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ASAP3 run on Monday, 04 Nov 2019 at 10:44:33

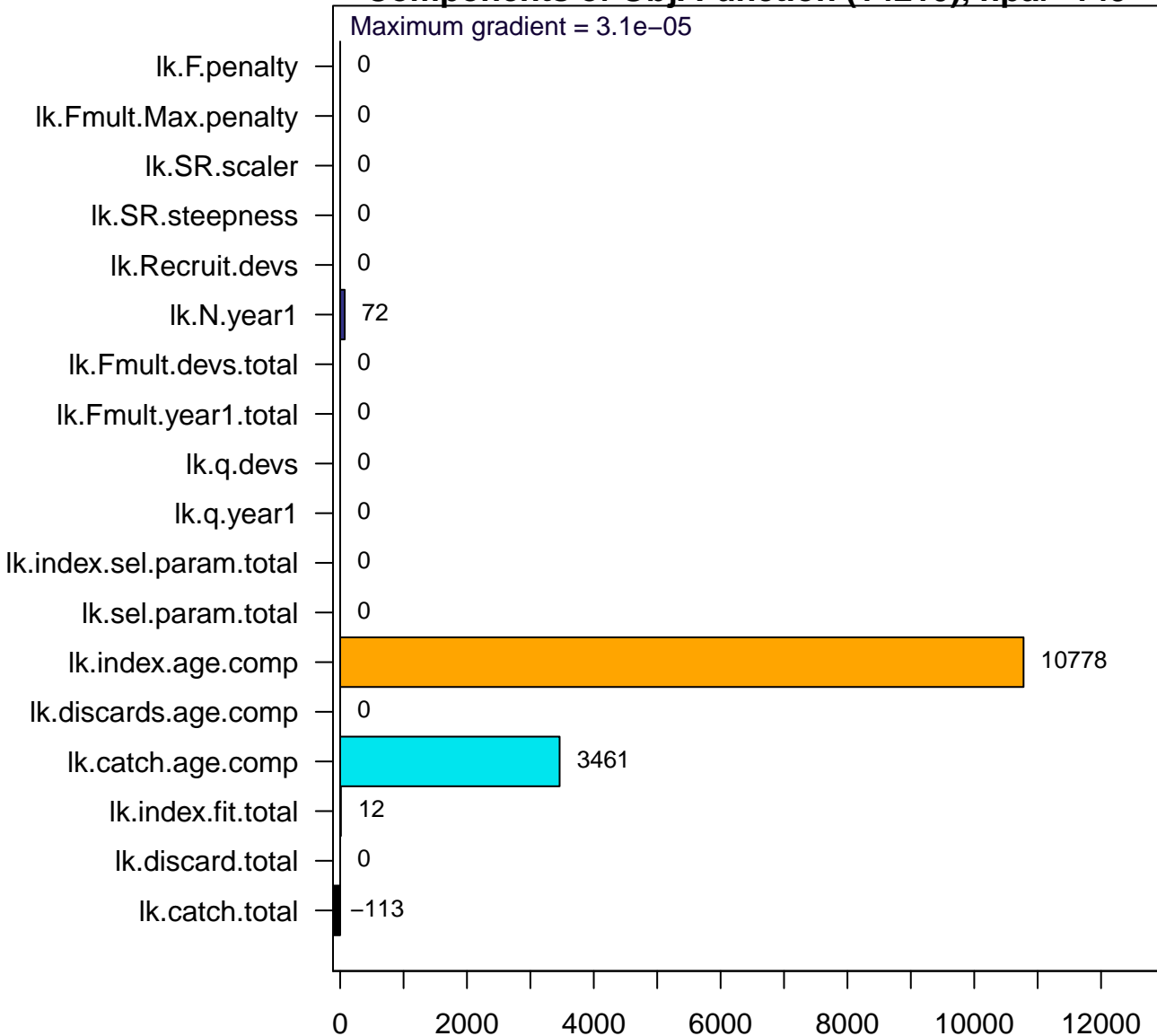
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\w

ASAPplots version = 0.2.14

npar = 149, maximum gradient = $3.06129e-005$

Components of Obj. Function (14210), npar=149

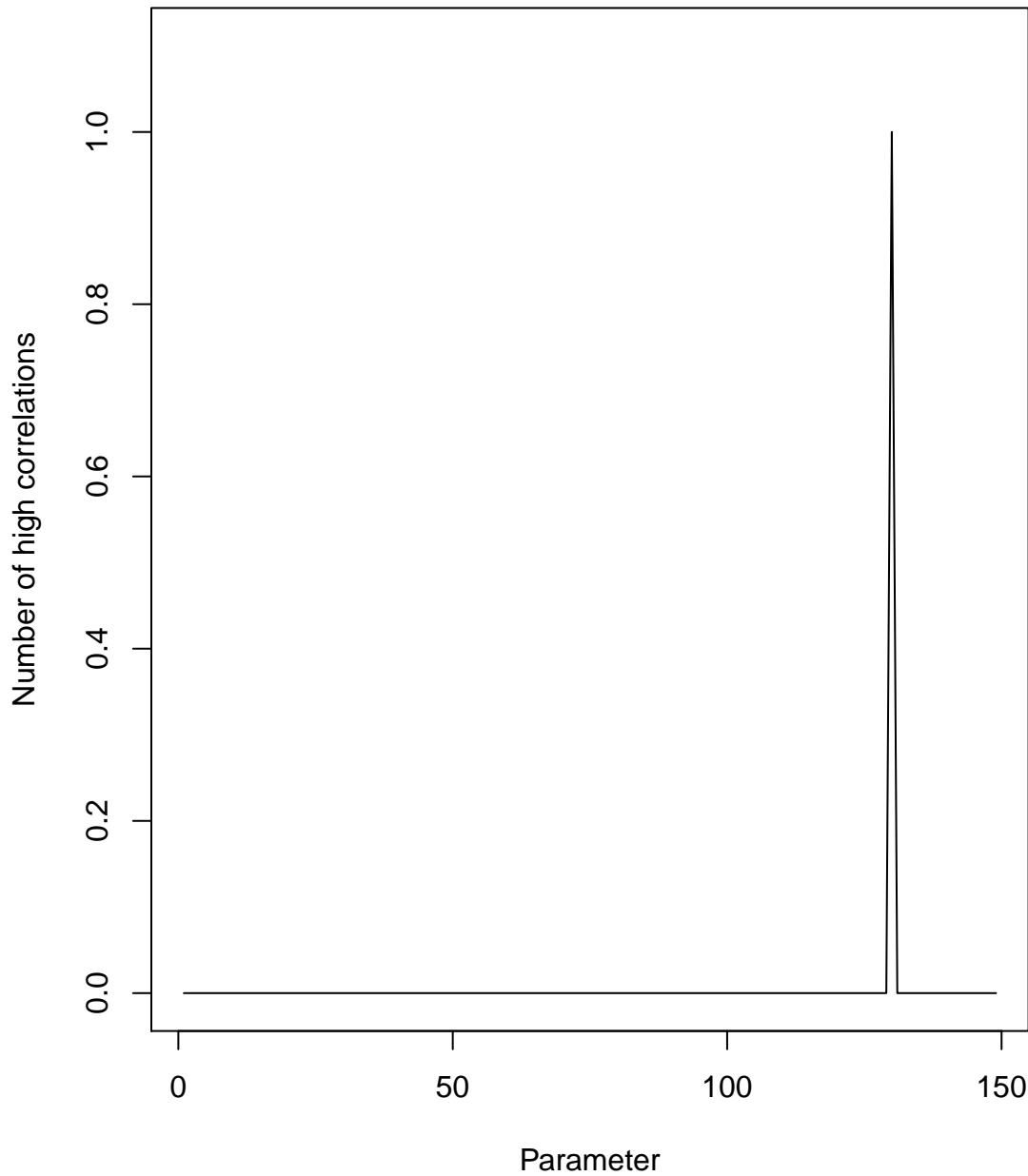
Maximum gradient = 3.1×10^{-5}

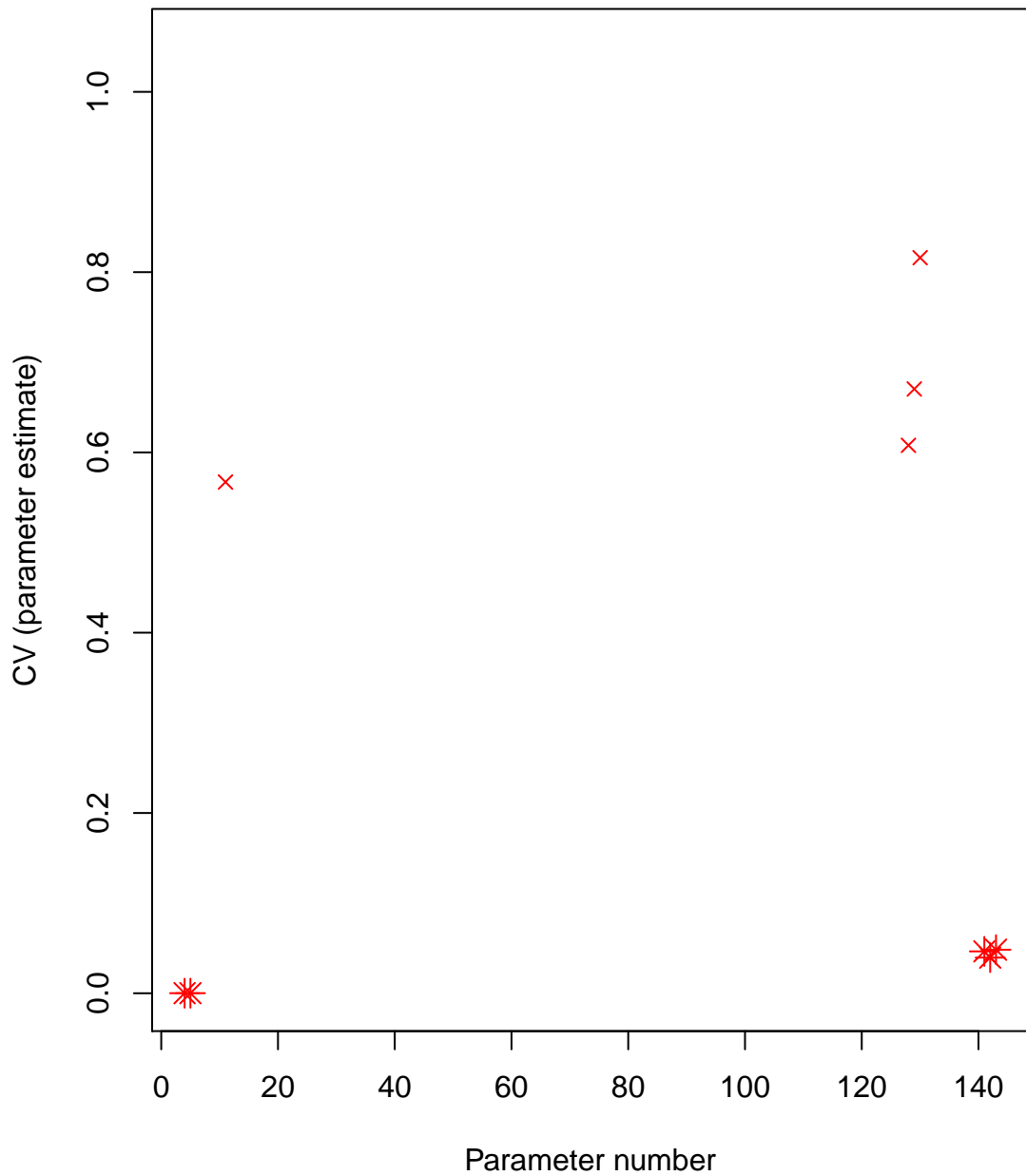


Likelihood Contribution

Model: y2000r9c3.7m1s111111111_000

Monday, 04 Nov 2019 at 10:44

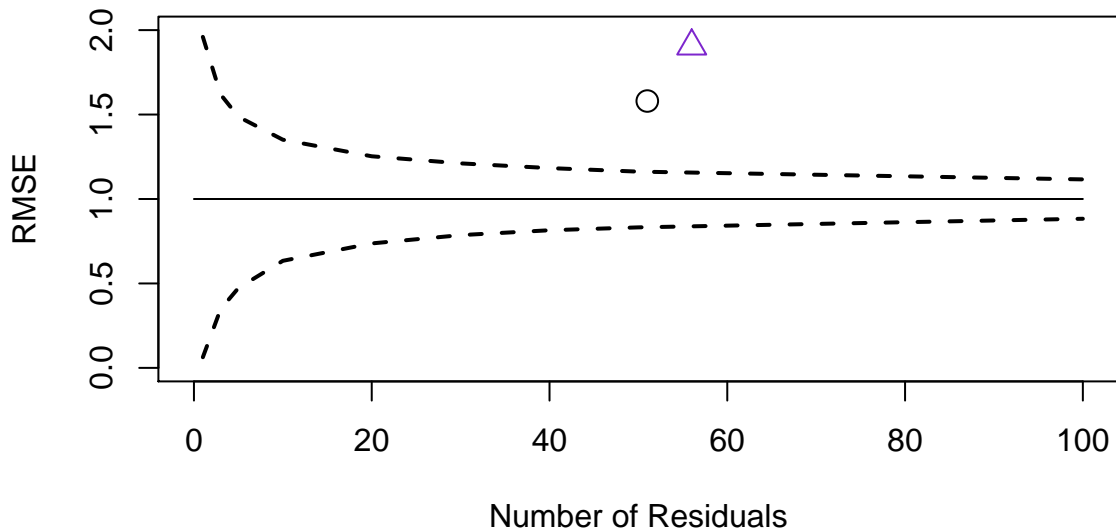




Root Mean Square Error computed from Standardized Residuals

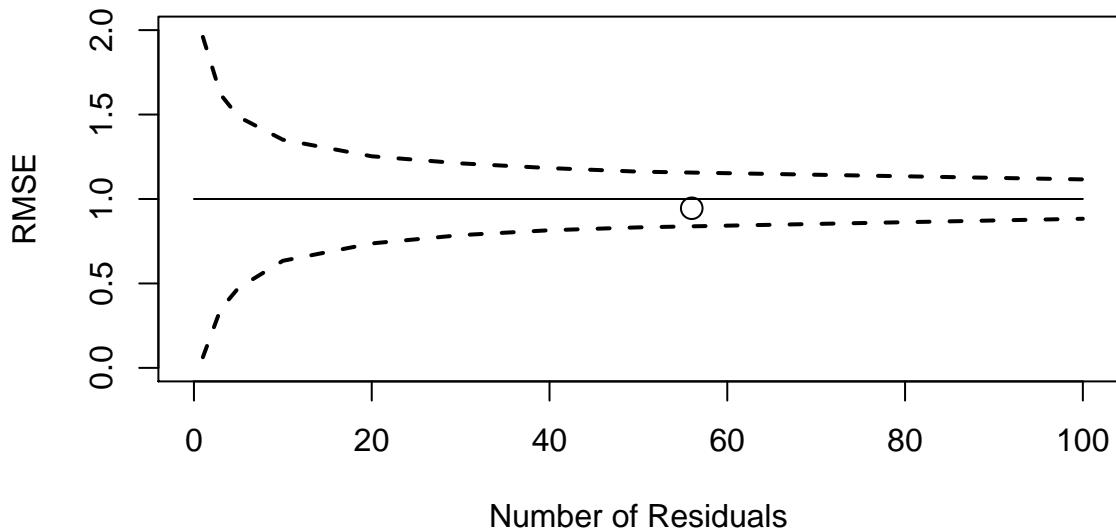
Component	# resids	RMSE
catch.tot	56	0.945
discard.tot	0	0
ind01	51	1.58
ind02	56	1.91
ind.total	107	1.76
N.year1	8	0.683
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



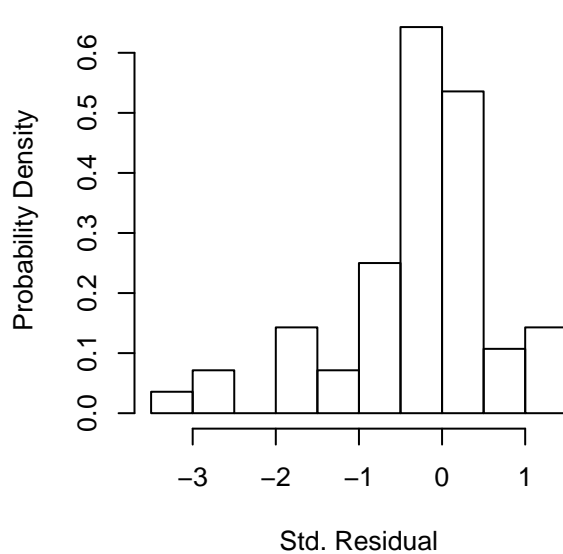
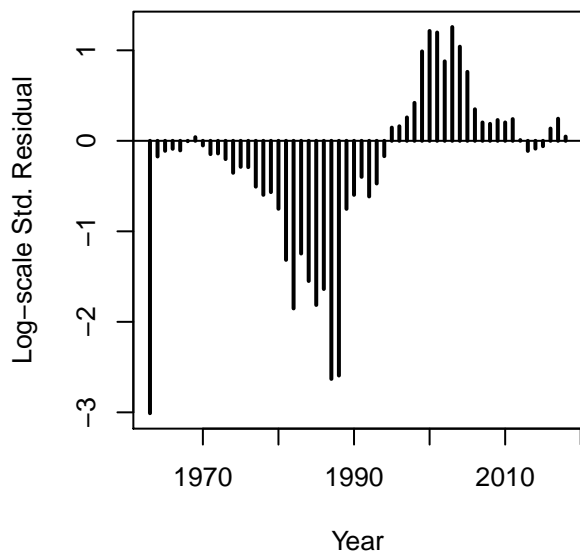
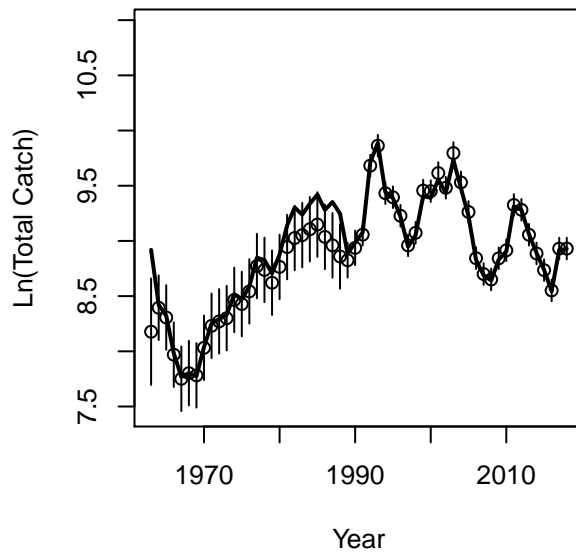
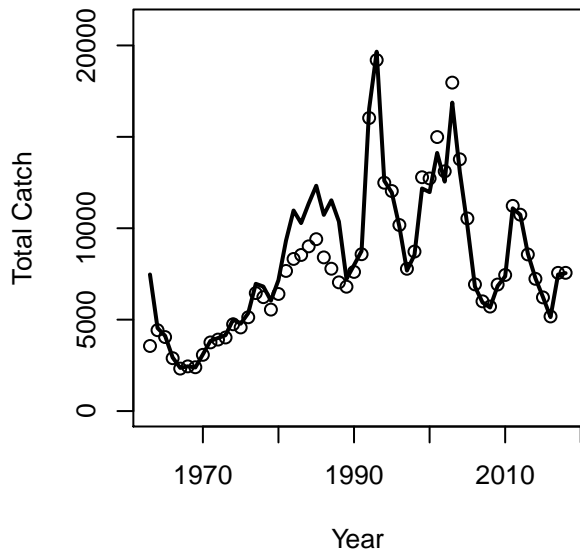
+ ind total
△ INDEX-2
○ INDEX-1

Root Mean Square Error for Catch



○ catch.tot

Fleet 1 Catch (FLEET-1)

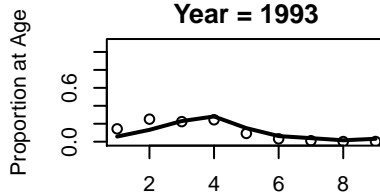


Catch

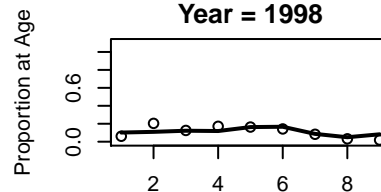
Fleet 1
FLEET-1



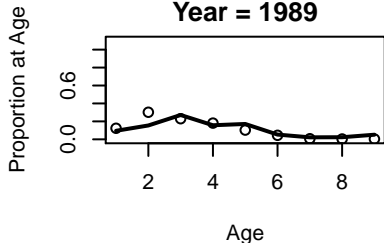
Year = 1993



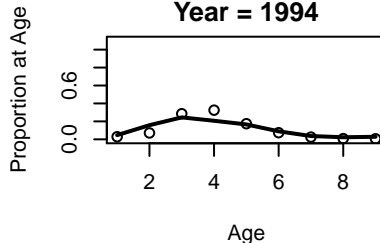
Year = 1998



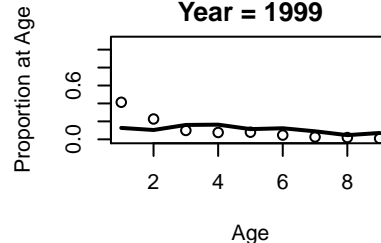
Year = 1989



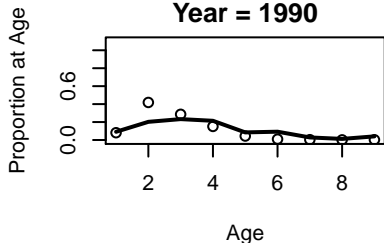
Year = 1994



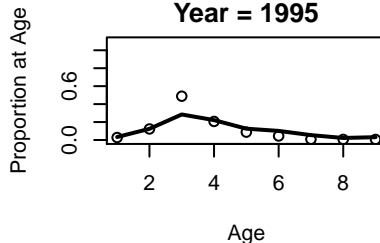
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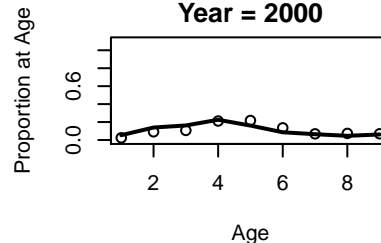
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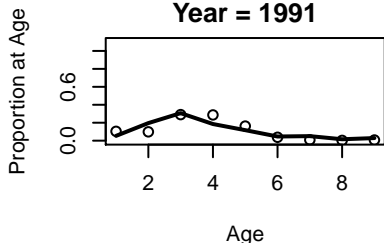
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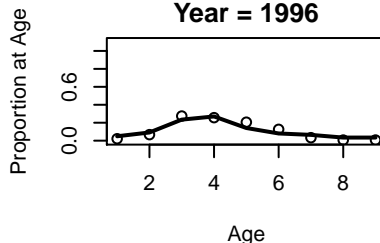
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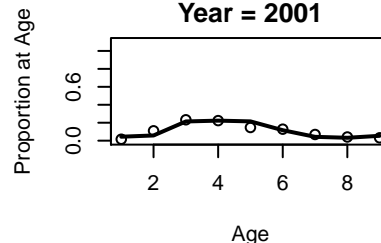
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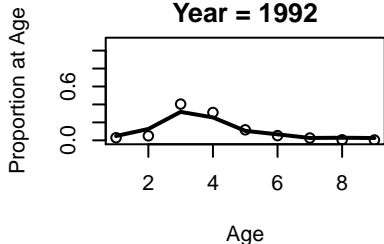
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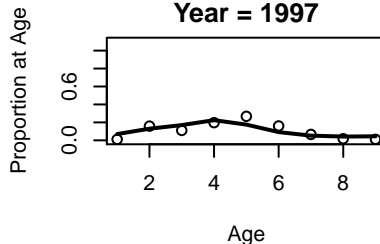
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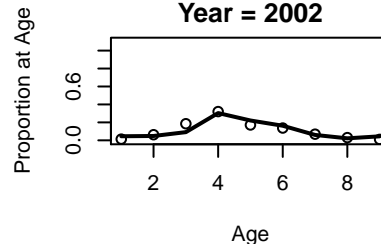
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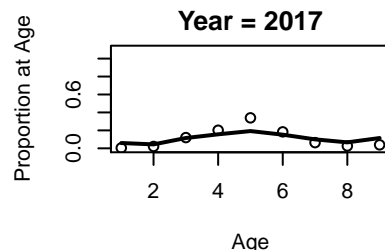
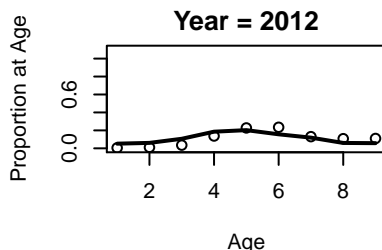
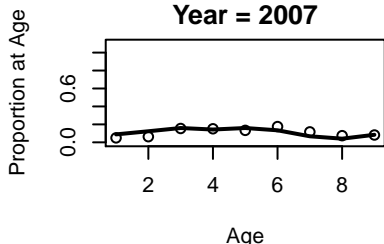
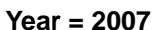
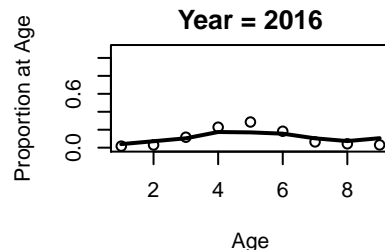
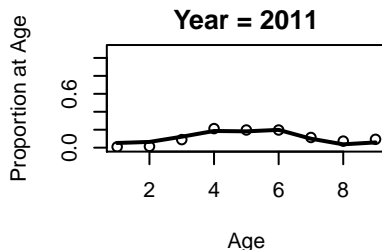
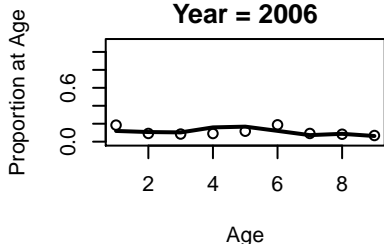
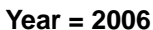
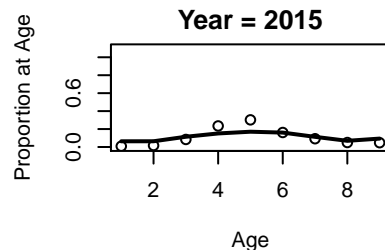
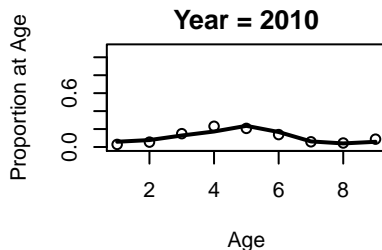
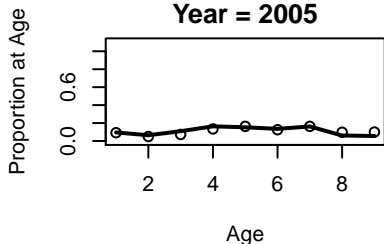
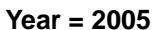
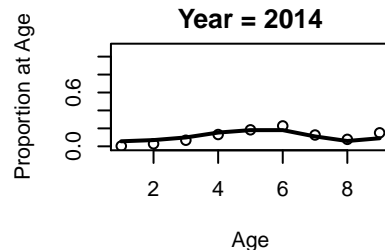
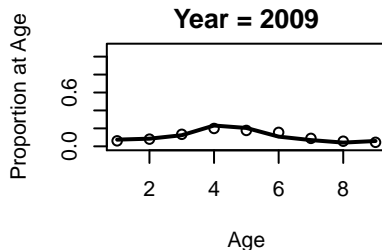
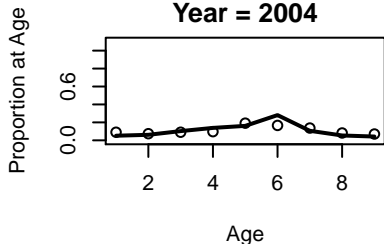
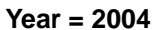
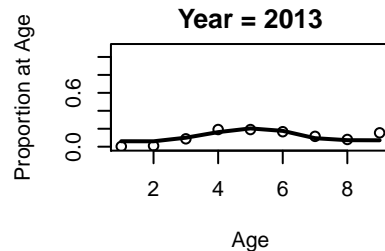
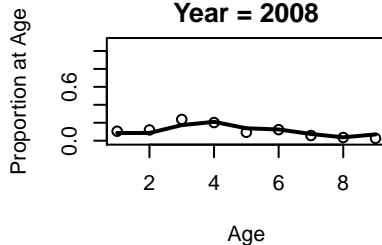
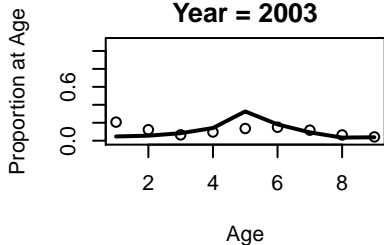
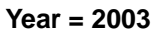
Year = 1997



Year = 2002



Year = 2008



Year = 2018

Proportion at Age

0.0 0.6

2

4

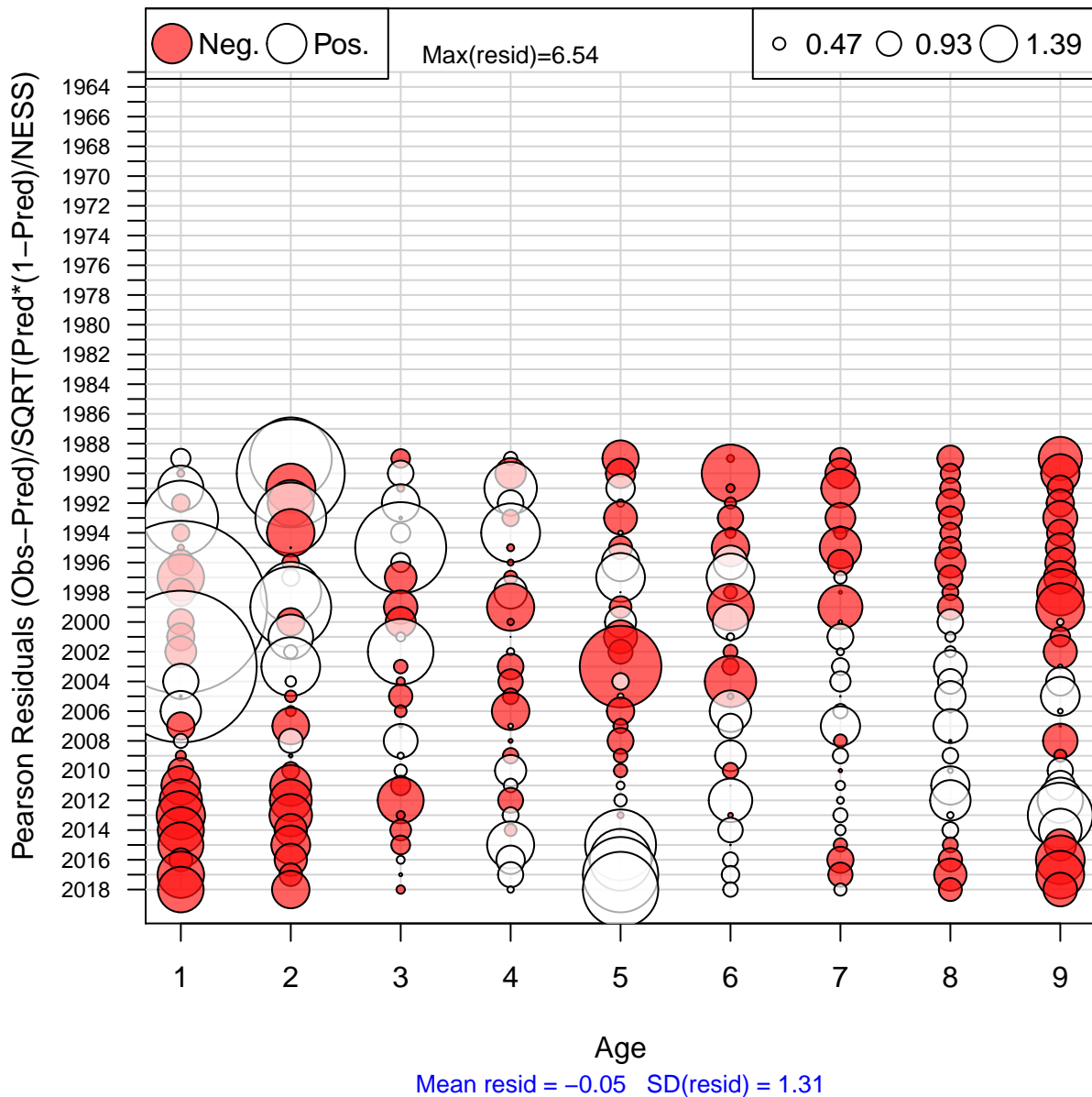
6

8

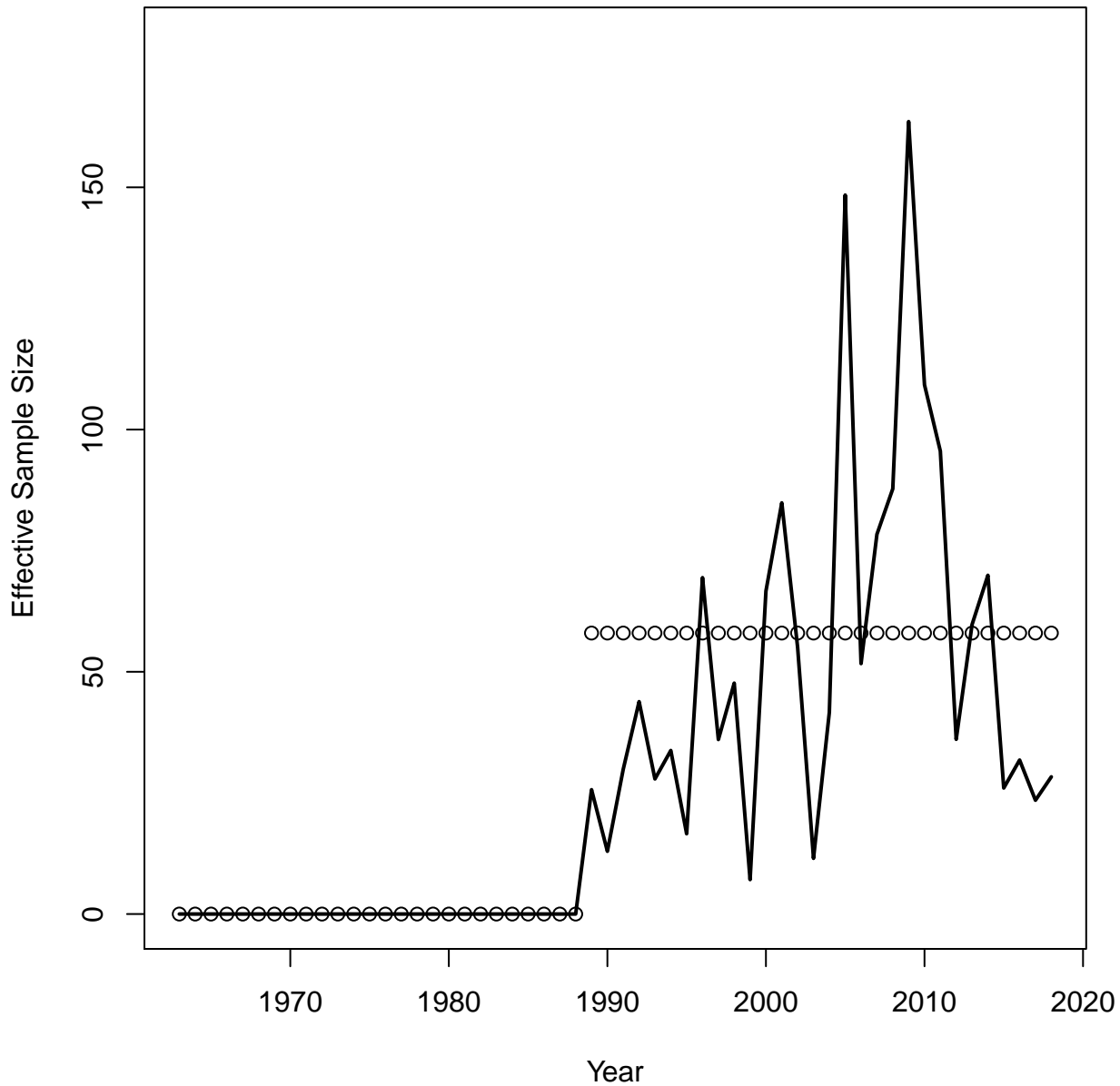
Age

Catch

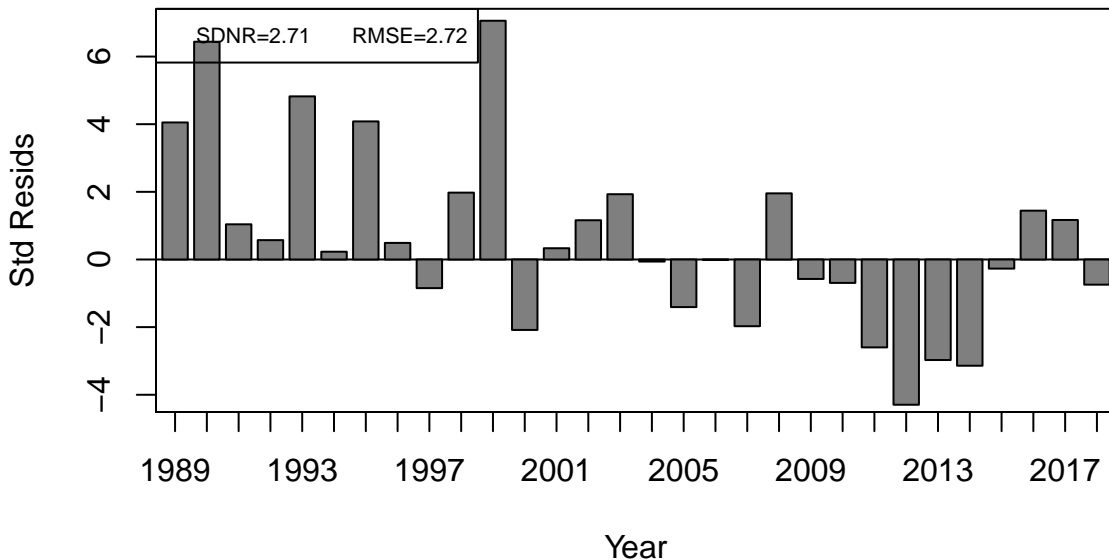
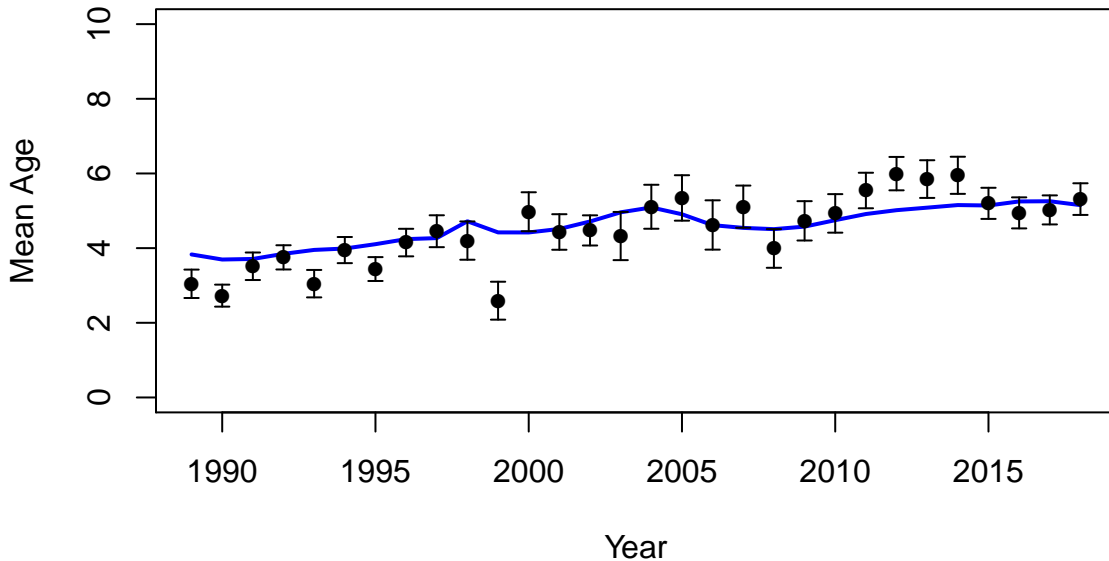
Age Comp Residuals for Catch by Fleet 1 (FLEET-1)



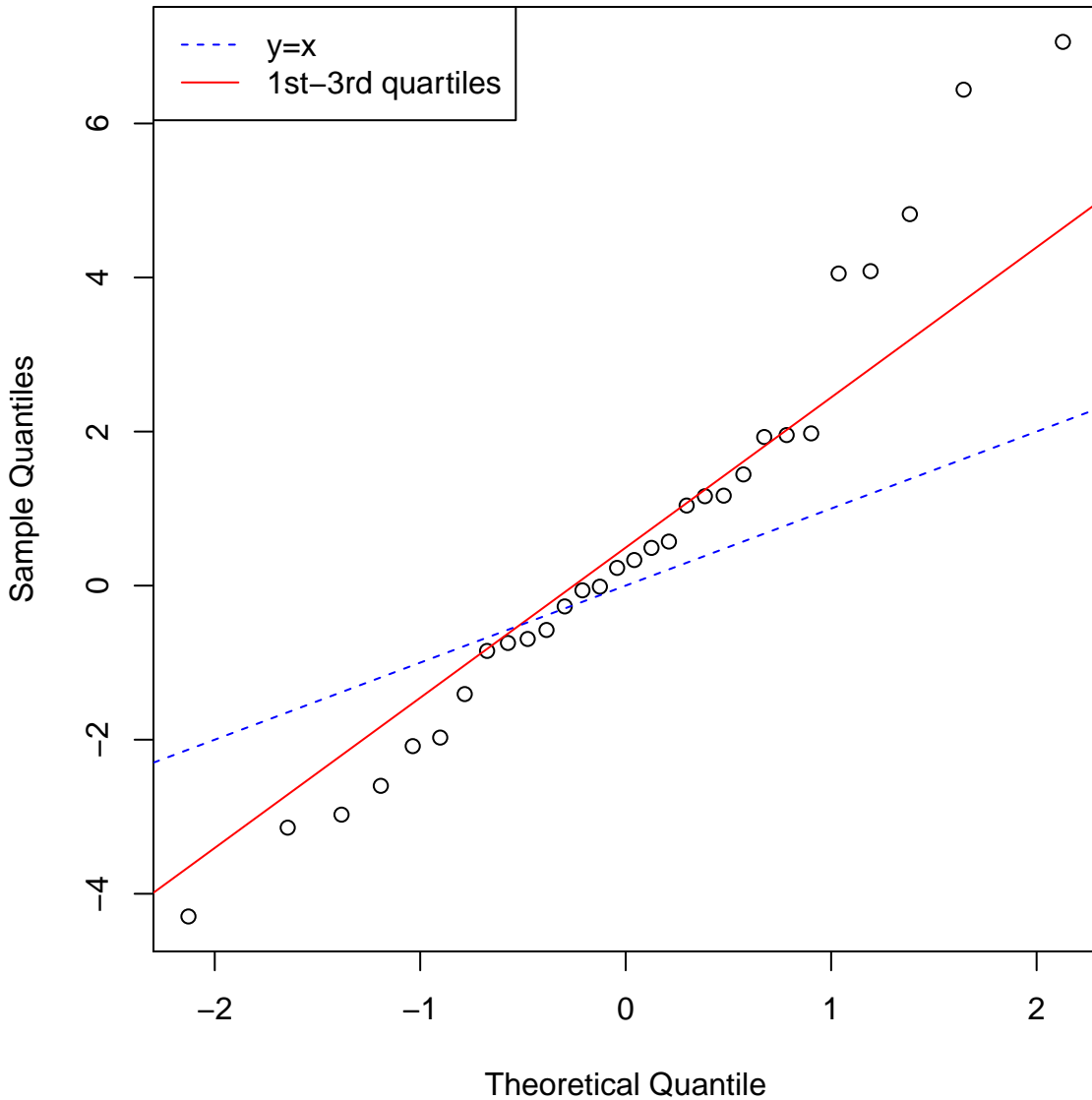
Catch Neff Fleet 1 (FLEET-1)



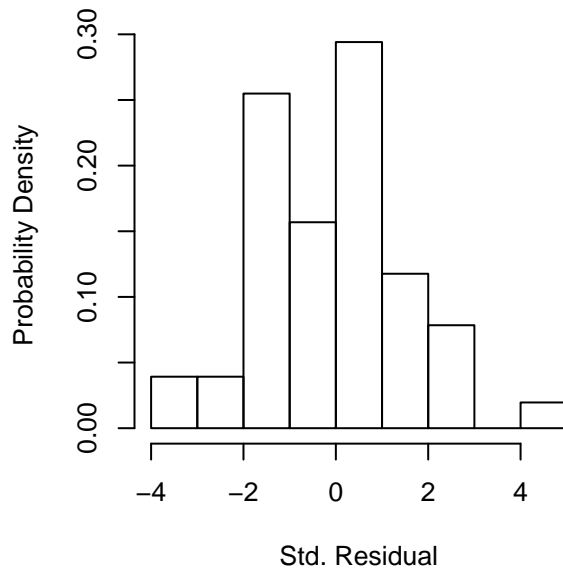
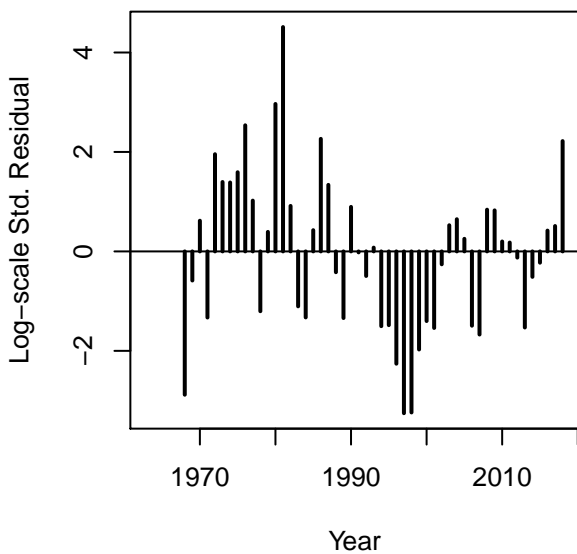
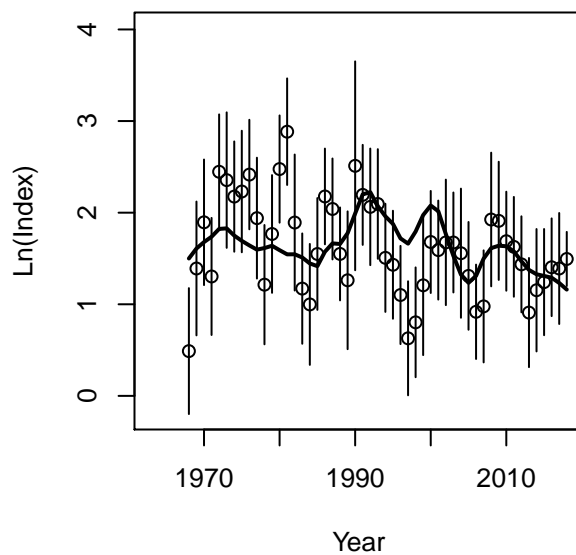
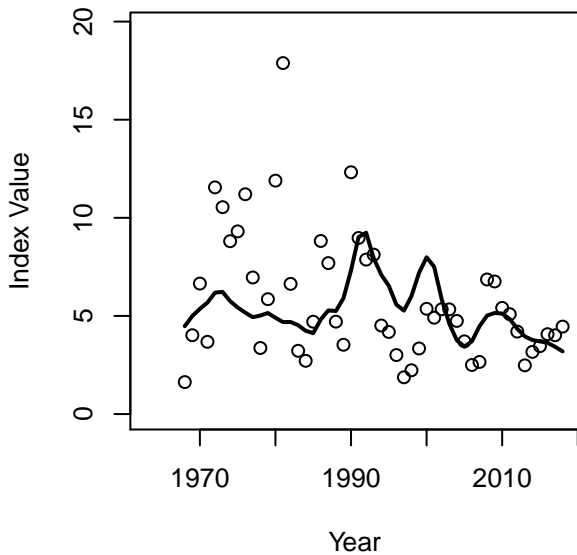
Catch Fleet 1 (FLEET-1) ESS = 58



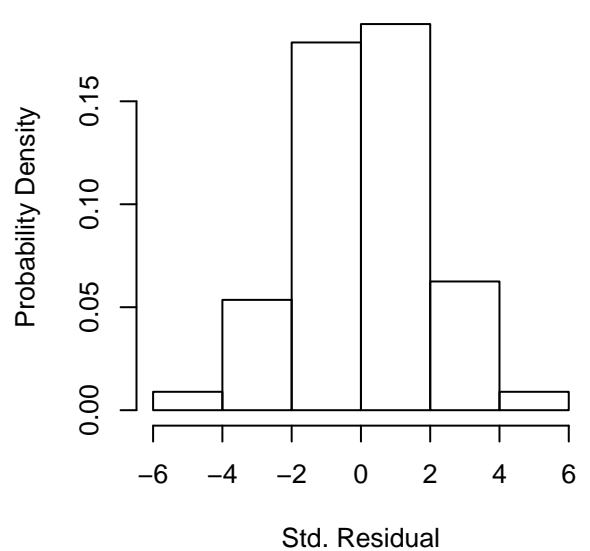
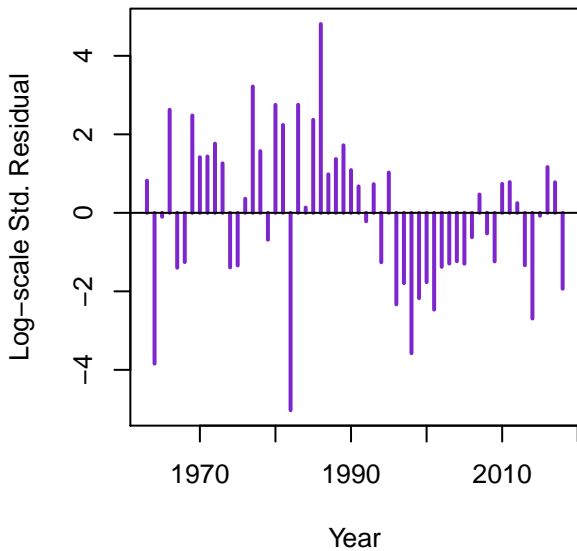
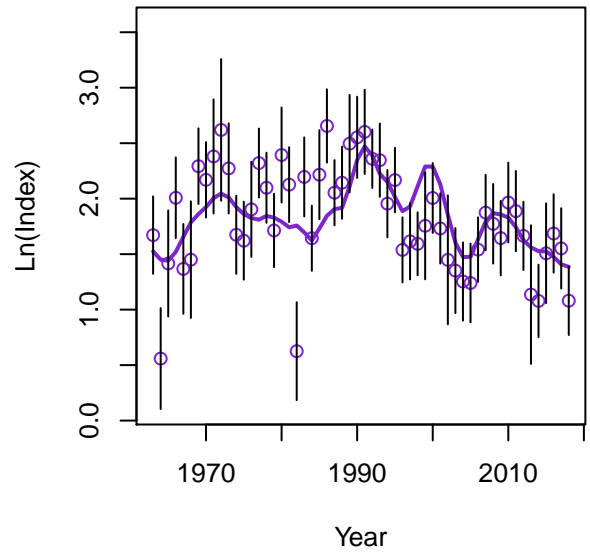
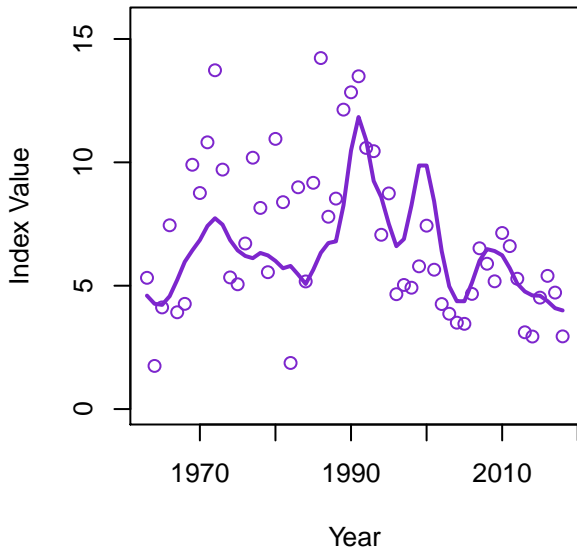
Catch Fleet 1 (FLEET-1) ESS = 58



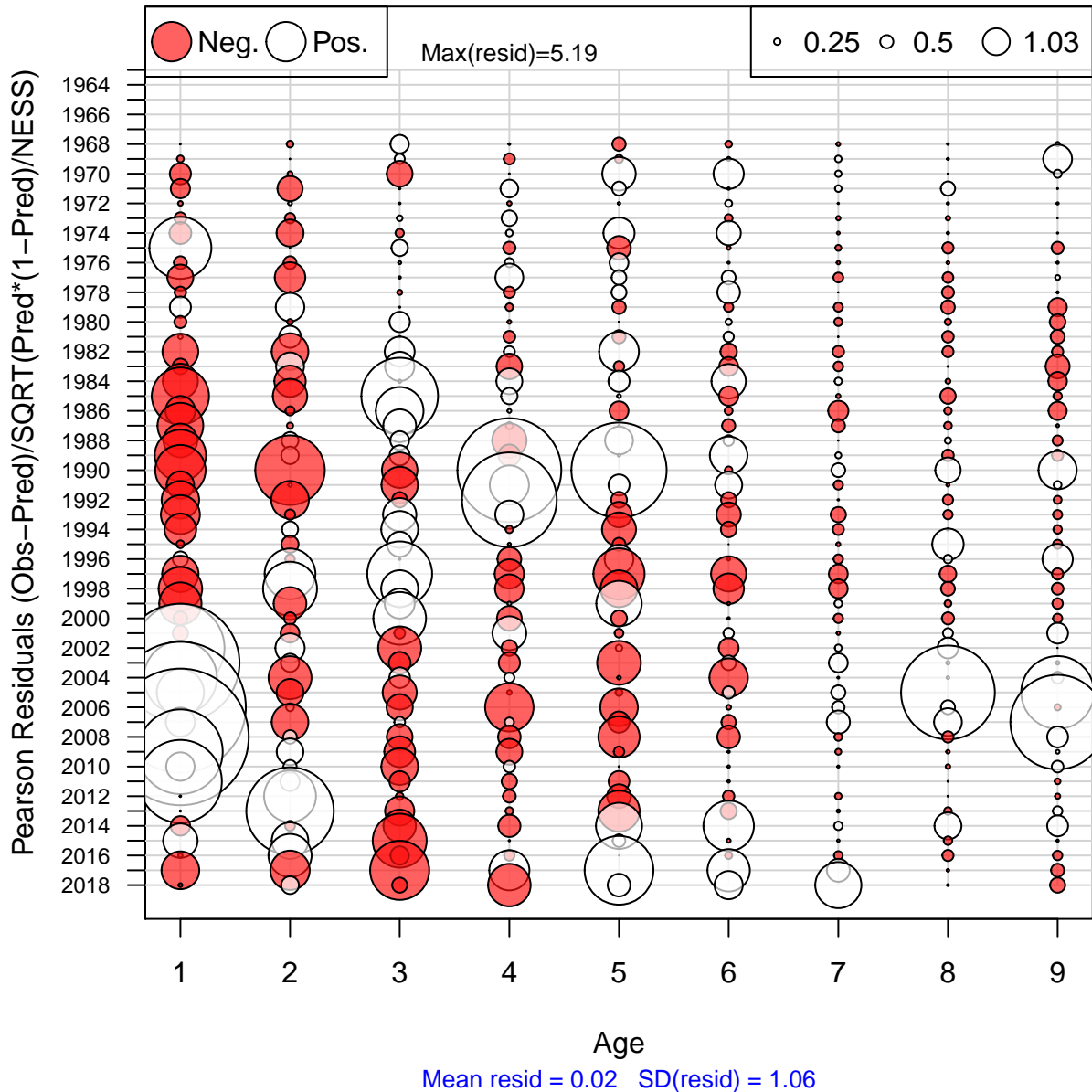
Index 1 (INDEX-1)



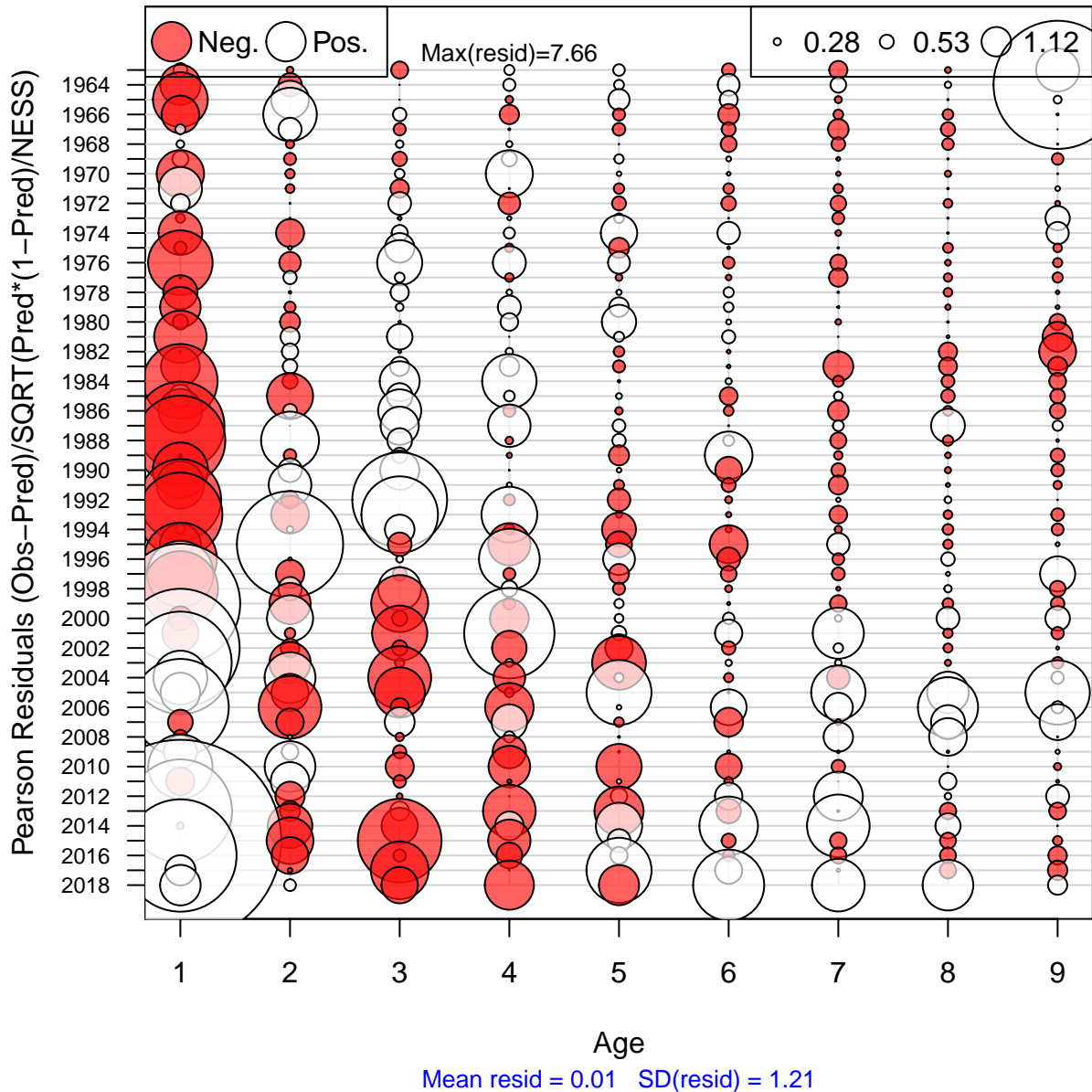
Index 2 (INDEX-2)



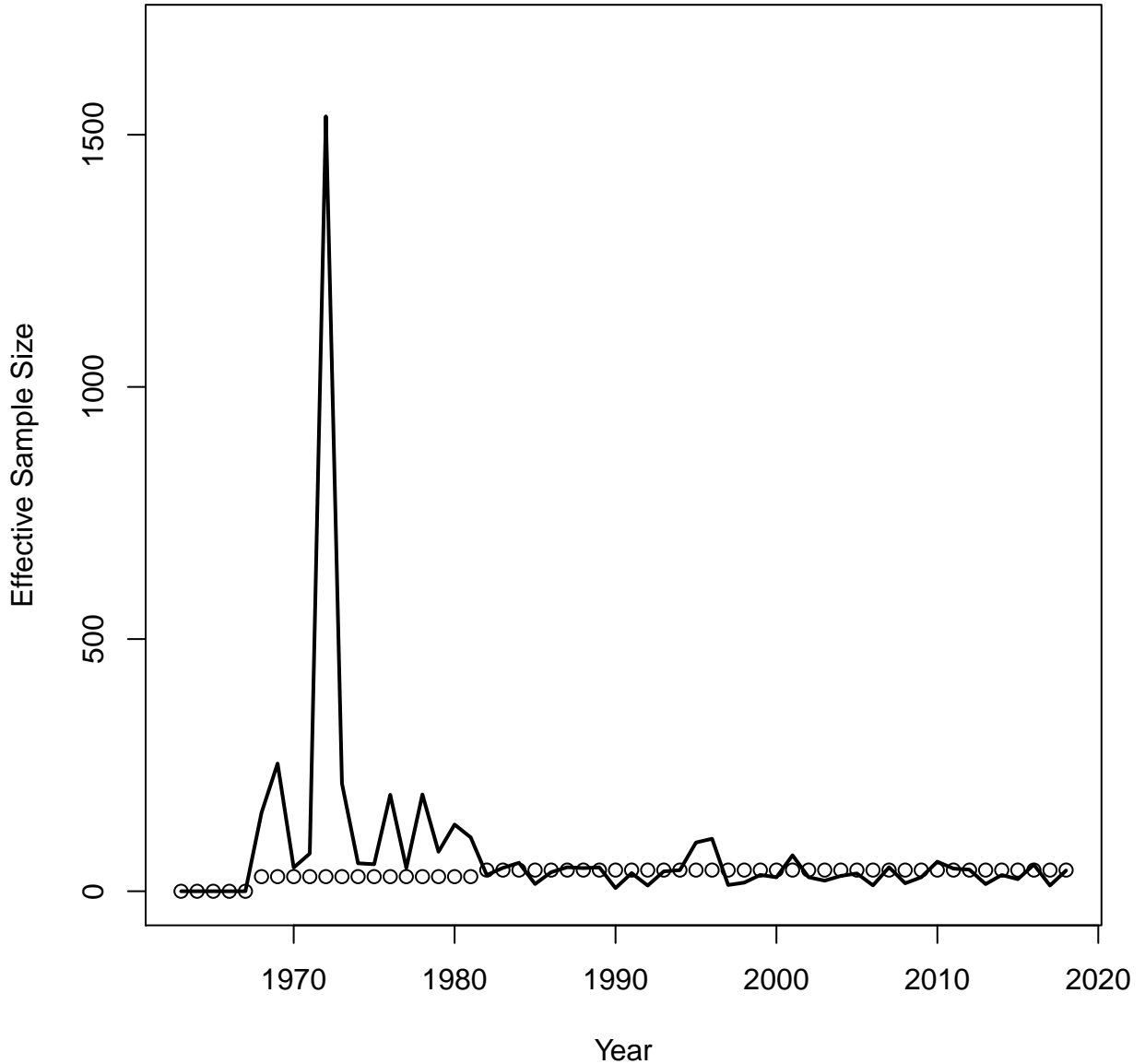
Age Comp Residuals for Index 1 (INDEX-1)



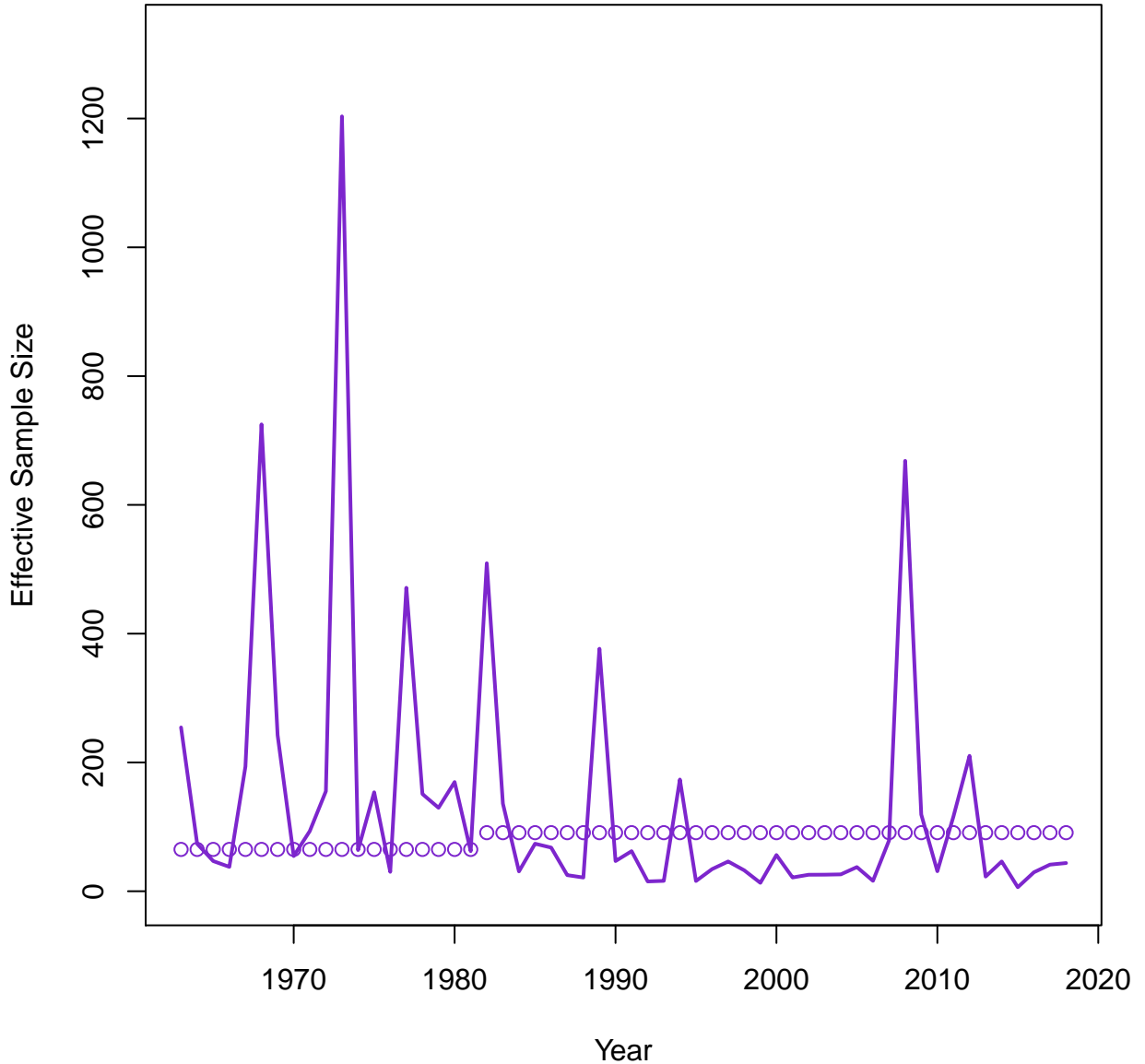
Age Comp Residuals for Index 2 (INDEX-2)



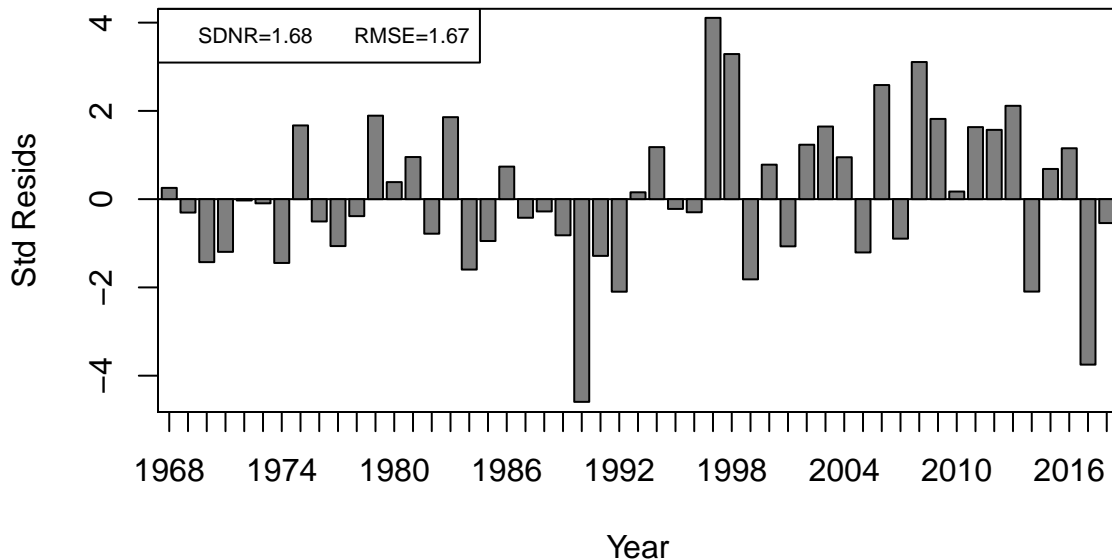
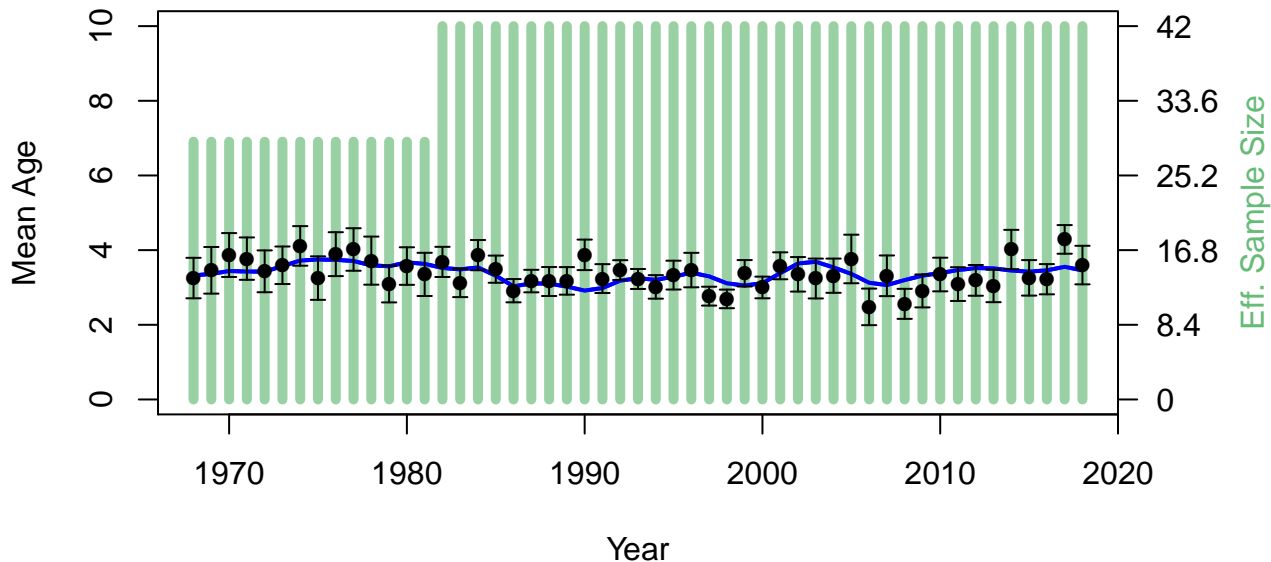
Index Neff 1 (INDEX-1)



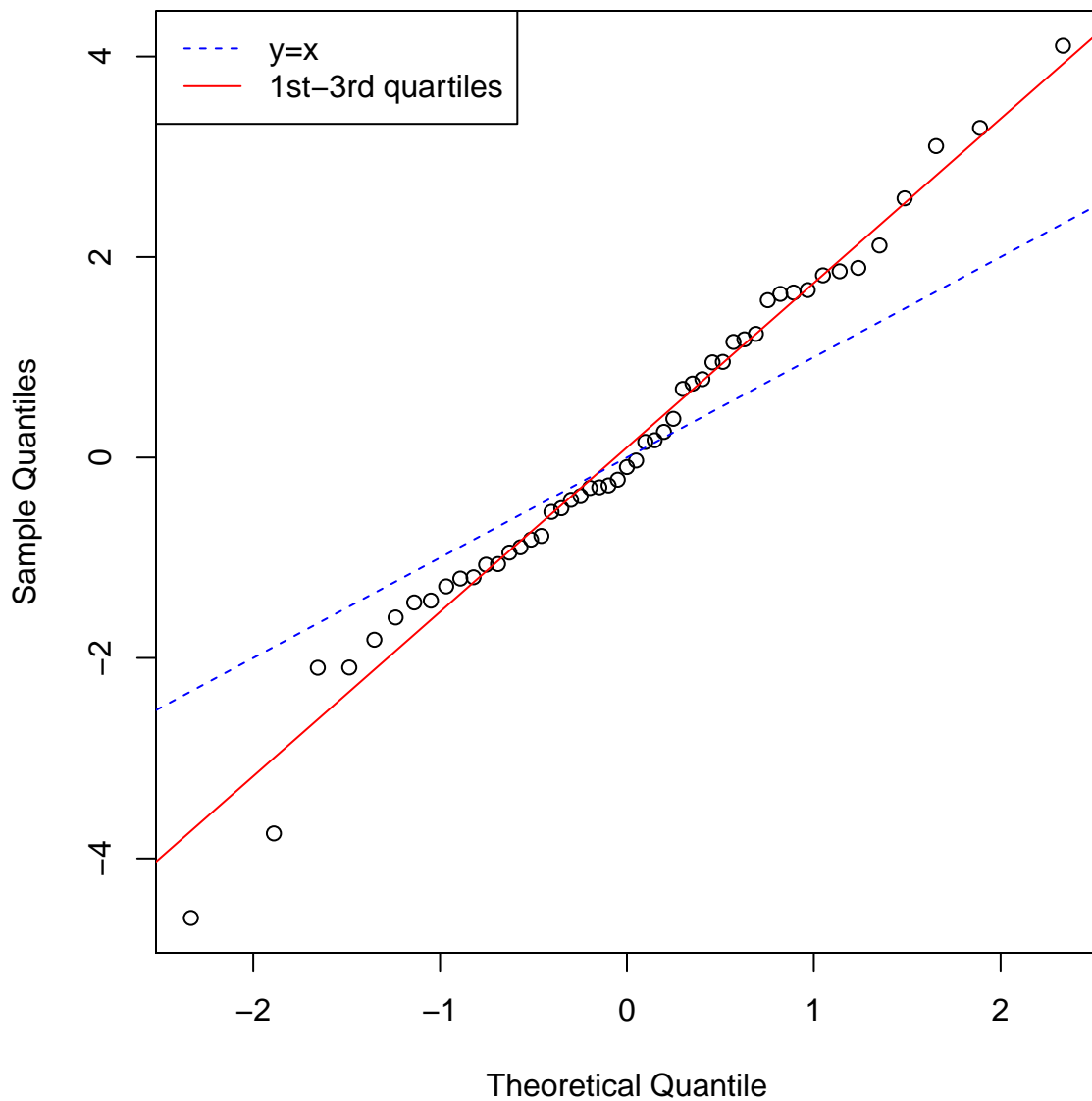
Index Neff 2 (INDEX-2)



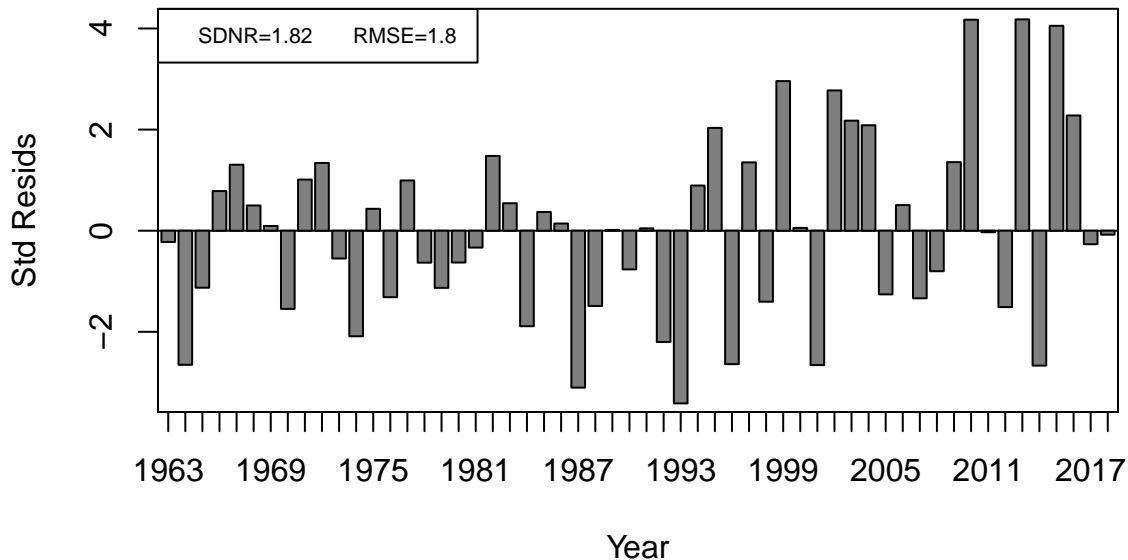
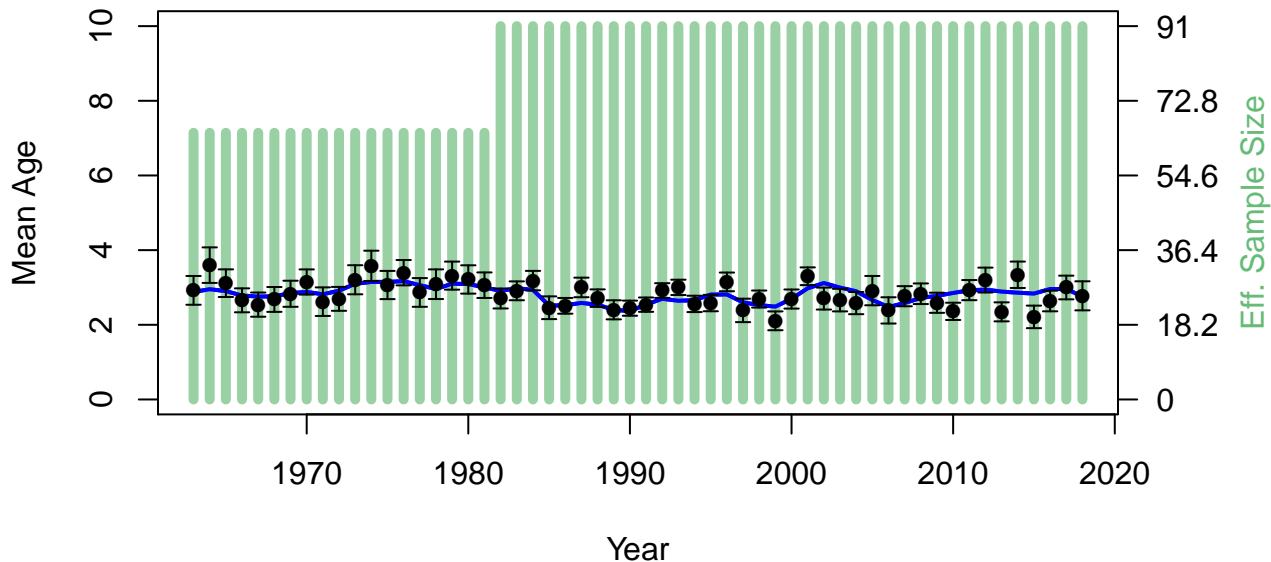
Index 1 (INDEX-1)



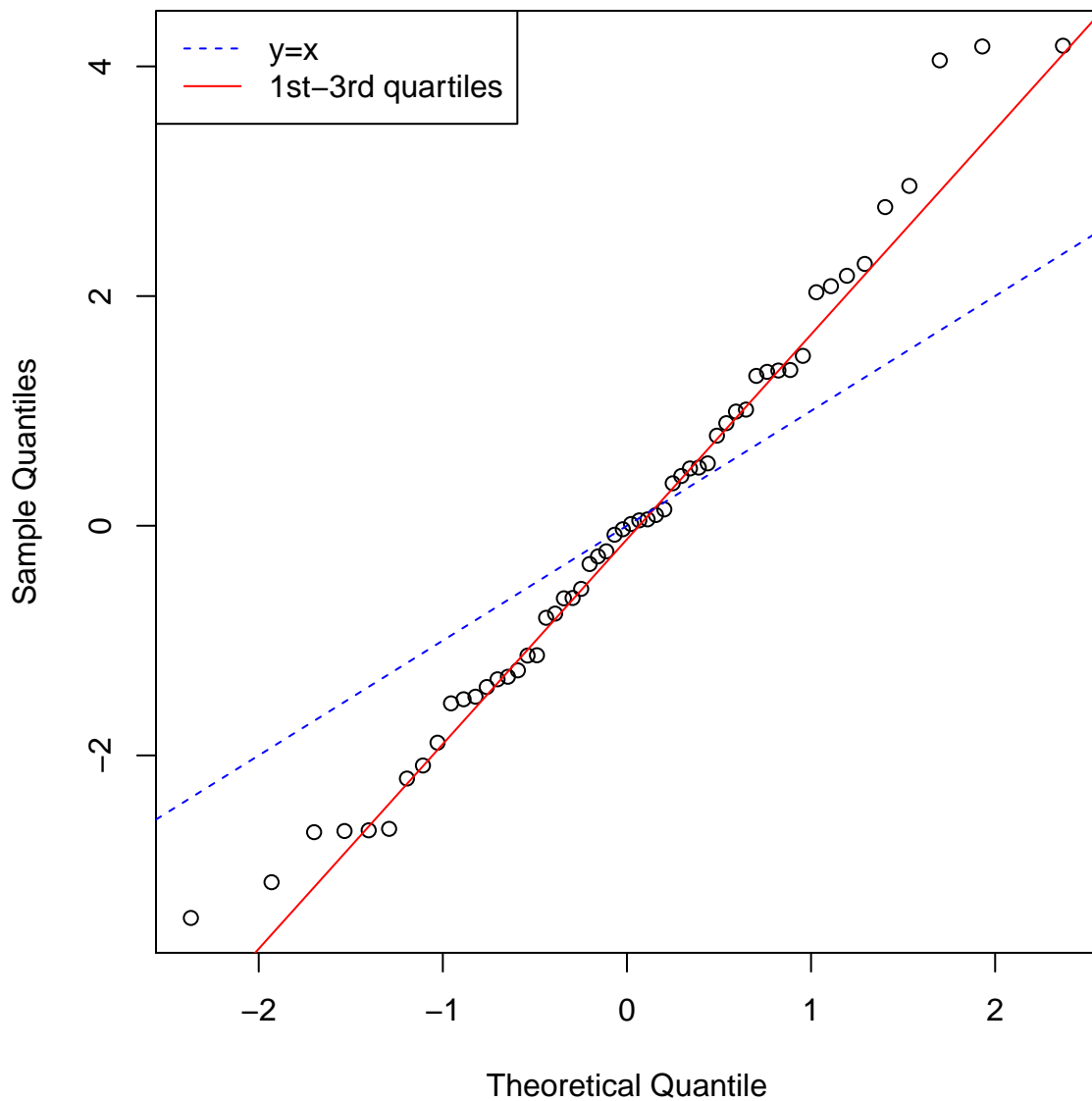
Index 1 (INDEX-1)



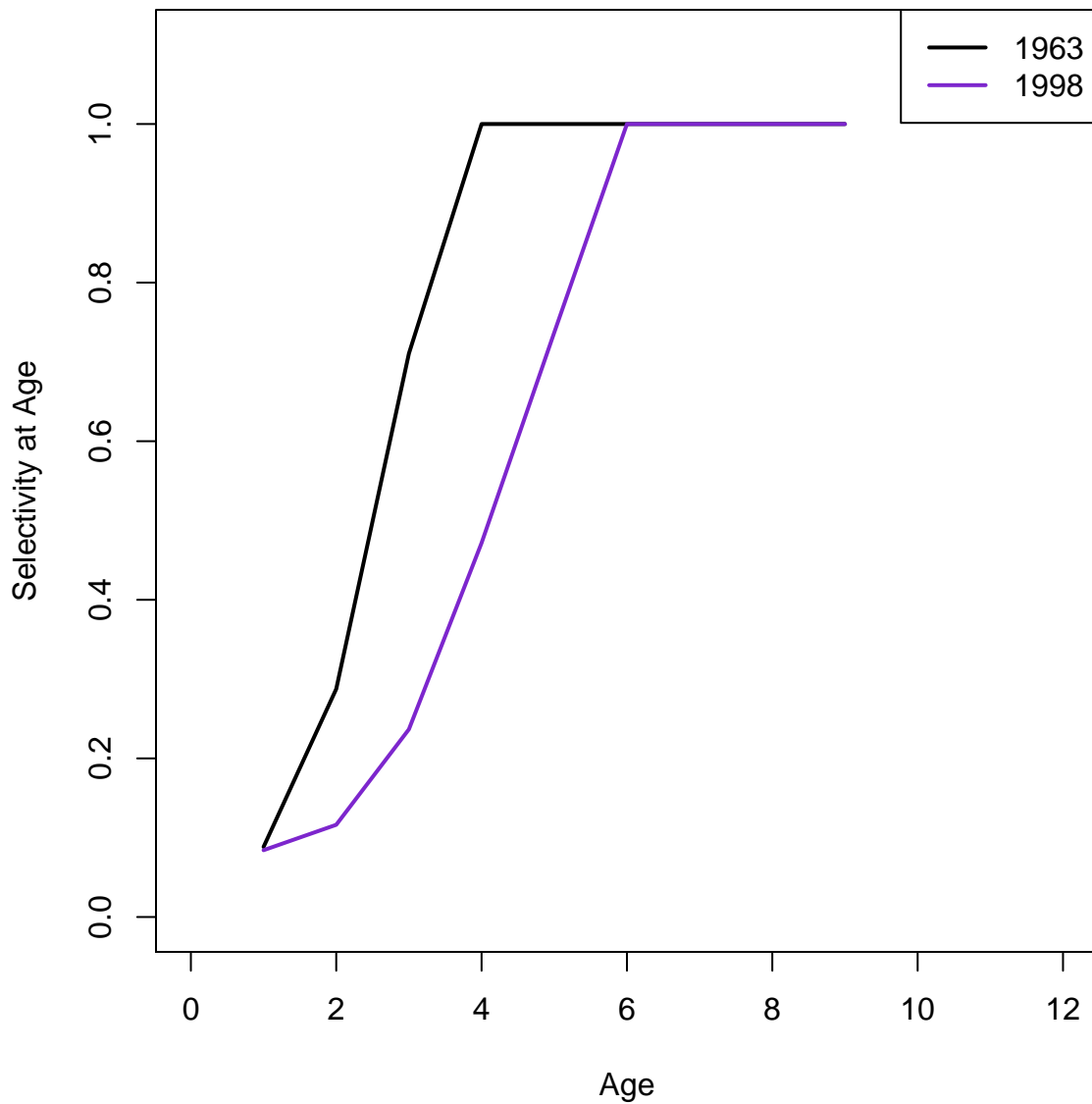
Index 2 (INDEX-2)

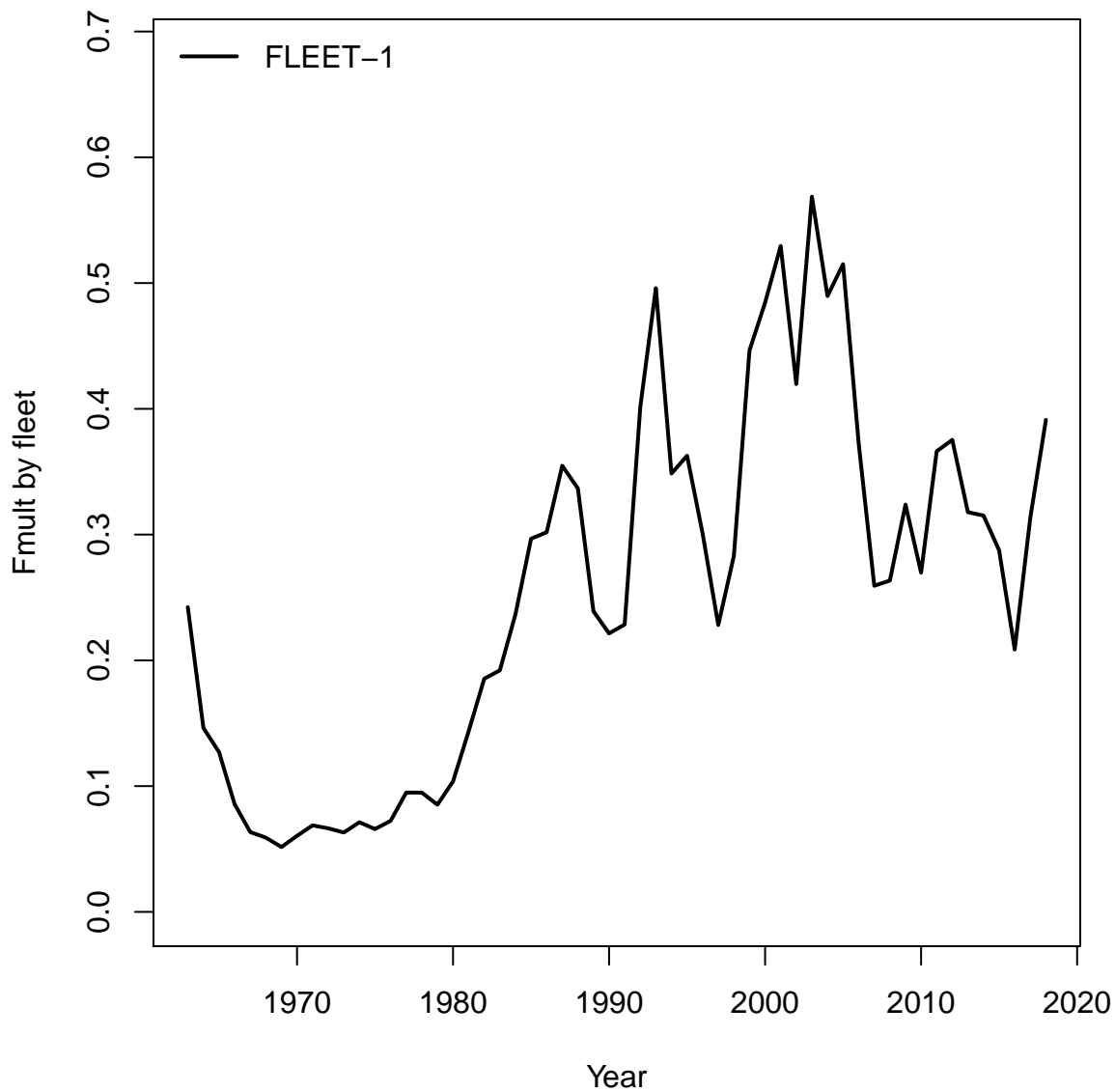


Index 2 (INDEX-2)

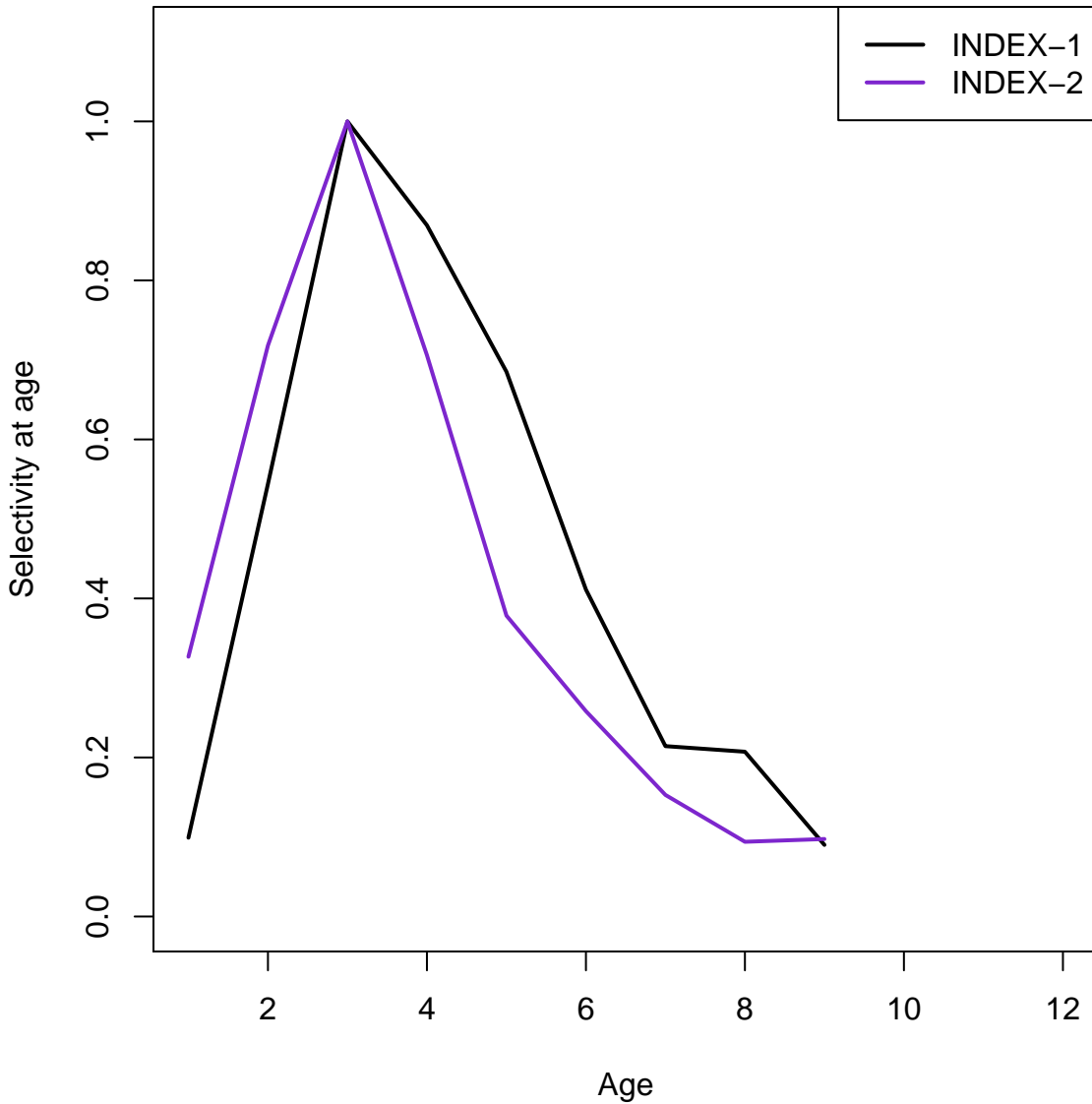


Fleet 1 (FLEET-1)

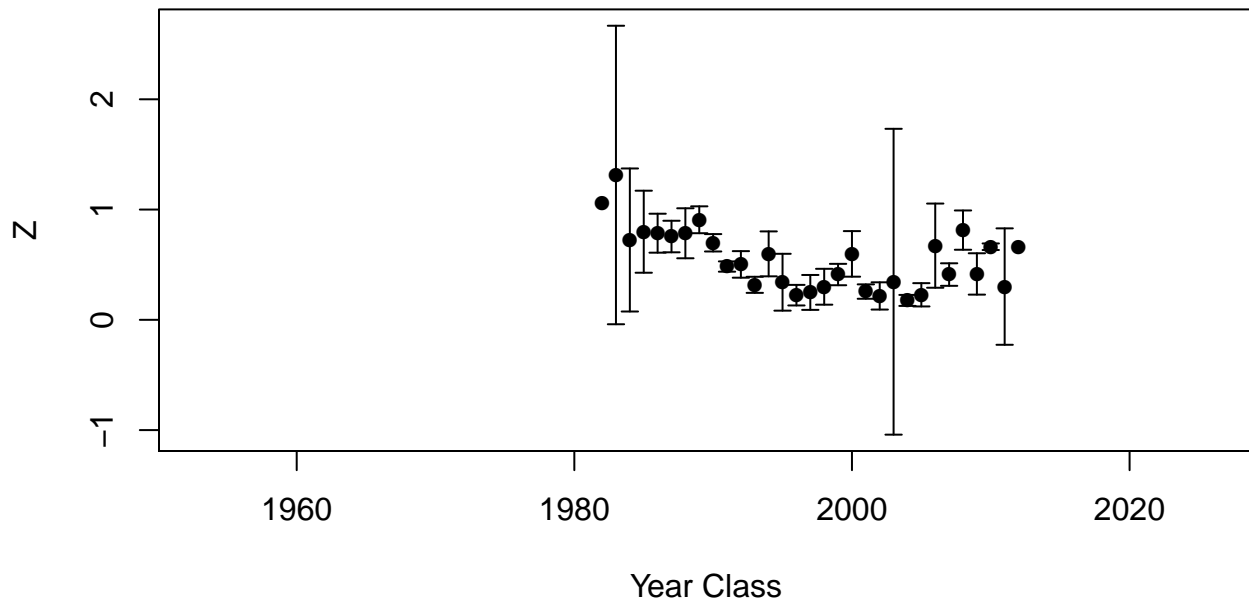
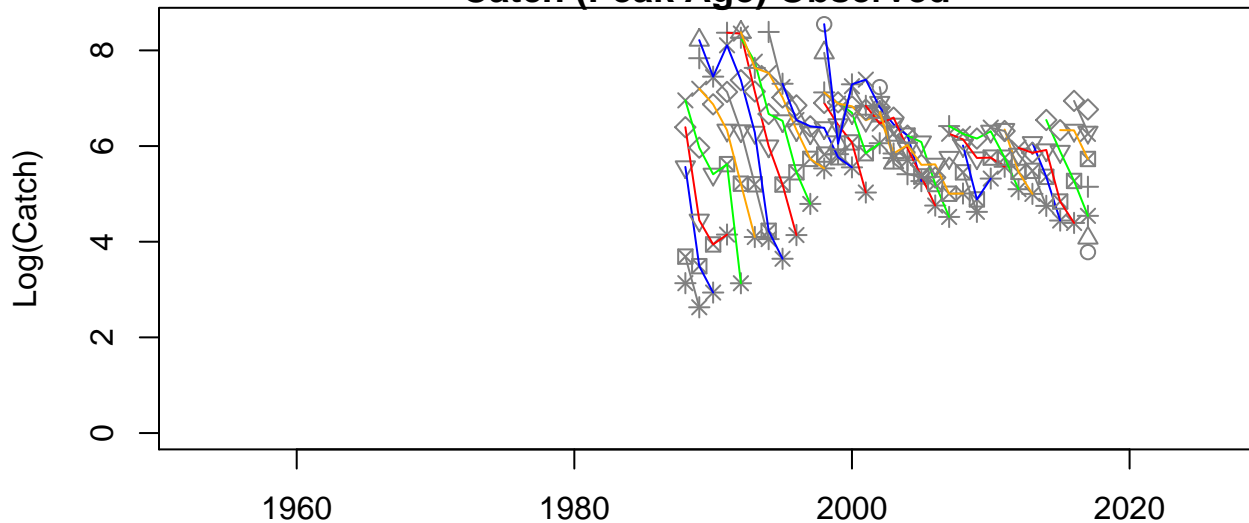




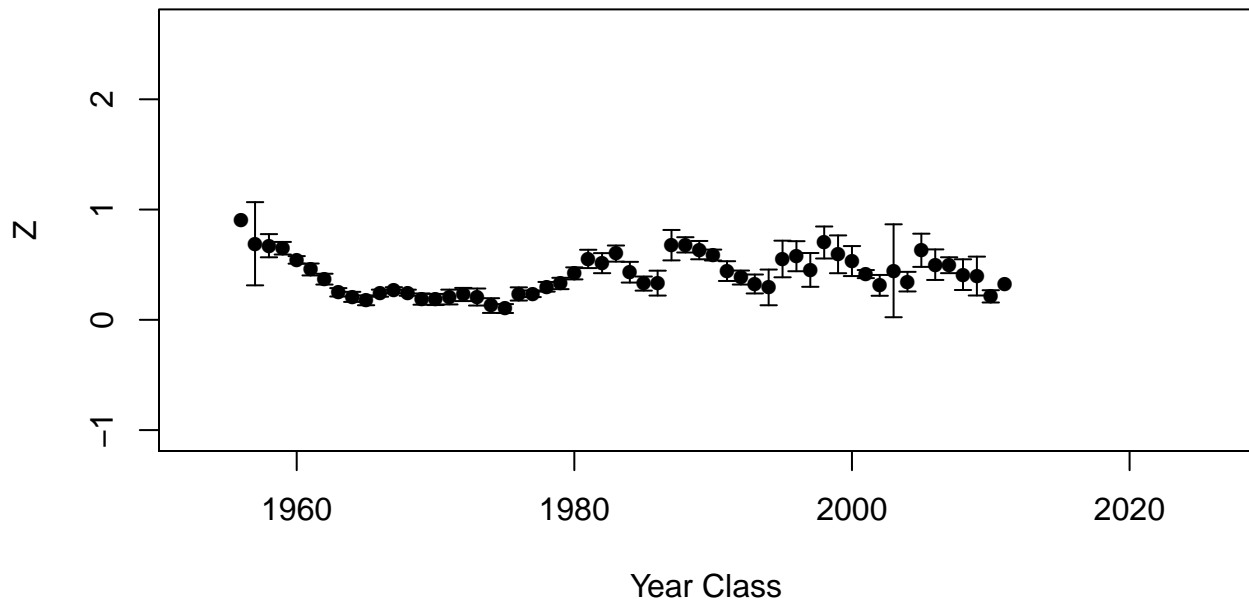
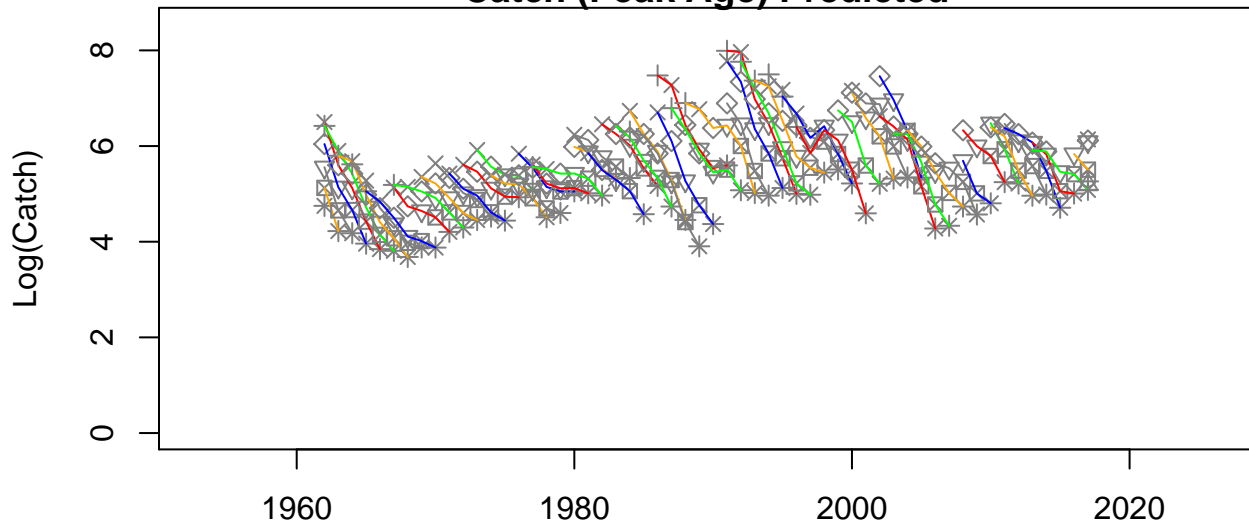
Indices



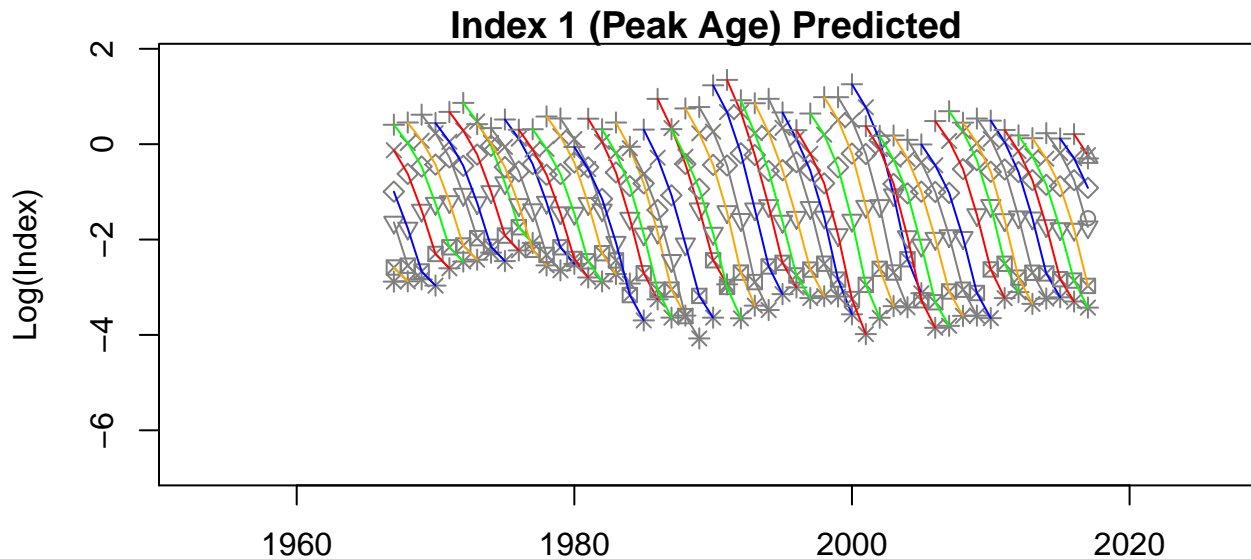
Catch (Peak Age) Observed



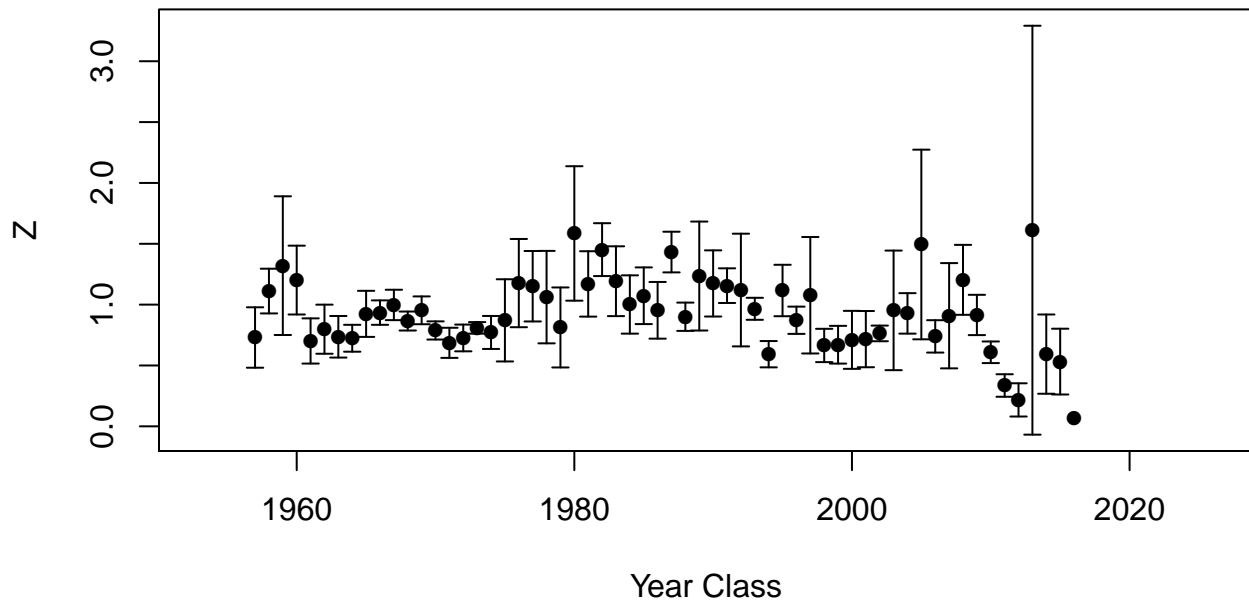
Catch (Peak Age) Predicted



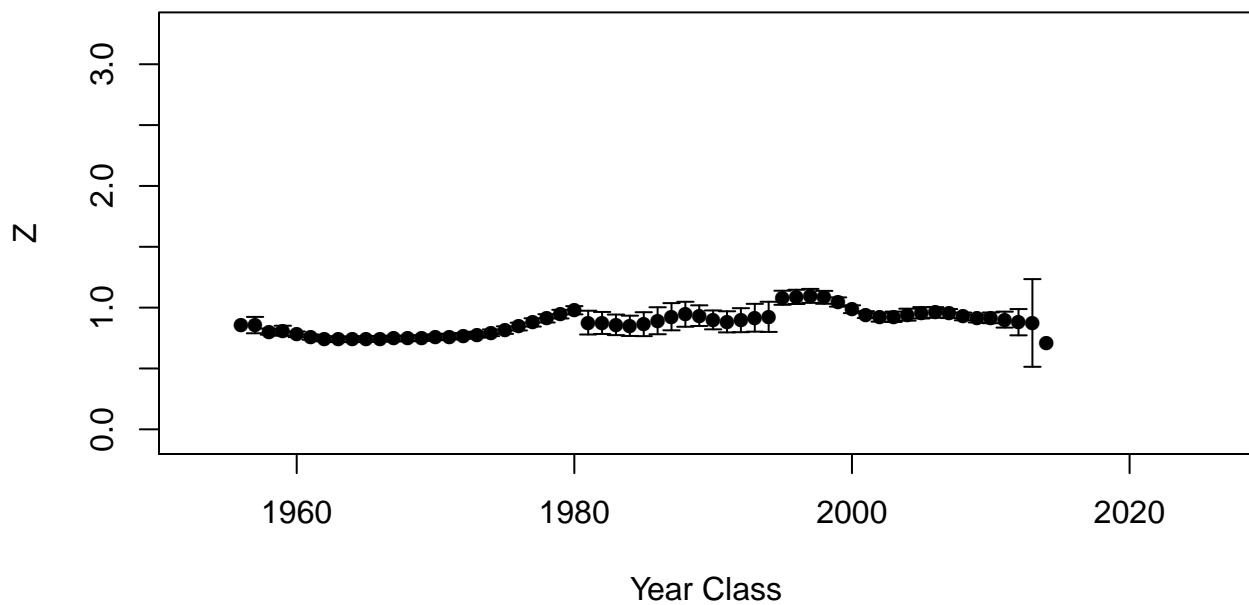
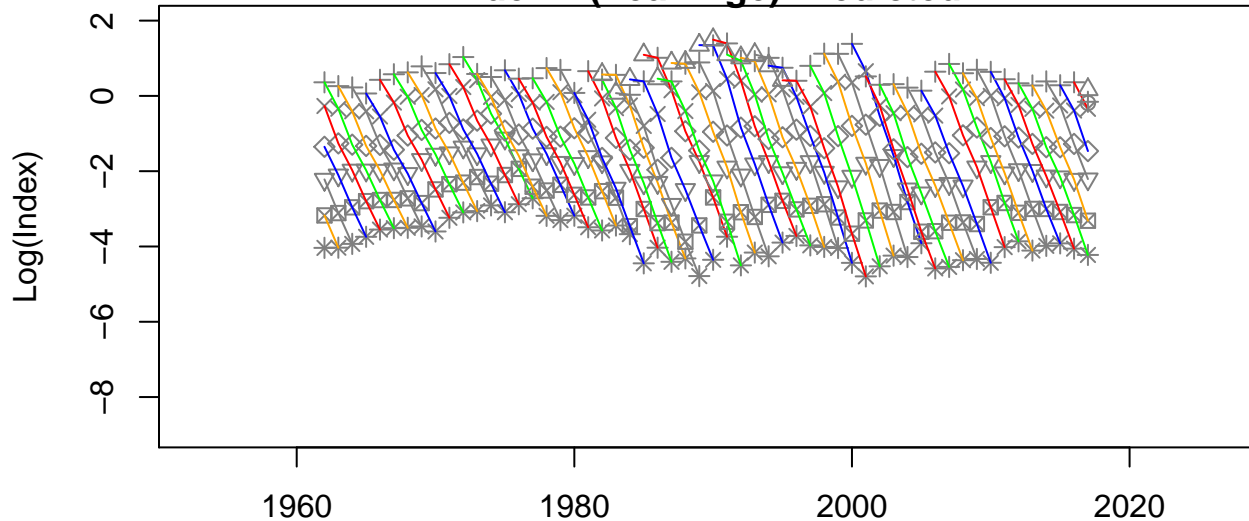




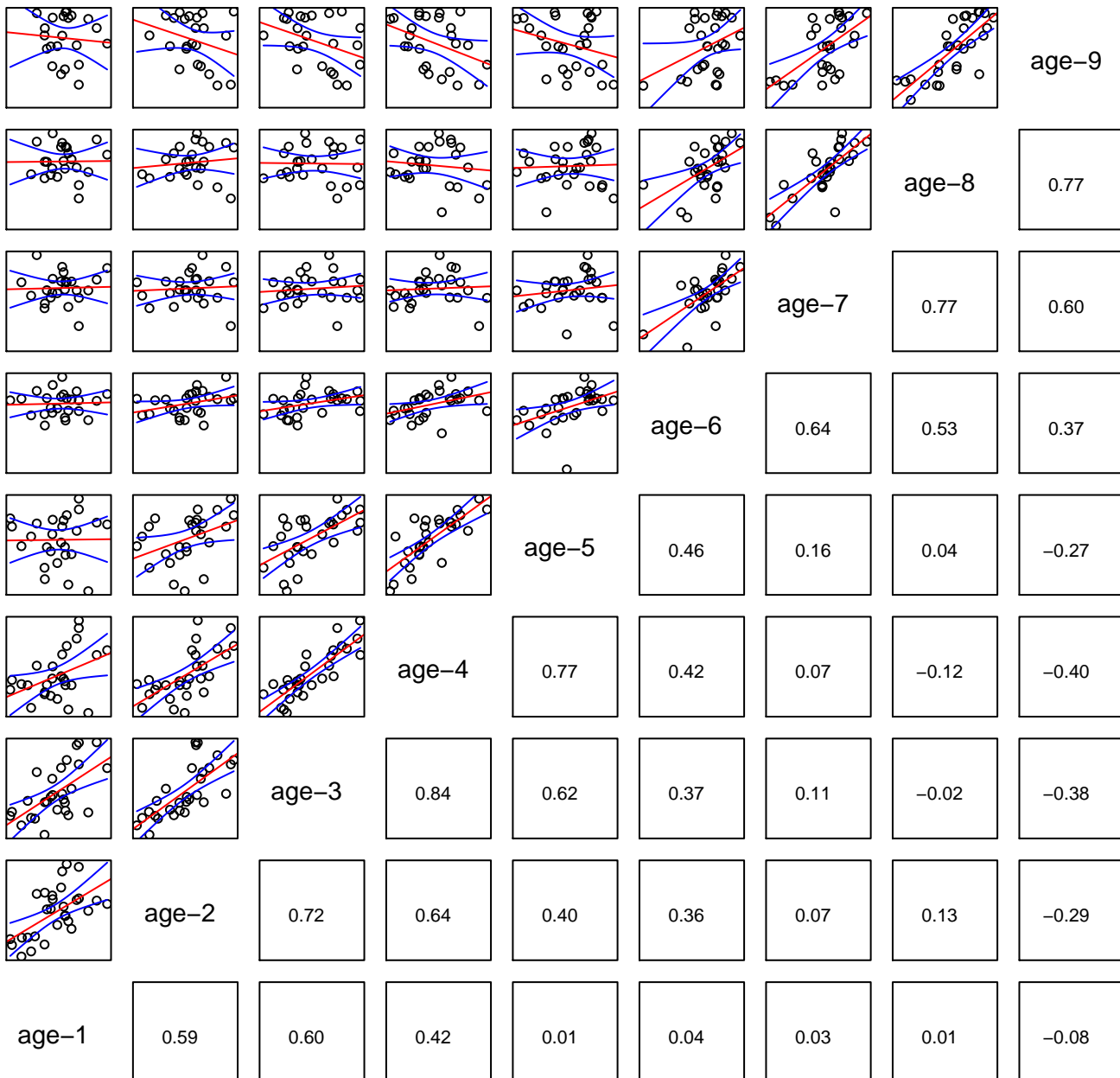
Index 2 (Peak Age) Observed



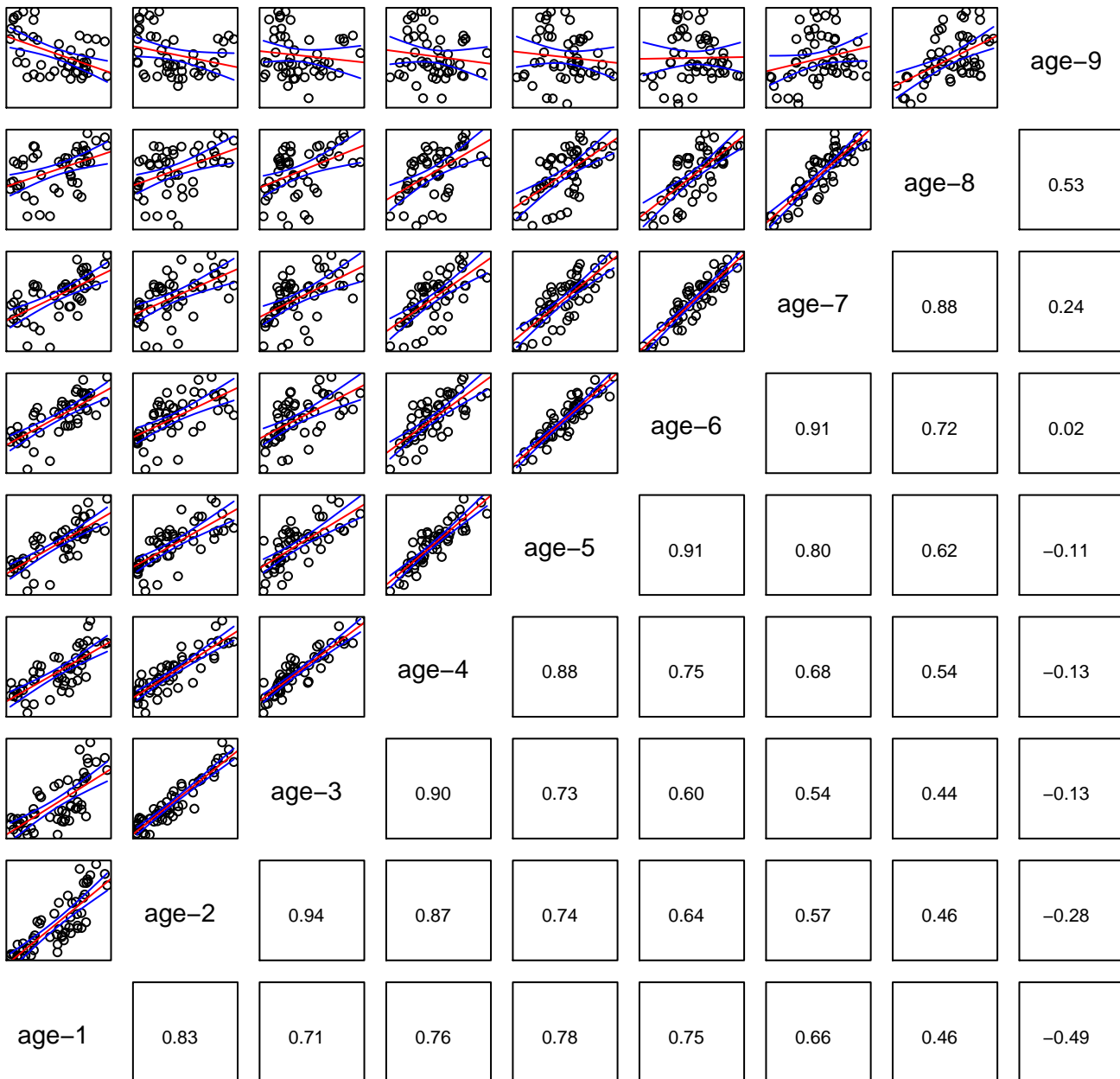
Index 2 (Peak Age) Predicted

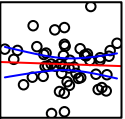
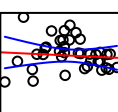
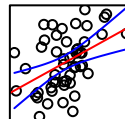
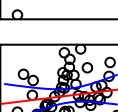
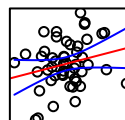
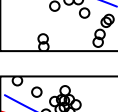
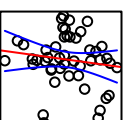
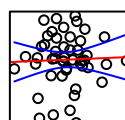
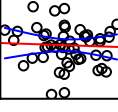
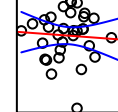
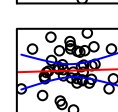
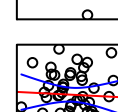

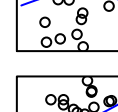

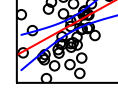
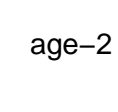
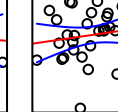


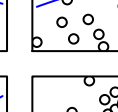
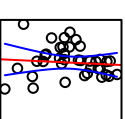
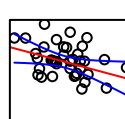
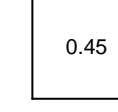
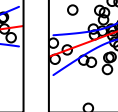
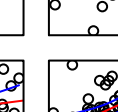
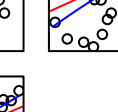
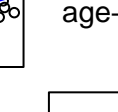
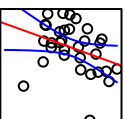
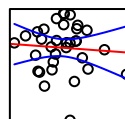
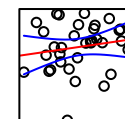
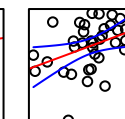
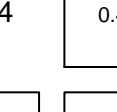
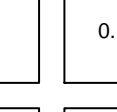
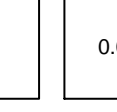
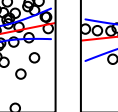


Catch Observed



Catch Predicted



	age-1	age-2	age-3	age-4	age-5	age-6	age-7	age-8	age-9
age-1		-0.04	-0.28	-0.33	-0.14	0.13	0.20	-0.07	-0.34
age-2			0.45	0.24	0.04	-0.05	0.03	-0.32	-0.07
age-3				0.54	0.14	0.01	0.06	-0.08	0.16
age-4					0.45	0.14	0.00	0.22	0.37
age-5						0.57	0.23	0.01	0.25
age-6							0.48	0.11	0.12
age-7								0.24	0.31
age-8									0.31
age-9									

-0.34

-0.07

0.20

0.13

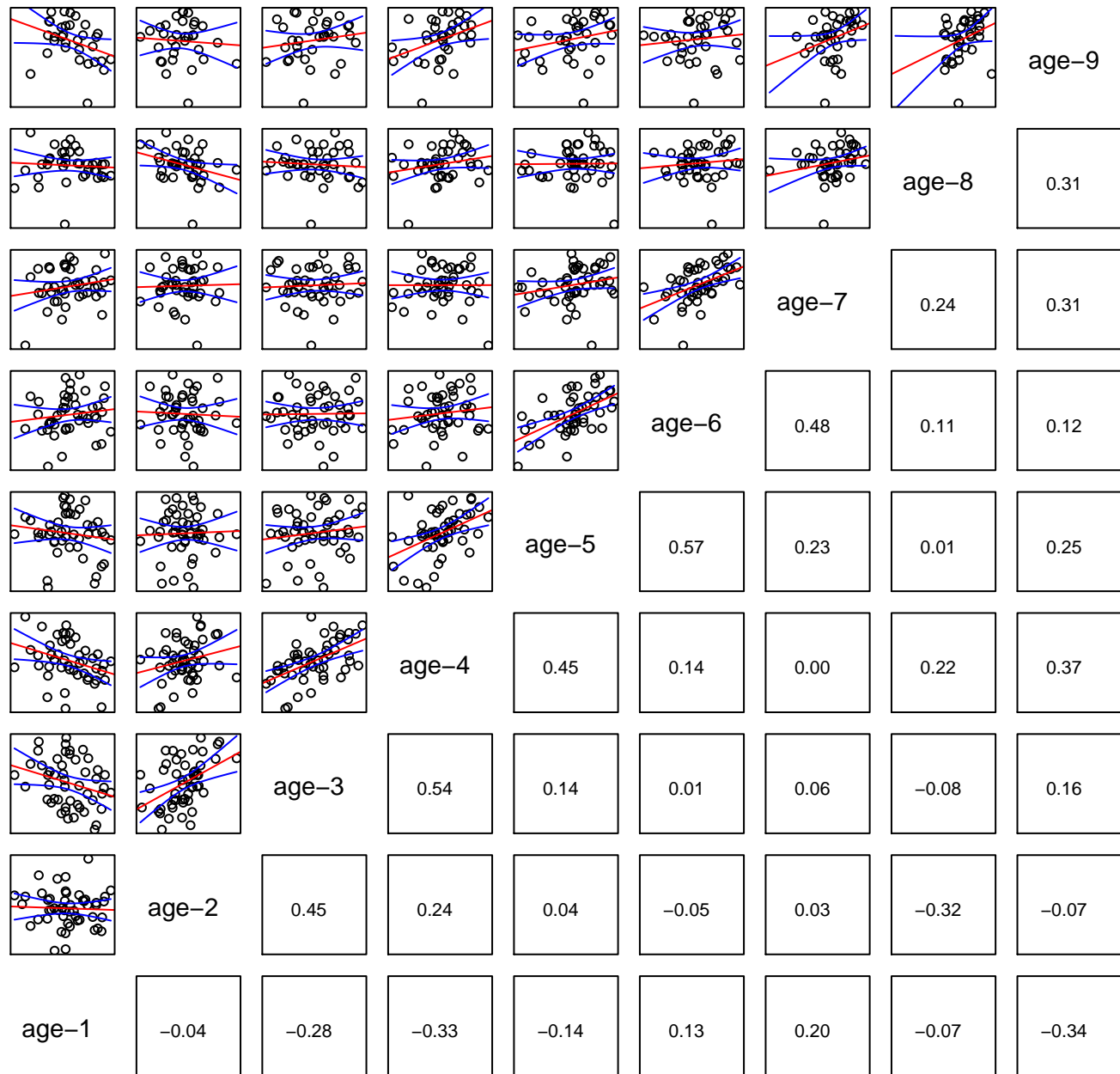
-0.14

-0.33

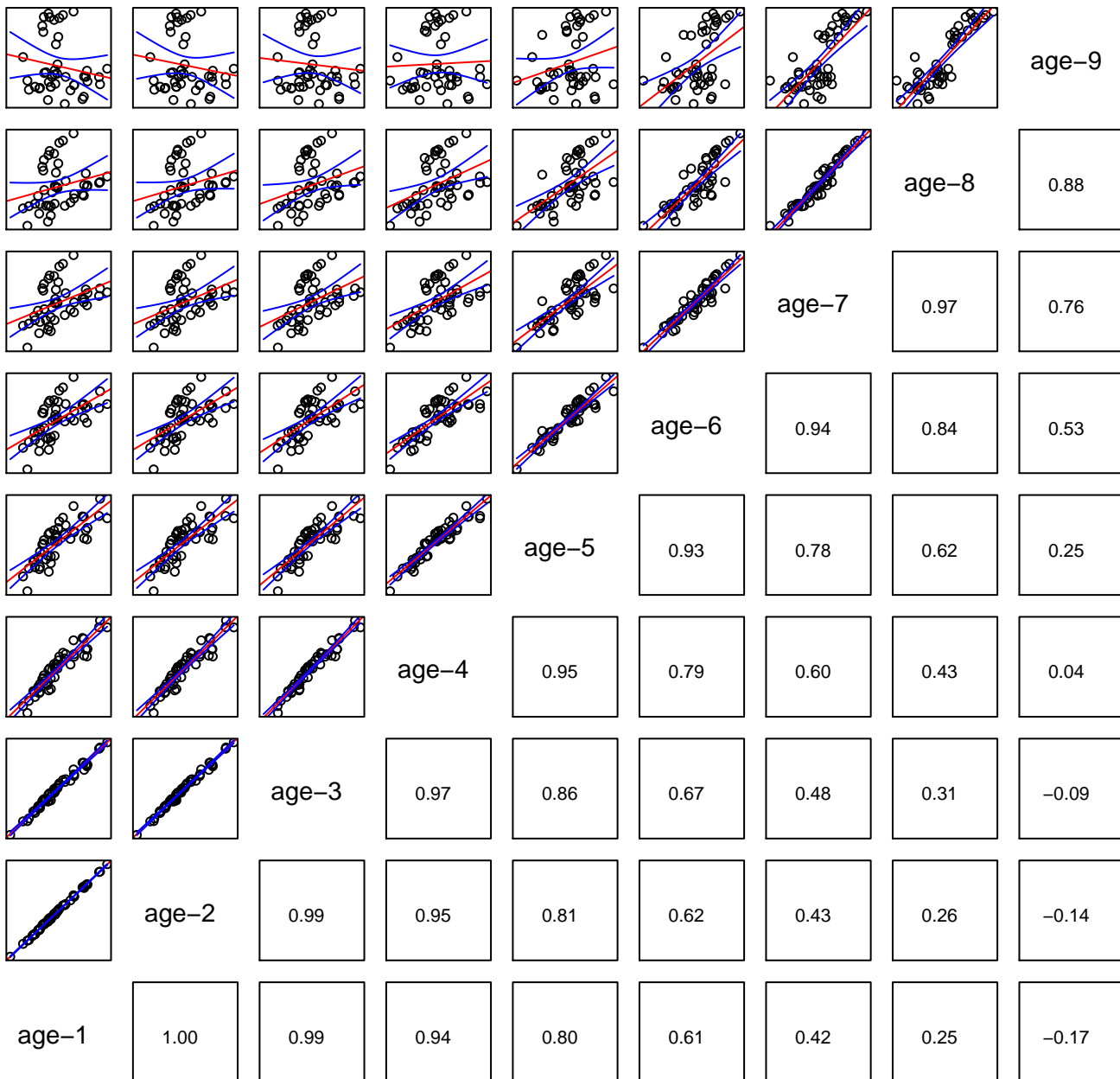
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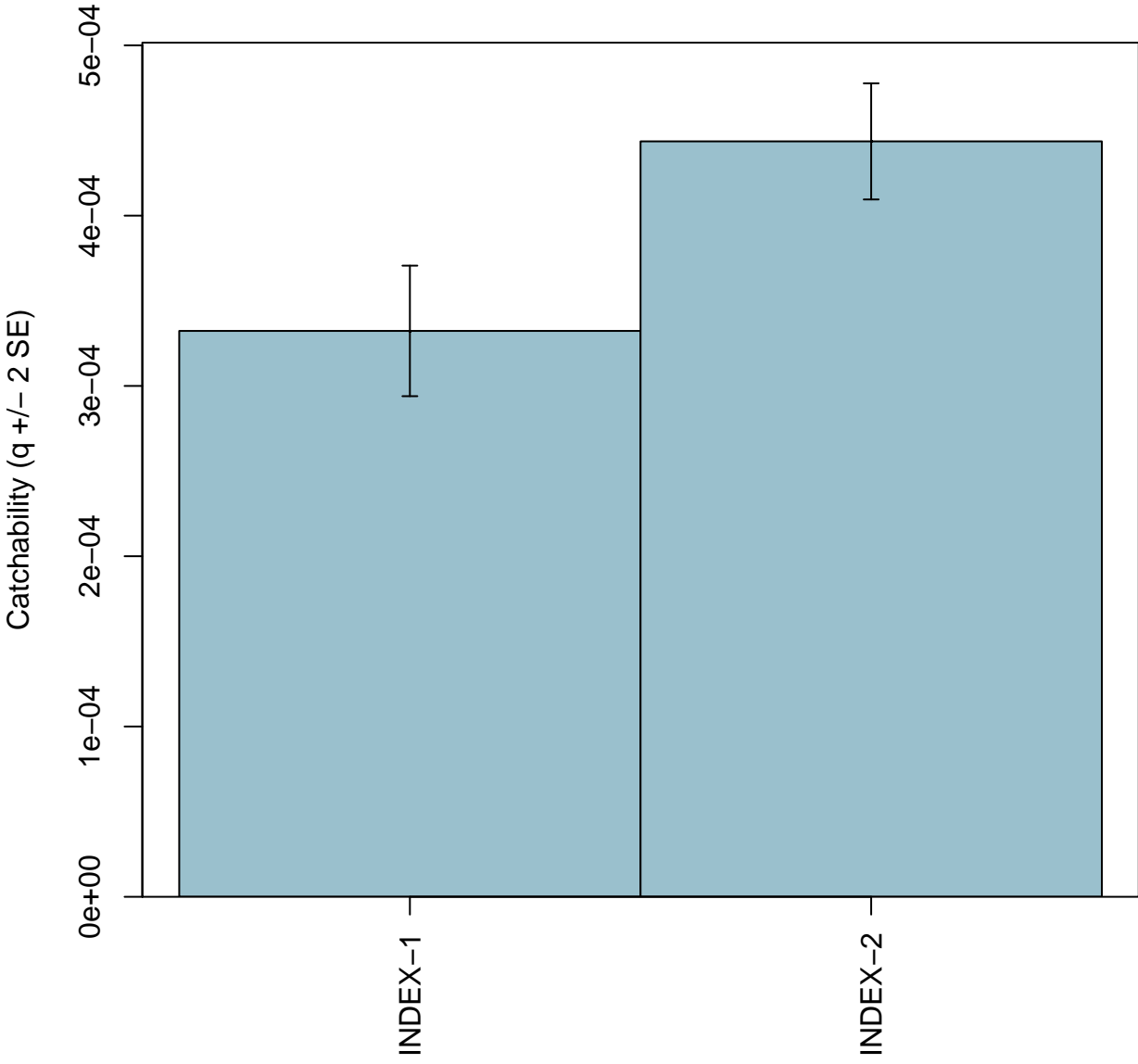
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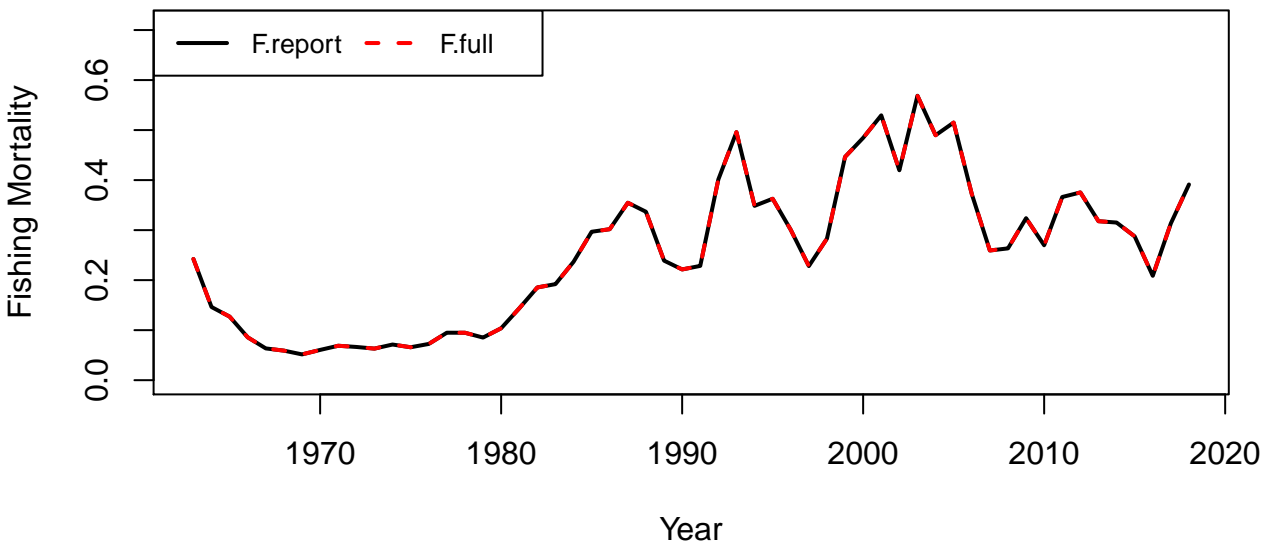
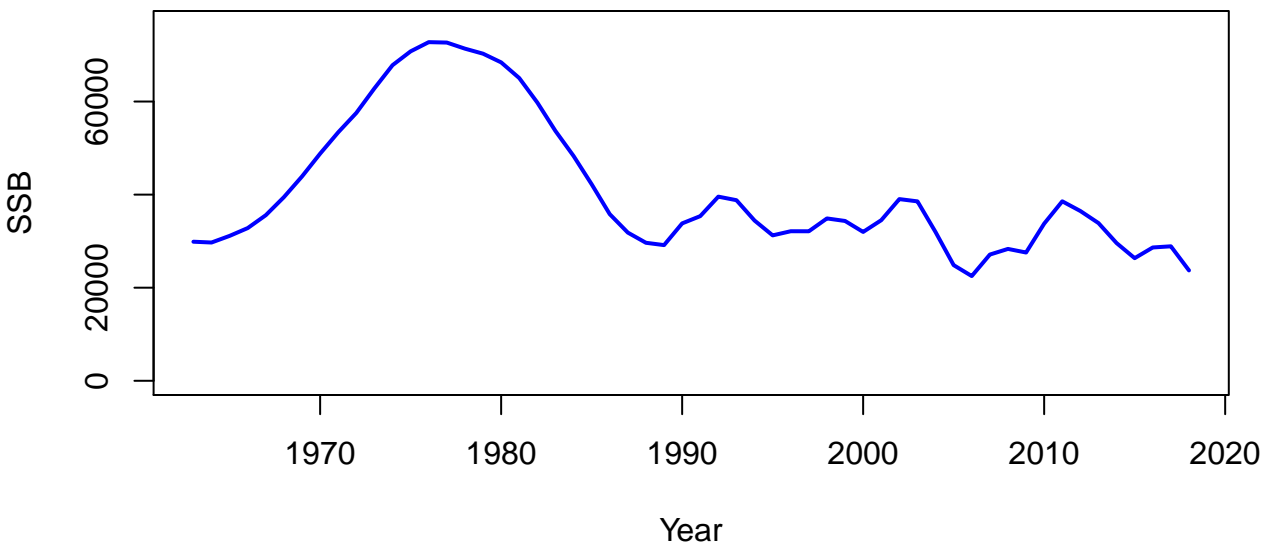
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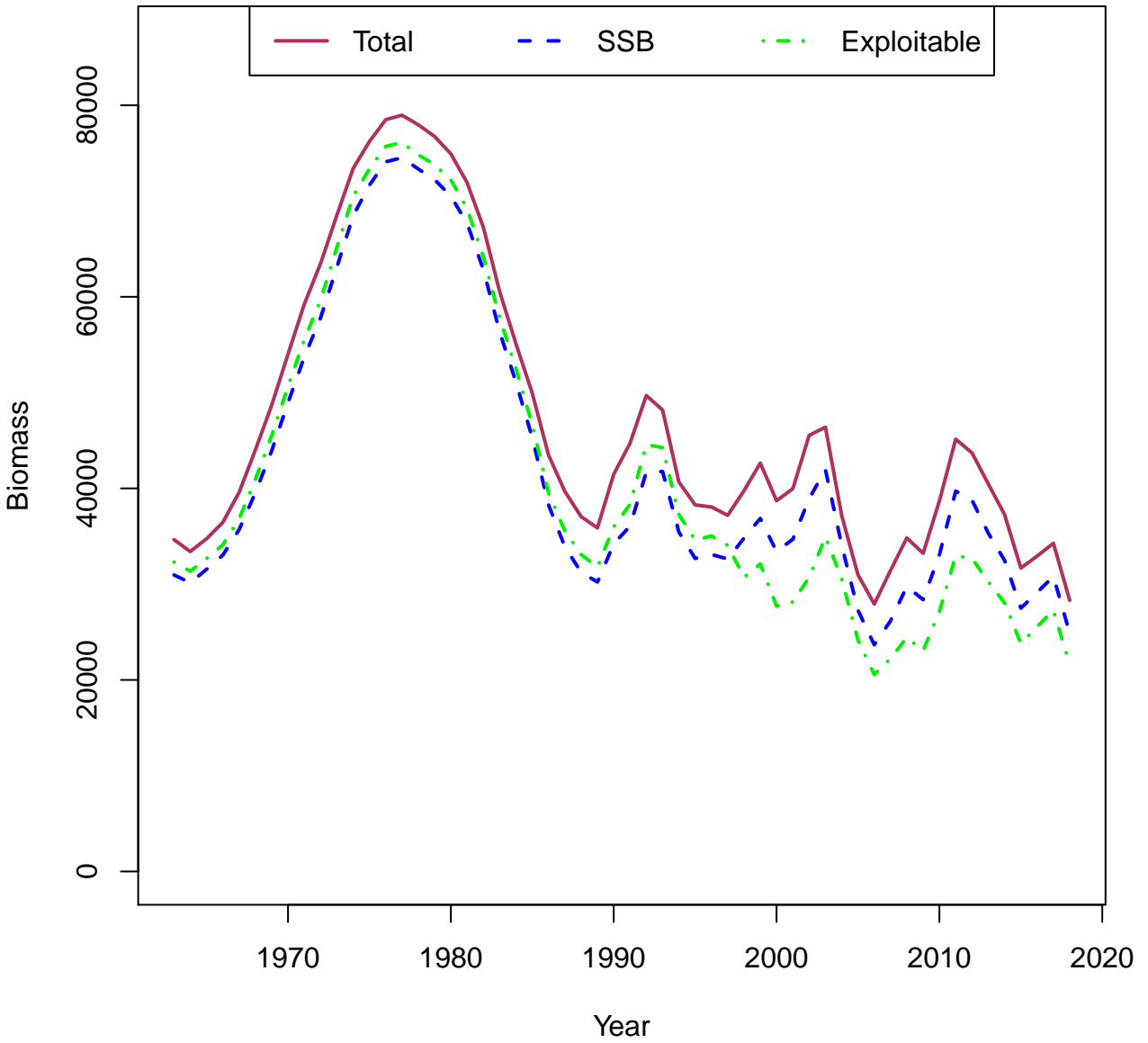
Index 1 (INDEX-1) Predicted

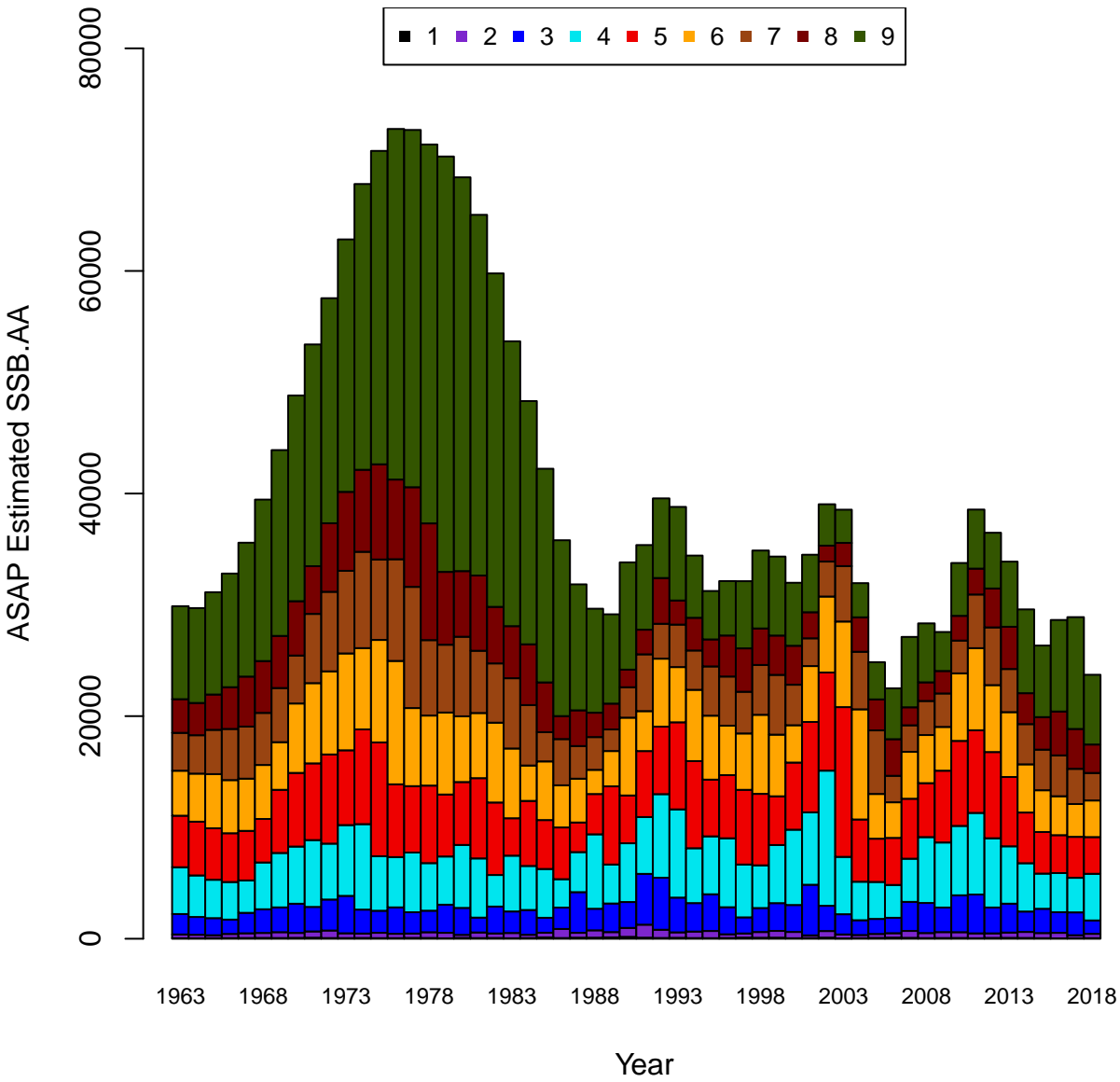


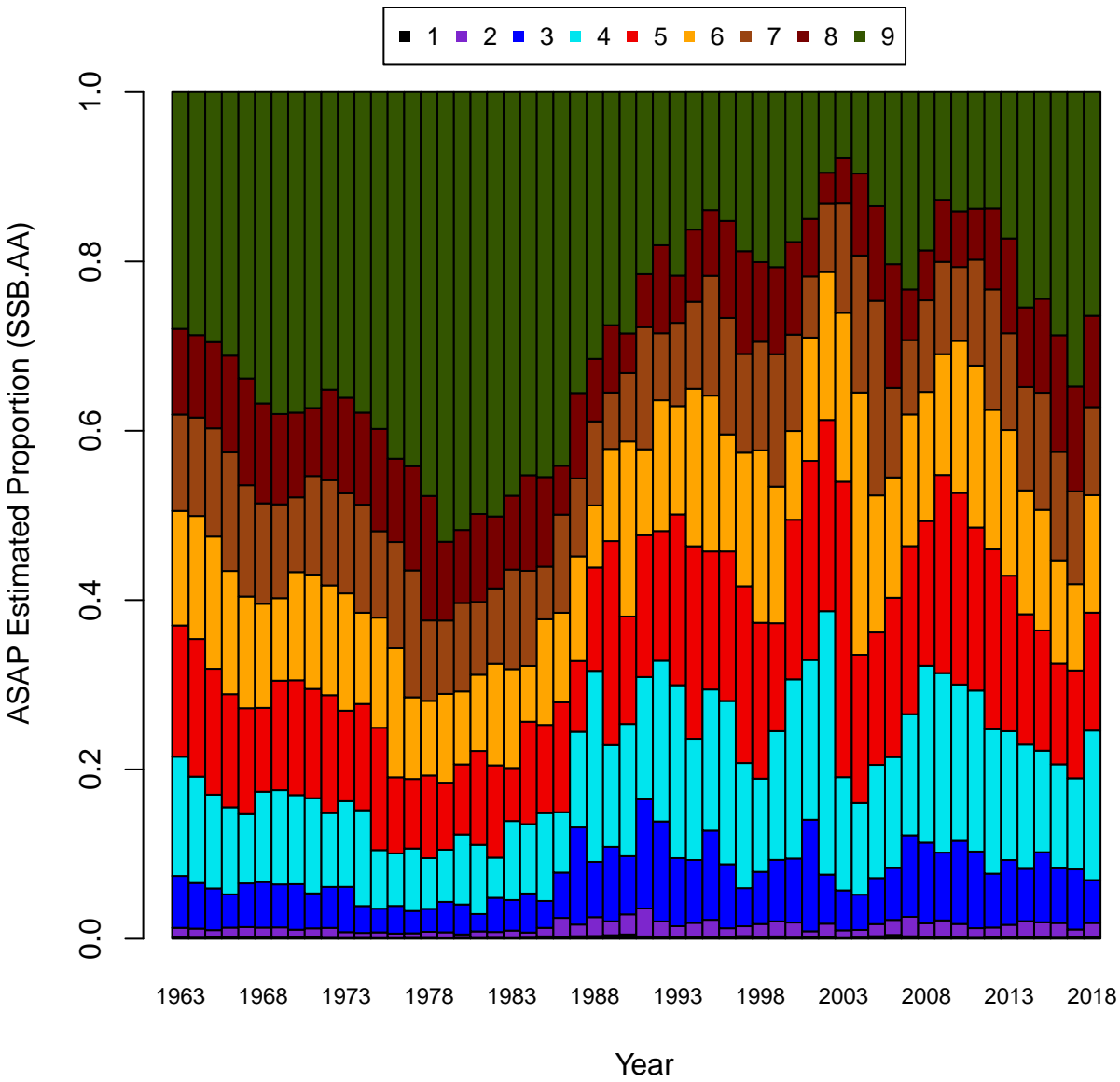


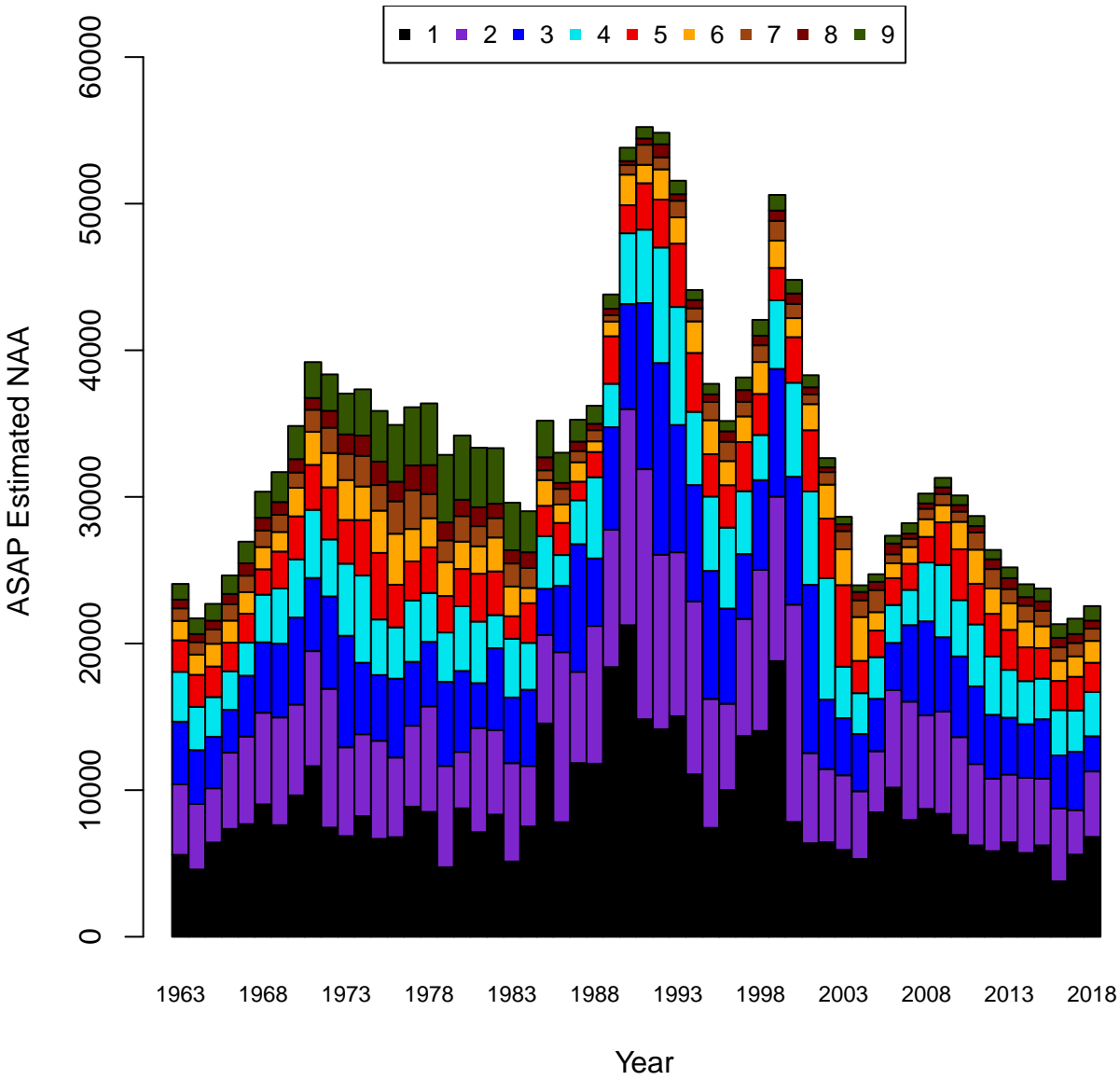


Comparison of January 1 Biomass

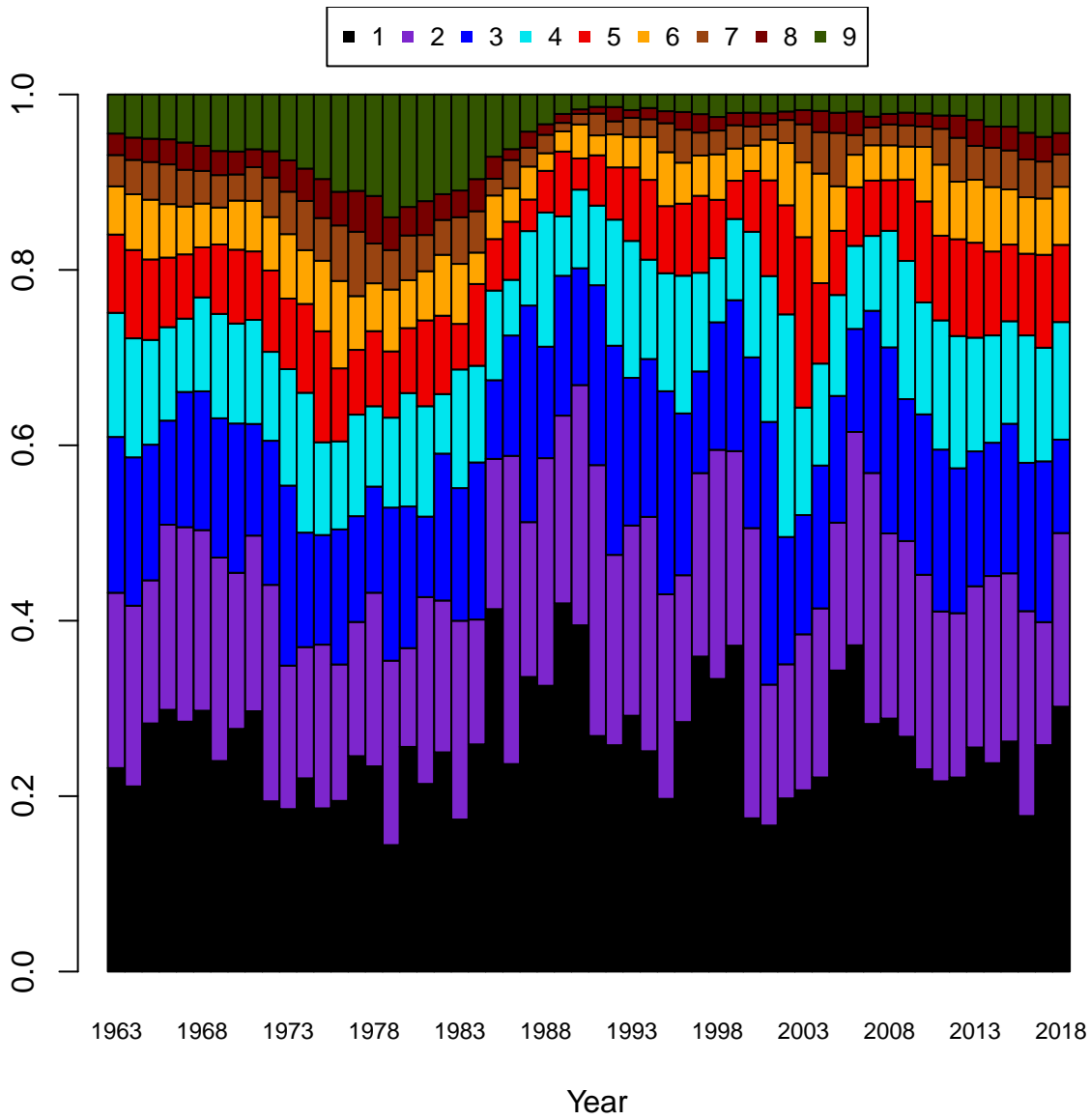


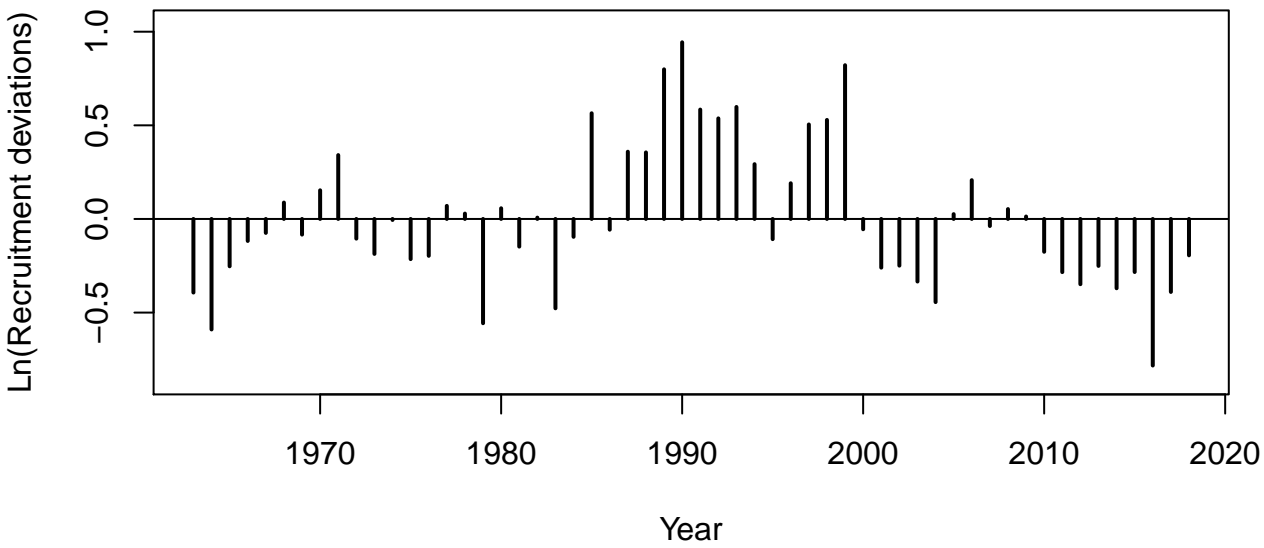
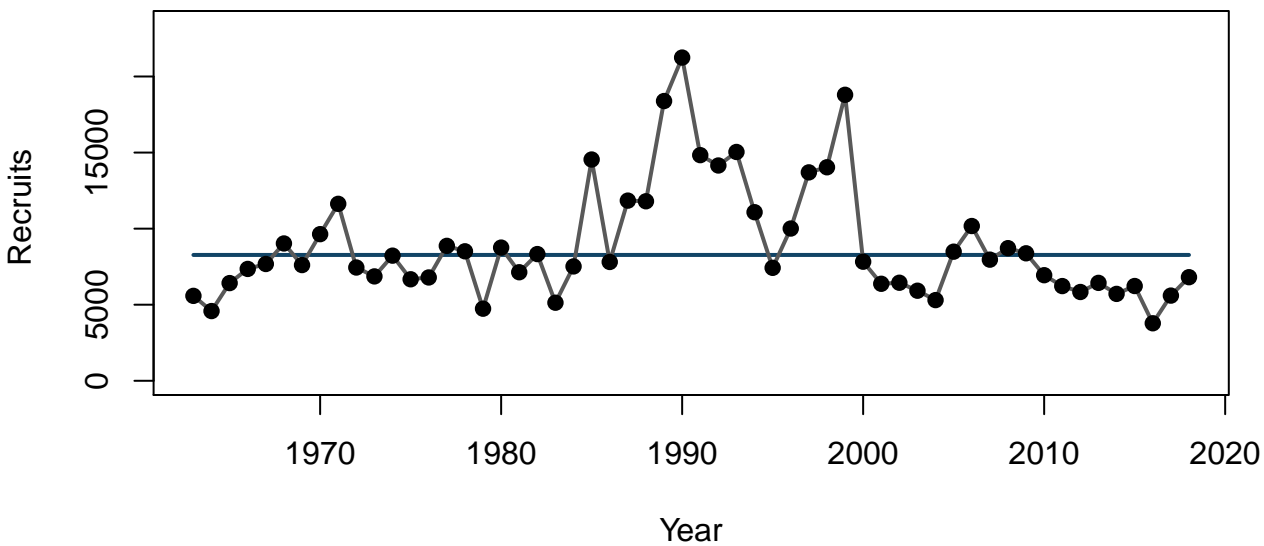


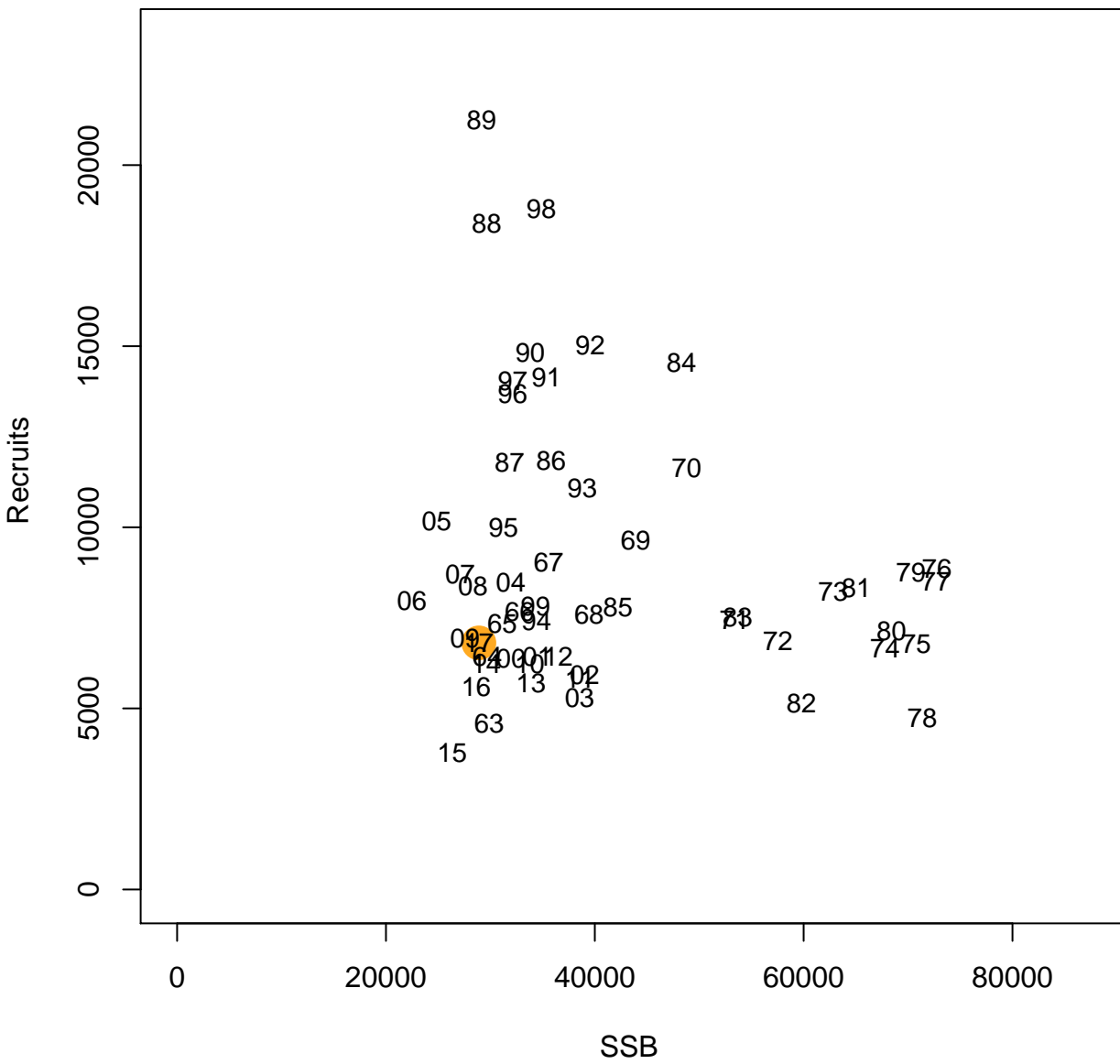


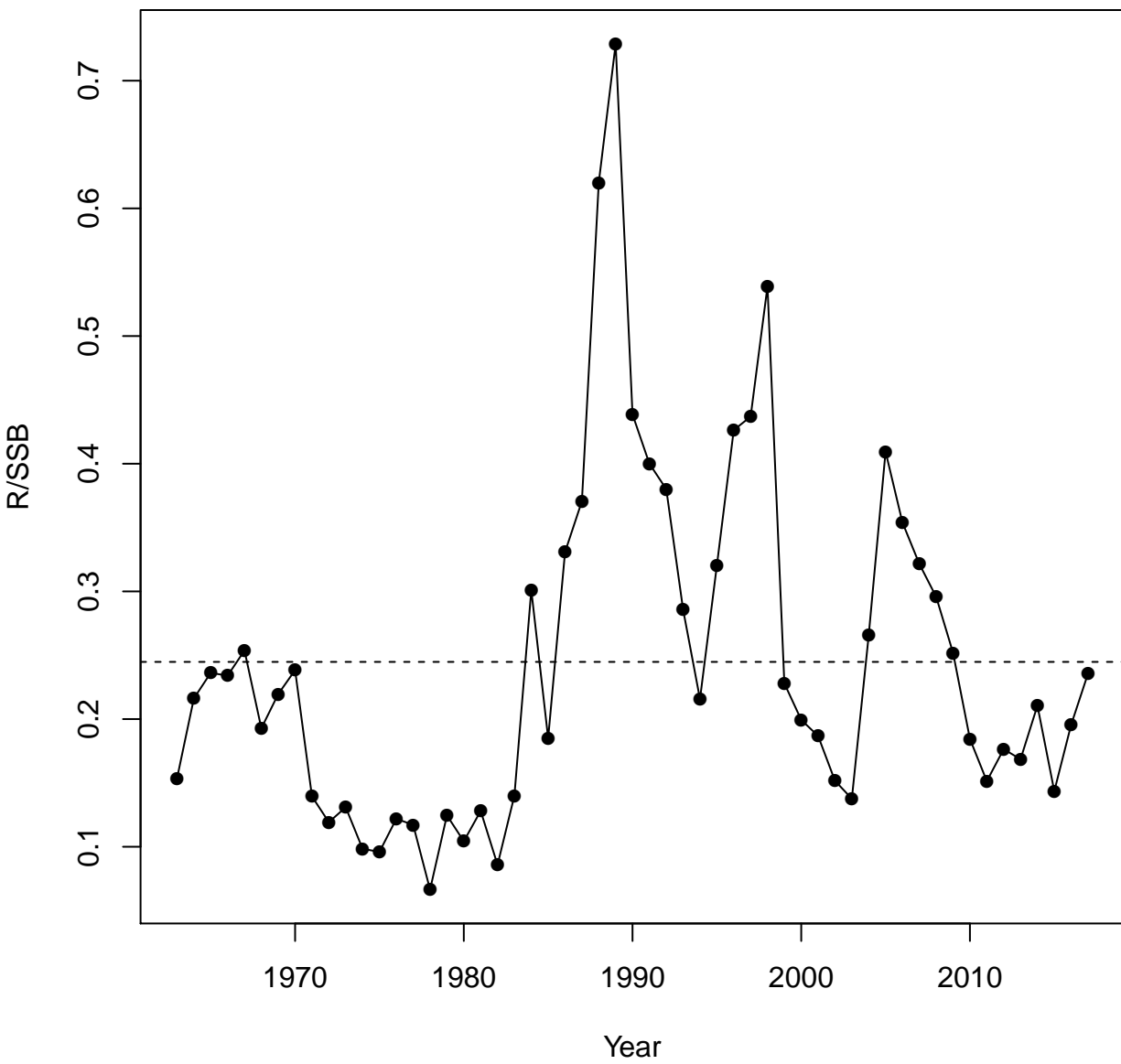


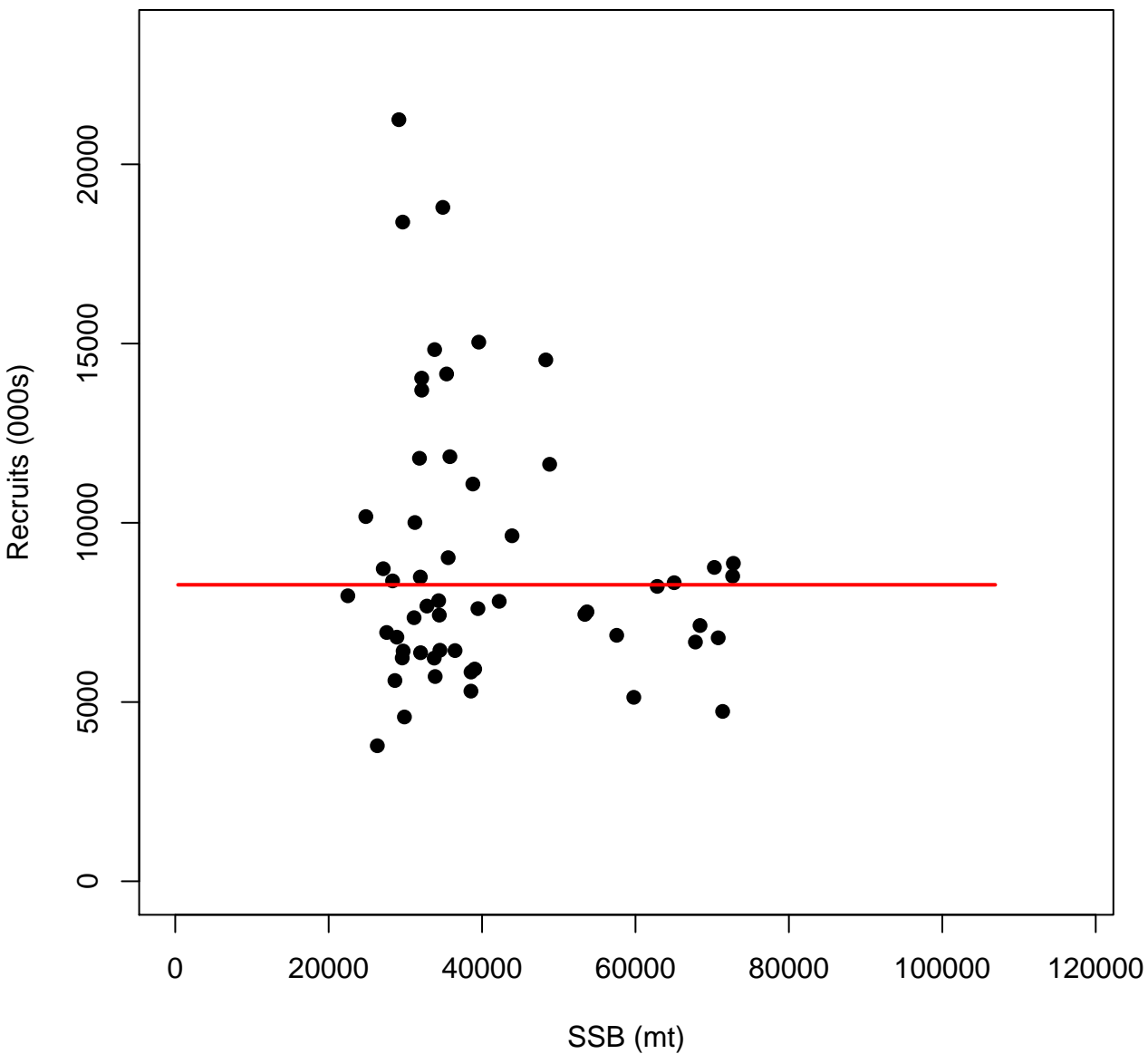
ASAP Estimated Proportion (NAA)

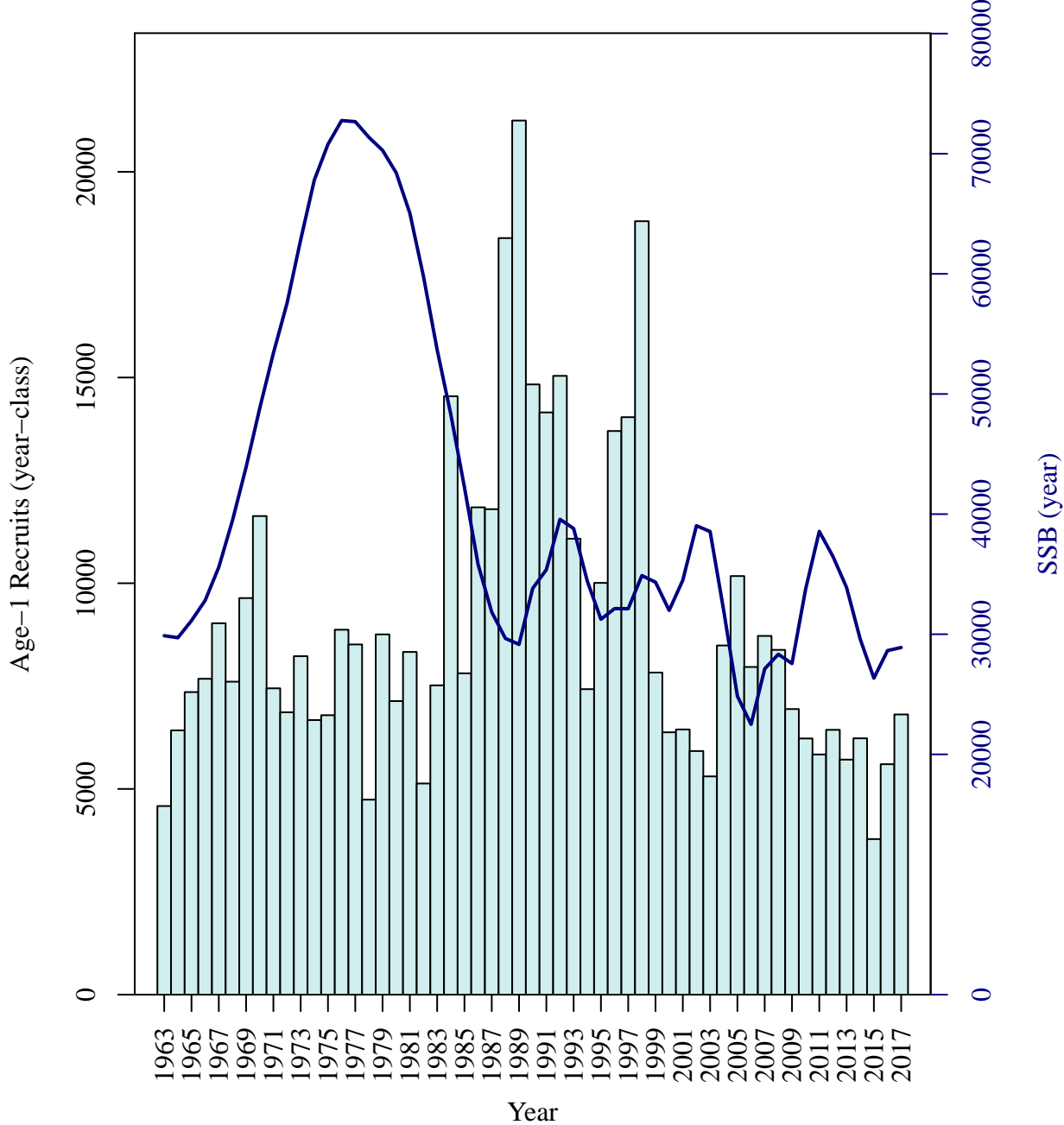




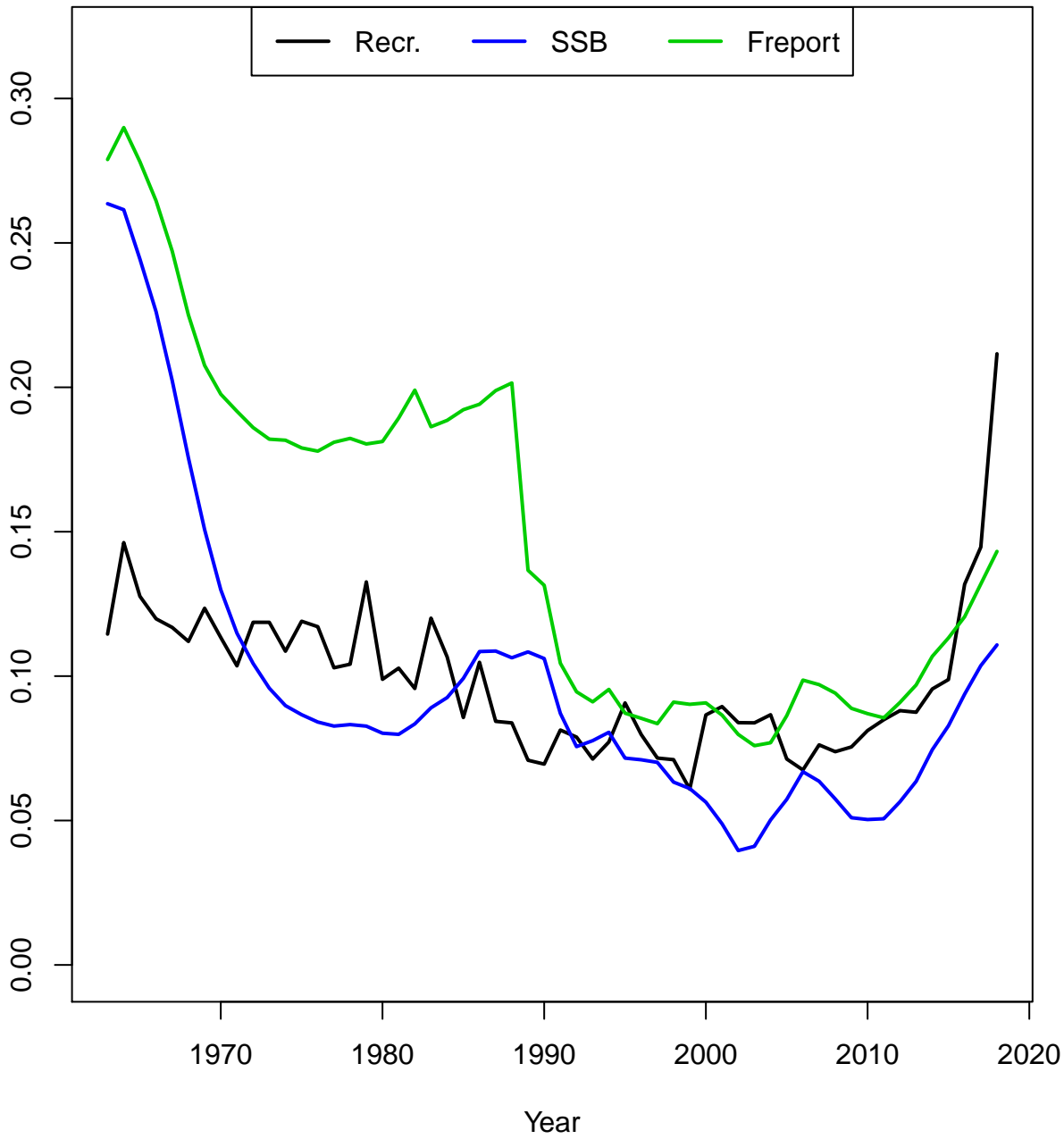




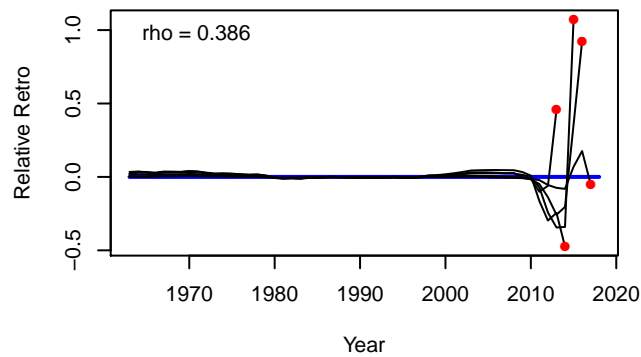
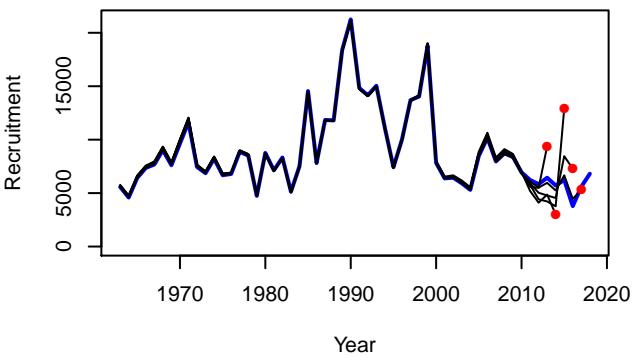
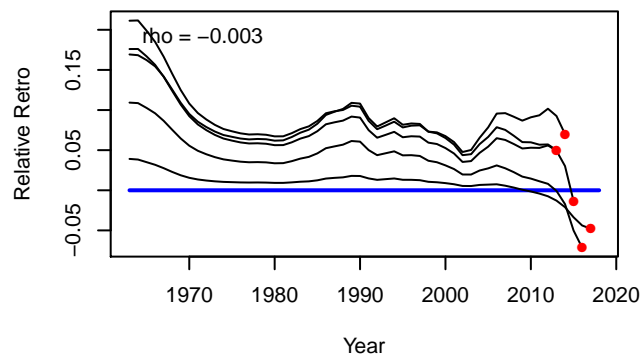
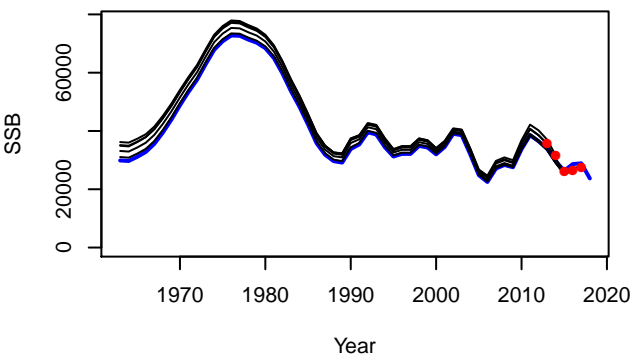
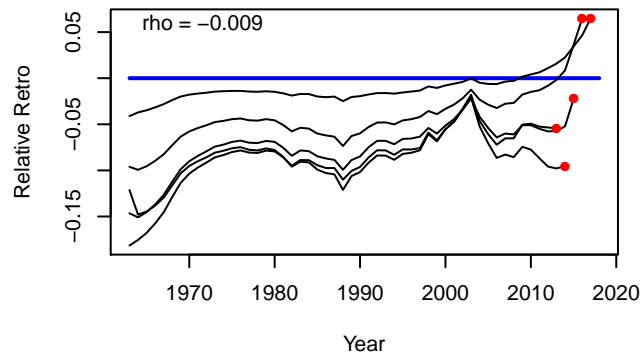
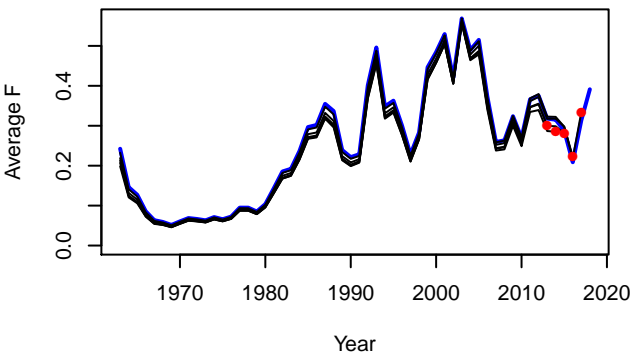




CV

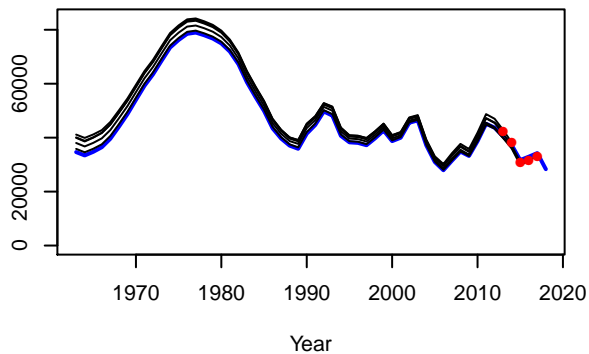


F, SSB, R

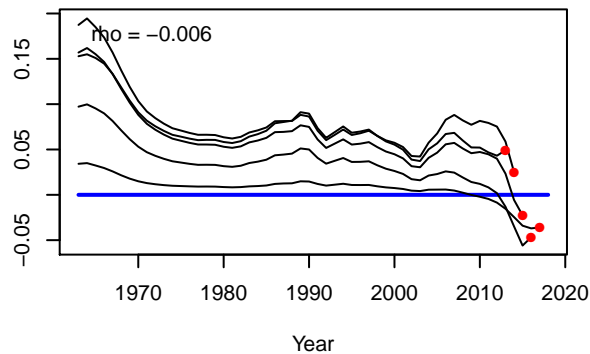


Jan-1 B, Exploitable B, Total Stock N

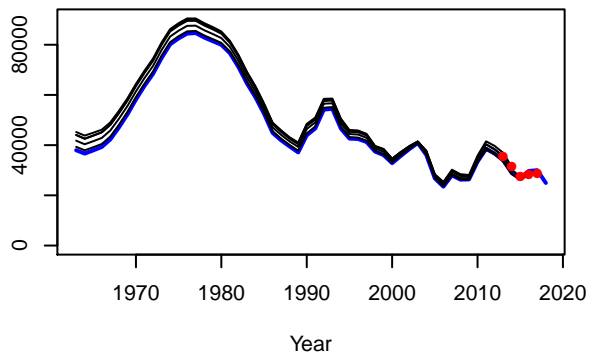
Jan-1 B



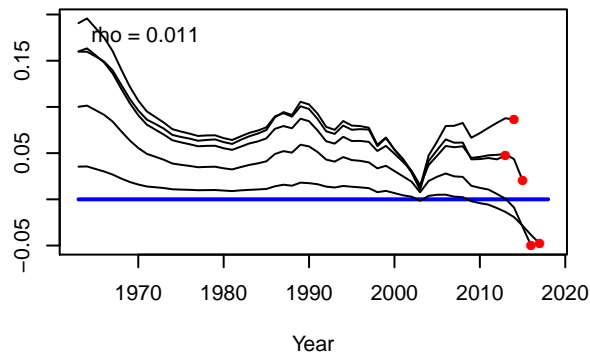
Relative Retro



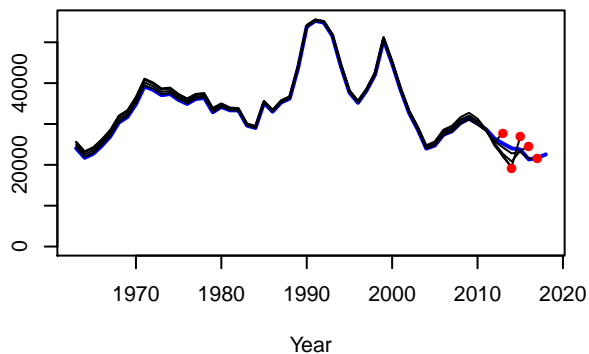
Exploitable B



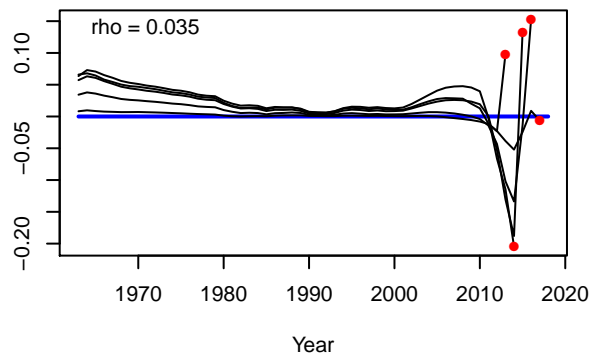
Relative Retro



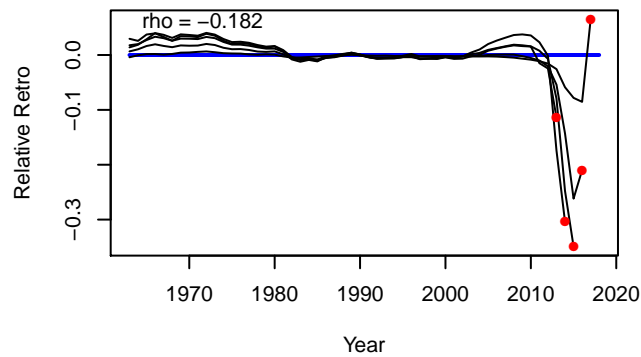
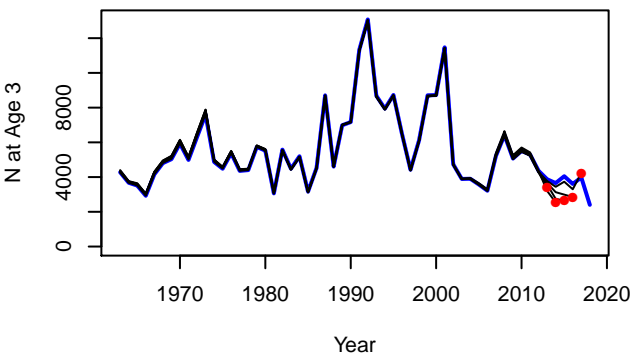
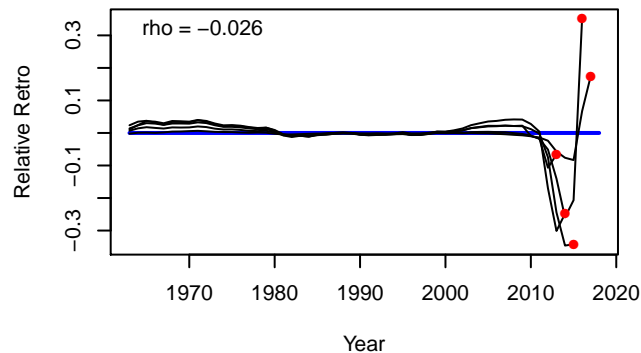
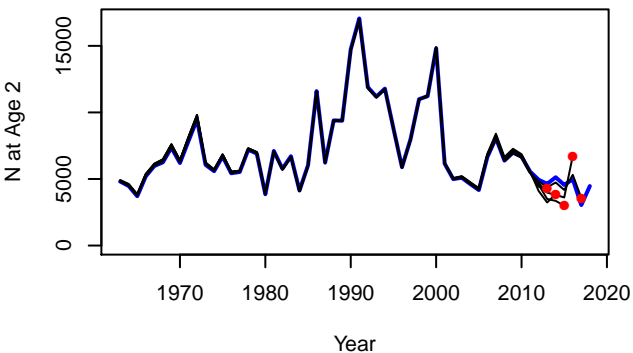
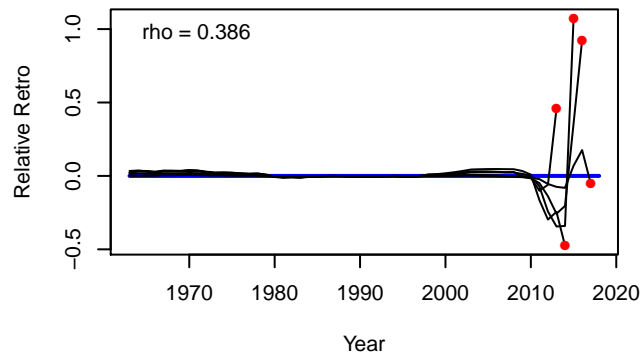
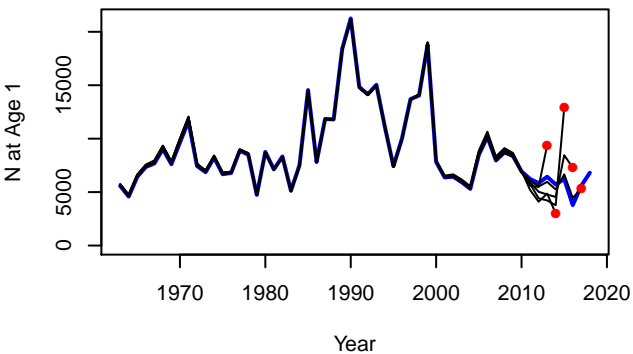
Total Stock N



Relative Retro

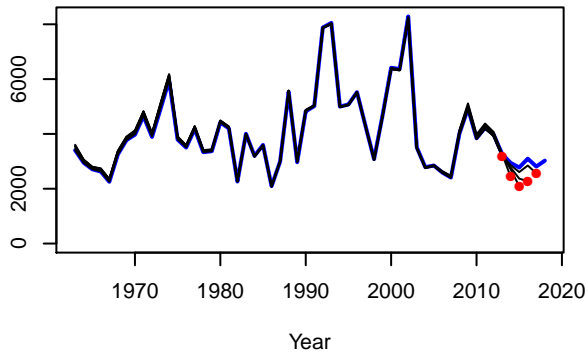


Stock Numbers at Age

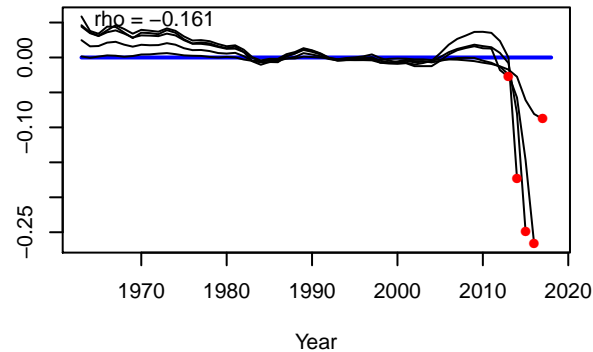


Stock Numbers at Age

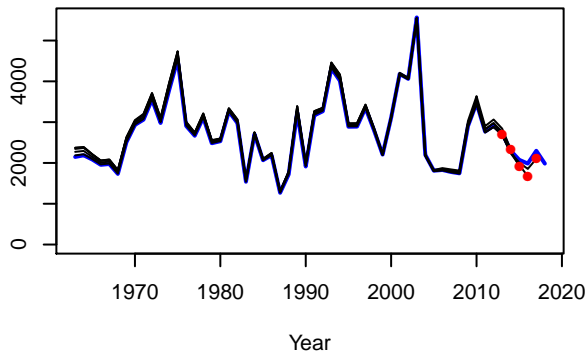
N at Age 4



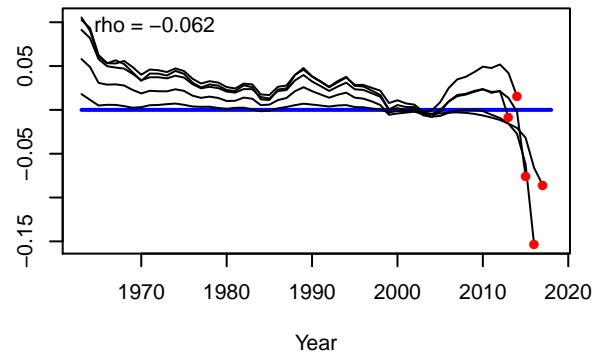
Relative Retro



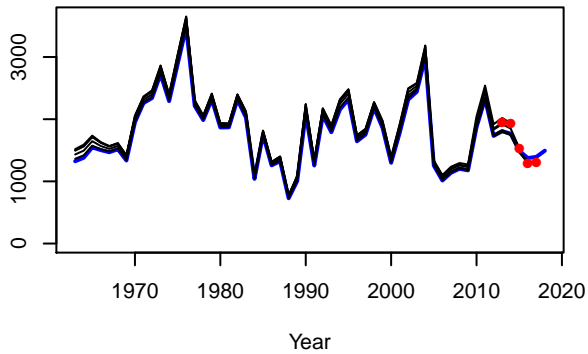
N at Age 5



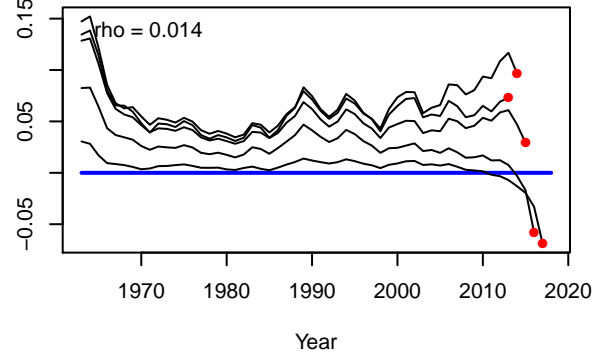
Relative Retro



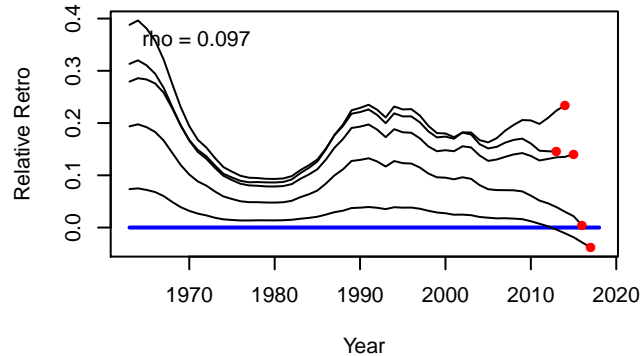
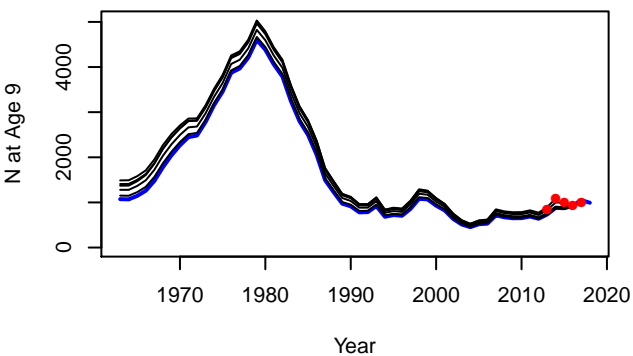
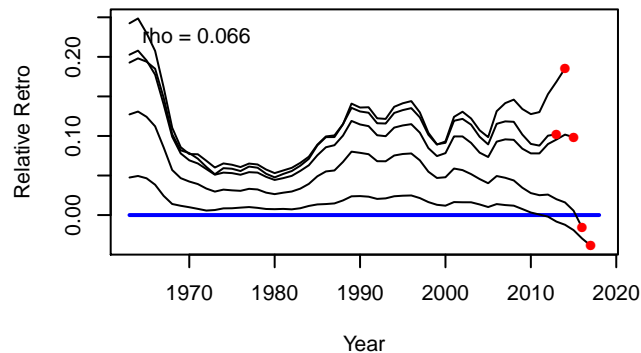
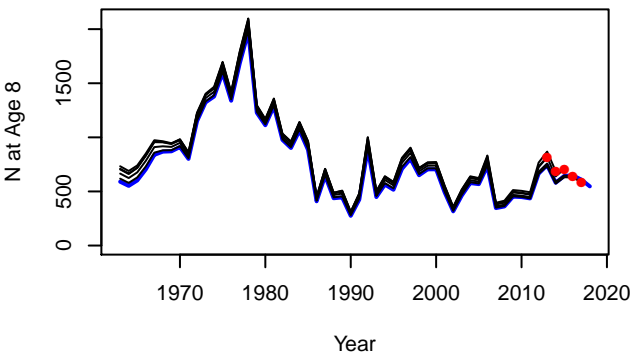
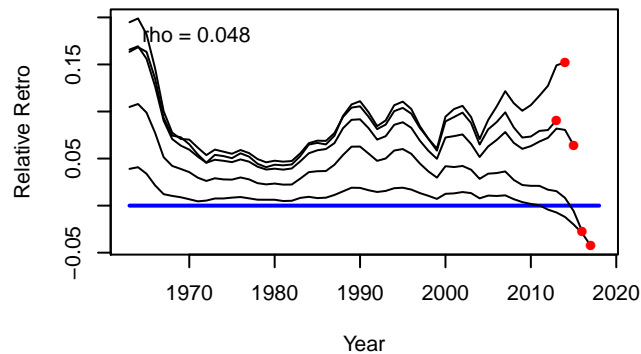
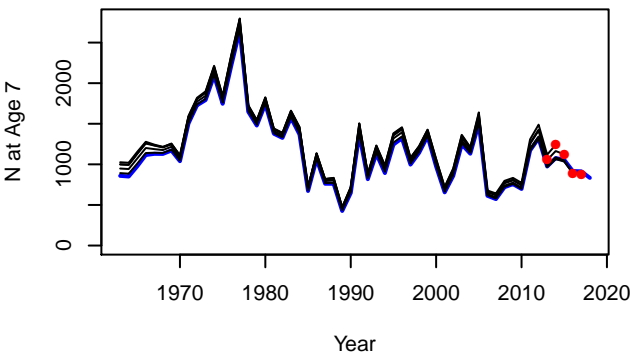
N at Age 6



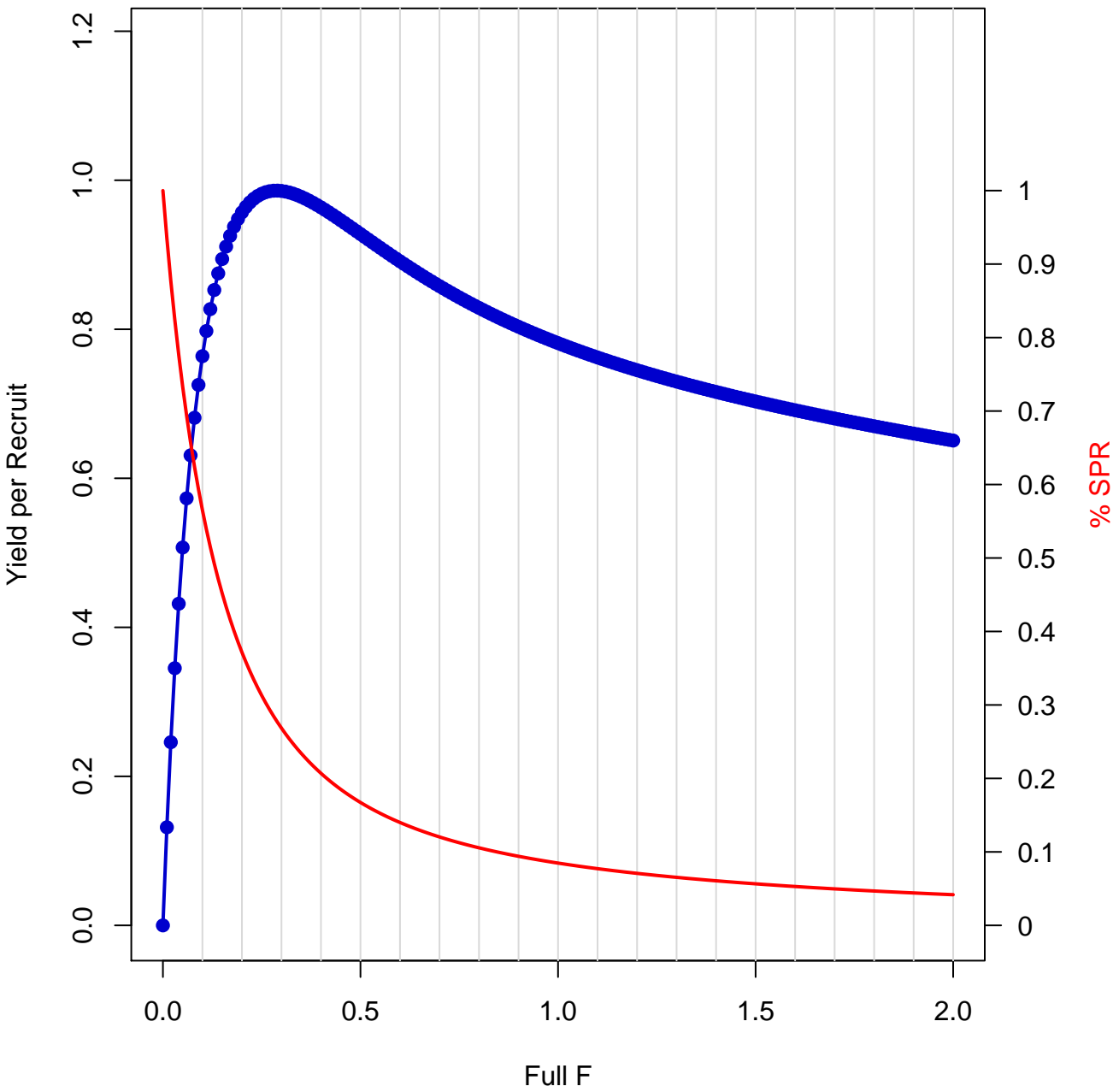
Relative Retro



Stock Numbers at Age



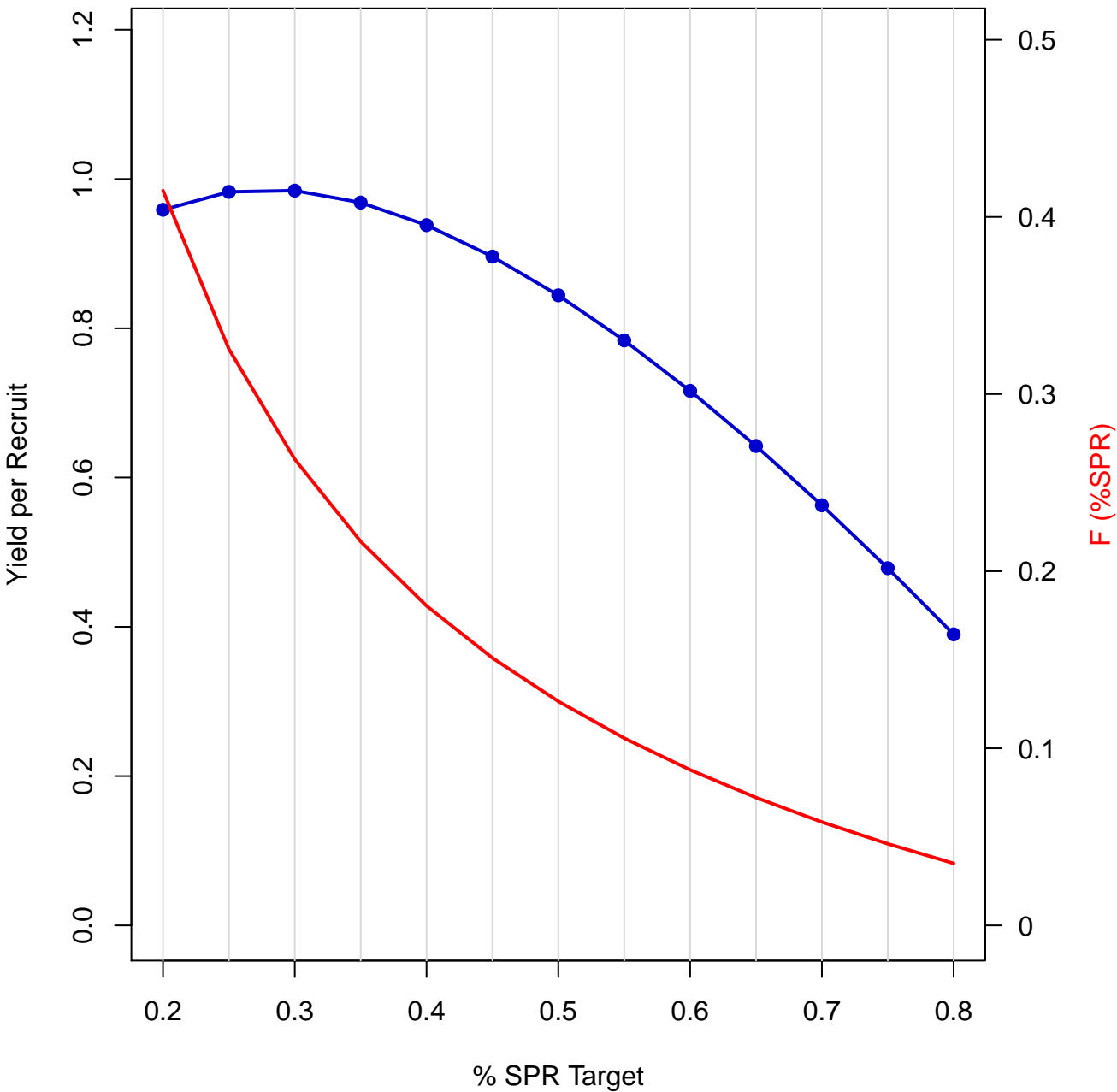
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.9778	0.2341	0.7	0.8579	0.1204
0.01	0.1317	0.9353	0.36	0.9753	0.2282	0.71	0.8548	0.1187
0.02	0.2459	0.8771	0.37	0.9727	0.2225	0.72	0.8518	0.1171
0.03	0.3452	0.8245	0.38	0.9698	0.2171	0.73	0.8487	0.1155
0.04	0.4317	0.7768	0.39	0.9668	0.2119	0.74	0.8457	0.114
0.05	0.5072	0.7334	0.4	0.9636	0.207	0.75	0.8428	0.1125
0.06	0.5731	0.6937	0.41	0.9603	0.2022	0.76	0.8399	0.111
0.07	0.6308	0.6575	0.42	0.957	0.1977	0.77	0.8371	0.1096
0.08	0.6812	0.6241	0.43	0.9535	0.1933	0.78	0.8342	0.1082
0.09	0.7254	0.5935	0.44	0.9499	0.1892	0.79	0.8315	0.1069
0.1	0.764	0.5652	0.45	0.9463	0.1851	0.8	0.8287	0.1056
0.11	0.7977	0.539	0.46	0.9427	0.1813	0.81	0.826	0.1043
0.12	0.8271	0.5148	0.47	0.939	0.1776	0.82	0.8234	0.103
0.13	0.8527	0.4923	0.48	0.9353	0.174	0.83	0.8207	0.1018
0.14	0.875	0.4714	0.49	0.9316	0.1706	0.84	0.8182	0.1006
0.15	0.8943	0.4518	0.5	0.9279	0.1673	0.85	0.8156	0.0995
0.16	0.911	0.4336	0.51	0.9242	0.1641	0.86	0.8131	0.0983
0.17	0.9254	0.4166	0.52	0.9204	0.161	0.87	0.8106	0.0972
0.18	0.9377	0.4007	0.53	0.9167	0.1581	0.88	0.8082	0.0961
0.19	0.9481	0.3857	0.54	0.913	0.1552	0.89	0.8058	0.0951
0.2	0.9569	0.3717	0.55	0.9093	0.1525	0.9	0.8034	0.094
0.21	0.9642	0.3585	0.56	0.9057	0.1498	0.91	0.8011	0.093
0.22	0.9703	0.3461	0.57	0.902	0.1472	0.92	0.7988	0.092
0.23	0.9751	0.3344	0.58	0.8984	0.1448	0.93	0.7965	0.091
0.24	0.9789	0.3233	0.59	0.8948	0.1424	0.94	0.7943	0.0901
0.25	0.9819	0.3129	0.6	0.8913	0.14	0.95	0.792	0.0892
0.26	0.9839	0.303	0.61	0.8878	0.1378	0.96	0.7899	0.0882
0.27	0.9853	0.2937	0.62	0.8843	0.1356	0.97	0.7877	0.0874
0.28	0.986	0.2849	0.63	0.8809	0.1335	0.98	0.7856	0.0865
0.29	0.9861	0.2765	0.64	0.8775	0.1314	0.99	0.7835	0.0856
0.3	0.9857	0.2685	0.65	0.8741	0.1295	1	0.7814	0.0848
0.31	0.9848	0.2609	0.66	0.8708	0.1275	1.01	0.7794	0.084
0.32	0.9836	0.2537	0.67	0.8675	0.1257	1.02	0.7774	0.0831
0.33	0.982	0.2469	0.68	0.8643	0.1238	1.03	0.7754	0.0823
0.34	0.98	0.2404	0.69	0.8611	0.1221	1.04	0.7734	0.0816

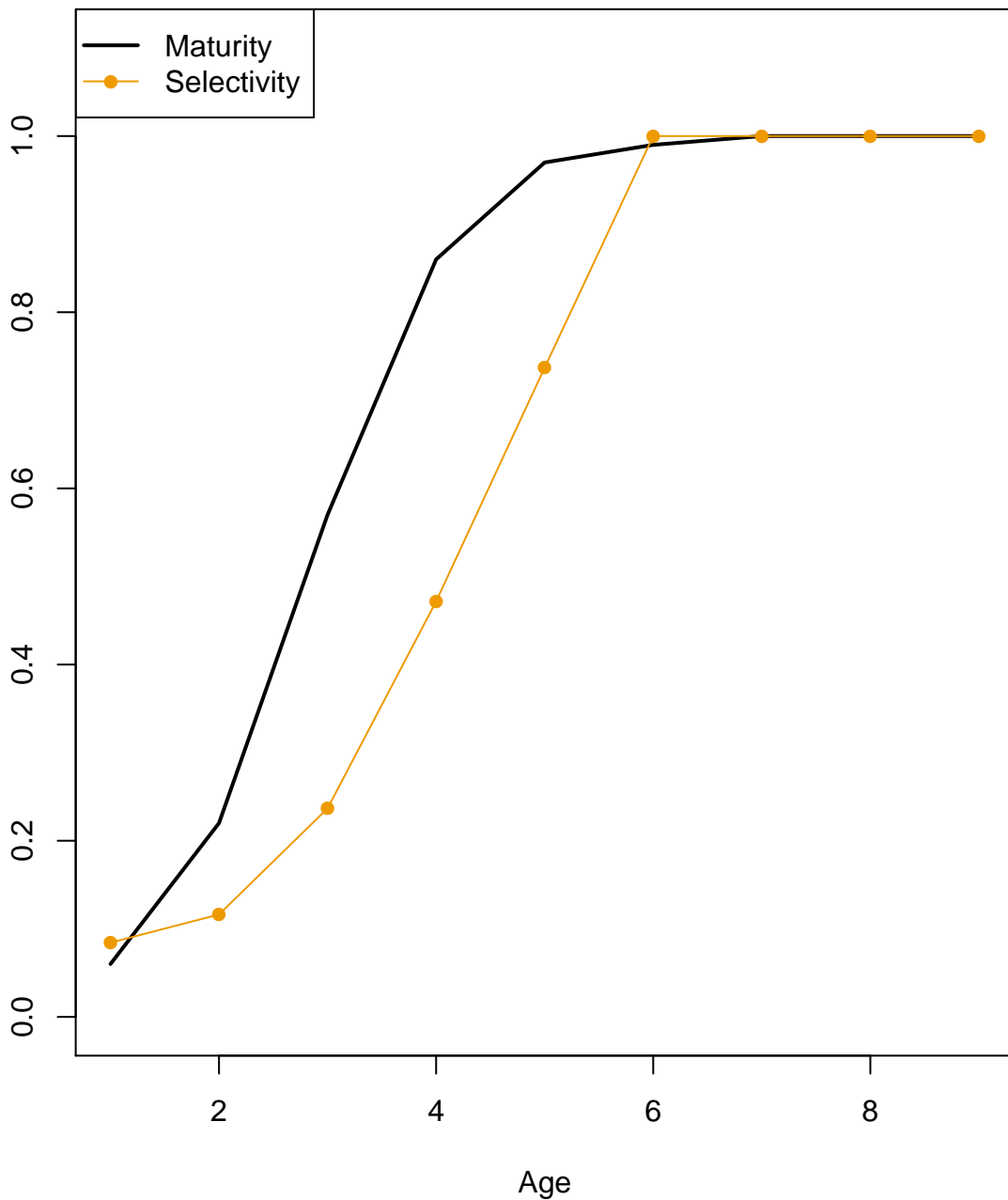
SPR Target Reference Points (Years Avg = 5)



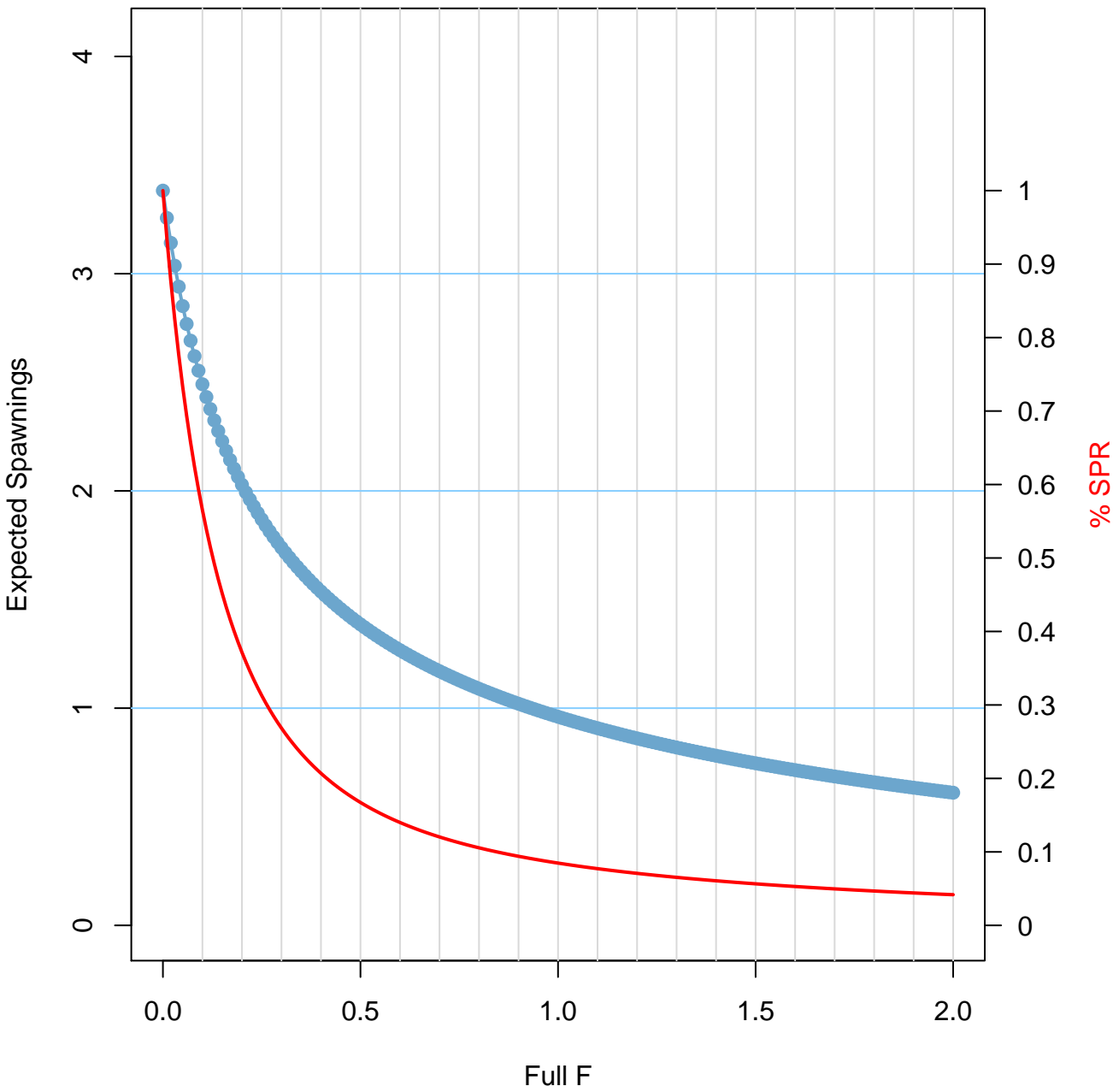
SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	0.4149	0.9587
0.25	0.3254	0.9827
0.3	0.2632	0.9844
0.35	0.2168	0.9684
0.4	0.1804	0.9382
0.45	0.151	0.8961
0.5	0.1265	0.8441
0.55	0.1057	0.7838
0.6	0.0878	0.7162
0.65	0.0722	0.6423
0.7	0.0584	0.5629
0.75	0.0461	0.4786
0.8	0.035	0.39

Selectivity or Maturity at age



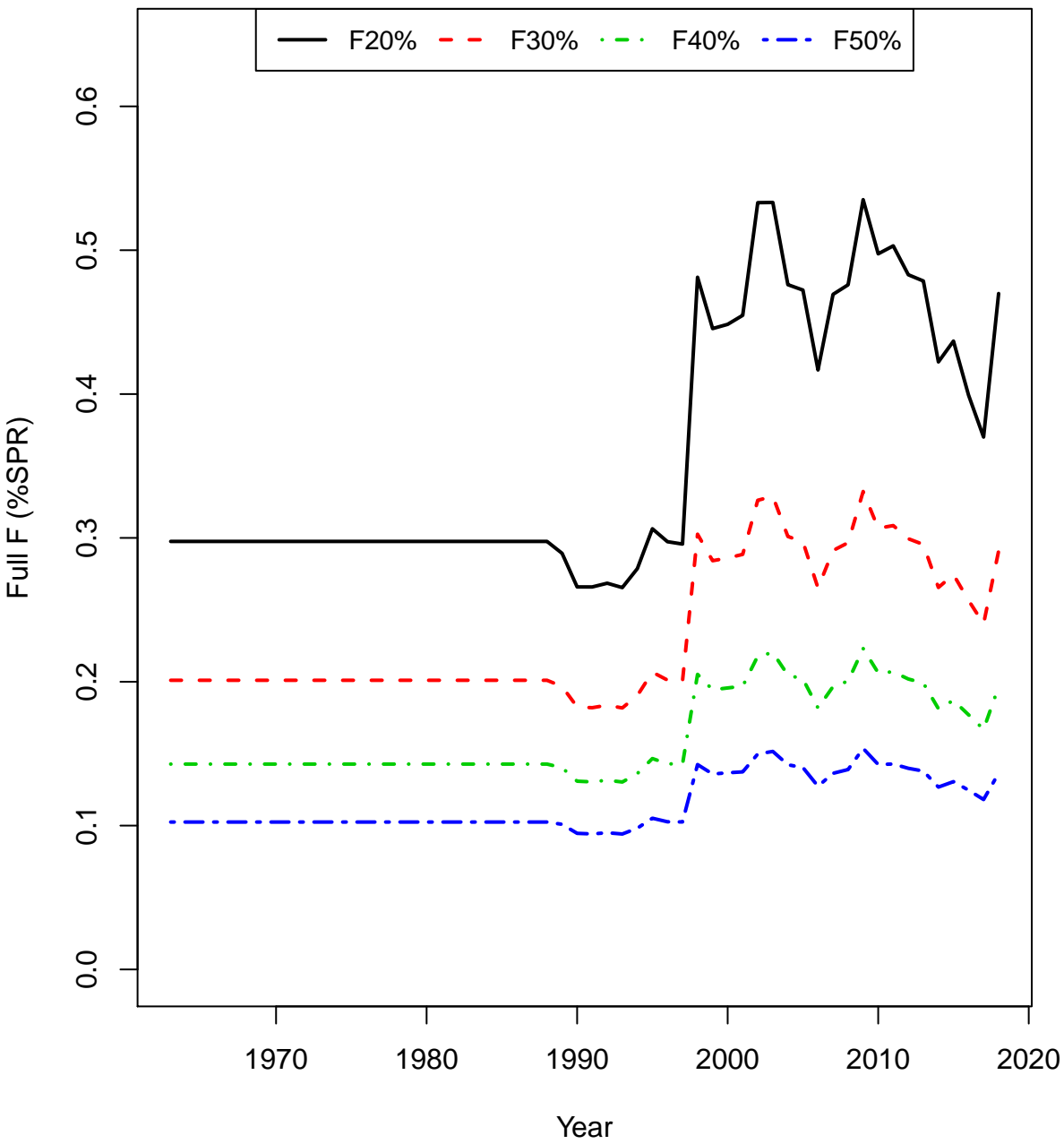
Expected Spawnings and SPR Reference Points (Years Avg = 5)



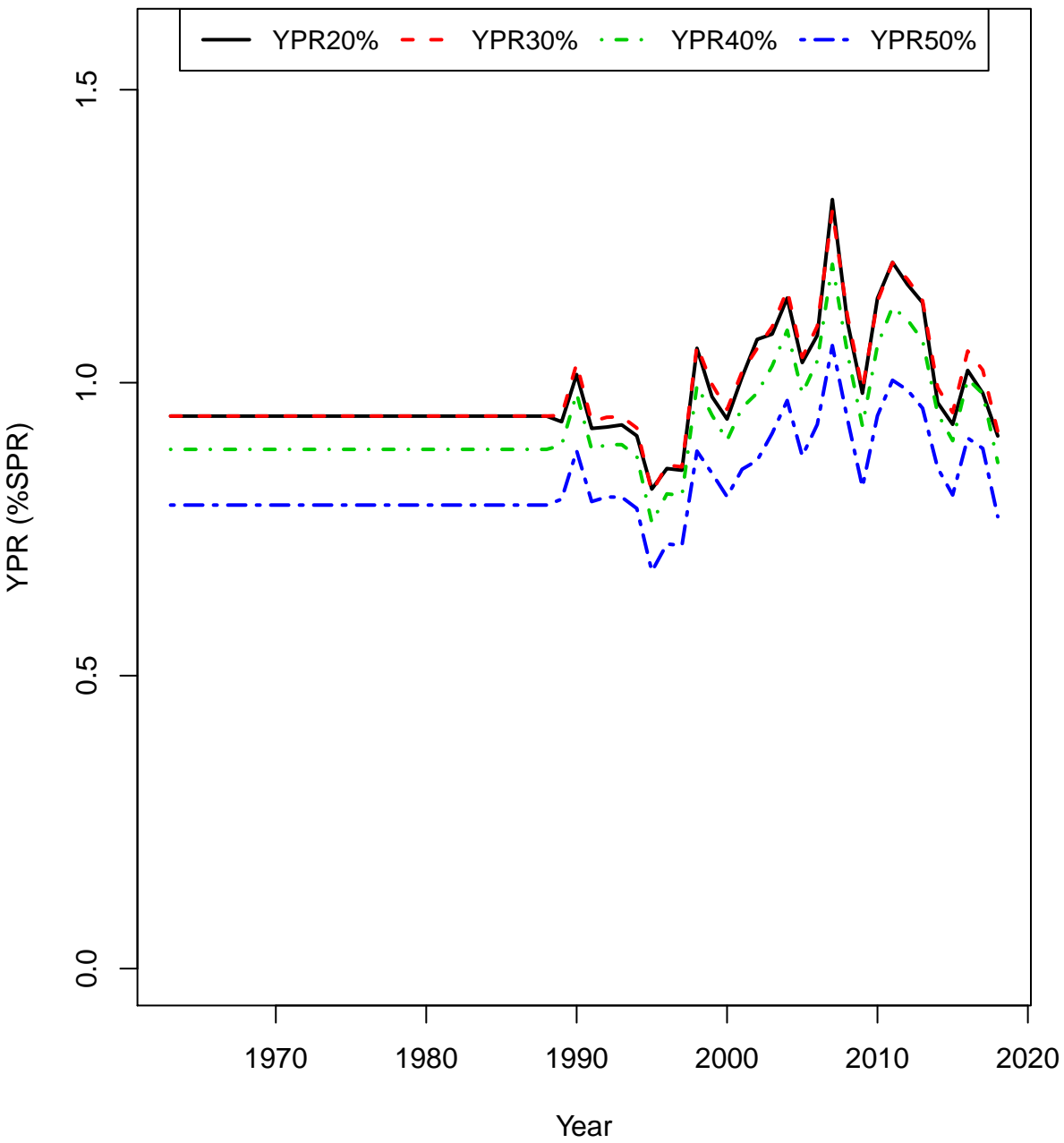
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	3.3824	1	0.35	1.6298	0.2341	0.7	1.1703	0.1204
0.01	3.2566	0.9353	0.36	1.6101	0.2282	0.71	1.1616	0.1187
0.02	3.1419	0.8771	0.37	1.591	0.2225	0.72	1.153	0.1171
0.03	3.0368	0.8245	0.38	1.5724	0.2171	0.73	1.1446	0.1155
0.04	2.9402	0.7768	0.39	1.5544	0.2119	0.74	1.1363	0.114
0.05	2.8511	0.7334	0.4	1.5369	0.207	0.75	1.1282	0.1125
0.06	2.7685	0.6937	0.41	1.5199	0.2022	0.76	1.1202	0.111
0.07	2.6918	0.6575	0.42	1.5033	0.1977	0.77	1.1123	0.1096
0.08	2.6203	0.6241	0.43	1.4873	0.1933	0.78	1.1045	0.1082
0.09	2.5535	0.5935	0.44	1.4716	0.1892	0.79	1.0969	0.1069
0.1	2.4909	0.5652	0.45	1.4564	0.1851	0.8	1.0894	0.1056
0.11	2.4322	0.539	0.46	1.4415	0.1813	0.81	1.082	0.1043
0.12	2.3769	0.5148	0.47	1.427	0.1776	0.82	1.0748	0.103
0.13	2.3248	0.4923	0.48	1.4129	0.174	0.83	1.0676	0.1018
0.14	2.2755	0.4714	0.49	1.3992	0.1706	0.84	1.0606	0.1006
0.15	2.2289	0.4518	0.5	1.3857	0.1673	0.85	1.0536	0.0995
0.16	2.1847	0.4336	0.51	1.3726	0.1641	0.86	1.0468	0.0983
0.17	2.1427	0.4166	0.52	1.3598	0.161	0.87	1.04	0.0972
0.18	2.1027	0.4007	0.53	1.3473	0.1581	0.88	1.0334	0.0961
0.19	2.0647	0.3857	0.54	1.335	0.1552	0.89	1.0269	0.0951
0.2	2.0284	0.3717	0.55	1.3231	0.1525	0.9	1.0204	0.094
0.21	1.9937	0.3585	0.56	1.3114	0.1498	0.91	1.014	0.093
0.22	1.9605	0.3461	0.57	1.2999	0.1472	0.92	1.0078	0.092
0.23	1.9288	0.3344	0.58	1.2887	0.1448	0.93	1.0016	0.091
0.24	1.8983	0.3233	0.59	1.2777	0.1424	0.94	0.9955	0.0901
0.25	1.8691	0.3129	0.6	1.267	0.14	0.95	0.9894	0.0892
0.26	1.841	0.303	0.61	1.2564	0.1378	0.96	0.9835	0.0882
0.27	1.814	0.2937	0.62	1.2461	0.1356	0.97	0.9776	0.0874
0.28	1.788	0.2849	0.63	1.236	0.1335	0.98	0.9718	0.0865
0.29	1.763	0.2765	0.64	1.2261	0.1314	0.99	0.9661	0.0856
0.3	1.7389	0.2685	0.65	1.2163	0.1295	1	0.9605	0.0848
0.31	1.7155	0.2609	0.66	1.2068	0.1275	1.01	0.9549	0.084
0.32	1.693	0.2537	0.67	1.1974	0.1257	1.02	0.9494	0.0831
0.33	1.6713	0.2469	0.68	1.1882	0.1238	1.03	0.944	0.0823
0.34	1.6502	0.2404	0.69	1.1791	0.1221	1.04	0.9386	0.0816

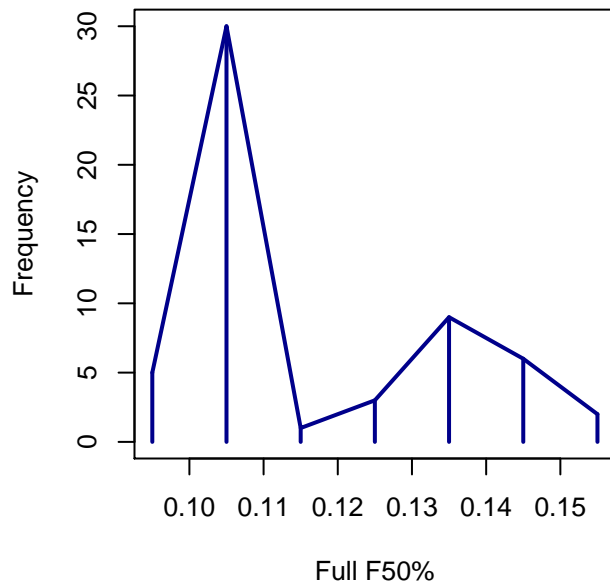
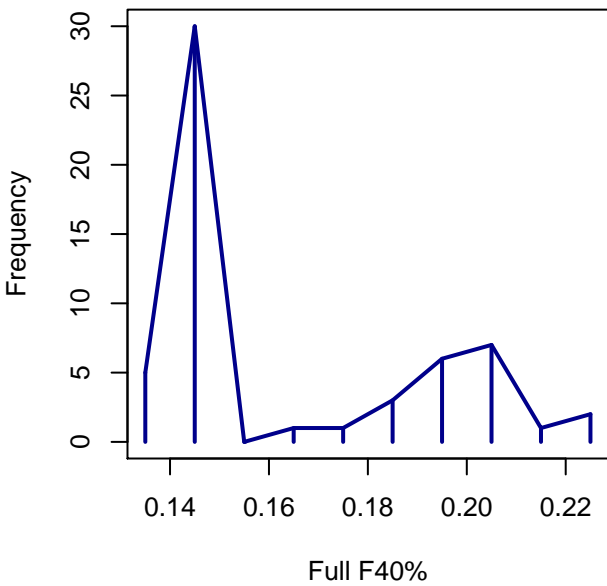
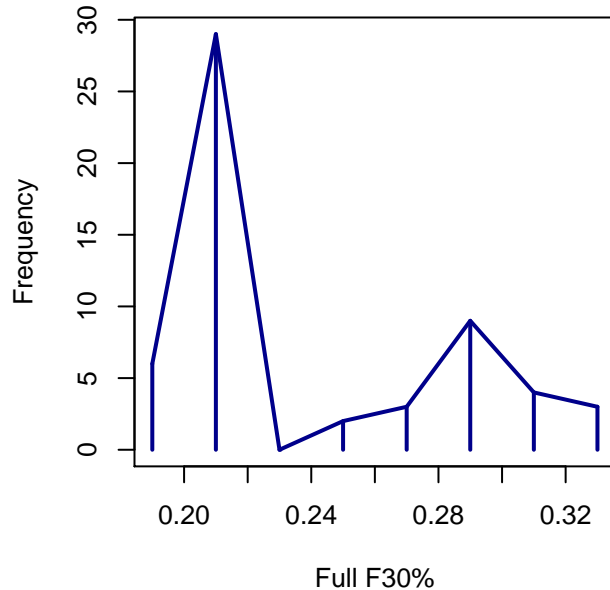
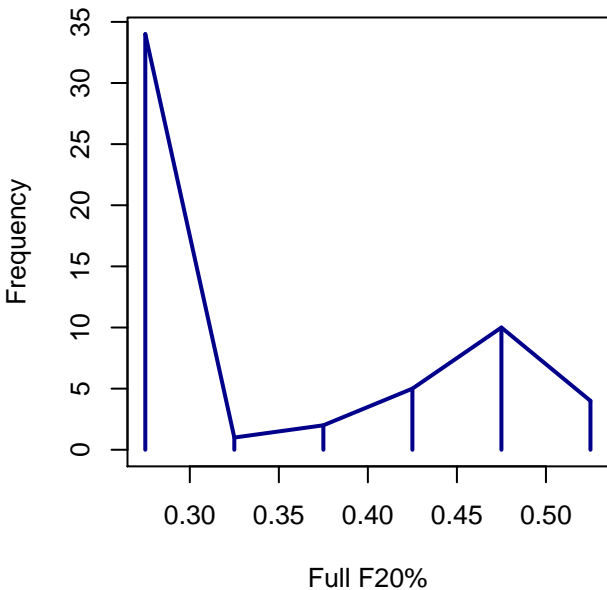
Annual F(%SPR) Reference Points



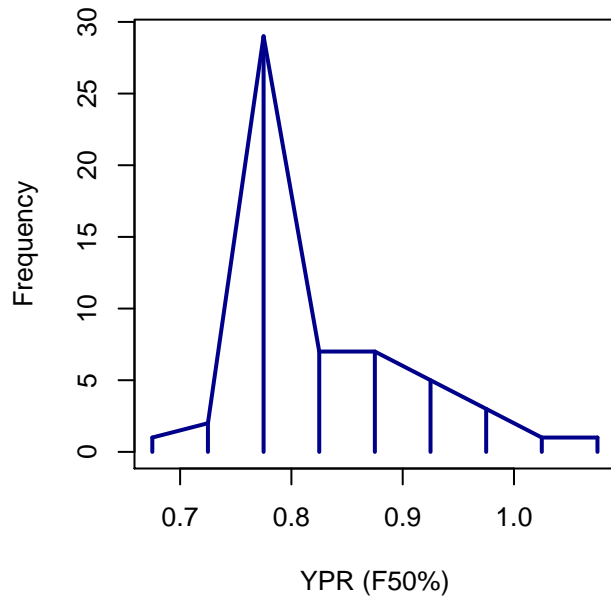
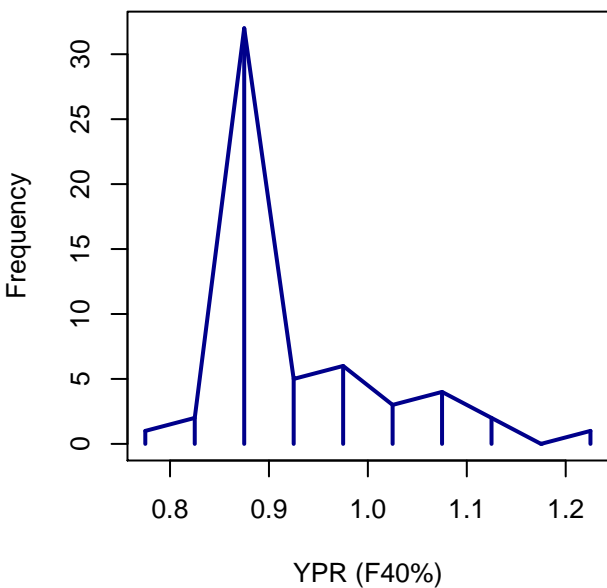
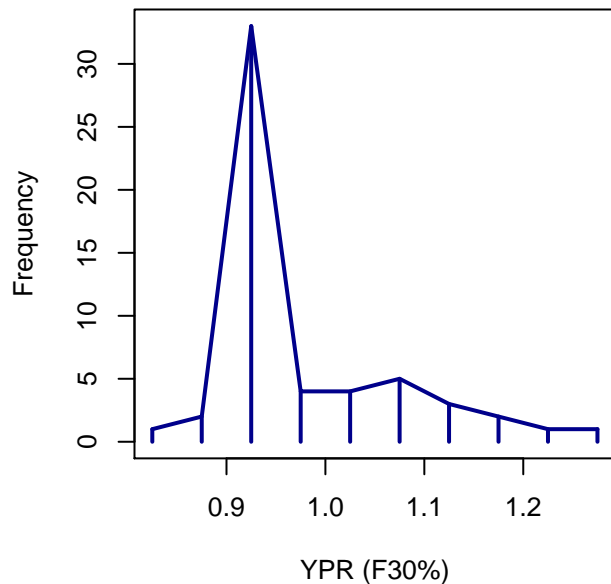
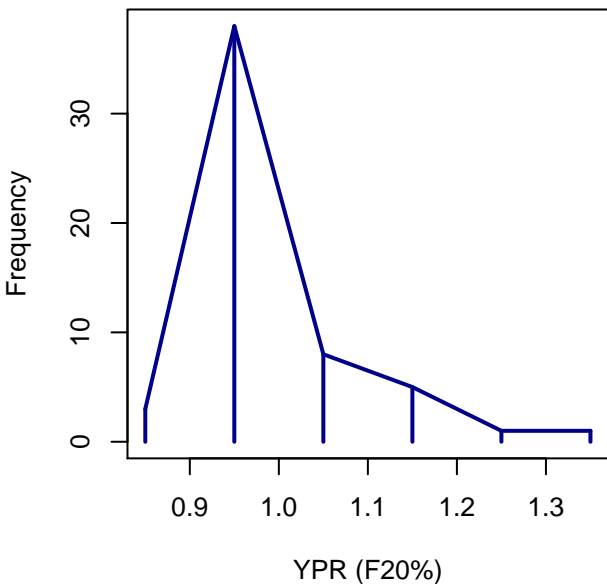
Annual YPR(%SPR) Reference Points

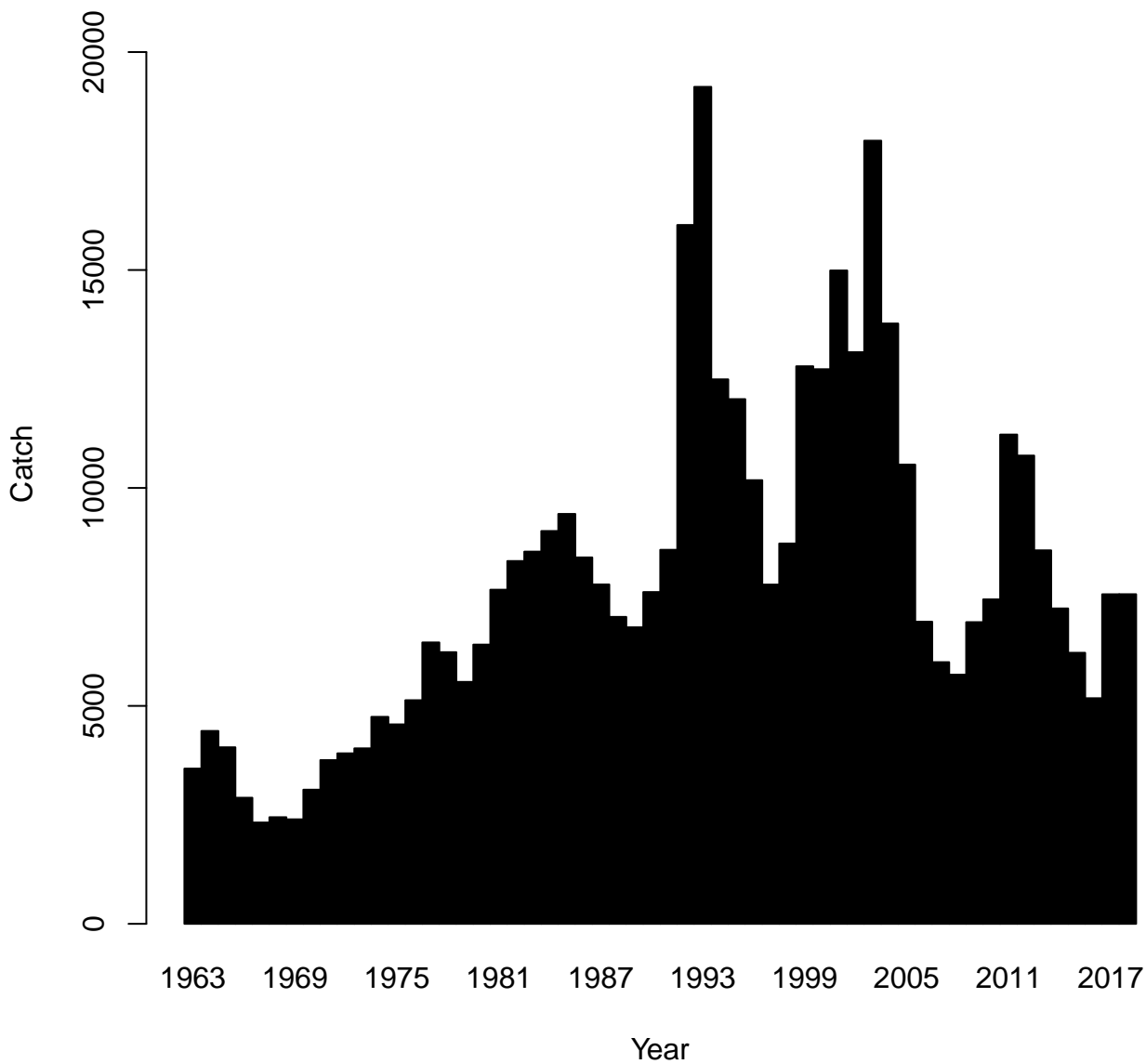


Annual F (%SPR) Reference Points



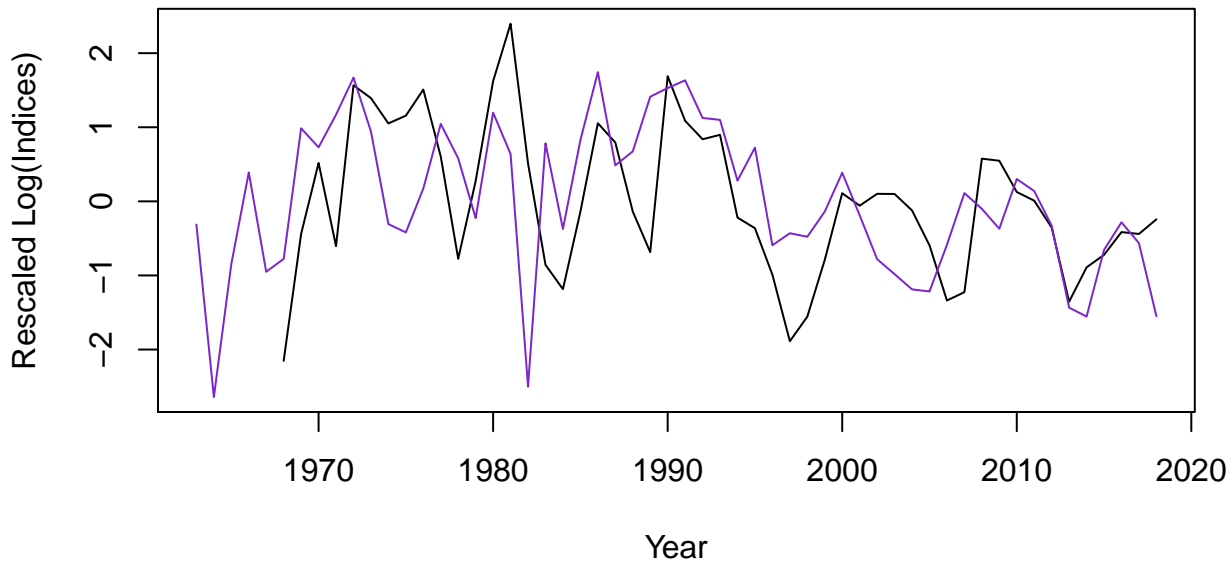
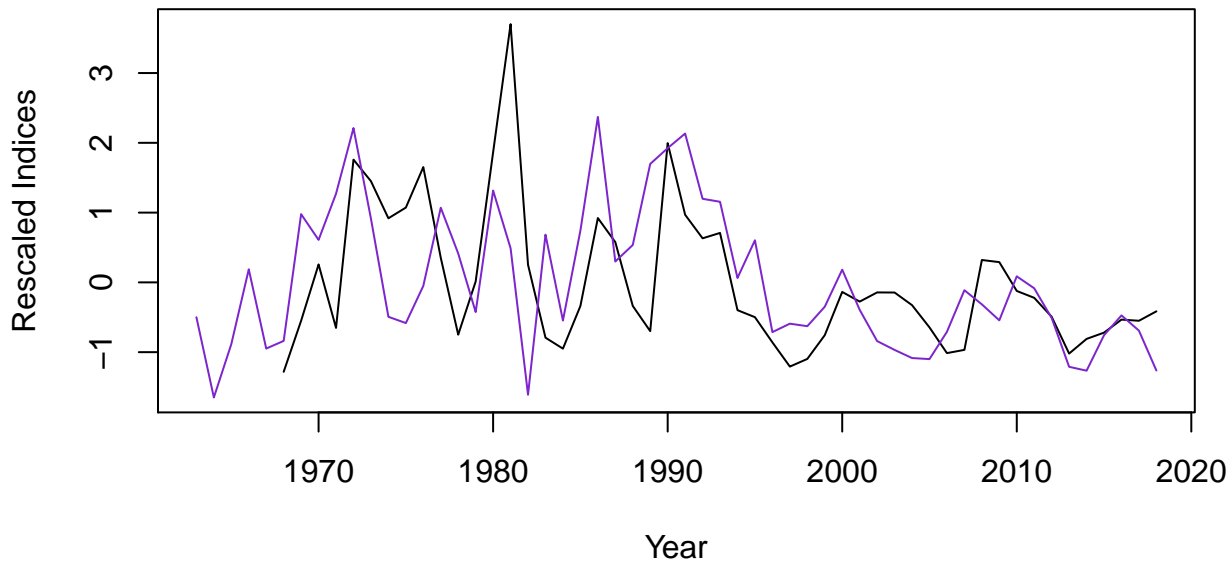
Annual YPR (%SPR) Reference Points



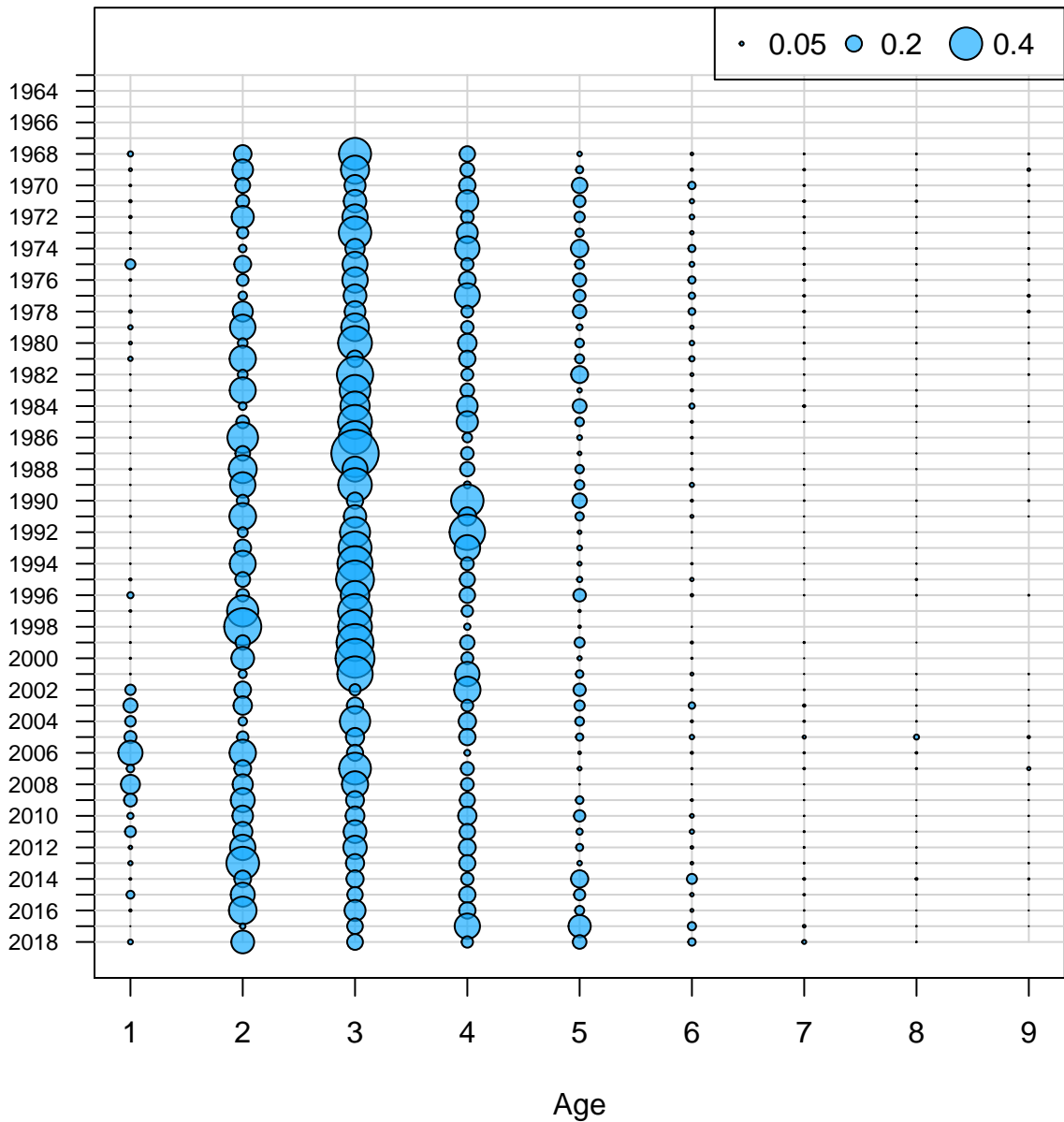


Age Comps for Catch by Fleet 1 (FLEET-1)

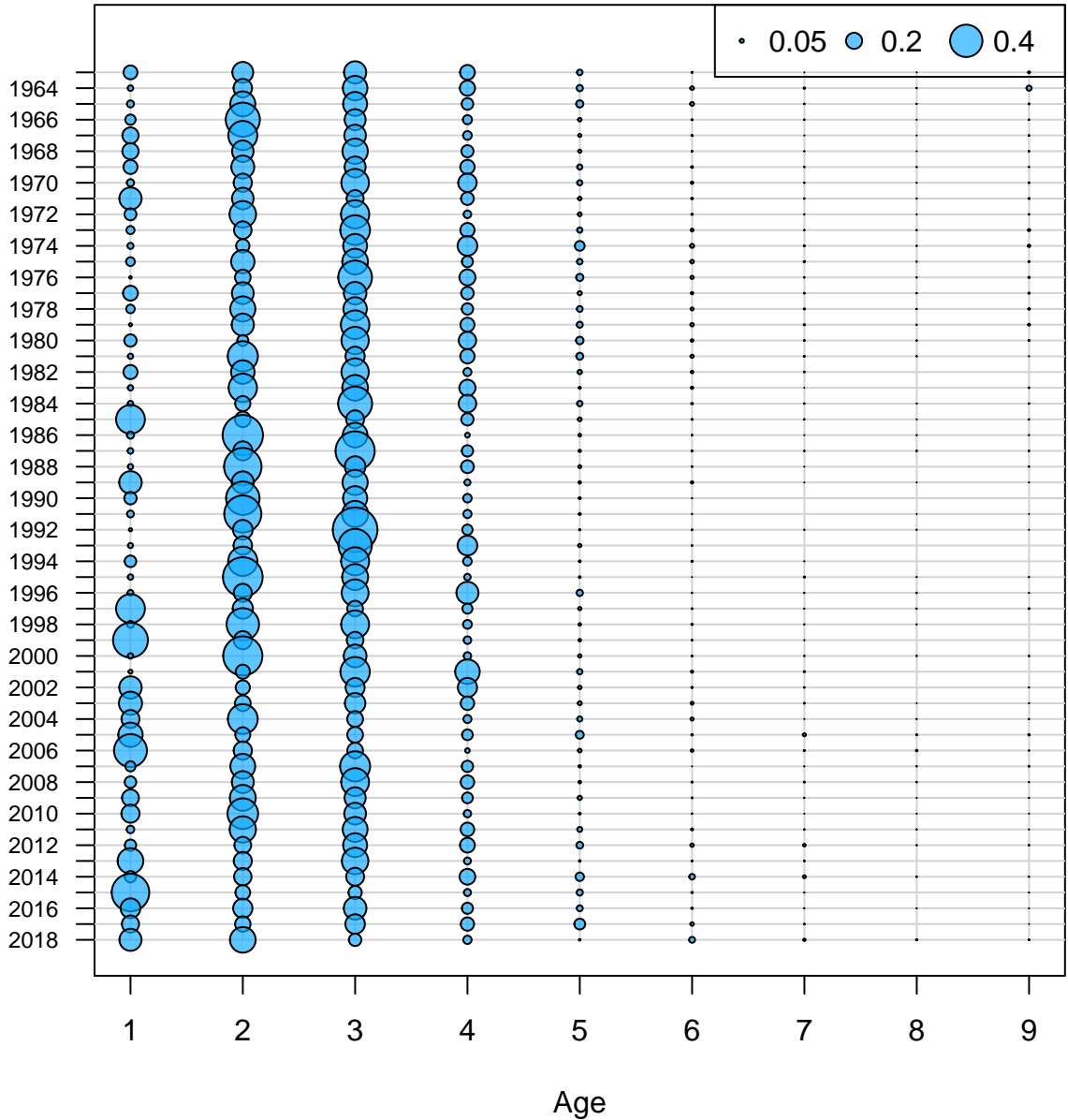




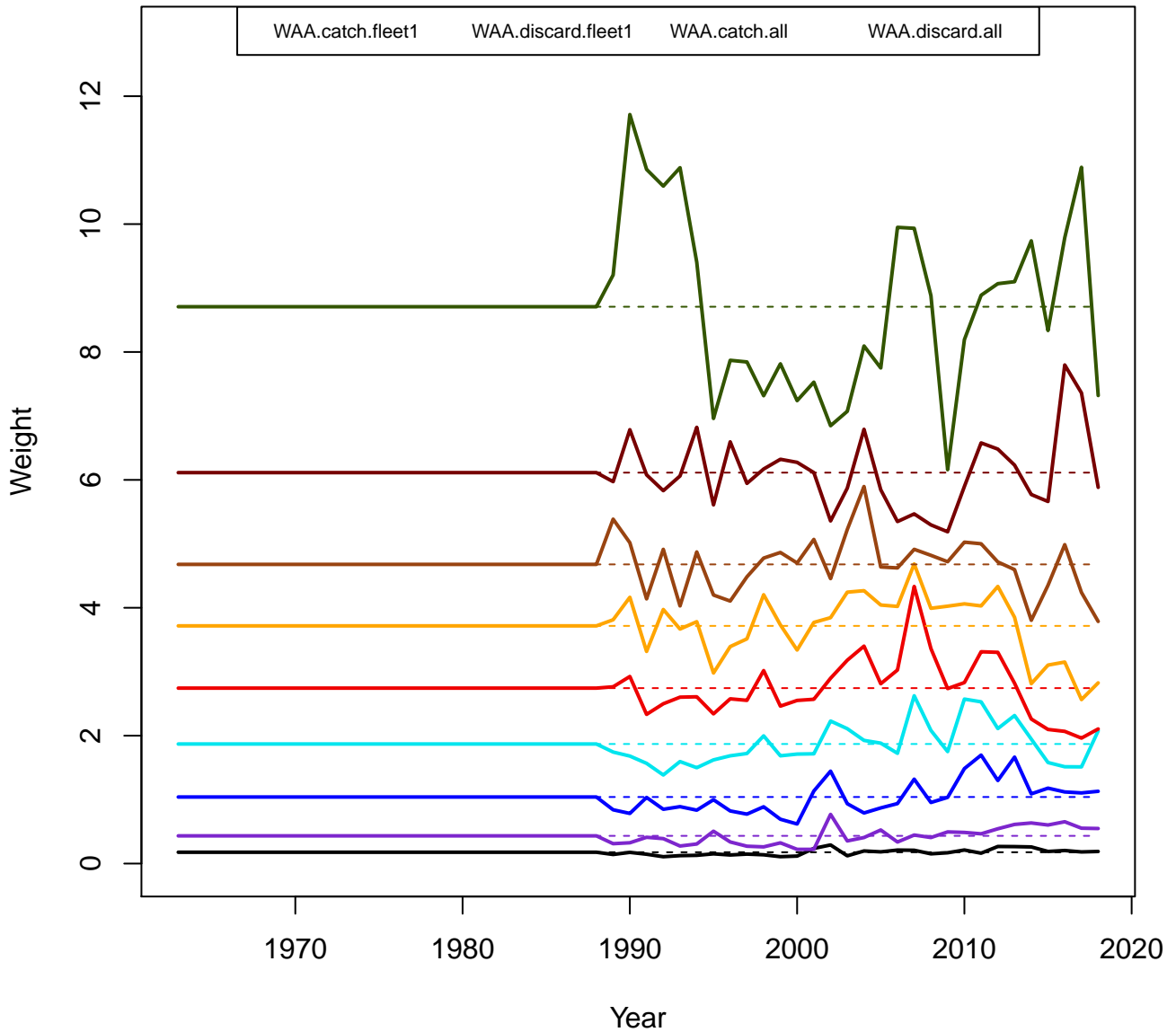
Age Comps for Index 1 (INDEX-1)



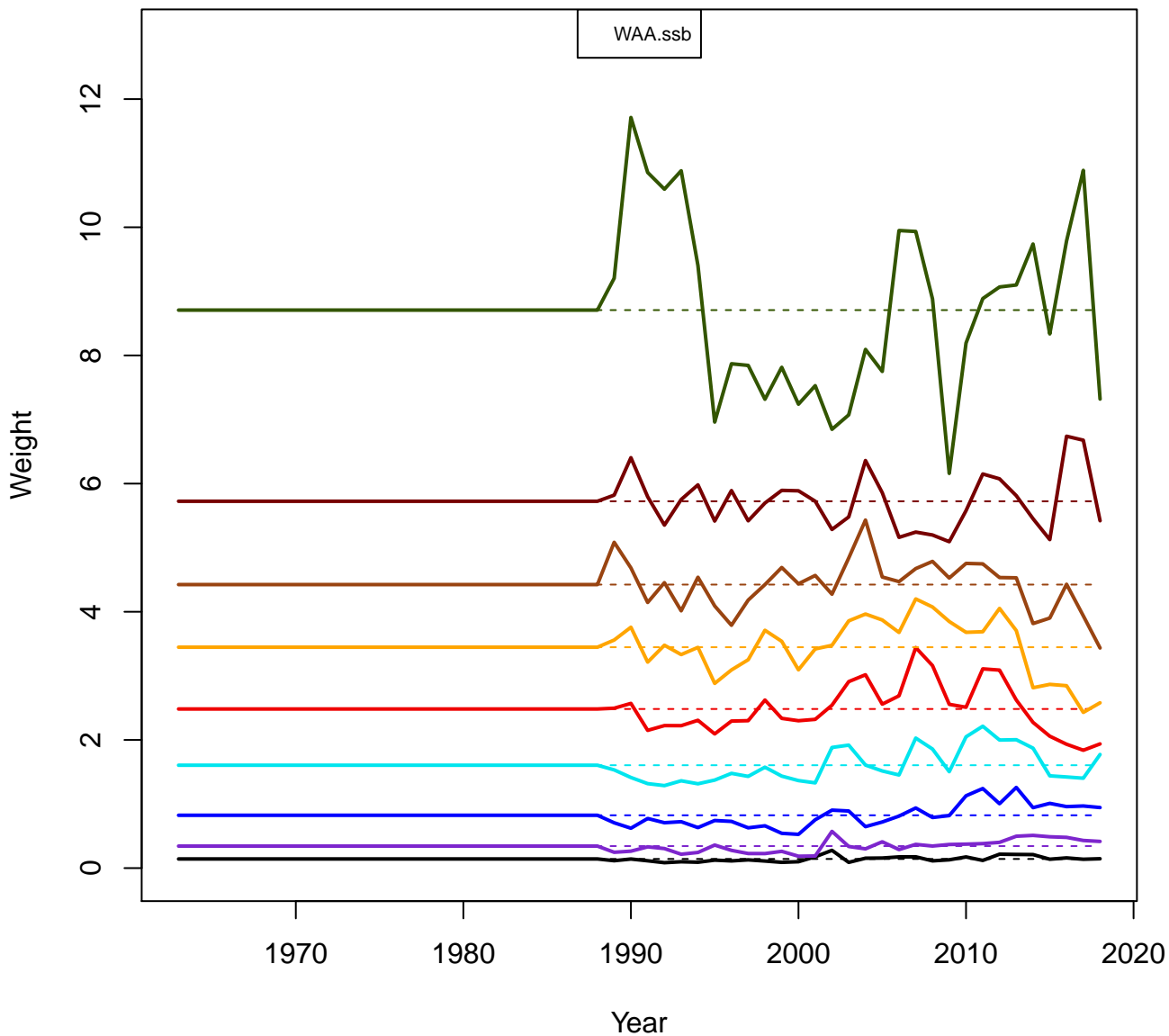
Age Comps for Index 2 (INDEX-2)



WAA matrix 1



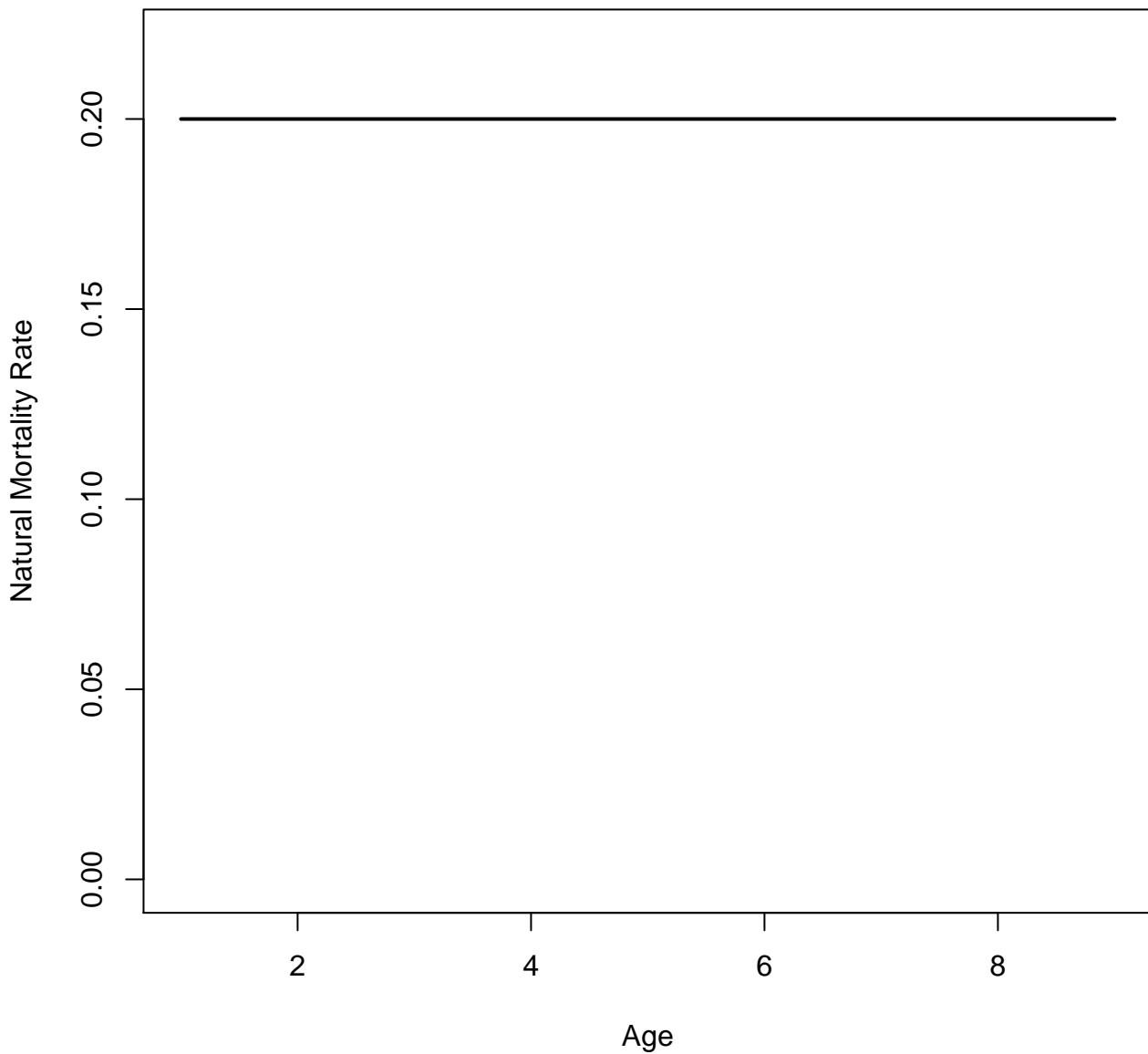
WAA matrix 2



WAA matrix 3



M



Maturity

