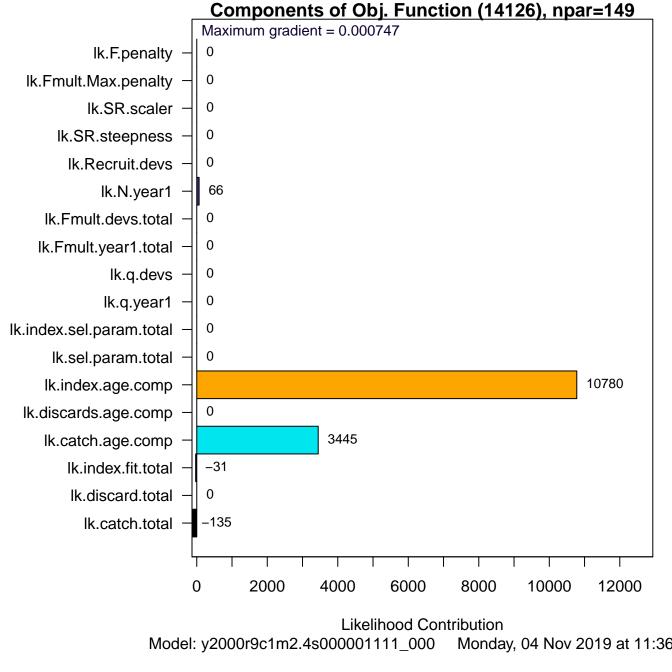
File = y2000r9c1m2.4s000001111_000.dat

ASAP3 run on Monday, 04 Nov 2019 at 11:36:26

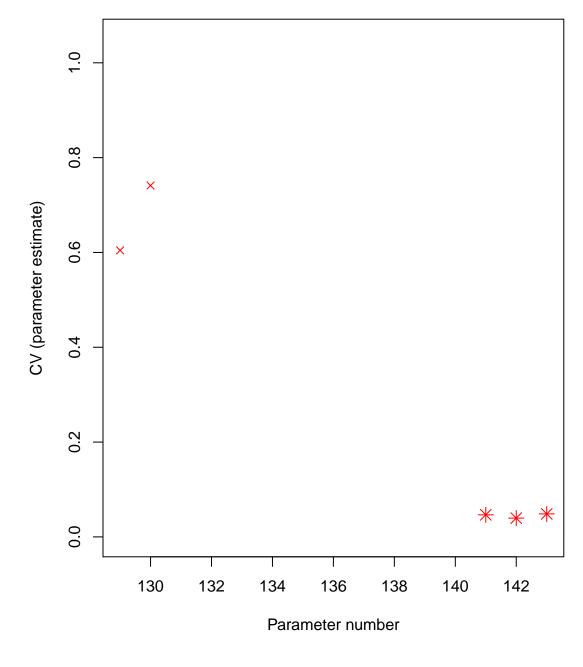
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\v

ASAPplots version = 0.2.14

npar = 149, maximum gradient = 0.000746561



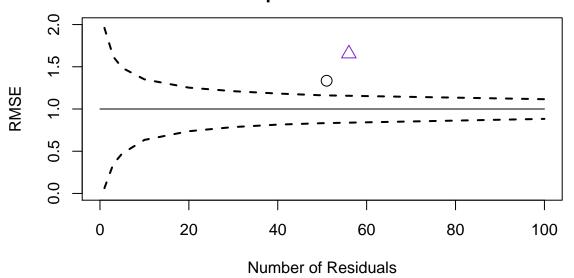




Root Mean Square Error computed from Standardized Residuals

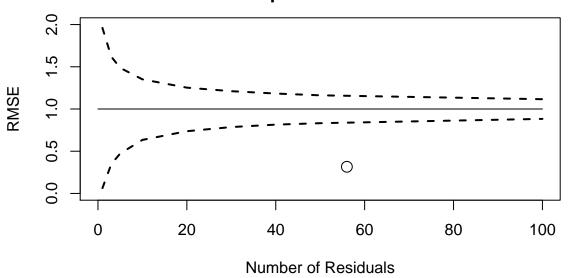
Component	# resids	RMSE
catch.tot	56	0.316
discard.tot	0	0
ind01	51	1.33
ind02	56	1.65
ind.total	107	1.51
N.year1	8	0.574
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices

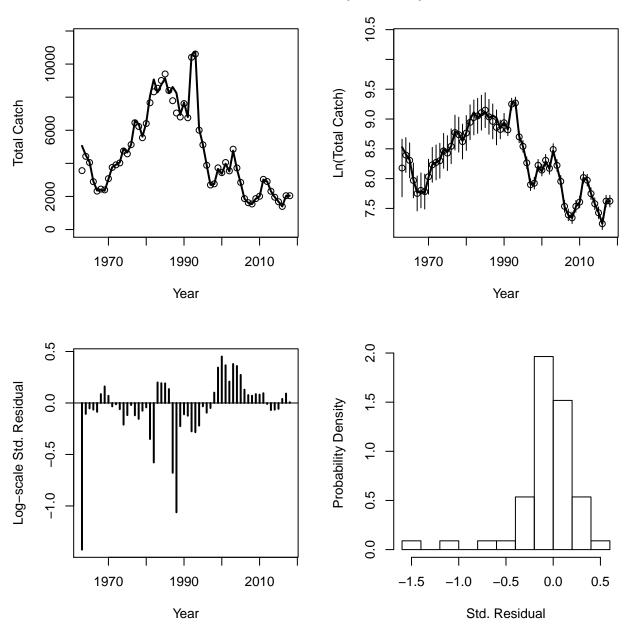


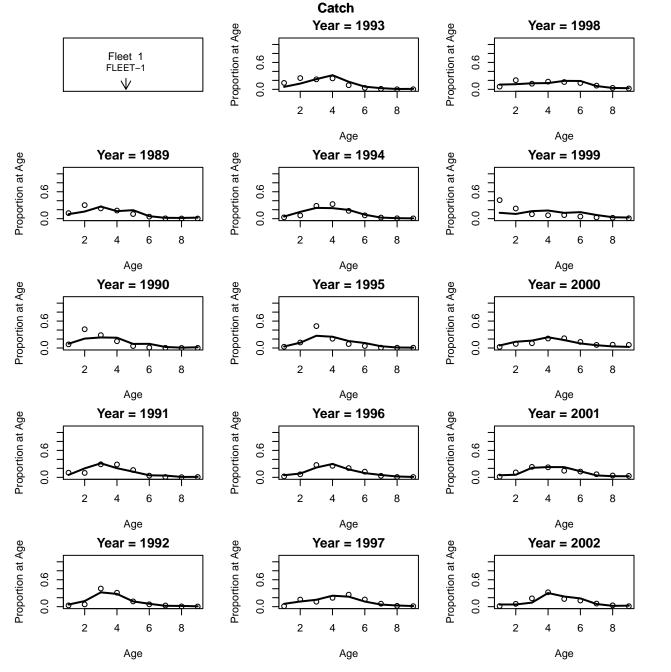


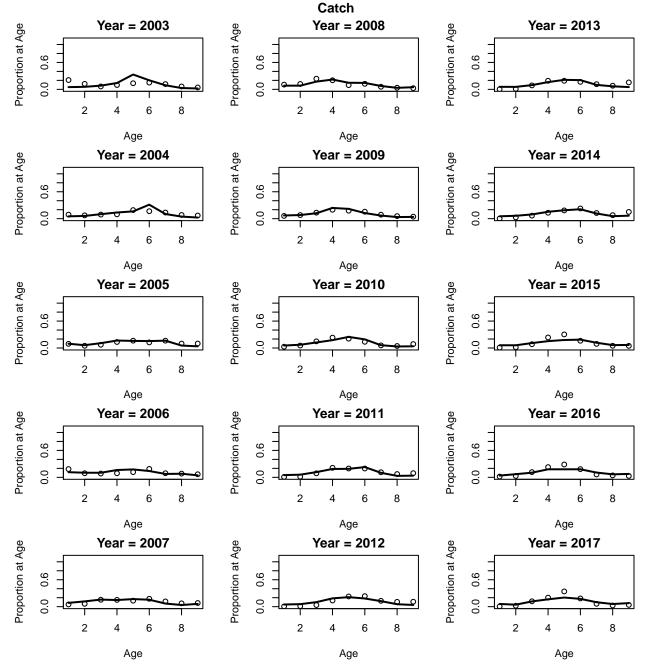
Root Mean Square Error for Catch



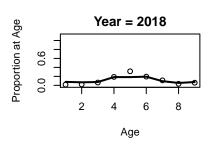
Fleet 1 Catch (FLEET-1)



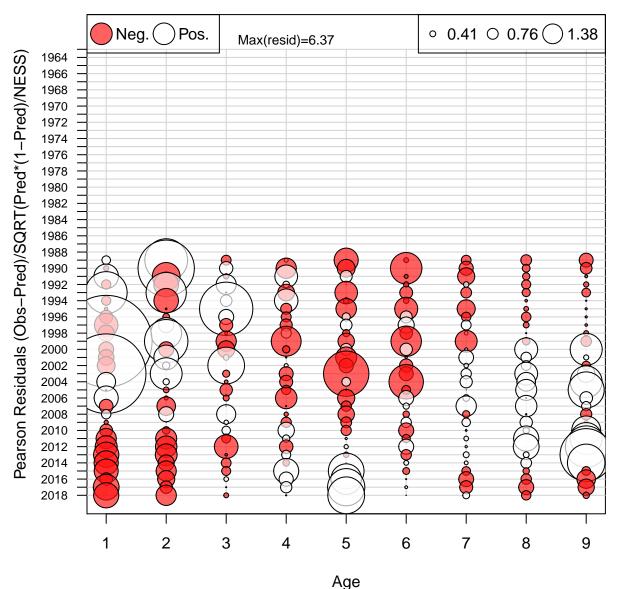




Catch

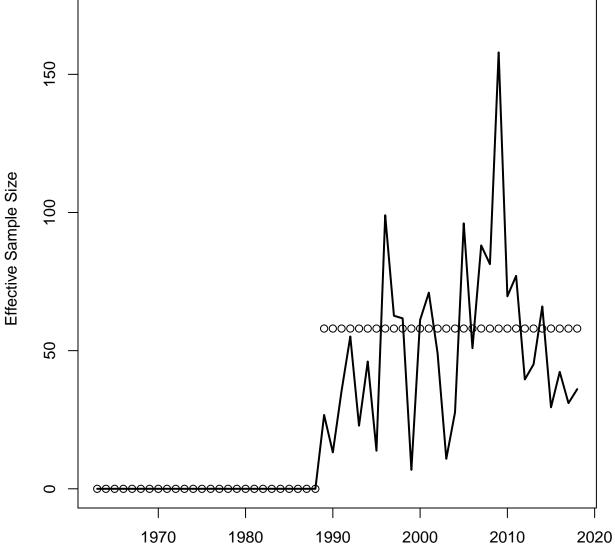


Age Comp Residuals for Catch by Fleet 1 (FLEET-1)



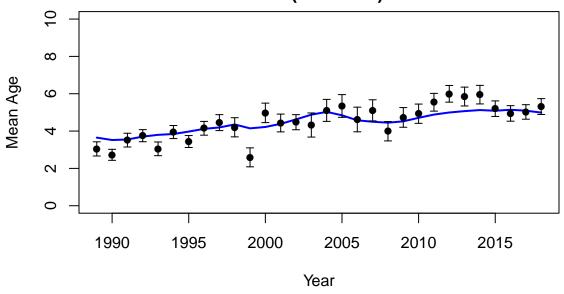
Mean resid = 0.01 SD(resid) = 1.3

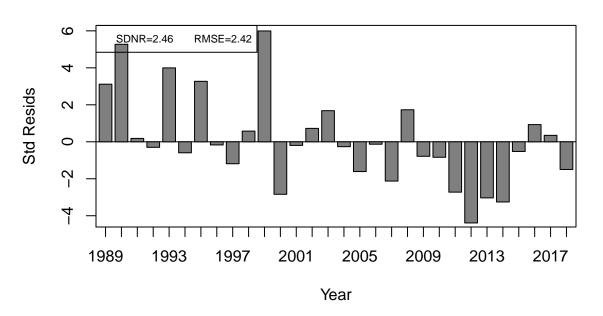
Catch Neff Fleet 1 (FLEET-1)



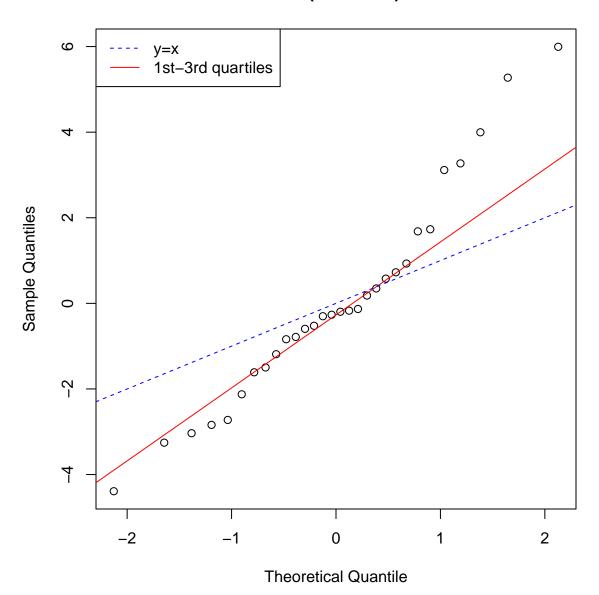
Year

Catch Fleet 1 (FLEET-1) ESS = 58

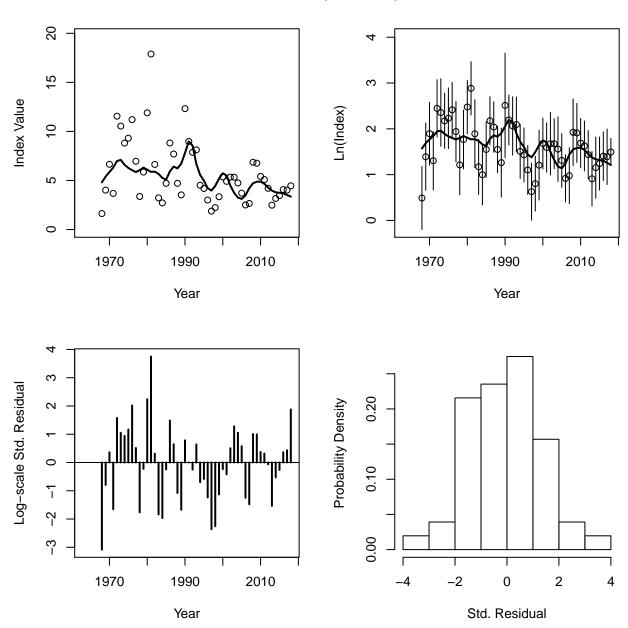




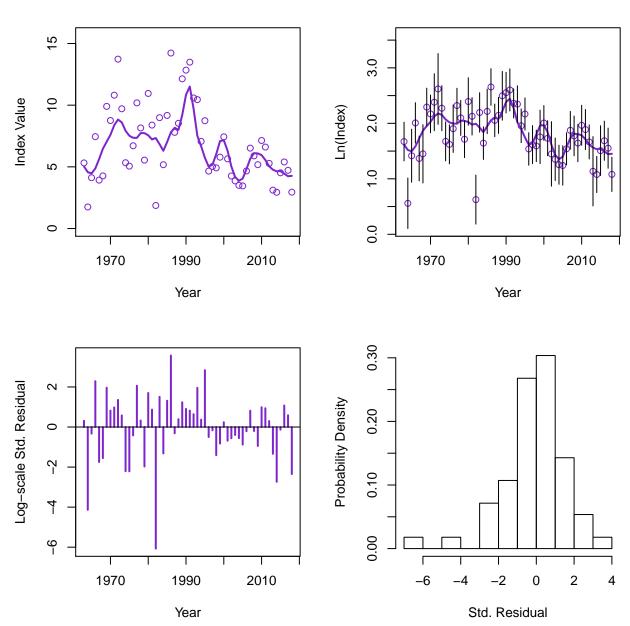
Catch Fleet 1 (FLEET-1) ESS = 58



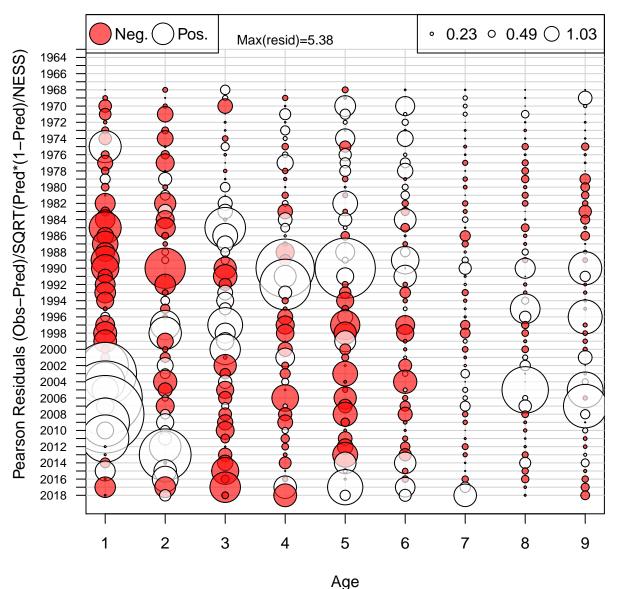
Index 1 (INDEX-1)



Index 2 (INDEX-2)

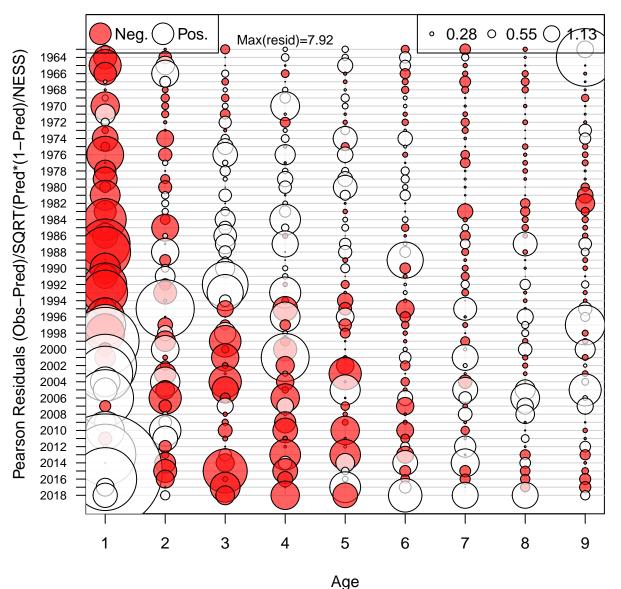


Age Comp Residuals for Index 1 (INDEX-1)



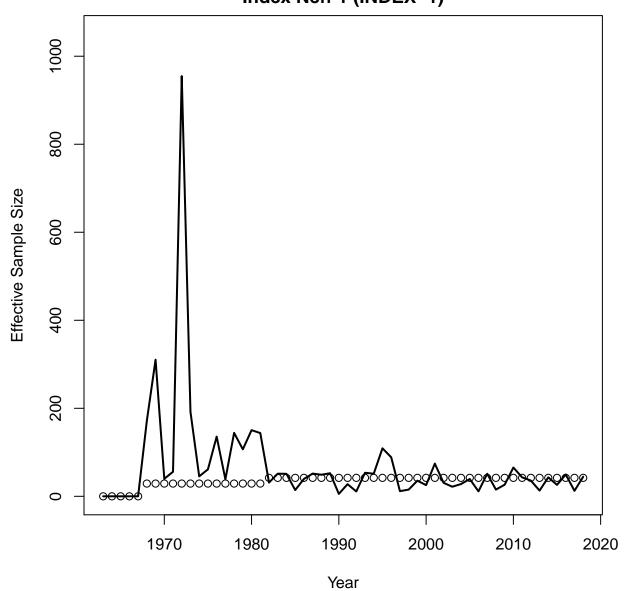
Mean resid = 0.04 SD(resid) = 1.08

Age Comp Residuals for Index 2 (INDEX-2)

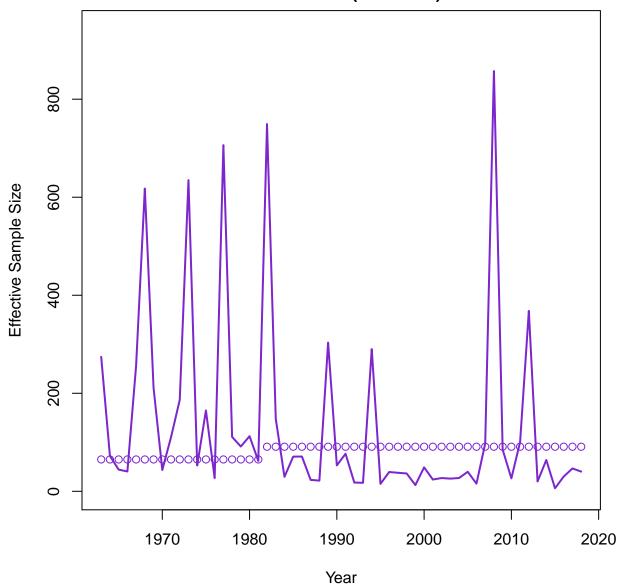


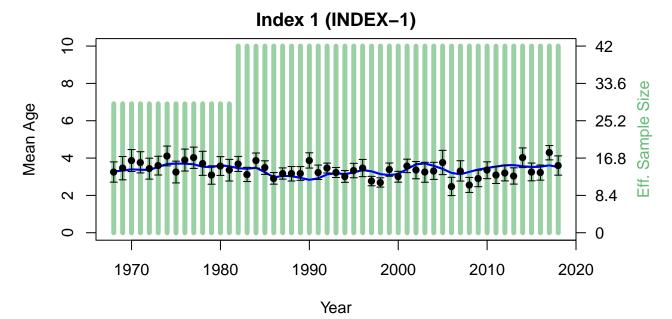
Mean resid = 0.03 SD(resid) = 1.21

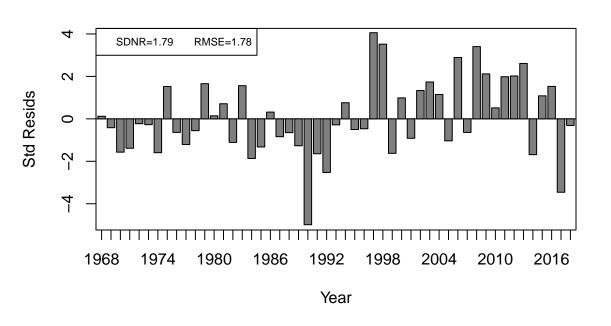
Index Neff 1 (INDEX-1)



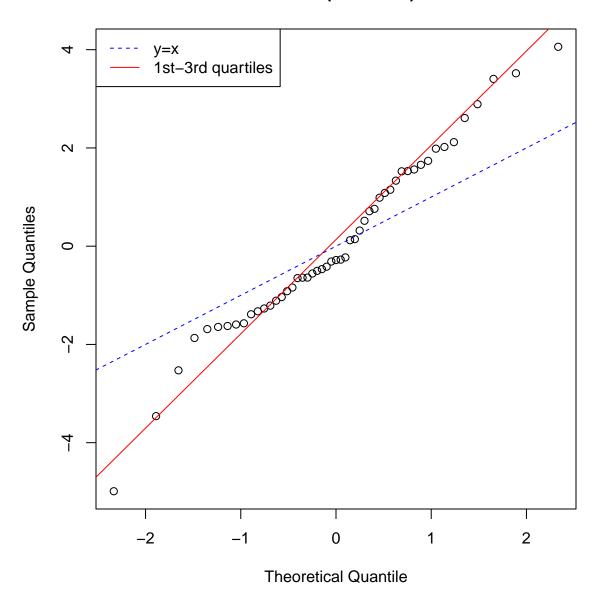
Index Neff 2 (INDEX-2)

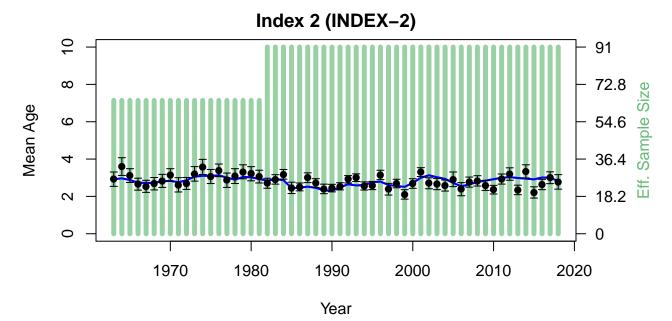


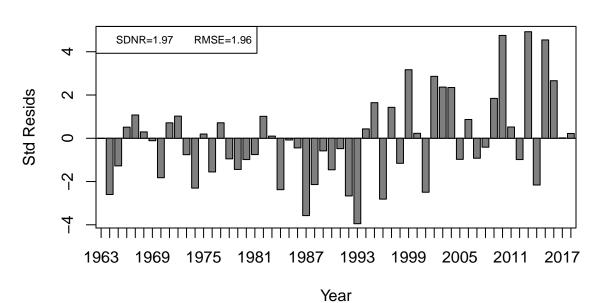




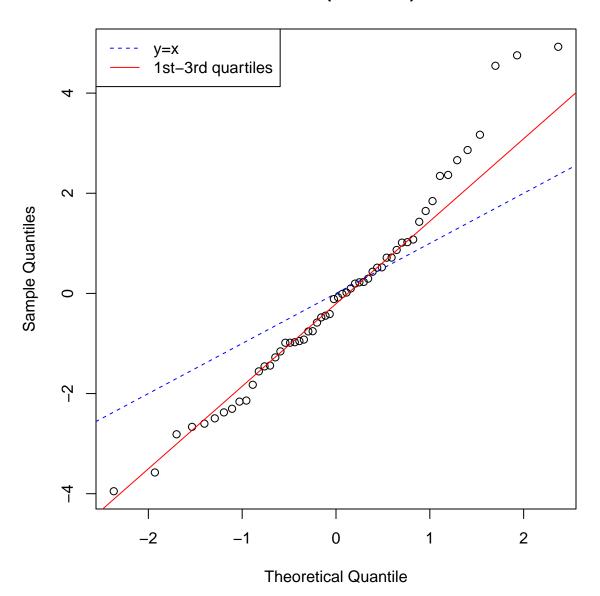
Index 1 (INDEX-1)



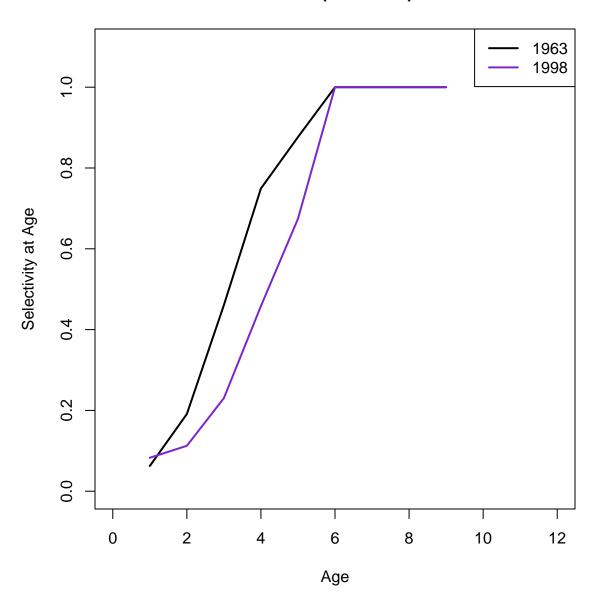


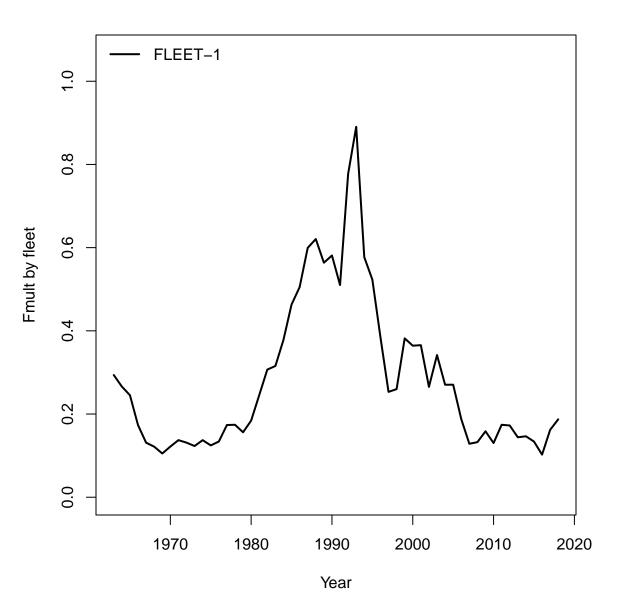


Index 2 (INDEX-2)

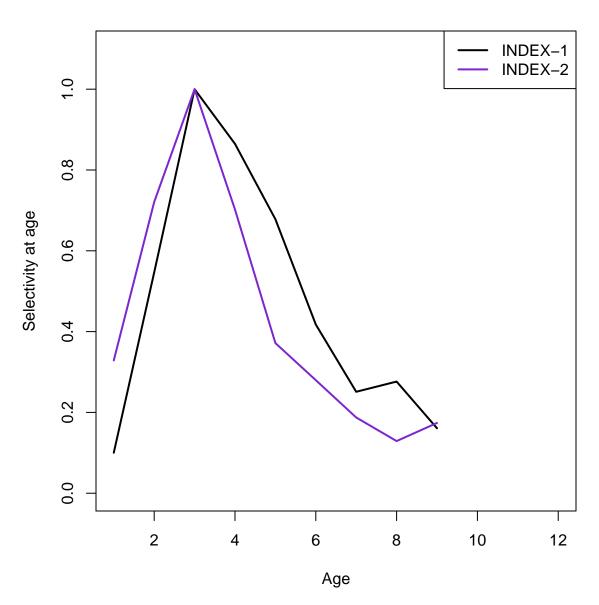


Fleet 1 (FLEET-1)

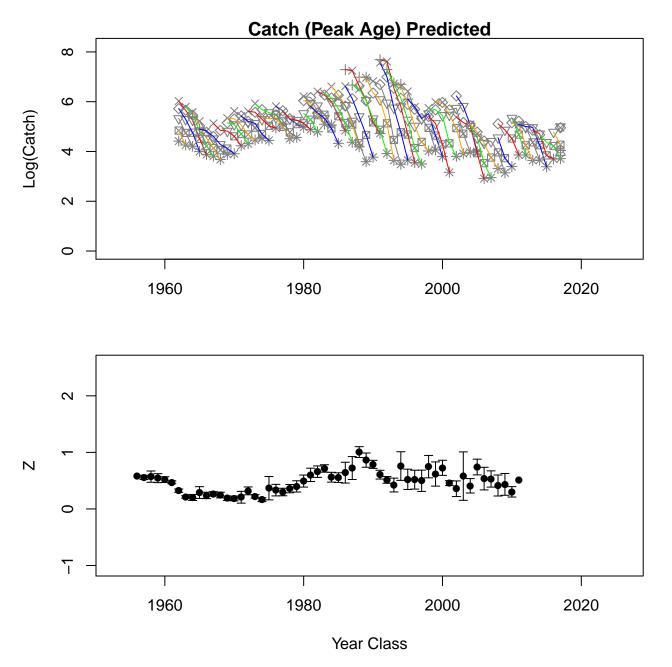




Indices

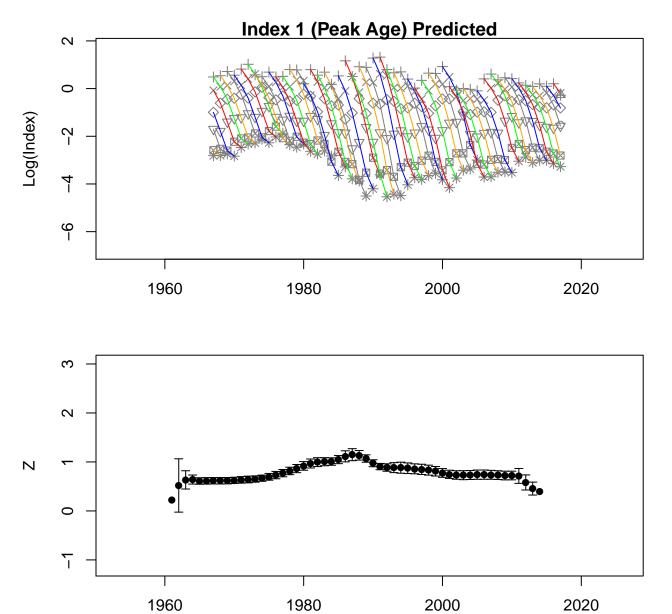




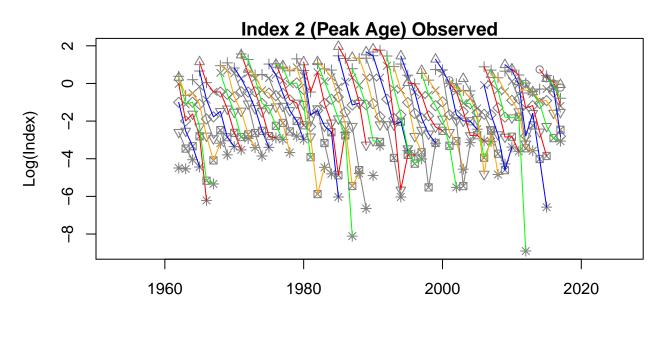


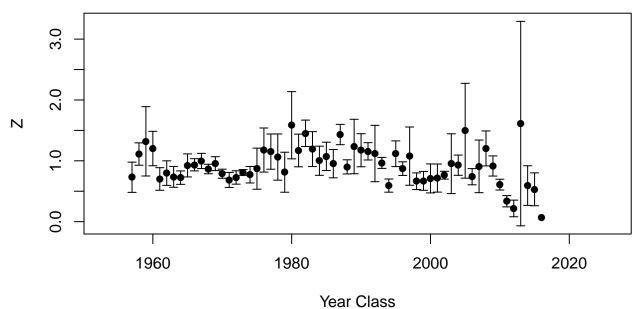


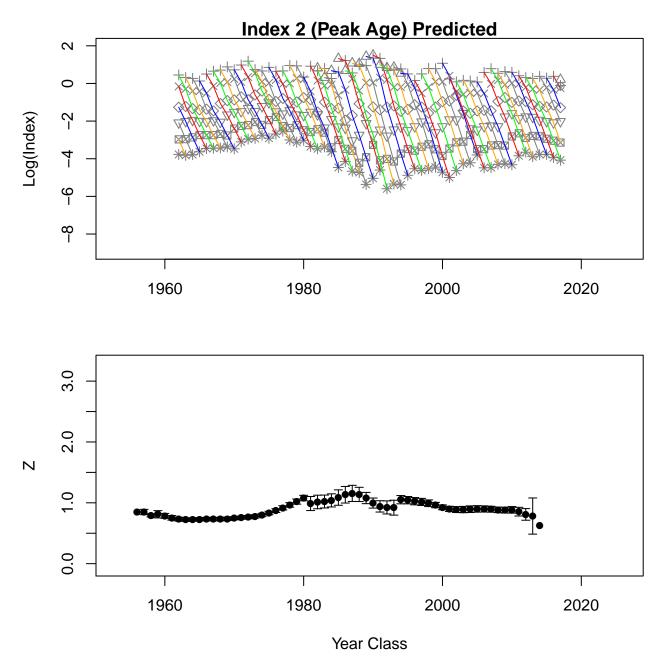




Year Class







Catch Observed

Catch Observed								
			800		80000000000000000000000000000000000000	0000	0 0000 0 0000 0 0000	age-9
00000 00000	9000 90000	0000	80000000000000000000000000000000000000			000000	age-8	0.55
	0000	00000	08 08	00000		age–7	0.48	0.25
	0000				age-6	0.38	0.00	-0.21
8000	0000	8 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		age-5	0.70	0.26	-0.14	-0.46
			age-4	0.90	0.79	0.32	-0.16	-0.44
	\$ 0 °	age-3	0.91	0.79	0.70	0.30	0.01	-0.40
	age-2	0.81	0.76	0.61	0.63	0.20	0.14	-0.32
age-1	0.69	0.72	0.59	0.30	0.34	0.12	0.03	-0.13

			\$ 000000000000000000000000000000000000		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		age-9
800 00 00 00 00 00 00 00 00 00 00 00 00	8 000000000000000000000000000000000000	\$ 000 B0					age-8	0.84
\$ 000 000 000 000 000 000 000 000 000 0						age-7	0.83	0.52
					age-6	0.79	0.44	0.04
	2 8			age-5	0.87	0.61	0.26	-0.13
			age-4	0.93	0.76	0.51	0.19	-0.17
		age-3	0.96	0.87	0.68	0.43	0.12	-0.19
	age-2	0.97	0.92	0.83	0.62	0.33	0.01	-0.33
age-1	0.89	0.81	0.77	0.68	0.48	0.08	-0.31	-0.65

Catch Predicted

	0000				8 6092			age-9
				0000 0000 0000000000000000000000000000	- 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		age-8	0.31
00000		\$ 0.000 BD	- 00000 00000 00000 00000 00000			age–7	0.24	0.31
					age–6	0.48	0.11	0.12
		90000000000000000000000000000000000000		age-5	0.57	0.23	0.01	0.25
			age-4	0.45	0.14	0.00	0.22	0.37
	8000 8000 8000 8000	age-3	0.54	0.14	0.01	0.06	-0.08	0.16
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	age-2	0.45	0.24	0.04	-0.05	0.03	-0.32	-0.07
age-1	-0.04	-0.28	-0.33	-0.14	0.13	0.20	-0.07	-0.34

Index 1 (INDEX-1) Observed

Index 1 (INDEX-1) Predicted

8 8 8	000000000000000000000000000000000000000	00000000000000000000000000000000000000	\$ 8000 C		9 9 0			age-9
			8000 8000 8000 8000 8000 8000 8000 800				age–8	0.96
	6 000000000000000000000000000000000000					age–7	0.98	0.91
					age–6	0.96	0.90	0.77
			S S S S S S S S S S S S S S S S S S S	age-5	0.90	0.78	0.70	0.54
60 B	\$ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		age-4	0.86	0.57	0.44	0.37	0.22
A STATE OF THE STA		age-3	0.95	0.66	0.31	0.19	0.12	-0.01
	age-2	0.99	0.91	0.58	0.21	0.09	0.02	-0.11
age-1	1.00	0.99	0.89	0.55	0.18	0.06	-0.01	-0.14

Index 2 (INDEX-2) Observed

(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00000000000000000000000000000000000000		0000		800	age-9
0000				0000		08°8	age-8	0.54
00000000000000000000000000000000000000		○ ○ ○ ○ ○ ○ ○ ○ ○ ○		0 000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	age–7	0.02	0.19
					age-6	0.23	0.00	0.27
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	00000000000000000000000000000000000000	0000000 000000000000000000000000000000		age-5	0.33	0.10	0.35	0.31
8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	8 8 0 8 0		age-4	0.19	0.06	-0.10	0.22	0.09
00000000000000000000000000000000000000		age-3	0.55	0.01	0.03	0.06	-0.15	0.08
	age-2	0.56	0.37	0.11	-0.11	-0.13	0.14	0.18
age–1	0.34	0.03	0.23	0.02	-0.28	0.16	0.12	0.17

age-1

1.00

0.97

0.77

00000	000 00 C	00 00 00 00 00 00 00 00 00 00 00 00 00	20 00 00 00 00 00 00 00 00 00 00 00 00 0					age-9
		00000000000000000000000000000000000000	0000 0000 0000 0000 0000 0000 0000 0000 0000				age-8	0.97
8 8 8 8 8 8 8 9 9 9 9 9 9	8 8		000 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		A STATE OF THE STA	age–7	0.99	0.93
60000000000000000000000000000000000000	60000000000000000000000000000000000000				age–6	0.97	0.92	0.83
				age–5	0.92	0.81	0.73	0.58
60 60 80 80 80			age-4	0.86	0.65	0.51	0.42	0.26
		age-3	0.91	0.58	0.32	0.18	0.10	-0.04
	age-2	0.98	0.81	0.42	0.15	0.03	-0.04	-0.17

0.35

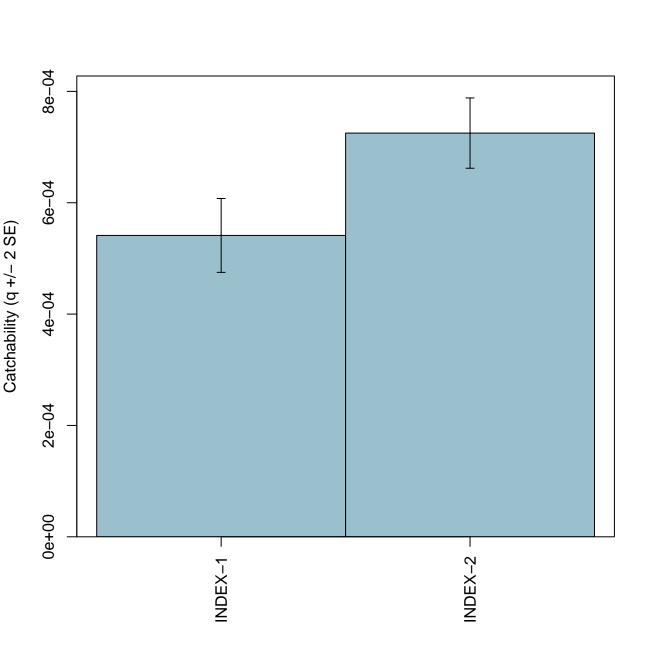
0.10

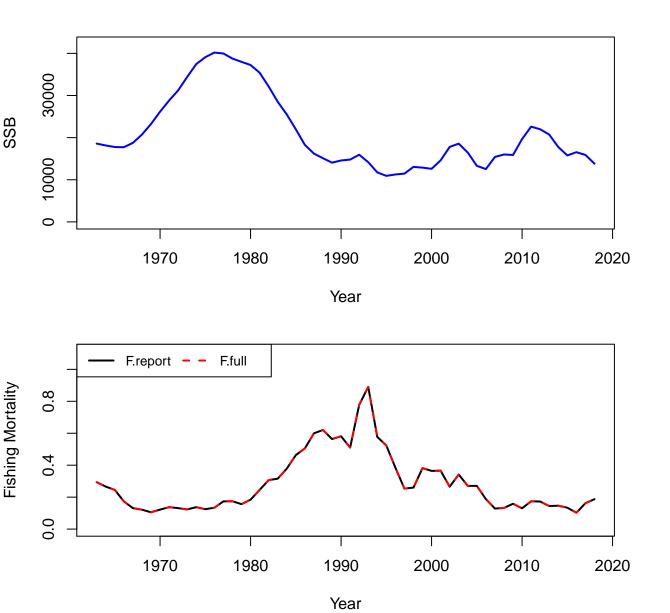
-0.02

-0.09

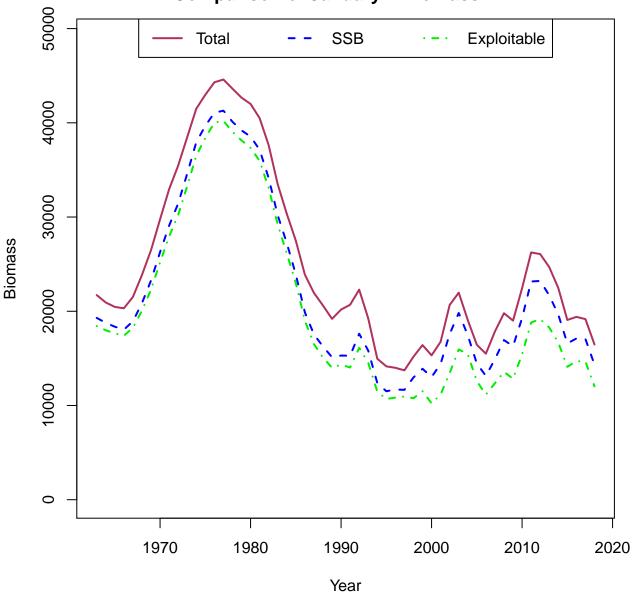
-0.21

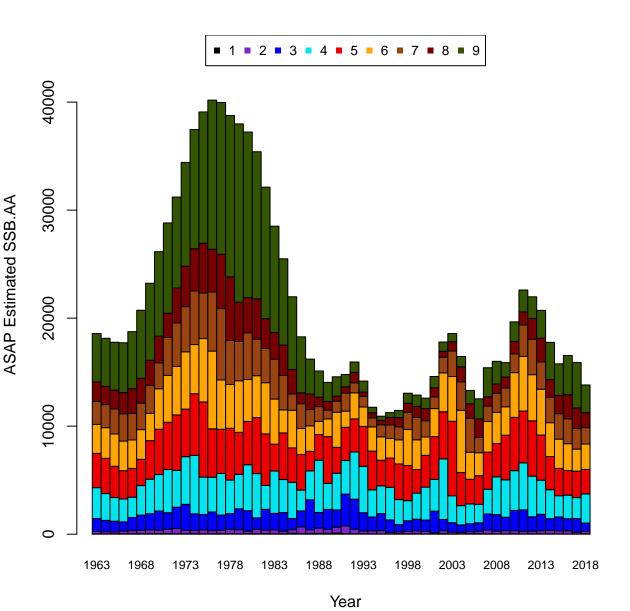
Index 2 (INDEX-2) Predicted

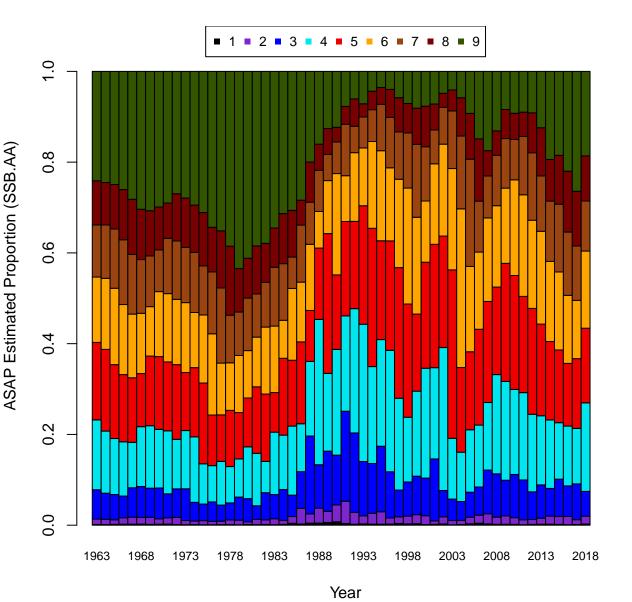


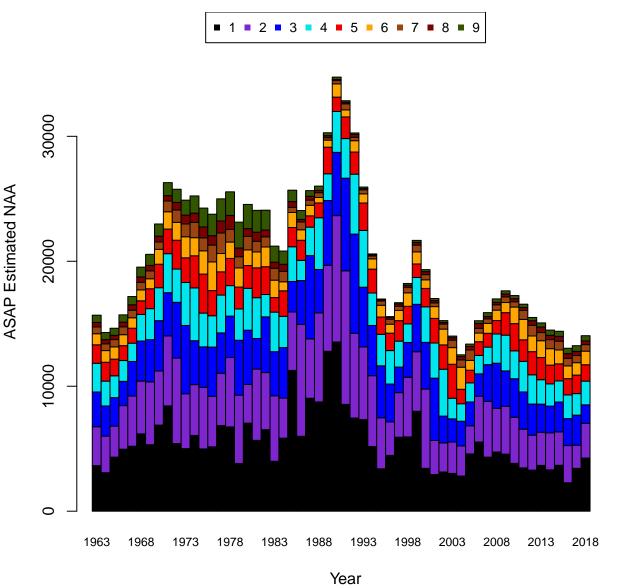


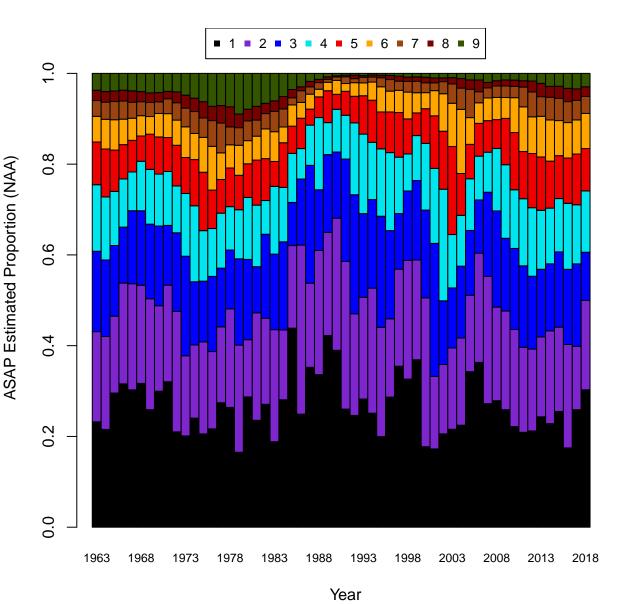
Comparison of January 1 Biomass

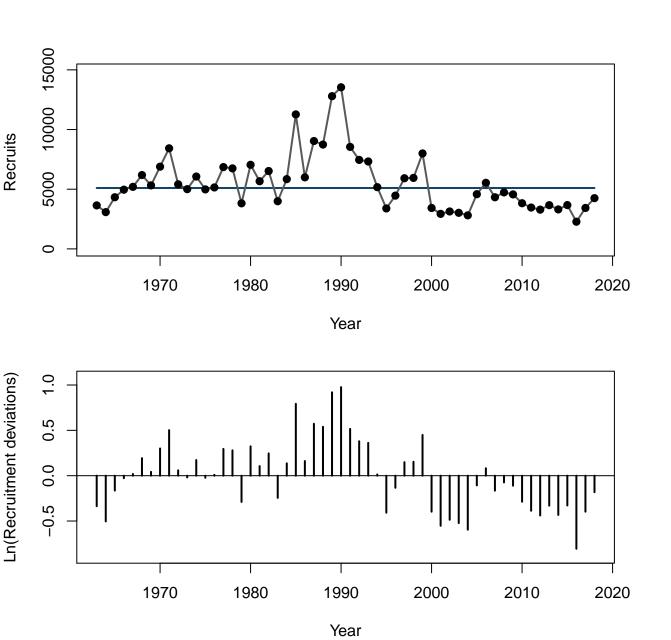


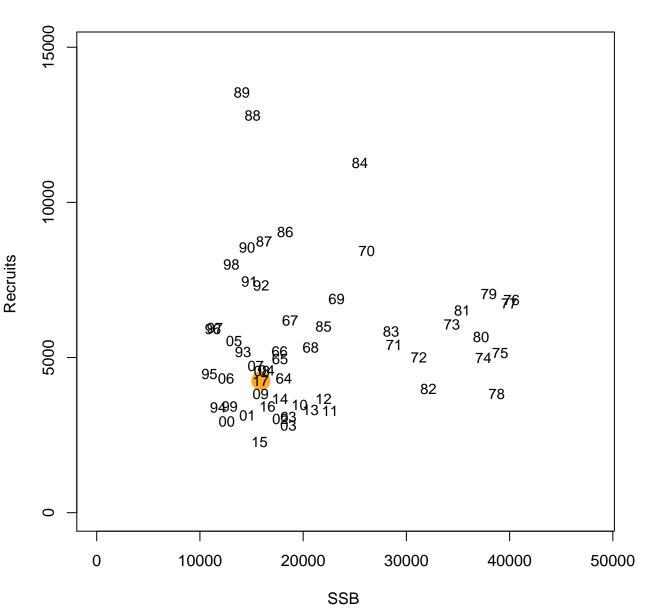


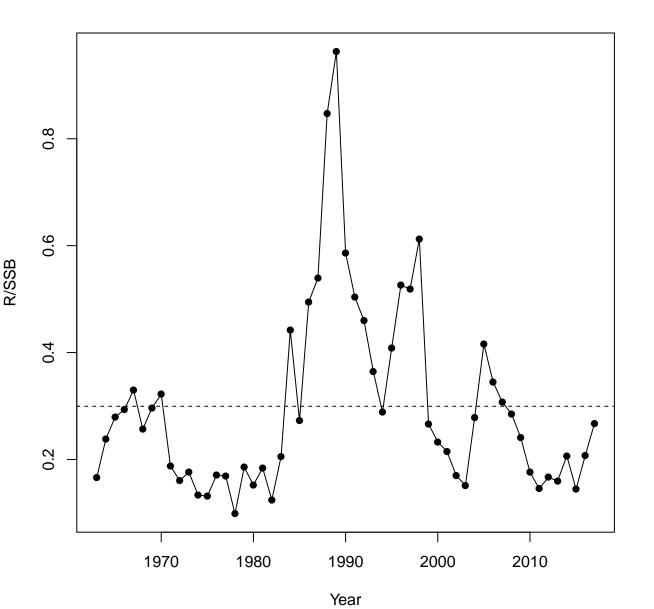


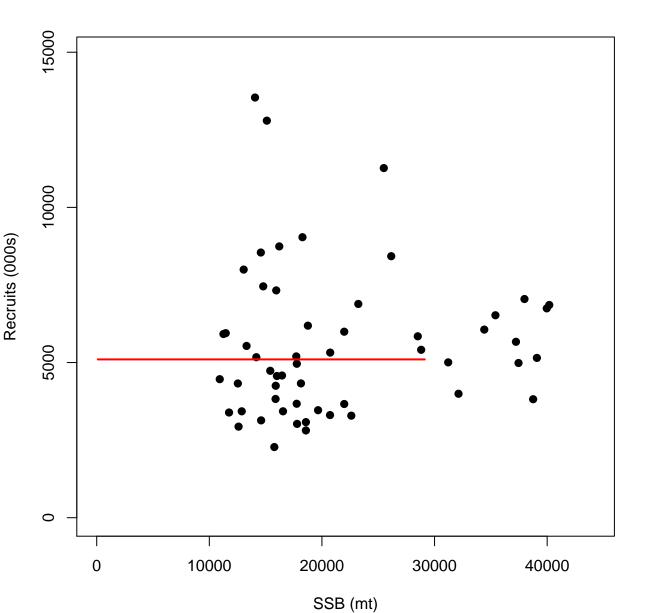


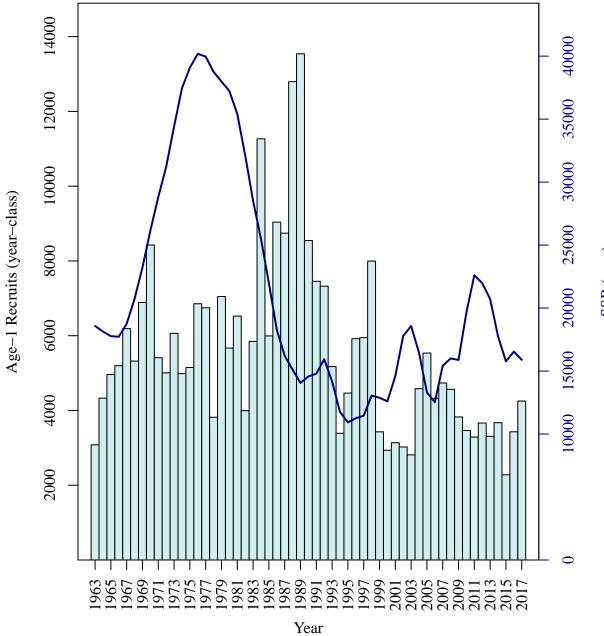




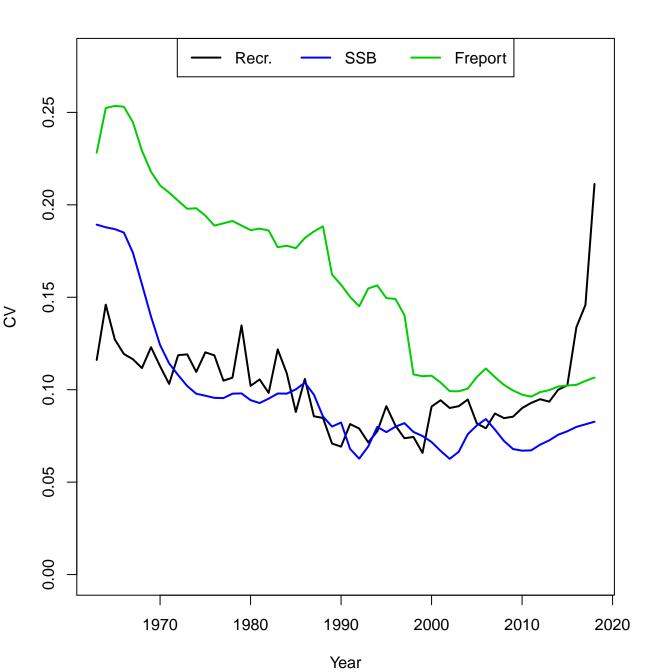




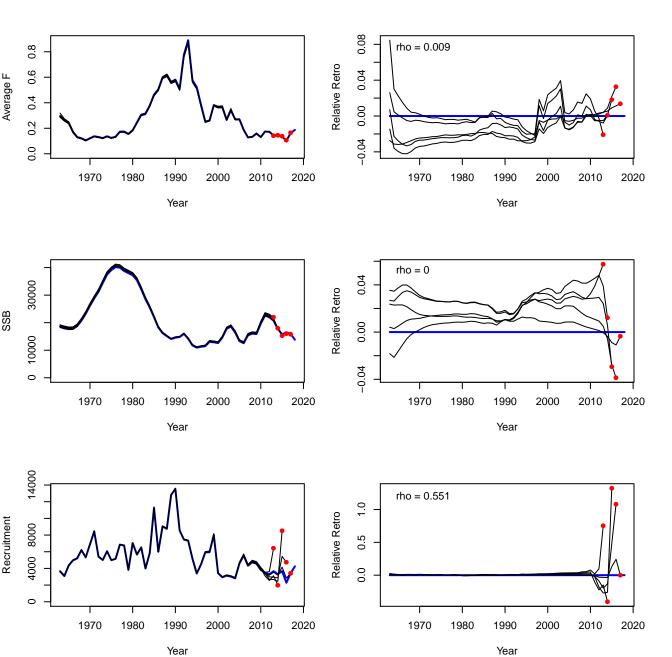




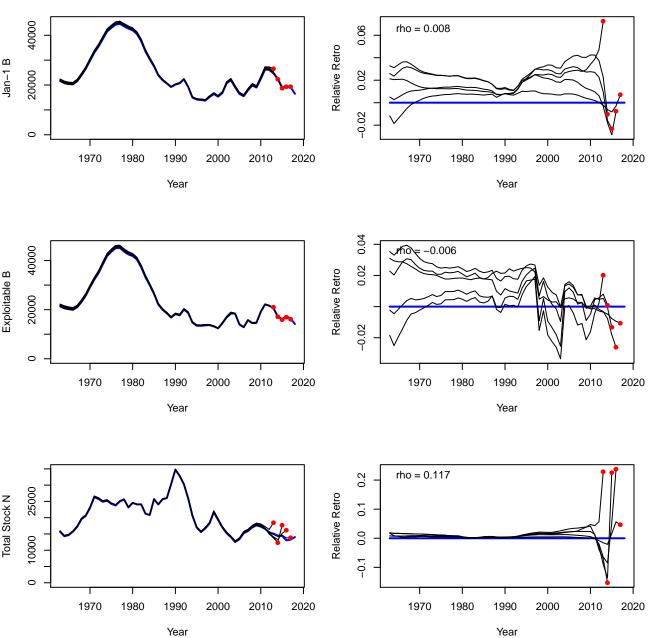
SSB (year)



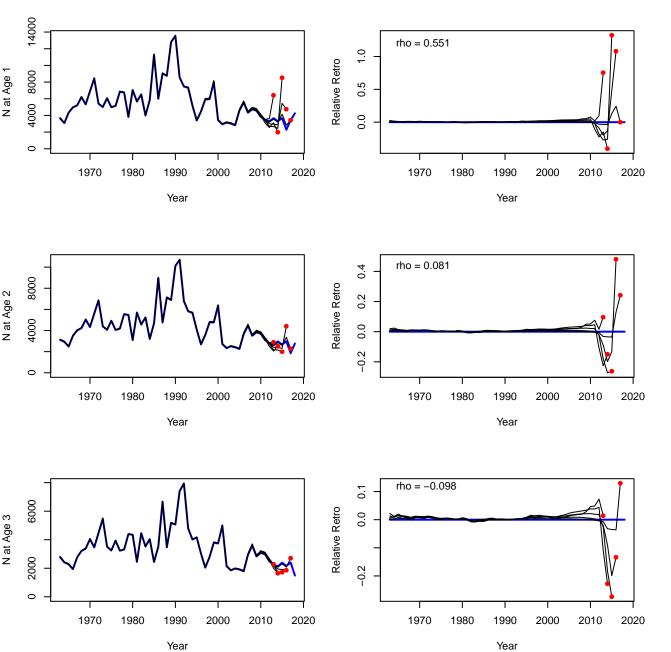
F, SSB, R



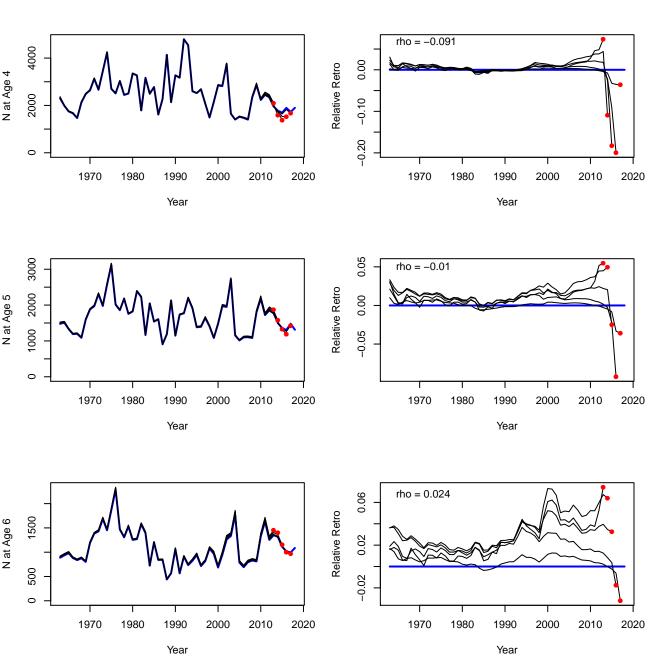
Jan-1 B, Exploitable B, Total Stock N



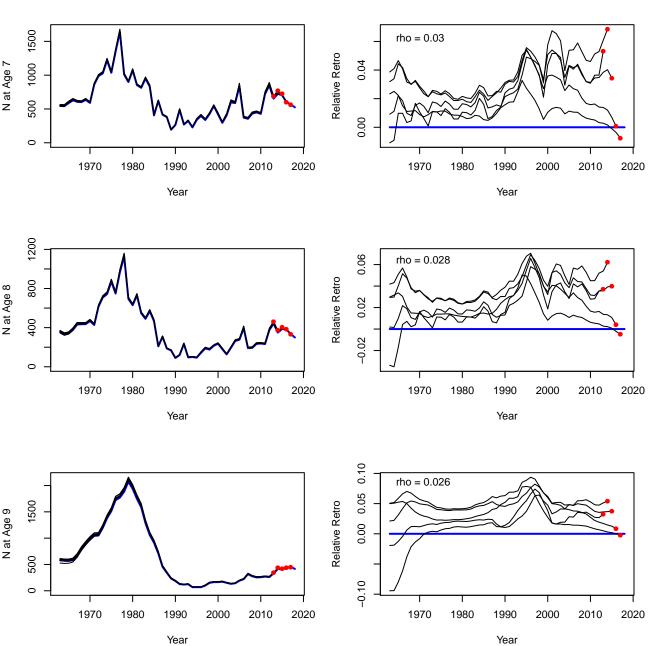
Stock Numbers at Age



Stock Numbers at Age



Stock Numbers at Age



YPR-SPR Reference Points (Years Avg = 5) 0.8 0.9 9.0 8.0 Yield per Recruit 0.7 0.6 0.4 0.5 0.4 0.3 0.2 0.2 0.1 0.0 0 0.0 0.5 1.0 1.5 2.0

Full F

YPR-SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.6852	0.4415	0.7	0.7452	0.2729
0.01	0.0502	0.9689	0.36	0.69	0.434	0.71	0.7452	0.2699
0.02	0.0968	0.9393	0.37	0.6945	0.4268	0.72	0.7452	0.267
0.03	0.1402	0.9113	0.38	0.6987	0.4198	0.73	0.7451	0.2641
0.04	0.1806	0.8846	0.39	0.7026	0.413	0.74	0.7449	0.2613
0.05	0.2183	0.8592	0.4	0.7062	0.4065	0.75	0.7448	0.2585
0.06	0.2534	0.835	0.41	0.7096	0.4001	0.76	0.7446	0.2558
0.07	0.2861	0.812	0.42	0.7128	0.3939	0.77	0.7443	0.2531
0.08	0.3166	0.79	0.43	0.7157	0.3878	0.78	0.744	0.2505
0.09	0.3451	0.769	0.44	0.7185	0.382	0.79	0.7437	0.2479
0.1	0.3718	0.749	0.45	0.721	0.3763	0.8	0.7434	0.2454
0.11	0.3966	0.7299	0.46	0.7234	0.3708	0.81	0.743	0.2429
0.12	0.4198	0.7115	0.47	0.7256	0.3654	0.82	0.7427	0.2405
0.13	0.4415	0.694	0.48	0.7277	0.3602	0.83	0.7422	0.2381
0.14	0.4618	0.6772	0.49	0.7295	0.3551	0.84	0.7418	0.2358
0.15	0.4808	0.6611	0.5	0.7313	0.3501	0.85	0.7413	0.2335
0.16	0.4986	0.6457	0.51	0.7329	0.3453	0.86	0.7409	0.2313
0.17	0.5152	0.6309	0.52	0.7344	0.3406	0.87	0.7404	0.2291
0.18	0.5308	0.6167	0.53	0.7357	0.336	0.88	0.7398	0.2269
0.19	0.5454	0.6031	0.54	0.737	0.3316	0.89	0.7393	0.2248
0.2	0.559	0.5899	0.55	0.7381	0.3272	0.9	0.7387	0.2227
0.21	0.5718	0.5773	0.56	0.7391	0.323	0.91	0.7382	0.2206
0.22	0.5838	0.5652	0.57	0.74	0.3188	0.92	0.7376	0.2186
0.23	0.595	0.5535	0.58	0.7409	0.3148	0.93	0.737	0.2166
0.24	0.6055	0.5422	0.59	0.7416	0.3108	0.94	0.7364	0.2146
0.25	0.6153	0.5314	0.6	0.7423	0.307	0.95	0.7357	0.2127
0.26	0.6245	0.5209	0.61	0.7429	0.3032	0.96	0.7351	0.2108
0.27	0.6332	0.5108	0.62	0.7434	0.2995	0.97	0.7344	0.209
0.28	0.6413	0.5011	0.63	0.7438	0.2959	0.98	0.7337	0.2071
0.29	0.6489	0.4917	0.64	0.7442	0.2924	0.99	0.7331	0.2053
0.3	0.656	0.4826	0.65	0.7445	0.289	1	0.7324	0.2035
0.31	0.6626	0.4738	0.66	0.7448	0.2856	1.01	0.7317	0.2018
0.32	0.6688	0.4653	0.67	0.745	0.2824	1.02	0.731	0.2001
0.33	0.6747	0.4571	0.68	0.7451	0.2792	1.03	0.7302	0.1984
0.34	0.6801	0.4492	0.69	0.7452	0.276	1.04	0.7295	0.1967

SPR Target Reference Points (Years Avg = 5) 0.8 0.9 9.0 8.0 Yield per Recruit 0.7 0.6 0.4 0.5 0.4 0.3 0.2 0.2 0.1 0.0 0 0.4 0.2 0.3 0.7 0.5 0.6 8.0

% SPR Target

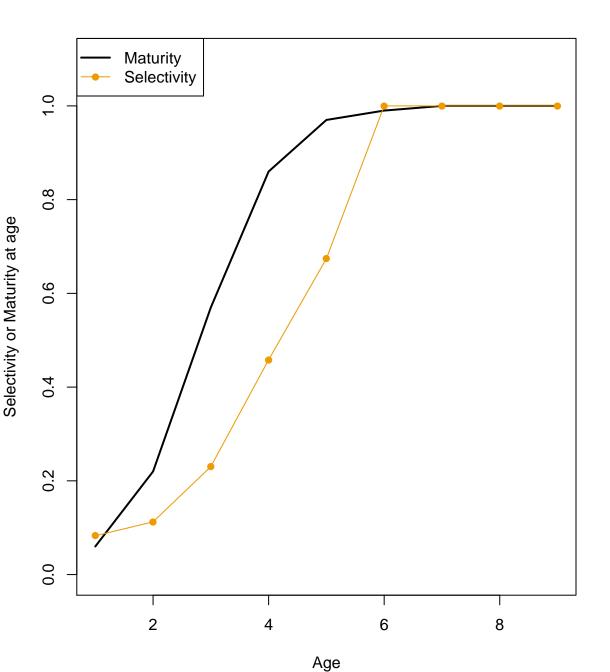
SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	1.0205	0.7309
0.25	0.7818	0.744
0.3	0.6187	0.7433
0.35	0.5003	0.7313
0.4	0.4101	0.7097
0.45	0.339	0.6796
0.5	0.2811	0.6422
0.55	0.2331	0.5983
0.6	0.1923	0.5486
0.65	0.1572	0.4937
0.7	0.1265	0.4342
0.75	0.0995	0.3704

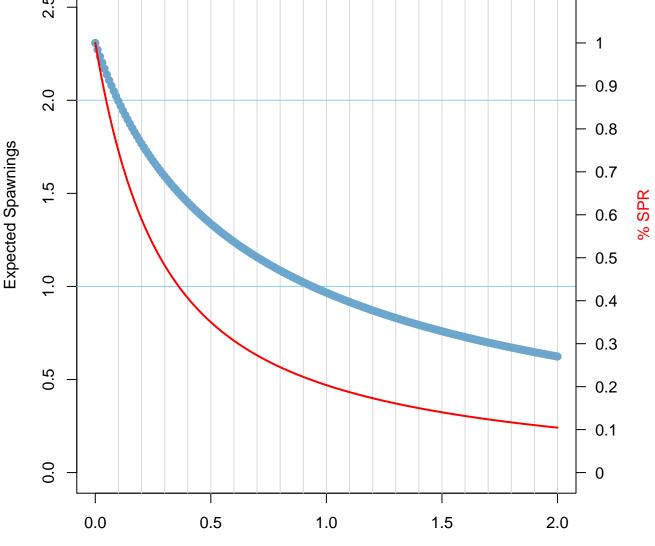
0.3029

8.0

0.0754



Expected Spawnings and SPR Reference Points (Years Avg = 5) 2.5 0.9 2.0 8.0

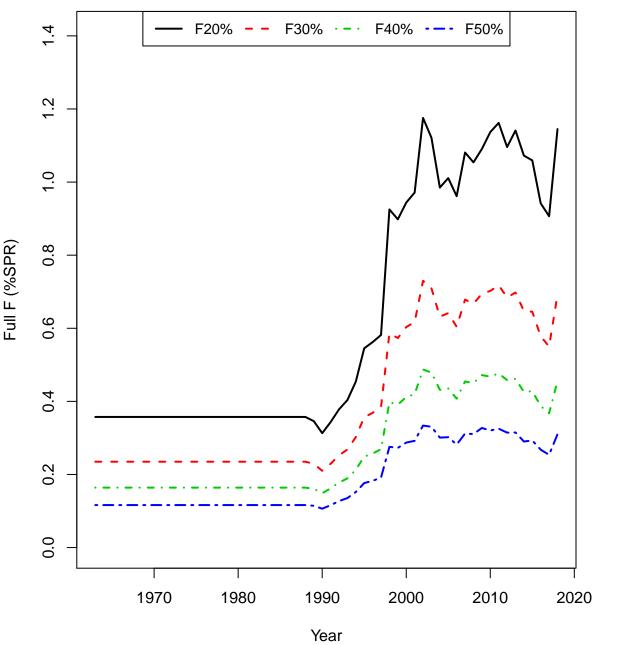


Full F

Expected Spawnings & SPR Reference Points (Years Avg = 5)

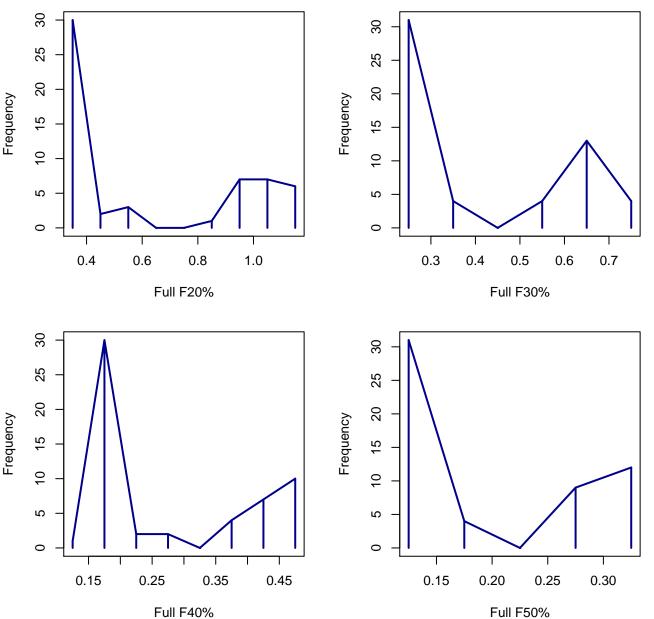
F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	2.308	1	0.35	1.5181	0.4415	0.7	1.1572	0.2729
0.01	2.2715	0.9689	0.36	1.5043	0.434	0.71	1.1496	0.2699
0.02	2.2364	0.9393	0.37	1.4908	0.4268	0.72	1.1421	0.267
0.03	2.2025	0.9113	0.38	1.4775	0.4198	0.73	1.1347	0.2641
0.04	2.1698	0.8846	0.39	1.4645	0.413	0.74	1.1273	0.2613
0.05	2.1382	0.8592	0.4	1.4517	0.4065	0.75	1.1201	0.2585
0.06	2.1077	0.835	0.41	1.4392	0.4001	0.76	1.113	0.2558
0.07	2.0782	0.812	0.42	1.427	0.3939	0.77	1.106	0.2531
0.08	2.0497	0.79	0.43	1.4149	0.3878	0.78	1.099	0.2505
0.09	2.0221	0.769	0.44	1.4031	0.382	0.79	1.0922	0.2479
0.1	1.9953	0.749	0.45	1.3916	0.3763	0.8	1.0854	0.2454
0.11	1.9694	0.7299	0.46	1.3802	0.3708	0.81	1.0788	0.2429
0.12	1.9442	0.7115	0.47	1.369	0.3654	0.82	1.0722	0.2405
0.13	1.9198	0.694	0.48	1.358	0.3602	0.83	1.0657	0.2381
0.14	1.8961	0.6772	0.49	1.3472	0.3551	0.84	1.0593	0.2358
0.15	1.8731	0.6611	0.5	1.3367	0.3501	0.85	1.0529	0.2335
0.16	1.8508	0.6457	0.51	1.3262	0.3453	0.86	1.0467	0.2313
0.17	1.829	0.6309	0.52	1.316	0.3406	0.87	1.0405	0.2291
0.18	1.8078	0.6167	0.53	1.3059	0.336	0.88	1.0344	0.2269
0.19	1.7872	0.6031	0.54	1.2961	0.3316	0.89	1.0284	0.2248
0.2	1.7672	0.5899	0.55	1.2863	0.3272	0.9	1.0224	0.2227
0.21	1.7476	0.5773	0.56	1.2767	0.323	0.91	1.0165	0.2206
0.22	1.7286	0.5652	0.57	1.2673	0.3188	0.92	1.0107	0.2186
0.23	1.71	0.5535	0.58	1.2581	0.3148	0.93	1.0049	0.2166
0.24	1.6919	0.5422	0.59	1.2489	0.3108	0.94	0.9993	0.2146
0.25	1.6742	0.5314	0.6	1.2399	0.307	0.95	0.9936	0.2127
0.26	1.6569	0.5209	0.61	1.2311	0.3032	0.96	0.9881	0.2108
0.27	1.6401	0.5108	0.62	1.2224	0.2995	0.97	0.9826	0.209
0.28	1.6236	0.5011	0.63	1.2138	0.2959	0.98	0.9772	0.2071
0.29	1.6075	0.4917	0.64	1.2054	0.2924	0.99	0.9718	0.2053
0.3	1.5918	0.4826	0.65	1.1971	0.289	1	0.9665	0.2035
0.31	1.5764	0.4738	0.66	1.1889	0.2856	1.01	0.9612	0.2018
0.32	1.5614	0.4653	0.67	1.1808	0.2824	1.02	0.9561	0.2001
0.33	1.5466	0.4571	0.68	1.1728	0.2792	1.03	0.9509	0.1984
0.34	1.5322	0.4492	0.69	1.165	0.276	1.04	0.9458	0.1967
	- 	- · · · 			-			

Annual F(%SPR) Reference Points



Annual YPR(%SPR) Reference Points YPR20% YPR30% YPR40% YPR50% 1.2 1.0 0.8 YPR (%SPR) 9.0 0.4 0.2 0.0 1970 1980 2000 2010 1990 2020 Year

Annual F (%SPR) Reference Points



Annual YPR (%SPR) Reference Points 30 30 25 25 20 20 Frequency Frequency 15 15 10 10 2 2 0 0 0.7 0.8 0.9 1.0 1.1 0.7 0.8 0.9 1.0 1.1 YPR (F20%) YPR (F30%) 30 30 22 25 20 20 Frequency Frequency 15 15 10 10 2 2 0 0 0.7 8.0 0.9 1.0 0.65 0.70 0.75 0.80 0.85 0.90

YPR (F50%)

YPR (F40%)



Age Comps for Catch by Fleet 1 (FLEET-1)





Age Comps for Index 1 (INDEX-1)



Age Comps for Index 2 (INDEX-2)



WAA matrix 1



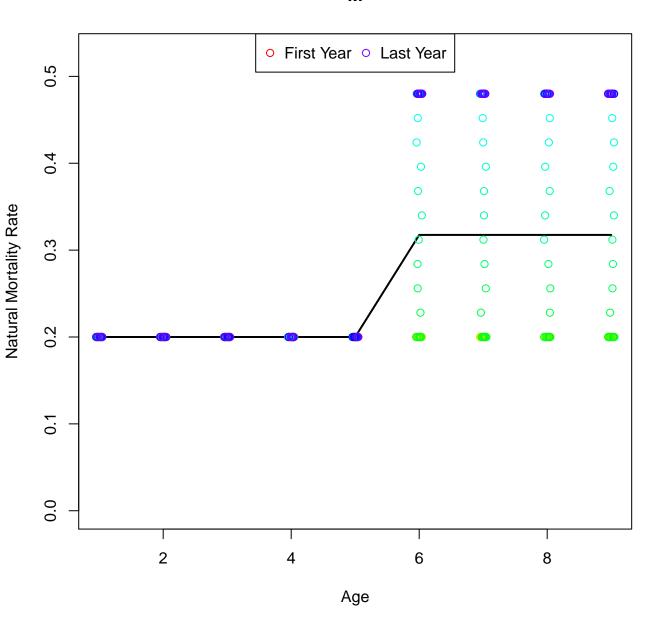
WAA matrix 2



WAA matrix 3



M



Maturity

