

**Framework Adjustment 57**  
**To the**  
**Northeast Multispecies FMP**  
**Appendix III**  
**ABC Projection Output**

## Gulf of Maine Cod (Base Model)

AGEPRO VERSION 4.2

GoM cod 2017 update - longterm project (refpoints) - M=0.2

Date & Time of Run: 20 Nov 2017 12:10

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMCOD\PROJ\GOM\_COD\_2017\_UPDATE\_M02\_PROJECT\_SSCA  
BC.INP

First Age Class: 1  
Number of Age Classes: 9  
Number of Years in Projection: 9  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 1000  
Number of Simulations: 10

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMCOD\PROJ\GOM\_COD\_2017\_UPDATE\_M02.BSN

Number of Feasible Solutions: 10000 of 10000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	428
2018	Removals	703
2019	Removals	703
2020	Removals	703
2021	Removals	703
2022	Removals	703
2023	Removals	703
2024	Removals	703
2025	Removals	703

Recruits 1000 Fish

Year	Class	Average	StdDev
2017		4413.5337	3522.8614
2018		5156.6073	4199.6018
2019		5607.4083	4433.3333
2020		5839.4226	4554.9859
2021		5855.7463	4505.9438
2022		5824.4100	4461.8802
2023		5814.9628	4519.1707
2024		5899.5180	4574.6739
2025		5879.1654	4519.4475

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
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2017	631.0560	823.2536	1015.2480	2020.9230	3277.0570	6044.0200	9082.9550	11091.1300	17210.8100
2018	753.5925	964.4959	1169.0890	2410.1390	3791.9745	7057.0960	10780.0500	13146.0300	21646.5300
2019	882.8028	1118.2350	1225.2720	2735.8080	4208.3495	7519.7120	11435.7700	14112.6700	23410.1800
2020	928.8842	1162.8510	1314.6360	3016.6200	4353.7270	7580.7530	11462.9100	14398.6800	23639.5600
2021	938.5287	1162.8090	1252.0170	3086.9490	4390.4780	7583.1180	11464.6300	14330.0100	23360.7300
2022	934.2744	1166.5390	1288.9030	3086.6530	4390.0310	7653.7560	11458.9600	14267.8300	23075.6100
2023	937.6901	1161.6920	1276.4960	3077.4610	4346.5770	7576.9830	11463.6800	14315.1800	23356.9900
2024	939.6334	1165.4600	1287.2320	3085.7290	4390.5430	7823.8800	11464.4600	14382.7900	23571.5100
2025	956.4007	1161.4520	1281.4510	3085.3430	4391.8765	7677.3800	11472.8900	14354.7600	23214.9500

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	4.7073	0.8564
2018	5.7347	1.0991
2019	7.1163	1.5022
2020	9.6361	2.5616
2021	13.8704	4.3863
2022	20.1095	6.4234
2023	25.5980	8.2329
2024	30.8585	9.6663
2025	37.2890	11.1861

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.0372	3.4385	3.6193	4.1201	4.6478	5.2571	5.8725	6.1916	6.8893
2018	3.5567	4.1284	4.3588	4.9384	5.6482	6.4280	7.2407	7.6629	8.5609
2019	4.1645	4.9046	5.2588	6.0303	6.9725	8.0916	9.1569	9.7385	10.9898
2020	5.0645	6.0453	6.6496	7.7907	9.3260	11.1114	13.0142	14.1867	17.0414
2021	6.4742	7.9733	8.9032	10.7071	13.2470	16.2615	19.7180	21.9735	26.9303
2022	9.1417	11.3044	12.7057	15.4831	19.2334	23.7210	28.6812	31.9155	39.4668
2023	11.3694	14.2160	16.0371	19.5957	24.5606	30.3872	36.6838	40.7098	49.7020
2024	13.8602	17.4806	19.5498	23.8260	29.6106	36.5446	43.7838	48.2666	58.8694
2025	17.2879	21.5607	24.1389	29.1543	35.9275	43.9669	52.2484	57.3698	69.1813

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	5.7579	1.0184
2018	7.1524	1.3655
2019	9.6294	2.3291
2020	13.2340	3.8050
2021	18.2342	5.6416
2022	25.0806	7.6012
2023	30.9696	9.3457
2024	36.5312	10.7453
2025	43.3038	12.2656

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.7573	4.2815	4.4783	5.0230	5.6688	6.3974	7.1440	7.5388	8.3857
2018	4.4720	5.1401	5.4592	6.1686	7.0264	8.0435	9.0031	9.5430	10.6892
2019	5.4297	6.3295	6.8904	7.9566	9.3552	10.9921	12.6986	13.7855	16.2018
2020	6.7045	8.0108	8.8830	10.4883	12.7278	15.3752	18.3092	20.1765	24.3671

2021	8.6388	10.5200	11.7237	14.1641	17.4601	21.4114	25.8476	28.6203	34.8625
2022	11.7689	14.4725	16.2350	19.6023	24.1093	29.5190	35.2895	38.9281	47.4259
2023	14.4797	17.8739	19.9499	24.2314	29.7974	36.4400	43.4812	47.9232	58.0293
2024	17.3303	21.4942	23.9026	28.6990	35.2156	42.9399	50.9785	55.9594	67.3248
2025	20.9956	25.8491	28.7539	34.4125	41.8213	50.7151	59.5869	65.3809	78.2337

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	6.2685	1.1330
2018	8.0928	1.7221
2019	11.0308	2.9486
2020	15.1290	4.6367
2021	20.8051	6.5164
2022	27.6093	8.4855
2023	33.6002	10.1671
2024	39.4657	11.5179
2025	46.7308	13.2063

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.9969	4.6053	4.8514	5.4458	6.1768	6.9824	7.8135	8.2708	9.1997
2018	4.8564	5.5979	6.0107	6.8559	7.8978	9.1695	10.3629	11.1433	12.7462
2019	5.9166	6.9479	7.6188	8.8960	10.6677	12.7029	14.9465	16.3488	19.5408
2020	7.2650	8.8114	9.8017	11.7883	14.4879	17.7092	21.3399	23.6667	28.9853
2021	9.6822	11.8409	13.2865	16.0889	19.8974	24.5355	29.5368	32.8408	40.1969
2022	12.7147	15.7809	17.6703	21.4467	26.5806	32.5233	39.0778	43.1366	52.4938
2023	15.6316	19.3946	21.7022	26.2316	32.3369	39.5843	47.2791	51.8792	62.7161
2024	18.7346	23.2430	26.0120	31.1092	38.1024	46.3129	54.8859	60.3607	72.5520
2025	22.6227	27.9118	30.9340	37.1491	45.1743	54.7914	64.2573	70.5726	84.3521

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.4280	0.0000
2018	0.7030	0.0000
2019	0.7030	0.0000
2020	0.7030	0.0000
2021	0.7030	0.0000
2022	0.7030	0.0000
2023	0.7030	0.0000
2024	0.7030	0.0000
2025	0.7030	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280
2018	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2019	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2020	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2021	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2022	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2023	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2024	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030

2025 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030

Landings x 1000 MT

Year	Average	StdDev
2017	0.4280	0.0000
2018	0.7030	0.0000
2019	0.7030	0.0000
2020	0.7030	0.0000
2021	0.7030	0.0000
2022	0.7030	0.0000
2023	0.7030	0.0000
2024	0.7030	0.0000
2025	0.7030	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280
2018	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2019	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2020	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2021	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2022	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2023	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2024	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2025	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030

Total Fishing Mortality

Year	Average	StdDev
2017	0.0920	0.0176
2018	0.1129	0.0228
2019	0.0979	0.0214
2020	0.0830	0.0202
2021	0.0580	0.0179
2022	0.0397	0.0139
2023	0.0302	0.0111
2024	0.0241	0.0086
2025	0.0194	0.0066

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0591	0.0668	0.0709	0.0793	0.0904	0.1019	0.1164	0.1227	0.1391
2018	0.0721	0.0808	0.0857	0.0963	0.1100	0.1261	0.1445	0.1529	0.1740
2019	0.0609	0.0680	0.0726	0.0825	0.0952	0.1103	0.1270	0.1362	0.1619
2020	0.0481	0.0556	0.0598	0.0682	0.0804	0.0946	0.1099	0.1201	0.1435
2021	0.0270	0.0336	0.0374	0.0452	0.0555	0.0685	0.0817	0.0912	0.1114
2022	0.0172	0.0214	0.0241	0.0297	0.0374	0.0472	0.0583	0.0655	0.0822
2023	0.0129	0.0160	0.0181	0.0222	0.0282	0.0360	0.0447	0.0512	0.0641
2024	0.0107	0.0133	0.0148	0.0179	0.0226	0.0286	0.0356	0.0402	0.0506
2025	0.0090	0.0110	0.0122	0.0147	0.0182	0.0229	0.0283	0.0315	0.0405

## Gulf of Maine Cod (M-Ramp Model, m=0.4 in projection)

AGEPRO VERSION 4.2

GoM cod 2017 update - longterm project (refpoints) - M-ramp (M=0.4, F40=0.177)

Date & Time of Run: 05 Jan 2018 13:50

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMCOD\PROJ\GOM\_COD\_2017\_UPDATE\_MRAMP\_M04\_PROJE  
CT\_SSCABC.INP

First Age Class: 1  
Number of Age Classes: 9  
Number of Years in Projection: 9  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 1000  
Number of Simulations: 10

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMCOD\PROJ\GOM\_COD\_2017\_UPDATE\_MRAMP.BSN

Number of Feasible Solutions: 10000 of 10000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	428
2018	Removals	703
2019	Removals	703
2020	Removals	703
2021	Removals	703
2022	Removals	703
2023	Removals	703
2024	Removals	703
2025	Removals	703

Recruits 1000 Fish

Year	Class	Average	StdDev
2017		5844.7448	3462.2396
2018		5932.7468	3628.3969
2019		6315.5981	3853.1059
2020		7293.4979	4343.0409
2021		8014.1117	4591.2181
2022		8325.3715	4653.9187
2023		8398.7867	4743.8372
2024		8534.6727	4798.2377
2025		8556.0727	4743.6438

Recruits Distribution

Year Class 1% 5% 10% 25% 50% 75% 90% 95% 99%

2017	1155.9690	1505.8370	1882.6160	3075.3340	5444.6170	7866.6250	10147.1800	11678.7900	17331.2400
2018	1131.0130	1513.5570	1886.8980	3150.4790	5426.4955	7948.6740	10438.6200	12191.3700	18490.6000
2019	1174.1210	1609.4670	1990.9560	3322.5300	5729.2515	8501.3150	11196.8100	12972.2300	19103.1400
2020	1408.7670	1906.4800	2371.4700	3950.4190	6624.6385	9626.8830	12997.0200	14754.6700	22067.8600
2021	1619.7060	2191.2060	2475.9830	4537.1350	7825.5220	11043.4600	13524.3300	15635.3500	23855.0000
2022	1742.6100	2334.9420	2545.2850	4740.6900	8156.9235	11521.5000	13911.4500	15689.1900	24214.5000
2023	1788.1810	2345.7680	2575.4160	4752.1860	8202.1860	11630.8300	14067.0600	15785.1200	25133.4300
2024	1814.0310	2356.1360	2608.6630	4766.3590	8467.9610	11795.3600	14131.7500	15855.7100	25420.4700
2025	1870.1530	2349.5970	2601.1330	4770.5510	8618.9780	11795.1800	14289.1600	15865.9400	25140.3700

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	4.2814	0.7842
2018	4.3848	0.8575
2019	4.7217	1.0451
2020	5.8279	1.6244
2021	7.6312	2.4678
2022	9.8633	3.2833
2023	11.8342	3.9244
2024	13.7844	4.3415
2025	16.0081	4.6682

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.7586	3.1096	3.3386	3.6979	4.2445	4.8028	5.2682	5.6617	6.3764
2018	2.7246	3.1080	3.3322	3.7628	4.3290	4.9367	5.4627	5.8928	6.5984
2019	2.7034	3.1772	3.4433	3.9676	4.6408	5.3744	6.0697	6.5835	7.5231
2020	2.9075	3.5240	3.9269	4.6539	5.6297	6.8132	7.9560	8.7171	10.4220
2021	3.2838	4.1637	4.7469	5.8431	7.3361	9.0981	10.8893	12.0318	14.7857
2022	3.9352	5.1531	5.9279	7.4669	9.5071	11.8376	14.1984	15.7350	19.2227
2023	4.5101	6.0381	7.0298	8.9854	11.4860	14.3135	16.9793	18.7581	22.5501
2024	5.1972	7.1749	8.3995	10.6850	13.5060	16.5538	19.4563	21.3745	25.0409
2025	6.2184	8.7707	10.1777	12.7721	15.7307	19.0121	22.0886	24.1285	28.0390

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	5.6744	1.0080
2018	6.2303	1.2076
2019	7.5764	1.8726
2020	9.4226	2.7350
2021	11.7625	3.6794
2022	14.6119	4.5615
2023	17.1440	5.1846
2024	19.5243	5.5274
2025	22.0976	5.8013

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.7006	4.1776	4.4321	4.9294	5.6142	6.3258	6.9481	7.4536	8.2575
2018	3.9108	4.4467	4.7491	5.3573	6.1355	6.9852	7.7874	8.3830	9.4440
2019	4.1859	4.9225	5.3779	6.2250	7.3516	8.7098	10.0163	10.9079	12.9267
2020	4.5733	5.5668	6.2248	7.4439	9.0874	11.0460	13.0551	14.3094	17.2613

2021	5.1282	6.4868	7.3633	9.0664	11.3722	13.9793	16.6182	18.2952	22.2316
2022	6.0690	7.8775	8.9952	11.3017	14.2203	17.5203	20.6486	22.6015	27.0109
2023	6.9671	9.2681	10.6865	13.4047	16.7722	20.4750	23.9573	26.2190	30.7599
2024	7.9339	10.9762	12.6242	15.6632	19.1964	23.0562	26.7626	29.1538	33.8092
2025	9.5604	12.9593	14.8533	18.2142	21.7709	25.8619	29.5143	32.0579	36.7147

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	5.7258	1.0412
2018	6.6446	1.4506
2019	8.2173	2.2271
2020	10.2283	3.1499
2021	12.7625	4.0673
2022	15.5949	4.8885
2023	18.1381	5.4080
2024	20.5501	5.6831
2025	23.1224	5.9429

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.6893	4.1863	4.4351	4.9692	5.6580	6.3984	7.0217	7.5795	8.3729
2018	3.9242	4.5489	4.9098	5.6071	6.4999	7.5081	8.5182	9.2068	10.7149
2019	4.2402	5.0644	5.6154	6.6076	7.9463	9.5450	11.1578	12.1908	14.6066
2020	4.6667	5.7874	6.5409	7.9530	9.8599	12.0862	14.4263	15.8400	19.2869
2021	5.3338	6.8963	7.8632	9.7926	12.3579	15.2432	18.1080	19.9494	24.1139
2022	6.3208	8.2478	9.5159	12.0596	15.2308	18.7405	21.9762	24.1910	28.7541
2023	7.2720	9.8394	11.3741	14.2662	17.7823	21.5839	25.2223	27.5789	32.1247
2024	8.4803	11.6959	13.4944	16.6855	20.2092	24.2030	27.9421	30.4101	35.1217
2025	10.2879	13.7182	15.6791	19.0817	22.7880	26.9944	30.7122	33.3180	38.2097

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.4280	0.0000
2018	0.7030	0.0000
2019	0.7030	0.0000
2020	0.7030	0.0000
2021	0.7030	0.0000
2022	0.7030	0.0000
2023	0.7030	0.0000
2024	0.7030	0.0000
2025	0.7030	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280
2018	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2019	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2020	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2021	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2022	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2023	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2024	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030



2025 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030 0.7030

Landings x 1000 MT

Year	Average	StdDev
2017	0.4280	0.0000
2018	0.7030	0.0000
2019	0.7030	0.0000
2020	0.7030	0.0000
2021	0.7030	0.0000
2022	0.7030	0.0000
2023	0.7030	0.0000
2024	0.7030	0.0000
2025	0.7030	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280	0.4280
2018	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2019	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2020	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2021	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2022	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2023	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2024	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030
2025	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030	0.7030

Total Fishing Mortality

Year	Average	StdDev
2017	0.1102	0.0215
2018	0.1610	0.0339
2019	0.1710	0.0407
2020	0.1650	0.0446
2021	0.1239	0.0435
2022	0.0929	0.0372
2023	0.0759	0.0321
2024	0.0633	0.0270
2025	0.0524	0.0225

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0706	0.0806	0.0859	0.0945	0.1076	0.1229	0.1385	0.1472	0.1714
2018	0.1000	0.1133	0.1226	0.1365	0.1561	0.1817	0.2051	0.2226	0.2518
2019	0.1026	0.1154	0.1261	0.1419	0.1645	0.1941	0.2252	0.2440	0.2872
2020	0.0909	0.1062	0.1160	0.1335	0.1576	0.1895	0.2242	0.2462	0.2994
2021	0.0567	0.0699	0.0775	0.0928	0.1160	0.1459	0.1797	0.2059	0.2622
2022	0.0397	0.0496	0.0551	0.0672	0.0849	0.1100	0.1401	0.1636	0.2154
2023	0.0325	0.0398	0.0445	0.0541	0.0683	0.0892	0.1163	0.1356	0.1868
2024	0.0284	0.0342	0.0379	0.0454	0.0572	0.0739	0.0960	0.1144	0.1574
2025	0.0250	0.0295	0.0326	0.0384	0.0475	0.0605	0.0777	0.0915	0.1293

# Georges Bank Haddock

AGEPRO VERSION 4.2

gbh 2017 update (5yr ave sel; slow growth 2013 yc) - ref pts (keep high recr) - use R when SSB>75K \*FINAL

Date & Time of Run: 21 Nov 2017 11:02

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GBHADDOCK\PROJ\GBH\_2017UPDATE\_AGEPRO\_FINAL\_4YR\_PROJECTION\_75FMSYCONSTANT.INP

First Age Class: 1  
Number of Age Classes: 9  
Number of Years in Projection: 4  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 1000  
Number of Simulations: 100

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GBHADDOCK\PROJ\GBH\_UPDATE2017\_BASE\_FINAL\_DFO\_FULL\_YRS.BSN

Number of Feasible Solutions: 99773 of 100000 Realizations

Input Harvest Scenario

Year Type Value

2017 Removals 18920  
2018 Removals 73114  
2019 Removals 73114  
2020 Removals 73114

Recruits 1000000 Fish

Year Class	Average	StdDev
2017	62.7952	65.3773
2018	62.4125	64.8022
2019	62.7441	65.2668
2020	62.8293	65.3823

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.3358	2.4866	4.2589	14.0765	52.2947	78.2674	127.0792	178.5931	368.6939
2018	1.3284	2.3900	4.2562	14.0023	52.2364	78.0797	126.5461	174.2412	364.8503
2019	1.3430	2.4744	4.2521	13.9989	52.3357	78.5567	126.8291	176.0819	370.7082
2020	1.3222	2.3358	4.2480	13.9781	52.4189	78.9972	126.8395	176.4204	369.3087

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	316.7804	74.8038

2018	338.9189	85.4201
2019	369.0900	113.5879
2020	308.6587	118.5090

#### Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	175.5242	214.5350	230.1696	261.1705	308.3035	358.7864	417.3229	454.4421	523.8174
2018	183.1593	218.2184	238.9625	274.4487	330.1782	387.0082	452.1445	498.1701	580.6840
2019	164.4952	210.7559	235.4873	287.8222	360.2695	431.7824	524.3296	577.1506	697.2167
2020	93.7015	143.5149	170.1359	225.4075	298.2848	372.2315	462.1997	524.4531	680.3650

#### JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	358.8297	80.6622
2018	396.2017	92.0606
2019	430.0288	121.6916
2020	365.5599	124.8468

#### JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	208.9508	245.8159	265.7080	297.8743	351.4849	403.2659	472.4830	508.5838	579.7678
2018	227.7921	267.6172	287.9178	328.8372	387.8467	447.6232	525.5041	567.4520	654.9634
2019	211.3612	260.1331	287.0702	343.0803	419.8087	496.2539	593.5208	654.3533	795.8388
2020	142.1310	191.9931	219.3435	277.2994	353.7287	432.5871	527.5063	594.1665	753.5350

#### Mean Biomass x 1000 MT

Year	Average	StdDev
2017	438.5249	103.7264
2018	414.6521	108.6167
2019	358.1239	110.7100
2020	300.7848	114.4409

#### Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	247.8075	292.2087	317.1676	360.6052	429.2561	498.4959	578.6968	631.5176	723.9063
2018	218.3897	263.1240	287.0537	336.7260	406.3209	473.8092	561.7457	614.1684	739.1397
2019	158.4256	203.3798	227.8617	279.7623	348.2543	418.6807	501.9708	559.6250	702.3342
2020	96.1354	141.8133	167.8199	221.3737	289.1044	361.5774	445.5277	507.2918	646.4921

#### Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	18.9200	0.0000
2018	73.1140	0.0000
2019	73.1140	0.0000
2020	73.0379	2.0045

#### Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200

2018	73.1139	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1141
2019	73.1139	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140
2020	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140

Landings x 1000 MT

Year	Average	StdDev
2017	18.9200	0.0000
2018	73.1140	0.0000
2019	73.1140	0.0000
2020	73.0379	2.0045

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200	18.9200
2018	73.1139	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1141
2019	73.1139	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140
2020	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140	73.1140

Total Fishing Mortality

Year	Average	StdDev
2017	0.1428	0.0312
2018	0.4472	0.1285
2019	0.4329	0.1729
2020	0.4677	0.3464

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0858	0.0976	0.1062	0.1211	0.1395	0.1615	0.1824	0.1973	0.2329
2018	0.2338	0.2747	0.3029	0.3593	0.4275	0.5186	0.6069	0.6644	0.8487
2019	0.1946	0.2344	0.2637	0.3204	0.3964	0.5111	0.6289	0.7359	0.9771
2020	0.1621	0.2018	0.2293	0.2966	0.3845	0.5391	0.7487	0.9277	1.6103

## GOM Haddock

AGEPRO VERSION 4.2

GoM haddock ASAP BASE (1977-2014 recruitment) - Fmsy

Date & Time of Run: 19 Sep 2017 10:12

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMHADDOCK\PROJ\GOM\_HADDOCK\_2017\_75FMSY\_PROJECT  
IONS.INP

First Age Class: 1  
 Number of Age Classes: 9  
 Number of Years in Projection: 9  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 10

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\GOMHADDOCK\PROJ\GOM\_HADDOCK\_ASAP\_2017\_BASE.BSN

Number of Feasible Solutions: 10000 of 10000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	2306
2018	F-Mult	0.3410
2019	F-Mult	0.3410
2020	F-Mult	0.3410
2021	F-Mult	0.3410
2022	F-Mult	0.3410
2023	F-Mult	0.3410
2024	F-Mult	0.3410
2025	F-Mult	0.3410

Recruits 1000 Fish

Year	Class	Average	StdDev
2017		4746.5514	10682.4682
2018		4873.0289	10703.0485
2019		4661.5202	10738.5325
2020		4714.4981	10728.4077
2021		4678.5762	10269.0629
2022		4705.7471	10543.0496
2023		4823.6111	10878.4635
2024		4463.4763	9949.8106
2025		4558.0547	10428.4535

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017		170.5283	259.3188	284.2058	488.8403	1480.6850	4342.4320	10111.1400	17865.9100	69011.9600
2018		176.2587	268.5678	287.3246	497.9444	1579.4775	4965.0470	10684.2700	17898.9800	67570.1500
2019		172.9522	265.1684	286.3515	496.5060	1496.6750	4150.0760	8749.2700	15855.5000	70739.0600
2020		174.7543	274.8040	291.0202	488.1376	1473.7505	4284.1750	9643.0240	16695.0200	69805.0400
2021		171.1318	264.6046	288.8917	487.3098	1507.9350	4568.2460	9022.1590	17119.1700	64652.0400
2022		174.9140	260.3954	286.4354	493.2828	1515.0590	4380.7440	9514.9830	17540.3200	69379.7500
2023		176.6504	268.4104	289.4886	495.0195	1546.8075	4888.2910	9544.1870	17764.7600	70578.8200
2024		172.3173	267.6861	287.3921	493.2396	1471.5720	3989.1800	7830.2540	15821.4000	65119.7300
2025		175.5775	265.0585	286.1380	475.2939	1450.8305	4189.8010	9149.3770	15813.3700	68789.1100

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	69.7323	13.2552
2018	67.5071	13.0930
2019	54.4133	10.3538
2020	41.0320	8.4444
2021	30.7783	8.0541
2022	24.0845	8.4524
2023	19.1674	8.7900

2024	16.1103	8.9186
2025	14.1848	8.8749

#### Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	43.9104	50.2071	53.8359	60.6275	68.4286	77.5718	87.3613	93.7201	106.4756
2018	42.7140	48.2425	51.7987	58.4081	66.2049	75.1969	85.0334	91.2171	103.6089
2019	34.7499	39.0773	42.0072	47.2429	53.3284	60.5448	68.2694	73.1278	83.2568
2020	25.7251	29.2225	31.3138	35.2637	39.9594	45.6466	51.8324	56.4502	66.7430
2021	18.5587	21.1372	22.6959	25.6387	29.3740	34.0455	39.6350	44.9577	62.2522
2022	13.4435	15.4770	16.7167	19.0147	22.1262	26.2727	32.5971	41.3437	58.1917
2023	9.6437	11.1127	12.0519	13.9498	16.7662	20.7675	28.6952	39.2955	53.8471
2024	7.0371	8.2312	9.0300	10.7375	13.4508	17.6944	26.7292	36.5856	50.1985
2025	5.2440	6.3615	7.1649	8.7028	11.3909	15.8778	25.4585	34.6453	47.0346

#### JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	76.1306	14.2329
2018	75.9806	14.5949
2019	62.5782	12.0955
2020	48.0572	10.3984
2021	36.6265	9.9000
2022	28.7163	10.2235
2023	23.1809	10.5335
2024	19.7612	10.6368
2025	17.5808	10.6165

#### JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	48.6233	55.1004	59.0251	66.3519	74.7675	84.4730	95.0092	102.0543	115.6795
2018	48.0799	54.5018	58.5012	65.8215	74.5632	84.5372	95.5847	102.2465	116.2481
2019	39.9250	45.0204	48.1238	54.1788	61.2526	69.6611	78.7719	84.4737	96.7244
2020	29.9617	33.9533	36.3609	41.0054	46.5658	53.5096	61.0311	66.7994	80.6535
2021	21.6910	24.8470	26.7601	30.2409	34.7571	40.5281	48.0207	55.2322	73.6418
2022	15.9250	18.2616	19.6672	22.4299	26.2130	31.4601	40.1501	50.6734	67.9991
2023	11.4974	13.3004	14.4606	16.7260	20.2304	25.3191	35.7901	47.1761	62.8318
2024	8.3927	10.0074	11.0510	13.1357	16.5209	21.9882	33.7399	43.8280	58.2633
2025	6.4527	7.8698	8.8031	10.8463	14.1903	19.9722	32.0697	41.8077	55.6282

#### Mean Biomass x 1000 MT

Year	Average	StdDev
2017	75.1723	14.0335
2018	69.0016	13.3744
2019	54.3027	11.0342
2020	41.5362	9.8922
2021	31.6407	9.8046
2022	25.3100	10.1788
2023	20.8692	10.3154
2024	18.1810	10.4472
2025	16.4539	10.4217

#### Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	47.8797	54.4751	58.3099	65.3213	73.8014	83.4983	93.9464	100.9861	113.4944
2018	43.7877	49.2541	52.9228	59.6261	67.6285	76.8455	86.8598	93.3237	106.7905
2019	34.1968	38.6775	41.4325	46.5446	52.9284	60.4857	68.7073	74.4082	86.4478
2020	25.3985	28.8757	31.0042	34.8881	39.9409	46.1254	53.5000	59.4722	75.8812
2021	18.1779	20.9373	22.4582	25.5448	29.4548	34.8811	42.5961	51.8582	69.4819
2022	13.4166	15.4234	16.6176	19.0728	22.5976	27.7109	36.9469	48.2405	63.7292
2023	9.6913	11.3405	12.3571	14.5056	17.7784	22.9577	33.9488	44.2333	58.8310
2024	7.2249	8.6590	9.6736	11.6368	14.8901	20.3635	31.9650	41.7567	56.1729
2025	5.6155	6.9793	7.8580	9.7844	13.0960	18.8863	30.7360	39.4783	53.8039

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	2.3060	0.0000
2018	13.4425	2.8316
2019	12.7821	2.6730
2020	10.3882	2.0939
2021	8.1179	1.6506
2022	5.0730	1.3854
2023	3.8841	1.4686
2024	3.1507	1.5559
2025	2.7400	1.6197

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060
2018	8.0830	9.3555	10.0996	11.4464	13.1307	15.0614	17.1958	18.6005	21.5465
2019	7.8894	8.9355	9.5889	10.8782	12.4904	14.3460	16.3054	17.7511	20.2715
2020	6.4115	7.3323	7.8821	8.9029	10.1859	11.5839	13.1292	14.2176	16.3424
2021	5.0977	5.7484	6.1737	6.9693	7.9272	9.0436	10.2792	11.1062	12.8798
2022	2.9245	3.3880	3.6463	4.1654	4.8322	5.6569	6.6796	7.5520	10.1548
2023	2.0984	2.4253	2.6236	3.0029	3.5313	4.2511	5.3704	6.8635	9.9294
2024	1.5215	1.7645	1.9294	2.2358	2.6977	3.4362	4.8527	6.5941	9.4756
2025	1.1344	1.3403	1.4777	1.7640	2.2336	3.0295	4.7063	6.3656	9.1044

Landings x 1000 MT

Year	Average	StdDev
2017	2.3060	0.0000
2018	13.4425	2.8316
2019	12.7821	2.6730
2020	10.3882	2.0939
2021	8.1179	1.6506
2022	5.0730	1.3854
2023	3.8841	1.4686
2024	3.1507	1.5559
2025	2.7400	1.6197

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060	2.3060
2018	8.0830	9.3555	10.0996	11.4464	13.1307	15.0614	17.1958	18.6005	21.5465

2019	7.8894	8.9355	9.5889	10.8782	12.4904	14.3460	16.3054	17.7511	20.2715
2020	6.4115	7.3323	7.8821	8.9029	10.1859	11.5839	13.1292	14.2176	16.3424
2021	5.0977	5.7484	6.1737	6.9693	7.9272	9.0436	10.2792	11.1062	12.8798
2022	2.9245	3.3880	3.6463	4.1654	4.8322	5.6569	6.6796	7.5520	10.1548
2023	2.0984	2.4253	2.6236	3.0029	3.5313	4.2511	5.3704	6.8635	9.9294
2024	1.5215	1.7645	1.9294	2.2358	2.6977	3.4362	4.8527	6.5941	9.4756
2025	1.1344	1.3403	1.4777	1.7640	2.2336	3.0295	4.7063	6.3656	9.1044

Total Fishing Mortality

Year	Average	StdDev
2017	0.0774	0.0156
2018	0.3410	0.0000
2019	0.3410	0.0000
2020	0.3410	0.0000
2021	0.3410	0.0000
2022	0.3410	0.0000
2023	0.3410	0.0000
2024	0.3410	0.0000
2025	0.3410	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0473	0.0541	0.0585	0.0663	0.0760	0.0869	0.0978	0.1049	0.1203
2018	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2019	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2020	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2021	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2022	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2023	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2024	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410
2025	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410	0.3410

## SNE Yellowtail Flounder

AGEPRO VERSION 4.2

ASAP\_RUN26\_SNEMA\_SARC54\_Agepro\_Recent\_Recruitment (1990-2015)\_update2017

Date & Time of Run: 03 Jan 2018 11:13

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\SNEYT\PROJ\ORIGINAL\_BASE\_PROJECTIONS\_USETHIS\_SSCCO  
NSTANT.INP

First Age Class: 1  
 Number of Age Classes: 6  
 Number of Years in Projection: 4  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 10



Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\SNEYT\PROJ\RUN26\_2017\_UPDATE\_MCMC.BSN

Number of Feasible Solutions: 10000 of 10000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	90
2018	Removals	68
2019	Removals	68
2020	Removals	68

Recruits 1 Fish

Year	Class	Average	StdDev
2017		4618521.8774	2955078.2968
2018		4570654.1041	2922352.2104
2019		4528719.0539	2924521.2580
2020		4596129.8684	2947289.8792

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017		339711.0	636697.6	1422617.0	2123080.0	4369197.5	6688212.0	8727464.00	10706530.0	12405430.0
2018		341764.0	618903.5	1422864.0	2036328.0	4286538.0	6683590.0	8663228.0	10471270.0	12395200.0
2019		339194.4	572564.0	1409548.0	2032053.0	4223250.5	6675852.0	8644262.0	10438340.0	12301210.0
2020		336541.4	669180.5	1419365.0	2011763.0	4363399.50	6685958.0	8662568.0	10572240.0	12427070.0

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	0.1930	0.0441
2018	0.1469	0.0493
2019	0.4196	0.2047
2020	1.0082	0.4705

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1106	0.1274	0.1394	0.1613	0.1871	0.2223	0.2521	0.2716	0.3128
2018	0.0544	0.0750	0.0900	0.1119	0.1399	0.1780	0.2154	0.2356	0.2721
2019	0.0839	0.1454	0.1826	0.2576	0.3899	0.5480	0.7071	0.8211	0.9576
2020	0.1951	0.3546	0.4386	0.6487	0.9500	1.2993	1.6758	1.8939	2.2433

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	0.2879	0.0549
2018	0.4951	0.1927
2019	0.9819	0.4024
2020	1.6022	0.6006

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1873	0.2079	0.2239	0.2484	0.2804	0.3227	0.3624	0.3856	0.4276
2018	0.1788	0.2346	0.2705	0.3449	0.4666	0.6153	0.7663	0.8732	1.0062
2019	0.2725	0.4142	0.4916	0.6780	0.9383	1.2290	1.5489	1.7310	2.0275
2020	0.4869	0.7136	0.8599	1.1537	1.5582	1.9877	2.4173	2.6746	3.1671

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	0.2395	0.0565
2018	0.5415	0.2400
2019	1.1877	0.5213
2020	1.8014	0.6816

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1350	0.1570	0.1740	0.1994	0.2316	0.2743	0.3182	0.3389	0.3826
2018	0.1530	0.2218	0.2641	0.3523	0.5053	0.6908	0.8781	1.0150	1.1729
2019	0.2768	0.4570	0.5530	0.7922	1.1264	1.5090	1.9270	2.1685	2.5484
2020	0.5280	0.7921	0.9573	1.2977	1.7496	2.2463	2.7215	3.0139	3.5633

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.0900	0.0000
2018	0.0680	0.0000
2019	0.0680	0.0000
2020	0.0680	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900
2018	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680
2019	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680
2020	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680

Landings x 1000 MT

Year	Average	StdDev
2017	0.0900	0.0000
2018	0.0680	0.0000
2019	0.0680	0.0000
2020	0.0680	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900	0.0900
2018	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680
2019	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680
2020	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680	0.0680

Total Fishing Mortality

Year	Average	StdDev
2017	0.5547	0.1320
2018	0.6027	0.2341
2019	0.3554	0.2194
2020	0.1472	0.1165

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.3186	0.3703	0.3992	0.4550	0.5407	0.6332	0.7321	0.7956	0.9307
2018	0.2860	0.3351	0.3686	0.4405	0.5607	0.7001	0.8755	1.0298	1.4153
2019	0.1345	0.1585	0.1789	0.2248	0.3004	0.4206	0.5818	0.7109	1.1240
2020	0.0499	0.0585	0.0671	0.0861	0.1187	0.1739	0.2479	0.3097	0.5494

## CC/GOM Yellowtail Flounder

AGEPRO VERSION 4.2

CCGOM\_2015\_BASEMODELUPDATE\_Short-Term Projections

Date & Time of Run: 06 Oct 2017 13:43

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\CCYT\PROJ\2017\_YEL\_CCGM\_MOD\_PROJECTIONS\_NAA\_RETRO  
ADJ\_75FMSYCONSTANT.INP

First Age Class: 1  
 Number of Age Classes: 6  
 Number of Years in Projection: 14  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 10

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\CCYT\PROJ\2017\_YEL\_CCGM\_MOD\_VPA\_BOOTSRAP\_FOR\_AGE  
PRO.BSN

Number of Feasible Solutions: 10000 of 10000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Landings	353
2018	Landings	511
2019	Landings	511
2020	Landings	511
2021	Landings	511
2022	Landings	511
2023	Landings	511
2024	Landings	511
2025	Landings	511
2026	Landings	511
2027	Landings	511

2028 Landings 511  
 2029 Landings 511  
 2030 Landings 511

Recruits 1 Fish

Year Class	Average	StdDev
2017	6472824.4492	2901190.5798
2018	6575491.6707	3052763.7507
2019	6588424.9070	3080367.7778
2020	6554451.6123	3080726.2253
2021	6562911.7364	2985744.7615
2022	6561273.2321	2986061.5934
2023	6568735.9639	2988743.7154
2024	6519321.7418	2960677.3310
2025	6518094.5319	2999421.8026
2026	6495839.3575	2958195.0330
2027	6612267.0368	3080037.3949
2028	6587574.4592	2976515.0666
2029	6524416.5238	2952753.0892
2030	6519146.6457	2976069.4804

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2763261.0	2949241.0	3161128.0	3979406.0	5794904.5	8046897.0	9492113.0	11689510.0	18336240.0
2018	2771520.0	2949818.0	3154588.0	3976923.0	5880484.5	8128660.0	9571477.0	11832600.0	19364600.0
2019	2780557.0	2952082.0	3147707.0	3976520.0	5903274.0	8160261.0	9580711.0	11802570.0	19766680.0
2020	2762618.0	2946527.0	3163292.0	3971574.0	5850942.5	8062440.0	9565693.0	11845620.0	19939690.0
2021	2780740.0	2952354.0	3208476.0	3992817.0	5890857.5	8140961.0	9567950.0	11788450.0	19003390.0
2022	2772716.0	2950767.0	3185810.0	4001859.0	5870191.0	8096068.0	9541312.0	11750710.0	19043240.0
2023	2789840.0	2950572.0	3196211.0	3985395.0	5881374.5	8148856.0	9565526.0	11770700.0	18784350.0
2024	2768546.0	2952160.0	3190390.0	3969637.0	5874169.5	8014996.0	9471942.0	11749710.0	18731520.0
2025	2775178.0	2948064.0	3127141.0	3977197.0	5836017.0	8069163.0	9488441.0	11754310.0	19100040.0
2026	2747000.0	2945769.0	3123833.0	3964220.0	5829100.5	8040296.0	9519384.0	11719960.0	18677610.0
2027	2775329.0	2949884.0	3210519.0	3997353.0	5928236.5	8109346.0	9586467.0	11845520.0	20035850.0
2028	2768299.0	2953347.0	3195334.0	3997200.0	5918664.0	8174305.0	9600748.0	11804060.0	18374420.0
2029	2778295.0	2948678.0	3157388.0	3993135.0	5852764.5	8084090.0	9487640.0	11723490.0	18900130.0
2030	2753575.0	2944255.0	3112806.0	3981028.0	5866457.5	8096861.0	9500872.0	11698810.0	18788550.0

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	2.2520	0.3351
2018	2.8457	0.5509
2019	3.0381	0.5926
2020	3.7201	0.7986
2021	4.4417	1.0024
2022	5.0917	1.1471
2023	5.7390	1.2864
2024	6.2862	1.3764
2025	6.7450	1.4342
2026	7.1271	1.4645
2027	7.4380	1.4763
2028	7.6933	1.4863
2029	7.9047	1.4916

2030 8.0956 1.5087

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.5450	1.7467	1.8335	2.0128	2.2256	2.4633	2.6985	2.8532	3.1402
2018	1.8234	2.0533	2.1789	2.4496	2.7876	3.1863	3.5828	3.8254	4.3502
2019	1.9422	2.1816	2.3315	2.6090	2.9816	3.3947	3.8399	4.0784	4.7133
2020	2.2270	2.5620	2.7643	3.1706	3.6469	4.1739	4.7158	5.1180	6.2018
2021	2.5664	2.9824	3.2618	3.7455	4.3492	5.0014	5.6973	6.2583	7.4675
2022	2.9358	3.4304	3.7393	4.3048	4.9749	5.7115	6.5636	7.1793	8.5086
2023	3.2935	3.8947	4.2427	4.8550	5.6013	6.4604	7.4041	8.0992	9.5482
2024	3.6882	4.2932	4.6824	5.3403	6.1286	7.0527	8.0876	8.8117	10.2499
2025	4.0133	4.6909	5.0551	5.7452	6.5982	7.5552	8.6474	9.3947	10.7790
2026	4.3161	4.9918	5.4004	6.0938	6.9779	7.9815	9.0634	9.8525	11.1716
2027	4.5357	5.2860	5.6879	6.4067	7.2962	8.3077	9.4012	10.1286	11.4933
2028	4.7483	5.5177	5.9177	6.6487	7.5626	8.5815	9.6553	10.3758	11.8400
2029	4.9728	5.7002	6.1130	6.8652	7.7726	8.8082	9.8531	10.6281	11.9335
2030	5.0995	5.8595	6.2927	7.0446	7.9575	8.9978	10.1009	10.8159	12.1509

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	3.8525	0.5732
2018	4.6710	0.7473
2019	5.4121	0.9292
2020	6.2702	1.1411
2021	7.0696	1.3267
2022	7.7401	1.4517
2023	8.4511	1.5843
2024	9.0539	1.6678
2025	9.5532	1.7174
2026	9.9659	1.7481
2027	10.3038	1.7629
2028	10.5972	1.7821
2029	10.8442	1.7945
2030	11.0447	1.8057

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.7616	3.0212	3.1560	3.4385	3.7902	4.2090	4.6390	4.8504	5.3816
2018	3.2494	3.5699	3.7763	4.1484	4.6030	5.1118	5.6535	5.9869	6.7684
2019	3.6127	4.0544	4.3040	4.7600	5.3329	5.9496	6.6099	7.0634	8.0979
2020	4.0991	4.5785	4.9025	5.4820	6.1583	6.9224	7.7374	8.3240	9.6000
2021	4.5261	5.1434	5.5051	6.1405	6.9493	7.8266	8.7941	9.4923	10.8561
2022	4.9866	5.6090	6.0440	6.7351	7.5856	8.5687	9.6524	10.3701	11.9118
2023	5.3945	6.1347	6.5852	7.3547	8.2891	9.3589	10.5393	11.3107	12.8973
2024	5.8514	6.6235	7.0756	7.8830	8.8954	10.0102	11.2684	12.0656	13.6747
2025	6.1933	7.0486	7.5351	8.3483	9.3934	10.5688	11.8250	12.6740	14.2287
2026	6.5451	7.4115	7.8841	8.7453	9.8066	10.9985	12.2815	13.1823	14.6999
2027	6.7909	7.7179	8.1813	9.0567	10.1506	11.3754	12.6645	13.4607	15.0048
2028	7.0664	7.9637	8.4428	9.3517	10.4434	11.6913	12.9492	13.7969	15.4102
2029	7.2571	8.1701	8.6816	9.5888	10.6983	11.9304	13.1748	14.0559	15.7333
2030	7.4134	8.3410	8.8554	9.7837	10.9039	12.1422	13.4060	14.2638	15.9875

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	3.8701	0.6251
2018	4.5857	0.7873
2019	5.4069	1.0109
2020	6.2471	1.2116
2021	6.9849	1.3688
2022	7.6408	1.4863
2023	8.2831	1.5928
2024	8.8264	1.6572
2025	9.2738	1.6943
2026	9.6426	1.7165
2027	9.9442	1.7288
2028	10.2109	1.7475
2029	10.4366	1.7613
2030	10.6152	1.7692

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.7269	2.9739	3.1231	3.4172	3.8055	4.2582	4.7285	4.9531	5.5977
2018	3.0958	3.4331	3.6511	4.0380	4.5108	5.0402	5.5955	5.9833	6.8904
2019	3.4656	3.9422	4.2111	4.7035	5.3123	5.9874	6.6821	7.2302	8.4042
2020	3.9593	4.4739	4.8054	5.4194	6.1282	6.9235	7.8061	8.4407	9.7785
2021	4.3821	4.9988	5.3648	6.0366	6.8507	7.7639	8.7773	9.4705	10.9163
2022	4.8191	5.4615	5.9073	6.6164	7.4763	8.4820	9.5910	10.3345	11.8922
2023	5.2054	5.9756	6.4015	7.1766	8.1224	9.2056	10.3985	11.1987	12.8414
2024	5.6312	6.4202	6.8579	7.6618	8.6703	9.7897	11.0216	11.8422	13.4569
2025	5.9367	6.7911	7.2702	8.0824	9.1221	10.2765	11.5187	12.4147	13.8879
2026	6.2639	7.1308	7.6066	8.4340	9.4983	10.6587	11.9427	12.7411	14.3227
2027	6.5257	7.4104	7.8775	8.7156	9.7970	10.9910	12.2239	13.0421	14.5860
2028	6.7349	7.6192	8.1098	8.9881	10.0605	11.2781	12.5285	13.3738	14.9429
2029	6.8959	7.8083	8.3218	9.1971	10.2909	11.4801	12.7556	13.6030	15.2750
2030	7.0857	7.9773	8.4801	9.3740	10.4763	11.6942	12.9289	13.7772	15.4934

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.3530	0.0000
2018	0.5110	0.0000
2019	0.5110	0.0000
2020	0.5110	0.0000
2021	0.5110	0.0000
2022	0.5110	0.0000
2023	0.5110	0.0000
2024	0.5110	0.0000
2025	0.5110	0.0000
2026	0.5110	0.0000
2027	0.5110	0.0000
2028	0.5110	0.0000
2029	0.5110	0.0000
2030	0.5110	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530
2018	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2019	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2020	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2021	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2022	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2023	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2024	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2025	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2026	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2027	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2028	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2029	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2030	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110

Landings x 1000 MT

Year	Average	StdDev
2017	0.3530	0.0000
2018	0.5110	0.0000
2019	0.5110	0.0000
2020	0.5110	0.0000
2021	0.5110	0.0000
2022	0.5110	0.0000
2023	0.5110	0.0000
2024	0.5110	0.0000
2025	0.5110	0.0000
2026	0.5110	0.0000
2027	0.5110	0.0000
2028	0.5110	0.0000
2029	0.5110	0.0000
2030	0.5110	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530	0.3530
2018	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2019	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2020	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2021	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2022	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2023	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2024	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2025	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2026	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2027	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2028	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2029	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110
2030	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110	0.5110

Total Fishing Mortality

Year	Average	StdDev
2017	0.1843	0.0272

2018	0.2072	0.0381
2019	0.1864	0.0381
2020	0.1608	0.0336
2021	0.1330	0.0301
2022	0.1146	0.0262
2023	0.1008	0.0230
2024	0.0914	0.0204
2025	0.0846	0.0183
2026	0.0796	0.0167
2027	0.0759	0.0154
2028	0.0731	0.0145
2029	0.0710	0.0138
2030	0.0692	0.0132

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1324	0.1435	0.1519	0.1651	0.1832	0.2010	0.2199	0.2325	0.2596
2018	0.1332	0.1514	0.1599	0.1799	0.2048	0.2311	0.2592	0.2748	0.3096
2019	0.1124	0.1311	0.1395	0.1588	0.1825	0.2104	0.2371	0.2545	0.2880
2020	0.0960	0.1122	0.1214	0.1373	0.1572	0.1802	0.2053	0.2218	0.2549
2021	0.0748	0.0899	0.0985	0.1120	0.1292	0.1502	0.1730	0.1887	0.2204
2022	0.0646	0.0769	0.0844	0.0967	0.1114	0.1292	0.1490	0.1632	0.1908
2023	0.0572	0.0676	0.0740	0.0851	0.0982	0.1137	0.1311	0.1424	0.1685
2024	0.0526	0.0617	0.0674	0.0774	0.0892	0.1029	0.1179	0.1287	0.1505
2025	0.0497	0.0578	0.0628	0.0722	0.0827	0.0950	0.1086	0.1175	0.1367
2026	0.0479	0.0550	0.0597	0.0680	0.0781	0.0894	0.1013	0.1096	0.1278
2027	0.0467	0.0532	0.0576	0.0652	0.0744	0.0850	0.0957	0.1036	0.1203
2028	0.0457	0.0520	0.0560	0.0631	0.0716	0.0816	0.0919	0.0986	0.1149
2029	0.0450	0.0508	0.0547	0.0614	0.0696	0.0791	0.0886	0.0954	0.1097
2030	0.0442	0.0497	0.0534	0.0601	0.0681	0.0769	0.0862	0.0928	0.1064

## American Plaice

AGEPRO VERSION 4.2

Am. plaice F40% OA2017\_BASE

Date & Time of Run: 29 Sep 2017 13:09

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\DABS\PROJ\2017\_PLA\_UNIT\_MOD\_PROJ\_BASE\_2017-2020\_75FMSY.INP

First Age Class: 1  
 Number of Age Classes: 11  
 Number of Years in Projection: 14  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 100

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\DABS\PROJ\2017\_PLA\_UNIT\_MOD\_VPA\_T2016\_BASE\_BOOT.BSN



Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	1226
2018	F-Mult	0.1620
2019	F-Mult	0.1620
2020	F-Mult	0.1620
2021	F-Mult	0.1620
2022	F-Mult	0.1620
2023	F-Mult	0.1620
2024	F-Mult	0.1620
2025	F-Mult	0.1620
2026	F-Mult	0.1620
2027	F-Mult	0.1620
2028	F-Mult	0.1620
2029	F-Mult	0.1620
2030	F-Mult	0.1620

Recruits 1000000 Fish

Year	Class	Average	StdDev
2017		22.6991	10.4866
2018		22.6662	10.4687
2019		22.6595	10.4663
2020		22.6838	10.5117
2021		22.6794	10.4921
2022		22.7195	10.4840
2023		22.7059	10.5105
2024		22.6783	10.4922
2025		22.6628	10.4879
2026		22.7363	10.5268
2027		22.7082	10.5119
2028		22.6706	10.4347
2029		22.6994	10.5063
2030		22.7740	10.5425

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017		8.4836	9.7621	11.3239	13.5242	22.4746	26.2026	40.1900	44.7833	53.5621
2018		8.4941	9.7660	11.4405	13.5253	22.3851	26.1810	40.1520	44.7982	53.4150
2019		8.4900	9.7651	11.3323	13.5237	22.3693	26.1920	40.1073	44.5906	53.4728
2020		8.5034	9.7565	11.2705	13.5229	22.4366	26.1984	40.1915	44.7357	53.4590
2021		8.4824	9.7530	11.3878	13.5247	22.4283	26.1949	40.1802	44.7714	53.5032
2022		8.4985	9.7615	11.4374	13.5255	22.5227	26.1992	40.2017	44.7095	53.4653
2023		8.5272	9.7650	11.4501	13.5242	22.4578	26.1928	40.2287	45.0558	53.5137
2024		8.4558	9.7592	11.3589	13.5232	22.4082	26.1976	40.1889	44.7361	53.4340
2025		8.4873	9.7588	11.2906	13.5239	22.4055	26.1865	40.1367	44.7352	53.4802
2026		8.4663	9.7652	11.2890	13.5253	22.5102	26.2006	40.2571	45.0095	53.5793
2027		8.4514	9.7597	11.4010	13.5253	22.4323	26.1957	40.2229	44.9370	53.4710
2028		8.5213	9.7730	11.4517	13.5253	22.4844	26.1922	40.1252	44.4695	53.4825
2029		8.4790	9.7537	11.2485	13.5244	22.4802	26.1977	40.2084	44.8631	53.4948

2030 8.4886 9.7648 11.5036 13.5260 22.5292 26.2058 40.3089 45.1788 53.5231

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	9.9323	0.7437
2018	10.8179	0.9960
2019	10.2164	0.9857
2020	9.3029	0.9436
2021	9.0747	1.0692
2022	10.0591	1.5501
2023	11.3709	1.9405
2024	12.6790	2.1856
2025	13.5356	2.3137
2026	14.2153	2.3846
2027	14.6989	2.4207
2028	15.1882	2.4518
2029	15.5271	2.4687
2030	15.7645	2.4759

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	8.3174	8.7172	8.9936	9.4037	9.9130	10.4306	10.8848	11.1548	11.7083
2018	8.6417	9.2197	9.5871	10.1213	10.7659	11.4830	12.0657	12.5087	13.4389
2019	8.1048	8.6897	8.9710	9.5282	10.1908	10.8762	11.4505	11.9007	12.7910
2020	7.2928	7.8735	8.1228	8.6223	9.2547	9.9148	10.5295	10.9405	11.7226
2021	6.9721	7.4788	7.7715	8.3180	8.9819	9.7365	10.5097	10.9891	11.9068
2022	7.2326	7.8318	8.2120	8.9536	9.8767	10.9545	12.1985	12.9727	14.3225
2023	7.7781	8.5509	9.0564	9.9715	11.1430	12.5568	14.0354	14.9065	16.6682
2024	8.5559	9.4812	10.0385	11.0976	12.4475	14.0626	15.6216	16.6168	18.5551
2025	9.0963	10.1168	10.7266	11.8600	13.3154	15.0126	16.6399	17.6630	19.6580
2026	9.5881	10.6680	11.3132	12.5053	14.0041	15.7370	17.4070	18.4530	20.5388
2027	9.9513	11.0810	11.7407	12.9523	14.4993	16.2307	17.9339	18.9962	21.0674
2028	10.3558	11.5000	12.1889	13.4329	14.9856	16.7562	18.4413	19.5317	21.6203
2029	10.6418	11.8151	12.4975	13.7576	15.3400	17.1032	18.8093	19.8789	21.9728
2030	10.8707	12.0385	12.7352	13.9902	15.5813	17.3439	19.0550	20.1373	22.2491

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	12.9959	1.0188
2018	13.5955	1.2688
2019	12.6035	1.2128
2020	12.0305	1.2762
2021	12.5408	1.6716
2022	14.0561	2.2375
2023	15.6298	2.6154
2024	17.1030	2.8474
2025	18.0597	2.9685
2026	18.8047	3.0338
2027	19.3334	3.0699
2028	19.8680	3.1013
2029	20.2401	3.1163
2030	20.5012	3.1237

### JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	10.7289	11.3343	11.7339	12.3036	12.9605	13.6575	14.2816	14.6692	15.6191
2018	10.8789	11.5982	12.0027	12.6988	13.5589	14.4305	15.1788	15.7038	16.8706
2019	10.0095	10.7297	11.0759	11.7428	12.5592	13.3889	14.1479	14.7097	15.6943
2020	9.4263	10.0851	10.4539	11.1293	11.9487	12.8465	13.7259	14.2862	15.3113
2021	9.3723	10.0894	10.5326	11.3520	12.3625	13.5365	14.8105	15.6164	17.0647
2022	9.9047	10.8085	11.3793	12.4519	13.7978	15.4071	17.1352	18.1611	20.1718
2023	10.7037	11.8099	12.4808	13.7386	15.3436	17.2795	19.1722	20.3481	22.7035
2024	11.6462	12.8927	13.6382	15.0448	16.8269	18.9228	20.9108	22.2102	24.6520
2025	12.3110	13.6418	14.4426	15.9220	17.7939	19.9484	22.0279	23.3310	25.9092
2026	12.8646	14.2733	15.0968	16.6319	18.5527	20.7379	22.8490	24.1921	26.7954
2027	13.2495	14.7248	15.5792	17.1314	19.0865	21.2969	23.4128	24.7639	27.3591
2028	13.7213	15.1912	16.0520	17.6549	19.6304	21.8509	23.9792	25.3307	27.9678
2029	14.0595	15.5416	16.4158	18.0089	20.0143	22.2290	24.3771	25.7395	28.3528
2030	14.2821	15.7970	16.6755	18.2608	20.2665	22.4977	24.6558	26.0174	28.6746

### Mean Biomass x 1000 MT

Year	Average	StdDev
2017	14.2332	1.2723
2018	13.7130	1.3160
2019	12.7776	1.2987
2020	13.0221	1.6375
2021	14.4287	2.2468
2022	16.1129	2.7061
2023	17.6244	2.9917
2024	18.9505	3.1620
2025	19.8156	3.2471
2026	20.5009	3.2948
2027	20.9834	3.3248
2028	21.4313	3.3452
2029	21.7457	3.3550
2030	21.9659	3.3611

### Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	11.4632	12.2016	12.6306	13.3375	14.1797	15.0846	15.7963	16.3563	17.5424
2018	10.9173	11.6684	12.0528	12.7962	13.6824	14.5757	15.3855	15.9933	17.1088
2019	10.0550	10.7938	11.1619	11.8558	12.7062	13.6206	14.4819	15.0494	16.1175
2020	9.8663	10.6049	11.0466	11.8610	12.8620	14.0150	15.2373	16.0219	17.4098
2021	10.2905	11.1819	11.7444	12.8231	14.1676	15.7647	17.5290	18.5931	20.5854
2022	11.0539	12.1660	12.8744	14.1606	15.8034	17.8064	19.7954	21.0019	23.4727
2023	11.9212	13.2253	13.9927	15.4594	17.3289	19.5292	21.6376	22.9782	25.5716
2024	12.8362	14.2478	15.0991	16.6724	18.6566	20.9674	23.1845	24.5884	27.3194
2025	13.4898	14.9689	15.8480	17.4892	19.5483	21.8875	24.1470	25.5754	28.3924
2026	13.9893	15.5549	16.4724	18.1325	20.2364	22.6049	24.8997	26.3575	29.1110
2027	14.4058	15.9680	16.9000	18.6076	20.7207	23.1130	25.3920	26.8445	29.6678
2028	14.7767	16.3914	17.3191	19.0307	21.1868	23.5658	25.8666	27.3201	30.1191
2029	15.0955	16.6866	17.6329	19.3350	21.4991	23.8910	26.2042	27.6608	30.5386
2030	15.2786	16.9103	17.8538	19.5558	21.7079	24.1046	26.4548	27.8853	30.7964

### Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	1.2260	0.0000
2018	1.7420	0.1631
2019	1.6110	0.1542
2020	1.5008	0.1556
2021	1.5016	0.1892
2022	1.6900	0.2694
2023	1.8690	0.3198
2024	2.0835	0.3599
2025	2.2232	0.3798
2026	2.3340	0.3905
2027	2.4126	0.3959
2028	2.4852	0.4005
2029	2.5357	0.4026
2030	2.5712	0.4037

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260
2018	1.3880	1.4797	1.5374	1.6278	1.7324	1.8531	1.9430	2.0170	2.1643
2019	1.2856	1.3728	1.4150	1.5041	1.6092	1.7122	1.8059	1.8774	2.0070
2020	1.1718	1.2654	1.3071	1.3895	1.4919	1.6015	1.7046	1.7726	1.9017
2021	1.1376	1.2230	1.2733	1.3674	1.4829	1.6157	1.7581	1.8483	2.0094
2022	1.1979	1.3020	1.3685	1.4973	1.6580	1.8487	2.0622	2.1925	2.4335
2023	1.2720	1.4043	1.4864	1.6381	1.8319	2.0680	2.3045	2.4479	2.7409
2024	1.3997	1.5555	1.6475	1.8228	2.0475	2.3121	2.5664	2.7309	3.0431
2025	1.4919	1.6593	1.7613	1.9489	2.1879	2.4659	2.7308	2.9003	3.2253
2026	1.5746	1.7523	1.8575	2.0539	2.3012	2.5829	2.8553	3.0271	3.3655
2027	1.6325	1.8192	1.9283	2.1275	2.3799	2.6642	2.9416	3.1162	3.4511
2028	1.6951	1.8819	1.9940	2.1989	2.4529	2.7416	3.0158	3.1925	3.5368
2029	1.7367	1.9306	2.0412	2.2466	2.5056	2.7926	3.0710	3.2446	3.5874
2030	1.7727	1.9631	2.0772	2.2815	2.5412	2.8285	3.1083	3.2837	3.6304

Landings x 1000 MT

Year	Average	StdDev
2017	1.2260	0.0000
2018	1.7420	0.1631
2019	1.6110	0.1542
2020	1.5008	0.1556
2021	1.5016	0.1892
2022	1.6900	0.2694
2023	1.8690	0.3198
2024	2.0835	0.3599
2025	2.2232	0.3798
2026	2.3340	0.3905
2027	2.4126	0.3959
2028	2.4852	0.4005
2029	2.5357	0.4026
2030	2.5712	0.4037

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260	1.2260

2018	1.3880	1.4797	1.5374	1.6278	1.7324	1.8531	1.9430	2.0170	2.1643
2019	1.2856	1.3728	1.4150	1.5041	1.6092	1.7122	1.8059	1.8774	2.0070
2020	1.1718	1.2654	1.3071	1.3895	1.4919	1.6015	1.7046	1.7726	1.9017
2021	1.1376	1.2230	1.2733	1.3674	1.4829	1.6157	1.7581	1.8483	2.0094
2022	1.1979	1.3020	1.3685	1.4973	1.6580	1.8487	2.0622	2.1925	2.4335
2023	1.2720	1.4043	1.4864	1.6381	1.8319	2.0680	2.3045	2.4479	2.7409
2024	1.3997	1.5555	1.6475	1.8228	2.0475	2.3121	2.5664	2.7309	3.0431
2025	1.4919	1.6593	1.7613	1.9489	2.1879	2.4659	2.7308	2.9003	3.2253
2026	1.5746	1.7523	1.8575	2.0539	2.3012	2.5829	2.8553	3.0271	3.3655
2027	1.6325	1.8192	1.9283	2.1275	2.3799	2.6642	2.9416	3.1162	3.4511
2028	1.6951	1.8819	1.9940	2.1989	2.4529	2.7416	3.0158	3.1925	3.5368
2029	1.7367	1.9306	2.0412	2.2466	2.5056	2.7926	3.0710	3.2446	3.5874
2030	1.7727	1.9631	2.0772	2.2815	2.5412	2.8285	3.1083	3.2837	3.6304

Total Fishing Mortality

Year	Average	StdDev
2017	0.1201	0.0096
2018	0.1620	0.0000
2019	0.1620	0.0000
2020	0.1620	0.0000
2021	0.1620	0.0000
2022	0.1620	0.0000
2023	0.1620	0.0000
2024	0.1620	0.0000
2025	0.1620	0.0000
2026	0.1620	0.0000
2027	0.1620	0.0000
2028	0.1620	0.0000
2029	0.1620	0.0000
2030	0.1620	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0994	0.1054	0.1084	0.1134	0.1197	0.1261	0.1323	0.1376	0.1441
2018	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2019	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2020	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2021	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2022	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2023	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2024	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2025	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2026	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2027	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2028	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2029	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620
2030	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620	0.1620

## Georges Bank Winter Flounder

AGEPRO VERSION 4.2

2017-2020\_FMSY\_RETRO\_ADJ\_SSB\_0.649

Date & Time of Run: 06 Oct 2017 13:04

Input File Name: C:\NIT2\GARM08\UPDATE2017\_PROJ\GBWF\PROJ\2017\_FLW\_GB\_2017-2020\_PROJ\_75FMSY\_CONSTANT.INP

First Age Class: 1  
Number of Age Classes: 7  
Number of Years in Projection: 4  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 1000  
Number of Simulations: 100

Bootstrap File Name: C:\NIT2\GARM08\UPDATE2017\_PROJ\GBWF\PROJ\2017\_FLW\_GB\_VPA.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

#### Input Harvest Scenario

Year	Type	Value
2017	Removals	574
2018	Removals	855
2019	Removals	855
2020	Removals	855

Recruits 1000 Fish

Year	Class	Average	StdDev
2017		12330.1846	10402.9015
2018		11321.5145	9578.3516
2019		11634.7397	10070.7373
2020		13434.1922	11483.9024

#### Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017		1730.7350	2835.0100	3685.3870	5739.4860	9438.6305	15444.3700	24162.8800	31611.8000	51528.3300
2018		1596.3330	2593.7260	3397.9810	5290.3590	8675.0795	14189.7700	22072.2000	28712.7200	47383.8600
2019		1582.7360	2641.0060	3449.1890	5389.2070	8862.6005	14538.3700	22749.7500	29776.9600	49932.2400
2020		1811.3770	3016.2430	3948.1100	6206.7990	10195.1950	16833.2800	26431.5000	34415.5700	56831.2100

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	3.0488	0.4882
2018	2.4728	0.4682
2019	2.6976	0.7807
2020	4.6739	2.6579

#### Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.0314	2.3070	2.4712	2.7070	3.0258	3.3563	3.6597	3.8750	4.3598
2018	1.4956	1.7652	1.9162	2.1425	2.4502	2.7720	3.0783	3.2601	3.7440

2019	1.3893	1.6944	1.8611	2.1776	2.5832	3.0737	3.6413	4.0712	5.2280
2020	1.4793	1.9833	2.3074	2.9760	4.0162	5.5869	7.7297	9.5364	14.4511

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	4.3000	0.6041
2018	5.9865	2.2830
2019	7.6472	3.3166
2020	9.6519	4.3823

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	3.0414	3.3869	3.5821	3.8795	4.2705	4.6817	5.0967	5.3023	5.9225
2018	3.1911	3.6506	3.9533	4.5462	5.4263	6.7563	8.6148	10.1565	14.3852
2019	3.2668	3.9791	4.4535	5.4325	6.8997	9.0012	11.6970	13.7488	19.3301
2020	3.5445	4.5987	5.2779	6.6702	8.7235	11.5681	15.0723	17.7659	24.6357

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	3.8822	0.5838
2018	5.6431	2.4259
2019	7.6444	3.6306
2020	9.8184	4.7176

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.6632	3.0020	3.1920	3.4699	3.8534	4.2628	4.6355	4.8694	5.4038
2018	2.7330	3.1996	3.5072	4.1149	5.0336	6.4495	8.4321	10.0827	14.6233
2019	2.9057	3.6588	4.1680	5.2204	6.8117	9.1090	12.0678	14.3346	20.4568
2020	3.2623	4.3877	5.1146	6.6080	8.8126	11.8712	15.6518	18.5601	25.9944

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.5740	0.0000
2018	0.8550	0.0000
2019	0.8550	0.0000
2020	0.8550	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740
2018	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550
2019	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550
2020	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550

Landings x 1000 MT

Year	Average	StdDev
2017	0.5740	0.0000
2018	0.8550	0.0000

2019	0.8550	0.0000
2020	0.8550	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740	0.5740
2018	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550
2019	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550
2020	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550	0.8550

Total Fishing Mortality

Year	Average	StdDev
2017	0.2090	0.0352
2018	0.4039	0.0843
2019	0.3706	0.1130
2020	0.2523	0.1235

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1367	0.1579	0.1677	0.1836	0.2046	0.2303	0.2536	0.2721	0.3117
2018	0.2495	0.2888	0.3079	0.3431	0.3916	0.4521	0.5095	0.5580	0.6674
2019	0.1584	0.2112	0.2409	0.2935	0.3576	0.4328	0.5155	0.5723	0.7117
2020	0.0656	0.0986	0.1209	0.1661	0.2308	0.3128	0.4069	0.4778	0.6526

## SNE/MA Winter Flounder

AGEPRO VERSION 4.2

2011 SARC 52 SNE WFL: CAT10 Projected FMSY

Date & Time of Run: 20 Nov 2017 11:20

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\SNEWF\PROJ2\2017\_FLW\_SNEMA\_MOD\_AGEPRO\_SSCABC\_3YE  
AR\_PROJECTION\_V3.INP

First Age Class: 1  
 Number of Age Classes: 7  
 Number of Years in Projection: 7  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 1000  
 Number of Simulations: 100

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\SNEWF\PROJ2\CAT16\_MCMC\_GEO\_MEAN\_R.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
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2017 Removals	625
2018 Removals	727
2019 Removals	727
2020 Removals	727
2021 Removals	727
2022 Removals	727
2023 Removals	727

Recruits 1000 Fish

Year Class	Average	StdDev
2017	15570.7711	8534.8233
2018	16685.6054	9140.7841
2019	17324.9962	9519.1707
2020	20709.4420	11603.6661
2021	25605.8077	14476.6748
2022	29614.4184	16707.4276
2023	33027.2434	18433.1918

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4141.9750	5912.5660	7091.7150	9685.7980	13657.9550	19264.6100	26365.4700	31649.2900	45256.2700
2018	4403.7980	6305.1140	7585.1310	10359.1200	14654.2150	20649.4400	28216.8000	34081.1600	47818.3200
2019	4598.9560	6520.8510	7883.5320	10753.4500	15196.8650	21449.4300	29205.7100	35234.6800	50507.6700
2020	5320.3520	7642.4910	9230.9860	12708.3400	18022.7550	25670.0700	35312.8100	42643.0100	60922.3200
2021	6426.7470	9284.3330	11222.2600	15600.5300	22330.4200	31826.6400	43835.2700	53382.0700	75786.9700
2022	7587.4070	10866.5200	13162.9500	18080.4100	25785.4300	36814.6700	50565.5800	61099.6500	88048.1900
2023	8628.5650	12258.8300	14787.3200	20292.6300	28850.6000	40963.8100	56190.7000	67994.0800	97041.9000

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	4.0827	0.5402
2018	4.4599	0.5771
2019	4.7329	0.6619
2020	6.1290	1.4226
2021	8.6797	2.5707
2022	11.3433	3.4347
2023	14.1344	4.2660

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2.8821	3.2365	3.4238	3.7049	4.0578	4.4505	4.7970	5.0290	5.4179
2018	3.2217	3.5417	3.7335	4.0722	4.4242	4.8232	5.2322	5.4608	5.9460
2019	3.3471	3.7024	3.8917	4.2873	4.6980	5.1407	5.6127	5.8707	6.4472
2020	3.7164	4.2546	4.5728	5.1527	5.9136	6.8551	7.9276	8.7205	10.6534
2021	4.4888	5.3361	5.8692	6.8812	8.2612	10.0011	11.9764	13.4185	16.8538
2022	5.5650	6.7525	7.4993	8.9095	10.8294	13.1906	15.8041	17.6448	21.8909
2023	6.7703	8.3342	9.2849	11.0959	13.5418	16.4881	19.7435	21.9506	26.9697

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
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2017	6.2834	0.7212
2018	7.1449	0.9835
2019	8.7283	1.7322
2020	11.4388	2.8729
2021	14.5945	3.9341
2022	18.2206	5.0328
2023	22.4209	6.3054

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.7604	5.1293	5.3917	5.7975	6.2431	6.7337	7.2416	7.5343	8.1594
2018	5.1767	5.6729	5.9597	6.4700	7.0614	7.7431	8.4250	8.8724	9.8322
2019	5.6709	6.3658	6.7776	7.5269	8.4965	9.6614	10.9390	11.8558	14.0325
2020	6.5771	7.6026	8.2413	9.4260	11.0092	12.9625	15.1284	16.7002	20.3944
2021	7.8275	9.2726	10.1445	11.7985	14.0388	16.7461	19.7266	21.7833	26.5389
2022	9.4026	11.3089	12.4508	14.6350	17.5387	21.0398	24.8260	27.4045	33.1760
2023	11.2533	13.6844	15.1542	17.9338	21.5971	25.9889	30.7554	33.9722	40.9697

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	6.5877	0.7725
2018	7.5912	1.2222
2019	10.2237	2.5368
2020	13.1640	3.5710
2021	16.4914	4.6061
2022	20.5156	5.8589
2023	25.1888	7.2914

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.9277	5.3787	5.5982	6.0677	6.5488	7.0581	7.6289	7.9073	8.5818
2018	5.3026	5.8521	6.1778	6.7502	7.4508	8.2841	9.1529	9.7613	11.1947
2019	6.0453	6.9252	7.4576	8.4633	9.8162	11.5070	13.4729	14.8855	18.3581
2020	7.1612	8.3931	9.1803	10.6475	12.6258	15.0727	17.8034	19.6886	24.2447
2021	8.5529	10.2402	11.2692	13.2148	15.8444	19.0298	22.5107	24.9179	30.4100
2022	10.2808	12.4902	13.8004	16.3518	19.7194	23.8015	28.2586	31.2160	37.8645
2023	12.3913	15.1430	16.7807	19.9945	24.2130	29.3059	34.8356	38.5226	46.5276

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	0.6250	0.0000
2018	0.7270	0.0000
2019	0.7270	0.0000
2020	0.7270	0.0000
2021	0.7270	0.0000
2022	0.7270	0.0000
2023	0.7270	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250

2018	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2019	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2020	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2021	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2022	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2023	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270

Landings x 1000 MT

Year	Average	StdDev
2017	0.6250	0.0000
2018	0.7270	0.0000
2019	0.7270	0.0000
2020	0.7270	0.0000
2021	0.7270	0.0000
2022	0.7270	0.0000
2023	0.7270	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250
2018	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2019	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2020	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2021	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2022	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270
2023	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270	0.7270

Total Fishing Mortality

Year	Average	StdDev
2017	0.1916	0.0231
2018	0.1934	0.0255
2019	0.1640	0.0275
2020	0.1201	0.0315
2021	0.0872	0.0270
2022	0.0686	0.0217
2023	0.0557	0.0176

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.1465	0.1564	0.1631	0.1759	0.1904	0.2048	0.2220	0.2313	0.2566
2018	0.1429	0.1554	0.1620	0.1759	0.1914	0.2086	0.2279	0.2392	0.2621
2019	0.1067	0.1222	0.1307	0.1451	0.1622	0.1807	0.2001	0.2127	0.2368
2020	0.0574	0.0730	0.0816	0.0980	0.1175	0.1394	0.1614	0.1760	0.2057
2021	0.0392	0.0497	0.0559	0.0679	0.0838	0.1026	0.1227	0.1367	0.1664
2022	0.0316	0.0394	0.0441	0.0532	0.0655	0.0806	0.0971	0.1085	0.1342
2023	0.0262	0.0322	0.0359	0.0432	0.0531	0.0652	0.0786	0.0880	0.1096

## Redfish

AGEPRO VERSION 4.2

2017 redfish base model

Date & Time of Run: 21 Sep 2017 12:20

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\REDFISH\PROJ\2017\_RED\_UNIT\_MOD\_BASEAGEPRO\_75F50INPUT.INP

First Age Class: 1  
Number of Age Classes: 26  
Number of Years in Projection: 14  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 100  
Number of Simulations: 1000

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\REDFISH\PROJ\2017\_RED\_UNIT\_MOD\_BASEAGEPROF50INITN.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Removals	4630
2018	F-Mult	0.0285
2019	F-Mult	0.0285
2020	F-Mult	0.0285
2021	F-Mult	0.0285
2022	F-Mult	0.0285
2023	F-Mult	0.0285
2024	F-Mult	0.0285
2025	F-Mult	0.0285
2026	F-Mult	0.0285
2027	F-Mult	0.0285
2028	F-Mult	0.0285
2029	F-Mult	0.0285
2030	F-Mult	0.0285

Recruits 1 Fish

Year	Class	Average	StdDev
2017		40932337.2927	49531898.6027
2018		40400297.6545	48963835.4415
2019		40765809.9732	49425136.5940
2020		40733801.7318	49341780.0613
2021		40899458.2060	49770510.3483
2022		40437448.7491	49258286.2162
2023		40518359.0642	49089066.7619
2024		40488217.3800	49112107.7018
2025		40490395.2737	49169931.7318
2026		40772211.3291	49633610.0357
2027		40707730.4259	49091709.2686
2028		40768169.1757	49256993.3274

2029 40856067.9345 49371446.3773  
 2030 40673859.3915 49319131.0174

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	852523.3	1084727.0	1269934.0	4152079.0	29511020.0	49620250.0	92523940.0	136649200.0	263328300.0	
2018	852328.8	1086518.0	1287476.0	4213815.0	29060685.0	49347530.0	92438300.0	135371200.0	259343300.0	
2019	852381.6	1084084.0	1291981.0	4164822.0	29354245.0	49506600.0	92485800.0	137341900.0	263187000.0	
2020	852662.2	1085043.0	1277503.0	4215832.0	29673080.0	49459850.0	92453660.0	136703100.0	261554200.0	
2021	852085.2	1080087.0	1257936.0	4096918.0	29420525.0	49509410.0	92541950.0	139948800.0	262398200.0	
2022	852323.4	1080277.0	1264746.0	3988101.0	29000425.0	49358480.0	92471900.0	136458700.0	261501400.0	
2023	852687.9	1081964.0	1274299.0	4108526.0	29291145.0	49422560.0	92443010.0	136868700.0	259119700.0	
2024	852237.6	1083400.0	1270679.0	4086652.0	29291630.0	49376840.0	92473790.0	136589200.0	260918400.0	
2025	852260.7	1082364.0	1253823.0	4062288.0	29358055.0	49381460.0	92441380.0	137082200.0	261738400.0	
2026	852697.7	1083379.0	1278043.0	4136145.0	29295735.0	49387530.0	92503680.0	138012800.0	262903100.0	
2027	851828.0	1083300.0	1282480.0	4209783.0	29603410.0	49474340.0	92476830.0	137060900.0	259370000.0	
2028	852240.1	1082480.0	1264524.0	4037726.0	29623660.0	49486770.0	92487600.0	137470500.0	261477900.0	
2029	852157.7	1082658.0	1271132.0	4211044.0	29638680.0	49523800.0	92503580.0	137741300.0	260578300.0	
2030	852692.8	1085075.0	1277323.0	4118746.0	29415690.0	49466560.0	92457440.0	137735200.0	262738500.0	

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	383.1045	21.7596
2018	402.1590	23.3341
2019	413.4919	24.3778
2020	421.1447	25.3313
2021	425.6783	26.2770
2022	427.4968	27.2771
2023	427.0673	28.4084
2024	424.8345	29.7442
2025	421.2513	31.3508
2026	416.6912	33.2345
2027	411.4067	35.3215
2028	405.7220	37.5128
2029	399.7687	39.7099
2030	393.7676	41.8369

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	314.8917	347.5493	358.1911	369.9228	382.9801	397.8774	407.9517	411.9585	431.0953
2018	327.2472	364.5669	376.2702	387.9728	401.5709	418.2826	429.6441	434.8292	450.8609
2019	333.8814	374.1690	387.5701	399.1066	411.7900	430.6712	443.7512	450.5382	467.0766
2020	339.0558	379.6882	392.9762	406.6154	419.5616	439.1879	453.9632	460.1884	478.2652
2021	344.9388	381.1594	395.3222	410.5222	424.6789	444.2640	459.9994	466.7525	486.4343
2022	353.2341	382.1484	396.0295	411.5639	426.8846	445.6637	462.4930	470.7484	491.7693
2023	353.0625	383.4805	394.0795	409.6486	426.2933	444.7820	462.4524	474.5216	495.4840
2024	348.1080	380.8094	390.1850	406.1571	423.7526	442.5376	461.7127	476.8501	497.9181
2025	343.1255	374.6356	384.7956	401.5626	419.8970	439.5715	461.0517	477.2575	500.2444
2026	336.6508	367.3824	377.9737	395.4990	414.7555	435.9870	459.8661	475.8760	502.6825
2027	329.9393	359.3227	370.2617	388.4573	408.6463	432.0094	457.9016	473.8444	504.9606
2028	322.7350	350.6462	362.0172	380.8479	402.4579	427.7580	455.1247	472.0767	507.2633
2029	315.3601	341.6741	353.5334	372.9242	396.0328	423.3066	451.9873	470.2884	508.8758
2030	307.7439	332.9044	344.9259	364.9547	389.6063	418.7605	448.9571	468.4038	509.1842

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	427.3451	24.4688
2018	445.8807	26.2577
2019	454.2315	27.3314
2020	459.4469	28.4018
2021	462.0120	29.5328
2022	462.3076	30.8022
2023	460.7882	32.3076
2024	457.7847	34.0618
2025	453.6411	36.0426
2026	448.6739	38.2121
2027	443.0680	40.4682
2028	437.1136	42.7273
2029	430.9158	44.9242
2030	424.6983	47.0142

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	347.4854	388.2061	400.2984	411.9959	426.1720	443.6148	456.3887	460.9899	479.3649
2018	359.1736	404.1014	417.6541	430.6072	443.6395	464.4997	478.6388	487.0833	505.0484
2019	366.5675	409.0136	423.7568	438.6903	452.6740	473.5224	489.4354	496.4770	517.0204
2020	375.5809	411.5123	426.8020	443.1091	458.4751	478.9621	496.0003	504.5604	526.0015
2021	384.8918	413.5016	427.9710	444.6045	461.1767	481.2564	499.4986	509.2222	532.0728
2022	381.5396	415.1481	426.3827	443.3016	461.2937	481.3023	500.6485	513.9251	536.5878
2023	377.6944	412.7140	423.0493	440.5637	459.5546	480.0503	501.2123	517.3285	540.2167
2024	372.7175	406.8998	418.0569	436.3863	456.2463	477.8625	501.2918	518.2492	543.6367
2025	367.1130	400.0011	411.5542	430.5648	451.4778	474.7431	500.6123	517.2223	546.7049
2026	360.1605	392.1507	404.0221	423.7397	445.7723	471.1215	498.9647	515.9916	549.5766
2027	353.0866	383.4132	395.7320	416.2087	439.6558	467.0404	496.2595	514.4766	552.2278
2028	345.9100	374.4579	387.2145	408.1812	433.1952	462.5853	493.2982	512.8161	553.6146
2029	337.8558	365.3815	378.2780	400.0780	426.5734	457.9041	490.0127	510.8913	554.3921
2030	329.6887	356.3967	369.4839	392.0445	419.9841	452.9644	486.6696	508.7975	554.3479

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	414.5374	23.8674
2018	429.1496	25.2785
2019	437.1776	26.3188
2020	442.1859	27.3528
2021	444.6435	28.4434
2022	444.9330	29.6767
2023	443.4467	31.1287
2024	440.5442	32.8173
2025	436.5721	34.7331
2026	431.7979	36.8187
2027	426.4063	38.9851
2028	420.6794	41.1545
2029	414.7184	43.2641
2030	408.7386	45.2714

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	336.6489	376.3555	388.1509	399.5606	413.3959	430.4180	442.8807	447.3529	465.2801
2018	345.6163	388.9649	401.9890	414.4378	427.0352	447.0106	460.7571	468.8019	486.1775
2019	352.7604	393.6148	407.8033	422.2099	435.6868	455.7437	470.9861	477.8776	497.7075
2020	361.5511	396.0362	410.7425	426.4505	441.2479	460.9541	477.4085	485.6421	506.3480
2021	370.3631	397.9764	411.8511	427.8598	443.8319	463.1556	480.7299	490.1997	512.1479
2022	367.2442	399.5731	410.3057	426.5991	443.9520	463.2125	481.8575	494.7005	516.5388
2023	363.5241	397.1137	407.0870	423.9525	442.2617	461.9950	482.4371	497.9264	520.0174
2024	358.6333	391.4972	402.2504	419.9133	439.0559	459.8874	482.4887	498.7883	523.3053
2025	353.2401	384.8629	396.0220	414.3255	434.4721	456.9117	481.8858	497.8346	526.3297
2026	346.6218	377.3211	388.7781	407.7658	429.0082	453.4252	480.2547	496.6181	529.0241
2027	339.8068	368.9303	380.7789	400.5239	423.1226	449.5034	477.6654	495.1777	531.5110
2028	332.8097	360.3148	372.6203	392.7990	416.9108	445.2237	474.8042	493.6425	532.8598
2029	325.1349	351.5929	364.0338	384.9916	410.5469	440.7234	471.6253	491.7286	533.6046
2030	317.3333	342.9672	355.5464	377.3070	404.1974	435.9475	468.3738	489.7333	533.5222

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	4.6300	0.0000
2018	11.5793	0.6780
2019	11.8148	0.6961
2020	11.9733	0.7174
2021	12.0625	0.7463
2022	12.0602	0.7637
2023	12.0685	0.7996
2024	12.0139	0.8474
2025	11.8743	0.8812
2026	11.7321	0.9408
2027	11.5788	1.0085
2028	11.4160	1.0760
2029	11.2463	1.1416
2030	11.0760	1.2036

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300
2018	9.4816	10.4588	10.8268	11.1608	11.5523	12.0352	12.3562	12.5730	12.9351
2019	9.5913	10.6254	11.0523	11.3729	11.7849	12.2959	12.6364	12.8842	13.2163
2020	9.5868	10.7489	11.1852	11.5520	11.9418	12.4914	12.9001	13.0570	13.5091
2021	9.5469	10.8260	11.2083	11.6338	12.0641	12.6056	13.0641	13.1983	13.7618
2022	9.5987	10.7767	11.1864	11.6206	12.0226	12.6051	13.0509	13.2377	13.8576
2023	9.9822	10.8755	11.1537	11.5861	12.0617	12.5735	13.0708	13.4579	13.9711
2024	9.8958	10.7801	11.0393	11.4756	11.9877	12.5082	13.0522	13.5213	14.1344
2025	9.6957	10.5808	10.8577	11.3170	11.8384	12.3734	12.9686	13.4726	14.1164
2026	9.4772	10.3444	10.6435	11.1343	11.6759	12.2675	12.9519	13.4305	14.1901
2027	9.2602	10.1021	10.4109	10.9229	11.4951	12.1544	12.9104	13.3791	14.2812
2028	9.0542	9.8503	10.1716	10.7020	11.3124	12.0416	12.8337	13.3311	14.3630
2029	8.8446	9.5923	9.9239	10.4761	11.1310	11.9204	12.7499	13.2777	14.4146
2030	8.6239	9.3380	9.6784	10.2471	10.9511	11.7894	12.6653	13.2289	14.4353

Landings x 1000 MT

Year	Average	StdDev
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2017	4.6300	0.0000
2018	11.5793	0.6780
2019	11.8148	0.6961
2020	11.9733	0.7174
2021	12.0625	0.7463
2022	12.0602	0.7637
2023	12.0685	0.7996
2024	12.0139	0.8474
2025	11.8743	0.8812
2026	11.7321	0.9408
2027	11.5788	1.0085
2028	11.4160	1.0760
2029	11.2463	1.1416
2030	11.0760	1.2036

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300	4.6300
2018	9.4816	10.4588	10.8268	11.1608	11.5523	12.0352	12.3562	12.5730	12.9351
2019	9.5913	10.6254	11.0523	11.3729	11.7849	12.2959	12.6364	12.8842	13.2163
2020	9.5868	10.7489	11.1852	11.5520	11.9418	12.4914	12.9001	13.0570	13.5091
2021	9.5469	10.8260	11.2083	11.6338	12.0641	12.6056	13.0641	13.1983	13.7618
2022	9.5987	10.7767	11.1864	11.6206	12.0226	12.6051	13.0509	13.2377	13.8576
2023	9.9822	10.8755	11.1537	11.5861	12.0617	12.5735	13.0708	13.4579	13.9711
2024	9.8958	10.7801	11.0393	11.4756	11.9877	12.5082	13.0522	13.5213	14.1344
2025	9.6957	10.5808	10.8577	11.3170	11.8384	12.3734	12.9686	13.4726	14.1164
2026	9.4772	10.3444	10.6435	11.1343	11.6759	12.2675	12.9519	13.4305	14.1901
2027	9.2602	10.1021	10.4109	10.9229	11.4951	12.1544	12.9104	13.3791	14.2812
2028	9.0542	9.8503	10.1716	10.7020	11.3124	12.0416	12.8337	13.3311	14.3630
2029	8.8446	9.5923	9.9239	10.4761	11.1310	11.9204	12.7499	13.2777	14.4146
2030	8.6239	9.3380	9.6784	10.2471	10.9511	11.7894	12.6653	13.2289	14.4353

Total Fishing Mortality

Year	Average	StdDev
2017	0.0121	0.0007
2018	0.0285	0.0000
2019	0.0285	0.0000
2020	0.0285	0.0000
2021	0.0285	0.0000
2022	0.0285	0.0000
2023	0.0285	0.0000
2024	0.0285	0.0000
2025	0.0285	0.0000
2026	0.0285	0.0000
2027	0.0285	0.0000
2028	0.0285	0.0000
2029	0.0285	0.0000
2030	0.0285	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0107	0.0110	0.0113	0.0116	0.0121	0.0125	0.0129	0.0133	0.0146
2018	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285



2019	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2020	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2021	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2022	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2023	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2024	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2025	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2026	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2027	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2028	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2029	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285
2030	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285	0.0285

## White Hake

AGEPRO VERSION 4.2

White Hake Model Model 60 Update BRP estimation- 100 year projection

Date & Time of Run: 06 Oct 2017 14:39

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\WHITEHAKE\PROJ\2017\_HKW\_UNIT\_MOD\_AGEPRO\_75FMSY\_S  
HORT\_RECT\_ADJ\_AT\_AGE\_CONSTANT.INP

First Age Class: 1  
 Number of Age Classes: 9  
 Number of Years in Projection: 4  
 Number of Fleets: 1  
 Number of Recruitment Models: 1  
 Number of Bootstraps: 10000  
 Number of Simulations: 10

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\WHITEHAKE\PROJ\2017\_HKW\_UNIT\_MOD\_MCMC.BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Landings	1634
2018	Landings	2971
2019	Landings	2971
2020	Landings	2971

Recruits 1 Fish

Year	Class	Average	StdDev
2017		3260473.7206	827229.2719
2018		3259027.4124	827001.4111
2019		3255613.2150	825854.0911
2020		3263433.6465	828294.6955

Recruits Distribution

Year Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	2077201.0	2193039.0	2253195.0	2700789.0	3201516.0	3831482.0	4504834.0	4590574.0	5756223.0
2018	2077831.0	2191222.0	2251809.0	2697810.0	3200667.5	3831455.0	4504823.0	4593851.0	5740872.0
2019	2077223.0	2188298.0	2249609.0	2695981.0	3190926.5	3830132.0	4504741.0	4569443.0	5745314.0
2020	2075943.0	2189315.0	2251999.0	2702004.0	3216891.0	3832001.0	4504854.0	4601801.0	5738993.0

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	23.6304	2.2974
2018	25.0676	2.5036
2019	25.1865	2.6936
2020	24.9604	2.7642

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	18.6328	19.9706	20.7316	22.0777	23.5529	25.1432	26.6412	27.4715	29.3052
2018	19.6550	21.1069	21.9123	23.3763	24.9690	26.7150	28.3324	29.3047	31.3165
2019	19.4021	20.9329	21.8280	23.3420	25.0621	26.9387	28.7056	29.7812	31.9284
2020	19.0278	20.5895	21.5102	23.0559	24.8319	26.7721	28.5842	29.7133	31.8792

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	26.4932	2.4867
2018	28.1084	2.6489
2019	28.0200	2.7731
2020	27.7523	2.8254

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	21.0359	22.5739	23.3439	24.8010	26.4097	28.1525	29.7363	30.6748	32.7016
2018	22.3676	23.9339	24.7698	26.2989	27.9983	29.8541	31.5639	32.6110	34.7151
2019	22.0473	23.6379	24.5513	26.1150	27.8956	29.8397	31.6537	32.7473	34.9306
2020	21.6721	23.2830	24.2156	25.7999	27.6246	29.6014	31.4479	32.5936	34.7847

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	26.7111	2.5271
2018	27.4159	2.6708
2019	27.1527	2.7299
2020	27.0205	2.7916

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	21.2341	22.7188	23.5164	24.9983	26.6075	28.3775	29.9962	30.9801	33.0204
2018	21.6480	23.1975	24.0639	25.5864	27.2942	29.1722	30.9163	31.9606	34.0881
2019	21.2762	22.8317	23.7406	25.2711	27.0309	28.9470	30.7235	31.8167	33.9376
2020	20.9927	22.6134	23.5240	25.0919	26.8972	28.8381	30.6799	31.8149	33.9286

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	1.6340	0.0000
2018	2.9710	0.0000
2019	2.9710	0.0000
2020	2.9710	0.0000

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340
2018	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710
2019	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710
2020	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710

Landings x 1000 MT

Year	Average	StdDev
2017	1.6340	0.0000
2018	2.9710	0.0000
2019	2.9710	0.0000
2020	2.9710	0.0000

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340	1.6340
2018	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710
2019	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710
2020	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710	2.9710

Total Fishing Mortality

Year	Average	StdDev
2017	0.0787	0.0081
2018	0.1389	0.0146
2019	0.1385	0.0156
2020	0.1379	0.0164

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0622	0.0666	0.0689	0.0730	0.0782	0.0837	0.0893	0.0930	0.1000
2018	0.1091	0.1168	0.1209	0.1284	0.1379	0.1477	0.1582	0.1643	0.1776
2019	0.1072	0.1150	0.1195	0.1275	0.1374	0.1480	0.1590	0.1658	0.1797
2020	0.1051	0.1132	0.1179	0.1263	0.1367	0.1480	0.1594	0.1670	0.1821

## Pollock

AGEPRO VERSION 4.2

2017 pollock basse model - rho adjusted

Date & Time of Run: 21 Nov 2017 13:19

Input File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\POLLOCK\PROJ\2017\_POK\_UNIT\_MOD\_BASEAGEPRO\_75F40INP  
UTCONSTANT.INP

First Age Class: 1  
Number of Age Classes: 9  
Number of Years in Projection: 14  
Number of Fleets: 1  
Number of Recruitment Models: 1  
Number of Bootstraps: 1000  
Number of Simulations: 100

Bootstrap File Name:

C:\NIT2\GARM08\UPDATE2017\_PROJ\POLLOCK\PROJ\2017\_POK\_UNIT\_MOD\_BASEAGEPROF40INITN.  
BSN

Number of Feasible Solutions: 100000 of 100000 Realizations

Input Harvest Scenario

Year	Type	Value
2017	Landings	4296
2018	Landings	40172
2019	Landings	40172
2020	Landings	40172
2021	Landings	40172
2022	F-Mult	0.3600
2023	F-Mult	0.3600
2024	F-Mult	0.3600
2025	F-Mult	0.3600
2026	F-Mult	0.3600
2027	F-Mult	0.3600
2028	F-Mult	0.3600
2029	F-Mult	0.3600
2030	F-Mult	0.3600

Recruits 1 Fish

Year	Class	Average	StdDev
2017		26479687.7411	14093083.7479
2018		26573053.1346	14180841.7220
2019		26595350.4380	14230874.2123
2020		26585128.3617	14147806.6072
2021		26468387.9127	14078106.7964
2022		26486912.2077	14112780.3087
2023		26577961.2110	14170118.1528
2024		26520038.0673	14112525.0059
2025		26565192.8489	14155442.3864
2026		26573249.1009	14207529.6642
2027		26538342.4526	14086234.3316
2028		26603031.5624	14154225.4571
2029		26593107.7371	14185887.3688
2030		26529287.1468	14070113.1465

Recruits Distribution

Year	Class	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	10133280	11395490.0	14625420.0	18047590.0	22132965.0	30013610.0	45380070.0	55181840.0	84550710.0	
2018	10144670	11392640.0	14625960.0	18067910.0	22190765.0	30109600.0	45629760.0	55708100.0	84559640.0	
2019	10135360	11374410.0	14574700.0	18051870.0	22250110.0	30093100.0	45668260.0	56029130.0	84932770.0	
2020	10137850	11385760.0	14685870.0	18158810.0	22242470.0	30163520.0	45544110.0	55771240.0	84346050.0	
2021	10145250	11406130.0	14648810.0	18066560.0	22105705.0	29991960.0	45495180.0	55273160.0	84268460.0	
2022	10146020	11411770.0	14704950.0	18046710.0	22131355.0	29997230.0	45423060.0	55617550.0	84550440.0	
2023	10139710	11397060.0	14670070.0	18102370.0	22227440.0	30114250.0	45549720.0	55610780.0	85021110.0	
2024	10152890	11414930.0	14632130.0	18110070.0	22155255.0	30037330.0	45430280.0	55289220.0	84995370.0	
2025	10145860	11408130.0	14675670.0	18023730.0	22160555.0	30127700.0	45641050.0	55577700.0	84636270.0	
2026	10146880	11422840.0	14680610.0	18153570.0	22178705.0	30038940.0	45548520.0	55725200.0	85408260.0	
2027	10143010	11390060.0	14651350.0	18150440.0	22263610.0	30043120.0	45387600.0	55159840.0	84846490.0	
2028	10138360	11392460.0	14671080.0	18152380.0	22274335.0	30168610.0	45532290.0	55666460.0	84211060.0	
2029	10144110	11426850.0	14686250.0	18162990.0	22165755.0	30242980.0	45521630.0	55804780.0	85373820.0	
2030	10155530	11382660.0	14666680.0	18162410.0	22349545.0	30033600.0	45250220.0	55338930.0	84715200.0	

Spawning Stock Biomass x 1000 MT

Year	Average	StdDev
2017	249.0445	44.1967
2018	291.4323	51.8173
2019	284.4957	57.1998
2020	265.8351	59.9985
2021	237.2474	59.1720
2022	210.6134	58.1998
2023	192.6003	47.3220
2024	177.5214	39.0650
2025	166.3220	33.1338
2026	157.6863	29.0122
2027	151.0854	26.2676
2028	146.0512	24.5166
2029	142.2250	23.4313
2030	139.3089	22.7891

Spawning Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	163.0093	186.2691	197.2805	217.2868	243.3454	275.5390	306.9540	326.6155	373.7074
2018	190.8833	218.1564	231.5212	254.4213	286.6545	321.6523	358.8050	381.6218	437.4669
2019	172.7087	202.2192	218.7953	243.8946	279.8294	317.9098	358.3138	384.2117	444.1484
2020	150.1023	179.2603	195.6166	222.7530	260.2545	301.0007	343.1539	373.5673	434.1910
2021	123.9125	151.3568	167.9135	194.4538	231.3257	272.5690	313.5492	345.4121	403.0619
2022	99.0669	126.0854	141.9351	168.8436	204.9016	245.3263	285.6918	315.7533	373.3907
2023	101.3467	123.4082	136.0071	159.0724	188.4627	221.0035	254.2337	277.2243	322.6260
2024	101.8887	120.0252	130.3587	149.8306	174.1608	201.0776	228.7290	247.4800	284.2763
2025	102.5294	117.3083	126.2325	142.7818	163.4294	186.4986	210.1092	225.5150	256.7971
2026	101.7602	114.9085	122.7420	137.1218	154.9556	175.3311	196.2780	209.5593	237.2815
2027	101.1581	112.6967	119.6110	132.4364	148.4701	166.8994	186.0649	198.3642	223.8076
2028	100.0236	110.6194	116.9488	128.5770	143.3598	160.7755	178.8390	190.5717	214.3488
2029	98.9739	108.8392	114.6180	125.4947	139.5198	156.0431	173.5091	185.0513	208.5434
2030	97.8526	107.1442	112.6090	123.0827	136.5076	152.6727	169.7520	180.9327	204.6641

JAN-1 Stock Biomass x 1000 MT

Year	Average	StdDev
2017	294.2550	51.5926
2018	324.7322	56.8284
2019	310.1709	60.2473
2020	289.1438	61.8073
2021	259.7494	60.4280
2022	232.7448	59.3673
2023	214.6697	48.5329
2024	199.5774	40.4333
2025	188.3735	34.6994
2026	179.7518	30.7692
2027	173.1637	28.1868
2028	168.1347	26.5642
2029	164.3170	25.5745
2030	161.4069	24.9975

JAN-1 Stock Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	194.1316	220.9187	234.1463	256.8956	288.8125	324.5159	361.1365	383.6638	440.4383
2018	213.9915	243.3184	259.3932	284.1406	319.5160	357.9811	398.4458	422.4263	484.3066
2019	193.7087	223.1766	240.1618	267.2210	304.5883	345.7620	387.8942	416.1563	477.6698
2020	170.3191	199.4698	216.8261	244.7718	283.1159	326.0103	369.0666	400.3639	462.0963
2021	143.8499	171.9039	188.5711	216.3977	253.8637	295.9226	337.7322	369.0003	428.5382
2022	118.6049	146.1728	162.2427	190.5125	227.3056	268.3151	309.6138	339.3260	397.4018
2023	120.9057	143.2768	156.2508	180.3687	210.5295	243.9413	278.0596	301.2047	347.4220
2024	121.0321	139.7237	150.5298	170.9745	196.1108	224.0659	252.9123	271.9182	309.5583
2025	120.9239	136.8721	146.3680	163.7070	185.3587	209.5402	234.2765	250.2380	282.5313
2026	120.2207	134.2586	142.6207	157.9145	176.9775	198.4522	220.6531	234.5741	263.9847
2027	119.2657	131.8260	139.3973	153.1146	170.3639	190.3402	210.7045	223.7583	250.4185
2028	118.1221	129.6232	136.5573	149.2106	165.3038	184.1130	203.6078	216.3270	241.6765
2029	116.6890	127.6255	134.0426	146.1252	161.4726	179.5997	198.4582	210.8307	236.1141
2030	115.3499	125.8121	132.0450	143.5766	158.4379	176.2219	194.8741	207.0297	232.2020

Mean Biomass x 1000 MT

Year	Average	StdDev
2017	312.8105	54.9660
2018	316.8816	58.7911
2019	298.3082	61.0197
2020	272.7811	61.0230
2021	241.4684	58.7696
2022	221.6114	53.2692
2023	205.8619	44.1777
2024	192.4996	37.3428
2025	182.7574	32.5878
2026	175.1944	29.3805
2027	169.4230	27.3192
2028	165.0208	26.0430
2029	161.6840	25.2822
2030	159.1299	24.8374

Mean Biomass Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	206.1139	234.0794	249.8121	273.4433	307.6789	344.2177	384.5002	407.6996	466.4190

2018	202.2231	232.4509	248.5905	275.0384	311.6544	351.3990	393.3157	419.0676	480.2935
2019	180.6403	209.8470	227.0919	254.5798	292.4502	334.7330	376.8138	407.4598	468.4244
2020	155.2232	184.0361	201.1255	228.8942	266.7097	309.2439	351.4162	383.0793	443.7061
2021	128.2344	155.7924	171.9020	199.4418	236.0159	276.6871	317.3355	346.9715	404.7906
2022	118.9127	143.6921	157.8864	183.8167	216.9816	253.5994	290.8922	316.6746	368.0694
2023	120.2425	140.6498	152.4555	174.5995	202.0465	232.5191	263.8238	284.8095	326.3515
2024	120.1044	137.0703	147.2255	166.0381	189.2778	215.2992	241.8628	259.2892	293.5978
2025	119.4780	134.4003	143.3348	159.6456	179.8609	202.6585	225.9846	240.7984	271.8180
2026	118.7586	131.9415	139.8767	154.3137	172.3820	193.0423	214.2869	227.5704	255.5351
2027	117.4660	129.5382	136.8668	149.9571	166.5682	185.9896	205.9789	218.7929	244.4763
2028	116.2170	127.5180	134.1402	146.4642	162.2053	180.5338	199.9118	212.2916	237.5033
2029	114.9921	125.5566	131.8867	143.7073	158.7924	176.7553	195.5097	207.6974	233.1127
2030	113.6598	123.8984	130.0665	141.3450	156.0992	173.7422	192.2719	204.7009	230.0051

Combined Catch Biomass x 1000 MT

Year	Average	StdDev
2017	4.2960	0.0000
2018	40.1720	0.0000
2019	40.1720	0.0000
2020	40.1720	0.0000
2021	40.1720	0.0000
2022	24.6285	6.8691
2023	22.0606	4.7143
2024	21.5136	4.6368
2025	20.4558	4.6080
2026	19.9600	4.4742
2027	19.5652	4.3841
2028	19.2536	4.3272
2029	19.0262	4.3031
2030	18.8674	4.2997

Combined Catch Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960
2018	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2019	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2020	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2021	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2022	11.6437	14.6402	16.5696	19.7151	23.9154	28.8570	33.3380	36.9415	44.2710
2023	12.8430	15.1588	16.4692	18.7660	21.6084	24.8886	28.1315	30.5635	35.1991
2024	13.3246	15.1826	16.2706	18.2812	20.8741	24.0298	27.5523	30.0879	35.8828
2025	12.7560	14.3804	15.3588	17.1947	19.7027	22.9215	26.5083	29.0815	35.0156
2026	12.6722	14.1819	15.0699	16.7751	19.1814	22.3174	25.8400	28.4155	34.2527
2027	12.5244	13.9542	14.8090	16.4433	18.7830	21.8542	25.3205	27.8133	33.6915
2028	12.3636	13.7531	14.5809	16.1807	18.4247	21.5233	24.9711	27.4436	33.2385
2029	12.2413	13.6031	14.4155	15.9574	18.1949	21.2505	24.7492	27.1871	32.9058
2030	12.1555	13.4610	14.2549	15.8065	18.0191	21.0688	24.5850	26.9763	32.8879

Landings x 1000 MT

Year	Average	StdDev
2017	4.2960	0.0000
2018	40.1720	0.0000
2019	40.1720	0.0000

2020	40.1720	0.0000
2021	40.1720	0.0000
2022	24.6285	6.8691
2023	22.0606	4.7143
2024	21.5136	4.6368
2025	20.4558	4.6080
2026	19.9600	4.4742
2027	19.5652	4.3841
2028	19.2536	4.3272
2029	19.0262	4.3031
2030	18.8674	4.2997

Landings Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960	4.2960
2018	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2019	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2020	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2021	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720	40.1720
2022	11.6437	14.6402	16.5696	19.7151	23.9154	28.8570	33.3380	36.9415	44.2710
2023	12.8430	15.1588	16.4692	18.7660	21.6084	24.8886	28.1315	30.5635	35.1991
2024	13.3246	15.1826	16.2706	18.2812	20.8741	24.0298	27.5523	30.0879	35.8828
2025	12.7560	14.3804	15.3588	17.1947	19.7027	22.9215	26.5083	29.0815	35.0156
2026	12.6722	14.1819	15.0699	16.7751	19.1814	22.3174	25.8400	28.4155	34.2527
2027	12.5244	13.9542	14.8090	16.4433	18.7830	21.8542	25.3205	27.8133	33.6915
2028	12.3636	13.7531	14.5809	16.1807	18.4247	21.5233	24.9711	27.4436	33.2385
2029	12.2413	13.6031	14.4155	15.9574	18.1949	21.2505	24.7492	27.1871	32.9058
2030	12.1555	13.4610	14.2549	15.8065	18.0191	21.0688	24.5850	26.9763	32.8879

Total Fishing Mortality

Year	Average	StdDev
2017	0.0468	0.0082
2018	0.3663	0.0725
2019	0.3526	0.0825
2020	0.3317	0.0901
2021	0.4178	0.1384
2022	0.3600	0.0000
2023	0.3600	0.0000
2024	0.3600	0.0000
2025	0.3600	0.0000
2026	0.3600	0.0000
2027	0.3600	0.0000
2028	0.3600	0.0000
2029	0.3600	0.0000
2030	0.3600	0.0000

Total Fishing Mortality Distribution

Year	1%	5%	10%	25%	50%	75%	90%	95%	99%
2017	0.0304	0.0343	0.0368	0.0409	0.0463	0.0520	0.0570	0.0610	0.0702
2018	0.2244	0.2567	0.2803	0.3153	0.3600	0.4115	0.4571	0.4978	0.5758
2019	0.1992	0.2367	0.2552	0.2961	0.3432	0.4013	0.4592	0.5059	0.5941
2020	0.1774	0.2093	0.2312	0.2666	0.3181	0.3816	0.4494	0.5006	0.6165
2021	0.2019	0.2426	0.2728	0.3206	0.3927	0.4885	0.5948	0.6759	0.8865



2022	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2023	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2024	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2025	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2026	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2027	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2028	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2029	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
2030	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600