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ASAP3 run on Monday, 04 Nov 2019 at 10:50:13

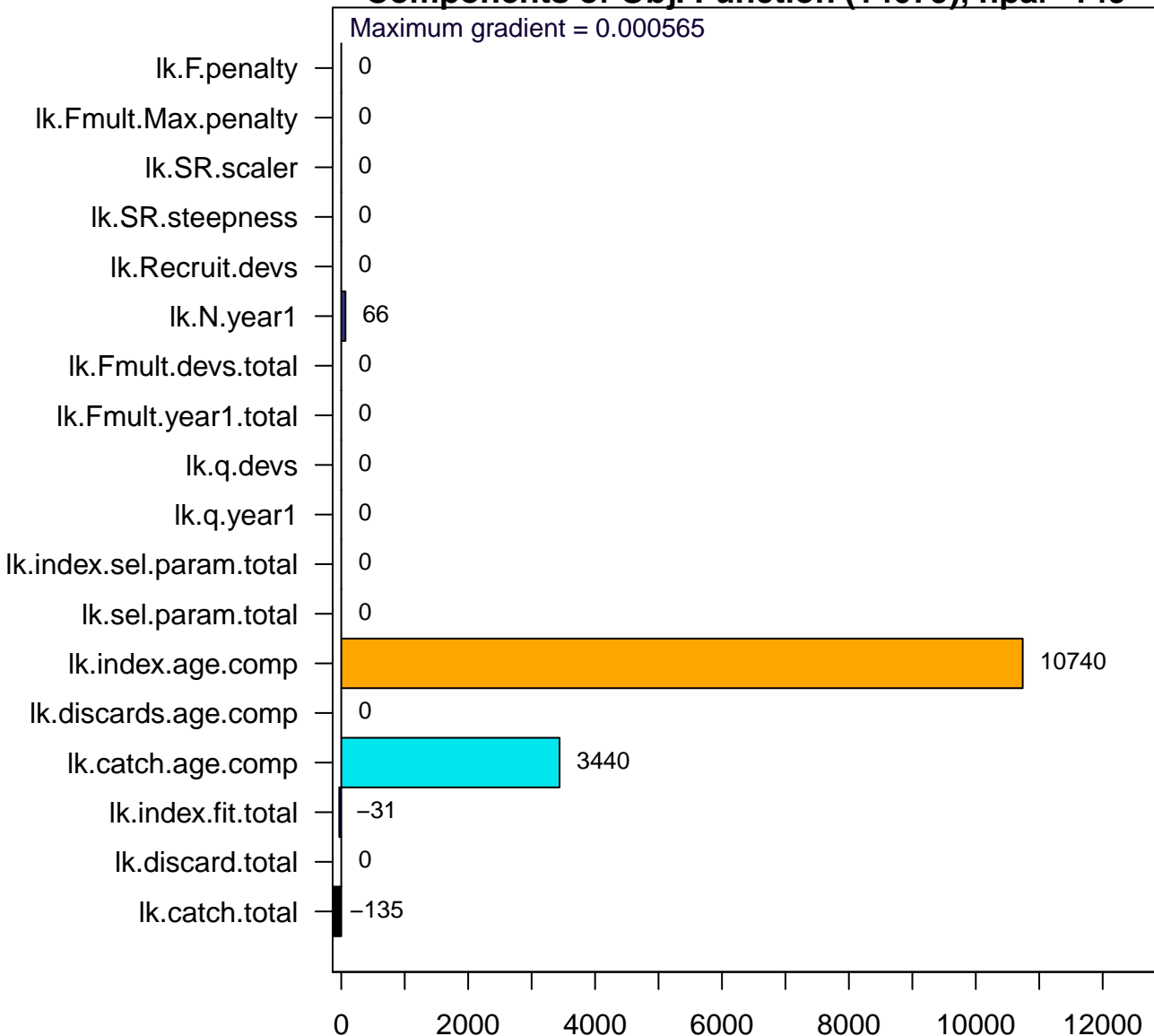
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\w

ASAPplots version = 0.2.14

npar = 149, maximum gradient = 0.000564766

Components of Obj. Function (14079), npar=149

Maximum gradient = 0.000565

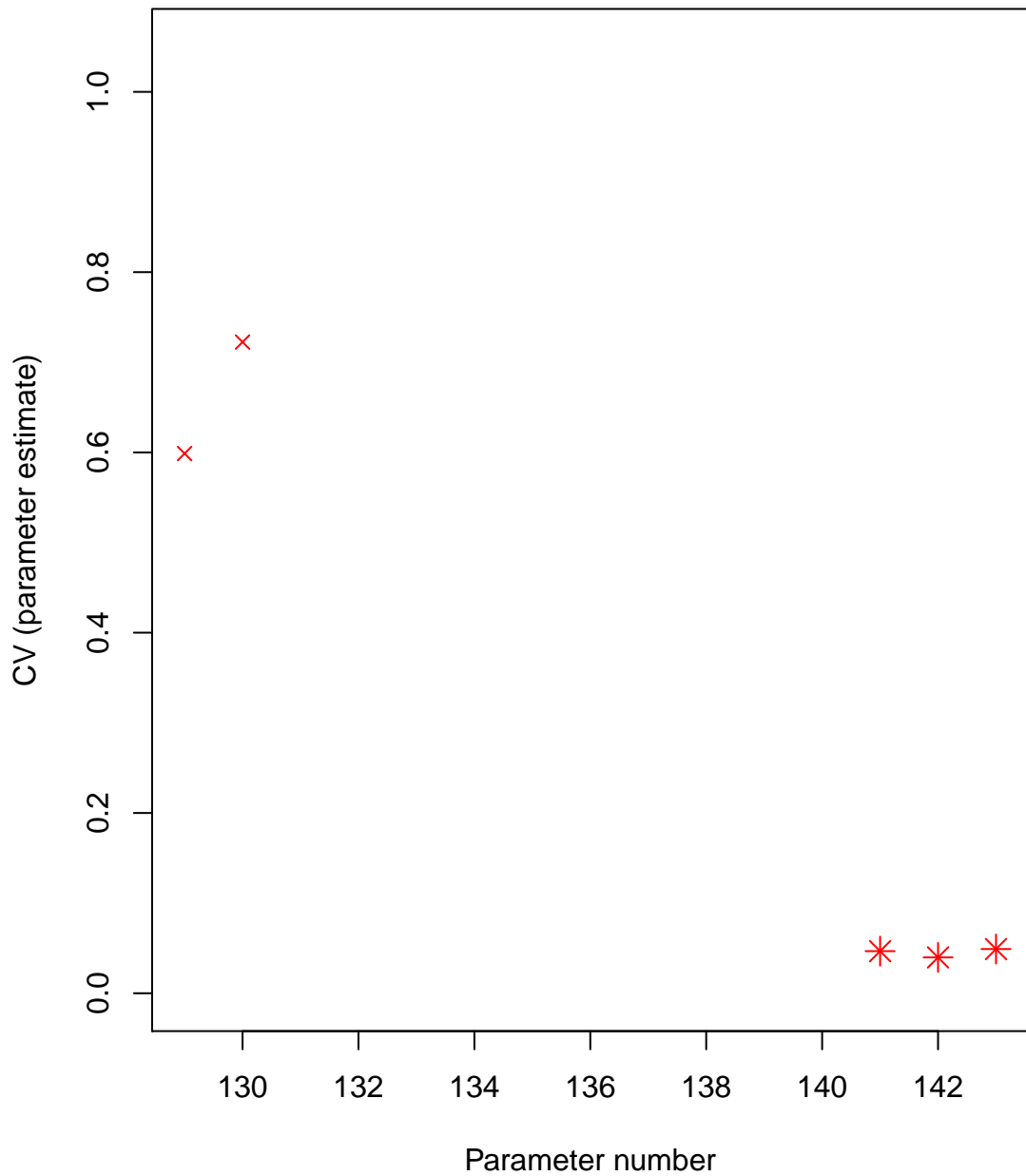


Likelihood Contribution

Model: y2005r0c1m1.6s111111111_000

Monday, 04 Nov 2019 at 10:50

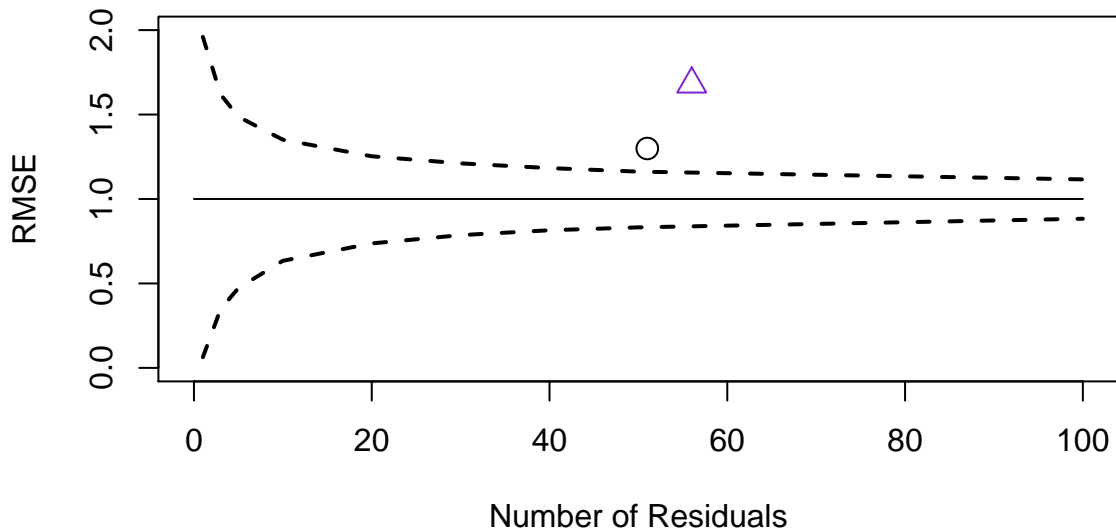




Root Mean Square Error computed from Standardized Residuals

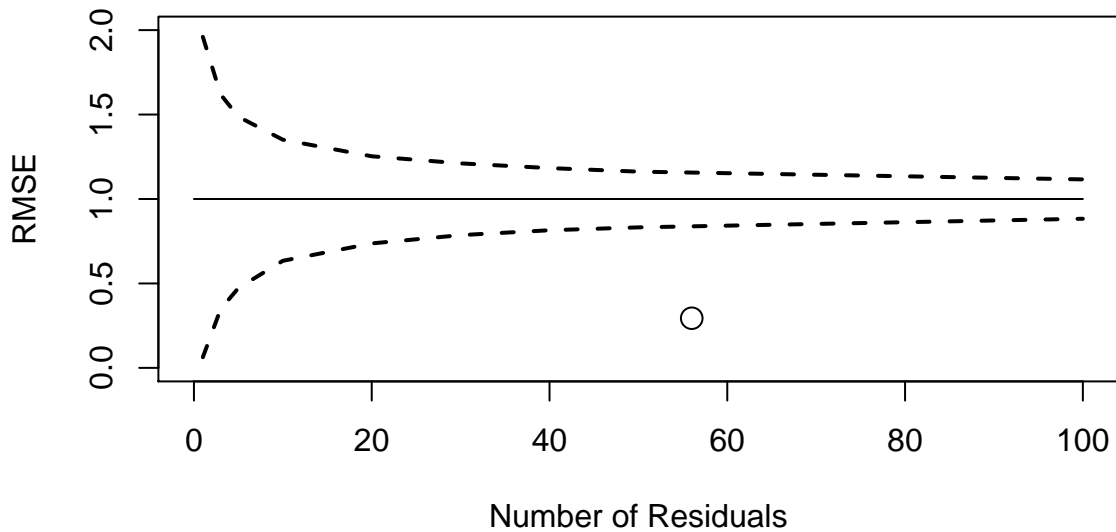
Component	# resids	RMSE
catch.tot	56	0.294
discard.tot	0	0
ind01	51	1.3
ind02	56	1.68
ind.total	107	1.51
N.year1	8	0.671
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



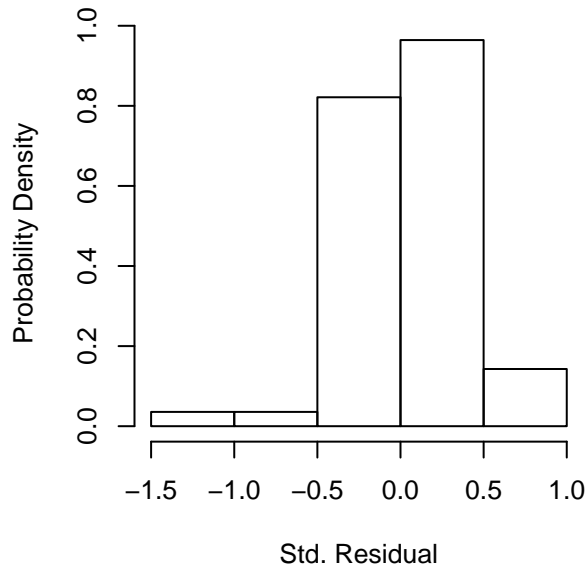
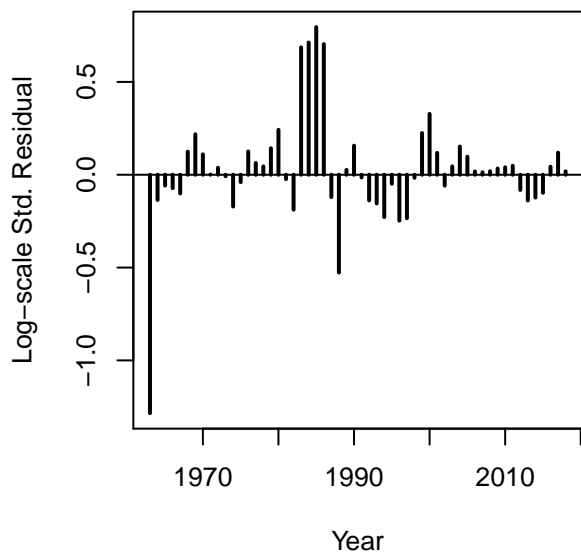
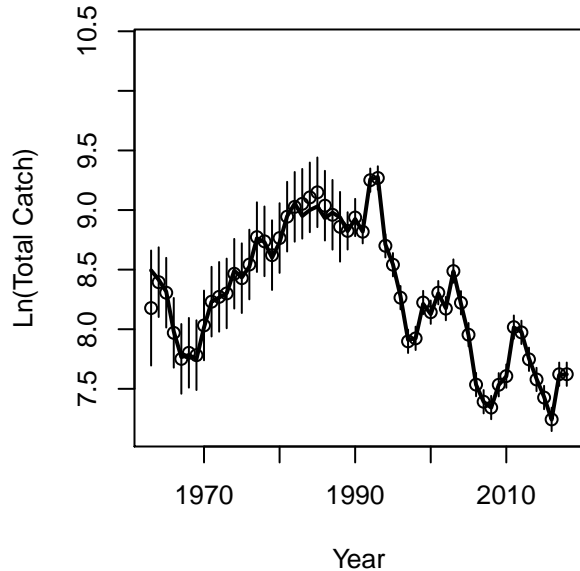
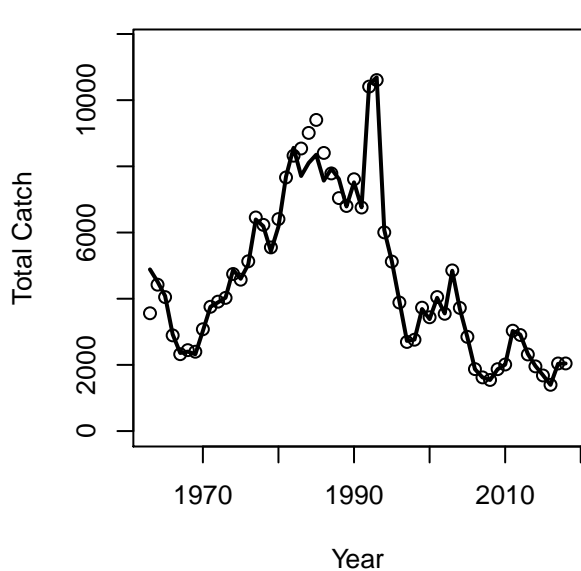
+ ind total
△ INDEX-2
○ INDEX-1

Root Mean Square Error for Catch



○ catch.tot

Fleet 1 Catch (FLEET-1)

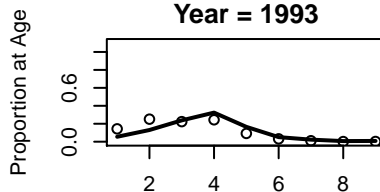


Catch

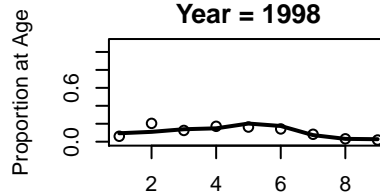
Fleet 1
FLEET-1



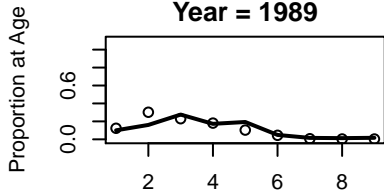
Year = 1993



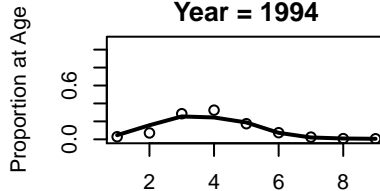
Year = 1998



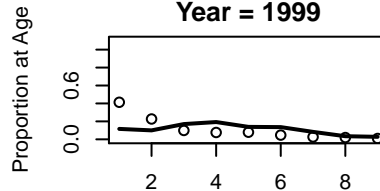
Year = 1989



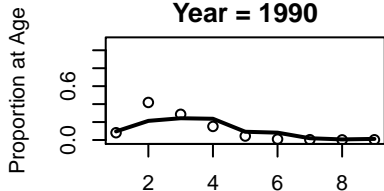
Year = 1994



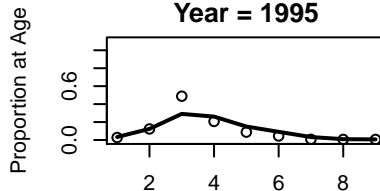
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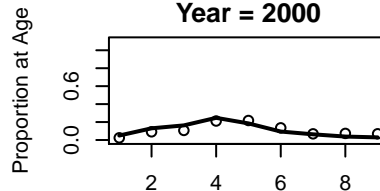
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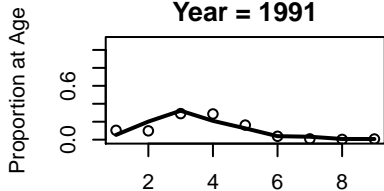
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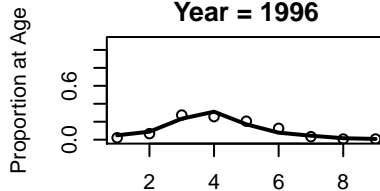
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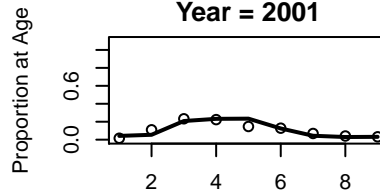
Year = 1991



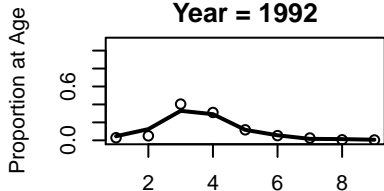
Year = 1996



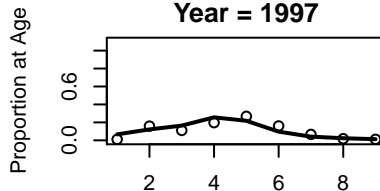
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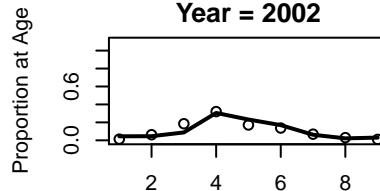
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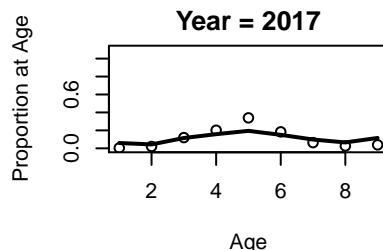
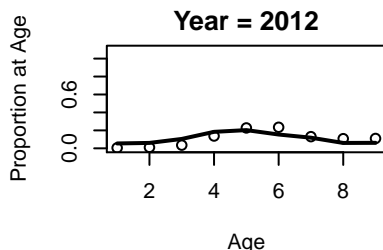
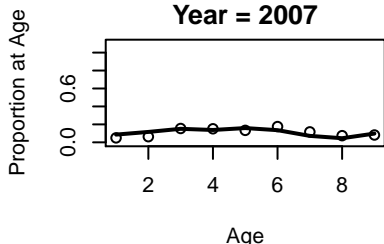
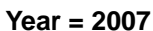
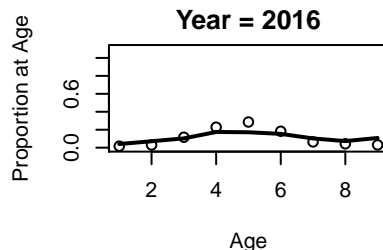
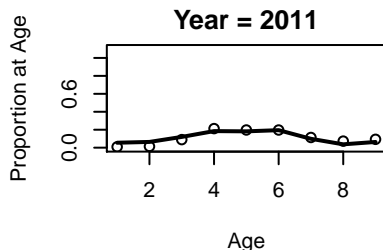
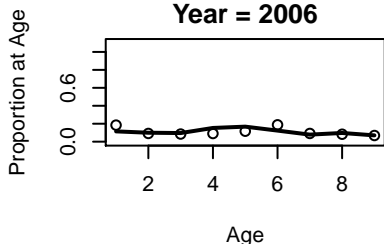
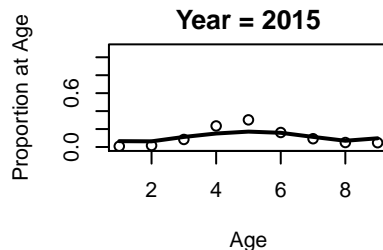
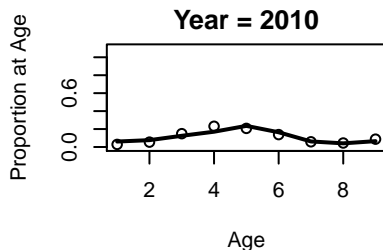
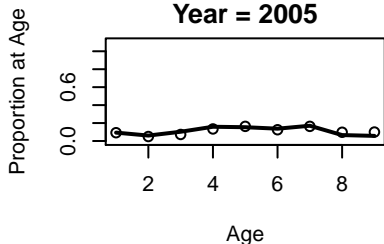
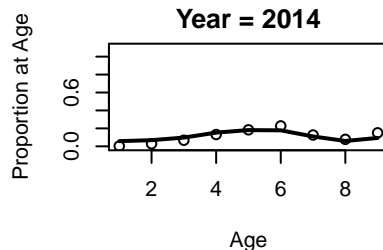
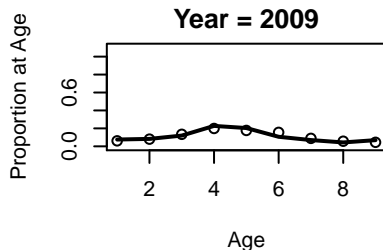
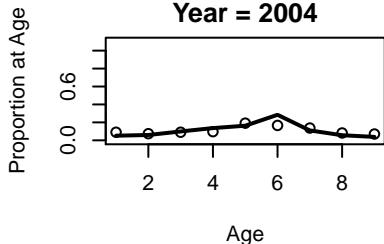
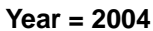
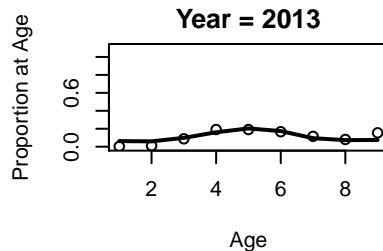
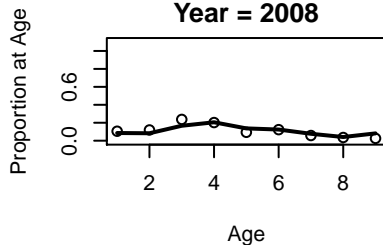
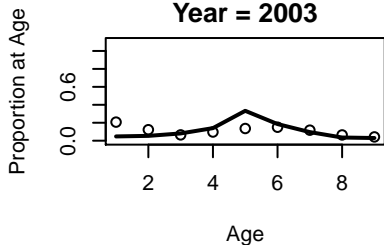
Year = 1997



Year = 2002



Year = 2008



Year = 2018

Proportion at Age

0.0 0.6

2

4

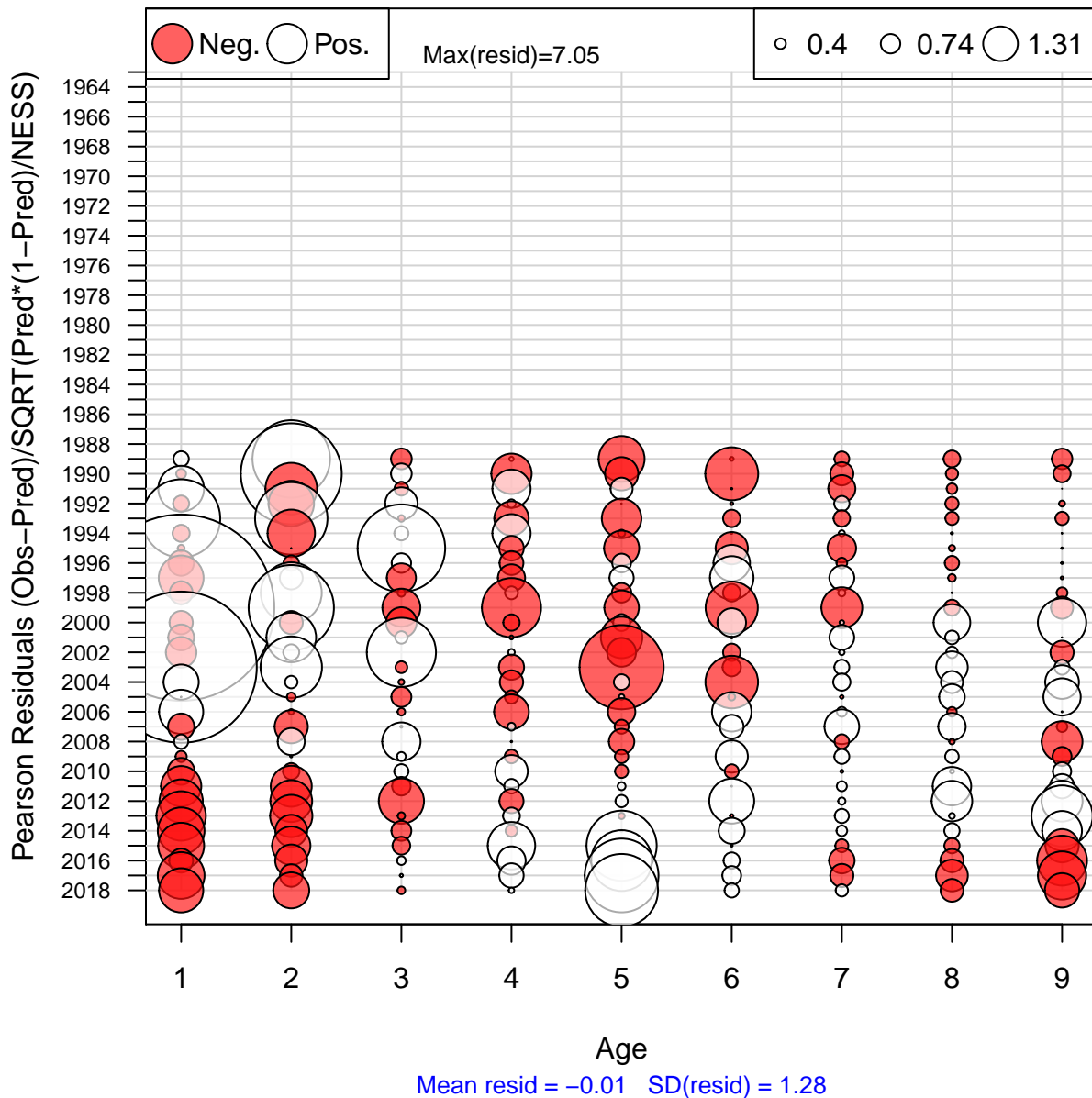
6

8

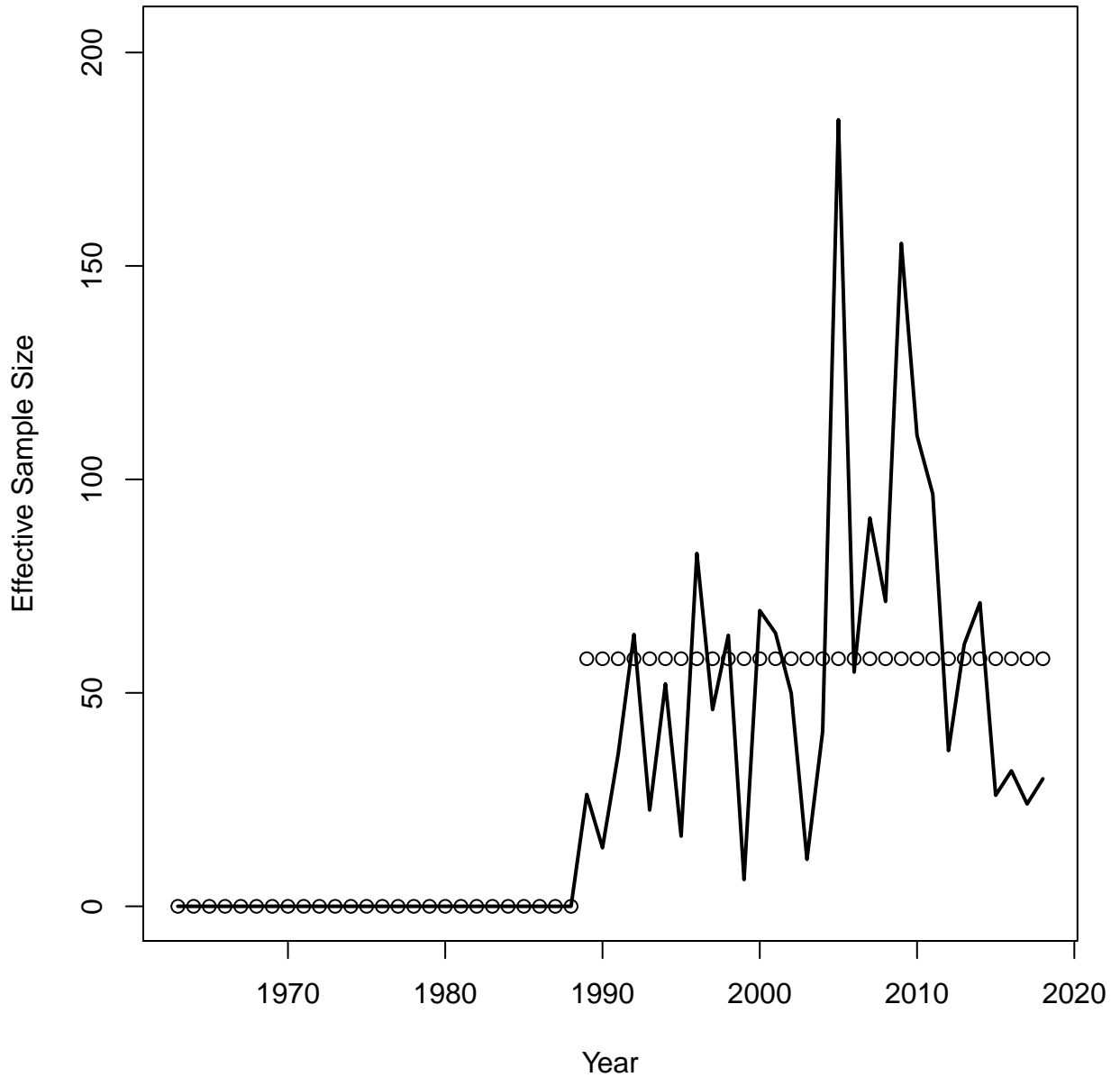
Age

Catch

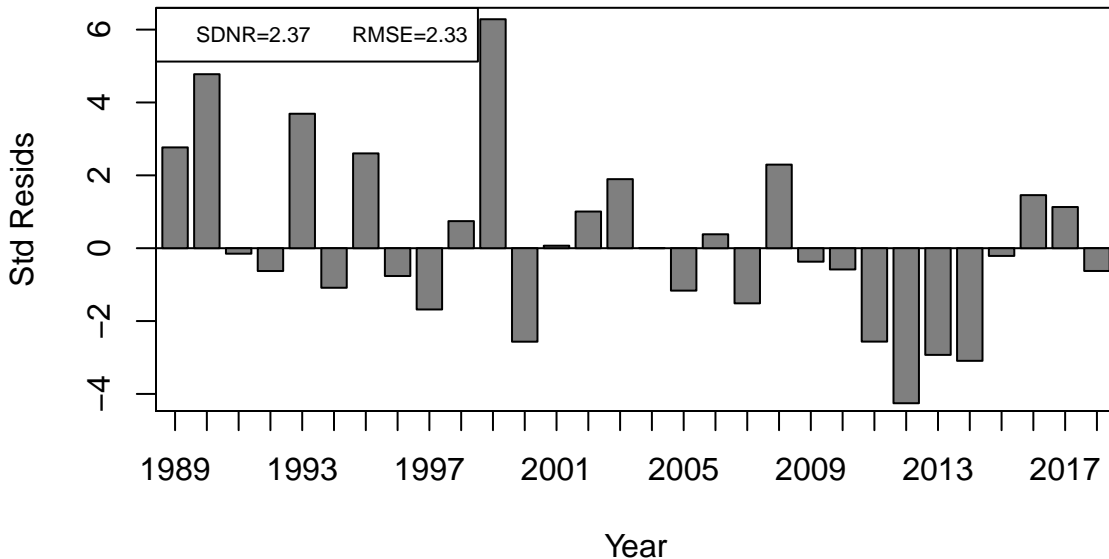
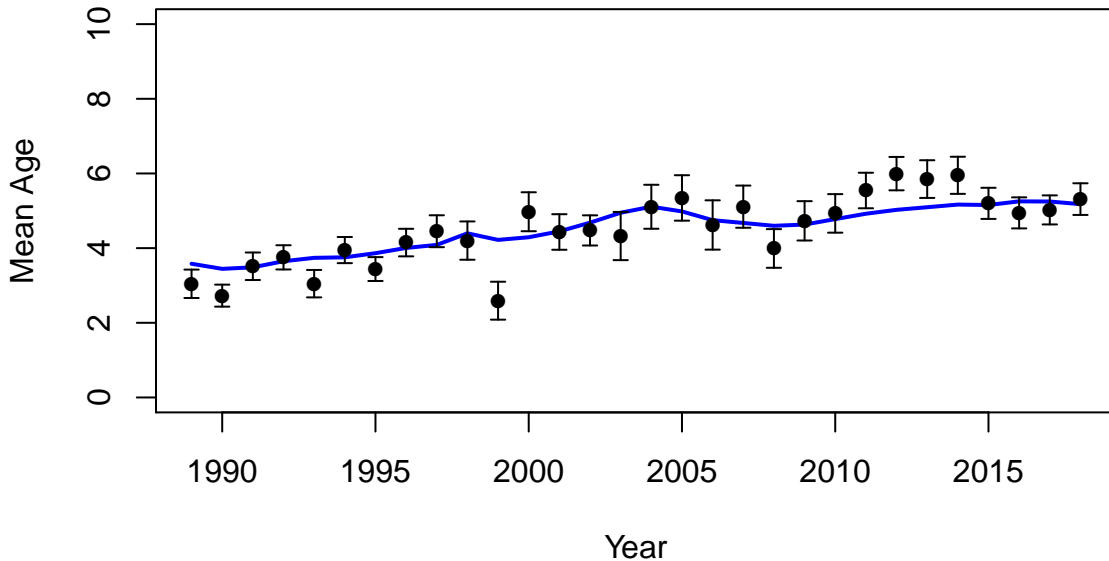
Age Comp Residuals for Catch by Fleet 1 (FLEET-1)



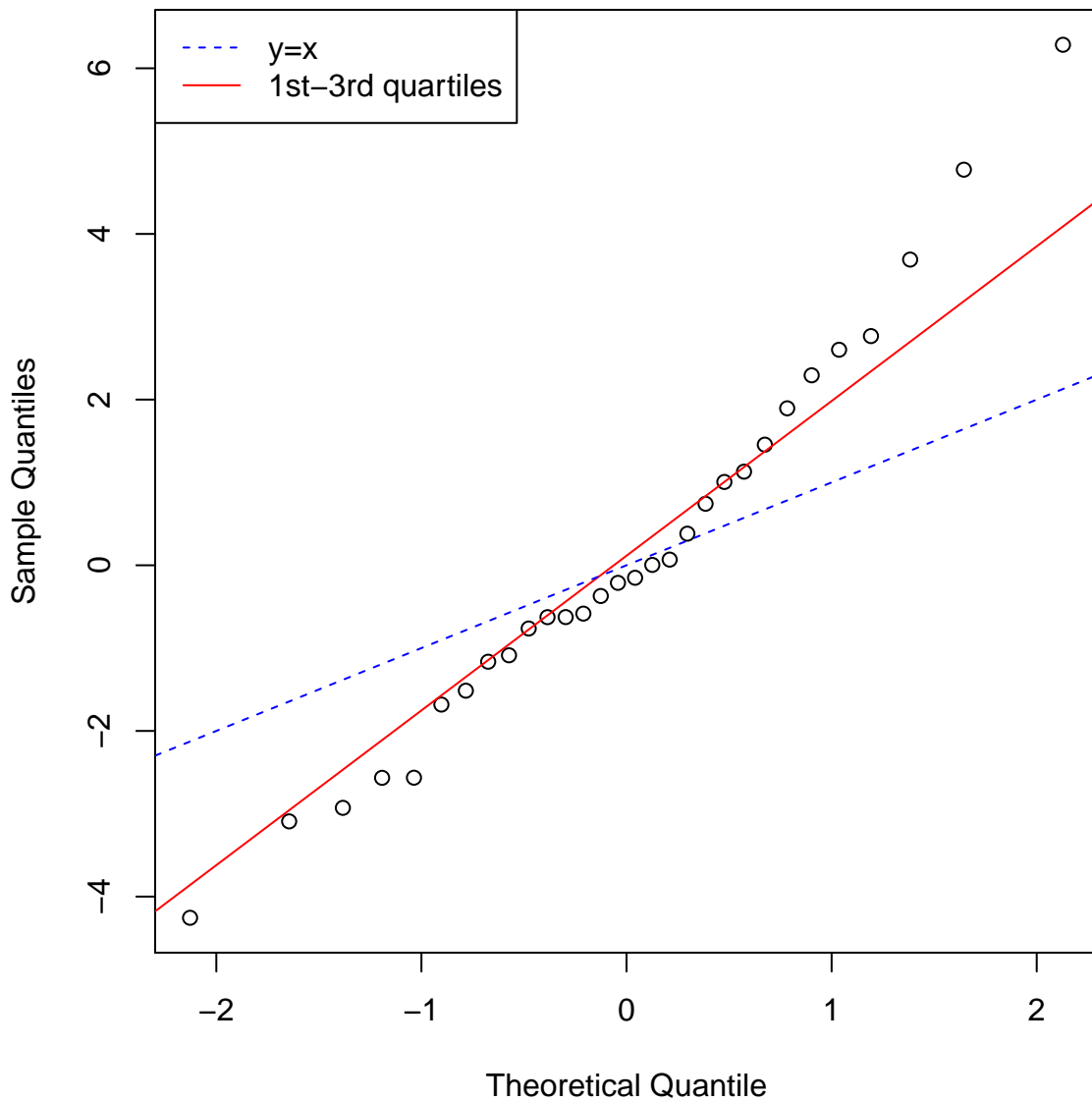
Catch Neff Fleet 1 (FLEET-1)



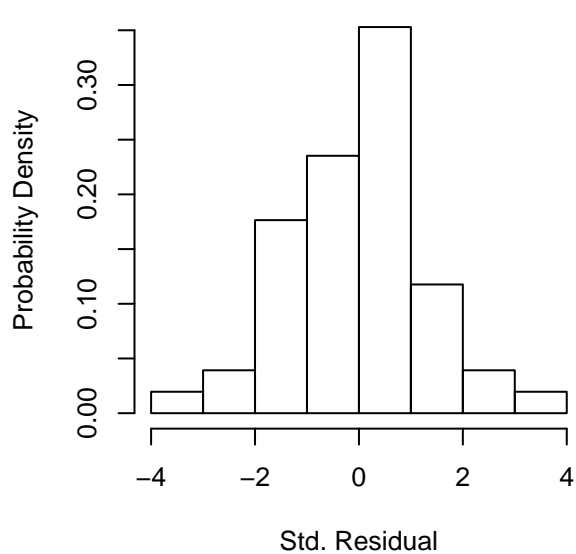
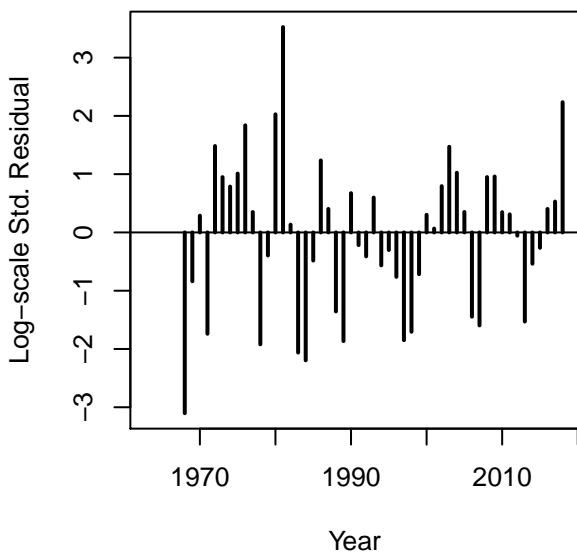
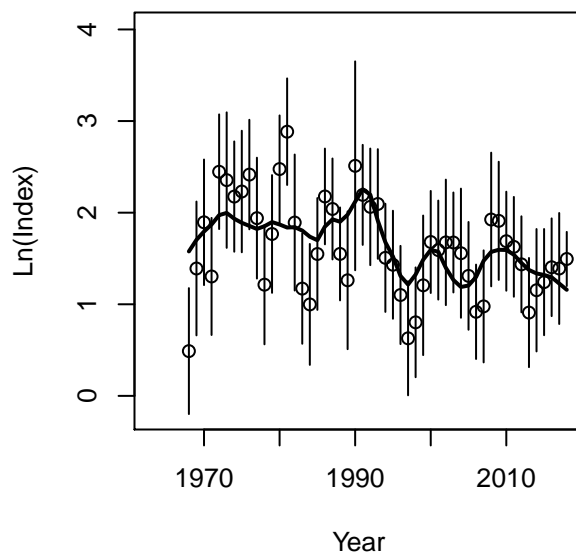
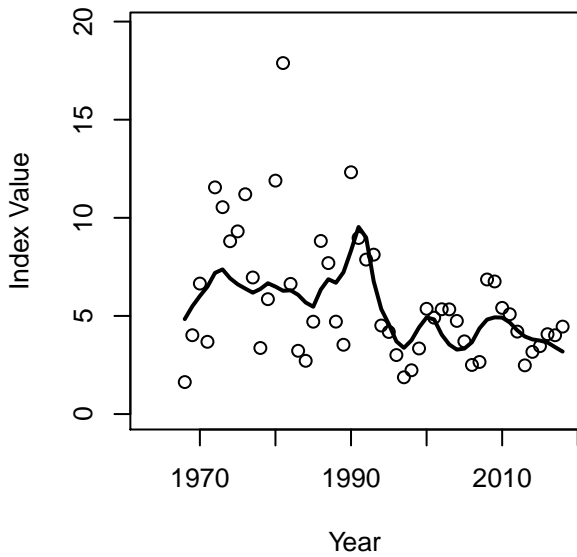
Catch Fleet 1 (FLEET-1) ESS = 58



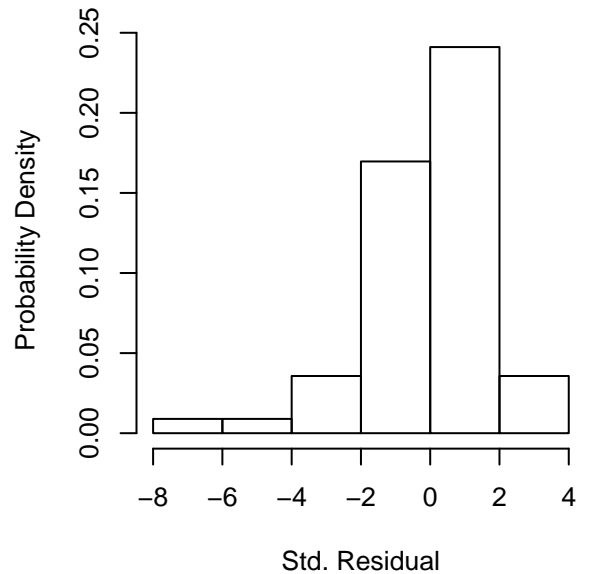
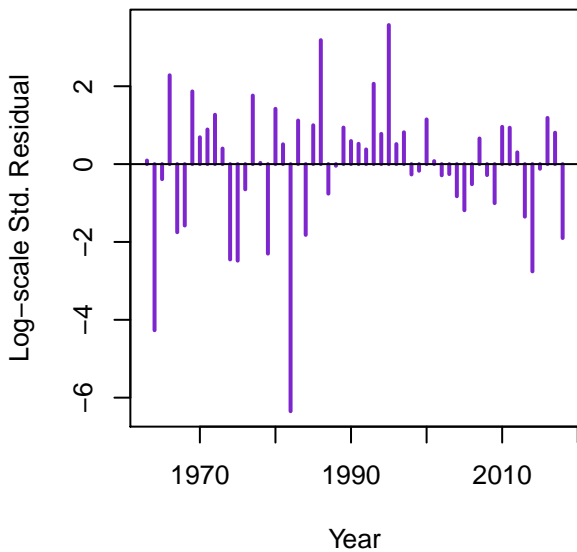
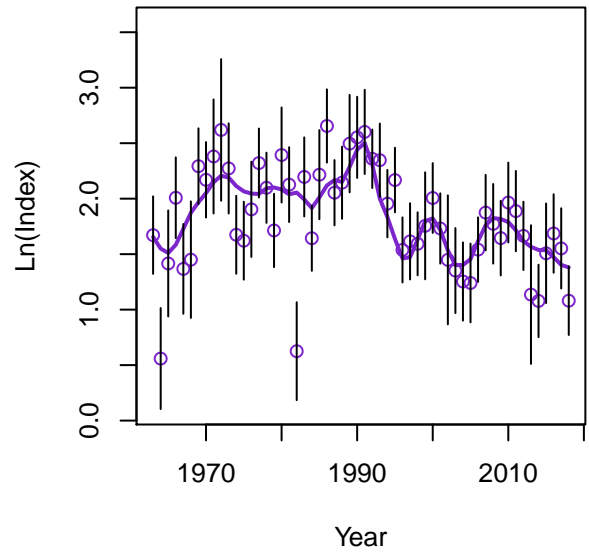
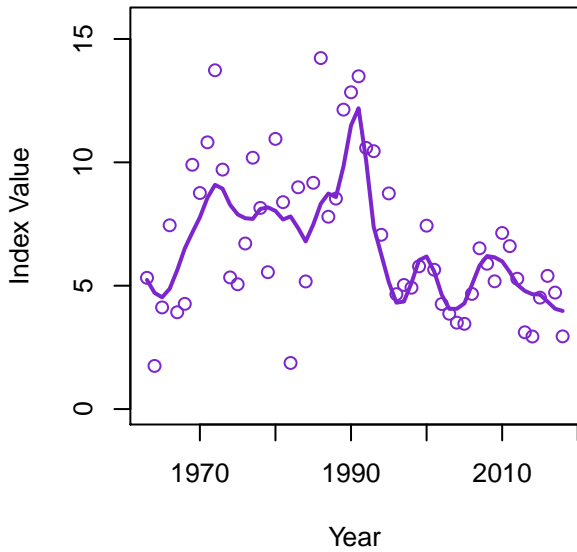
Catch Fleet 1 (FLEET-1) ESS = 58



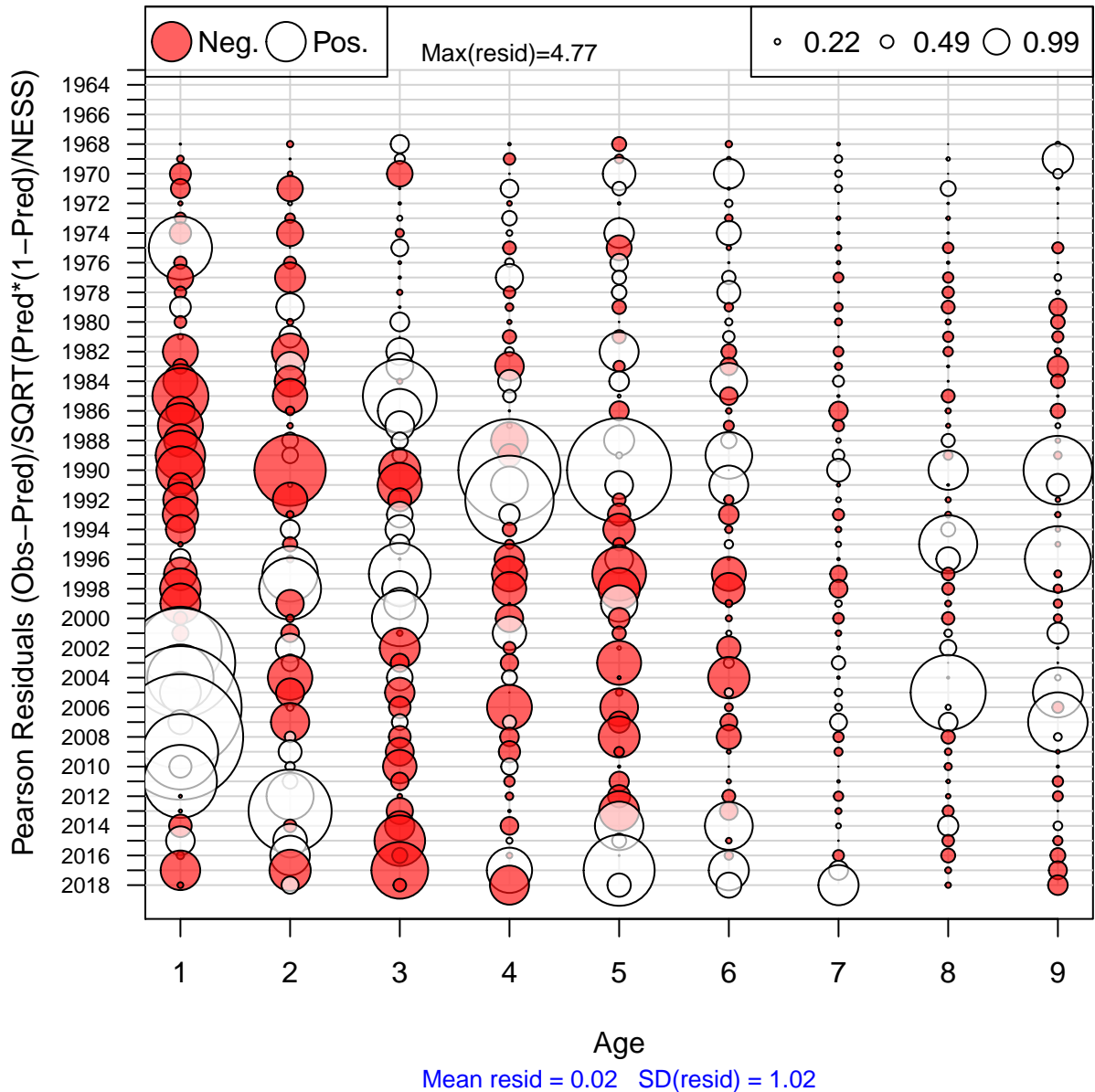
Index 1 (INDEX-1)



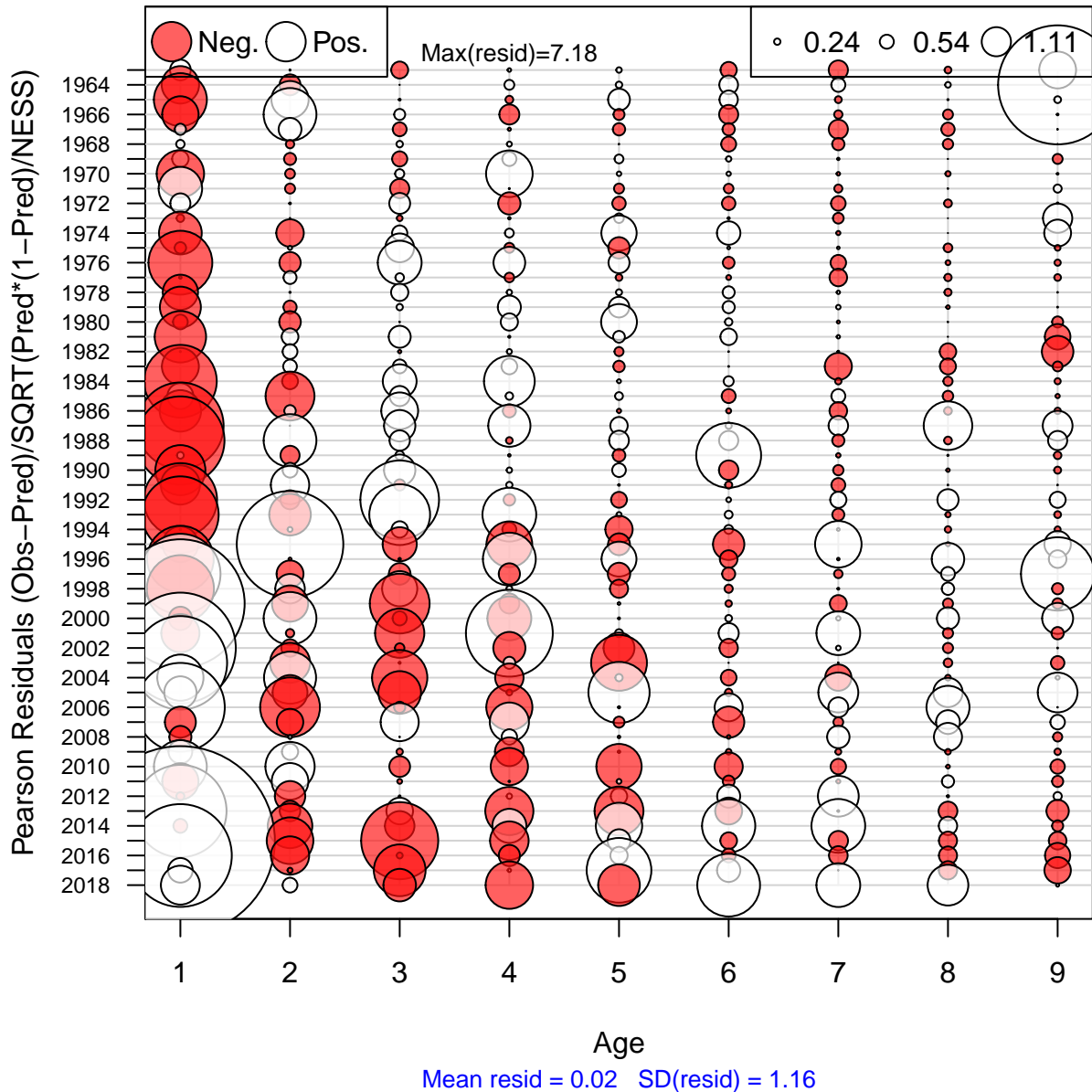
Index 2 (INDEX-2)



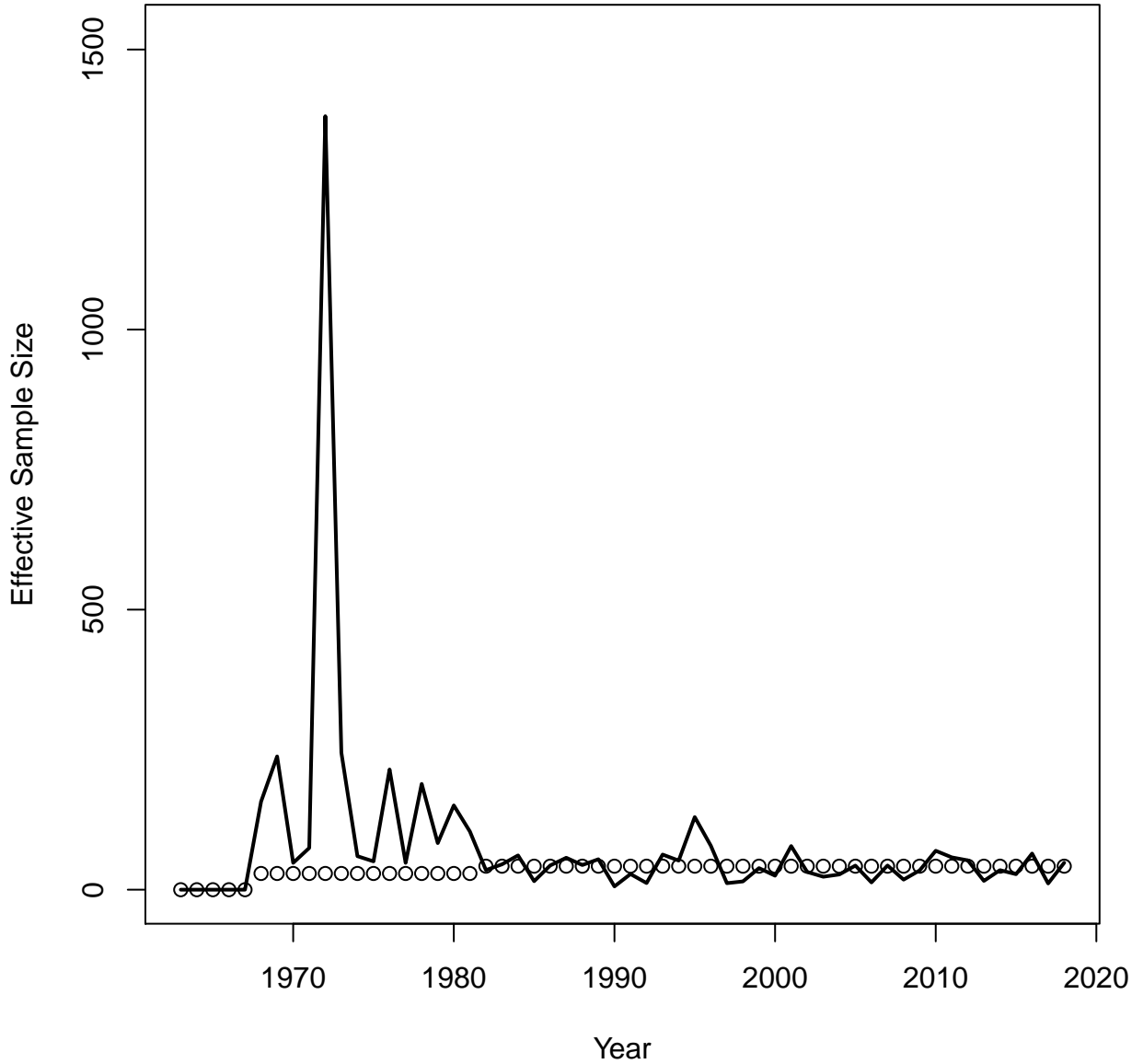
Age Comp Residuals for Index 1 (INDEX-1)



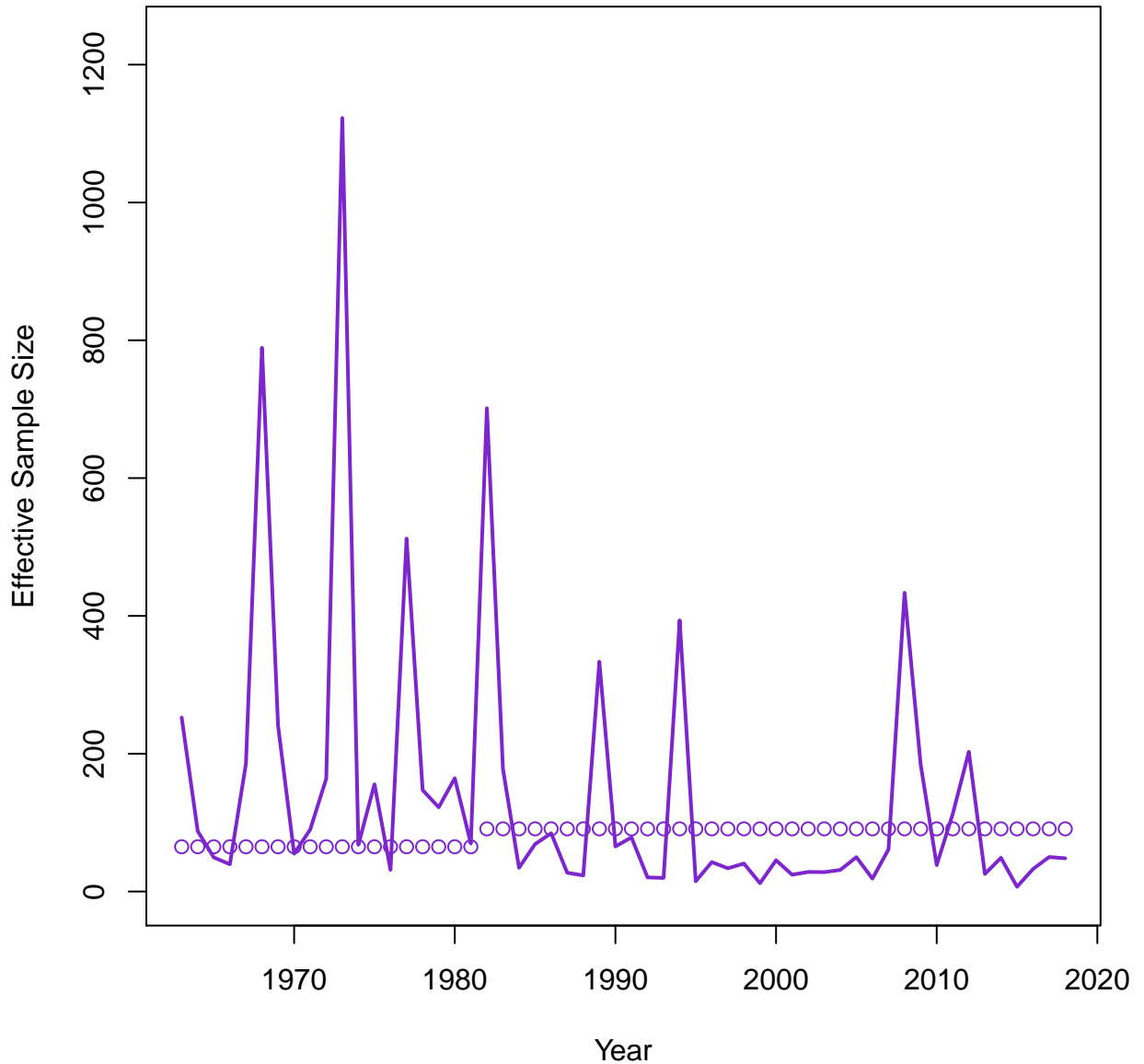
Age Comp Residuals for Index 2 (INDEX-2)



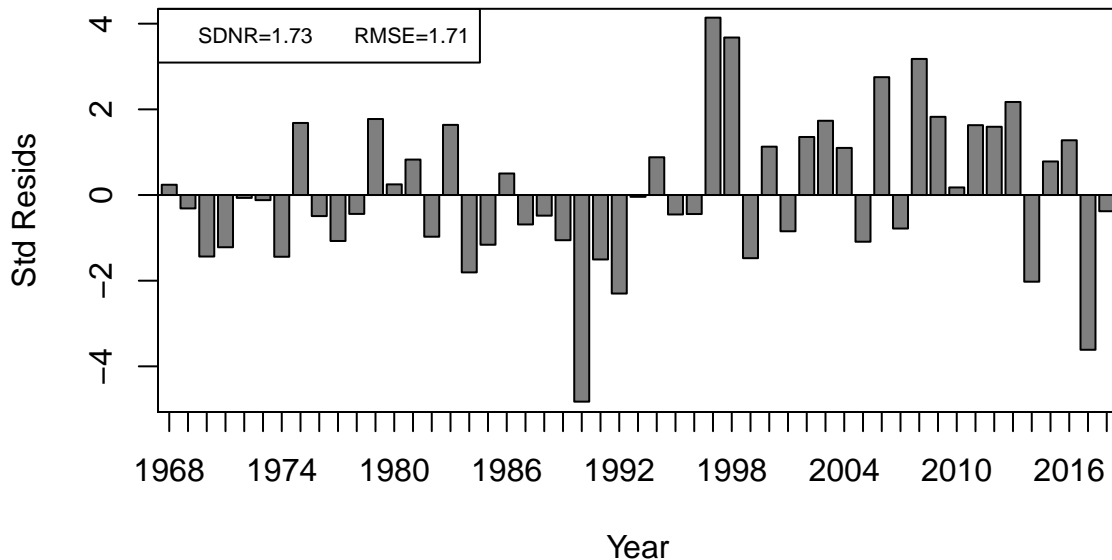
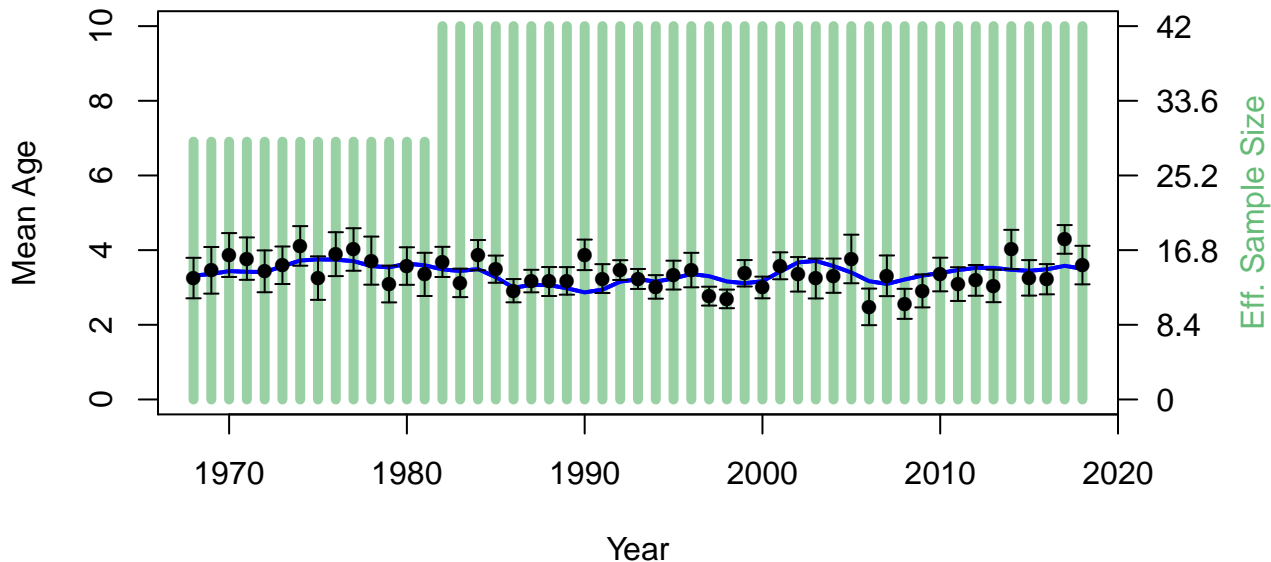
Index Neff 1 (INDEX-1)



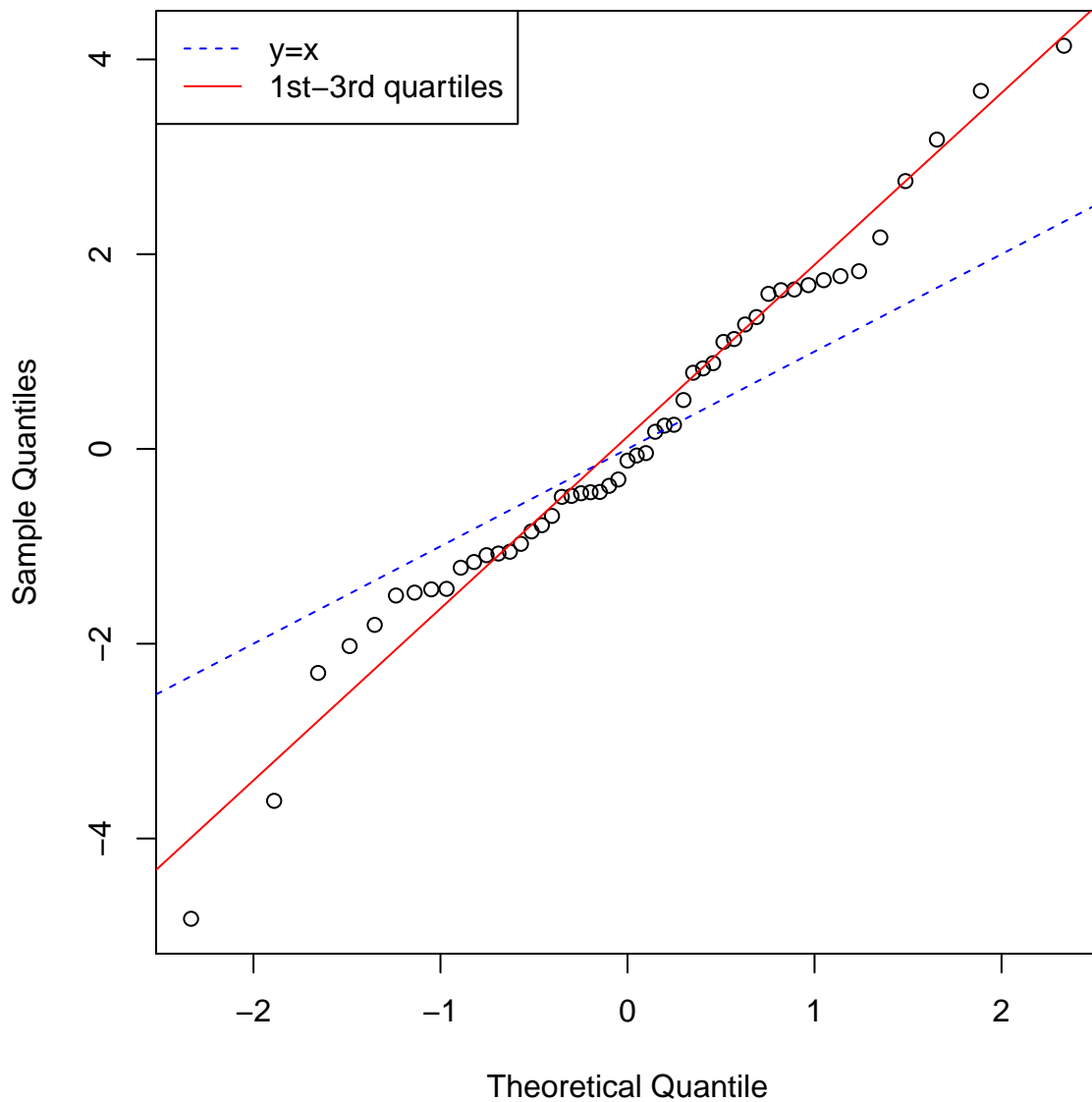
Index Neff 2 (INDEX-2)



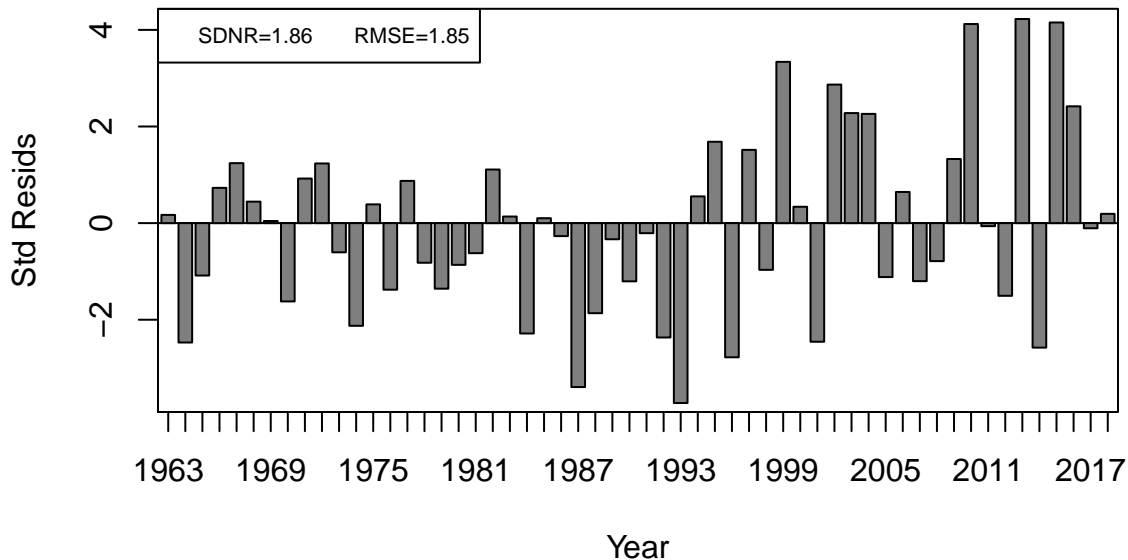
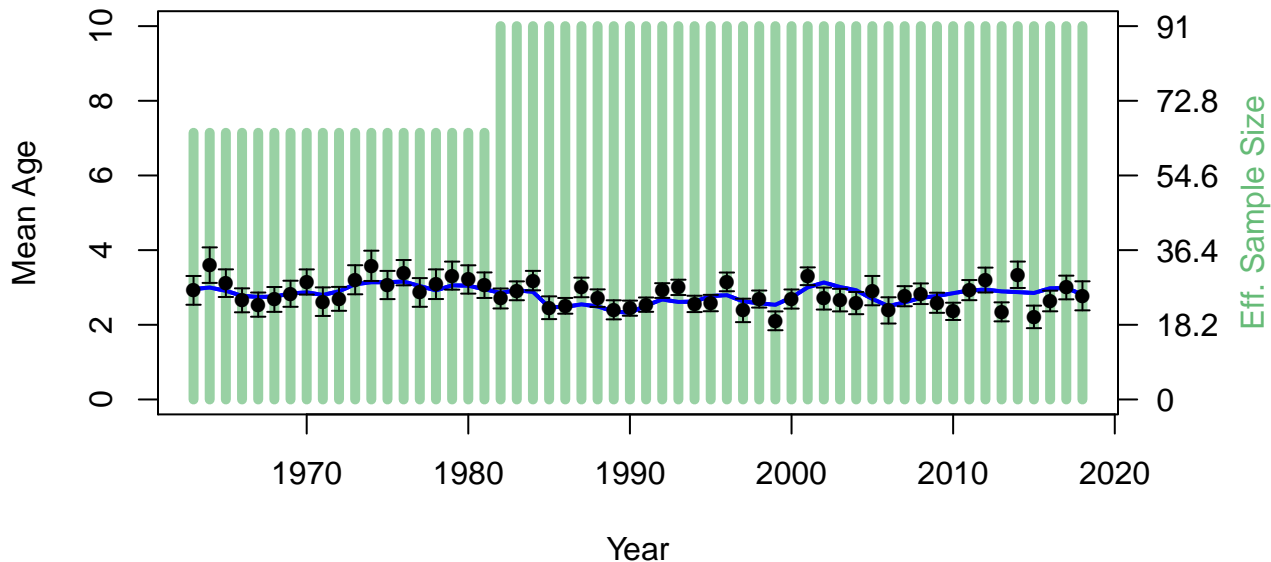
Index 1 (INDEX-1)



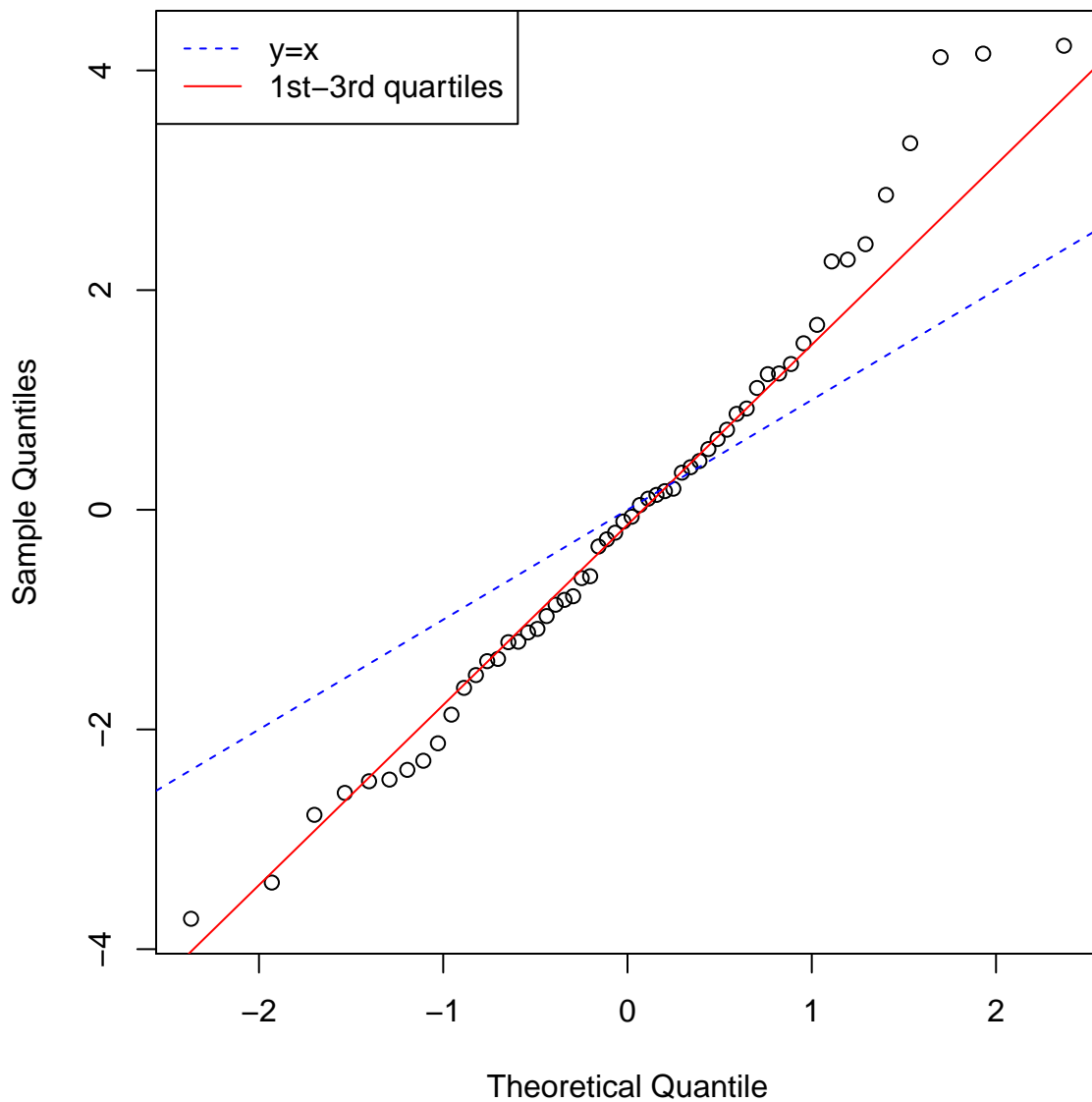
Index 1 (INDEX-1)



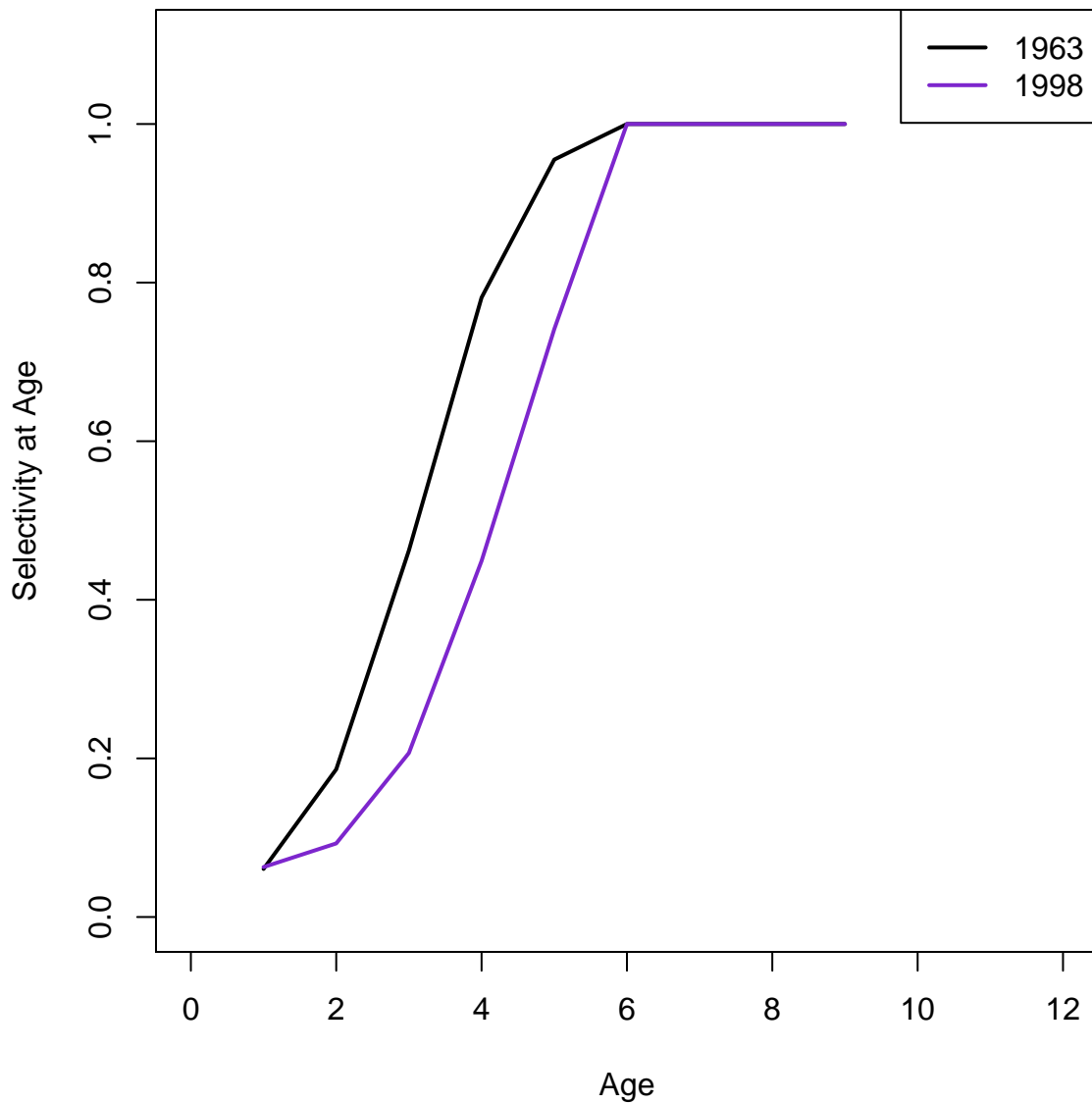
Index 2 (INDEX-2)

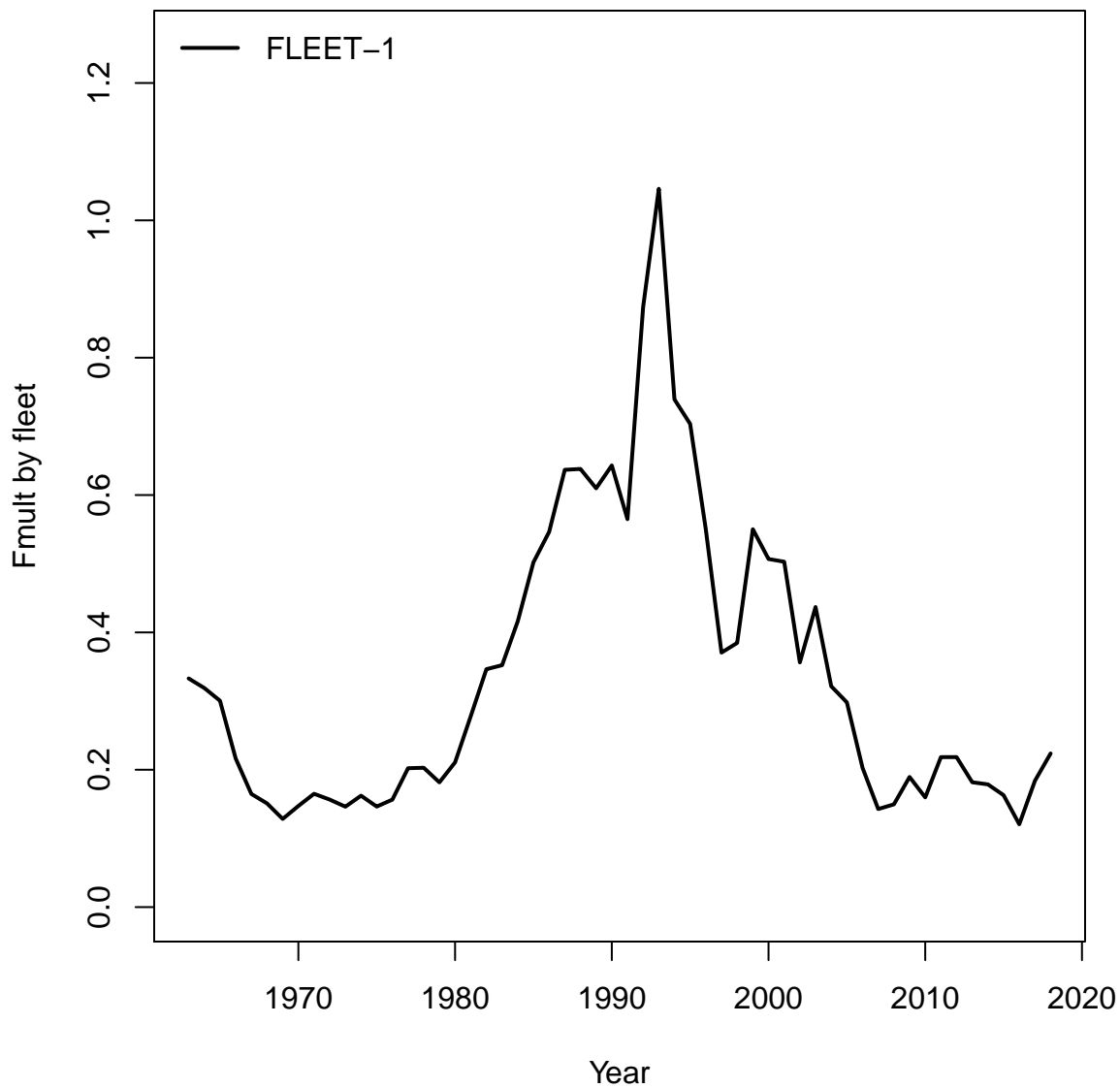


Index 2 (INDEX-2)

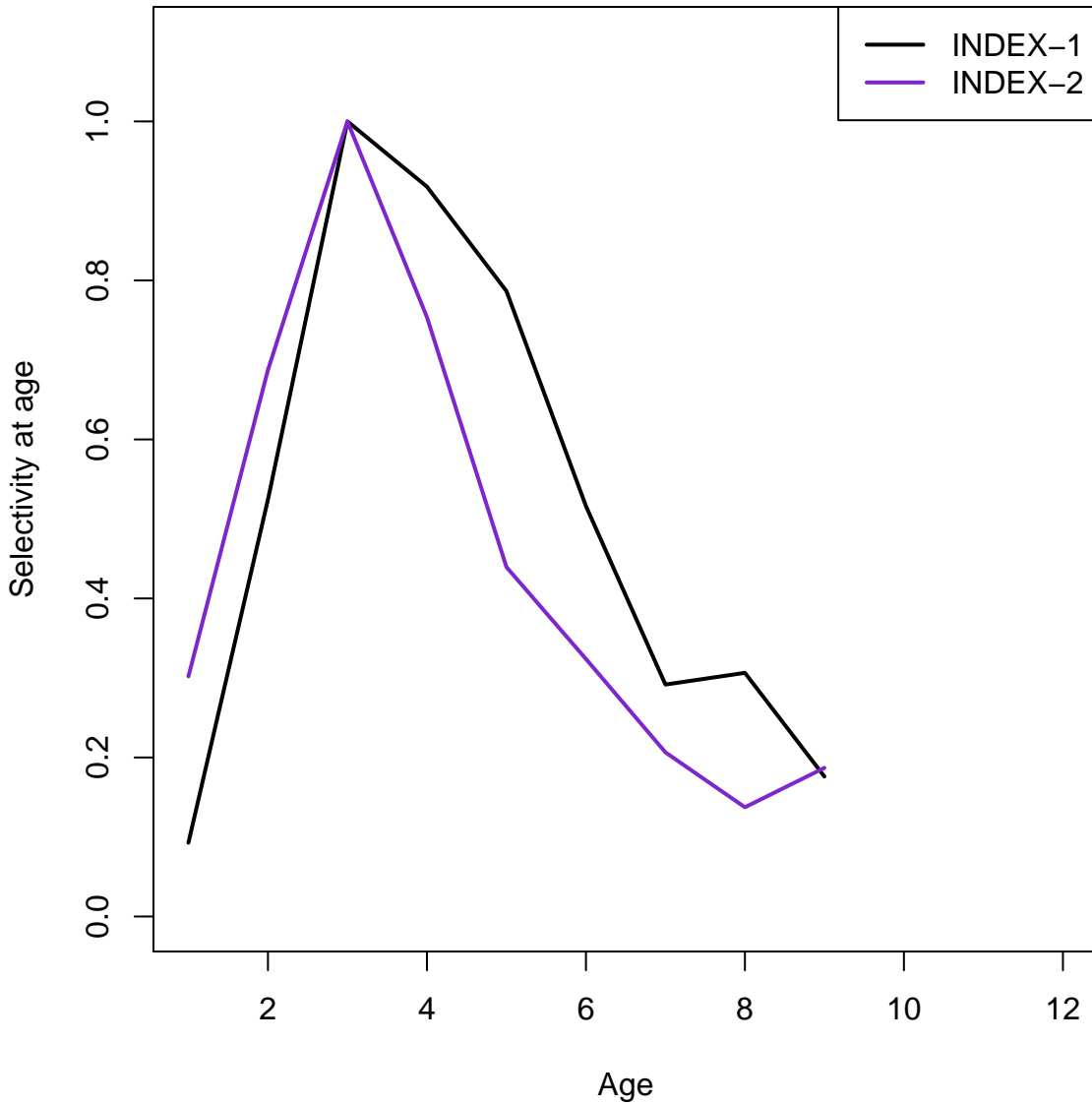


Fleet 1 (FLEET-1)





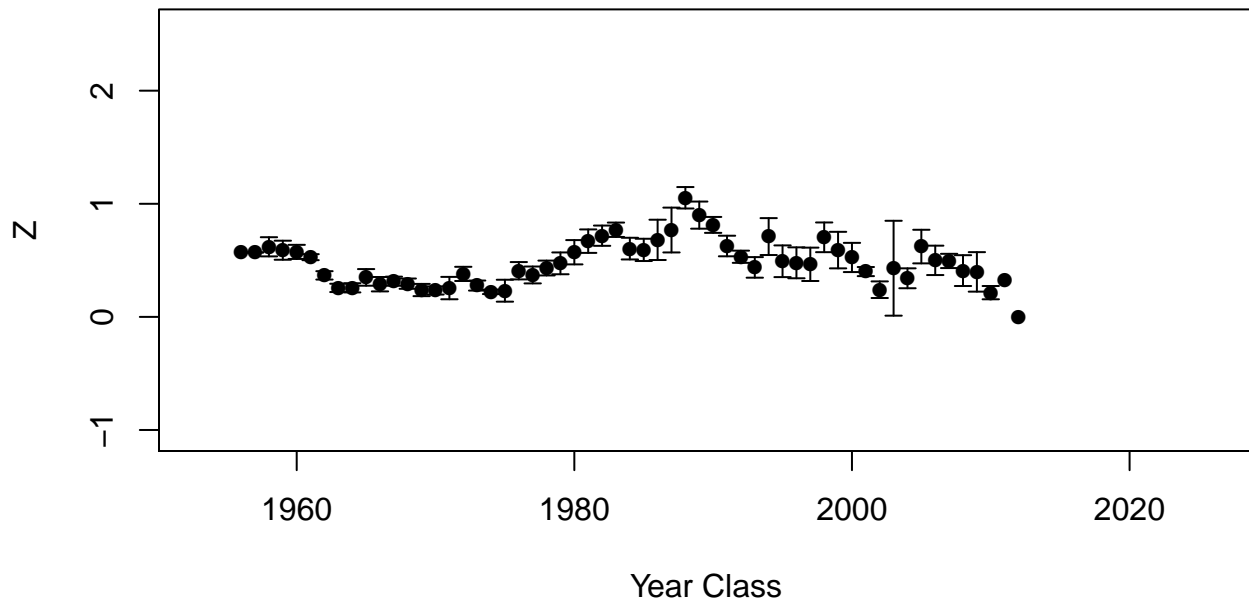
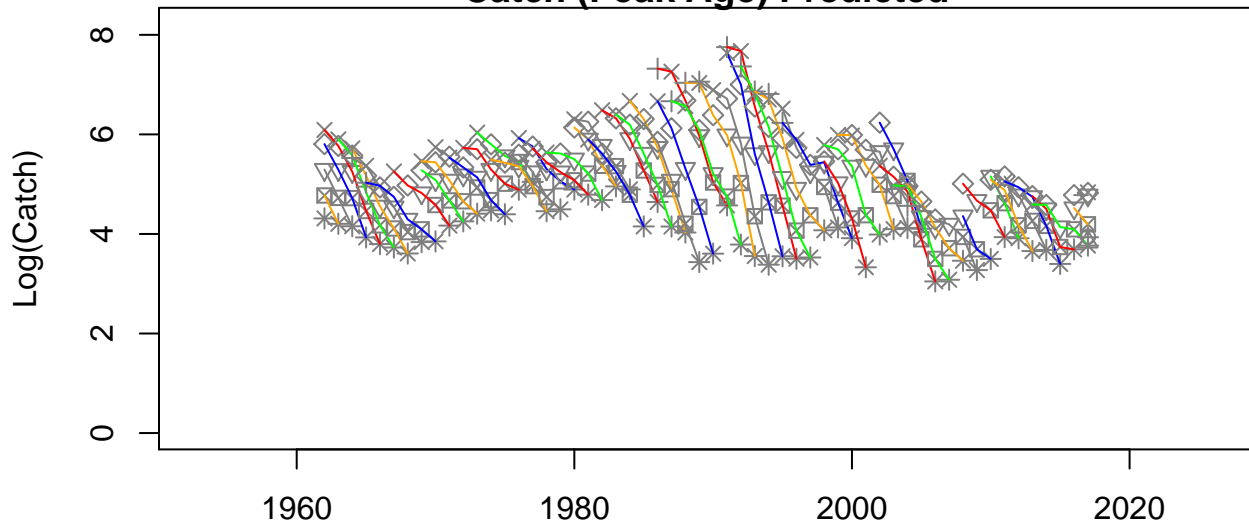
Indices



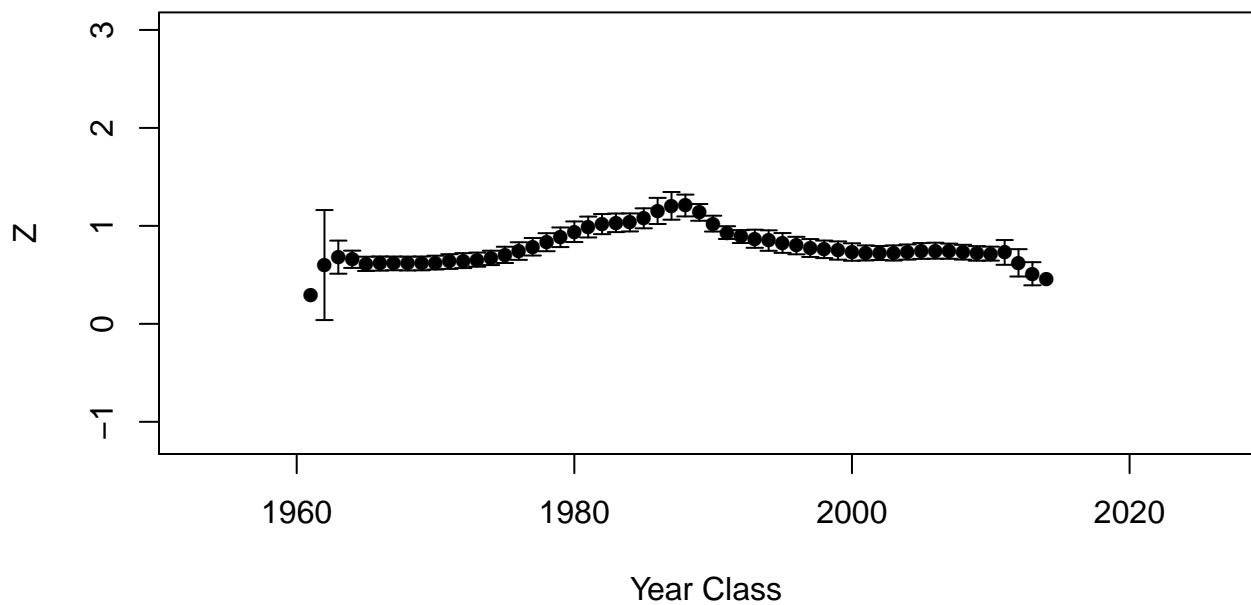
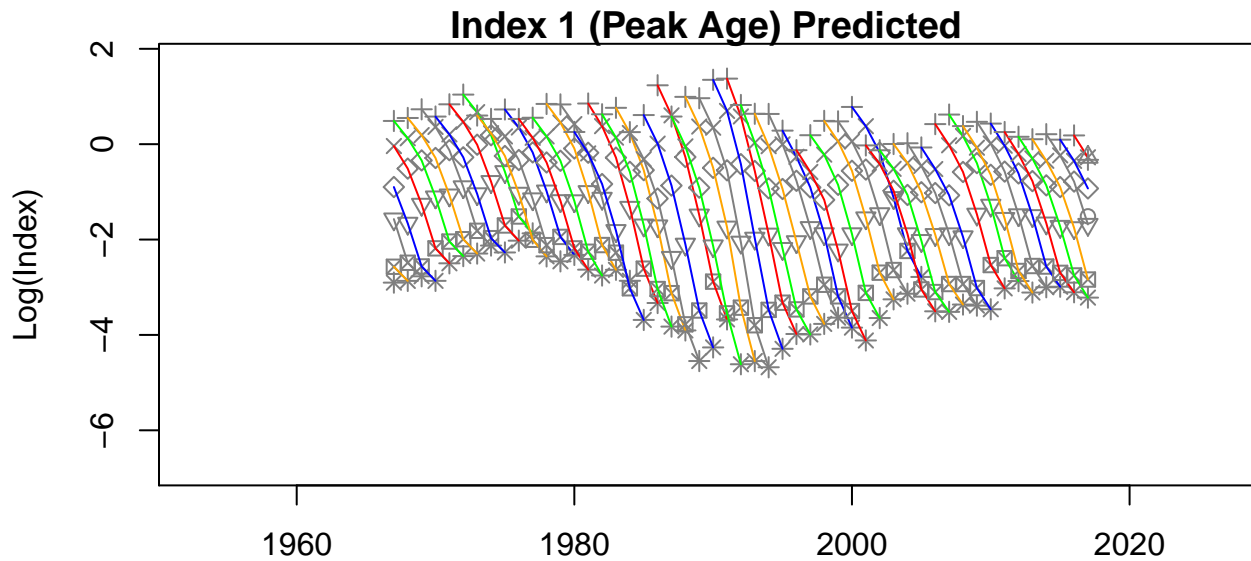
Catch (Peak Age) Observed



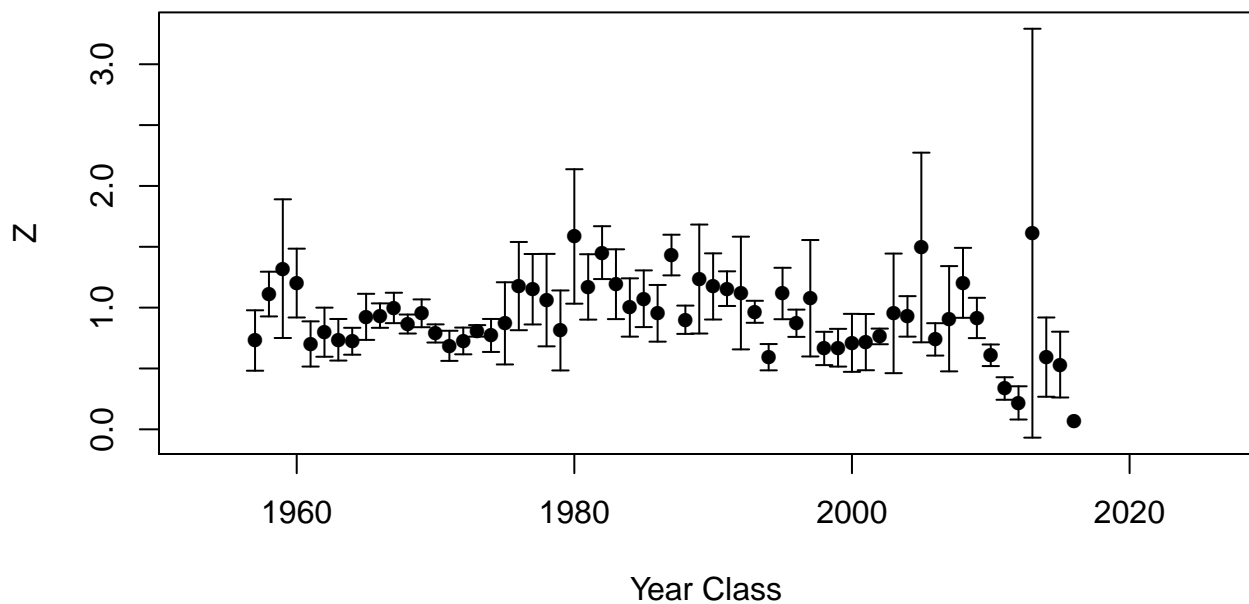
Catch (Peak Age) Predicted



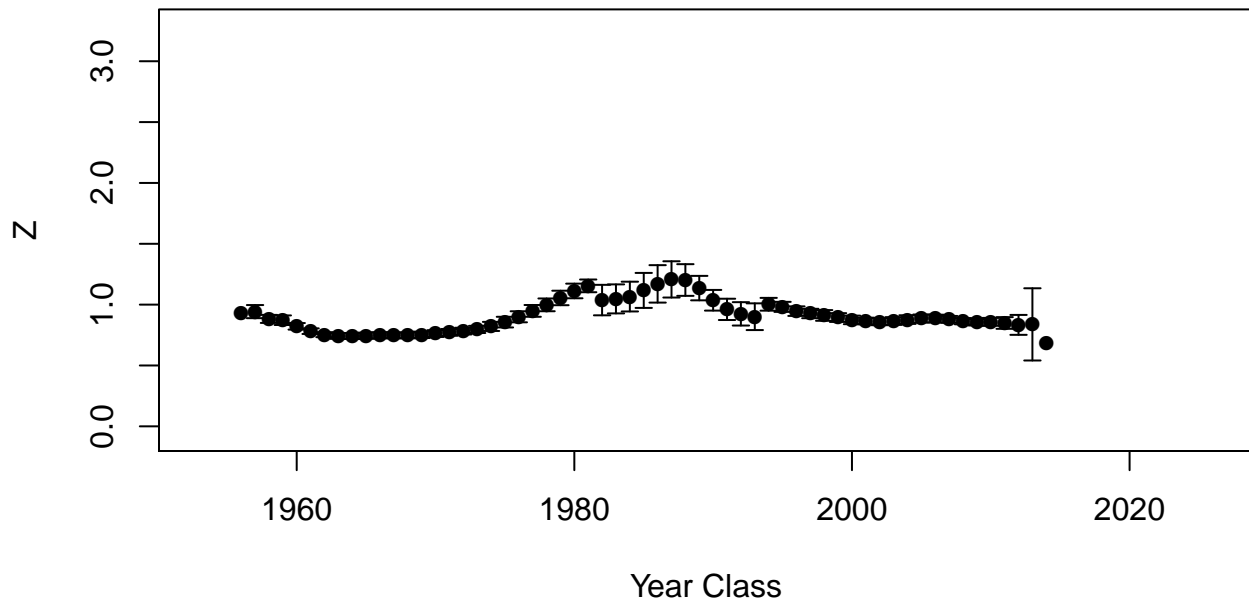
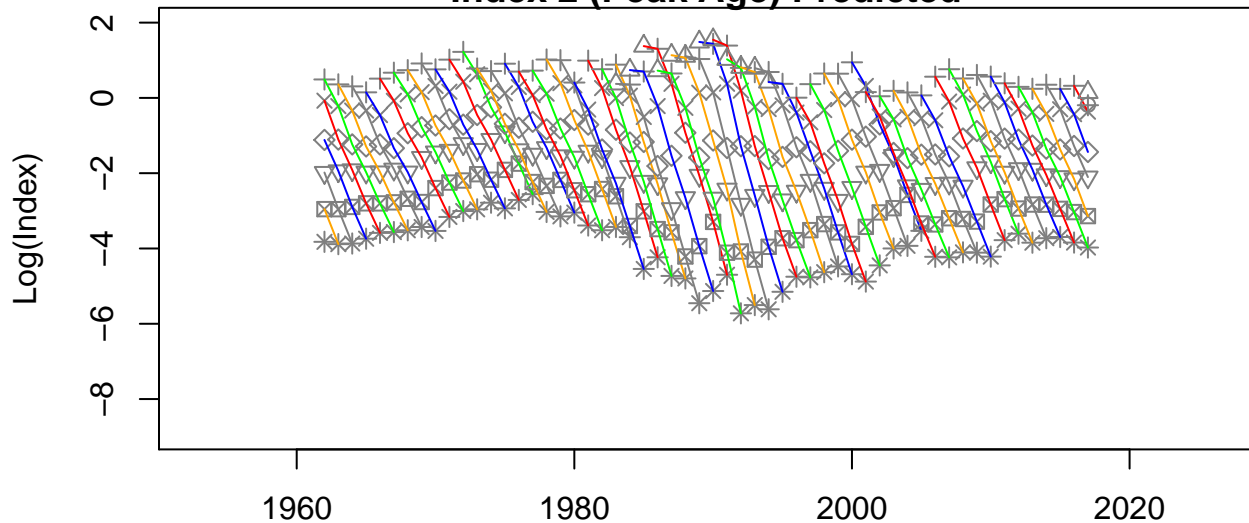




Index 2 (Peak Age) Observed



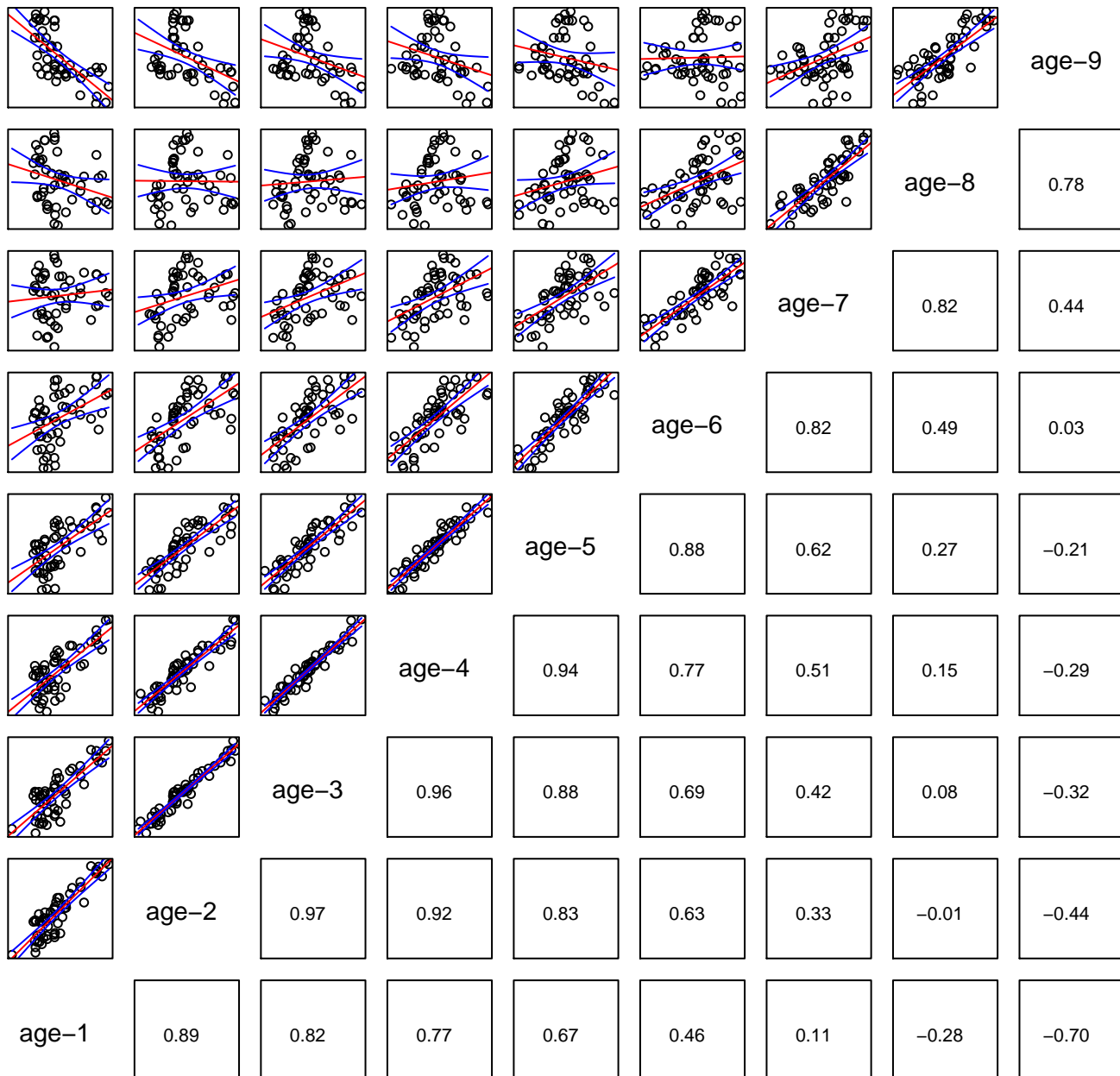
Index 2 (Peak Age) Predicted



Catch Observed



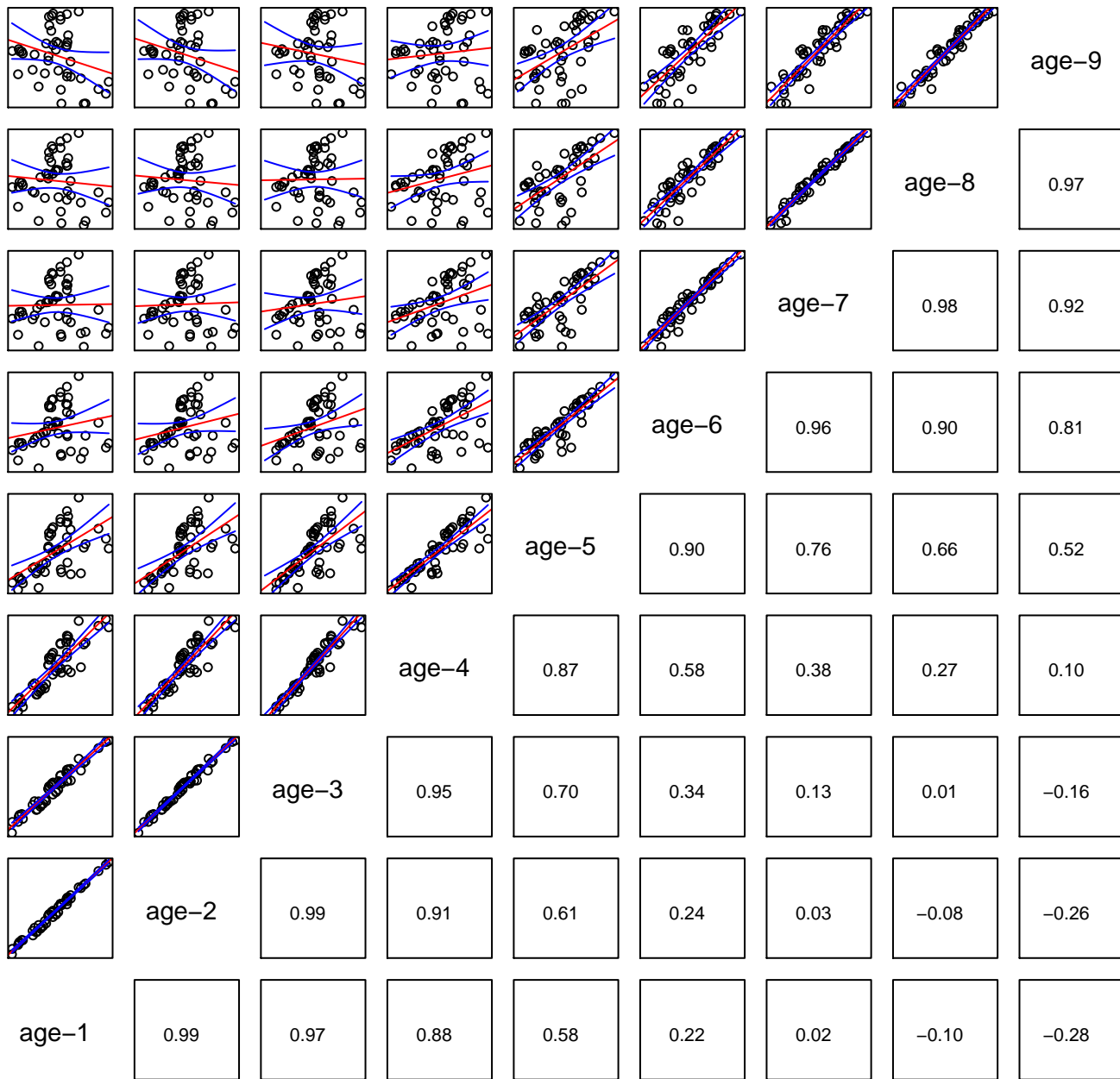
Catch Predicted



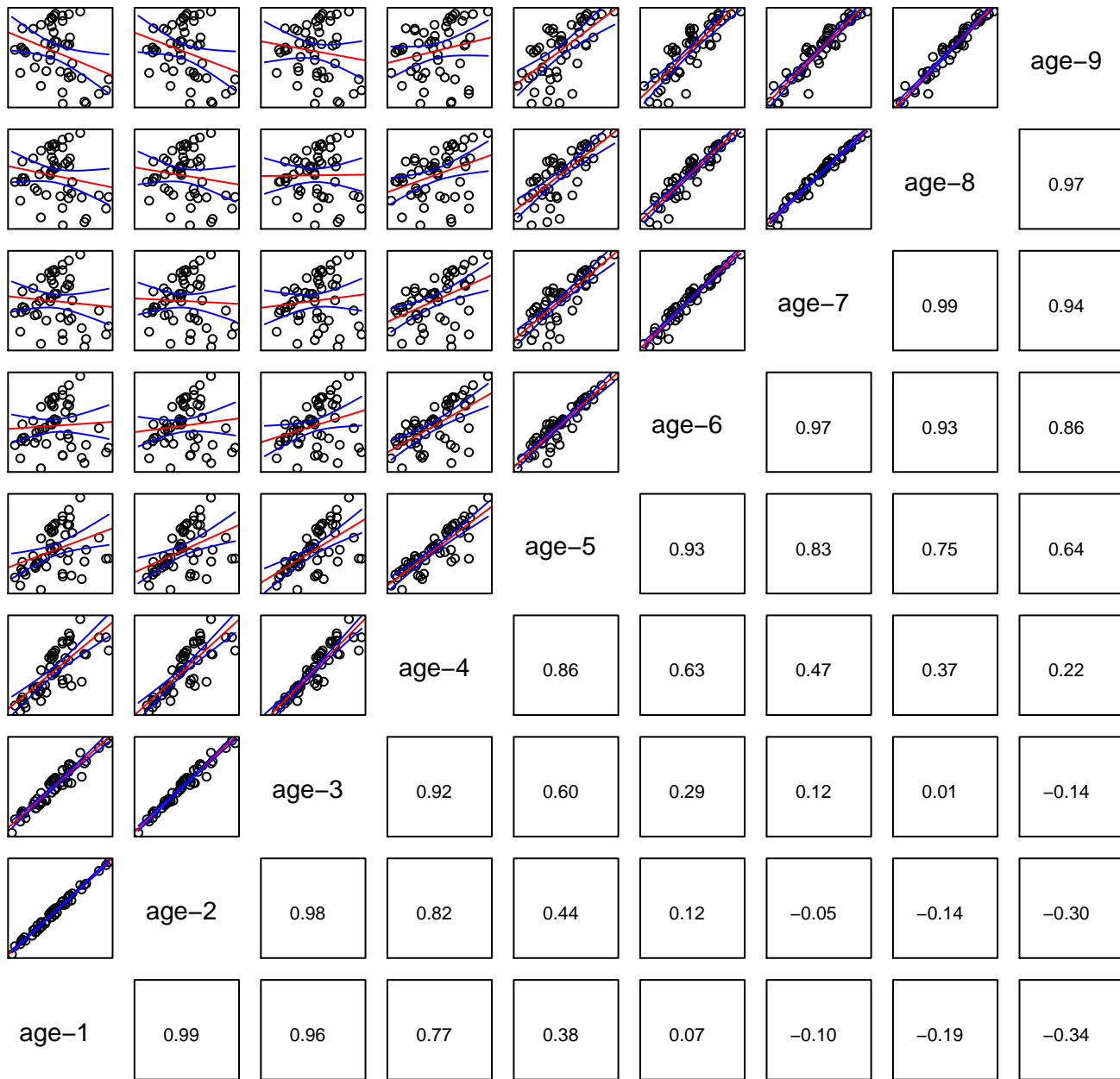
Index 1 (INDEX-1) Observed

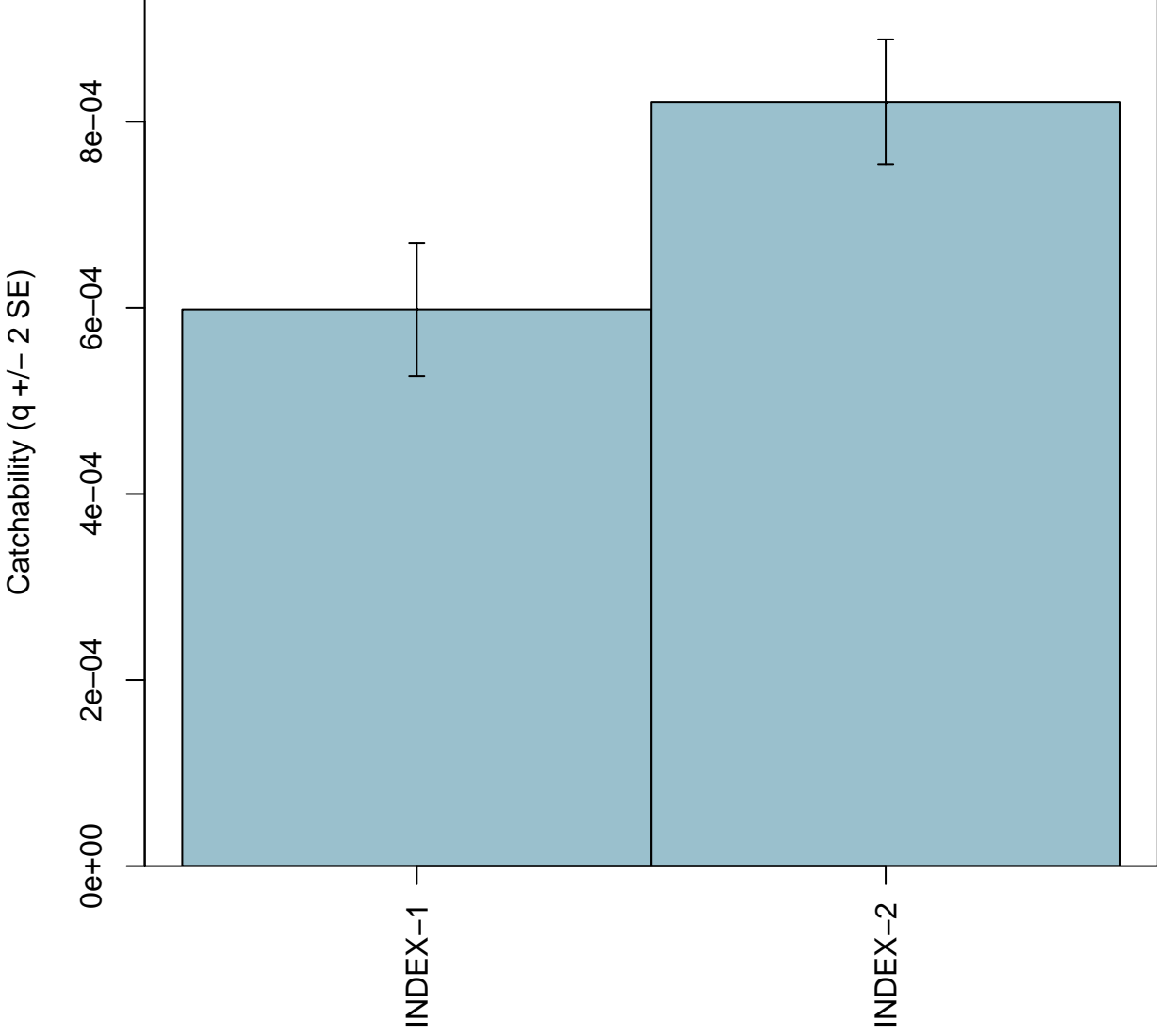


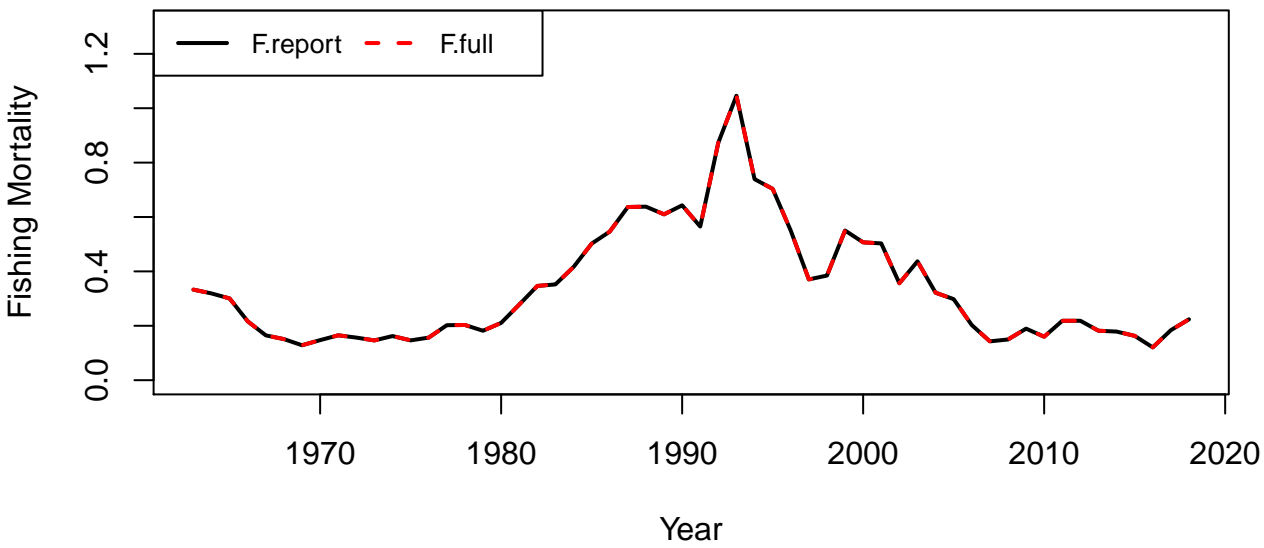
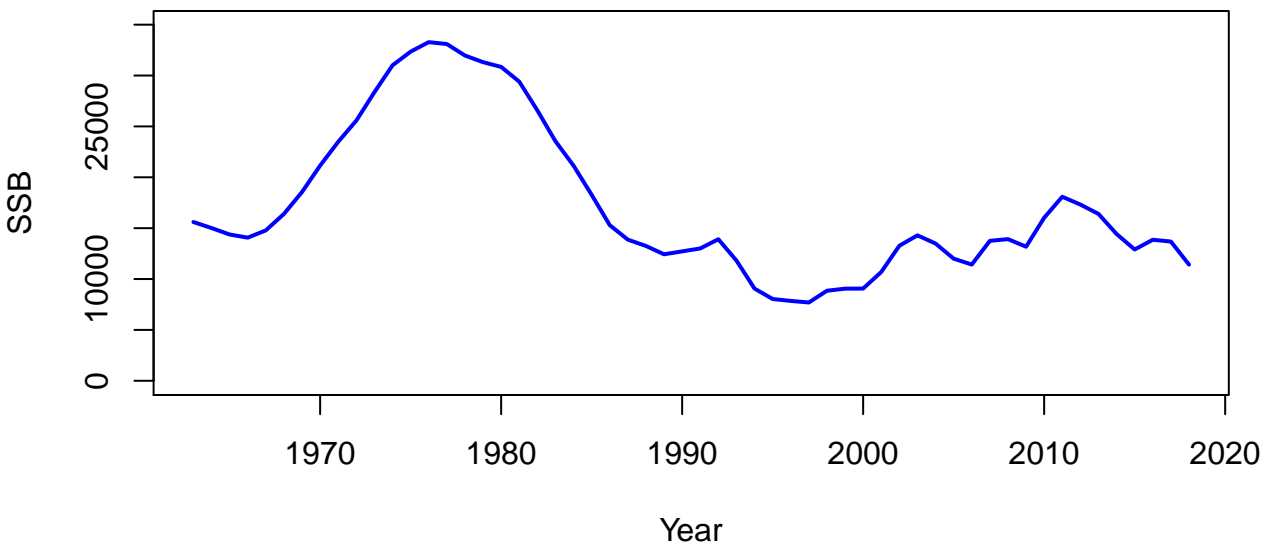
Index 1 (INDEX-1) Predicted



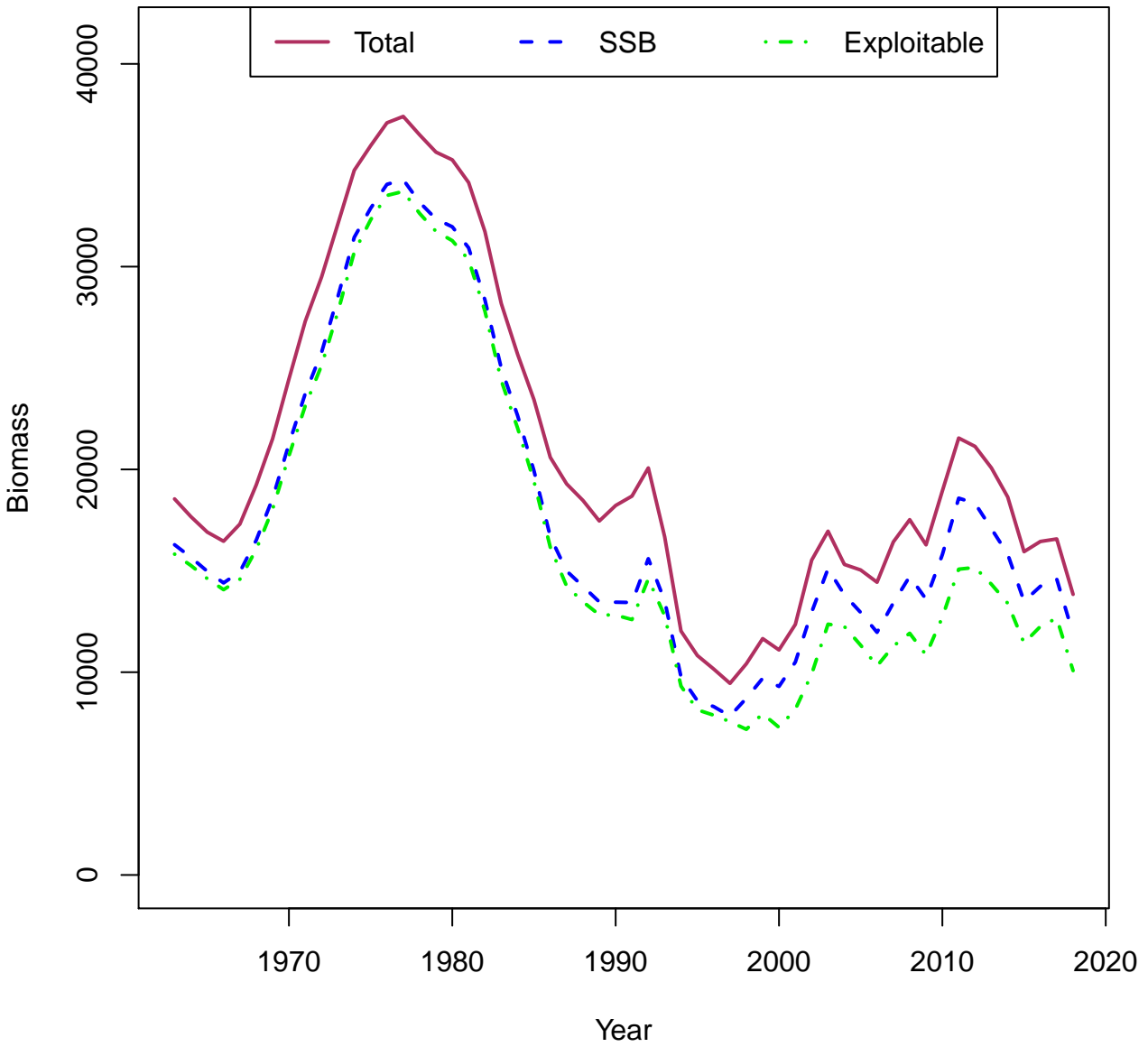
Index 2 (INDEX-2) Predicted

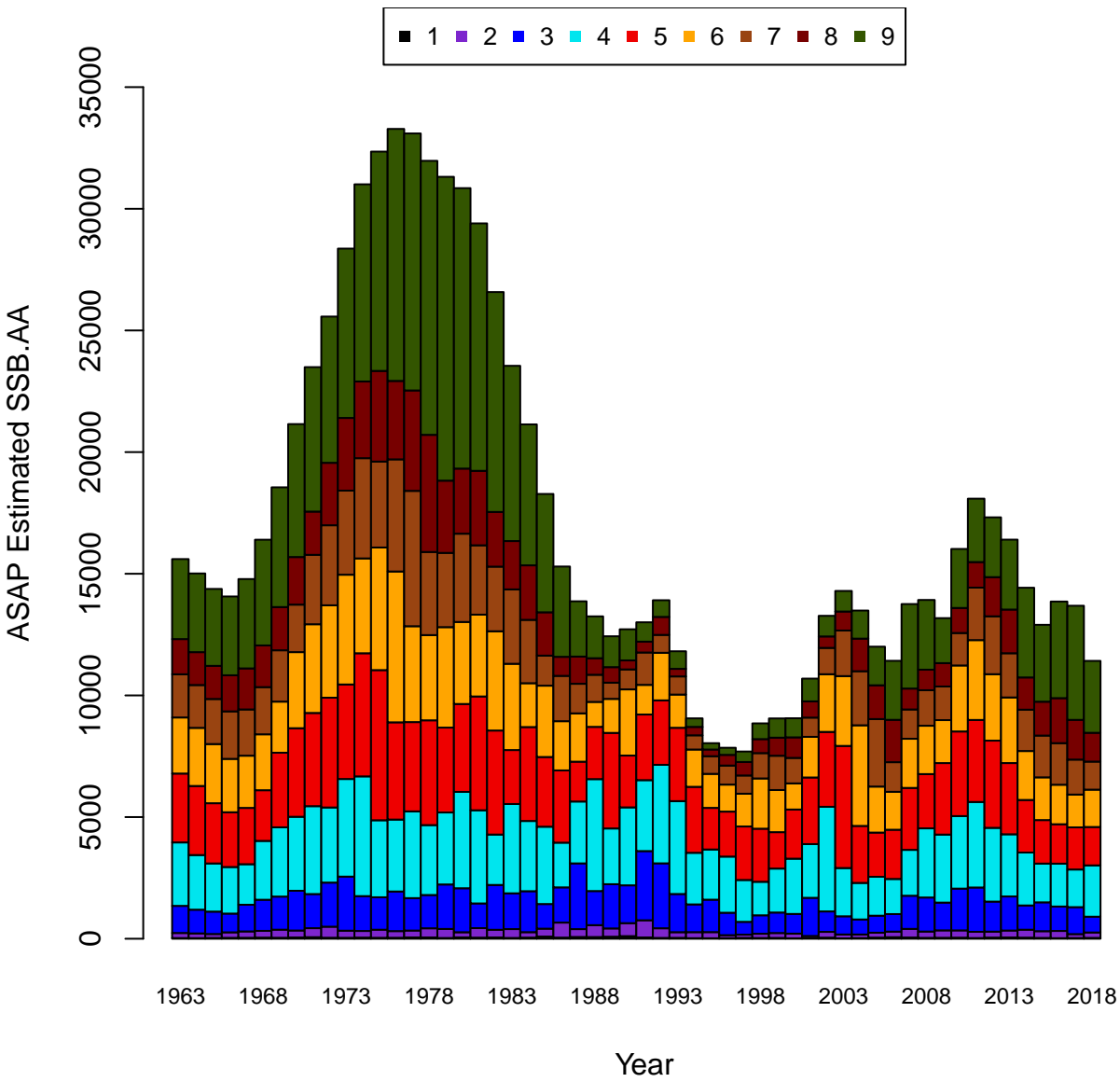


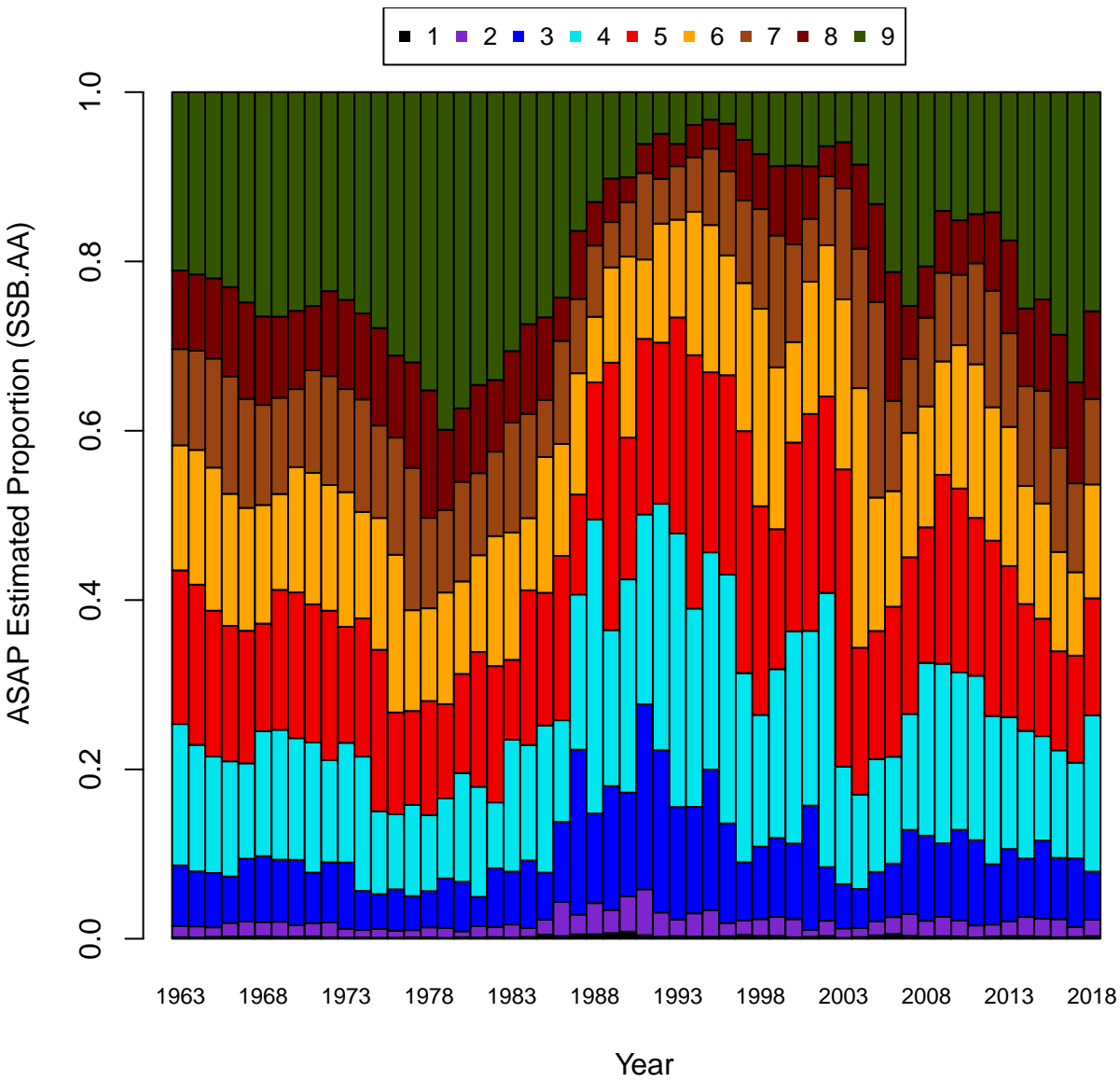


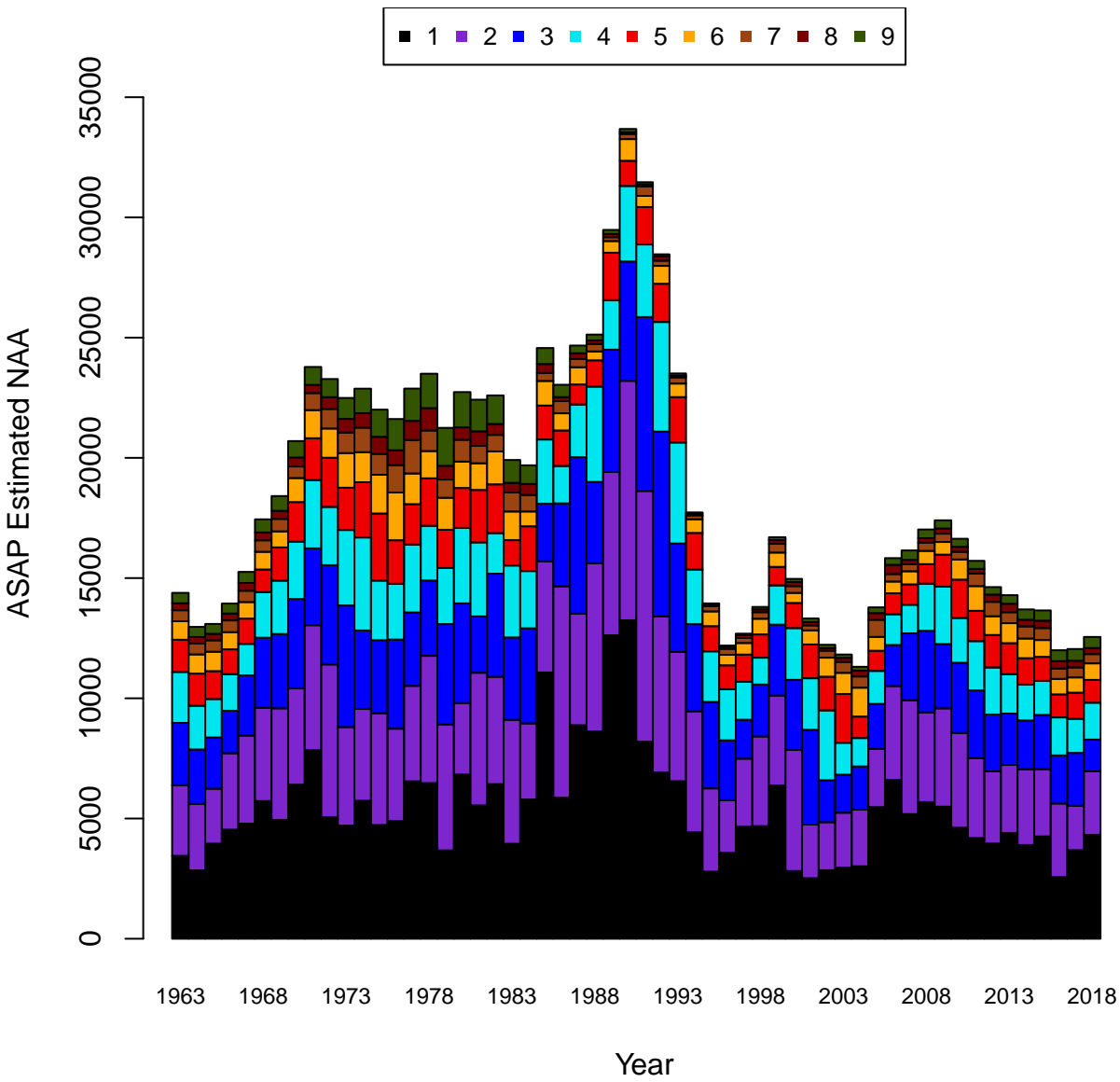


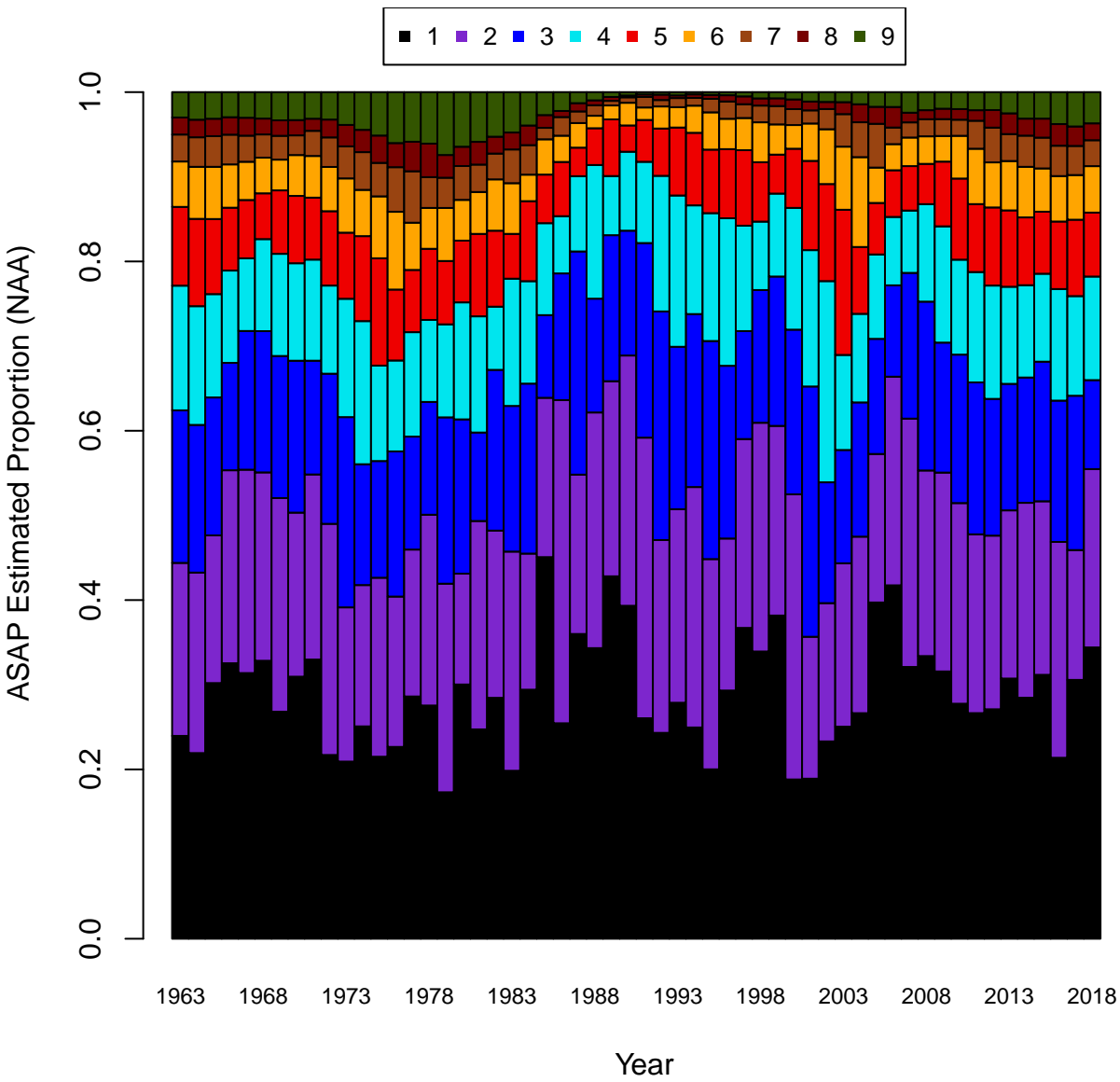
Comparison of January 1 Biomass

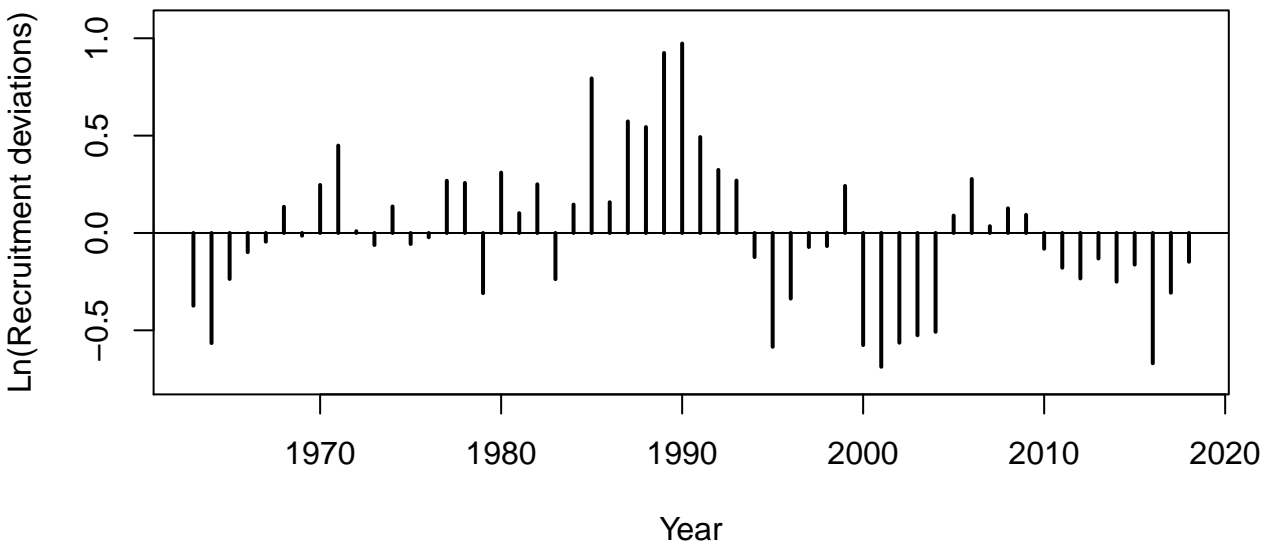
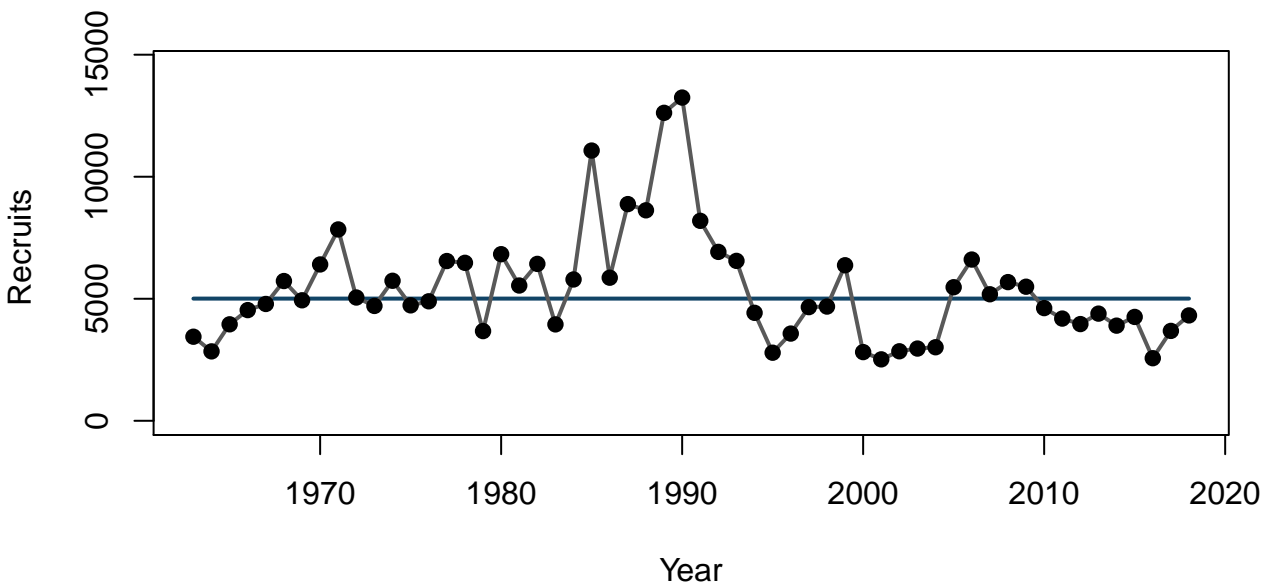


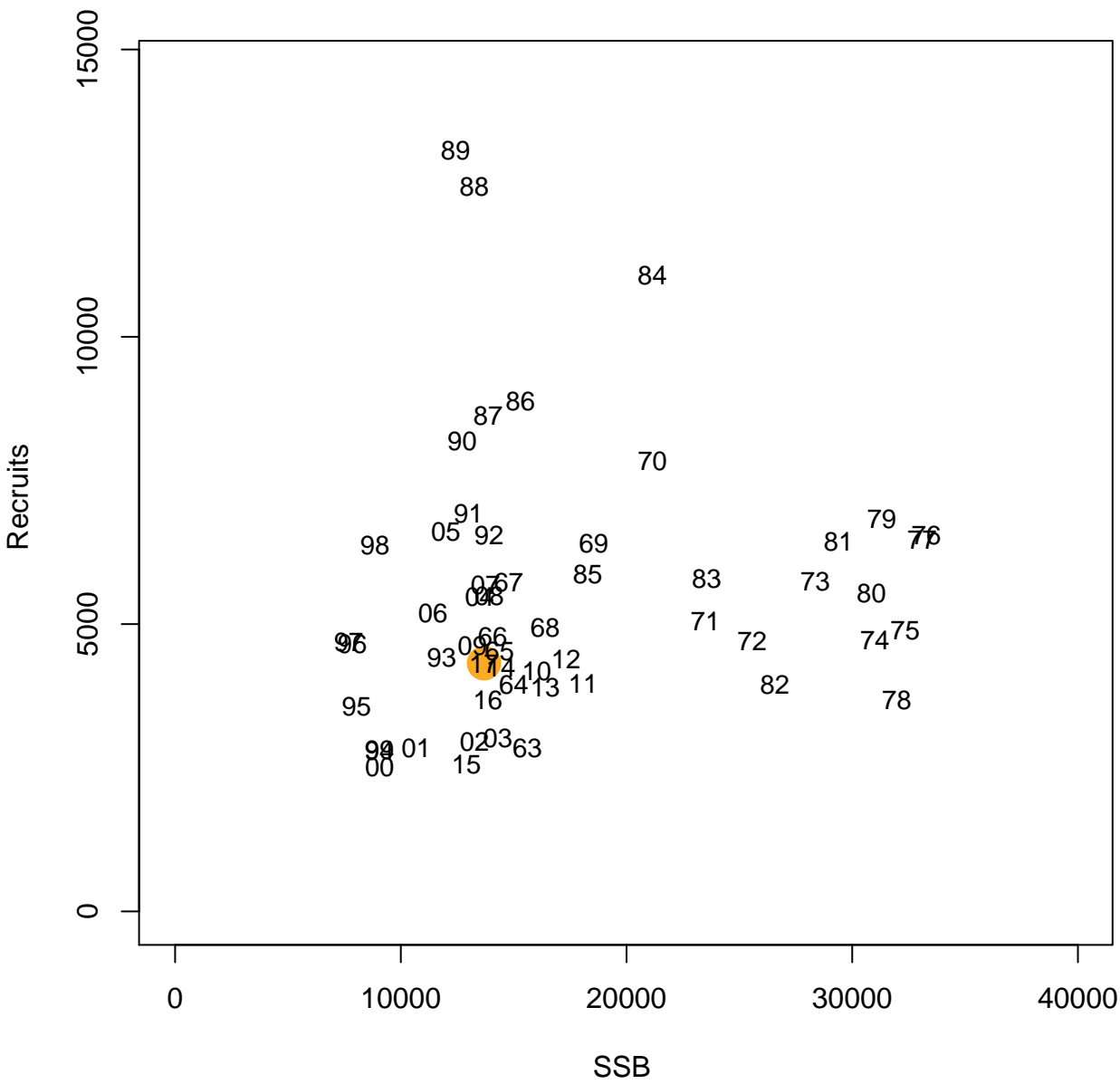


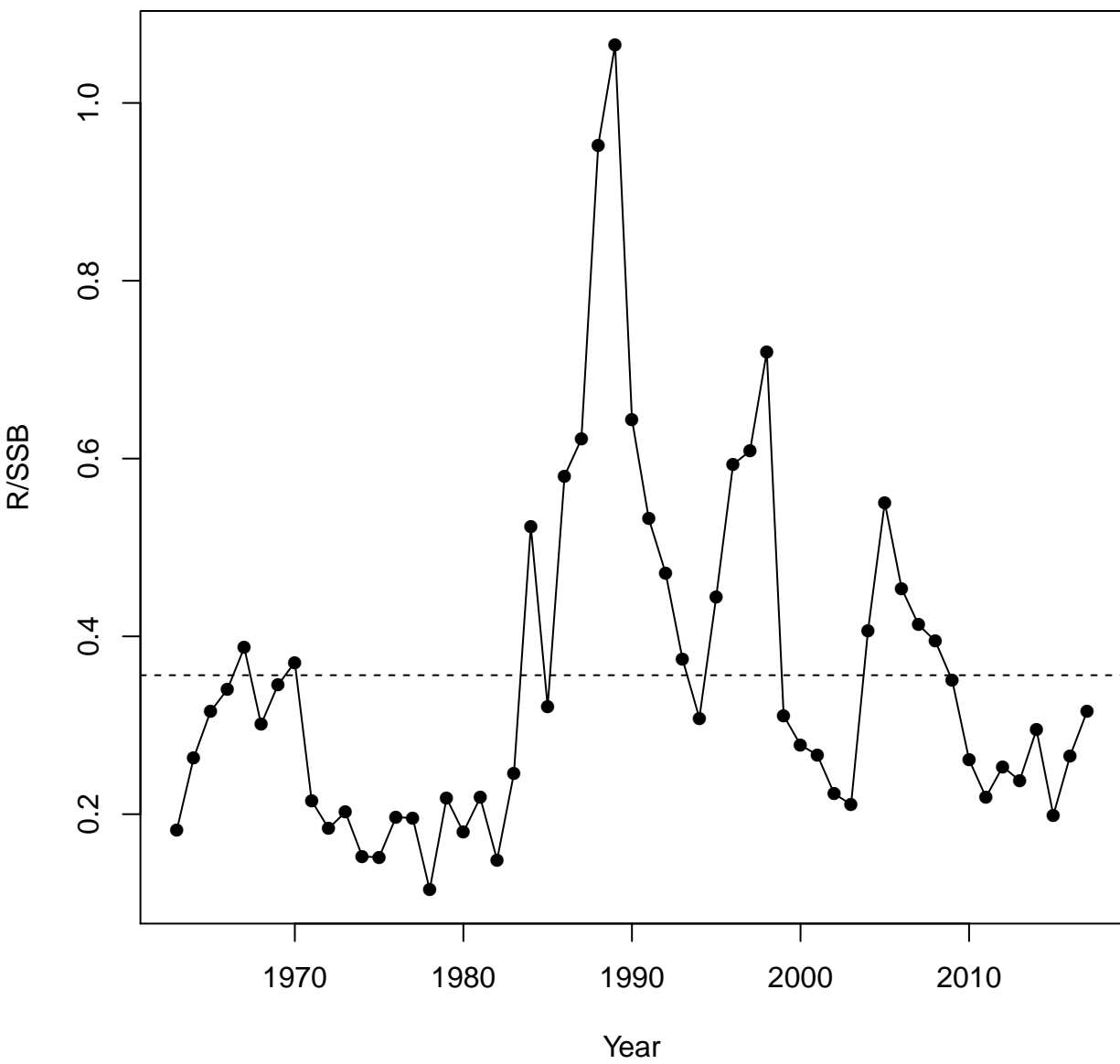


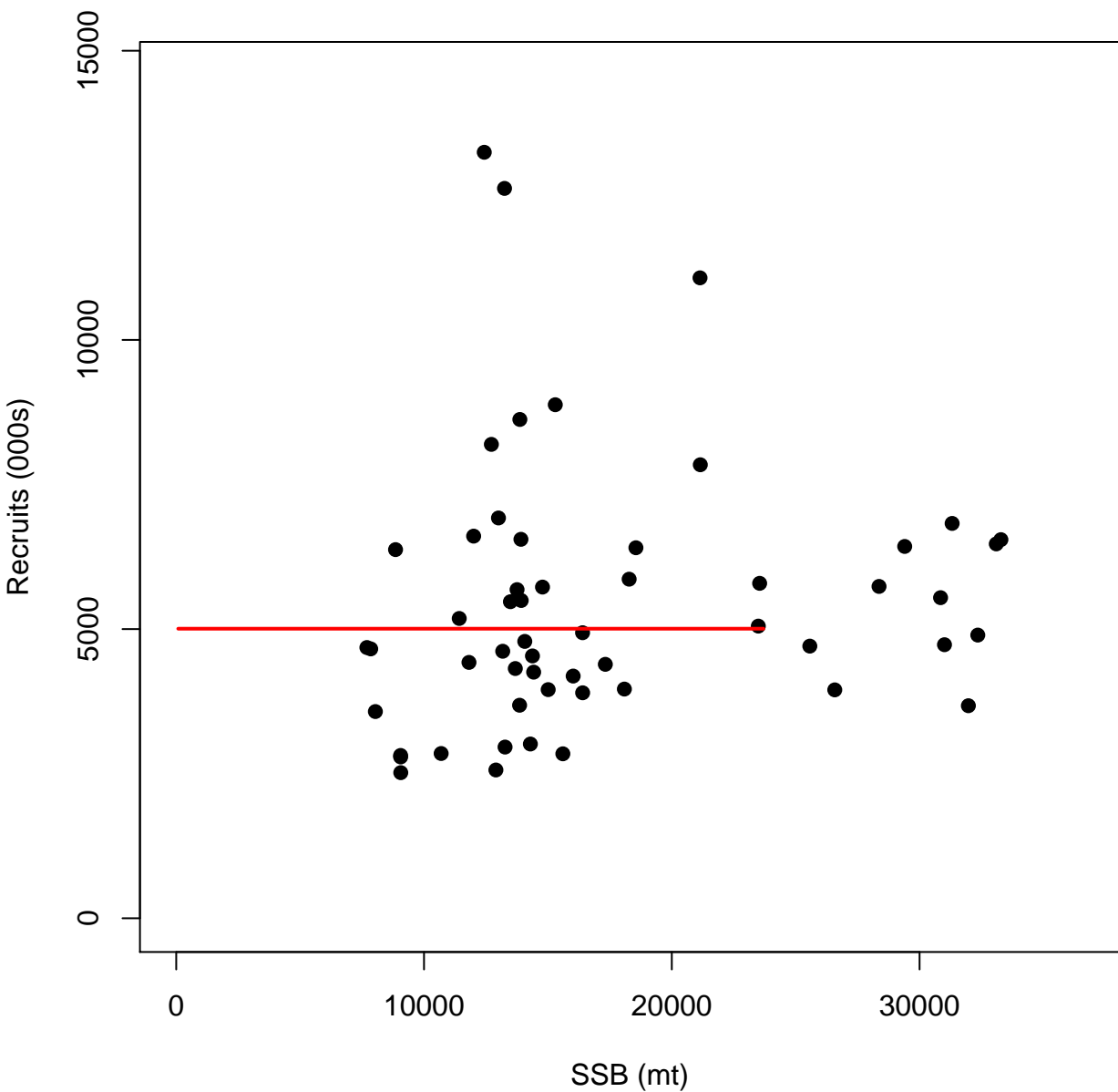


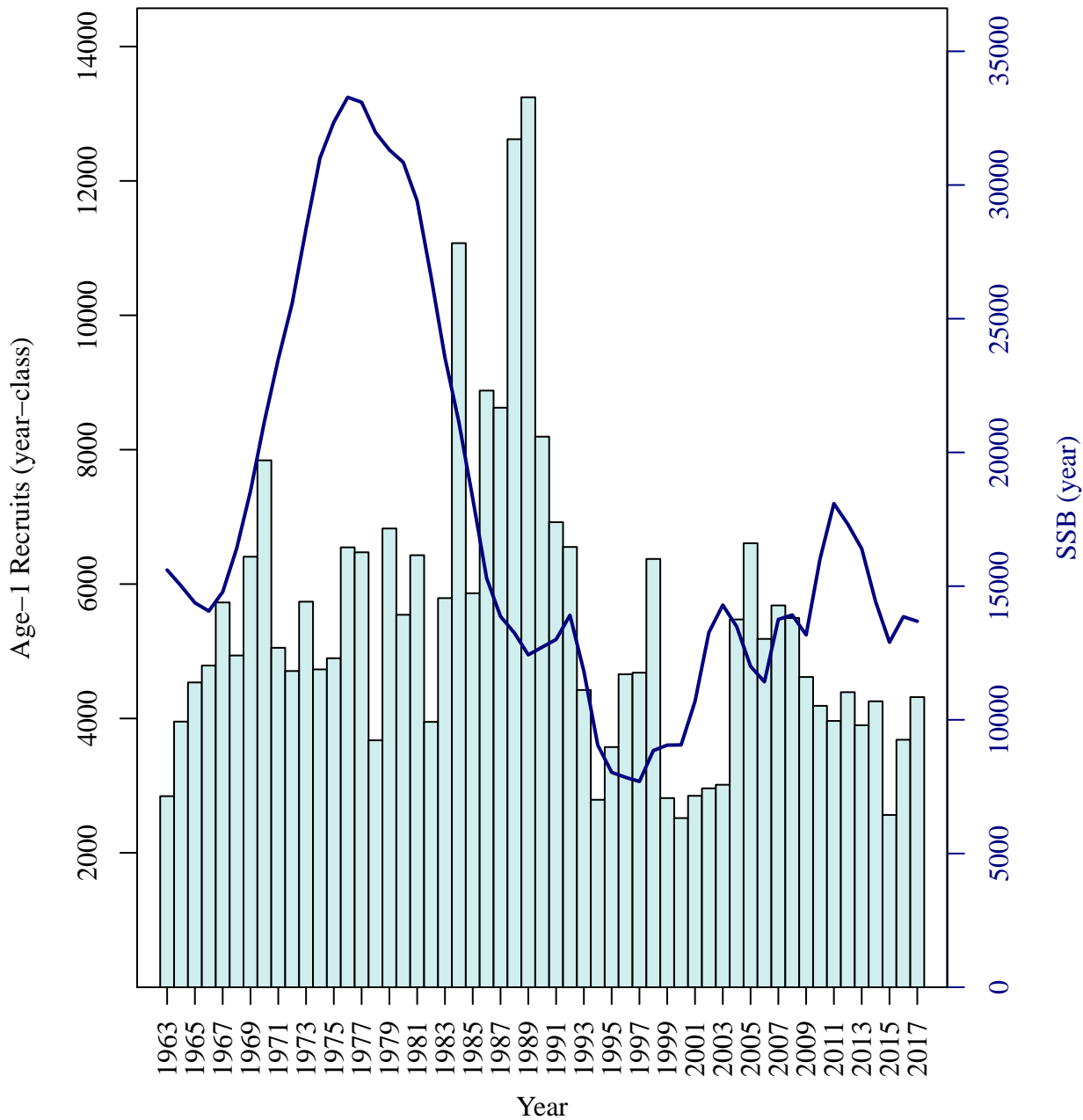


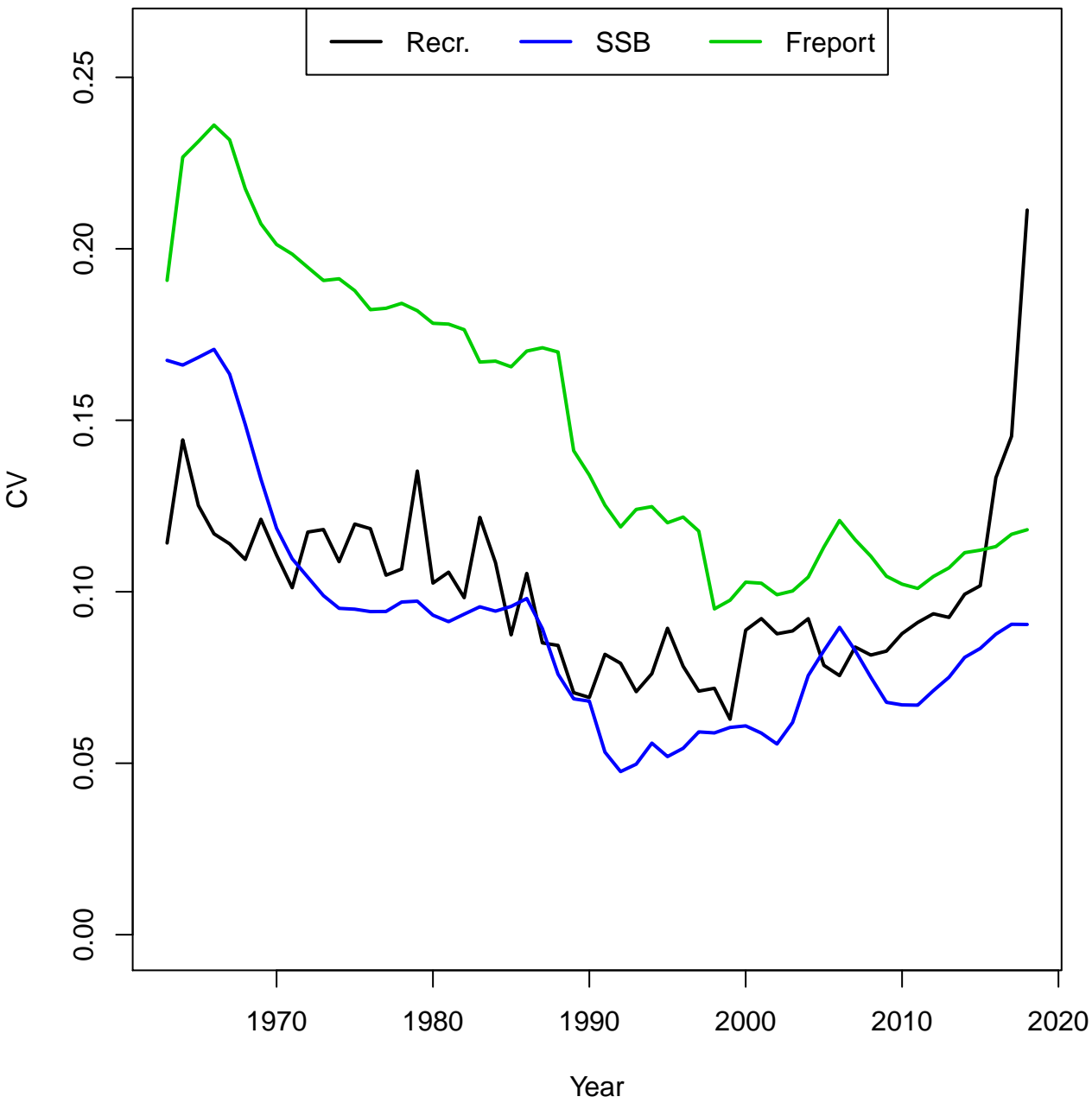




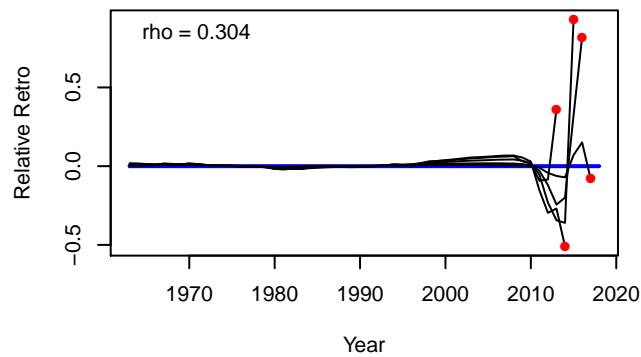
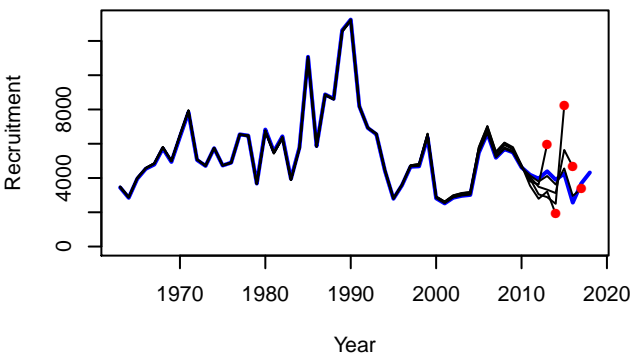
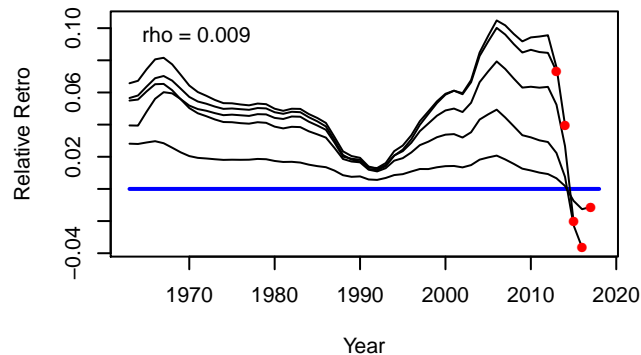
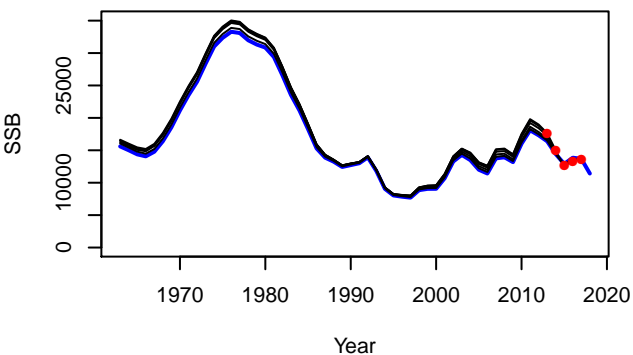
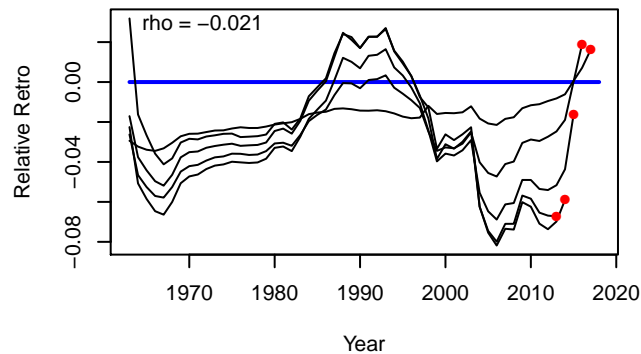
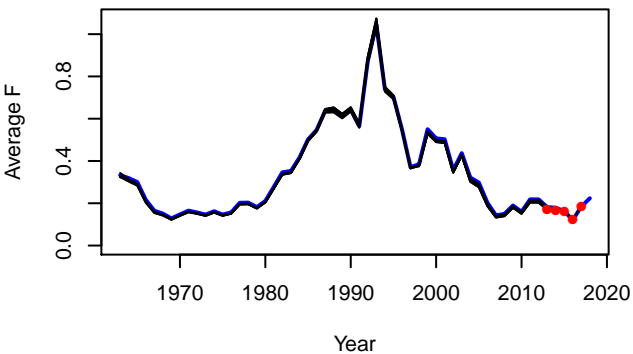




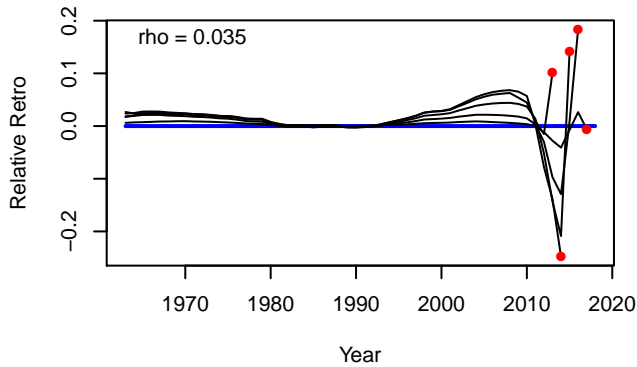
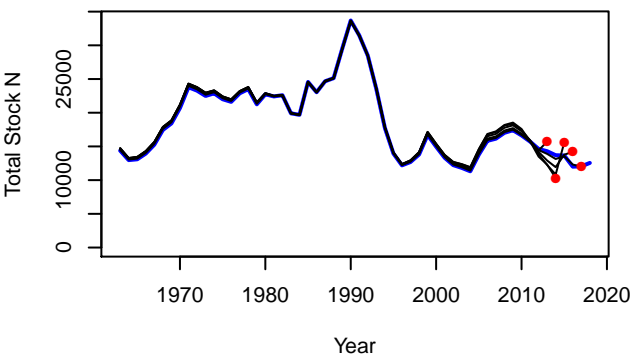
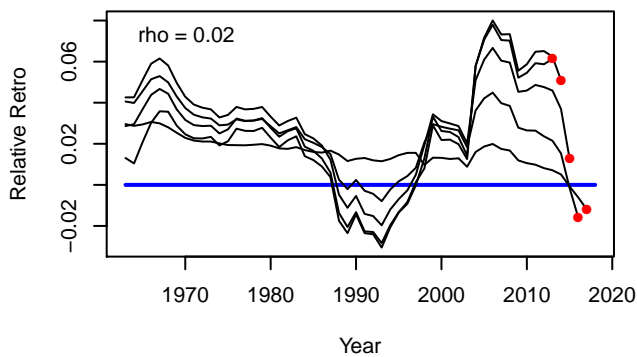
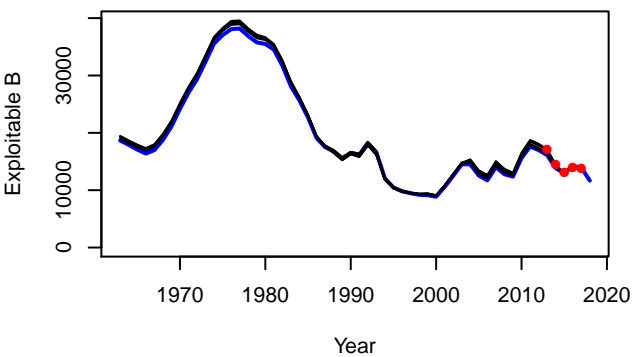
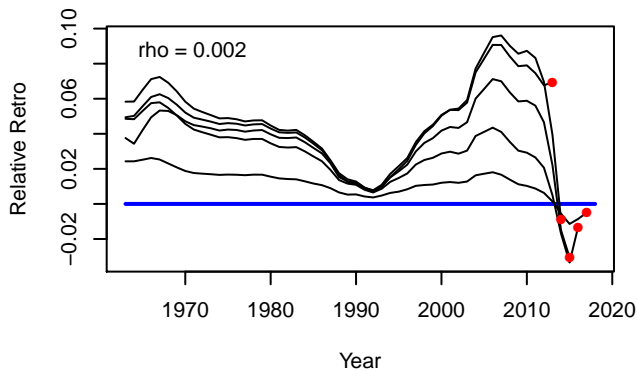
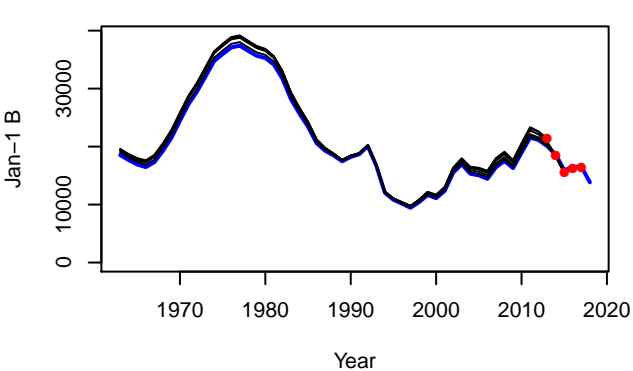




F, SSB, R

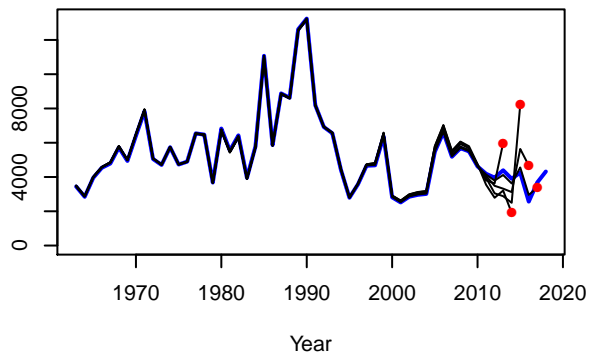


Jan-1 B, Exploitable B, Total Stock N

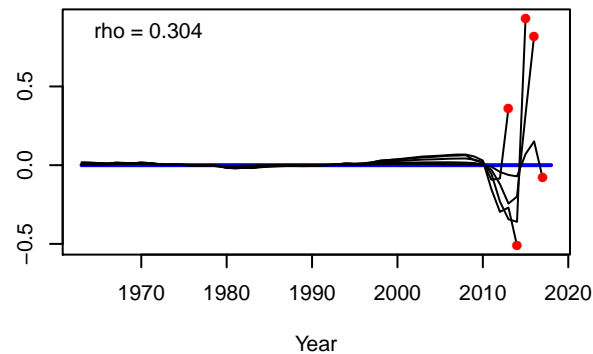


Stock Numbers at Age

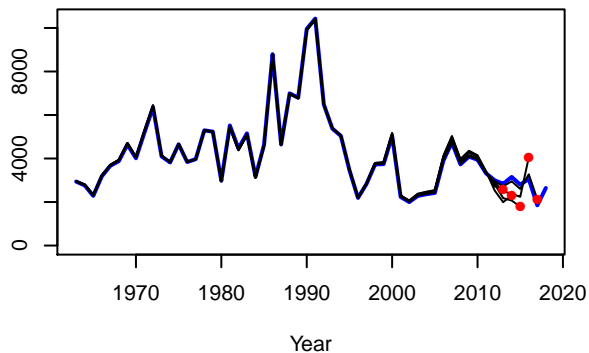
N at Age 1



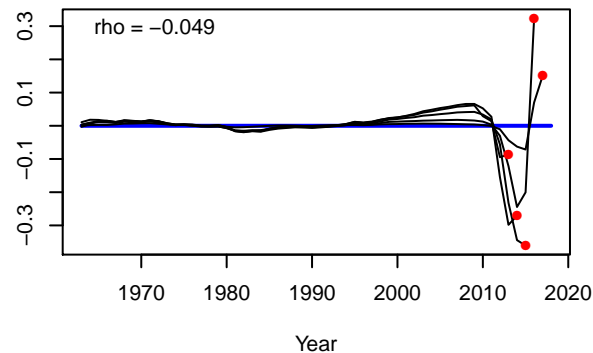
Relative Retro



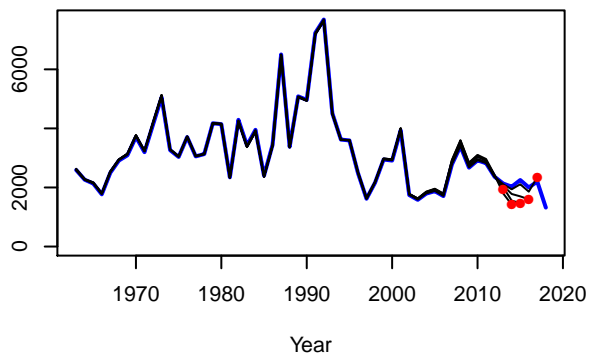
N at Age 2



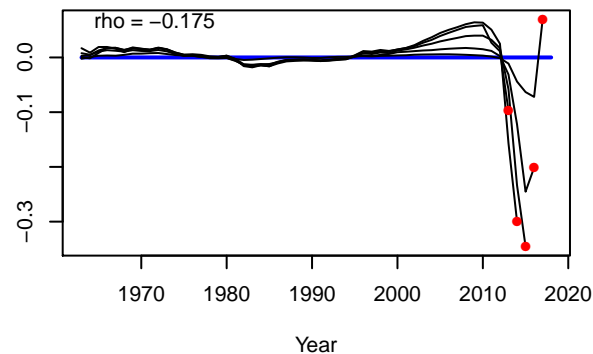
Relative Retro



N at Age 3

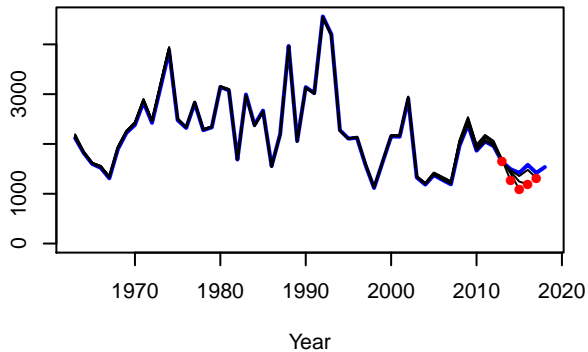


Relative Retro

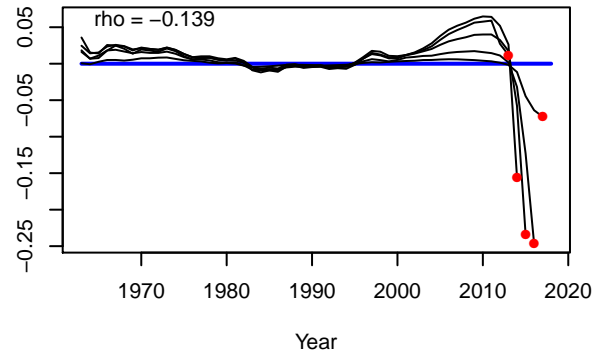


Stock Numbers at Age

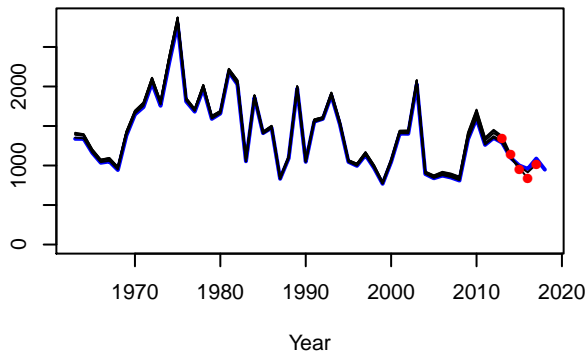
N at Age 4



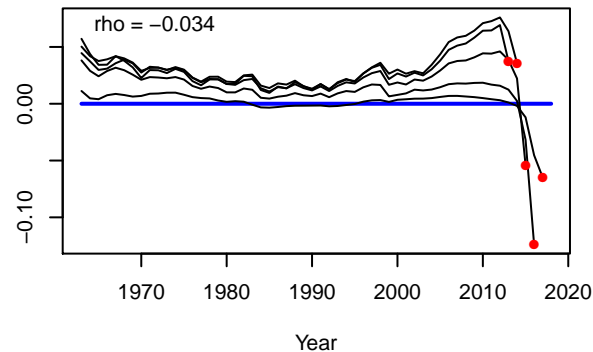
Relative Retro



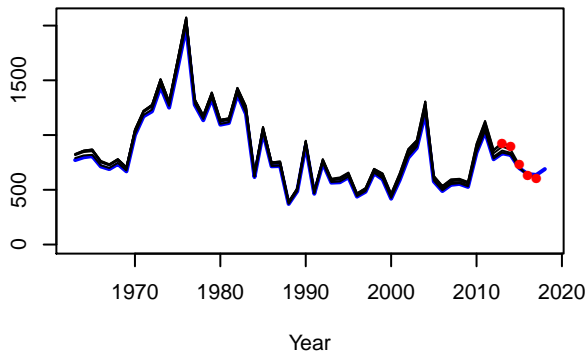
N at Age 5



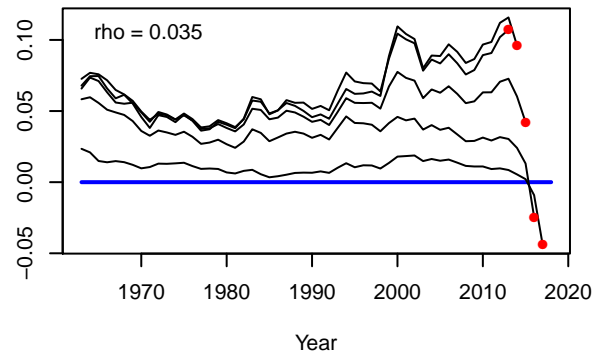
Relative Retro



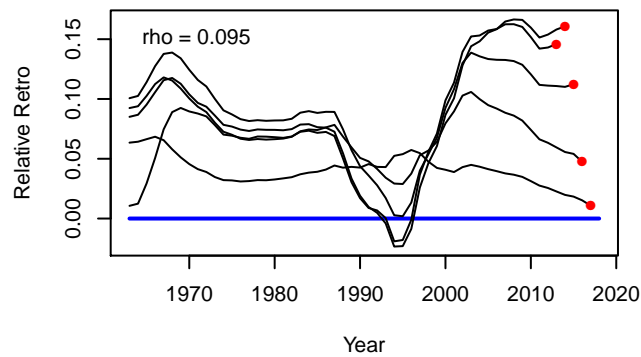
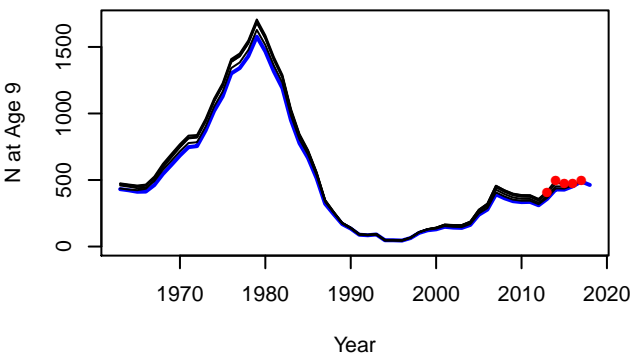
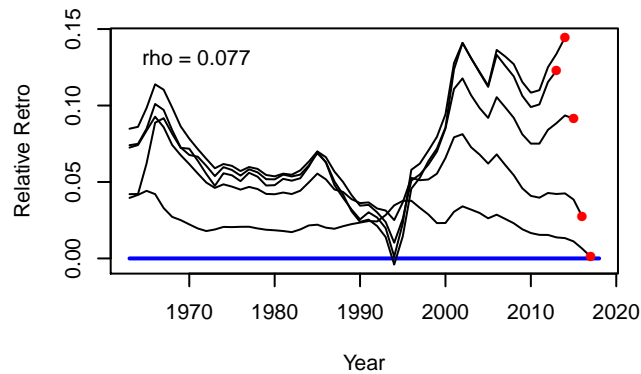
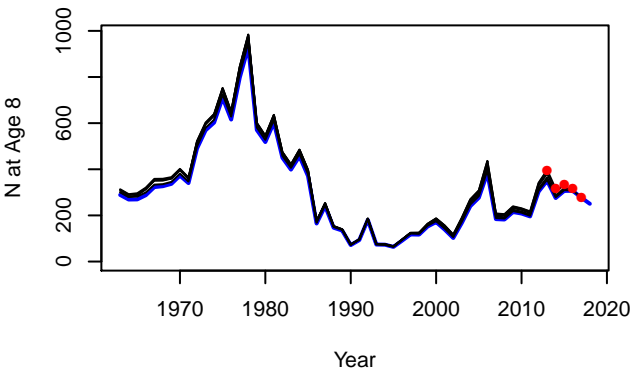
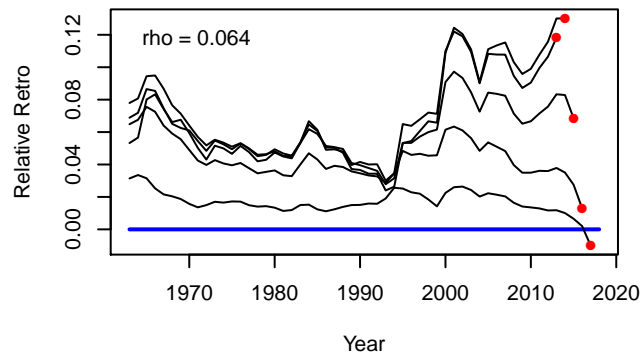
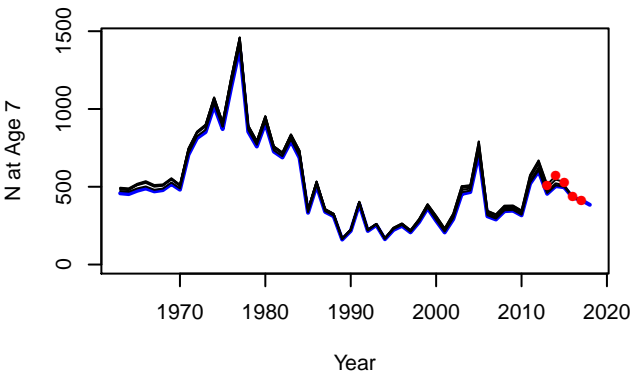
N at Age 6



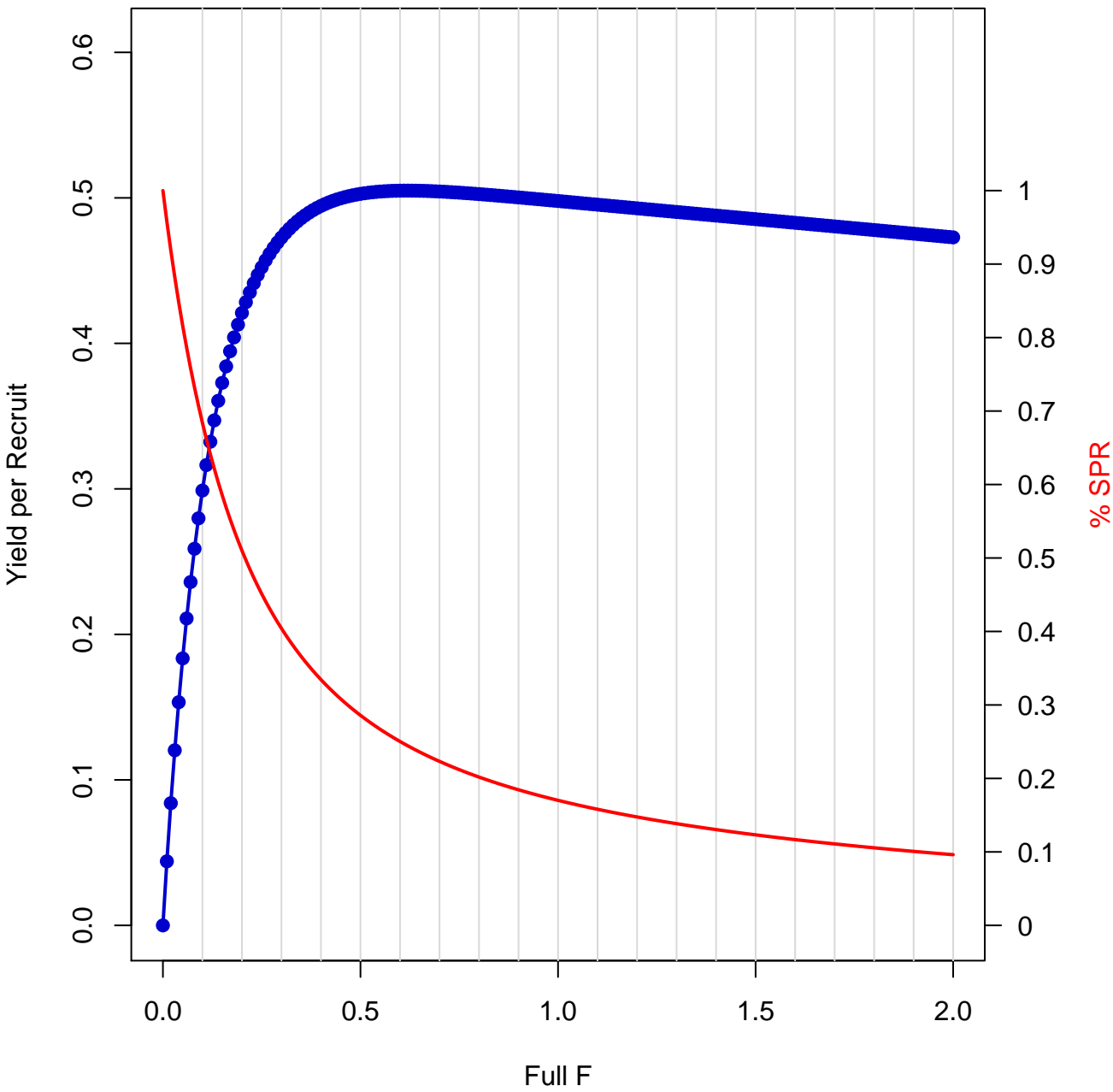
Relative Retro



Stock Numbers at Age



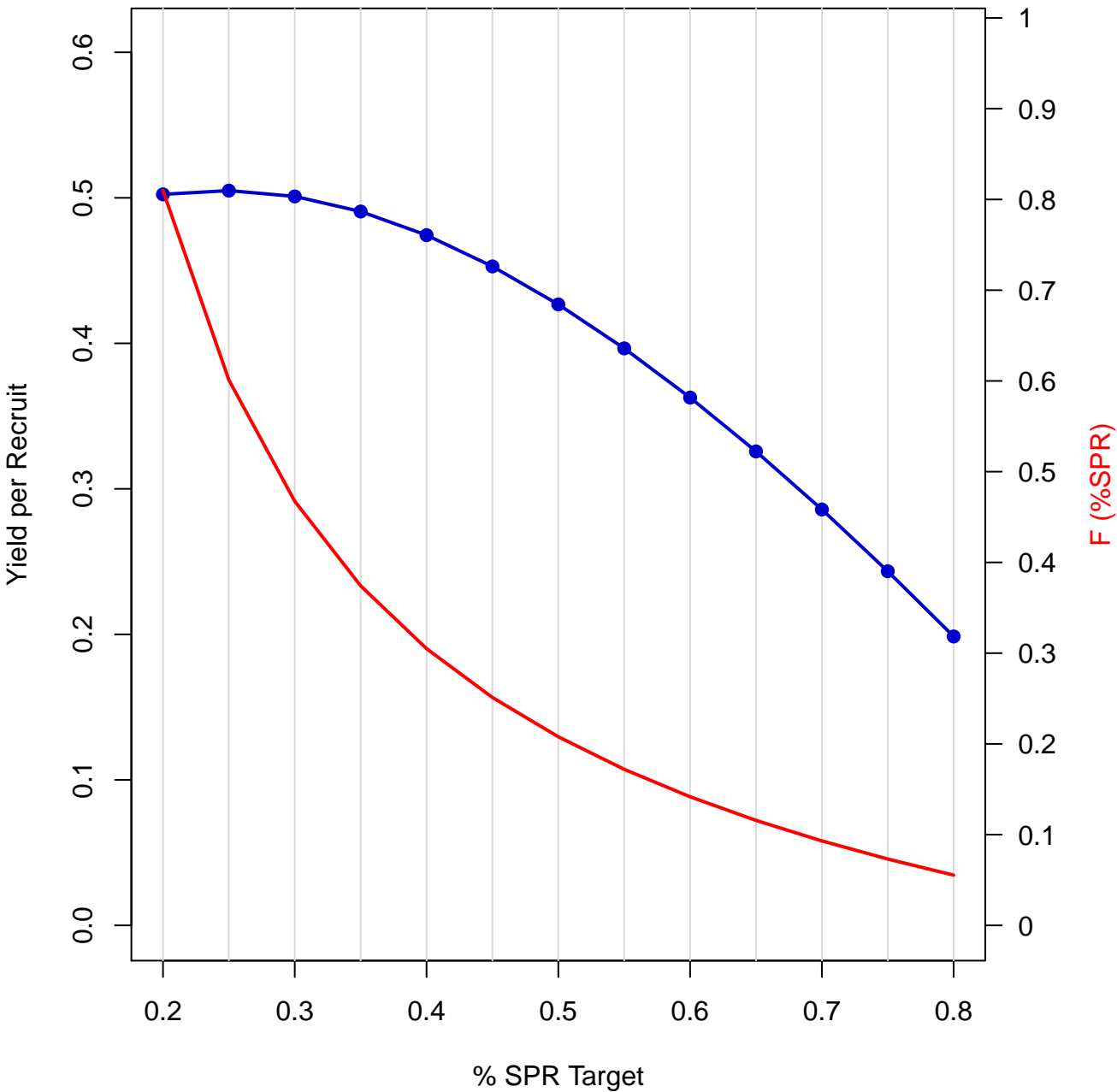
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.486	0.366	0.7	0.5044	0.2232
0.01	0.044	0.9579	0.36	0.488	0.3592	0.71	0.5042	0.2208
0.02	0.084	0.9188	0.37	0.4899	0.3527	0.72	0.5041	0.2185
0.03	0.1203	0.8823	0.38	0.4916	0.3464	0.73	0.5039	0.2163
0.04	0.1534	0.8482	0.39	0.4931	0.3403	0.74	0.5038	0.2141
0.05	0.1835	0.8163	0.4	0.4945	0.3345	0.75	0.5036	0.2119
0.06	0.2109	0.7864	0.41	0.4957	0.3288	0.76	0.5034	0.2098
0.07	0.236	0.7584	0.42	0.4969	0.3234	0.77	0.5032	0.2078
0.08	0.2589	0.7321	0.43	0.4979	0.3181	0.78	0.503	0.2057
0.09	0.2798	0.7073	0.44	0.4989	0.3131	0.79	0.5028	0.2038
0.1	0.2989	0.684	0.45	0.4997	0.3081	0.8	0.5026	0.2018
0.11	0.3164	0.662	0.46	0.5005	0.3034	0.81	0.5024	0.2
0.12	0.3324	0.6413	0.47	0.5012	0.2988	0.82	0.5022	0.1981
0.13	0.3471	0.6216	0.48	0.5018	0.2944	0.83	0.5019	0.1963
0.14	0.3605	0.6031	0.49	0.5023	0.29	0.84	0.5017	0.1945
0.15	0.3729	0.5855	0.5	0.5028	0.2859	0.85	0.5015	0.1928
0.16	0.3842	0.5688	0.51	0.5032	0.2818	0.86	0.5013	0.1911
0.17	0.3946	0.553	0.52	0.5035	0.2779	0.87	0.501	0.1894
0.18	0.4041	0.538	0.53	0.5039	0.2741	0.88	0.5008	0.1877
0.19	0.4129	0.5237	0.54	0.5041	0.2704	0.89	0.5006	0.1861
0.2	0.4209	0.5102	0.55	0.5044	0.2668	0.9	0.5003	0.1845
0.21	0.4283	0.4972	0.56	0.5045	0.2633	0.91	0.5001	0.183
0.22	0.4351	0.4849	0.57	0.5047	0.2599	0.92	0.4998	0.1815
0.23	0.4413	0.4732	0.58	0.5048	0.2566	0.93	0.4996	0.18
0.24	0.447	0.4619	0.59	0.5049	0.2534	0.94	0.4993	0.1785
0.25	0.4523	0.4512	0.6	0.505	0.2503	0.95	0.4991	0.177
0.26	0.4571	0.441	0.61	0.505	0.2473	0.96	0.4988	0.1756
0.27	0.4615	0.4312	0.62	0.505	0.2443	0.97	0.4986	0.1742
0.28	0.4656	0.4218	0.63	0.505	0.2414	0.98	0.4984	0.1728
0.29	0.4693	0.4128	0.64	0.5049	0.2386	0.99	0.4981	0.1715
0.3	0.4728	0.4042	0.65	0.5049	0.2359	1	0.4979	0.1702
0.31	0.4759	0.3959	0.66	0.5048	0.2332	1.01	0.4976	0.1689
0.32	0.4788	0.388	0.67	0.5047	0.2306	1.02	0.4973	0.1676
0.33	0.4814	0.3803	0.68	0.5046	0.2281	1.03	0.4971	0.1663
0.34	0.4838	0.373	0.69	0.5045	0.2256	1.04	0.4968	0.1651

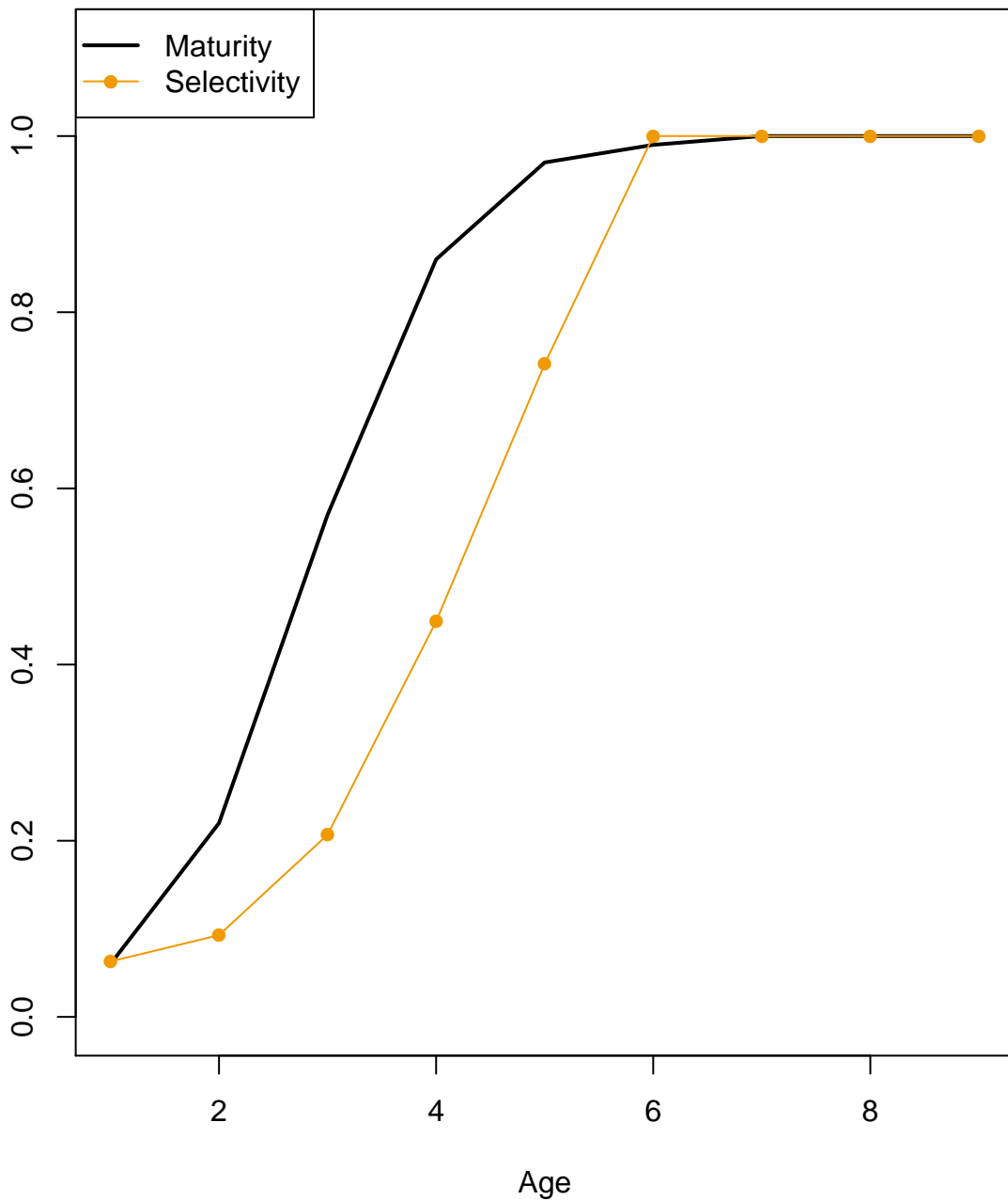
SPR Target Reference Points (Years Avg = 5)



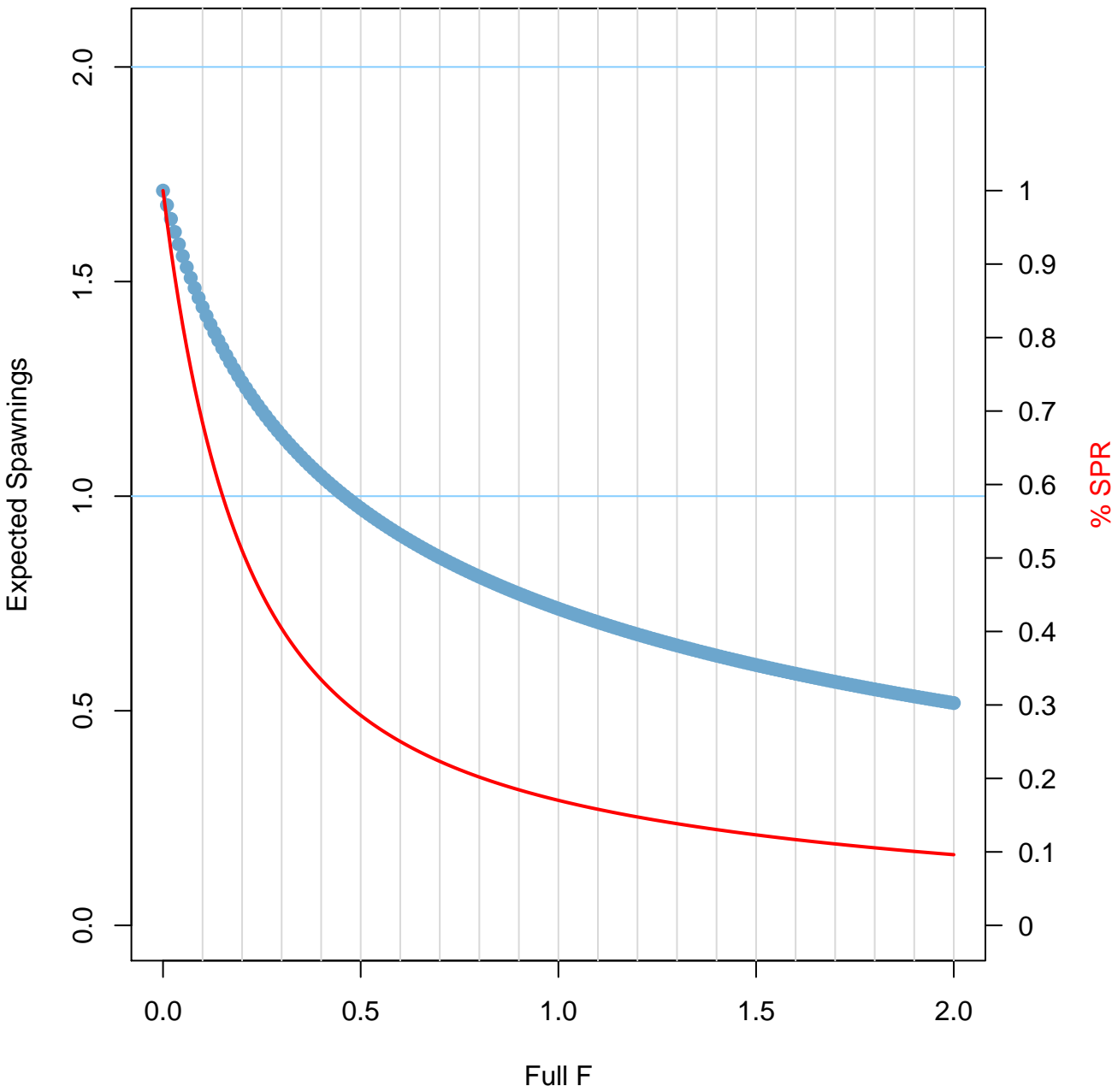
SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	0.8097	0.5024
0.25	0.601	0.505
0.3	0.4674	0.501
0.35	0.3742	0.4906
0.4	0.305	0.4743
0.45	0.2512	0.4529
0.5	0.2078	0.4267
0.55	0.172	0.3965
0.6	0.1417	0.3627
0.65	0.1157	0.3257
0.7	0.0931	0.2858
0.75	0.0731	0.2434
0.8	0.0554	0.1986

Selectivity or Maturity at age



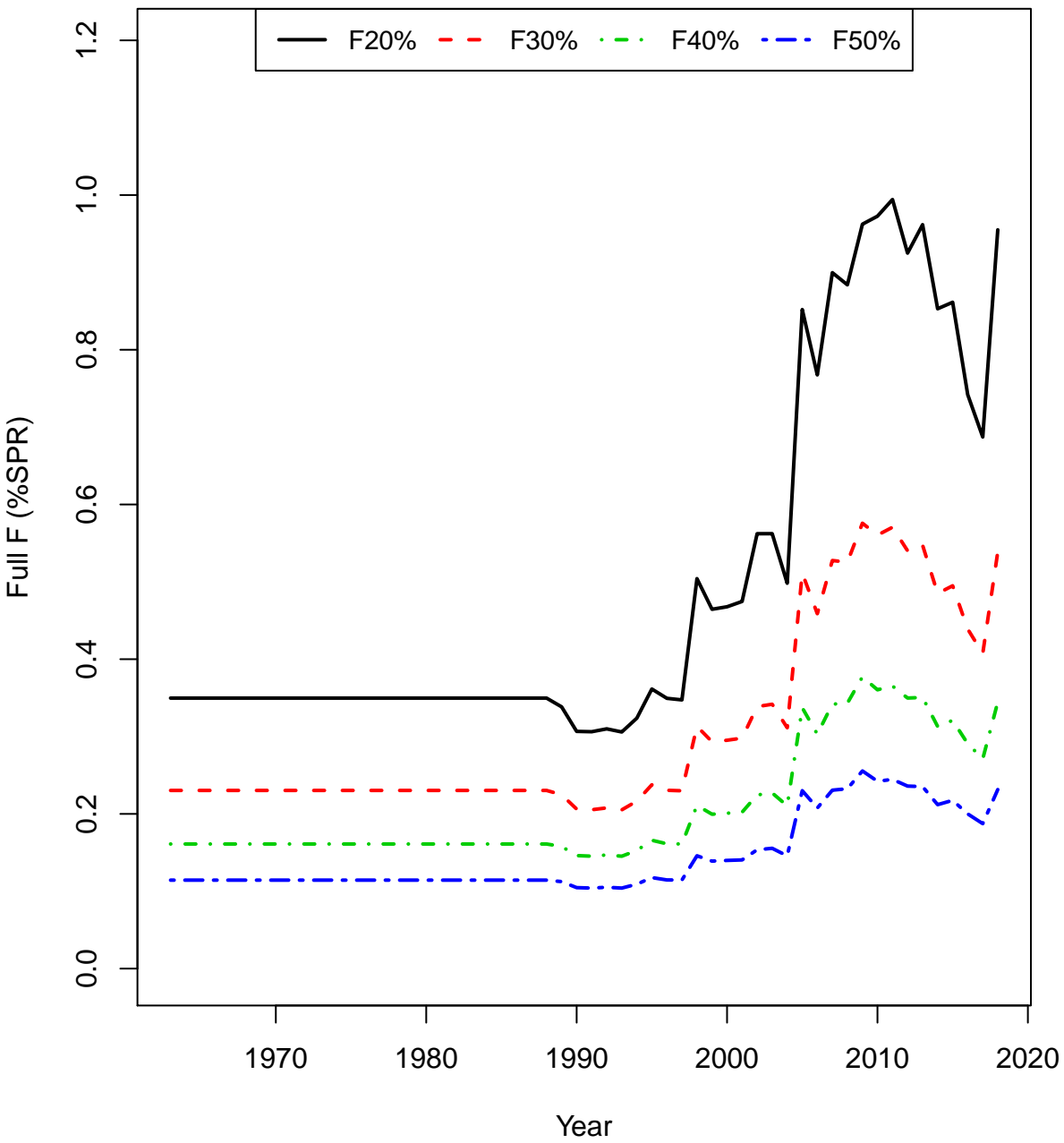
Expected Spawnings and SPR Reference Points (Years Avg = 5)



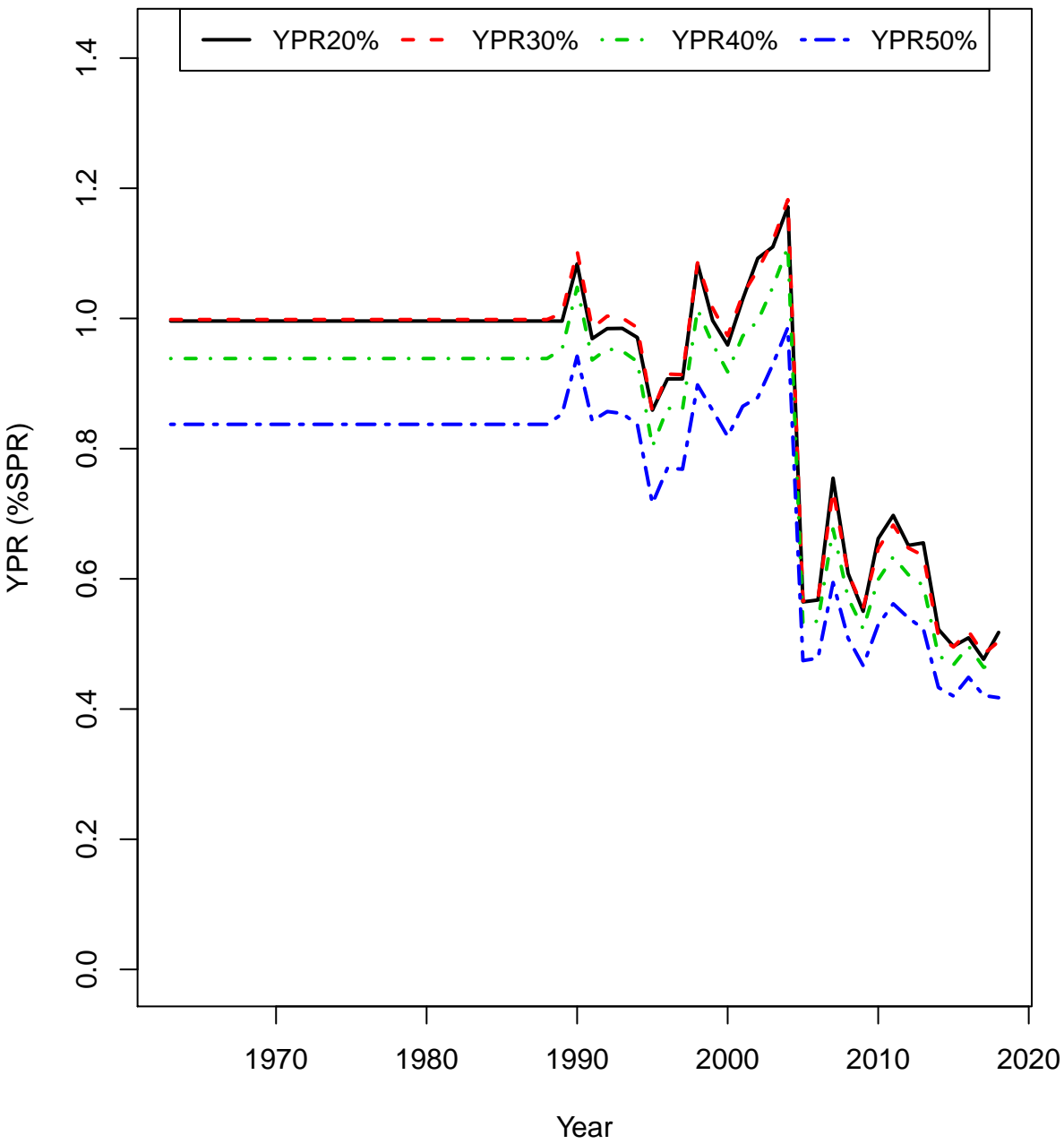
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	1.7119	1	0.35	1.0913	0.366	0.7	0.8575	0.2232
0.01	1.678	0.9579	0.36	1.082	0.3592	0.71	0.8527	0.2208
0.02	1.6459	0.9188	0.37	1.073	0.3527	0.72	0.8479	0.2185
0.03	1.6156	0.8823	0.38	1.0641	0.3464	0.73	0.8433	0.2163
0.04	1.5868	0.8482	0.39	1.0555	0.3403	0.74	0.8387	0.2141
0.05	1.5594	0.8163	0.4	1.047	0.3345	0.75	0.8341	0.2119
0.06	1.5334	0.7864	0.41	1.0387	0.3288	0.76	0.8297	0.2098
0.07	1.5086	0.7584	0.42	1.0306	0.3234	0.77	0.8252	0.2078
0.08	1.485	0.7321	0.43	1.0227	0.3181	0.78	0.8209	0.2057
0.09	1.4623	0.7073	0.44	1.015	0.3131	0.79	0.8166	0.2038
0.1	1.4407	0.684	0.45	1.0074	0.3081	0.8	0.8124	0.2018
0.11	1.42	0.662	0.46	1	0.3034	0.81	0.8082	0.2
0.12	1.4001	0.6413	0.47	0.9927	0.2988	0.82	0.8041	0.1981
0.13	1.381	0.6216	0.48	0.9856	0.2944	0.83	0.8	0.1963
0.14	1.3627	0.6031	0.49	0.9786	0.29	0.84	0.796	0.1945
0.15	1.3451	0.5855	0.5	0.9718	0.2859	0.85	0.792	0.1928
0.16	1.3281	0.5688	0.51	0.965	0.2818	0.86	0.7881	0.1911
0.17	1.3117	0.553	0.52	0.9584	0.2779	0.87	0.7842	0.1894
0.18	1.2959	0.538	0.53	0.952	0.2741	0.88	0.7804	0.1877
0.19	1.2807	0.5237	0.54	0.9456	0.2704	0.89	0.7766	0.1861
0.2	1.2659	0.5102	0.55	0.9394	0.2668	0.9	0.7729	0.1845
0.21	1.2517	0.4972	0.56	0.9333	0.2633	0.91	0.7692	0.183
0.22	1.2379	0.4849	0.57	0.9272	0.2599	0.92	0.7655	0.1815
0.23	1.2245	0.4732	0.58	0.9213	0.2566	0.93	0.7619	0.18
0.24	1.2116	0.4619	0.59	0.9155	0.2534	0.94	0.7584	0.1785
0.25	1.1991	0.4512	0.6	0.9098	0.2503	0.95	0.7549	0.177
0.26	1.1869	0.441	0.61	0.9042	0.2473	0.96	0.7514	0.1756
0.27	1.175	0.4312	0.62	0.8987	0.2443	0.97	0.7479	0.1742
0.28	1.1636	0.4218	0.63	0.8932	0.2414	0.98	0.7445	0.1728
0.29	1.1524	0.4128	0.64	0.8879	0.2386	0.99	0.7412	0.1715
0.3	1.1415	0.4042	0.65	0.8826	0.2359	1	0.7378	0.1702
0.31	1.131	0.3959	0.66	0.8774	0.2332	1.01	0.7345	0.1689
0.32	1.1207	0.388	0.67	0.8723	0.2306	1.02	0.7313	0.1676
0.33	1.1106	0.3803	0.68	0.8673	0.2281	1.03	0.7281	0.1663
0.34	1.1009	0.373	0.69	0.8623	0.2256	1.04	0.7249	0.1651

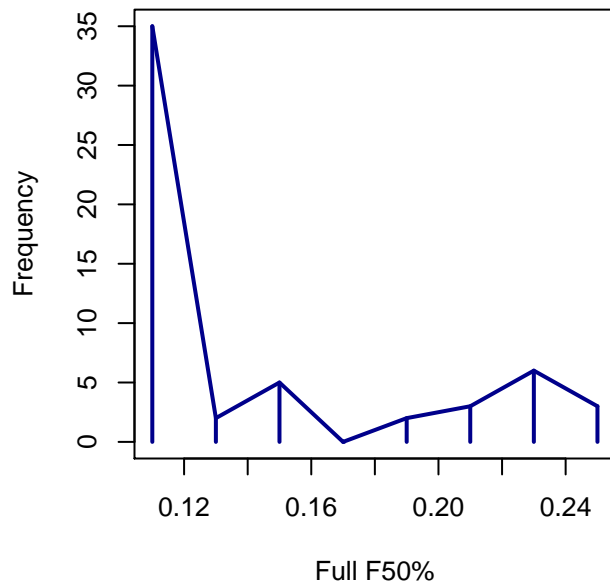
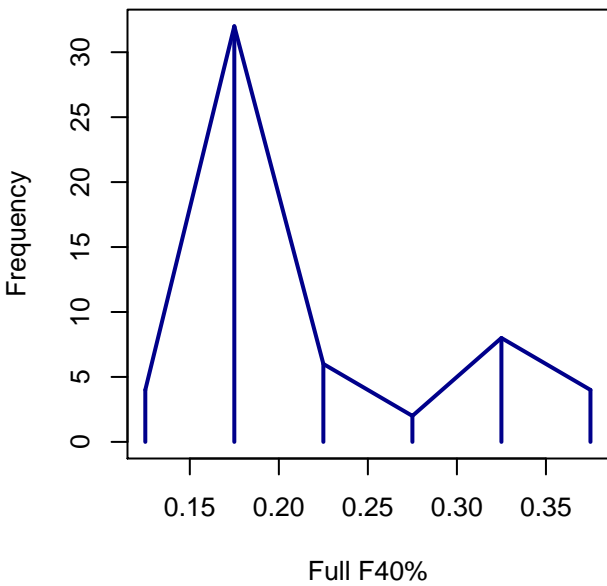
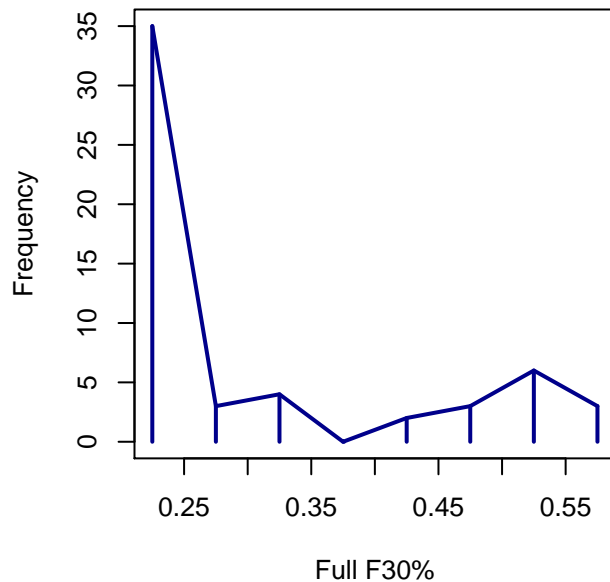
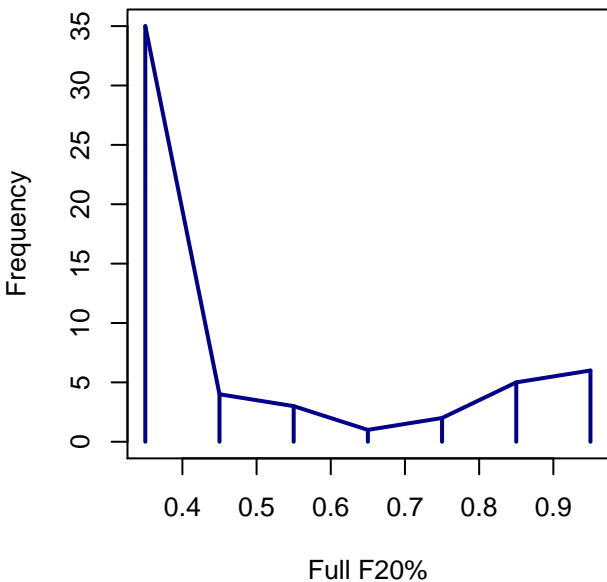
Annual F(%SPR) Reference Points



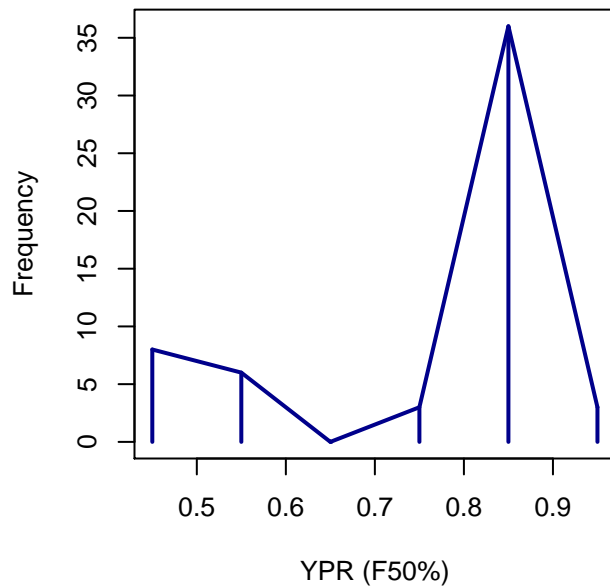
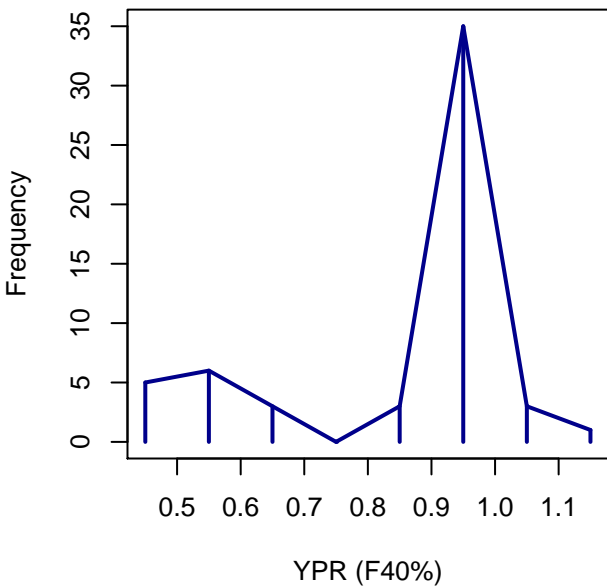
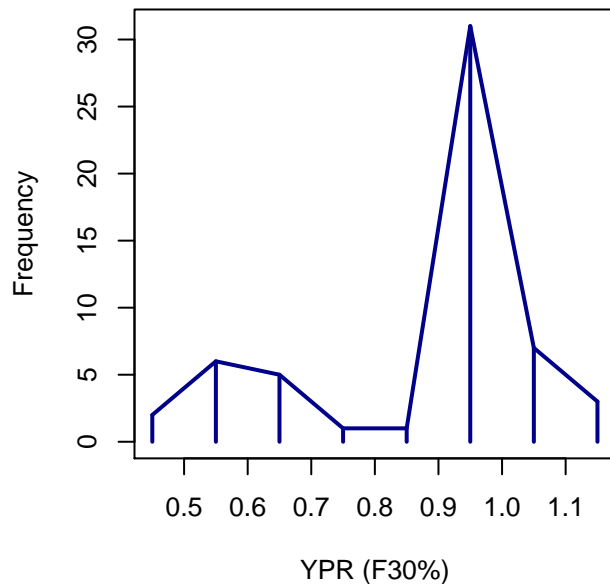
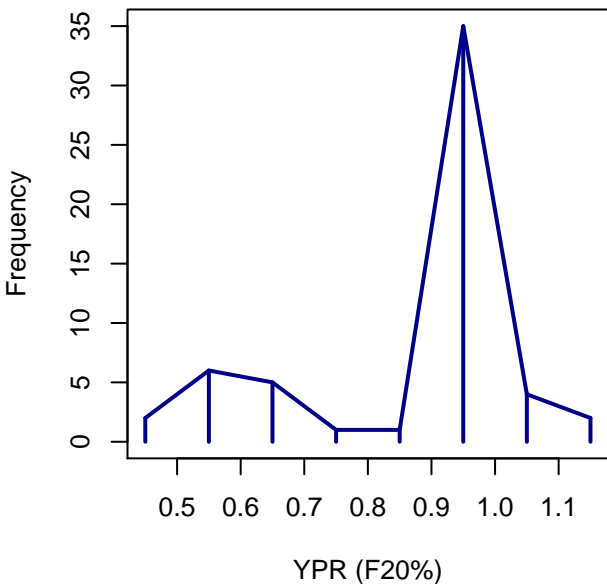
Annual YPR(%SPR) Reference Points



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)

• 0.05 • 0.2 • 0.4



Age

Age Comps for Index 2 (INDEX-2)



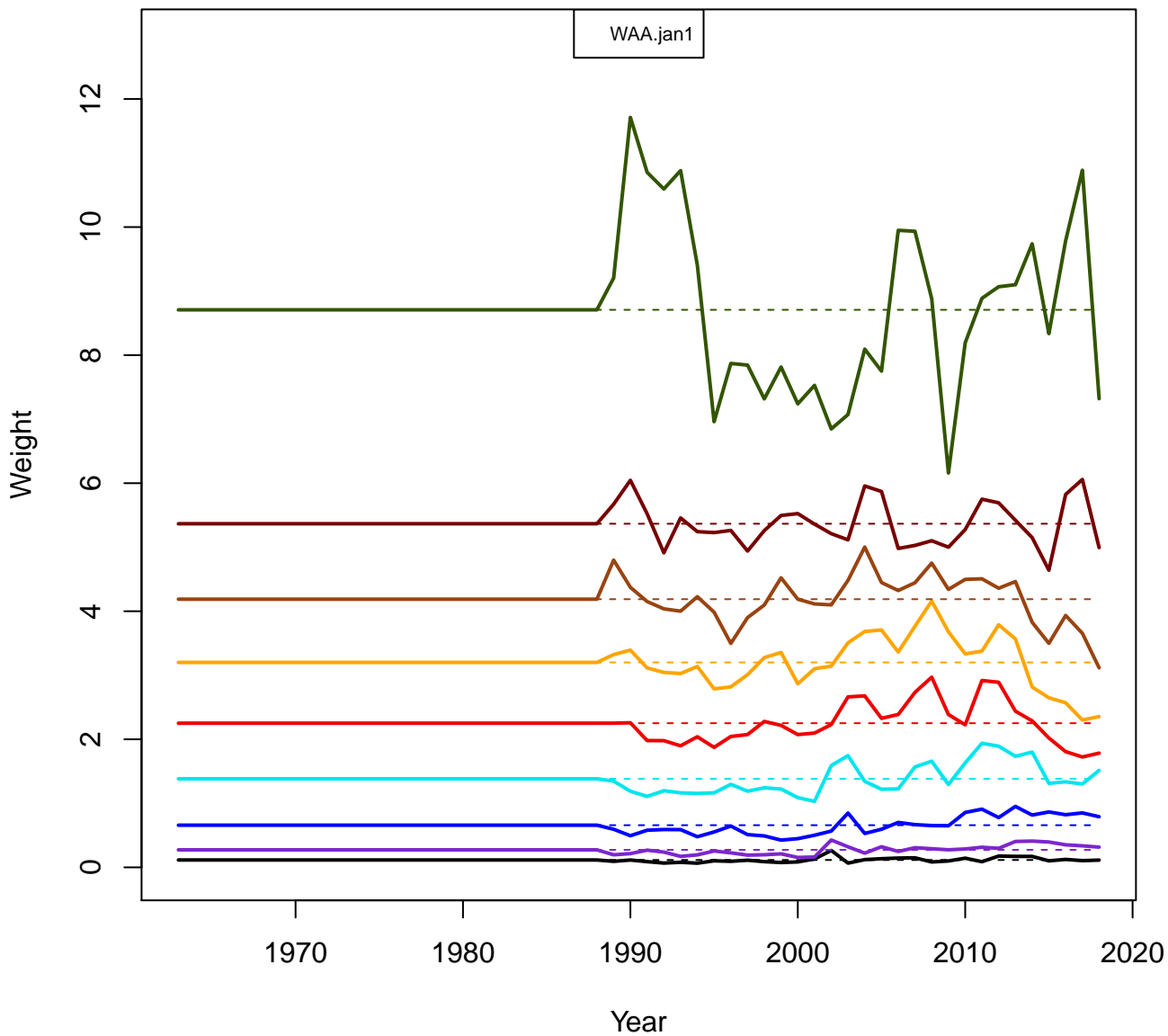
WAA matrix 1



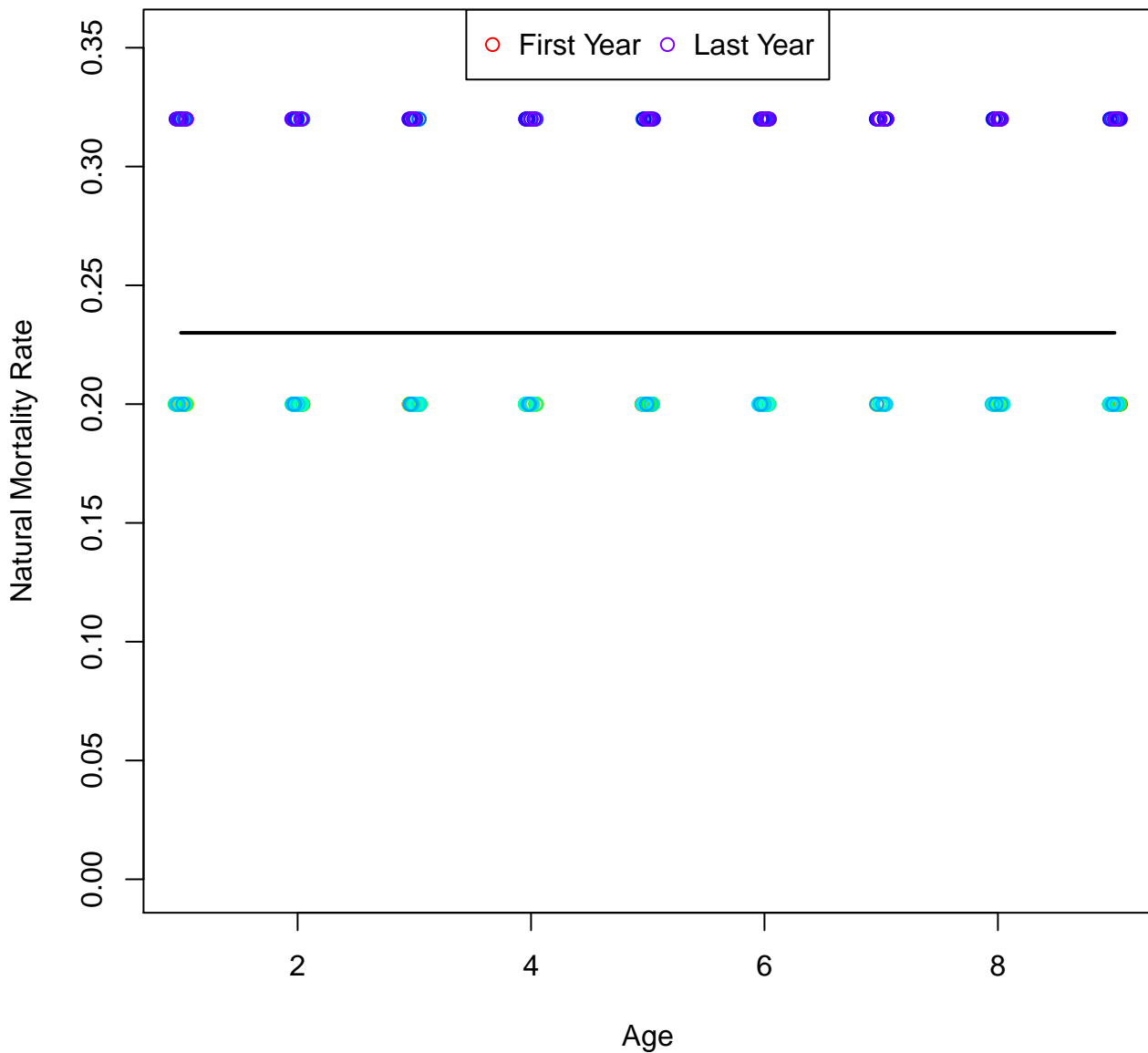
WAA matrix 2



WAA matrix 3



M



Maturity

