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ASAP3 run on Monday, 04 Nov 2019 at 11:48:29

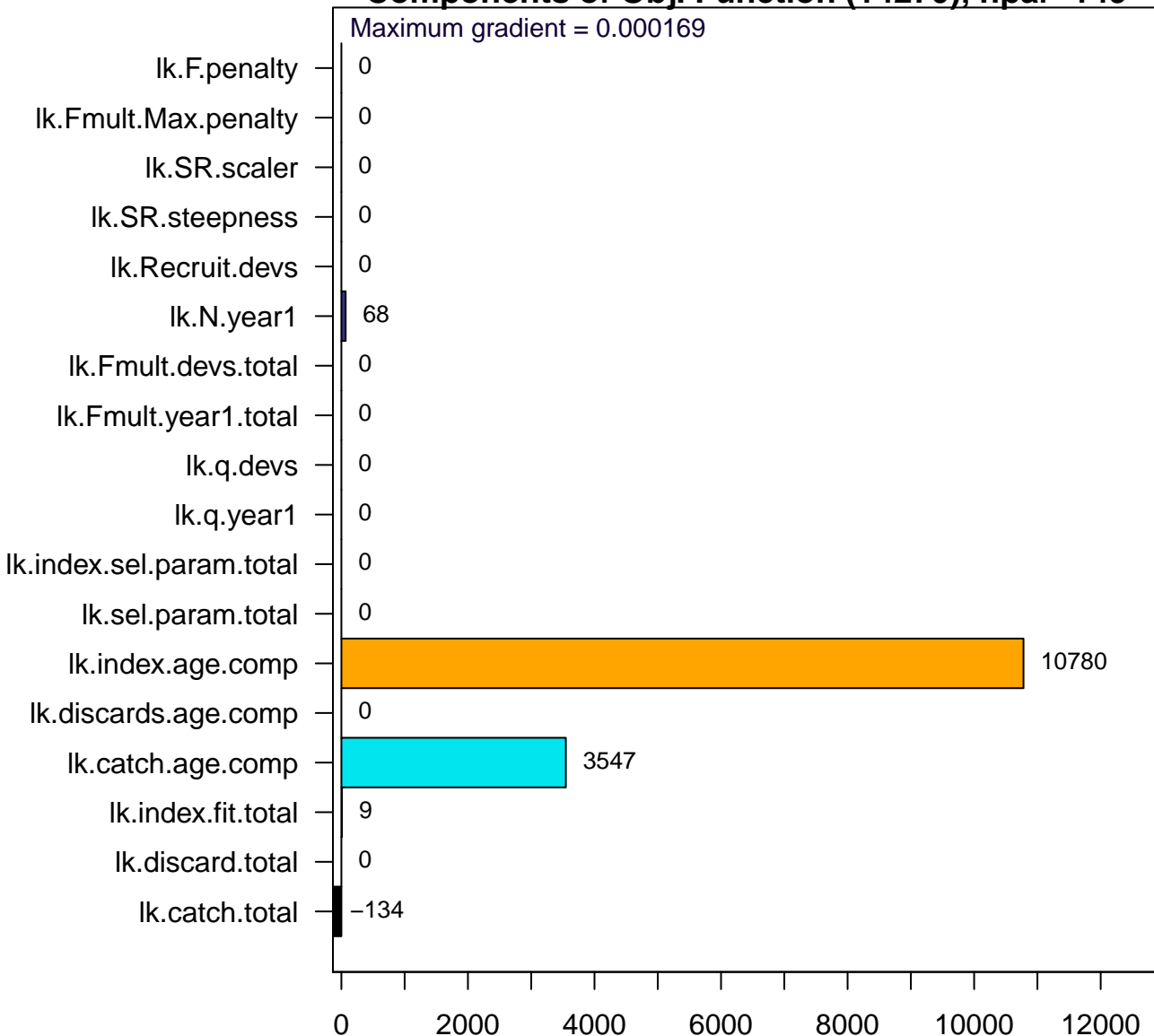
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\w

ASAPplots version = 0.2.14

npar = 149, maximum gradient = 0.000169003

Components of Obj. Function (14270), npar=149

Maximum gradient = 0.000169

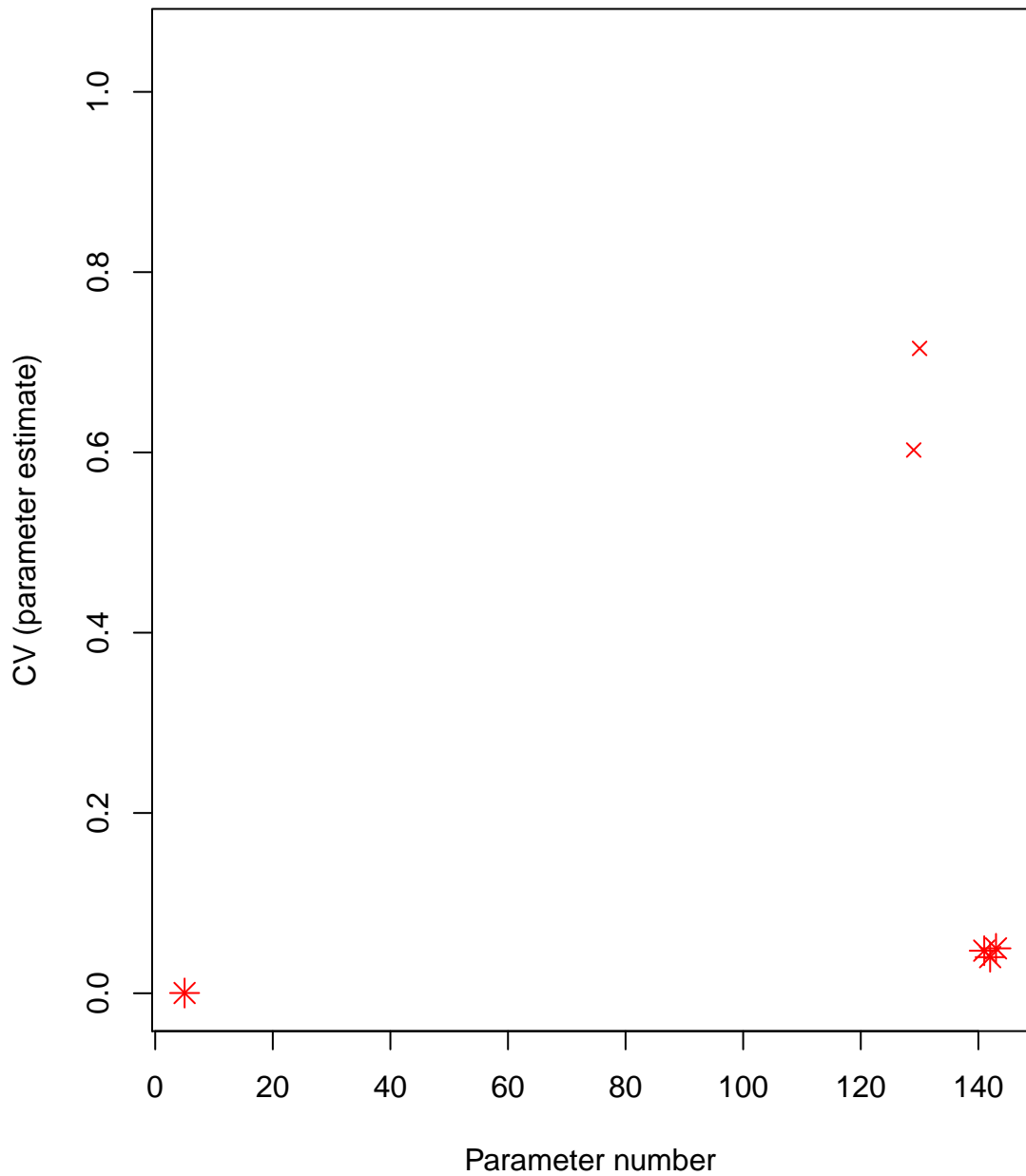


Likelihood Contribution

Model: y2015r4c1m5s111100000_000

Monday, 04 Nov 2019 at 11:48:

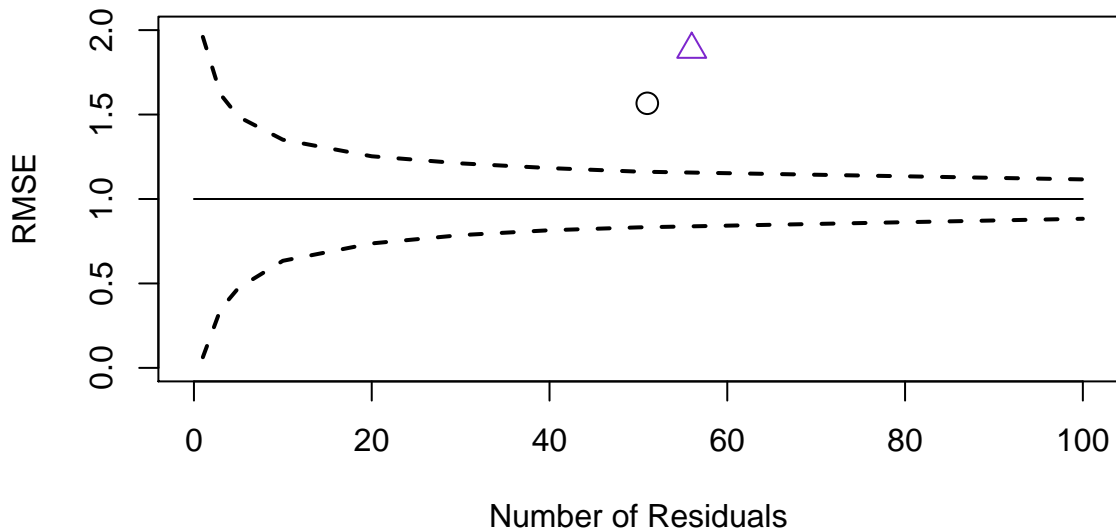




Root Mean Square Error computed from Standardized Residuals

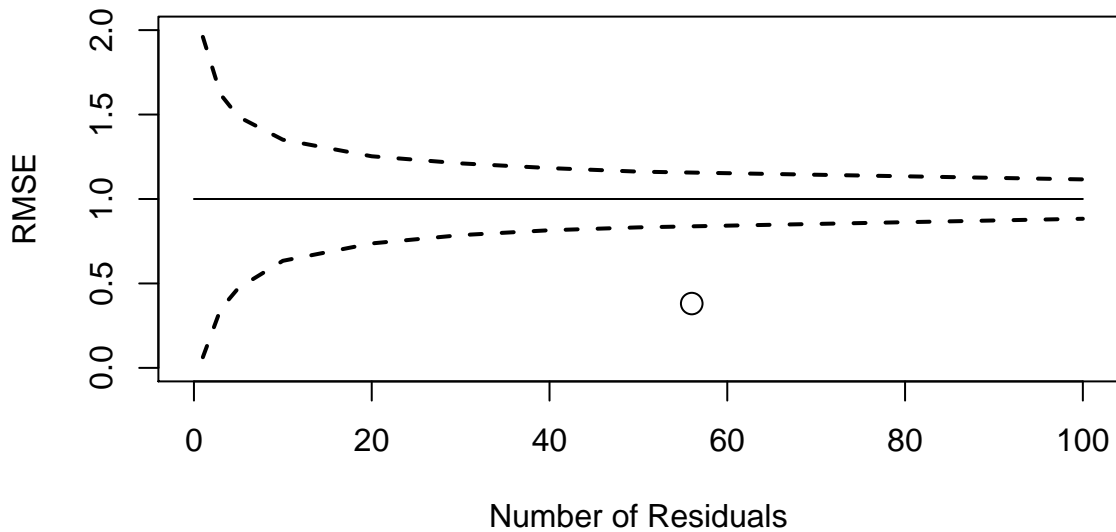
Component	# resids	RMSE
catch.tot	56	0.381
discard.tot	0	0
ind01	51	1.57
ind02	56	1.89
ind.total	107	1.74
N.year1	8	0.819
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



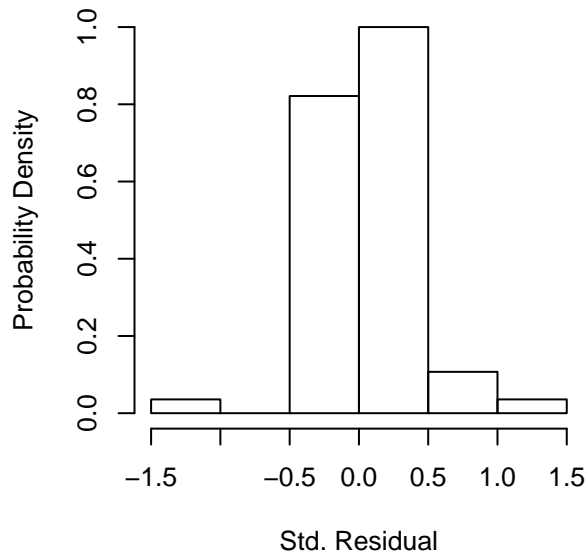
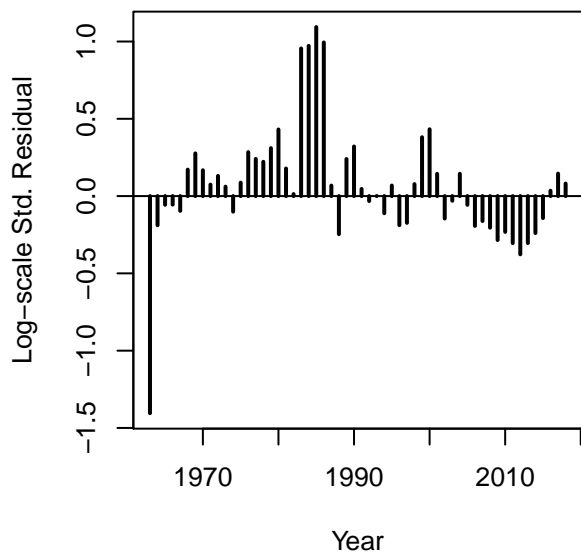
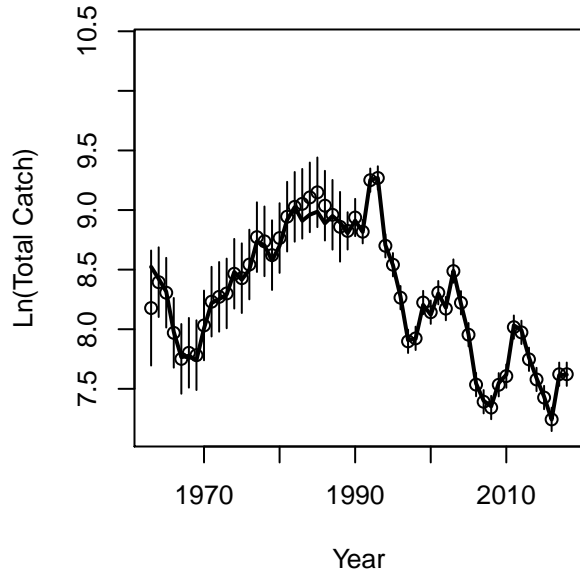
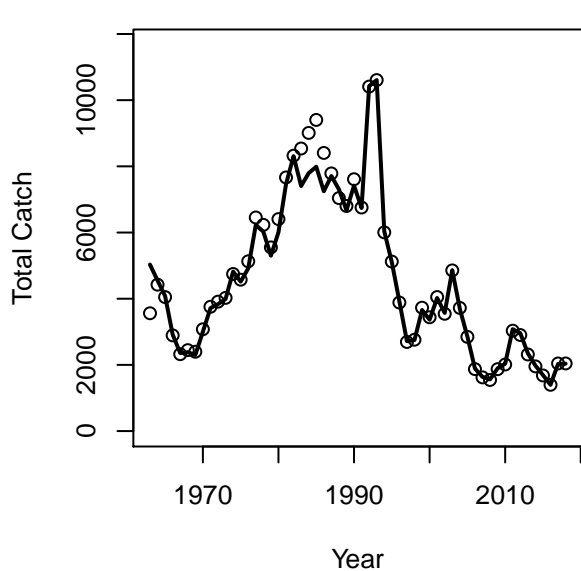
+ ind total
△ INDEX-2
○ INDEX-1

Root Mean Square Error for Catch



○ catch.tot

Fleet 1 Catch (FLEET-1)

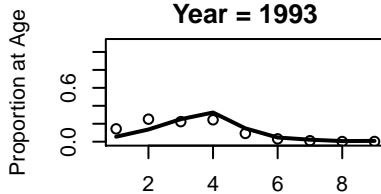


Catch

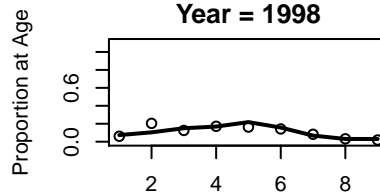
Fleet 1
FLEET-1



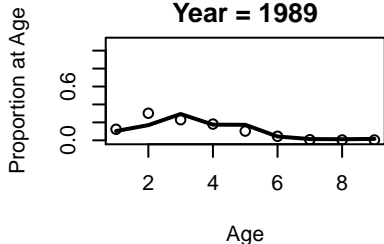
Year = 1993



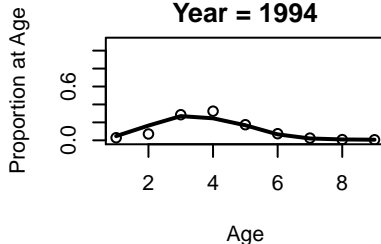
Year = 1998



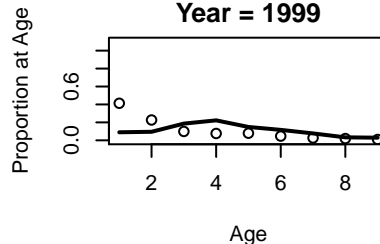
Year = 1989



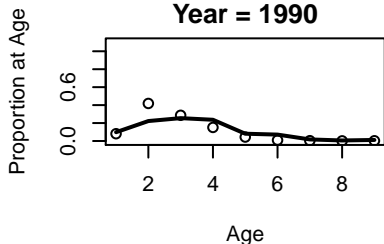
Year = 1994



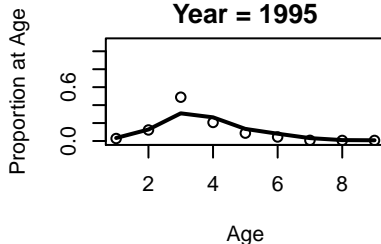
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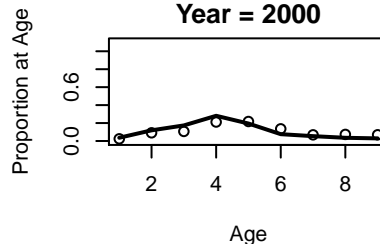
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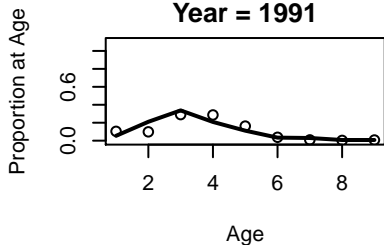
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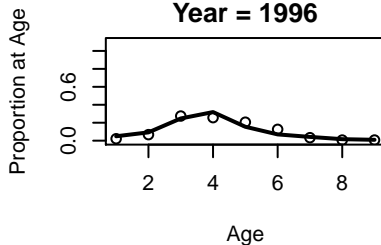
Year = 2000



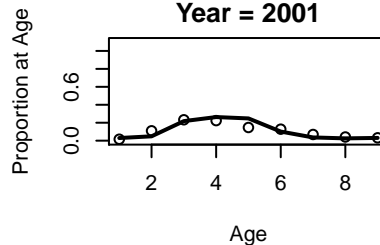
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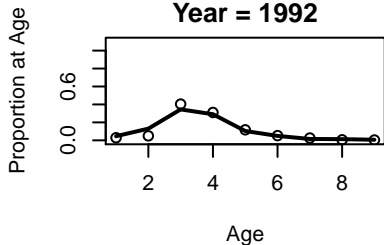
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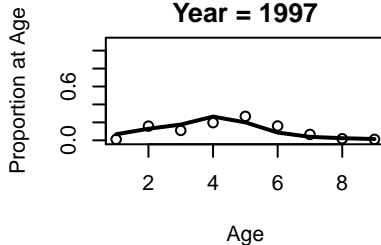
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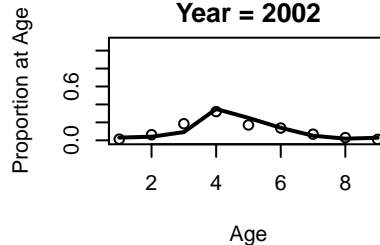
Year = 1992



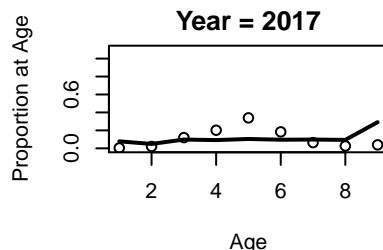
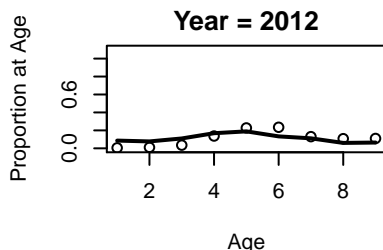
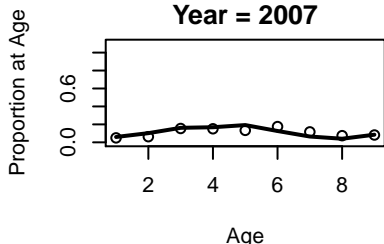
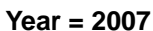
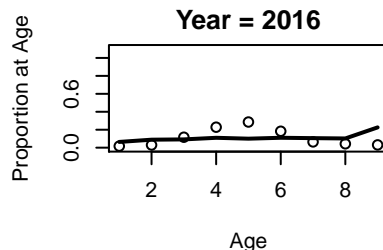
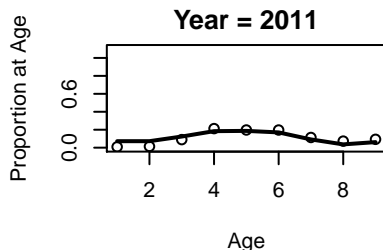
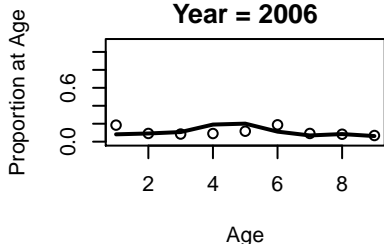
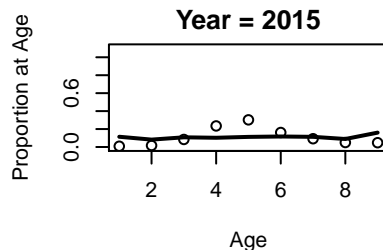
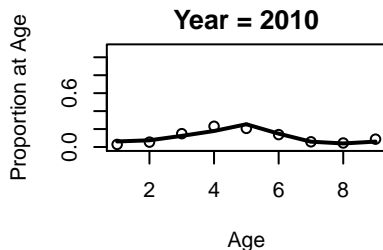
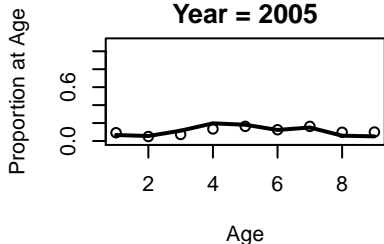
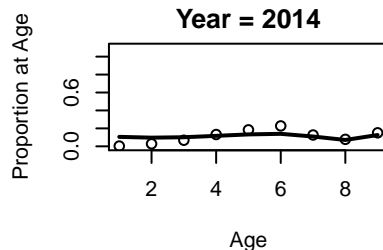
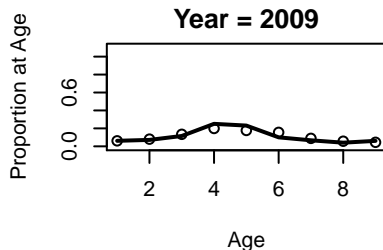
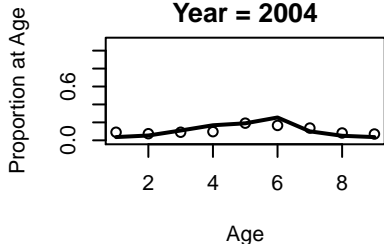
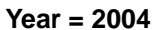
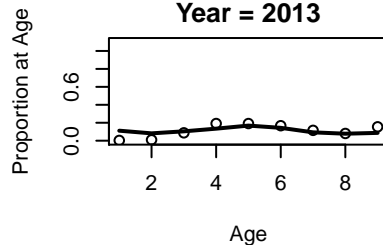
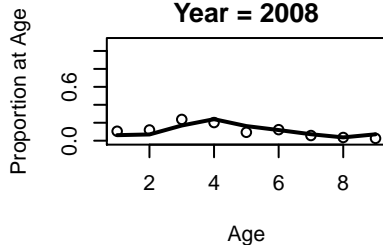
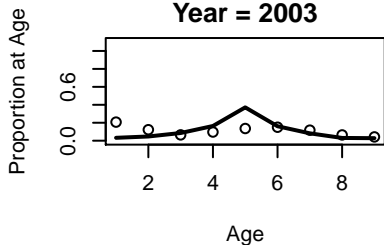
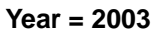
Year = 1997



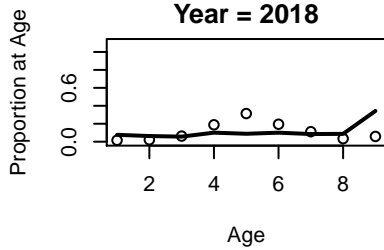
Year = 2002



Year = 2008

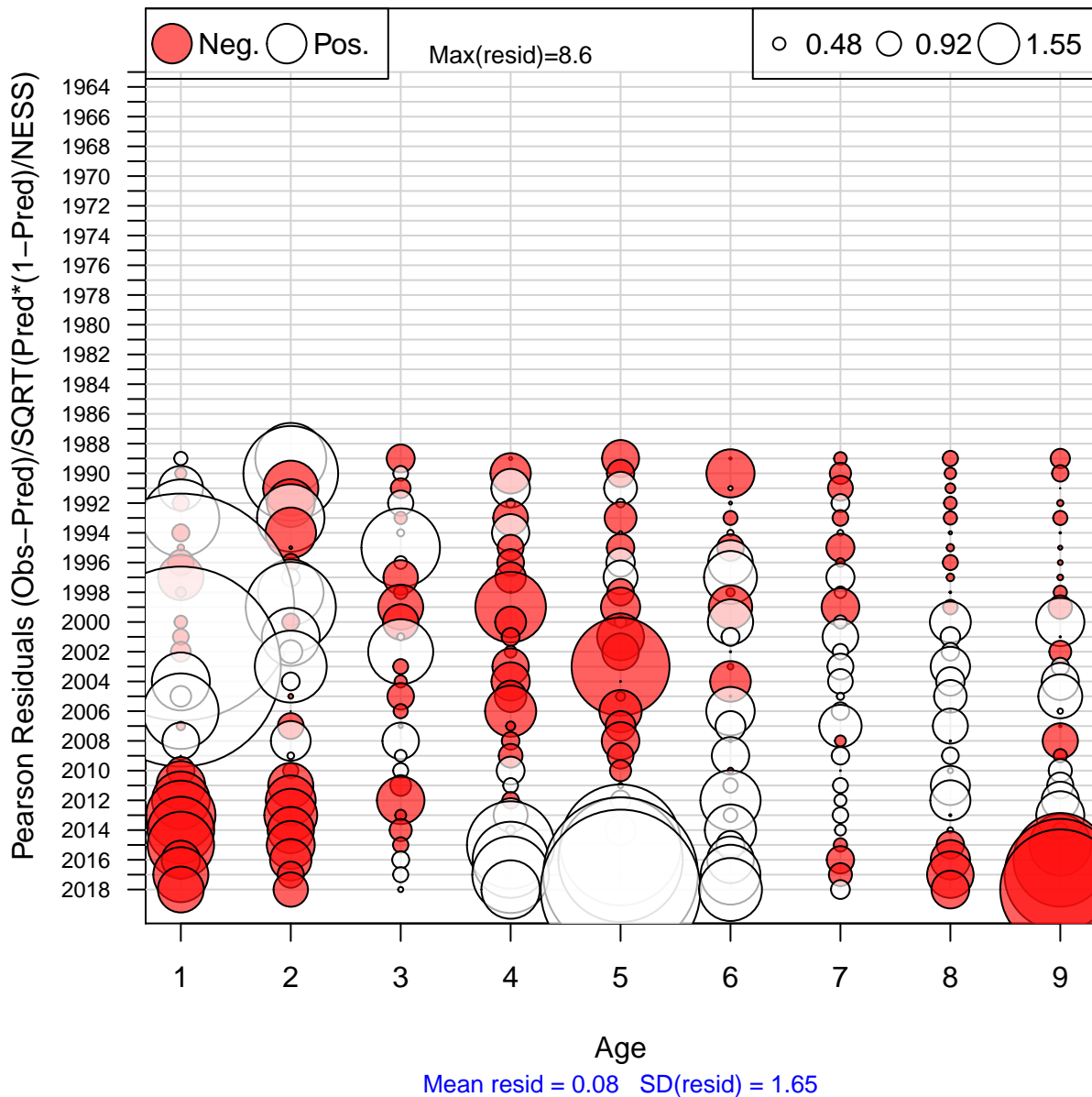


Year = 2018

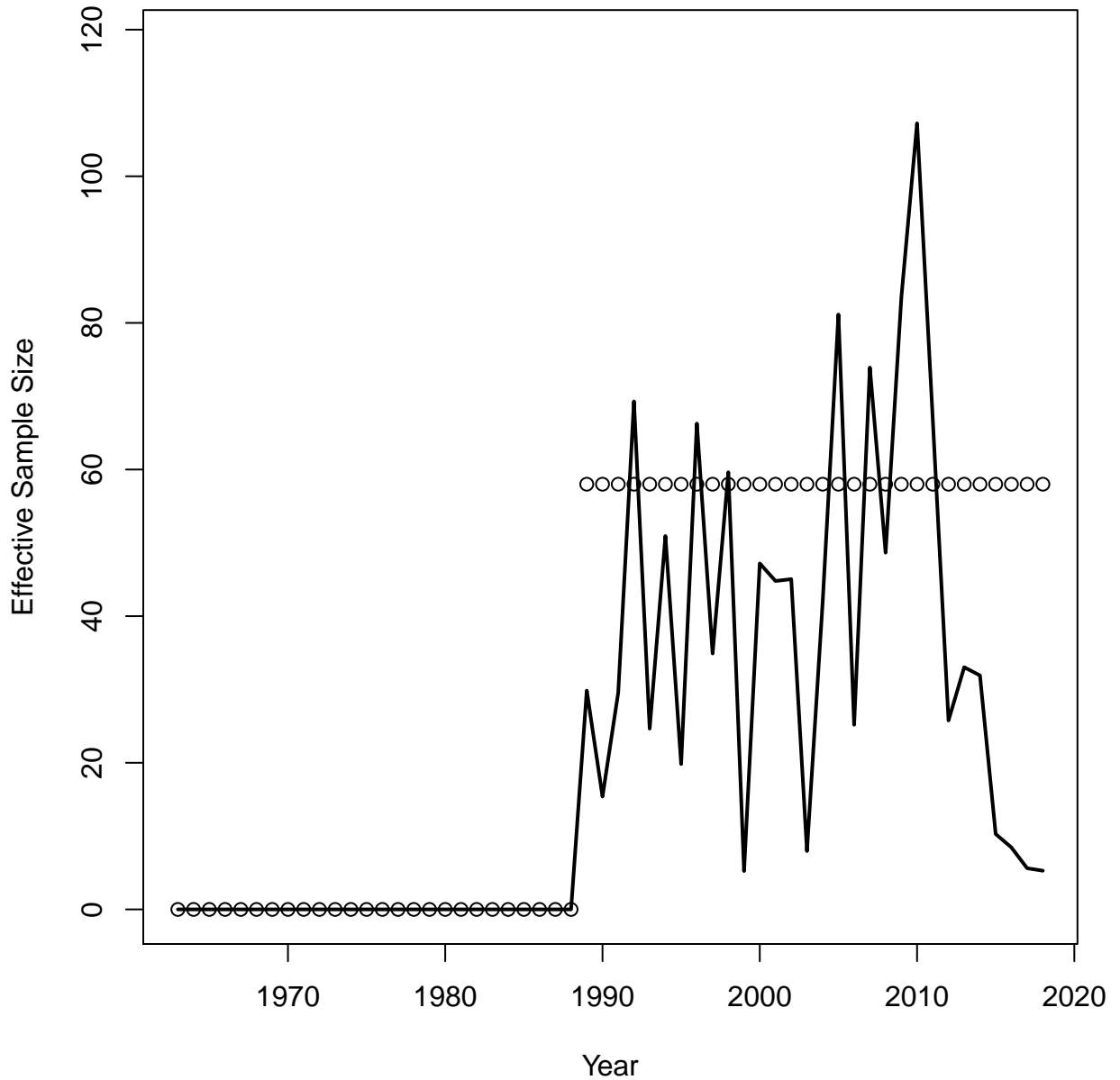


Catch

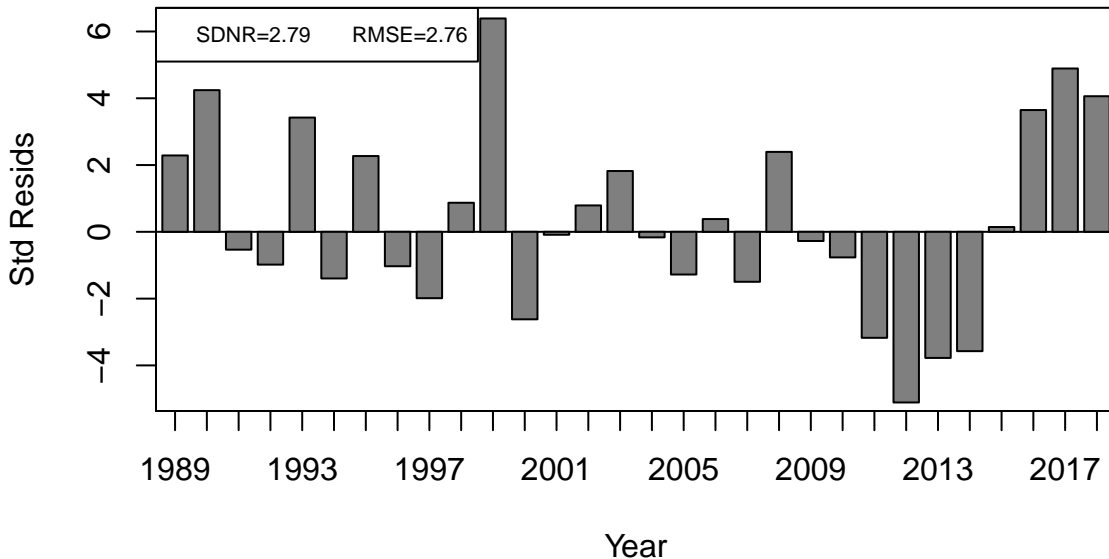
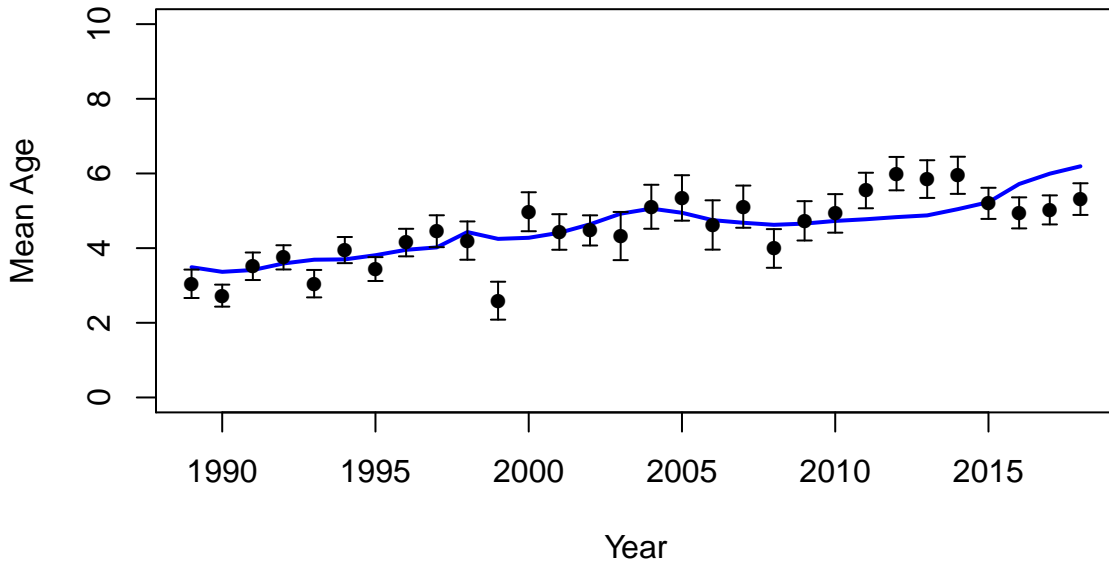
Age Comp Residuals for Catch by Fleet 1 (FLEET-1)



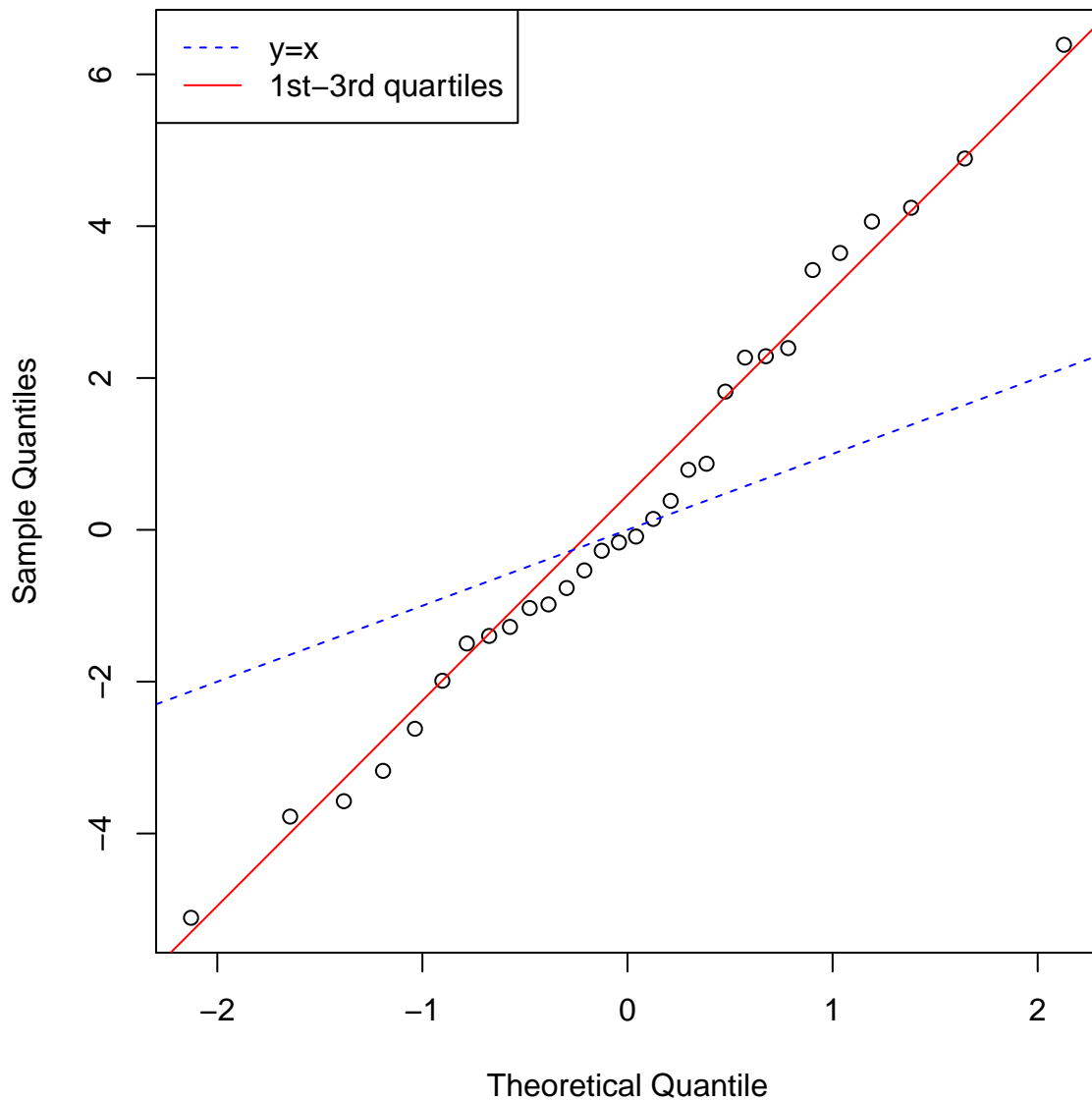
Catch Neff Fleet 1 (FLEET-1)



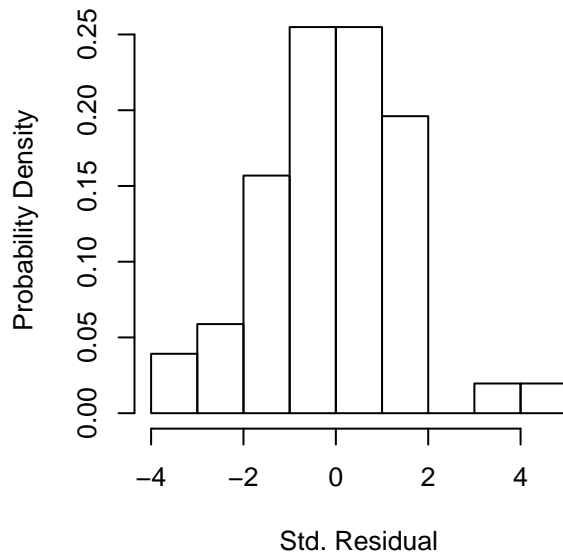
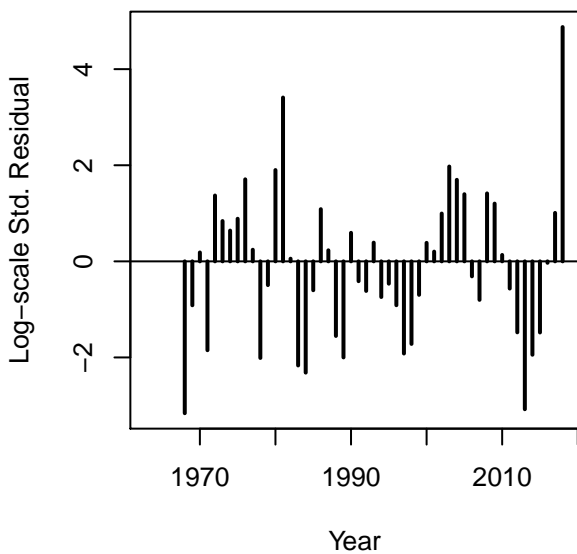
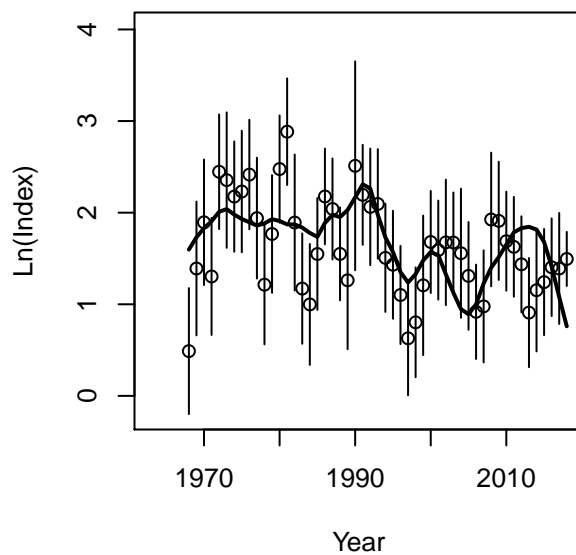
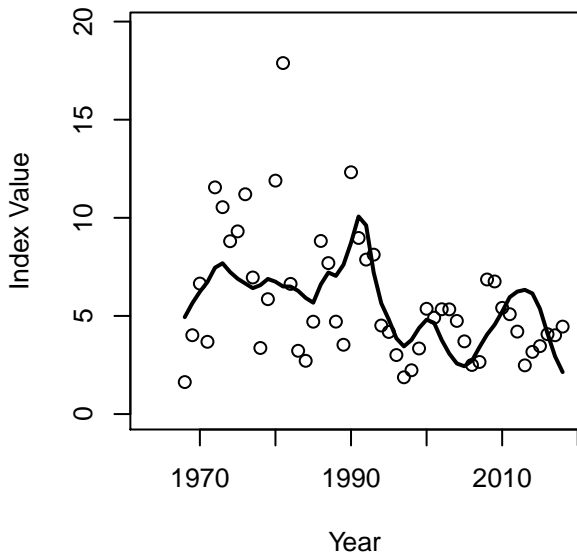
Catch Fleet 1 (FLEET-1) ESS = 58



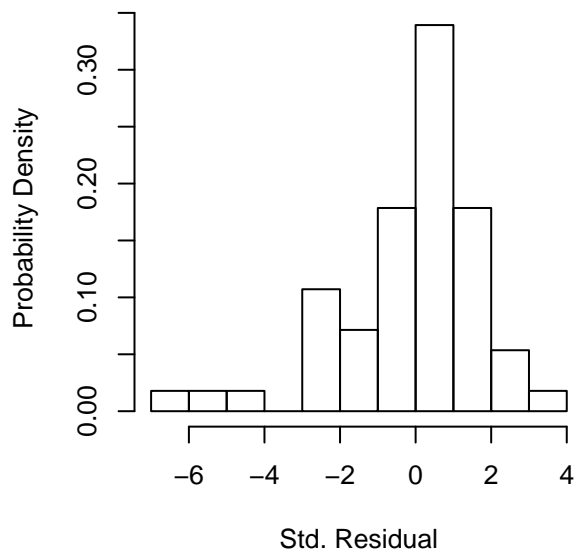
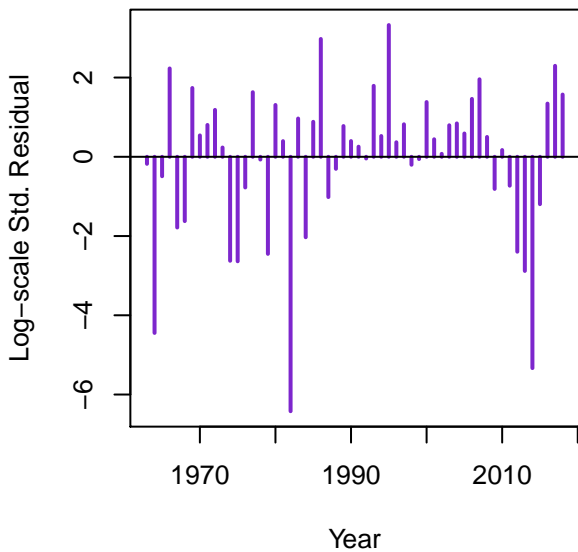
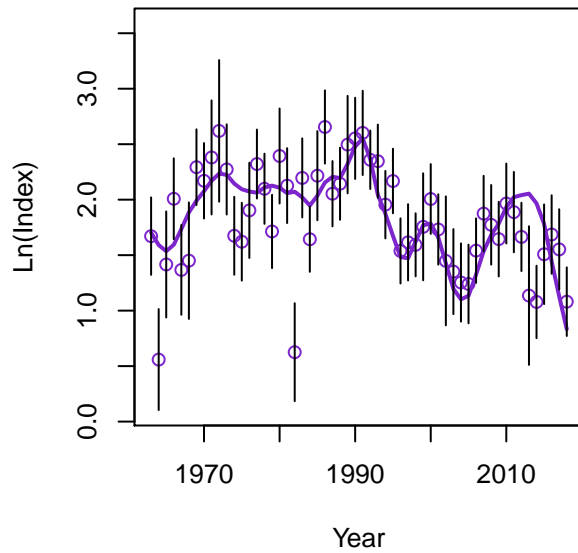
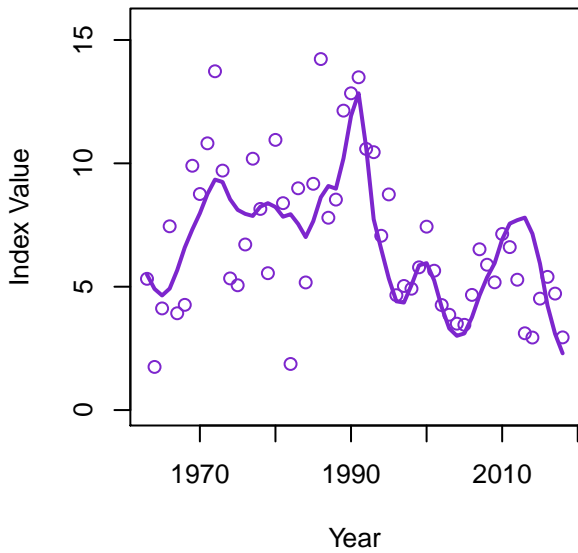
Catch Fleet 1 (FLEET-1) ESS = 58



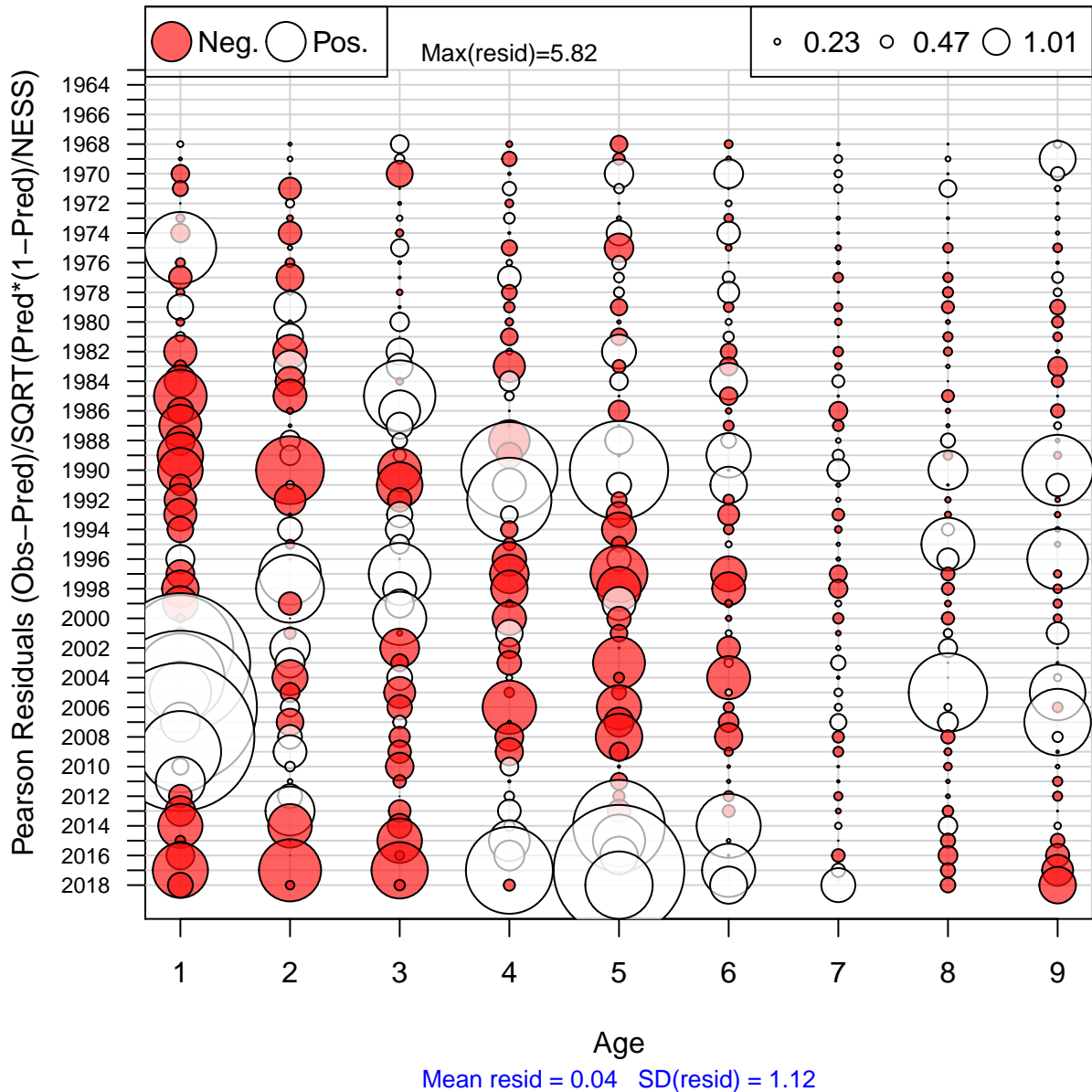
Index 1 (INDEX-1)



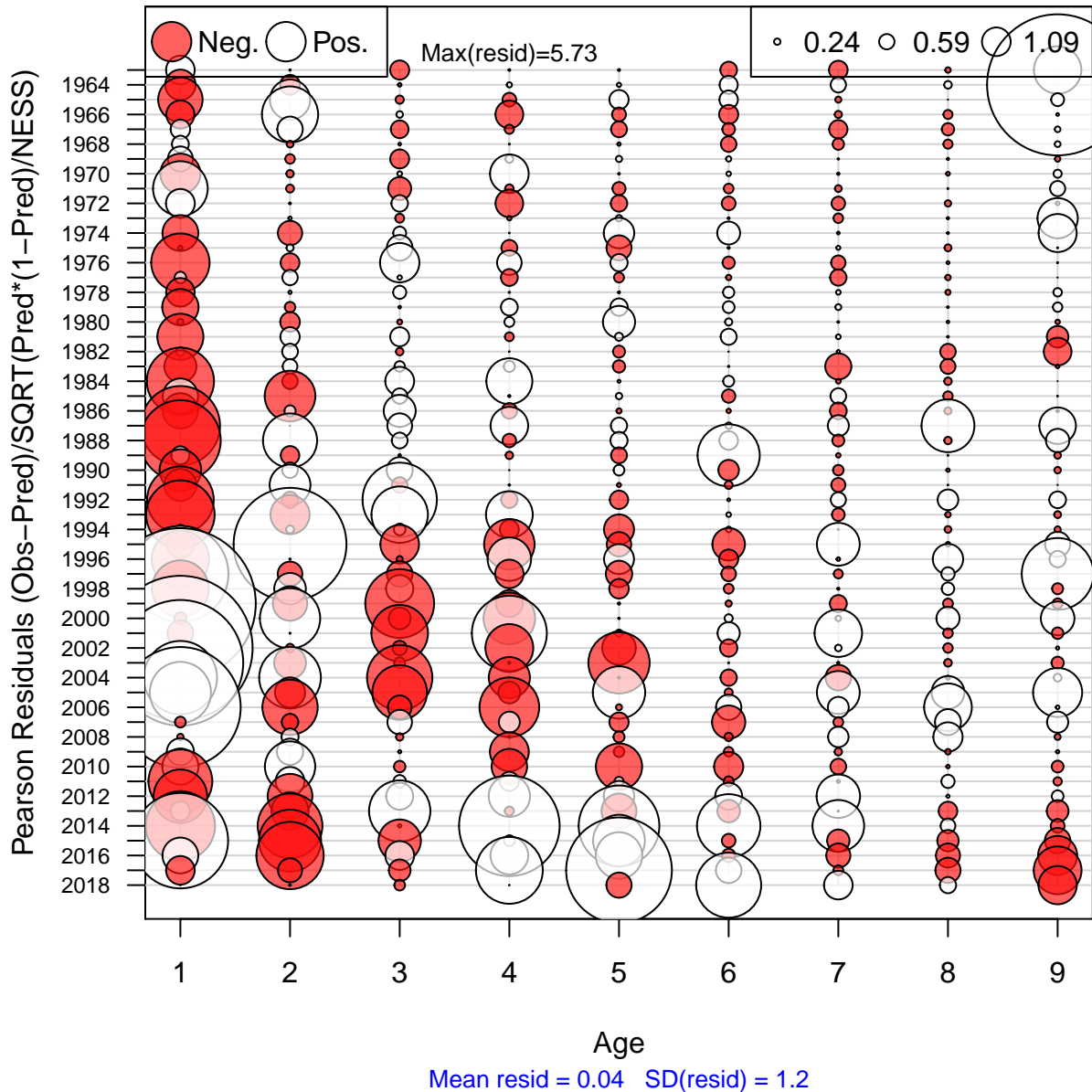
Index 2 (INDEX-2)



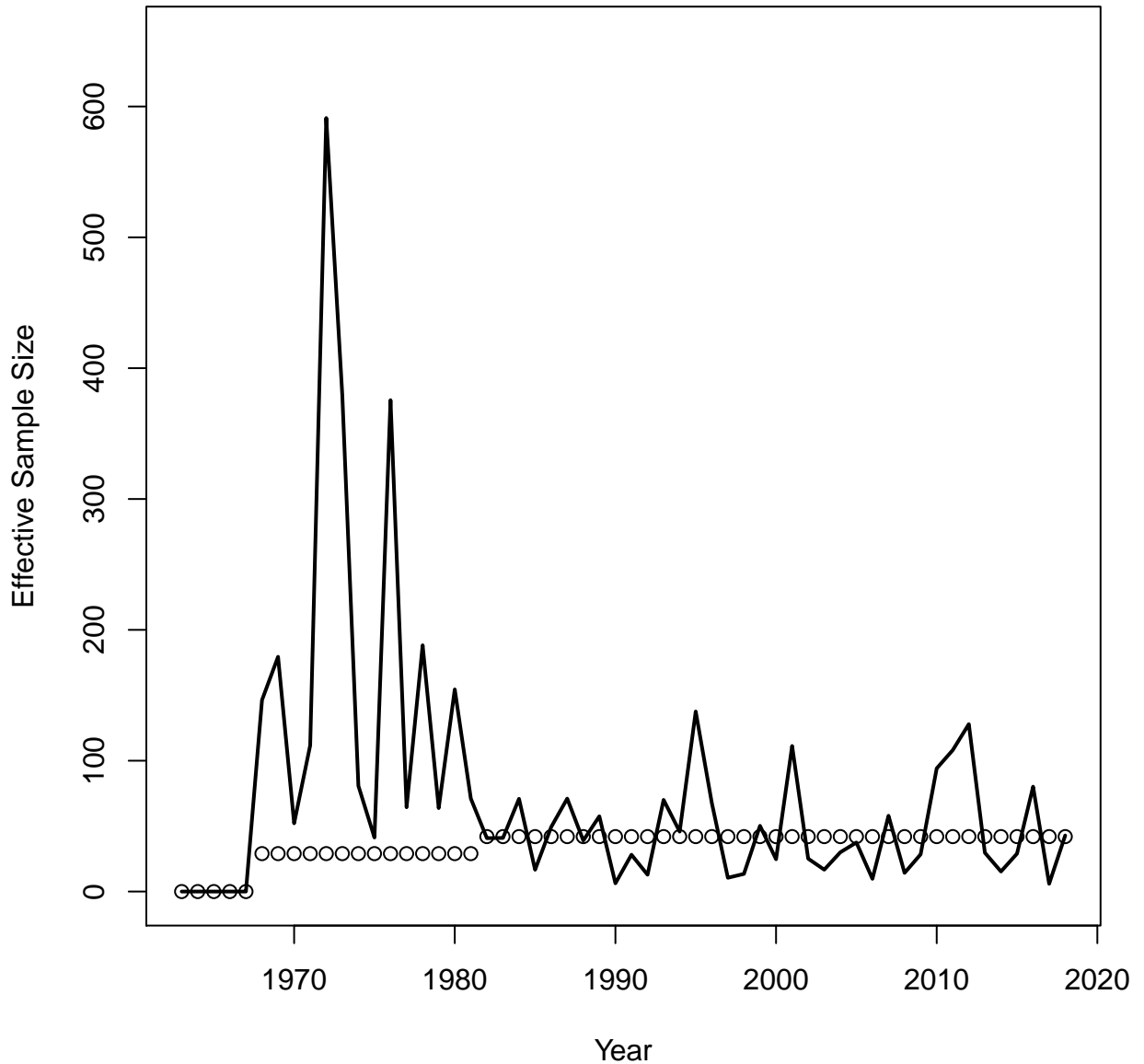
Age Comp Residuals for Index 1 (INDEX-1)



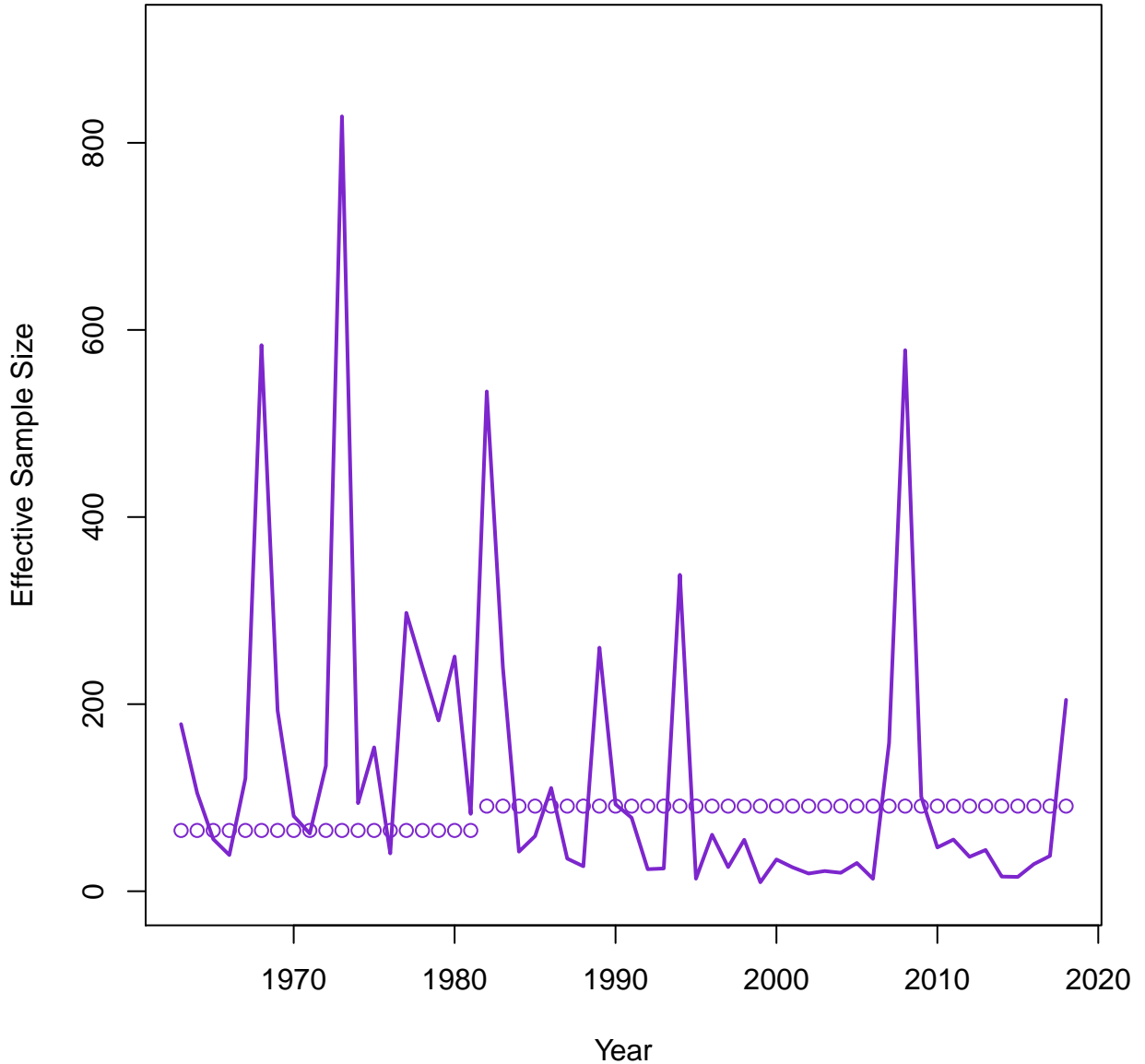
Age Comp Residuals for Index 2 (INDEX-2)



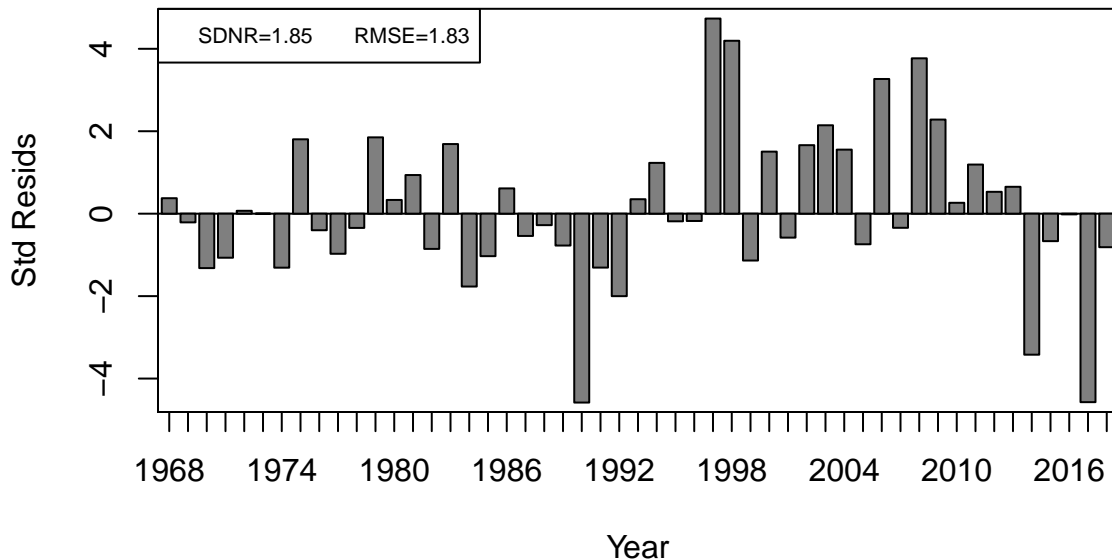
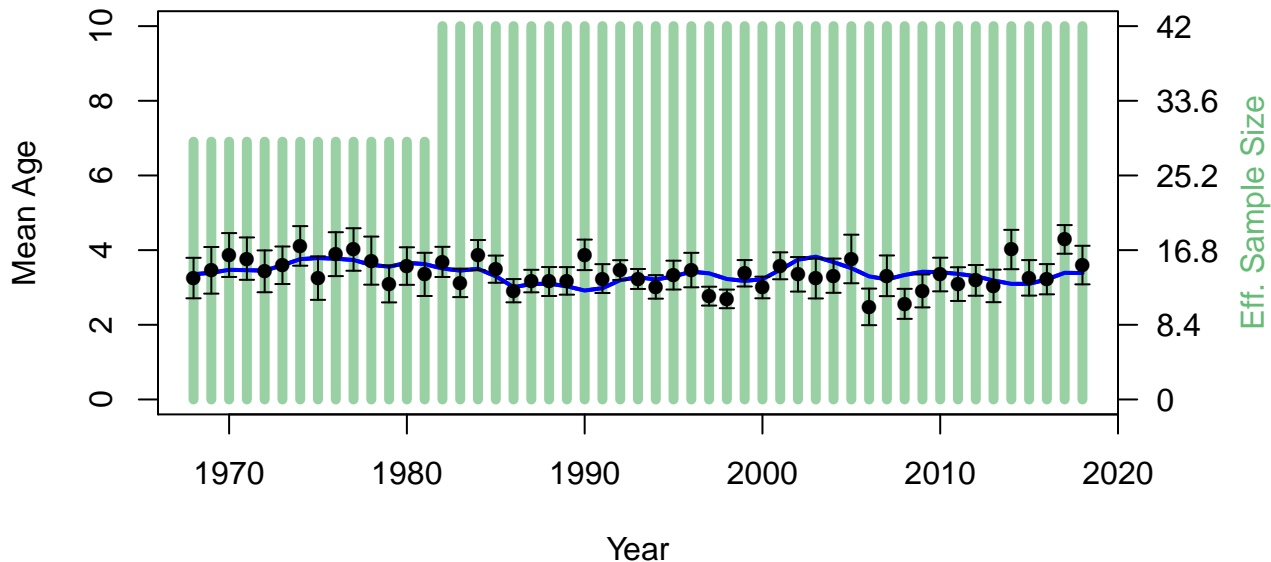
Index Neff 1 (INDEX-1)



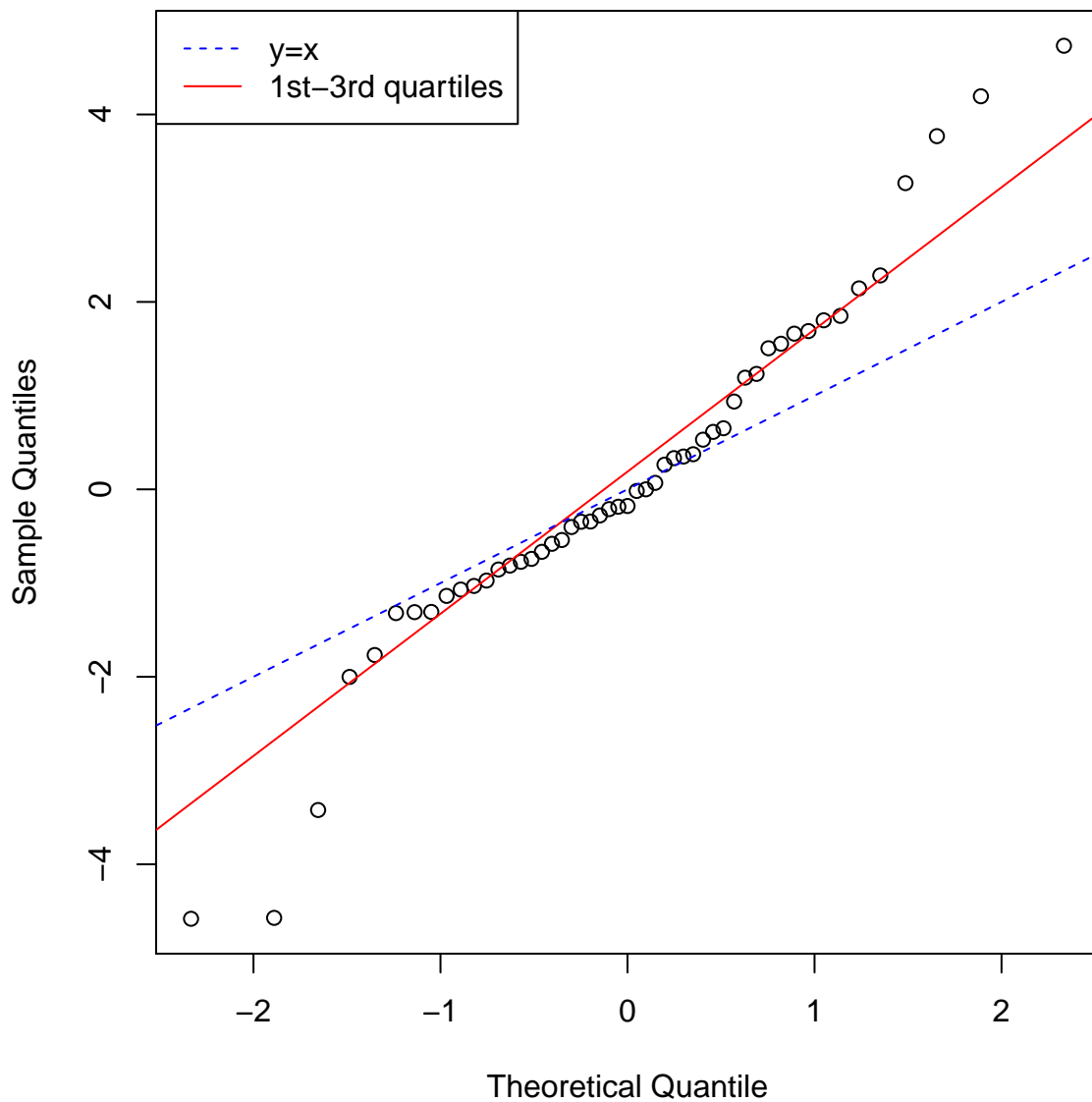
Index Neff 2 (INDEX-2)



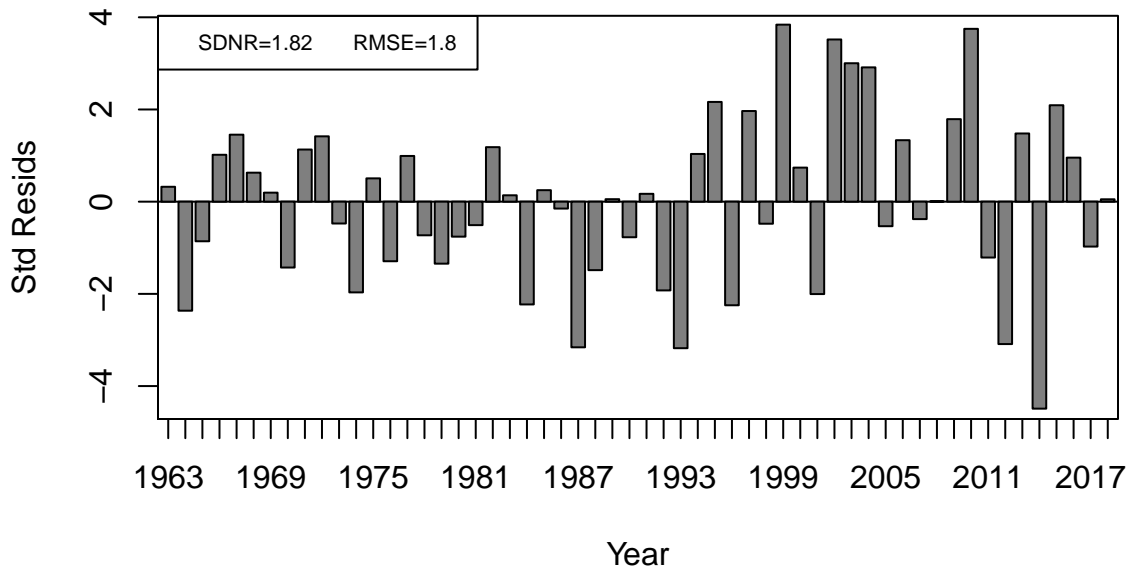
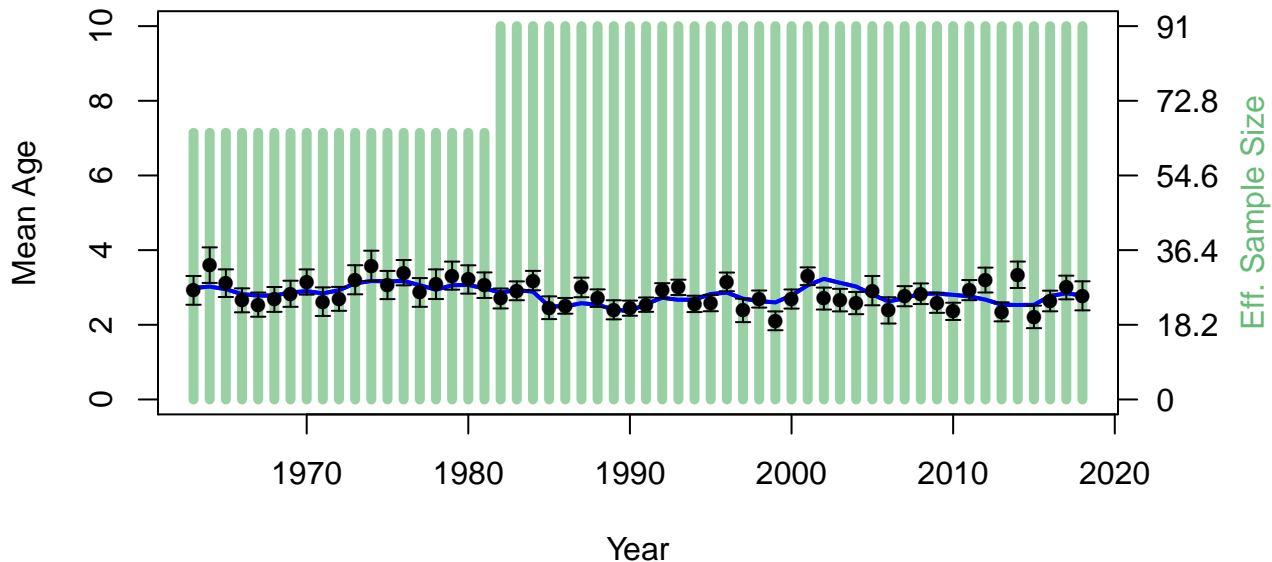
Index 1 (INDEX-1)



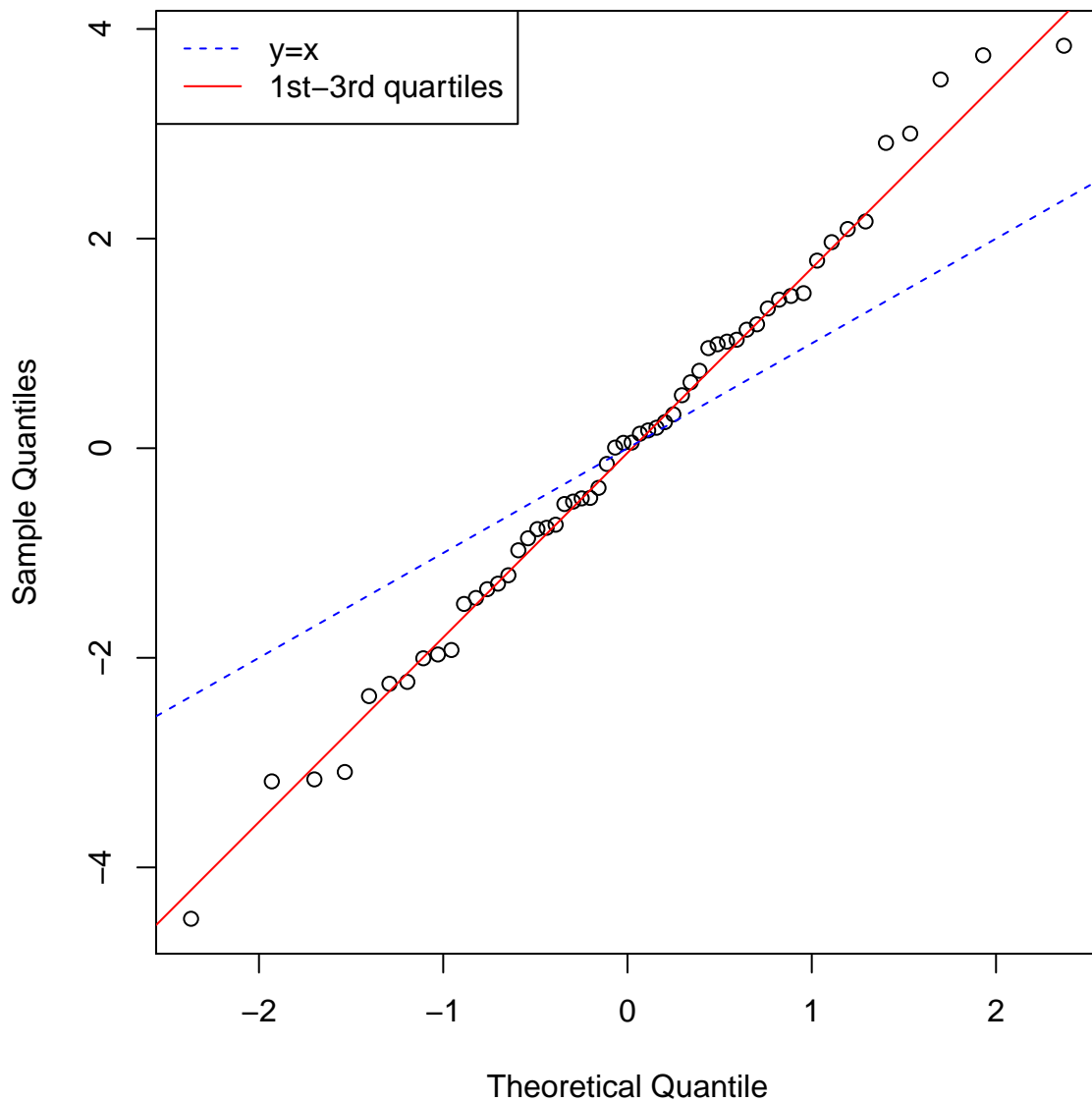
Index 1 (INDEX-1)



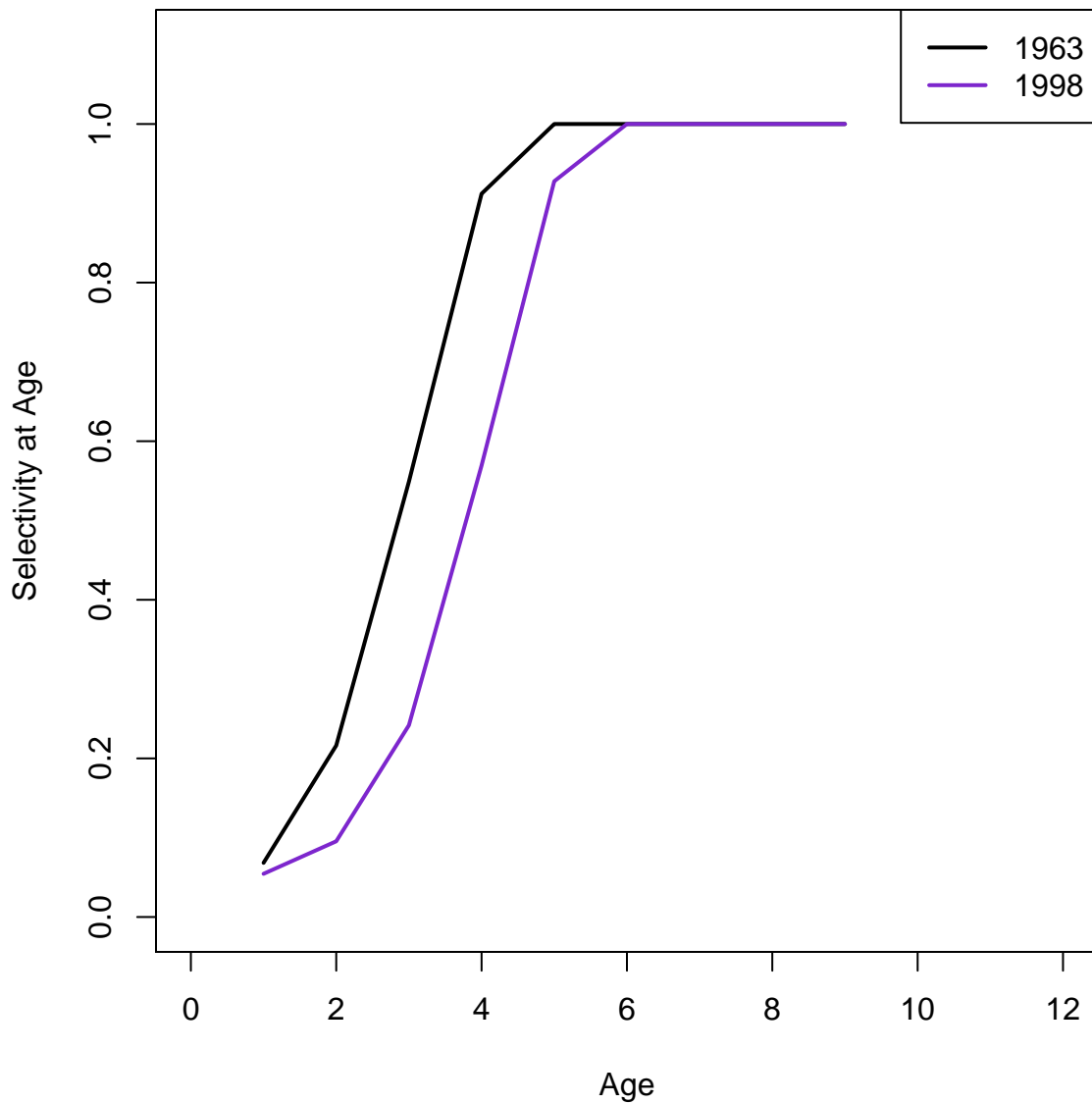
Index 2 (INDEX-2)

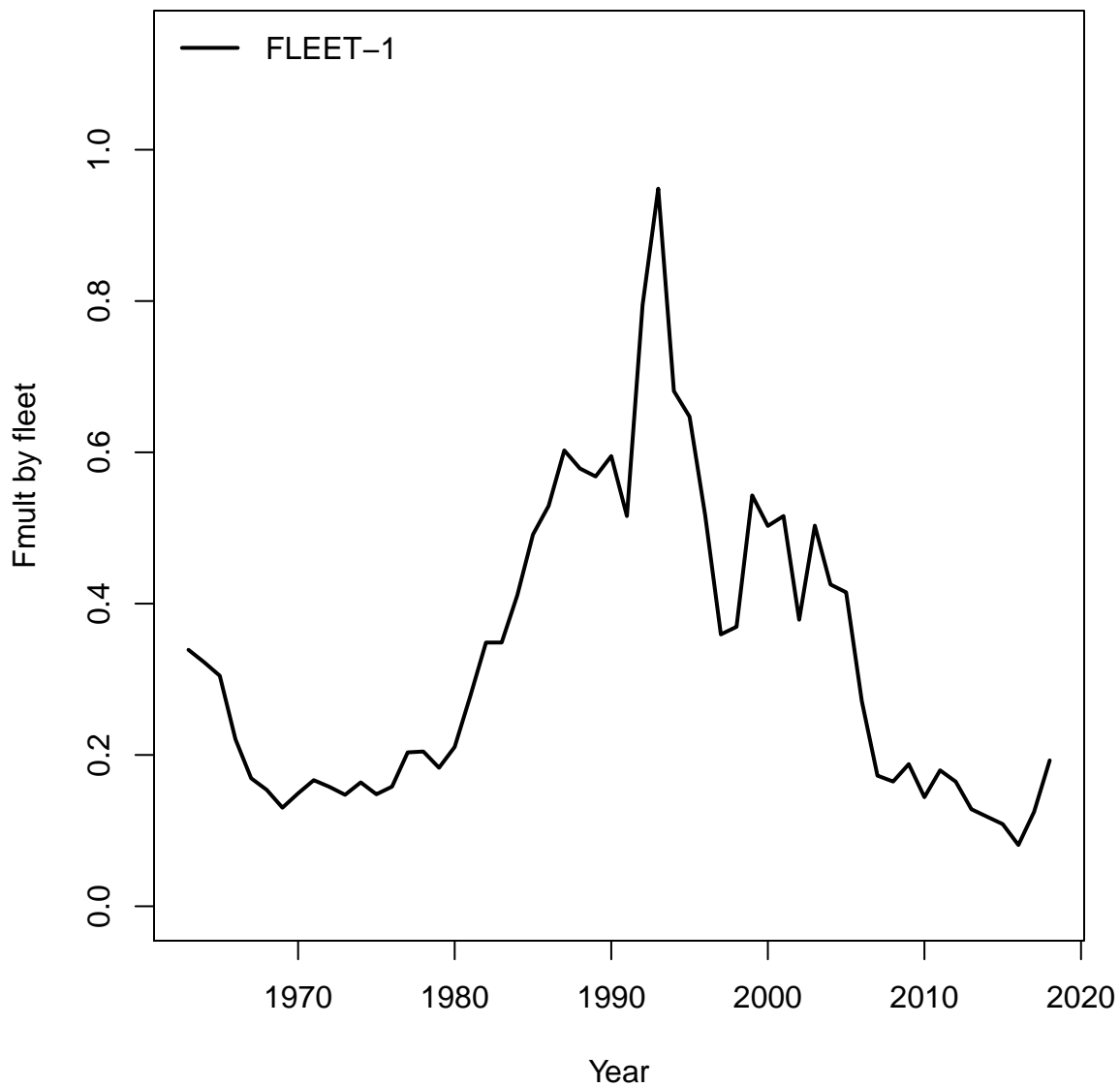


Index 2 (INDEX-2)

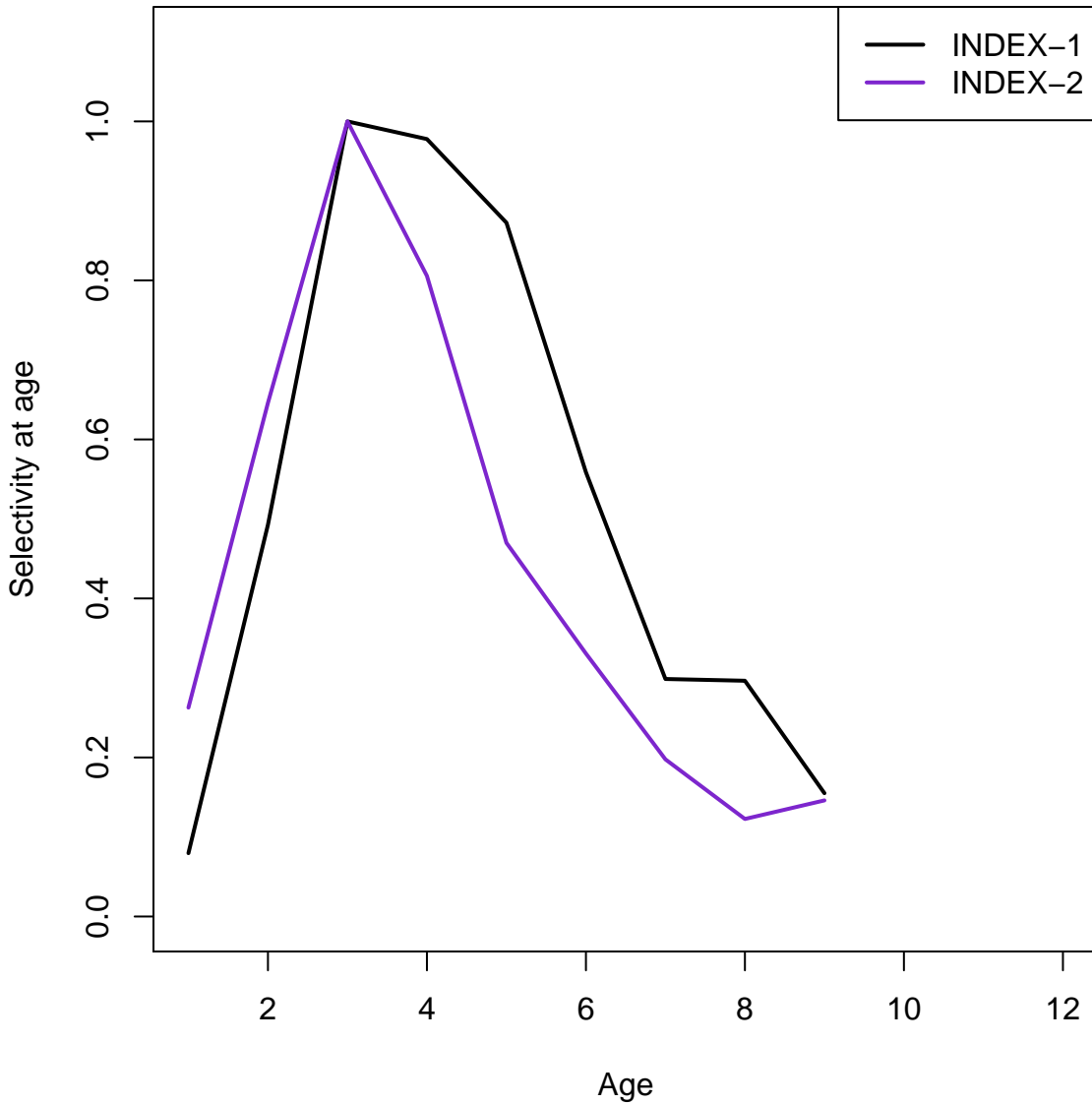


Fleet 1 (FLEET-1)





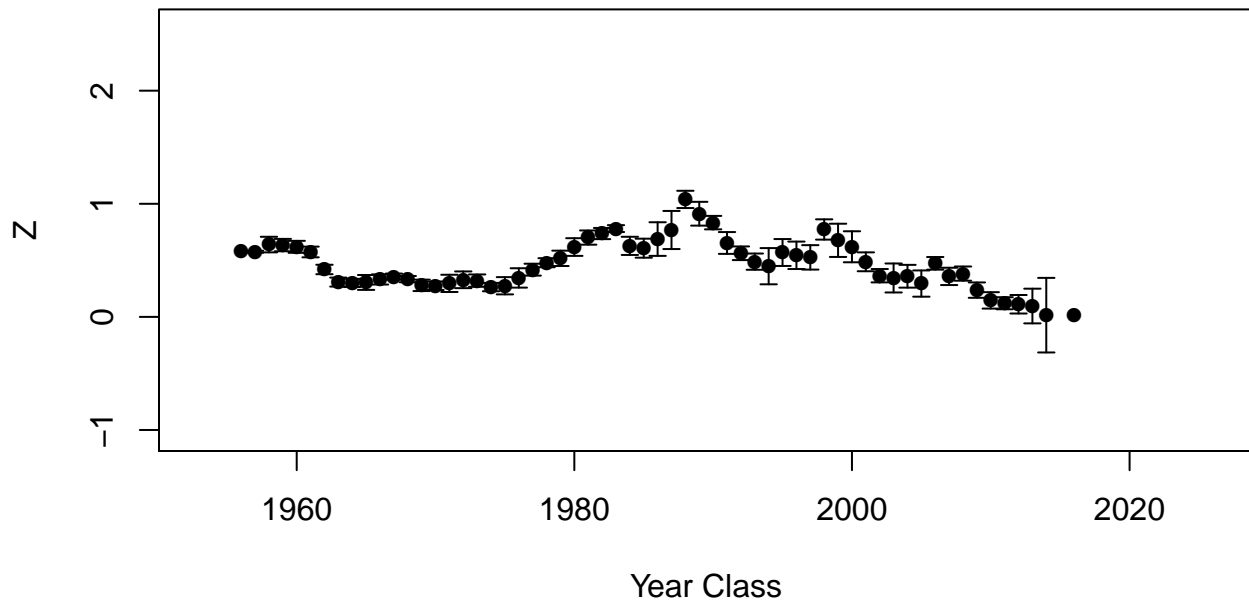
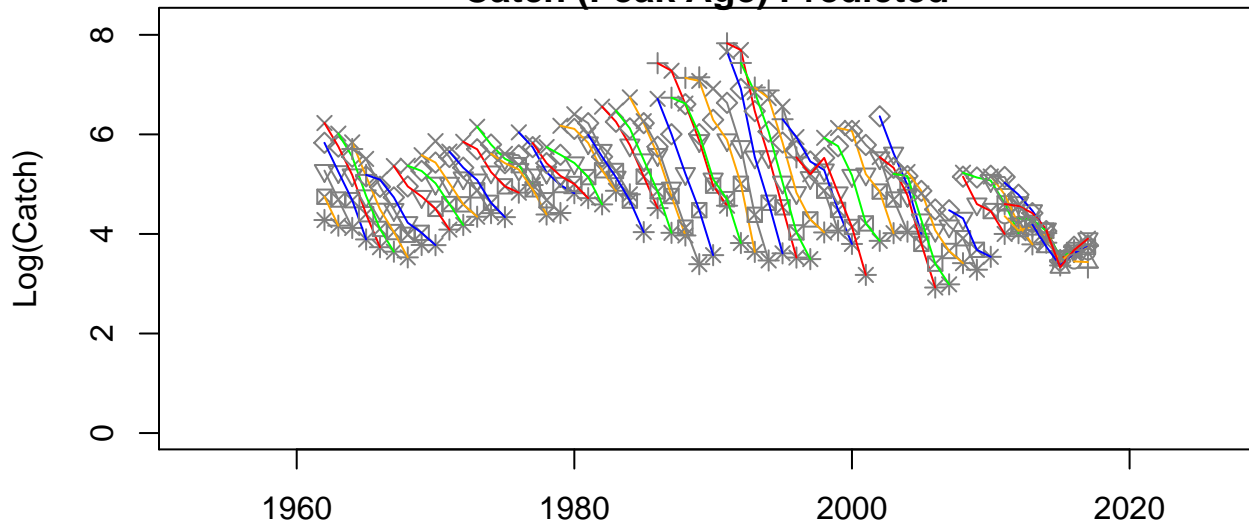
Indices



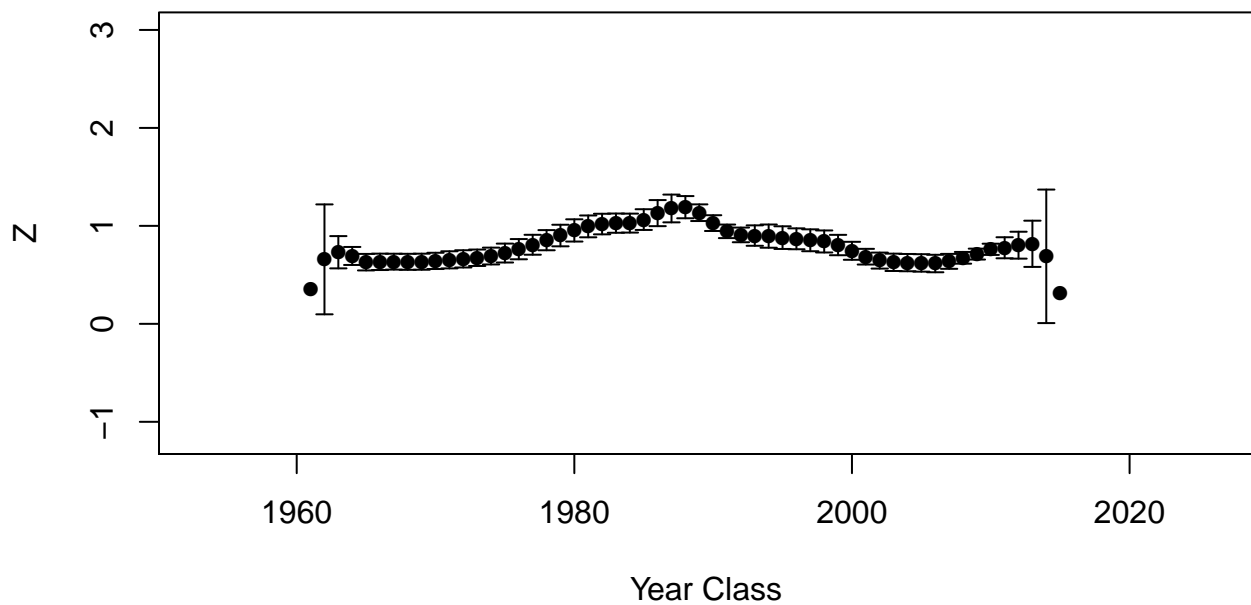
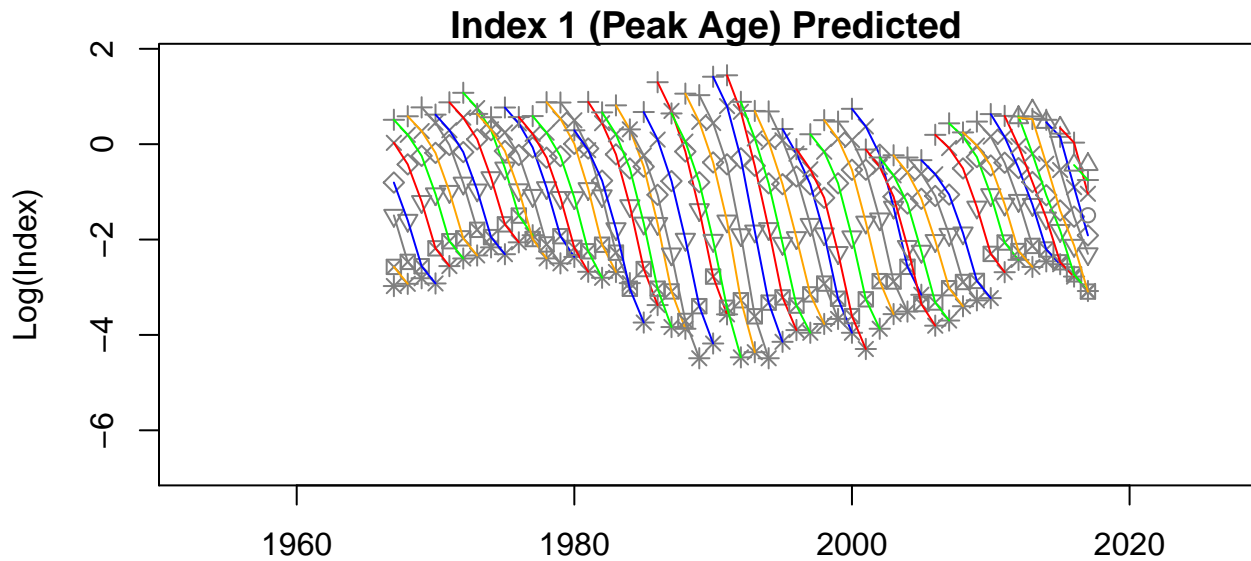
Catch (Peak Age) Observed



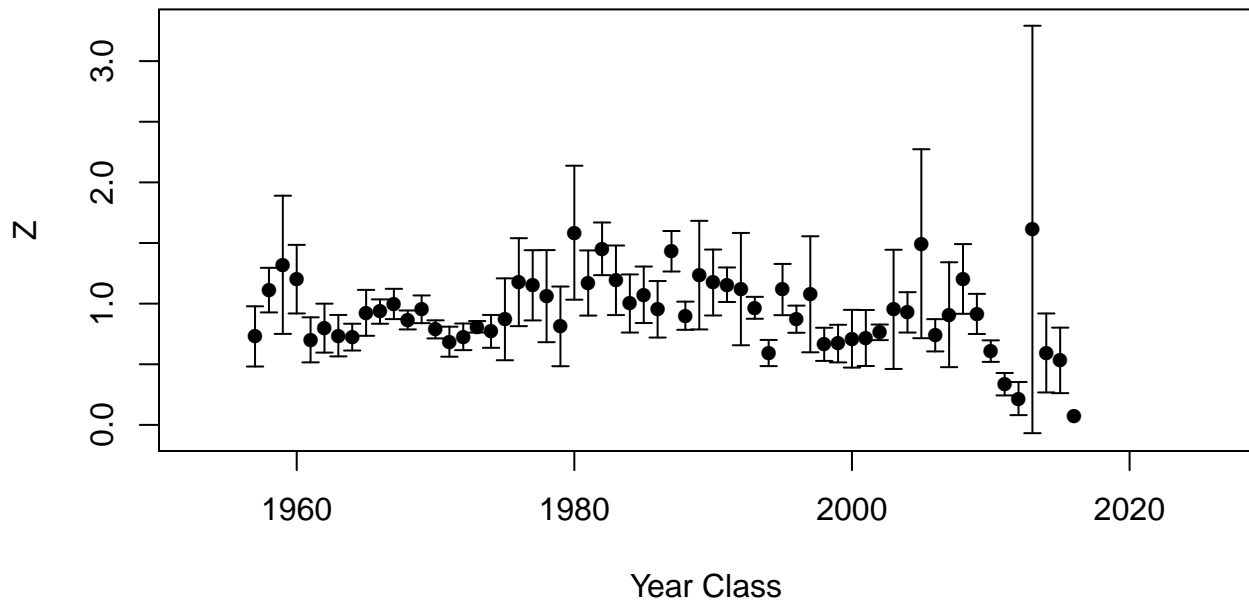
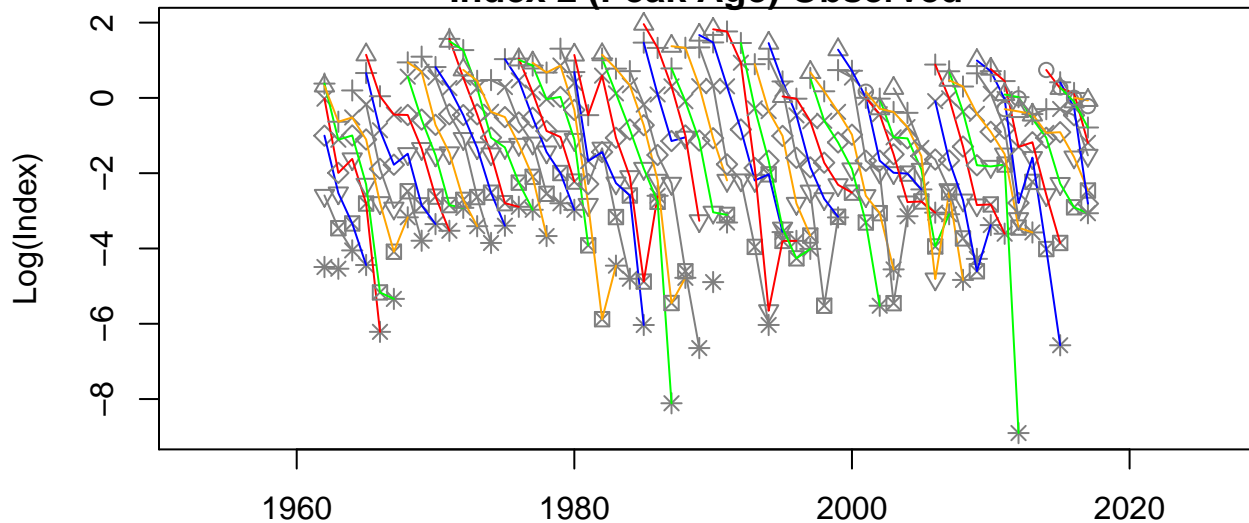
Catch (Peak Age) Predicted



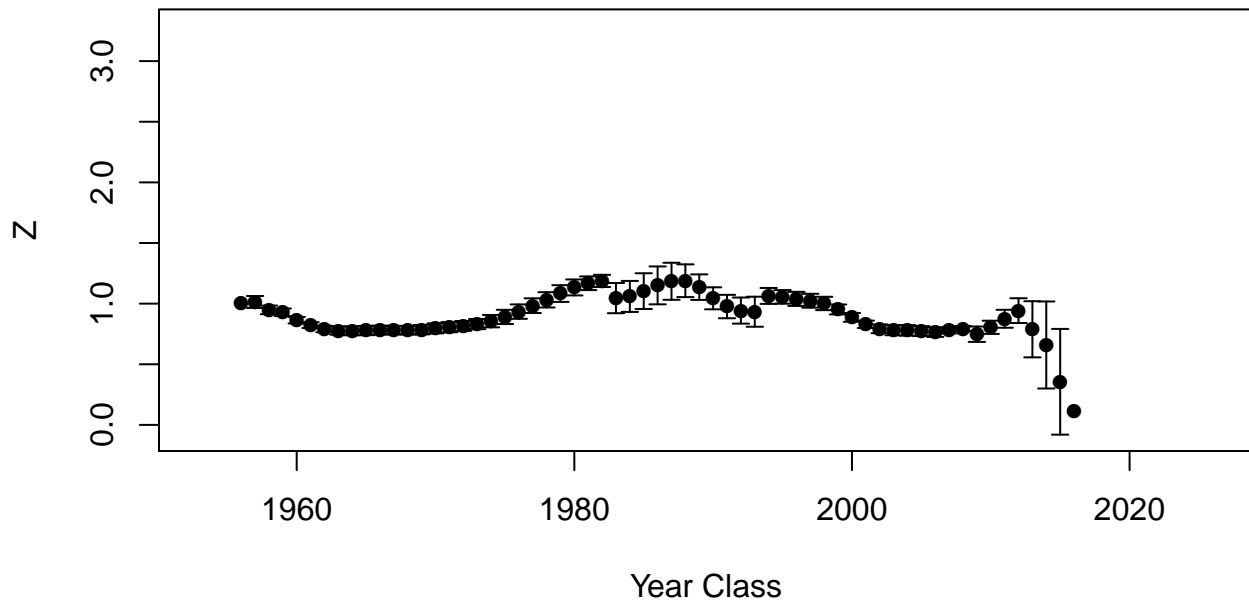
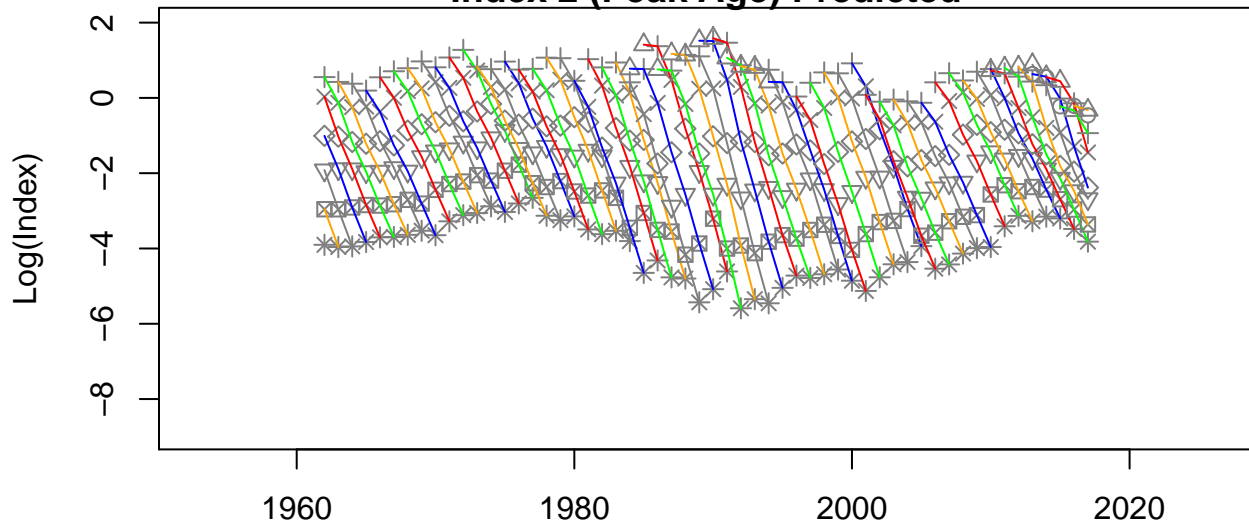




Index 2 (Peak Age) Observed



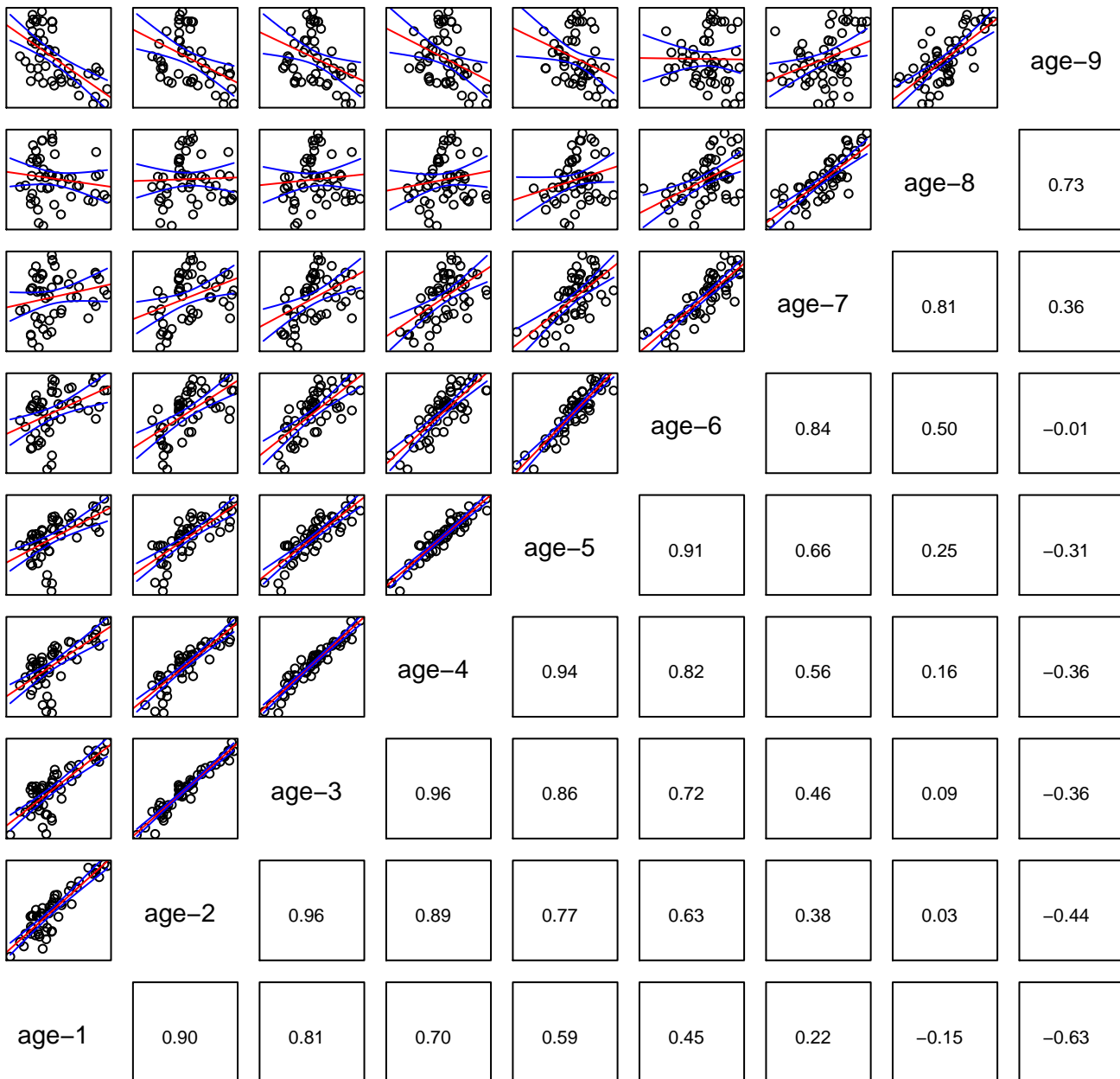
Index 2 (Peak Age) Predicted



Catch Observed



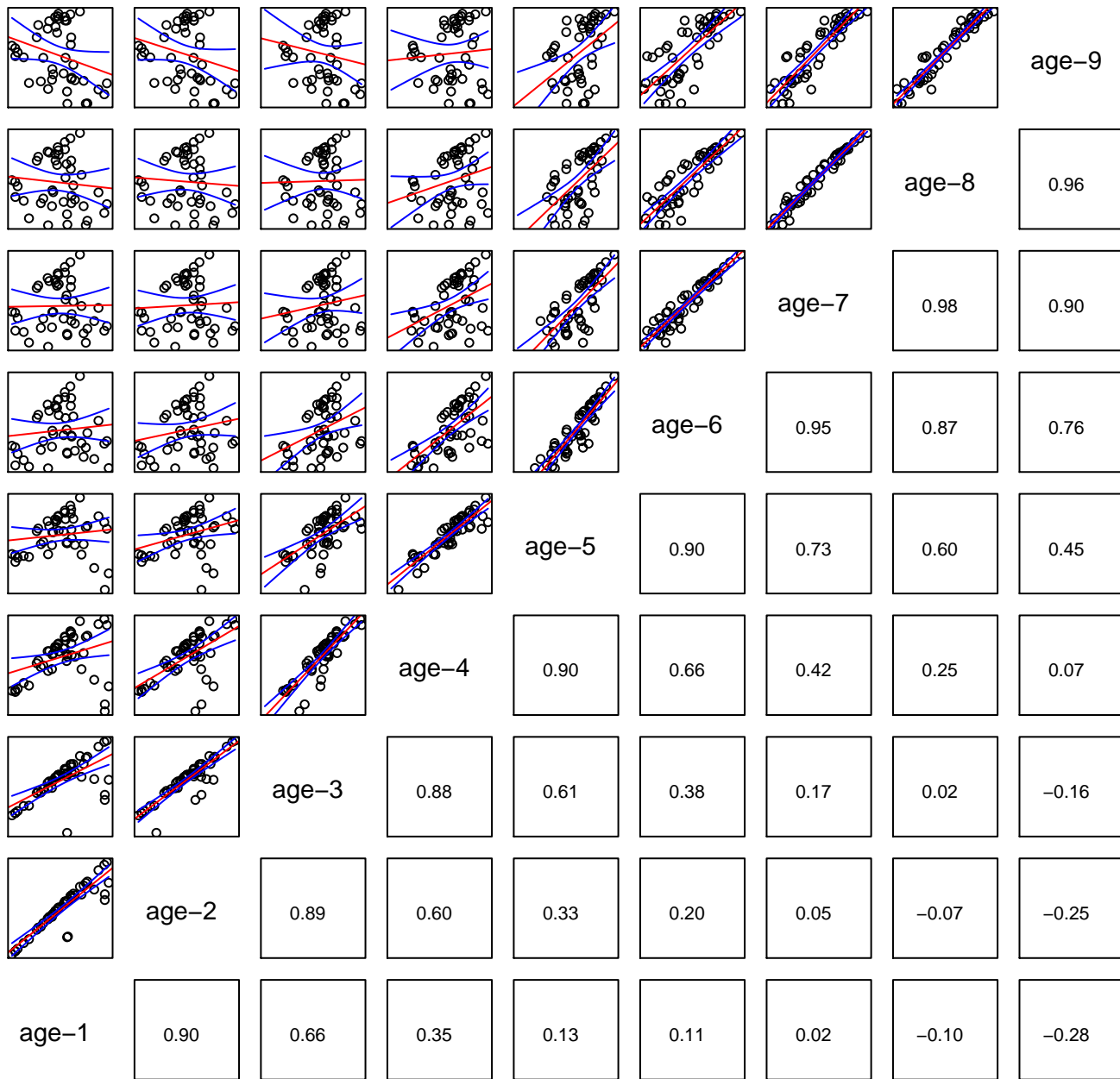
Catch Predicted



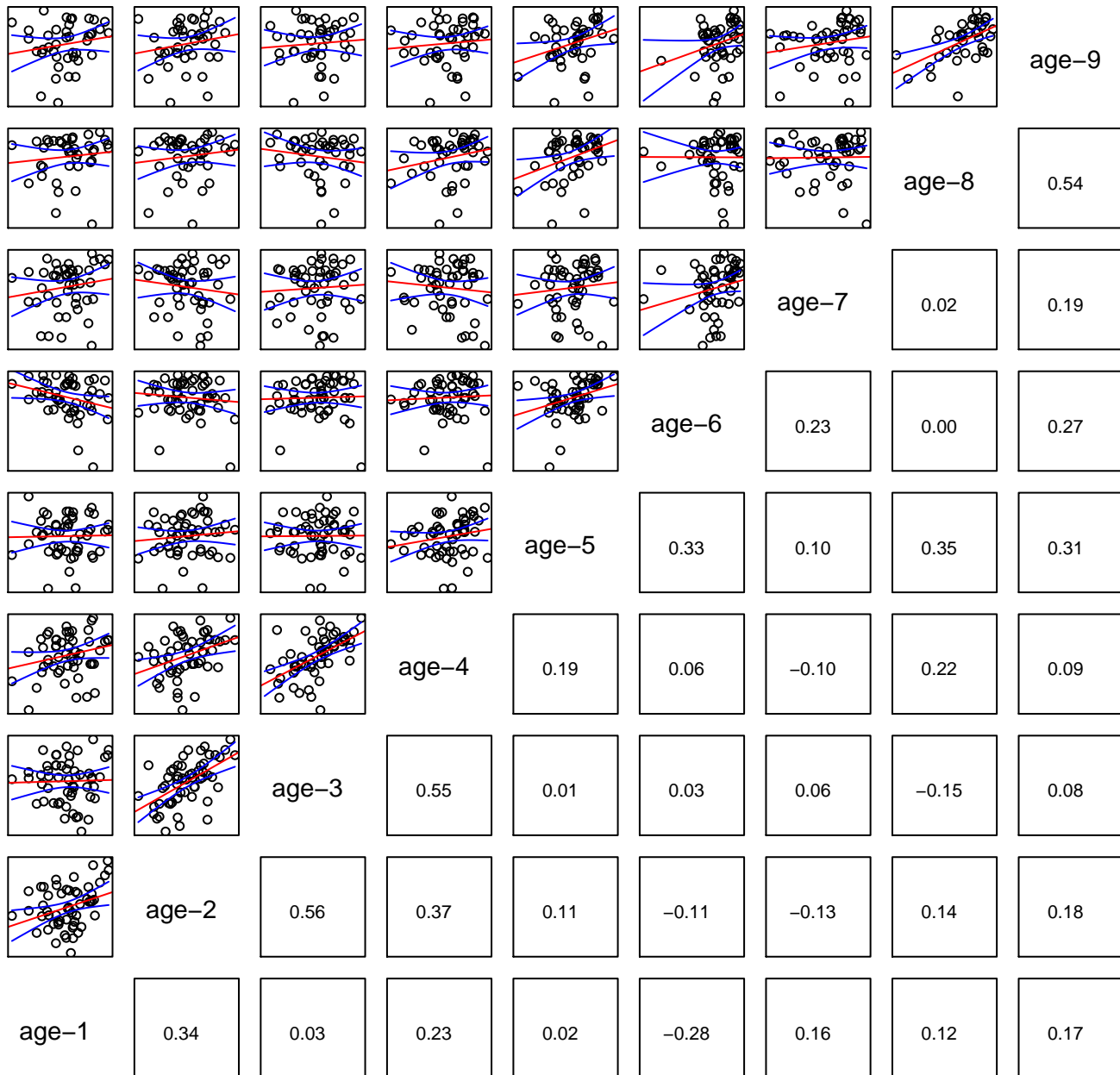
Index 1 (INDEX-1) Observed



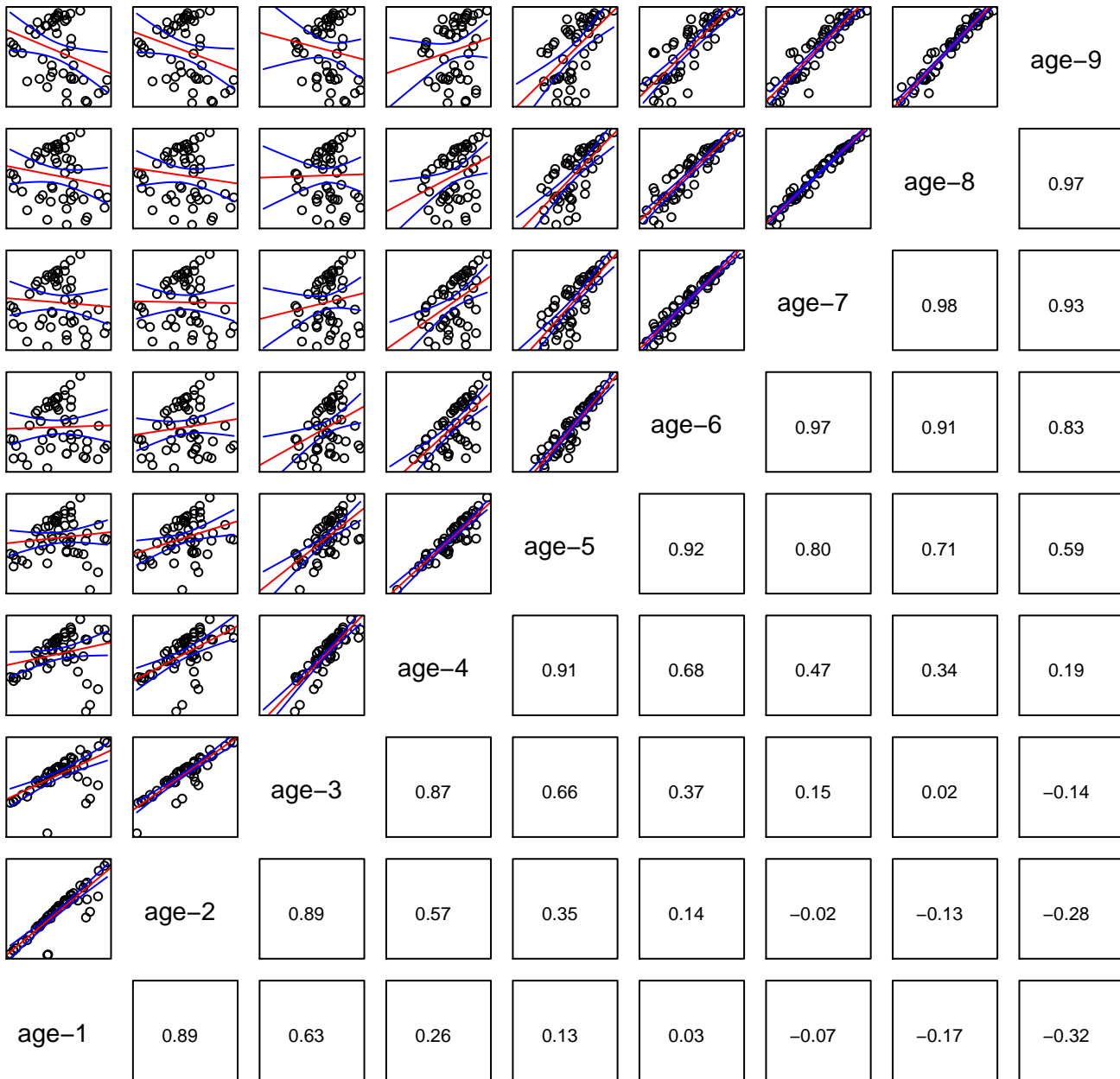
Index 1 (INDEX-1) Predicted

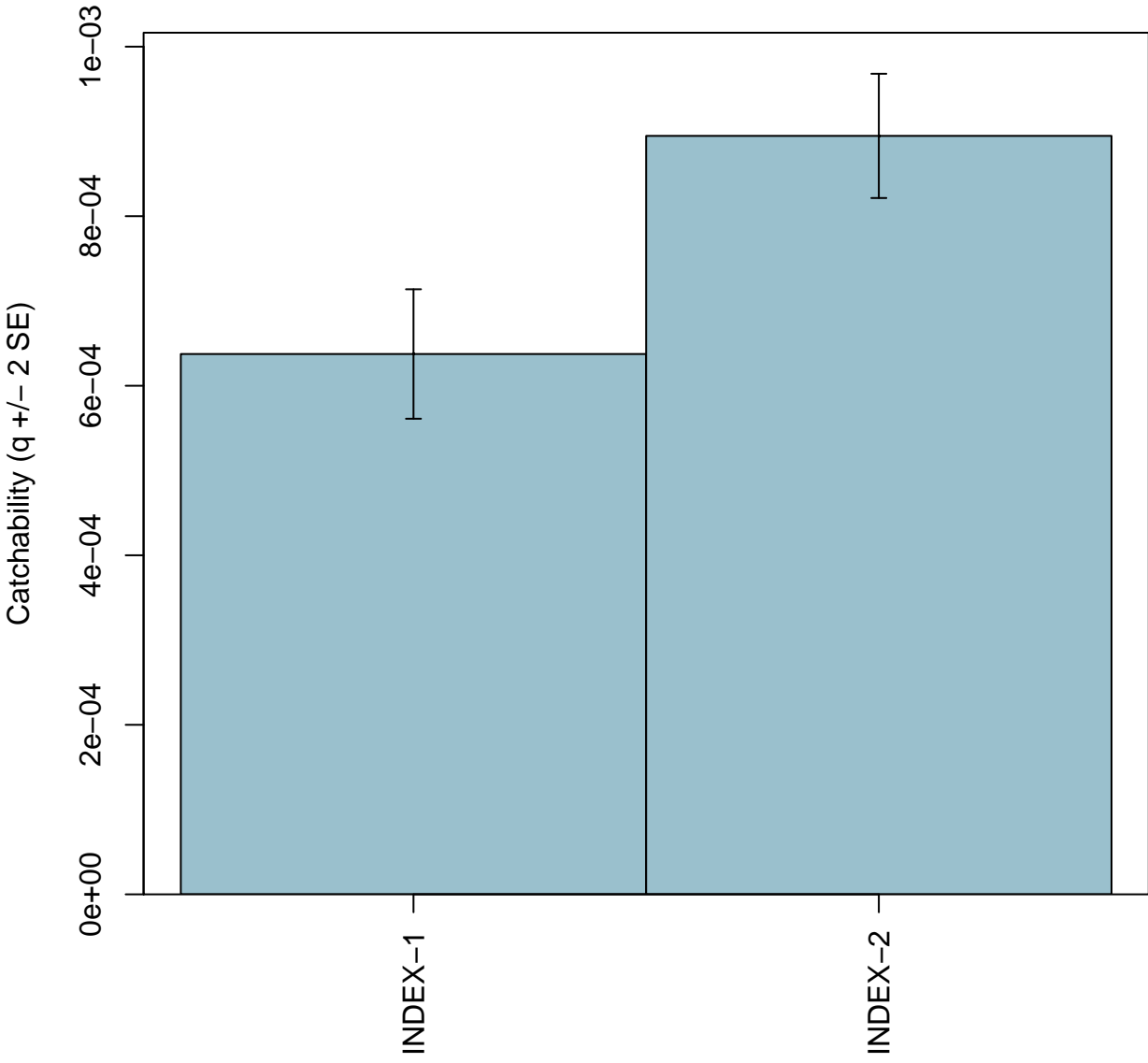


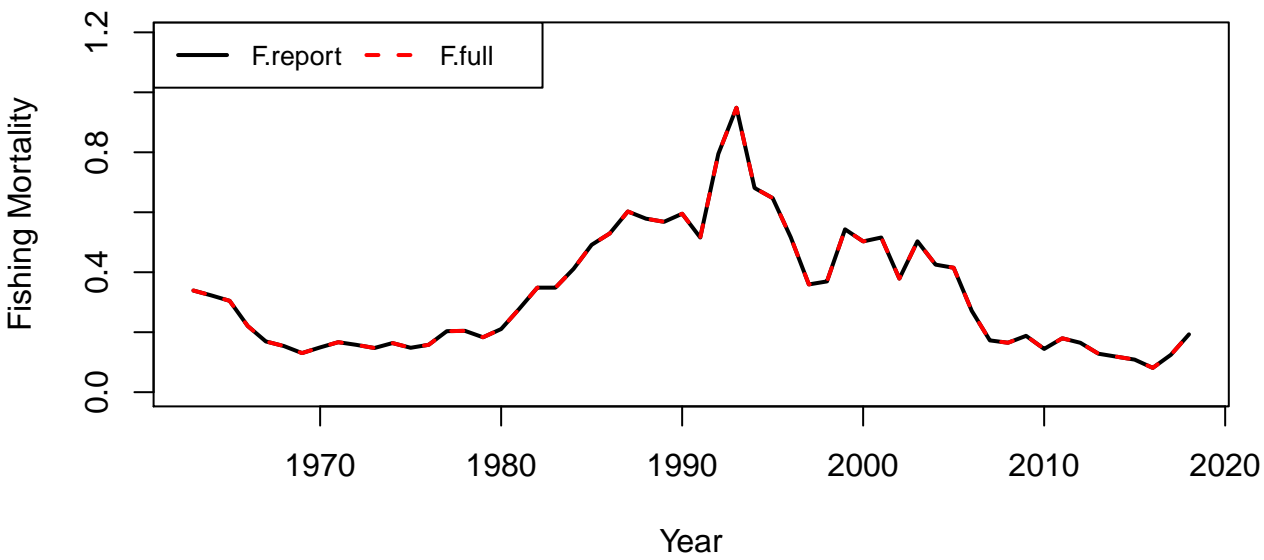
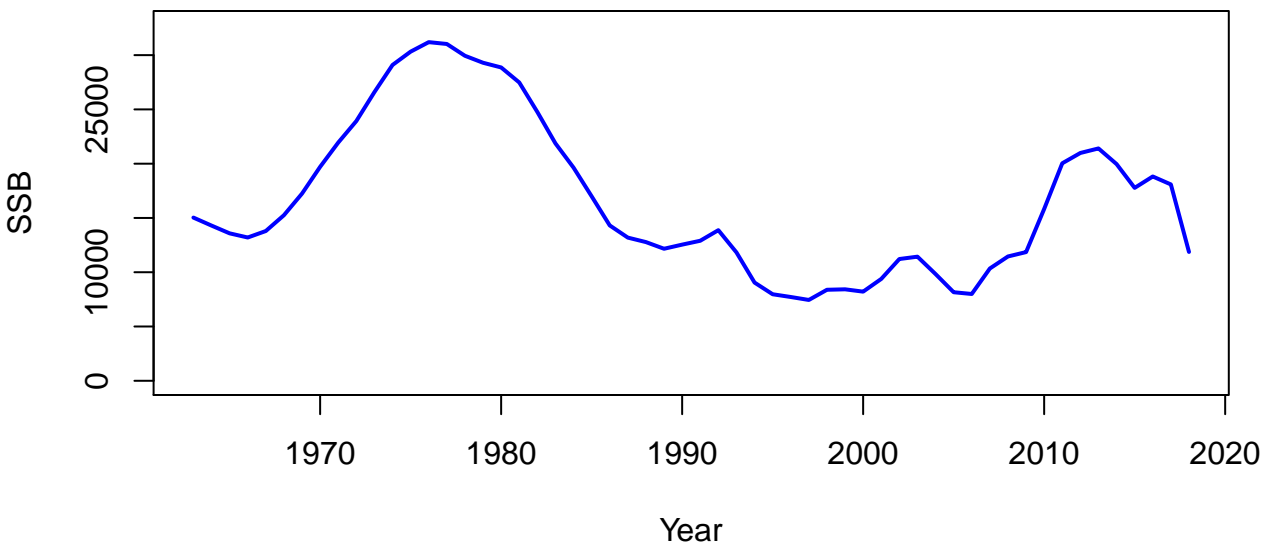
Index 2 (INDEX-2) Observed



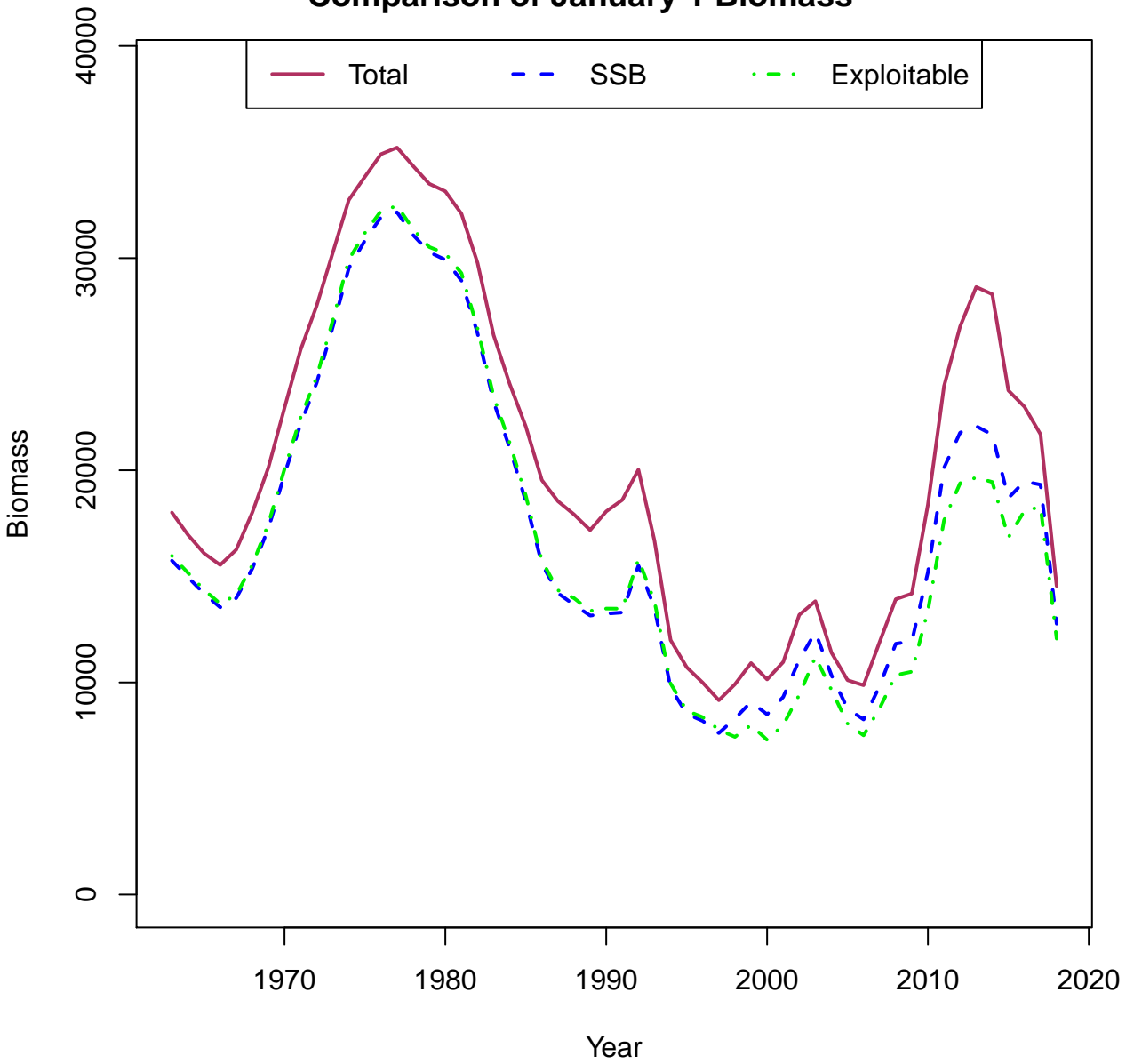
Index 2 (INDEX-2) Predicted

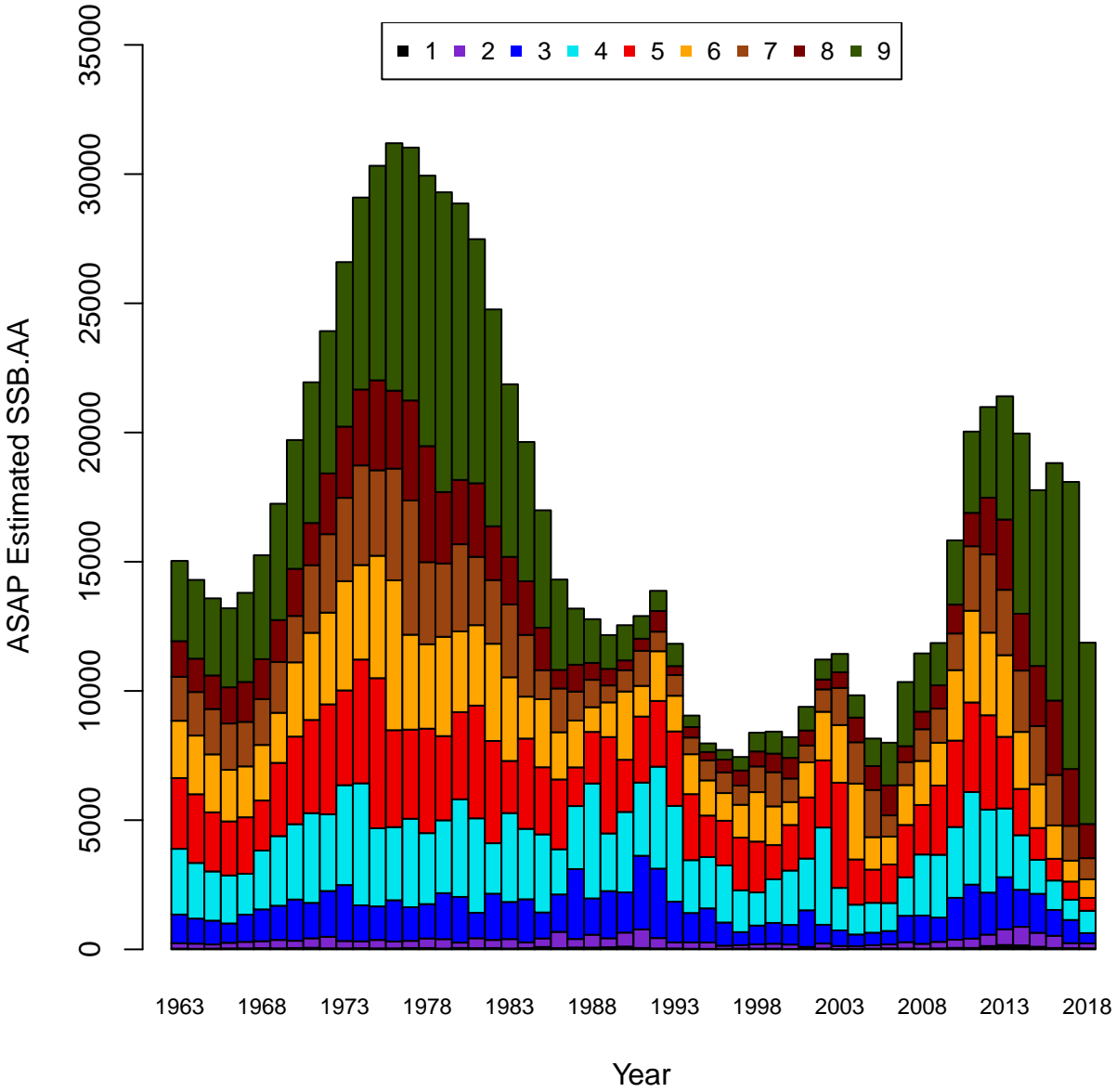


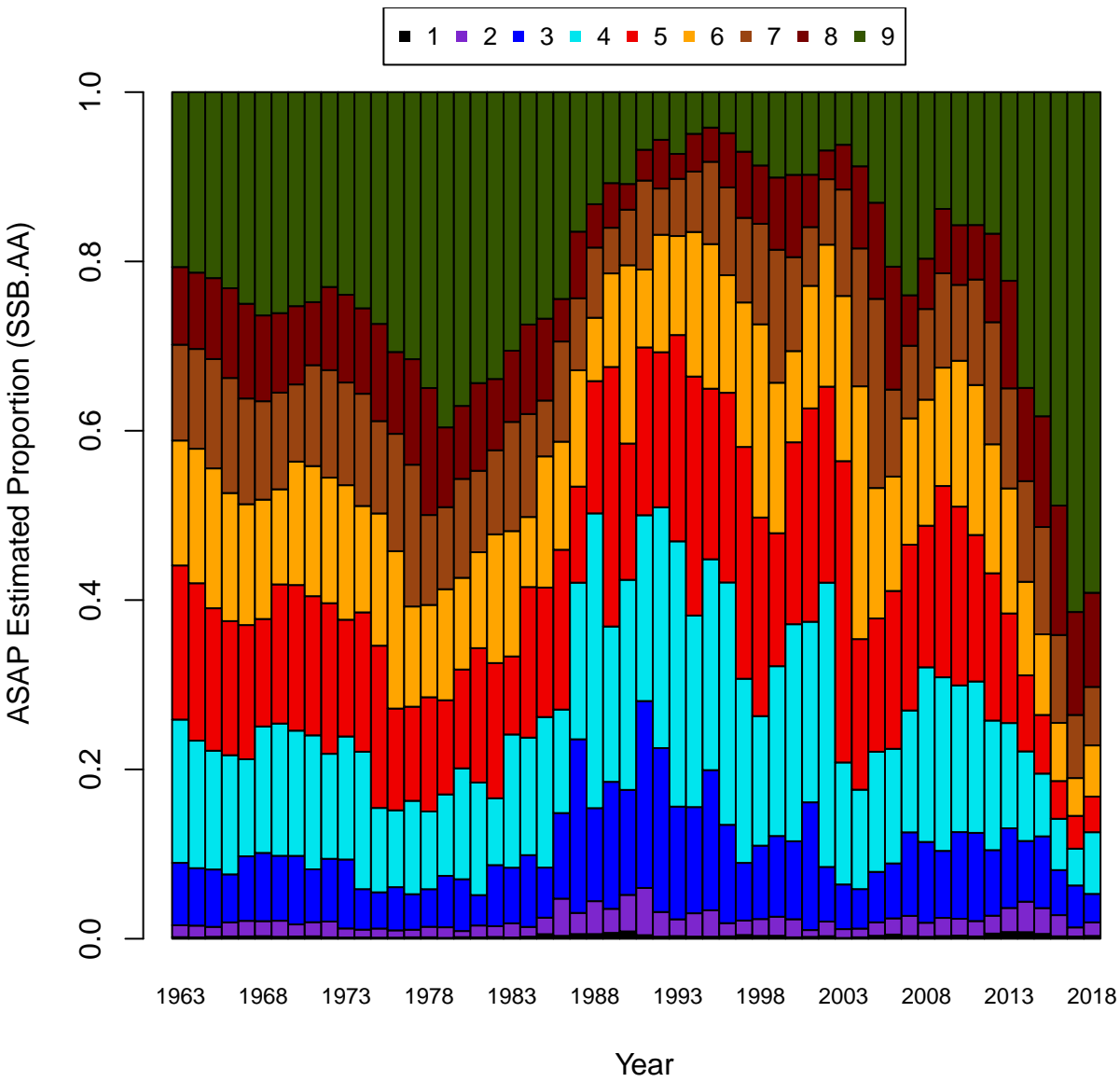




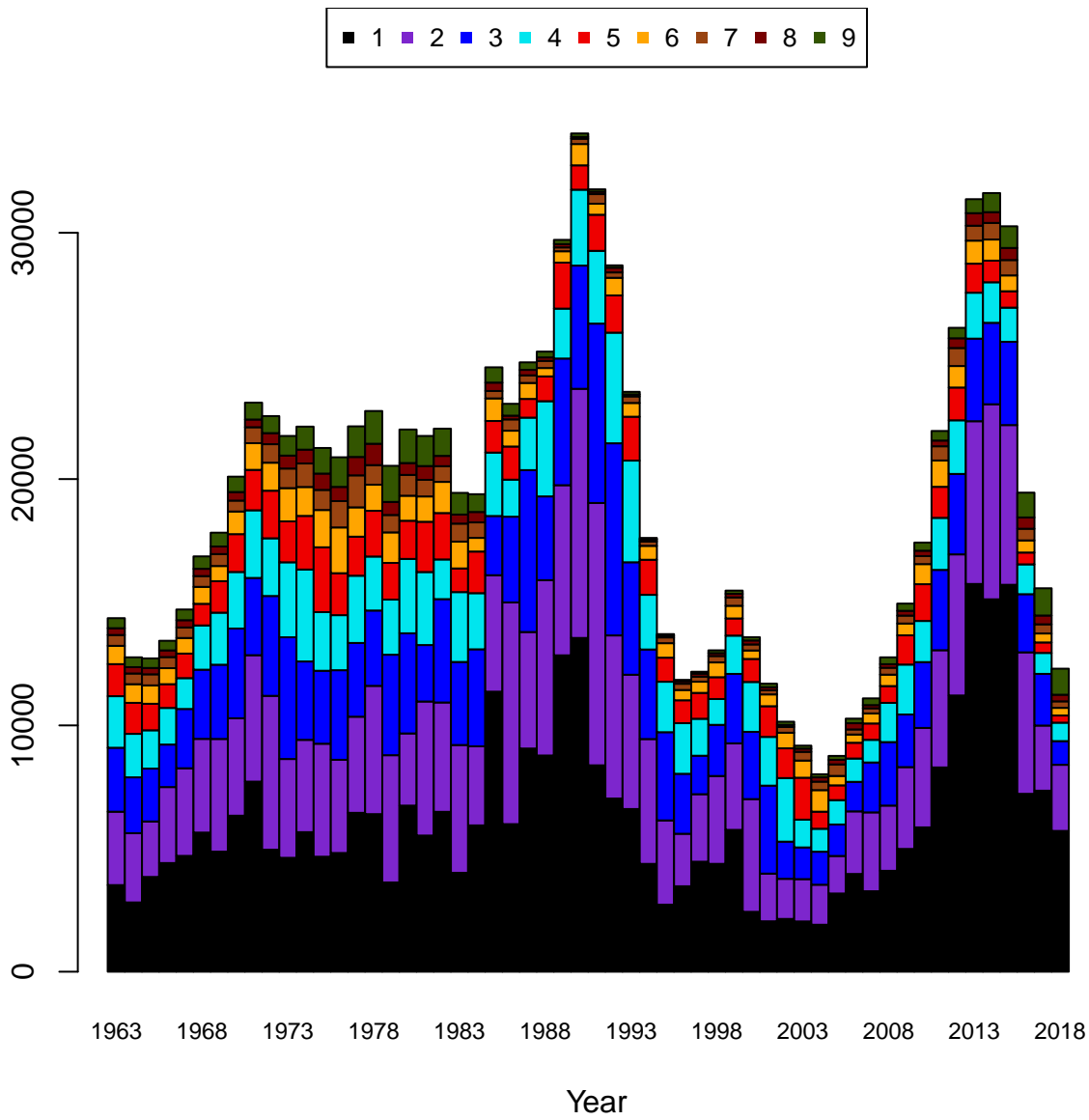
Comparison of January 1 Biomass

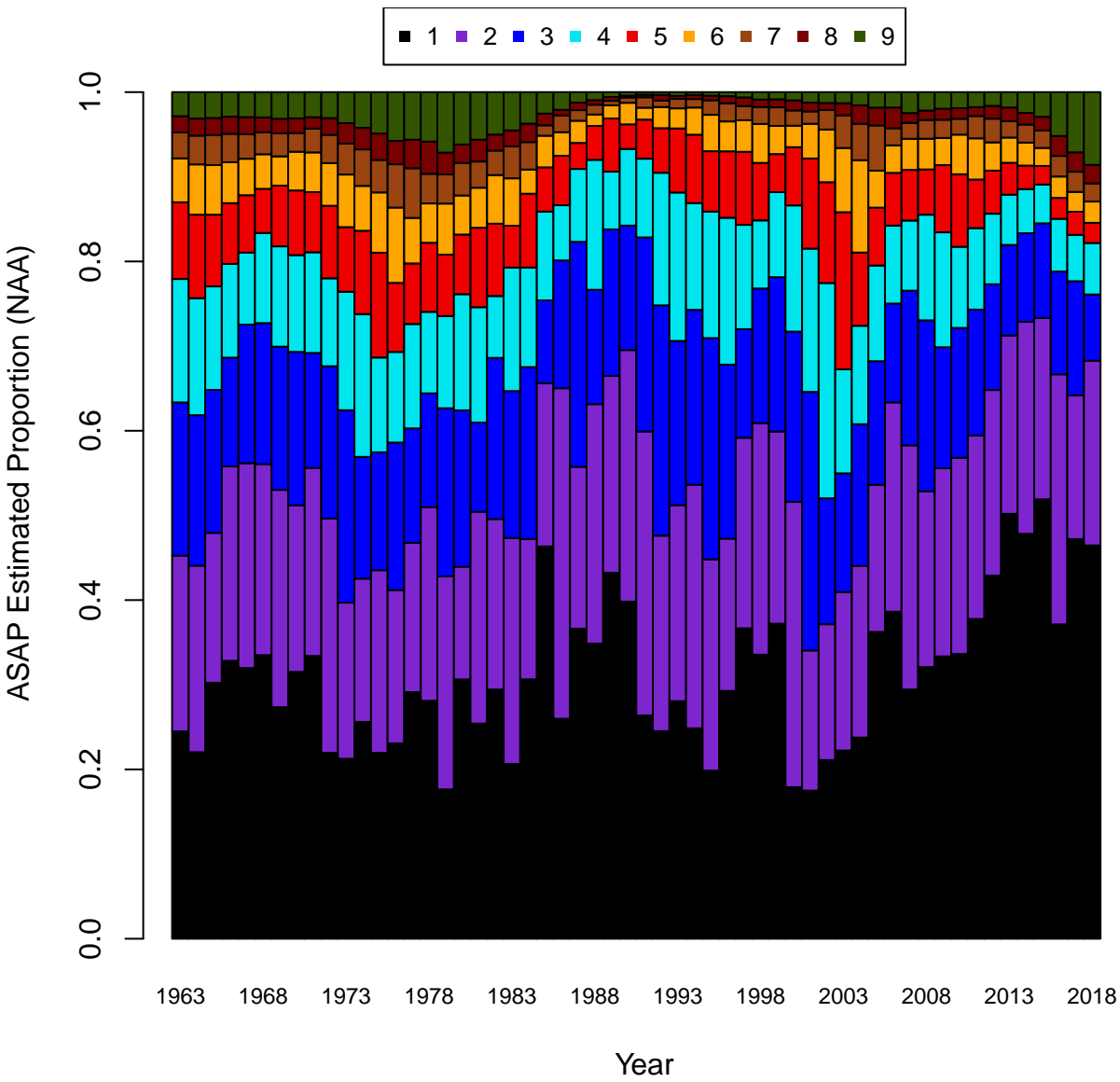


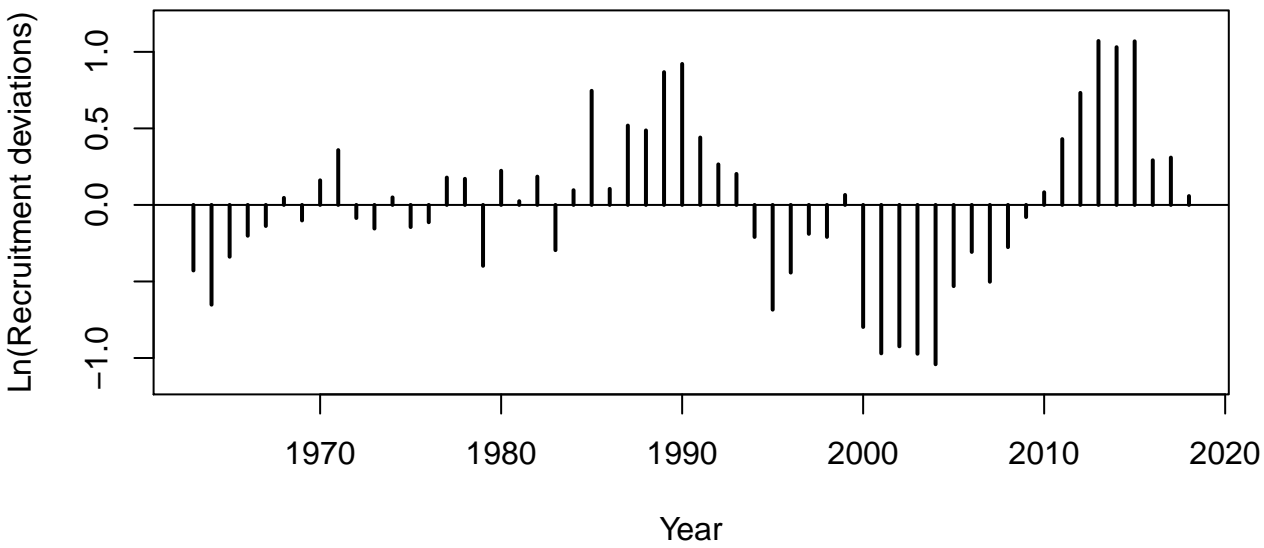
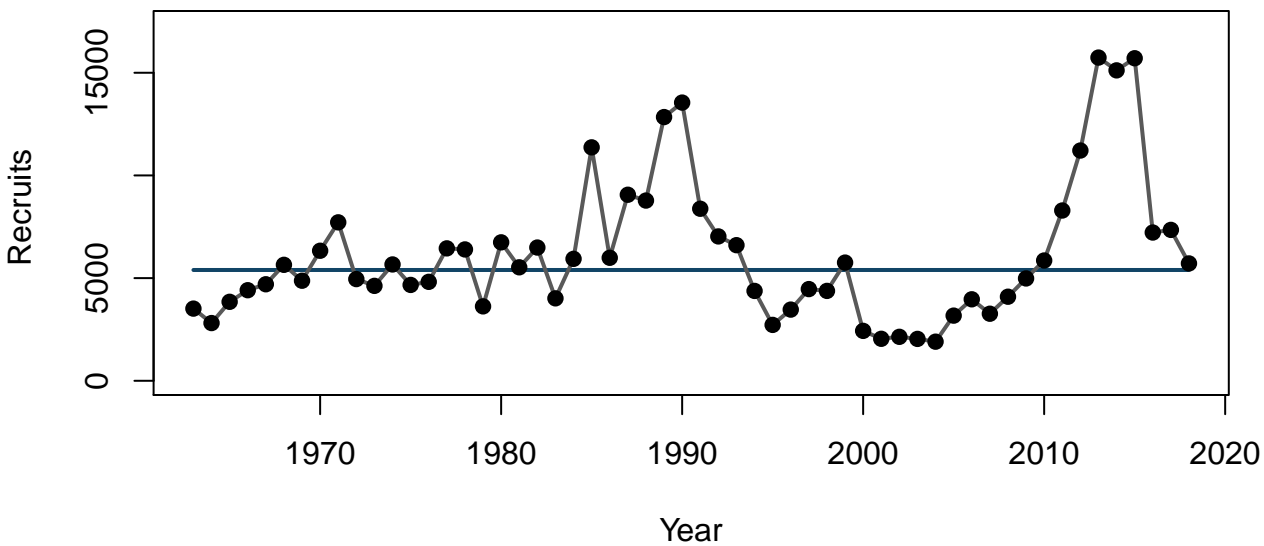


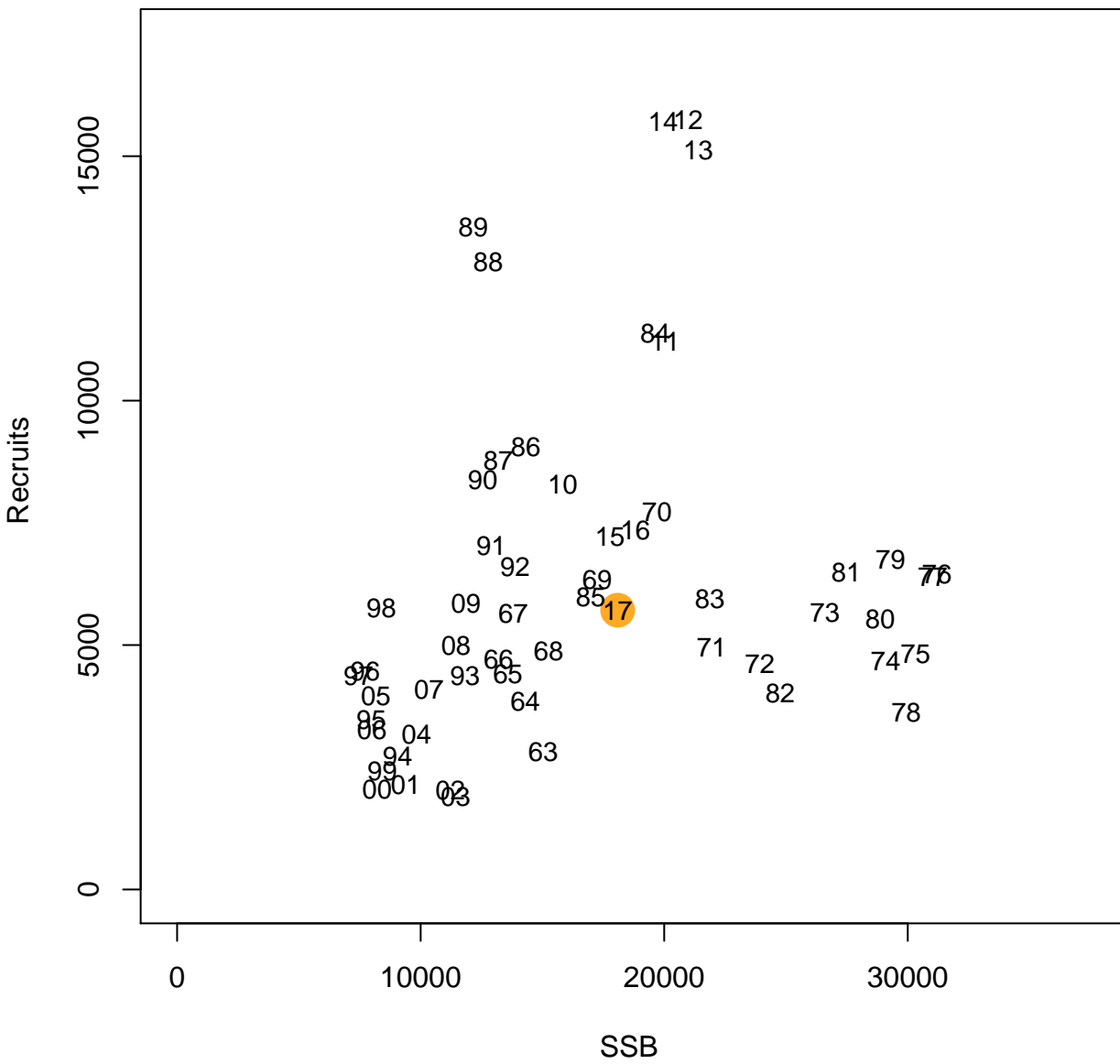


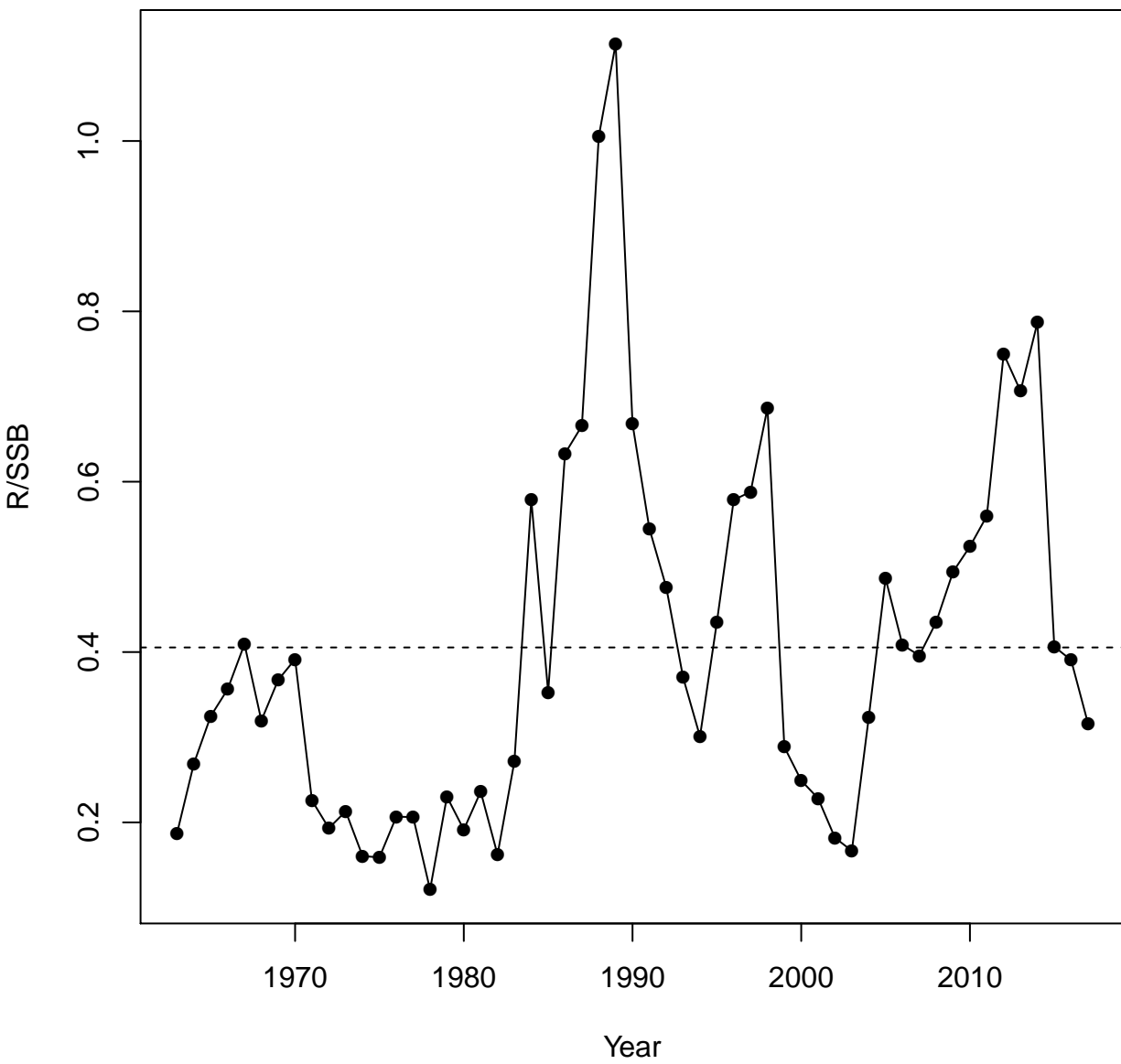
ASAP Estimated NAA

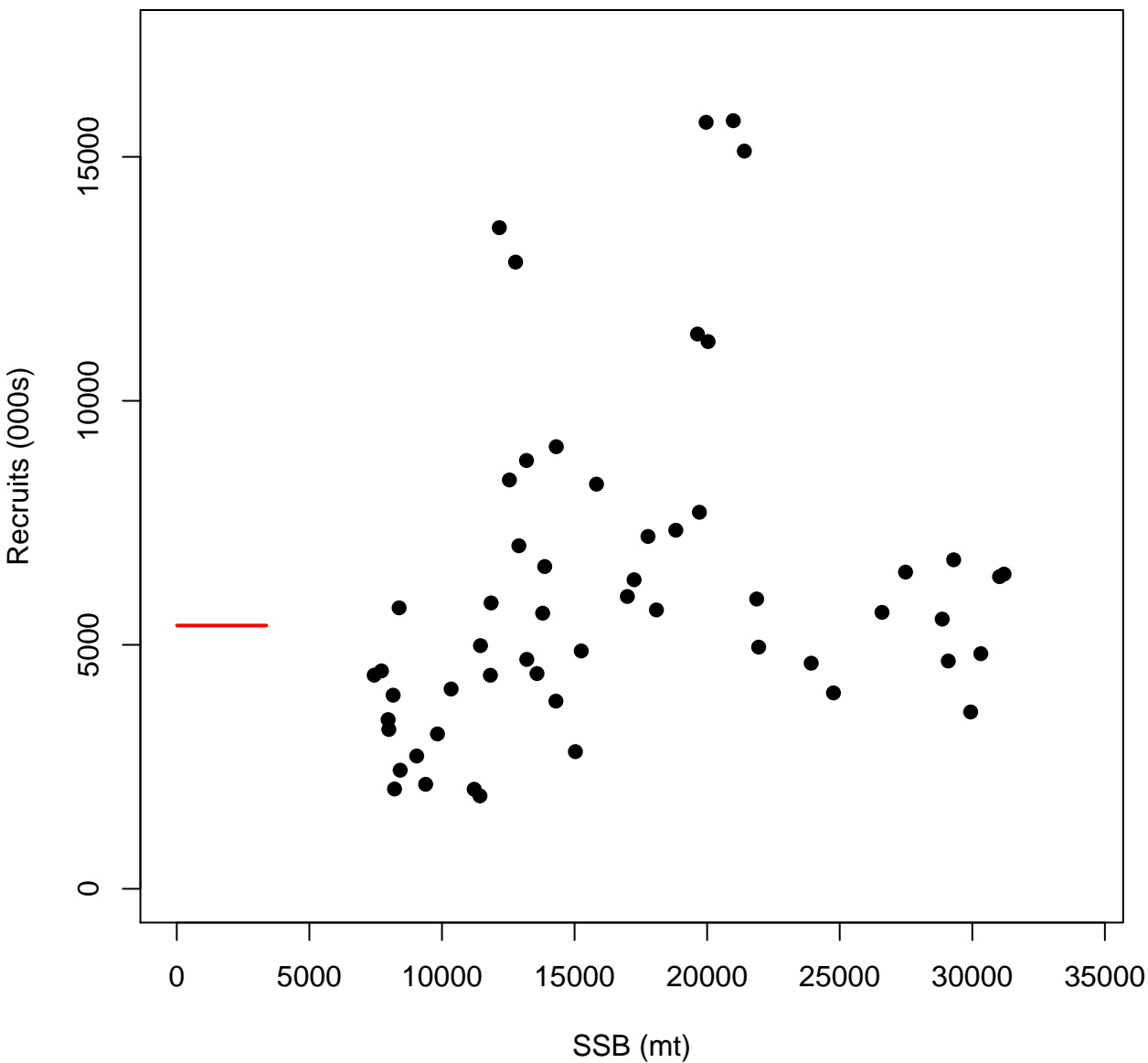


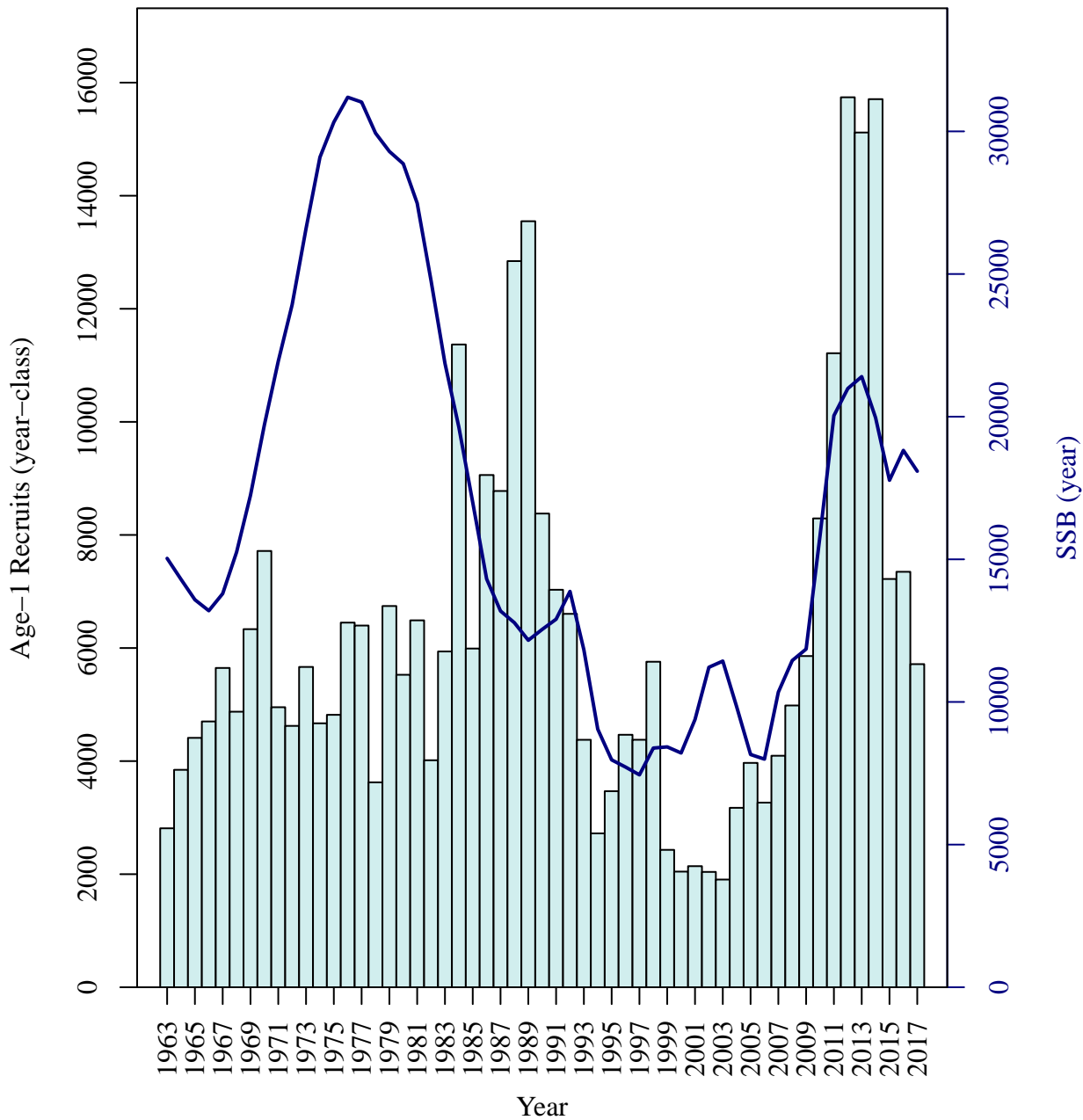




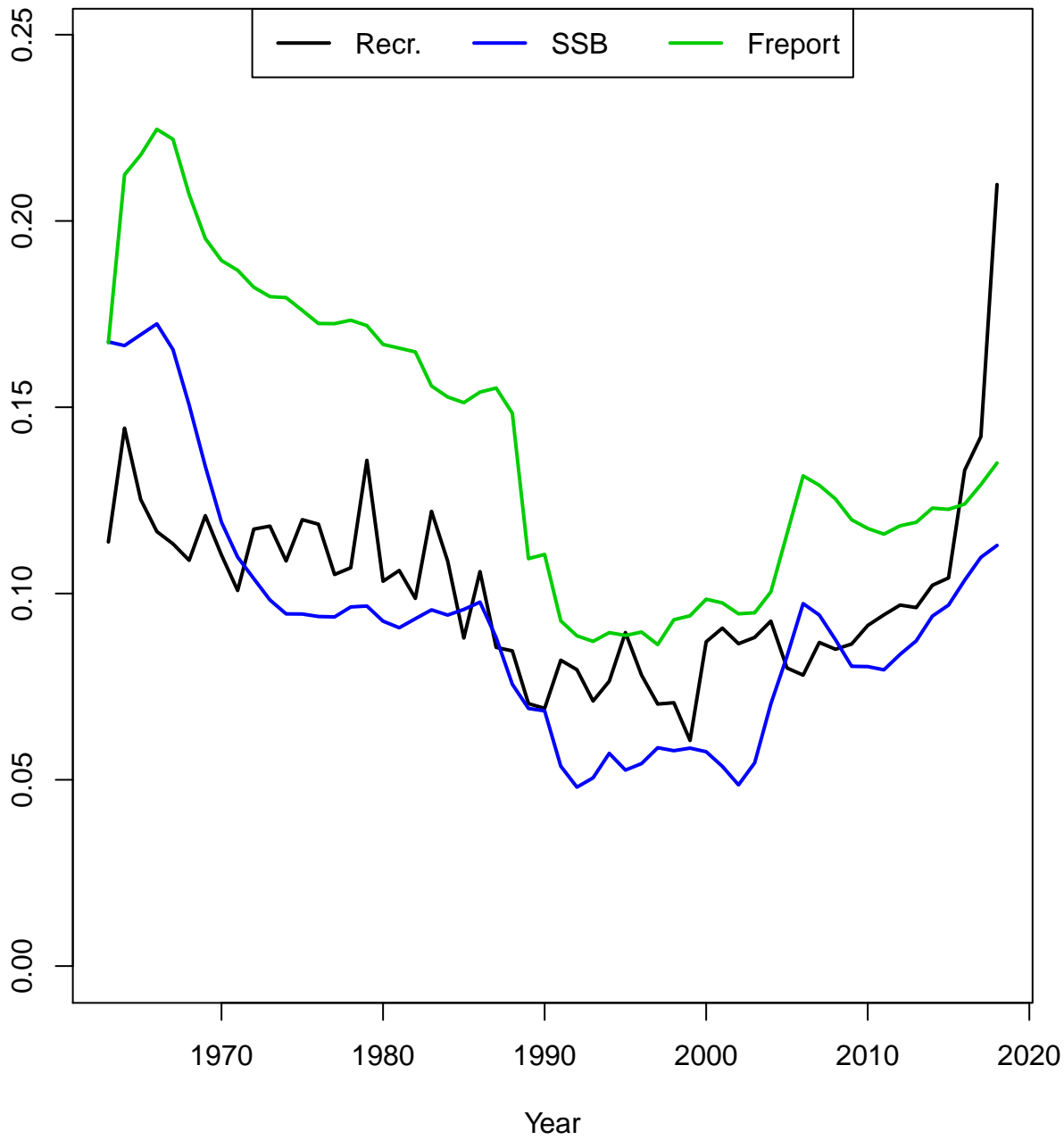




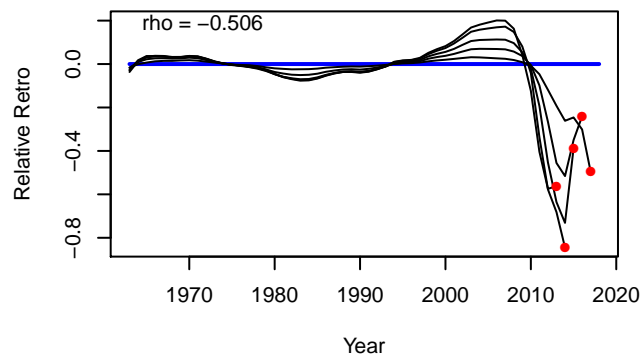
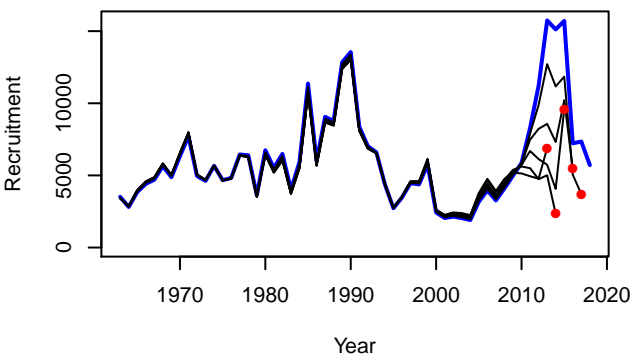
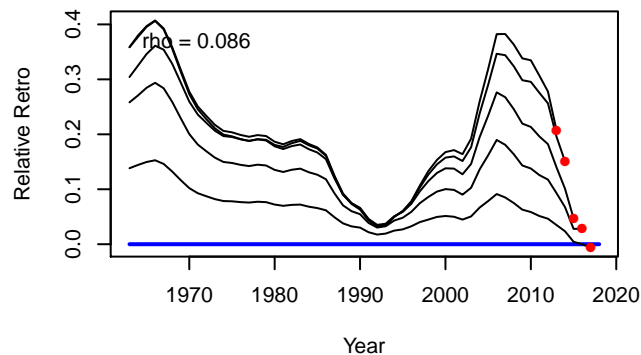
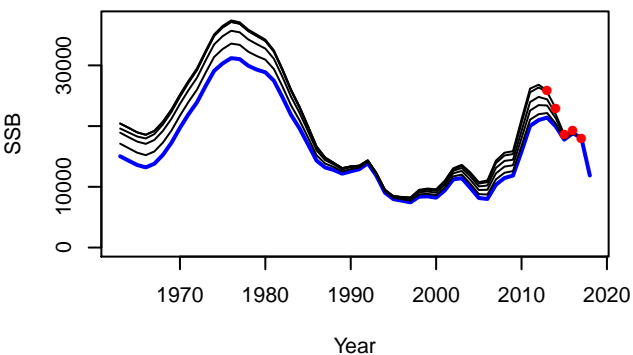
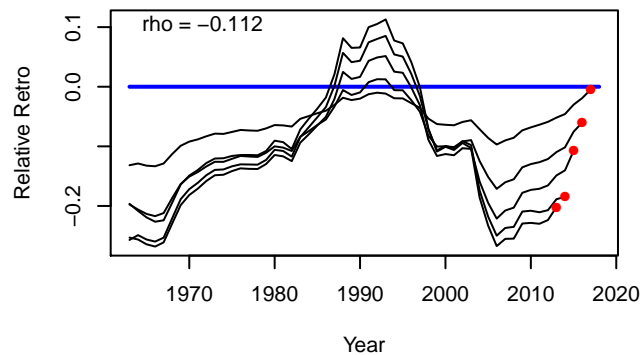
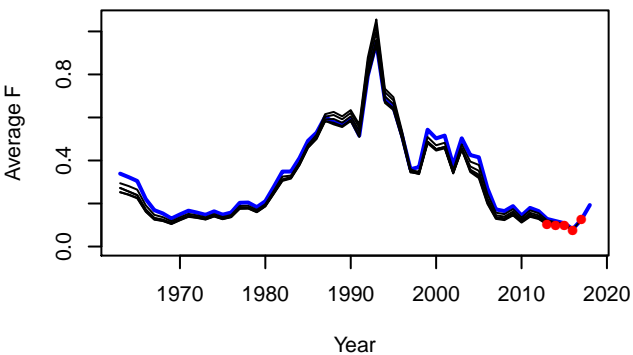




CV

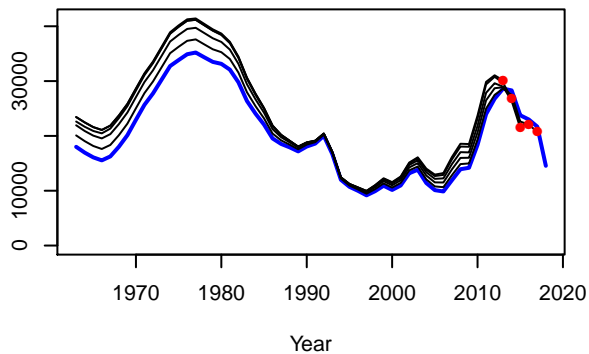


F, SSB, R

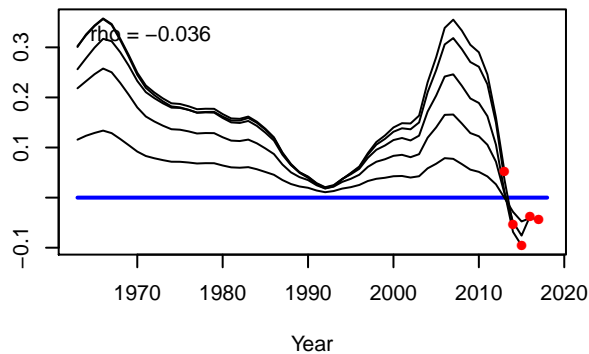


Jan-1 B, Exploitable B, Total Stock N

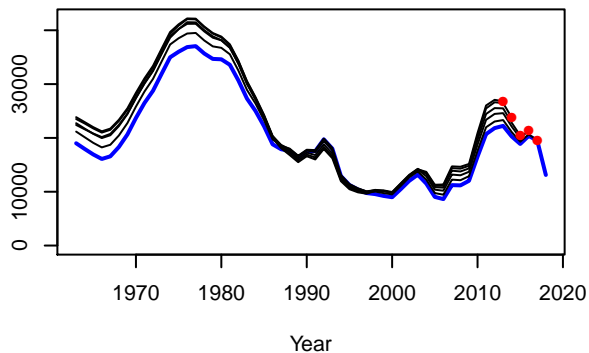
Jan-1 B



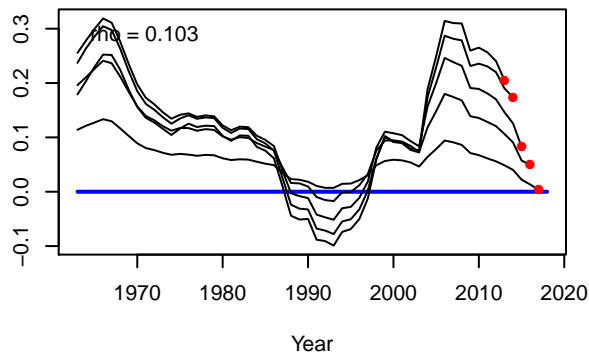
Relative Retro



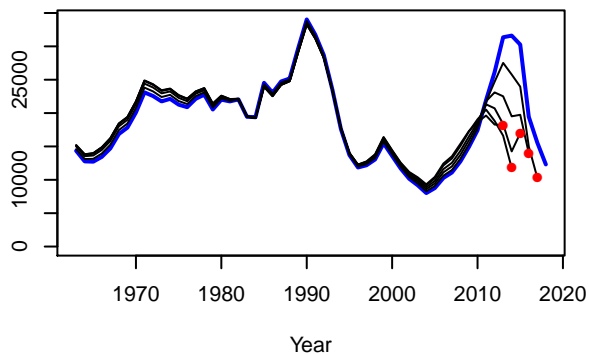
Exploitable B



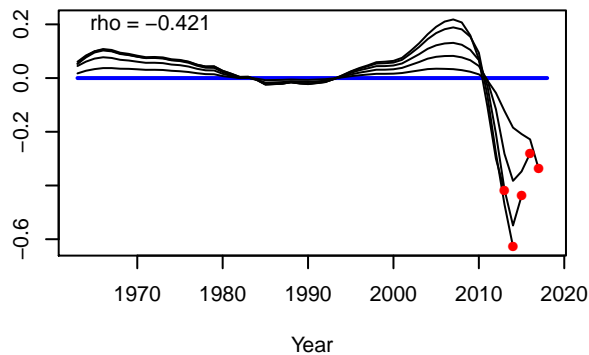
Relative Retro



Total Stock N

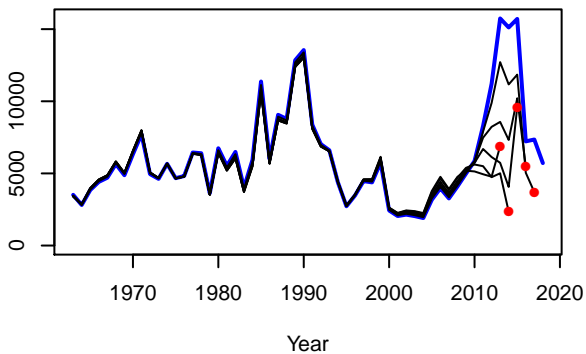


Relative Retro

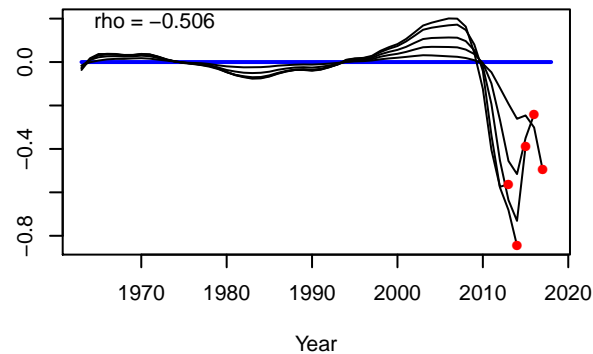


Stock Numbers at Age

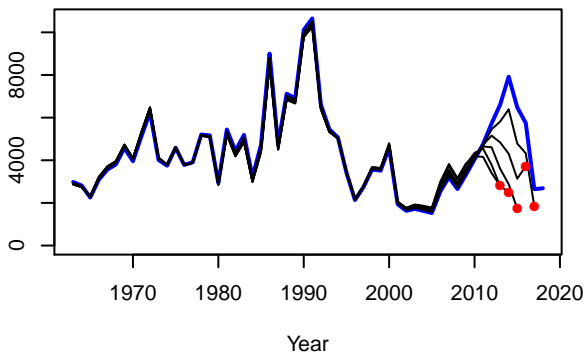
N at Age 1



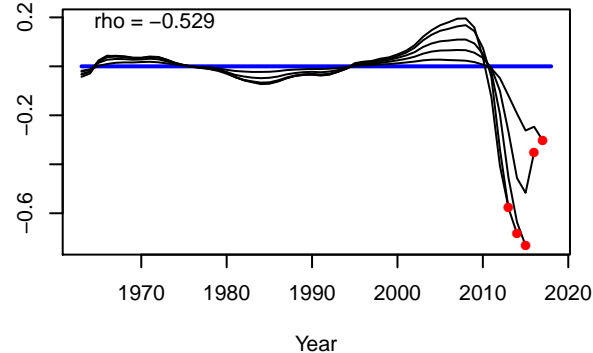
Relative Retro



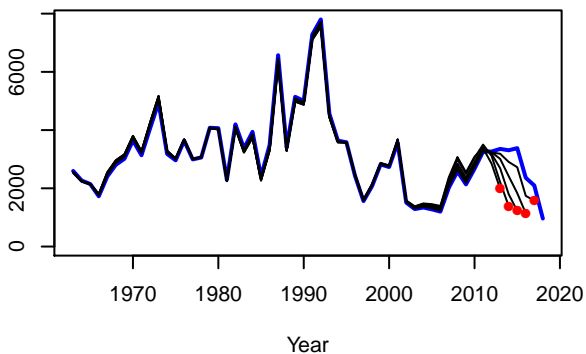
N at Age 2



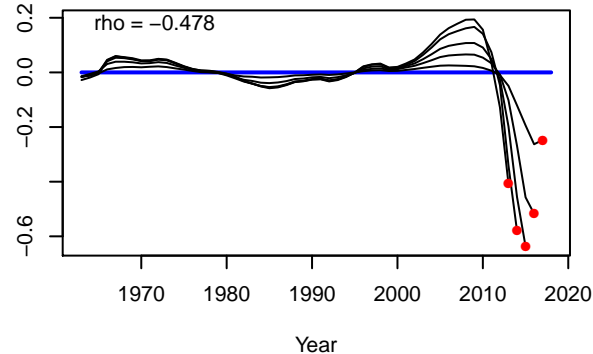
Relative Retro



N at Age 3

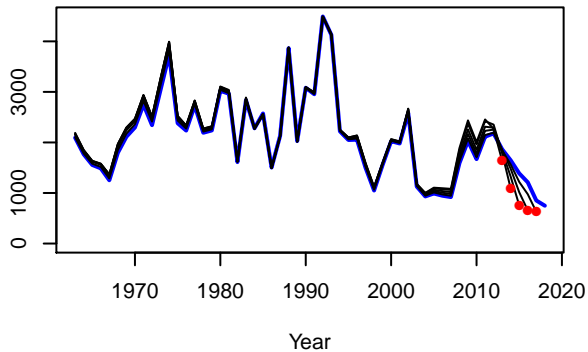


Relative Retro

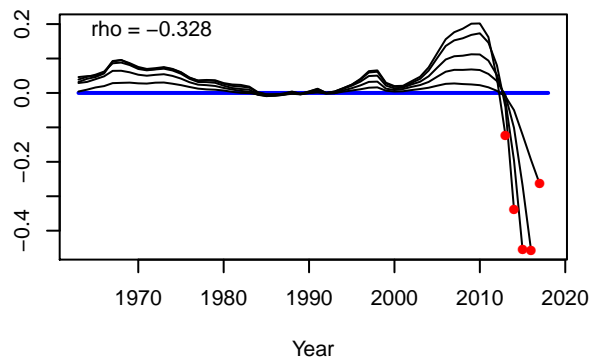


Stock Numbers at Age

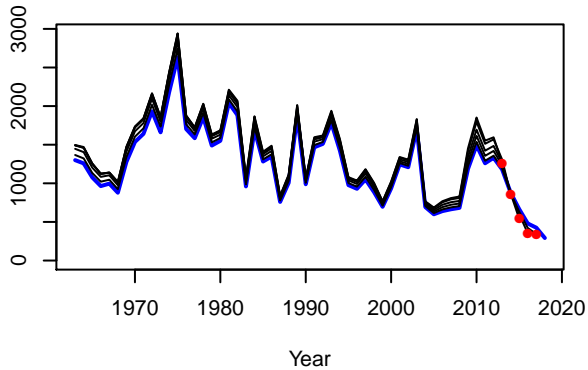
N at Age 4



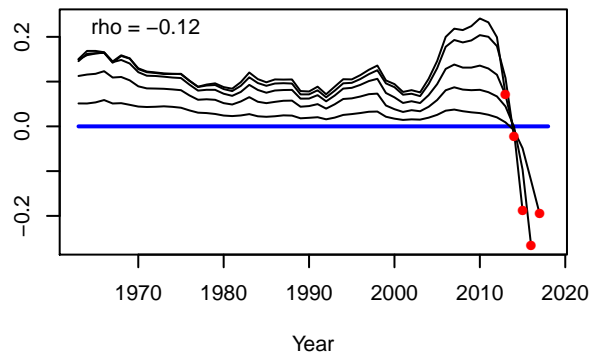
Relative Retro



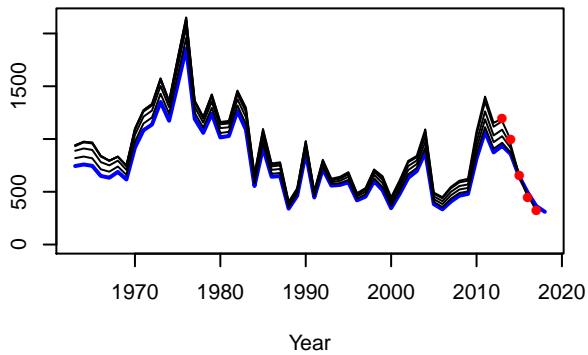
N at Age 5



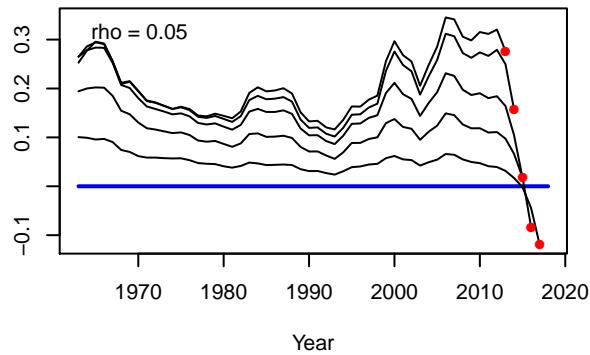
Relative Retro



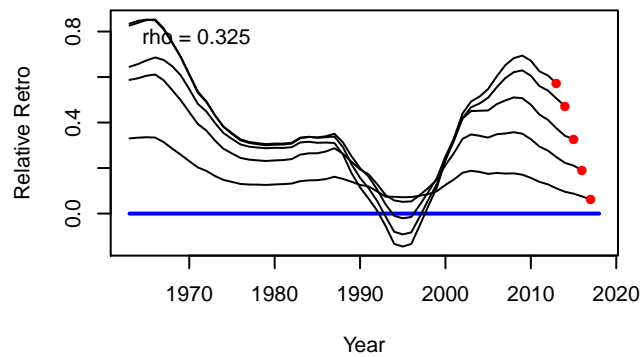
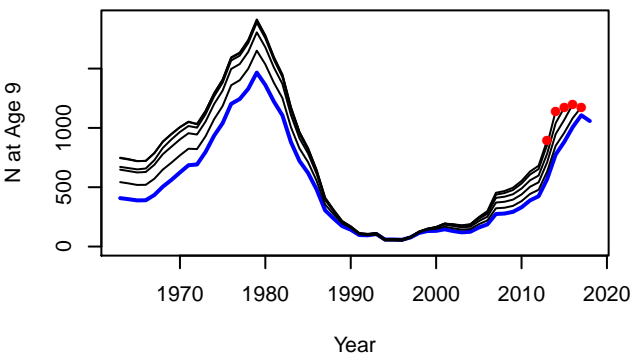
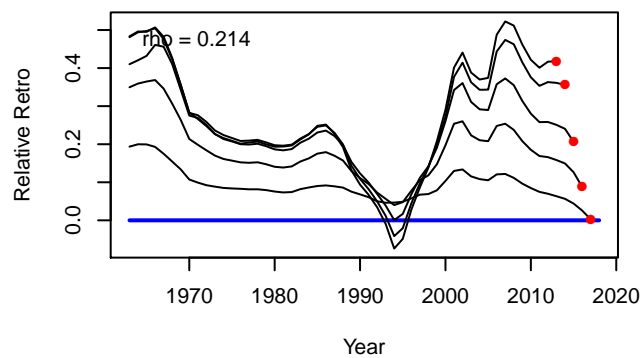
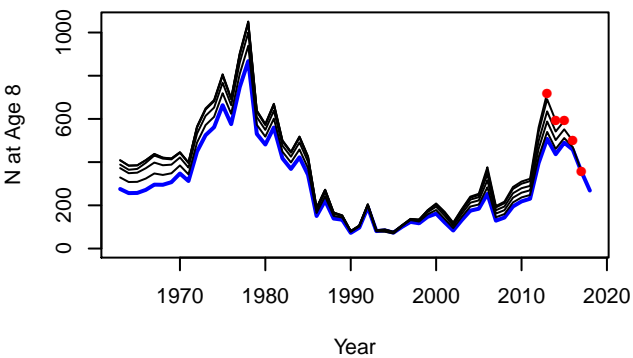
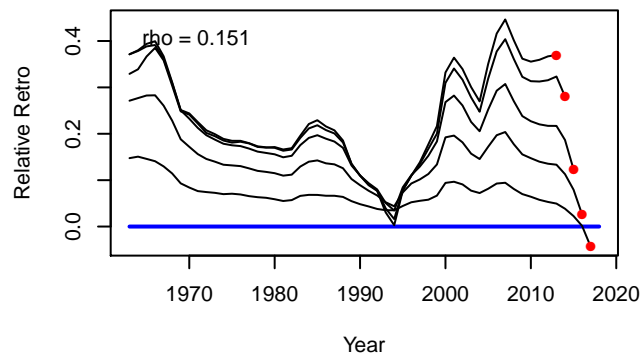
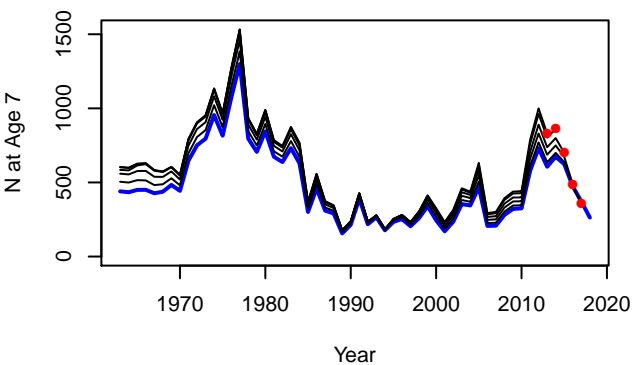
N at Age 6



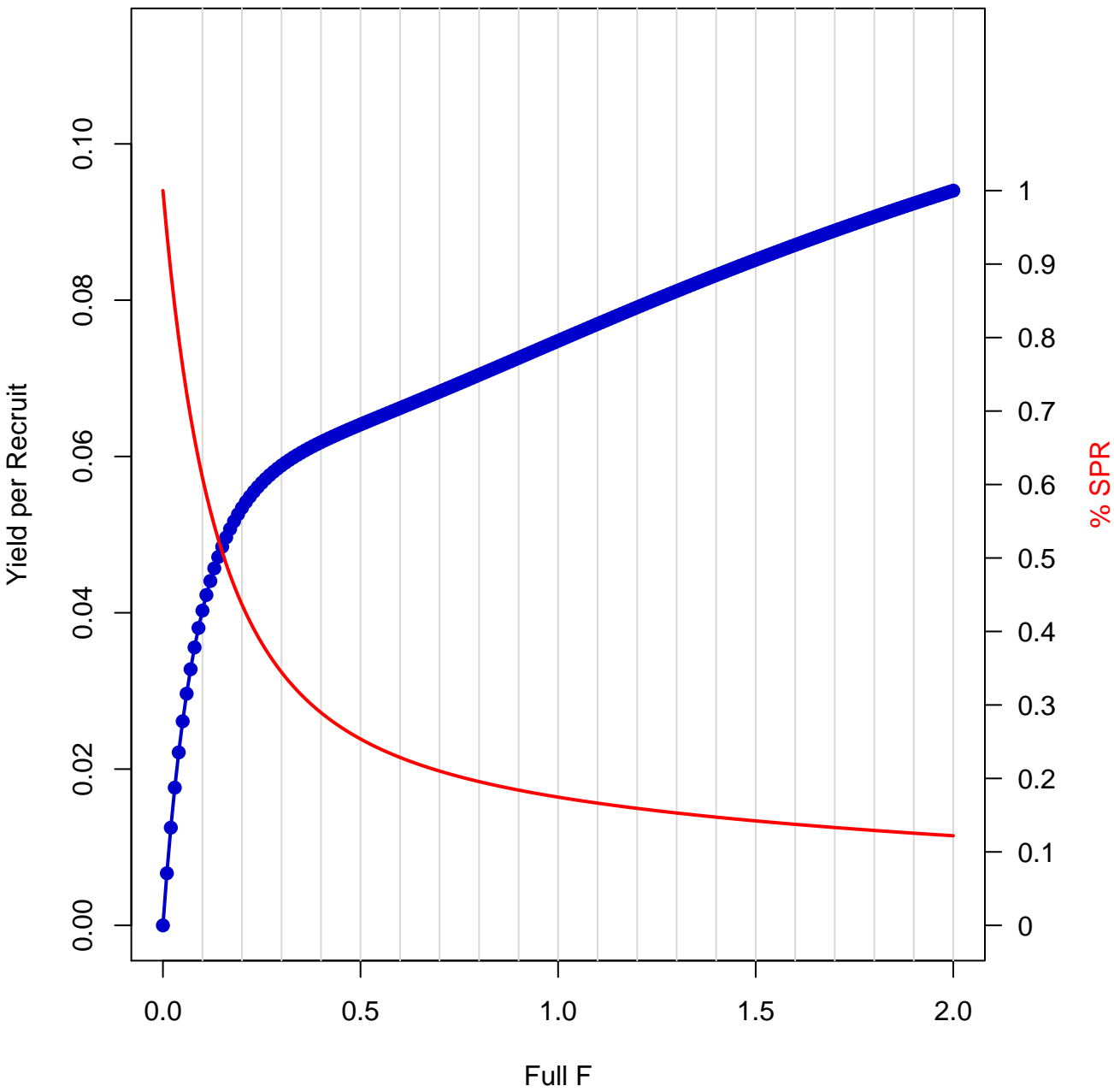
Relative Retro



Stock Numbers at Age



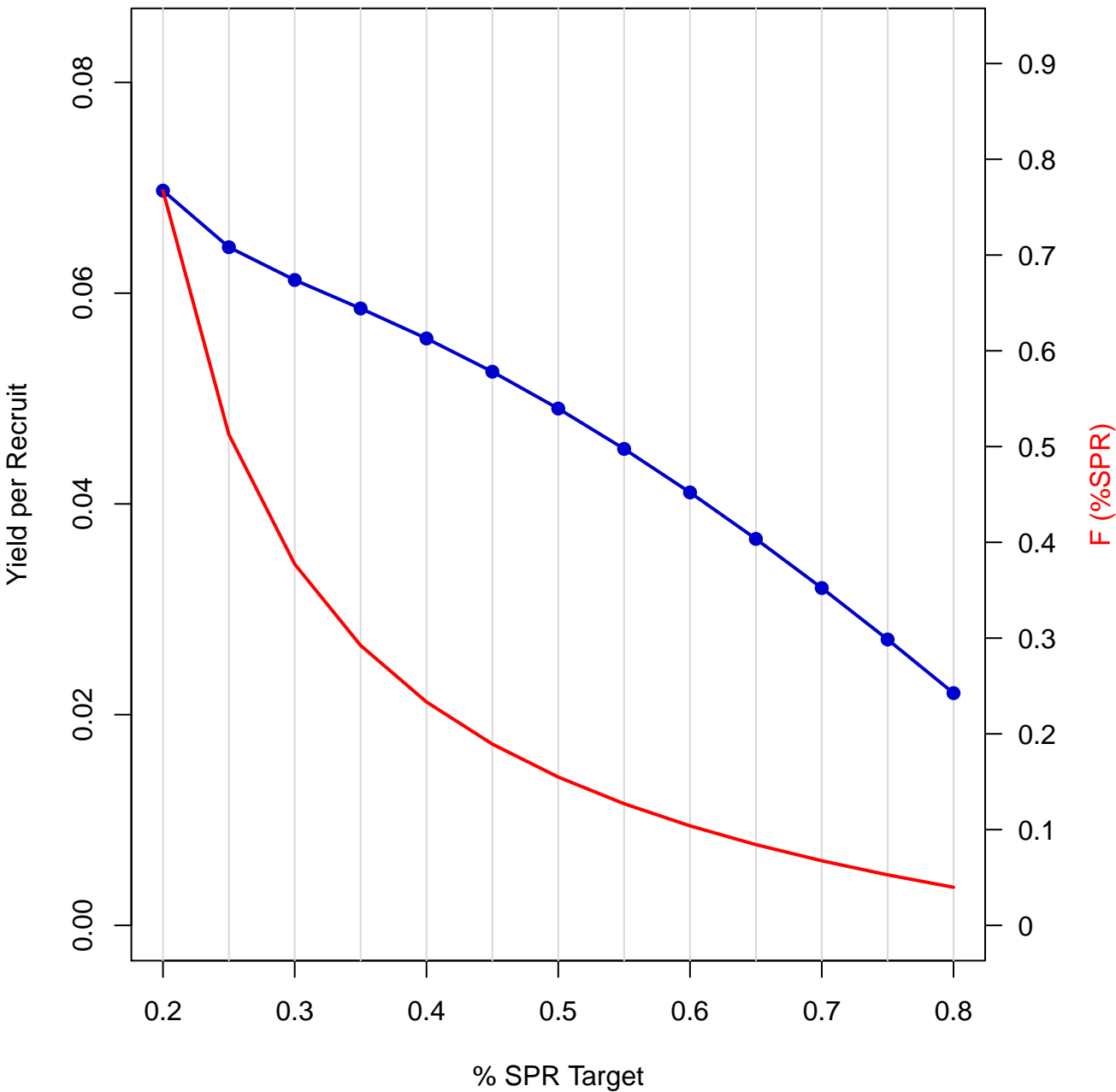
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.0605	0.3139	0.7	0.0683	0.21
0.01	0.0067	0.9417	0.36	0.0608	0.3086	0.71	0.0685	0.2084
0.02	0.0125	0.8893	0.37	0.0611	0.3035	0.72	0.0687	0.2069
0.03	0.0176	0.842	0.38	0.0613	0.2987	0.73	0.0689	0.2054
0.04	0.0221	0.7991	0.39	0.0616	0.294	0.74	0.0691	0.2039
0.05	0.0261	0.7601	0.4	0.0618	0.2896	0.75	0.0694	0.2024
0.06	0.0296	0.7245	0.41	0.0621	0.2853	0.76	0.0696	0.201
0.07	0.0328	0.692	0.42	0.0623	0.2812	0.77	0.0698	0.1996
0.08	0.0356	0.6621	0.43	0.0626	0.2773	0.78	0.07	0.1983
0.09	0.0381	0.6347	0.44	0.0628	0.2735	0.79	0.0702	0.197
0.1	0.0403	0.6094	0.45	0.063	0.2699	0.8	0.0704	0.1957
0.11	0.0423	0.586	0.46	0.0632	0.2664	0.81	0.0707	0.1944
0.12	0.0441	0.5643	0.47	0.0634	0.263	0.82	0.0709	0.1932
0.13	0.0457	0.5442	0.48	0.0637	0.2598	0.83	0.0711	0.192
0.14	0.0471	0.5255	0.49	0.0639	0.2567	0.84	0.0713	0.1908
0.15	0.0485	0.5081	0.5	0.0641	0.2536	0.85	0.0715	0.1896
0.16	0.0496	0.4918	0.51	0.0643	0.2507	0.86	0.0717	0.1885
0.17	0.0507	0.4766	0.52	0.0645	0.2479	0.87	0.072	0.1873
0.18	0.0517	0.4624	0.53	0.0647	0.2452	0.88	0.0722	0.1862
0.19	0.0526	0.4491	0.54	0.0649	0.2426	0.89	0.0724	0.1852
0.2	0.0534	0.4366	0.55	0.0651	0.2401	0.9	0.0726	0.1841
0.21	0.0542	0.4248	0.56	0.0654	0.2376	0.91	0.0728	0.1831
0.22	0.0549	0.4138	0.57	0.0656	0.2353	0.92	0.073	0.1821
0.23	0.0555	0.4033	0.58	0.0658	0.233	0.93	0.0733	0.1811
0.24	0.0561	0.3935	0.59	0.066	0.2307	0.94	0.0735	0.1801
0.25	0.0566	0.3842	0.6	0.0662	0.2286	0.95	0.0737	0.1791
0.26	0.0571	0.3754	0.61	0.0664	0.2265	0.96	0.0739	0.1782
0.27	0.0576	0.3671	0.62	0.0666	0.2244	0.97	0.0741	0.1772
0.28	0.058	0.3592	0.63	0.0668	0.2224	0.98	0.0744	0.1763
0.29	0.0585	0.3517	0.64	0.067	0.2205	0.99	0.0746	0.1754
0.3	0.0588	0.3446	0.65	0.0672	0.2186	1	0.0748	0.1745
0.31	0.0592	0.3378	0.66	0.0674	0.2168	1.01	0.075	0.1736
0.32	0.0596	0.3314	0.67	0.0677	0.2151	1.02	0.0752	0.1728
0.33	0.0599	0.3253	0.68	0.0679	0.2133	1.03	0.0754	0.1719
0.34	0.0602	0.3195	0.69	0.0681	0.2117	1.04	0.0757	0.1711

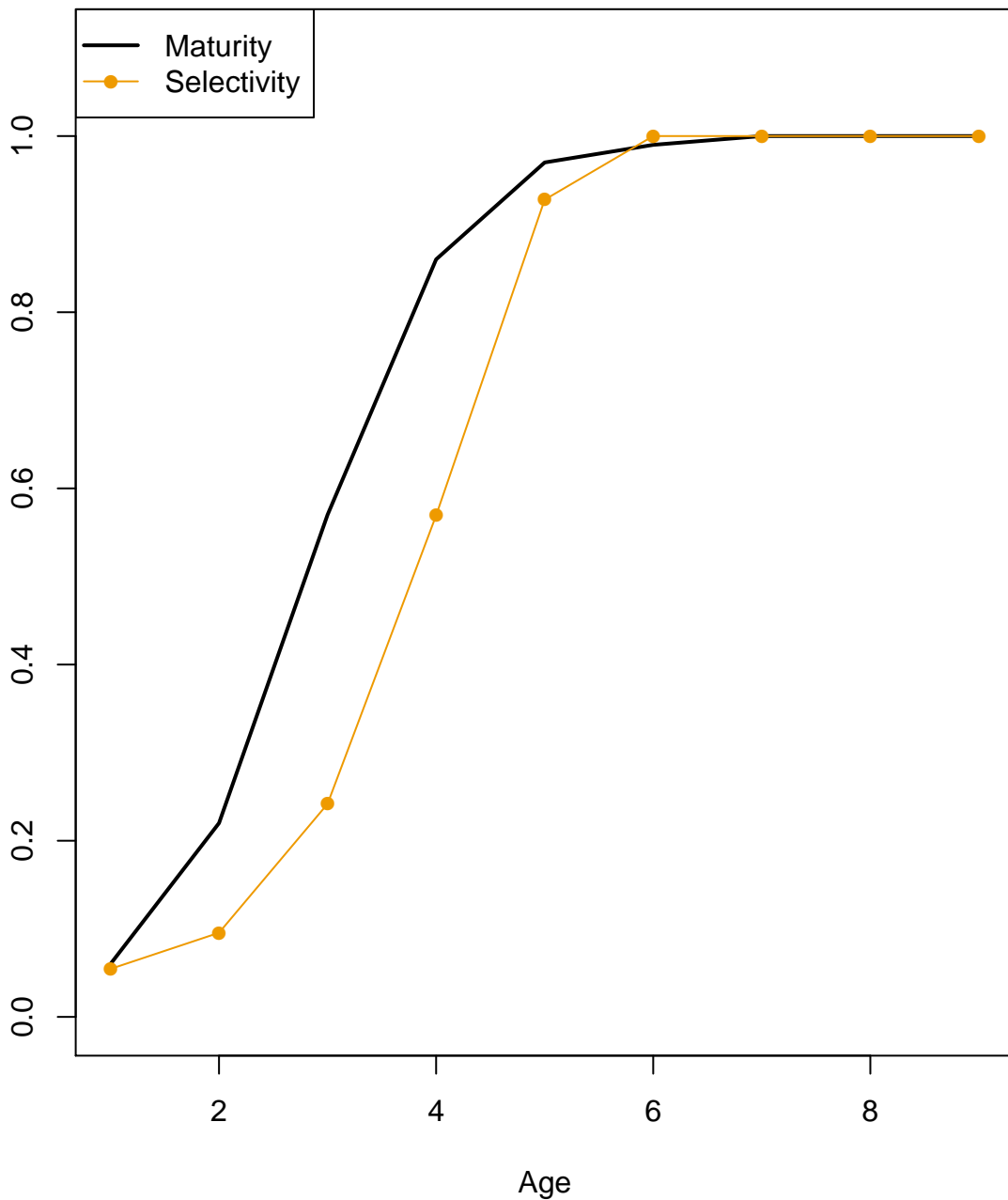
SPR Target Reference Points (Years Avg = 5)



SPR Target Reference Points (Years Avg = 5)

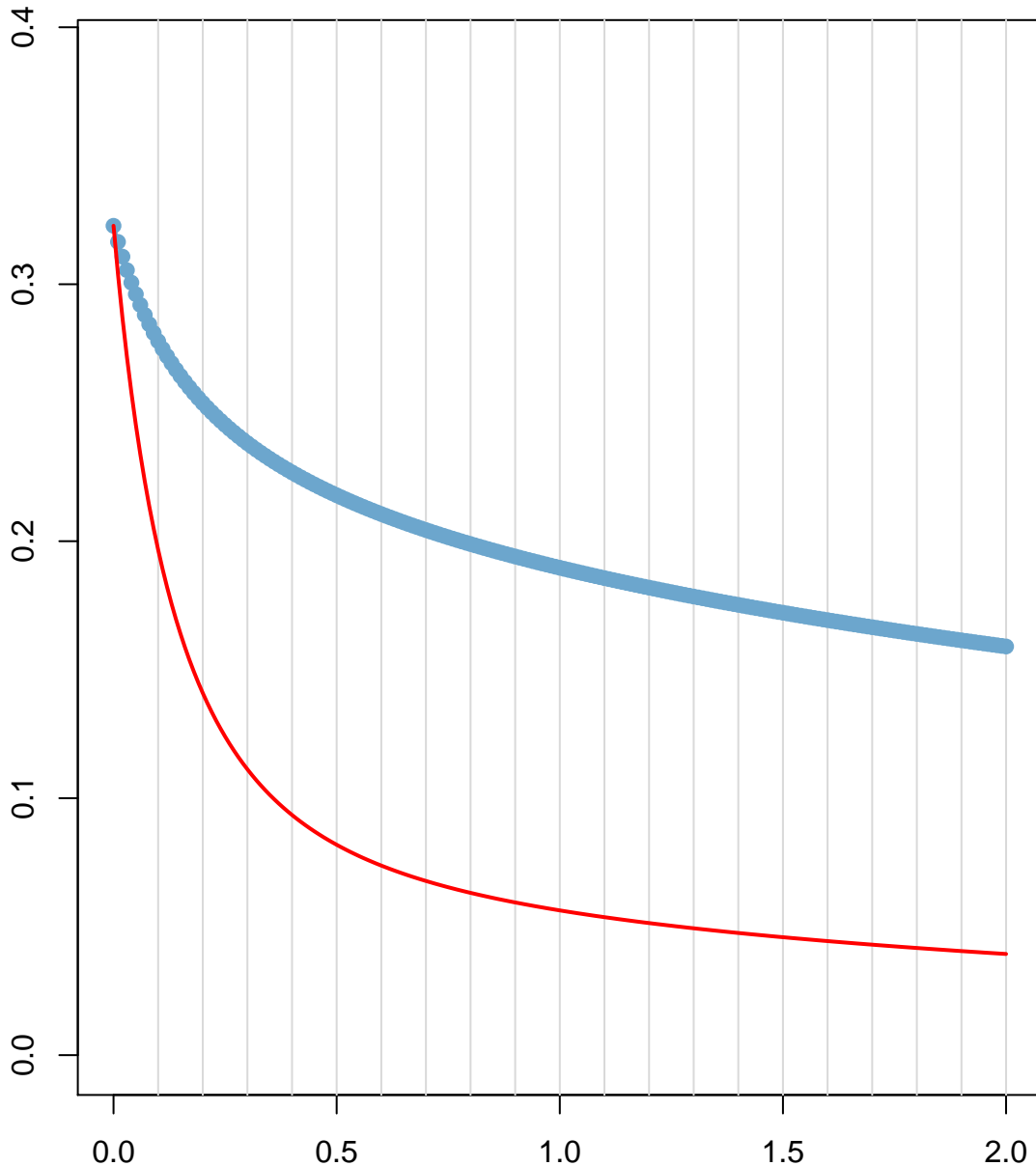
% SPR	F(%SPR)	YPR
0.2	0.7673	0.0697
0.25	0.5126	0.0644
0.3	0.3772	0.0613
0.35	0.2924	0.0585
0.4	0.2333	0.0557
0.45	0.1893	0.0525
0.5	0.1549	0.049
0.55	0.127	0.0452
0.6	0.1039	0.0411
0.65	0.0843	0.0367
0.7	0.0675	0.032
0.75	0.0527	0.0271
0.8	0.0398	0.022

Selectivity or Maturity at age



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

Expected Spawnings



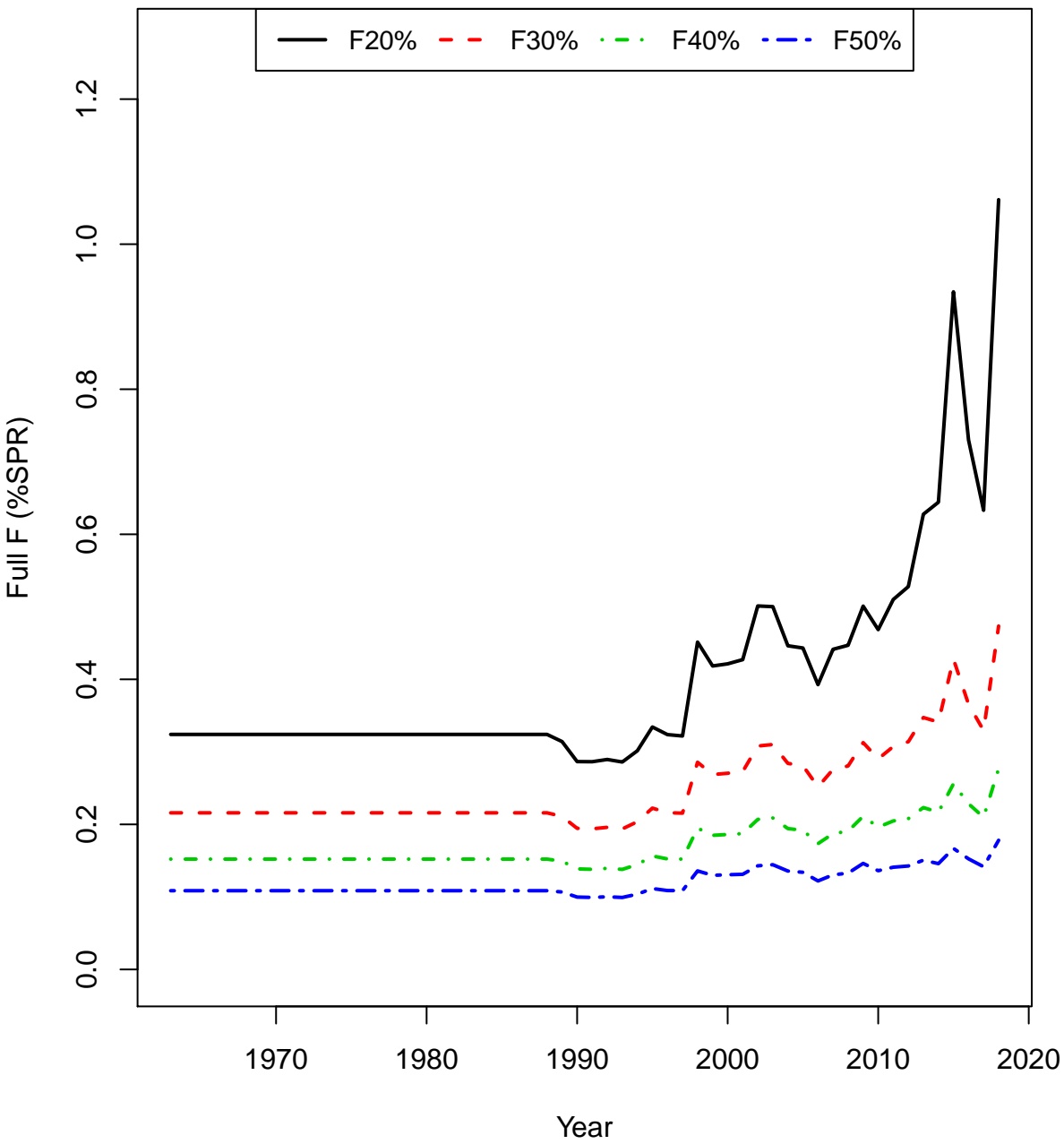
% SPR

Full F

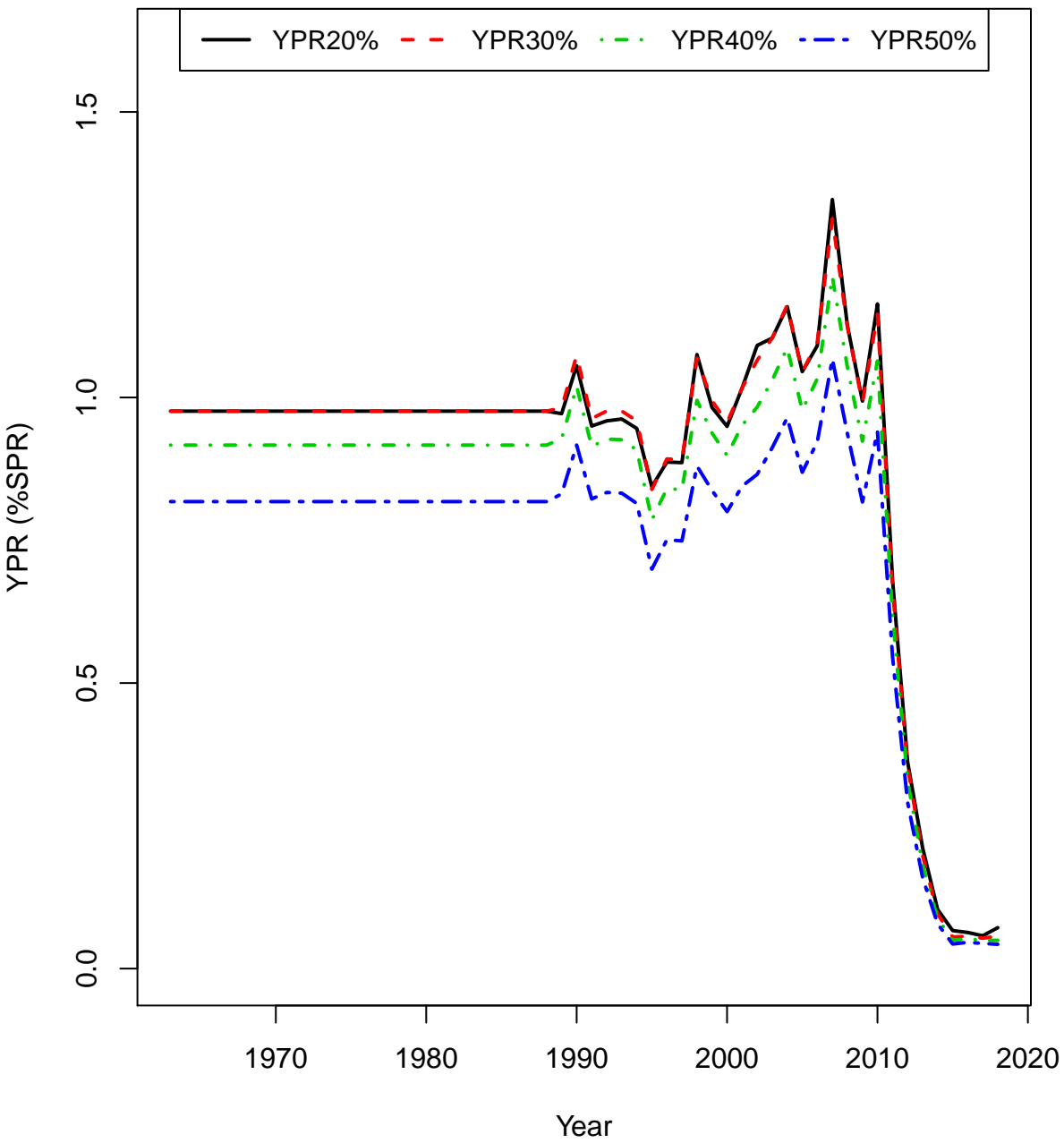
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	0.3228	1	0.35	0.2321	0.3139	0.7	0.2043	0.21
0.01	0.3165	0.9417	0.36	0.231	0.3086	0.71	0.2038	0.2084
0.02	0.3107	0.8893	0.37	0.2299	0.3035	0.72	0.2032	0.2069
0.03	0.3055	0.842	0.38	0.2288	0.2987	0.73	0.2026	0.2054
0.04	0.3006	0.7991	0.39	0.2278	0.294	0.74	0.2021	0.2039
0.05	0.2961	0.7601	0.4	0.2268	0.2896	0.75	0.2015	0.2024
0.06	0.292	0.7245	0.41	0.2258	0.2853	0.76	0.201	0.201
0.07	0.2881	0.692	0.42	0.2248	0.2812	0.77	0.2005	0.1996
0.08	0.2844	0.6621	0.43	0.2239	0.2773	0.78	0.1999	0.1983
0.09	0.281	0.6347	0.44	0.223	0.2735	0.79	0.1994	0.197
0.1	0.2778	0.6094	0.45	0.2221	0.2699	0.8	0.1989	0.1957
0.11	0.2748	0.586	0.46	0.2212	0.2664	0.81	0.1984	0.1944
0.12	0.272	0.5643	0.47	0.2204	0.263	0.82	0.1979	0.1932
0.13	0.2693	0.5442	0.48	0.2195	0.2598	0.83	0.1974	0.192
0.14	0.2667	0.5255	0.49	0.2187	0.2567	0.84	0.1969	0.1908
0.15	0.2643	0.5081	0.5	0.2179	0.2536	0.85	0.1964	0.1896
0.16	0.262	0.4918	0.51	0.2171	0.2507	0.86	0.1959	0.1885
0.17	0.2598	0.4766	0.52	0.2163	0.2479	0.87	0.1955	0.1873
0.18	0.2577	0.4624	0.53	0.2156	0.2452	0.88	0.195	0.1862
0.19	0.2557	0.4491	0.54	0.2148	0.2426	0.89	0.1945	0.1852
0.2	0.2538	0.4366	0.55	0.2141	0.2401	0.9	0.1941	0.1841
0.21	0.252	0.4248	0.56	0.2133	0.2376	0.91	0.1936	0.1831
0.22	0.2502	0.4138	0.57	0.2126	0.2353	0.92	0.1931	0.1821
0.23	0.2485	0.4033	0.58	0.2119	0.233	0.93	0.1927	0.1811
0.24	0.2468	0.3935	0.59	0.2112	0.2307	0.94	0.1922	0.1801
0.25	0.2453	0.3842	0.6	0.2106	0.2286	0.95	0.1918	0.1791
0.26	0.2438	0.3754	0.61	0.2099	0.2265	0.96	0.1914	0.1782
0.27	0.2423	0.3671	0.62	0.2093	0.2244	0.97	0.1909	0.1772
0.28	0.2409	0.3592	0.63	0.2086	0.2224	0.98	0.1905	0.1763
0.29	0.2395	0.3517	0.64	0.208	0.2205	0.99	0.1901	0.1754
0.3	0.2382	0.3446	0.65	0.2073	0.2186	1	0.1897	0.1745
0.31	0.2369	0.3378	0.66	0.2067	0.2168	1.01	0.1892	0.1736
0.32	0.2356	0.3314	0.67	0.2061	0.2151	1.02	0.1888	0.1728
0.33	0.2344	0.3253	0.68	0.2055	0.2133	1.03	0.1884	0.1719
0.34	0.2332	0.3195	0.69	0.2049	0.2117	1.04	0.188	0.1711

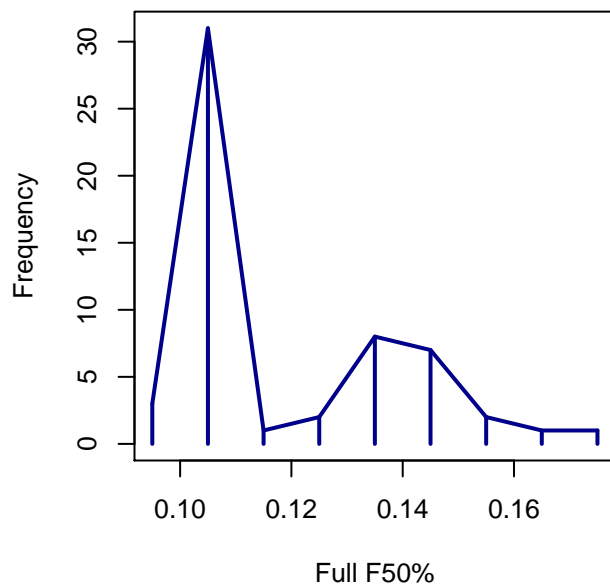
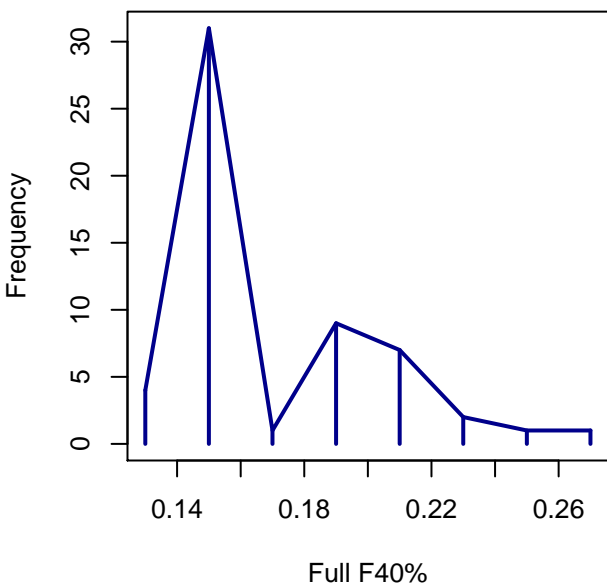
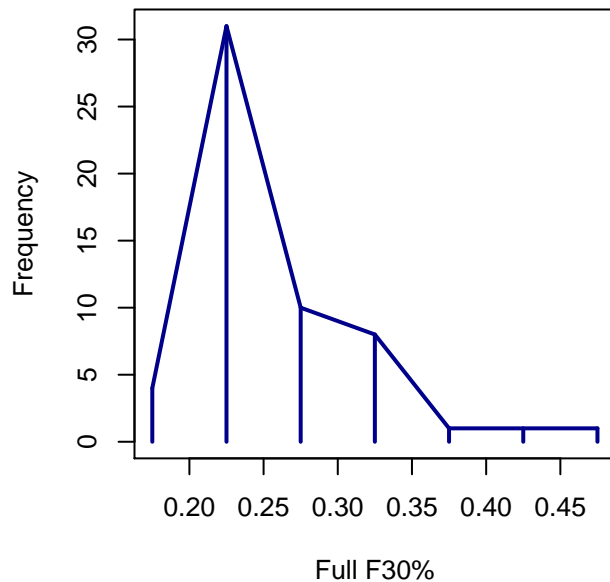
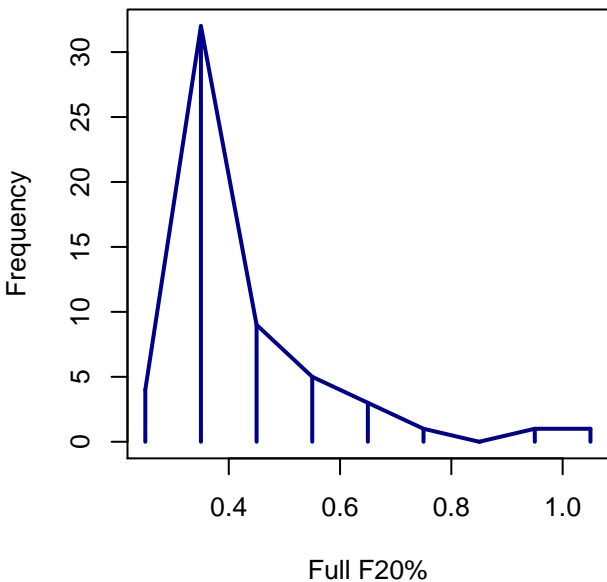
Annual F(%SPR) Reference Points



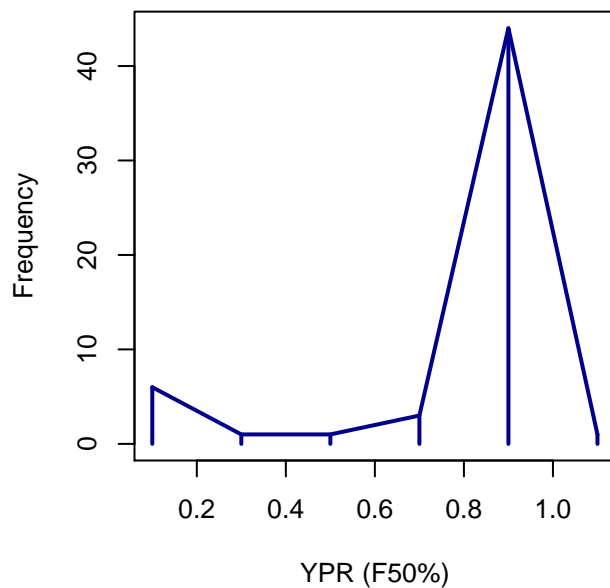
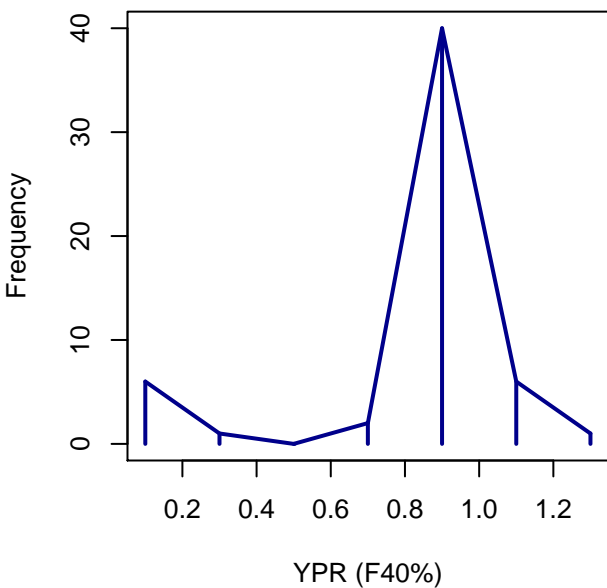
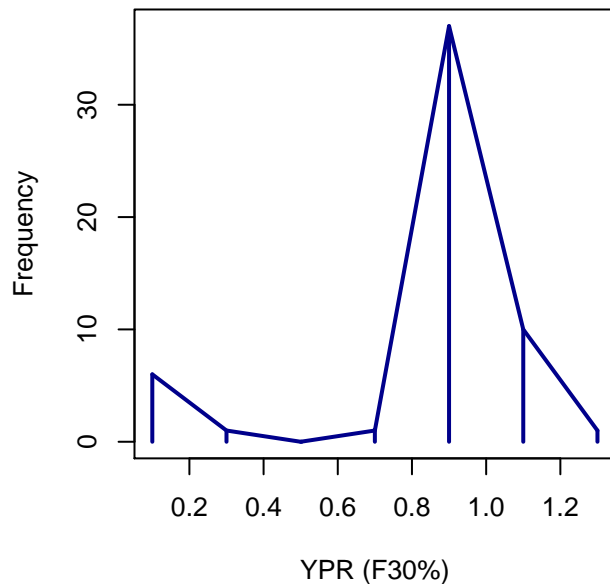
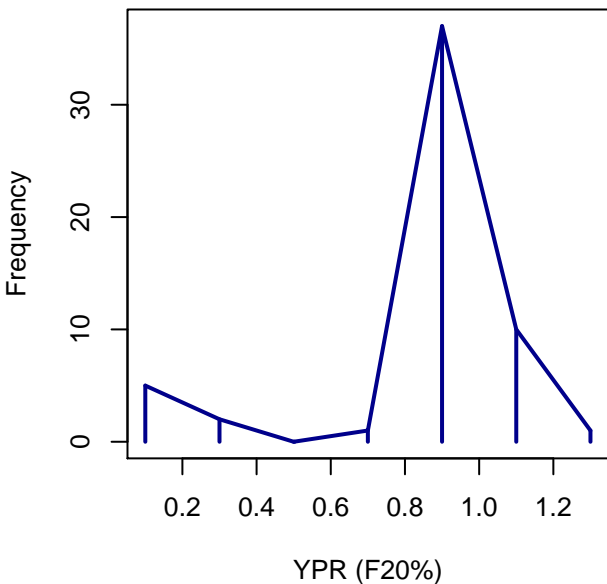
Annual YPR(%SPR) Reference Points



Annual F (%SPR) Reference Points



Annual YPR (%SPR) Reference Points



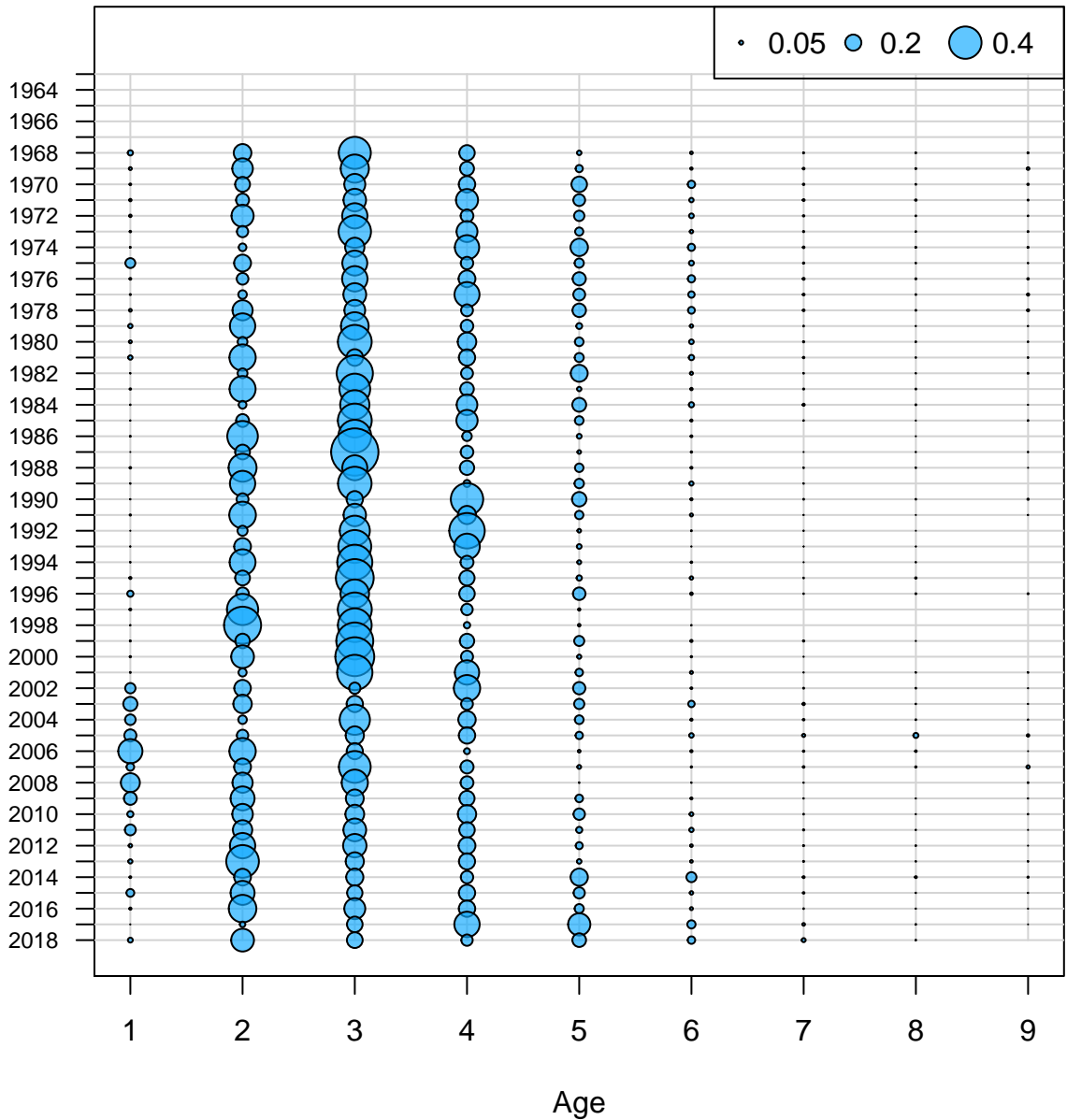


Age Comps for Catch by Fleet 1 (FLEET-1)





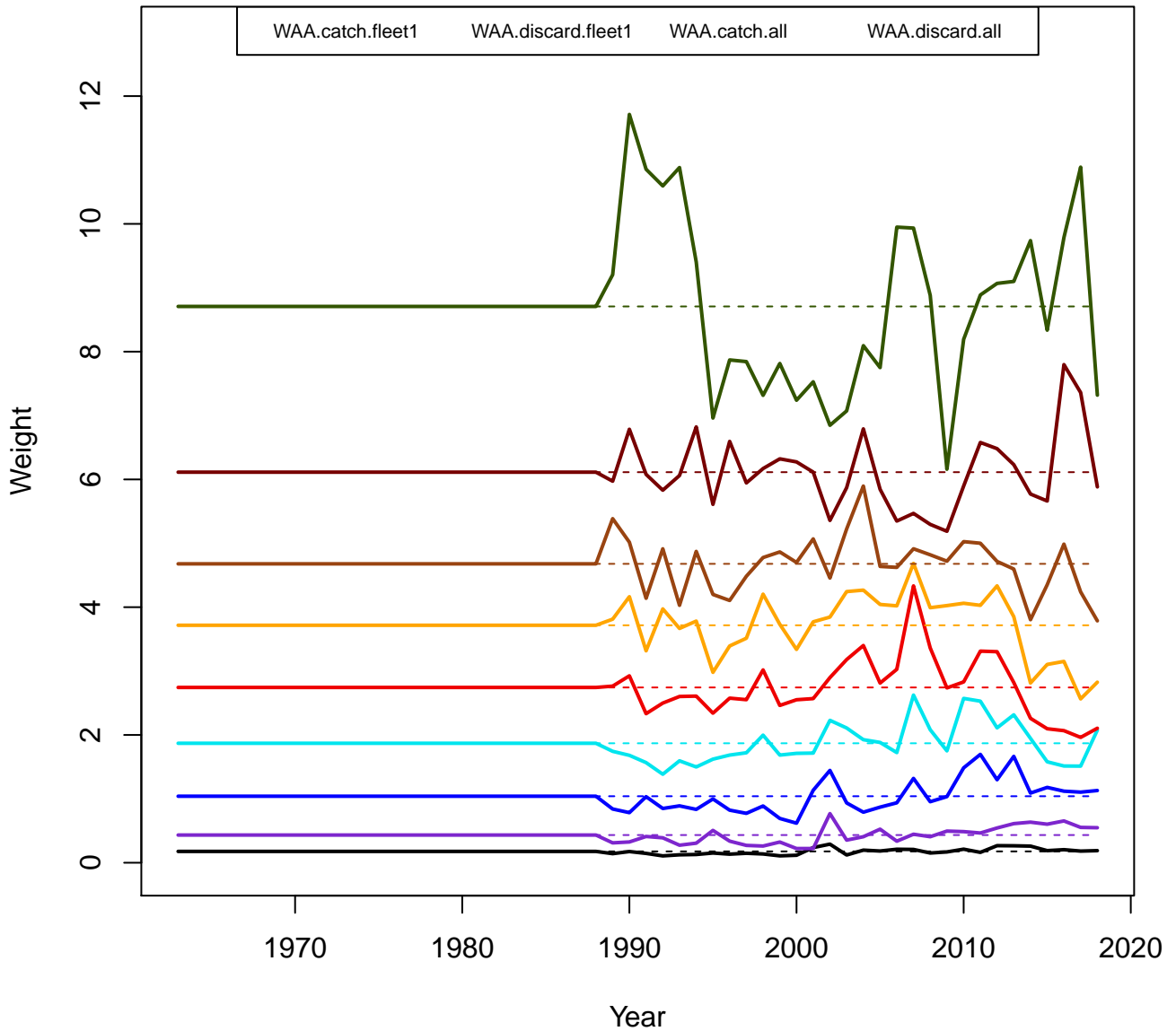
Age Comps for Index 1 (INDEX-1)



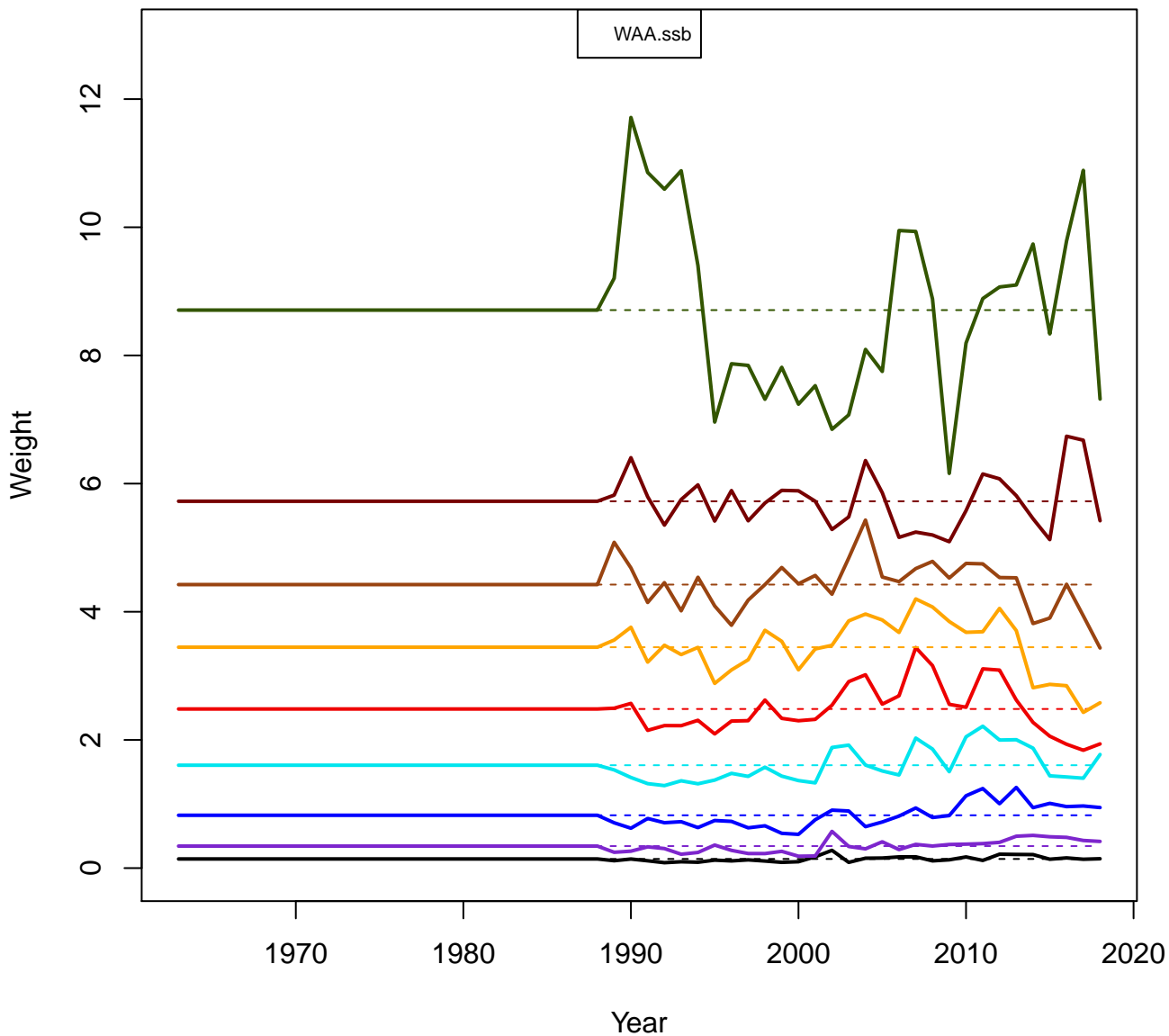
Age Comps for Index 2 (INDEX-2)



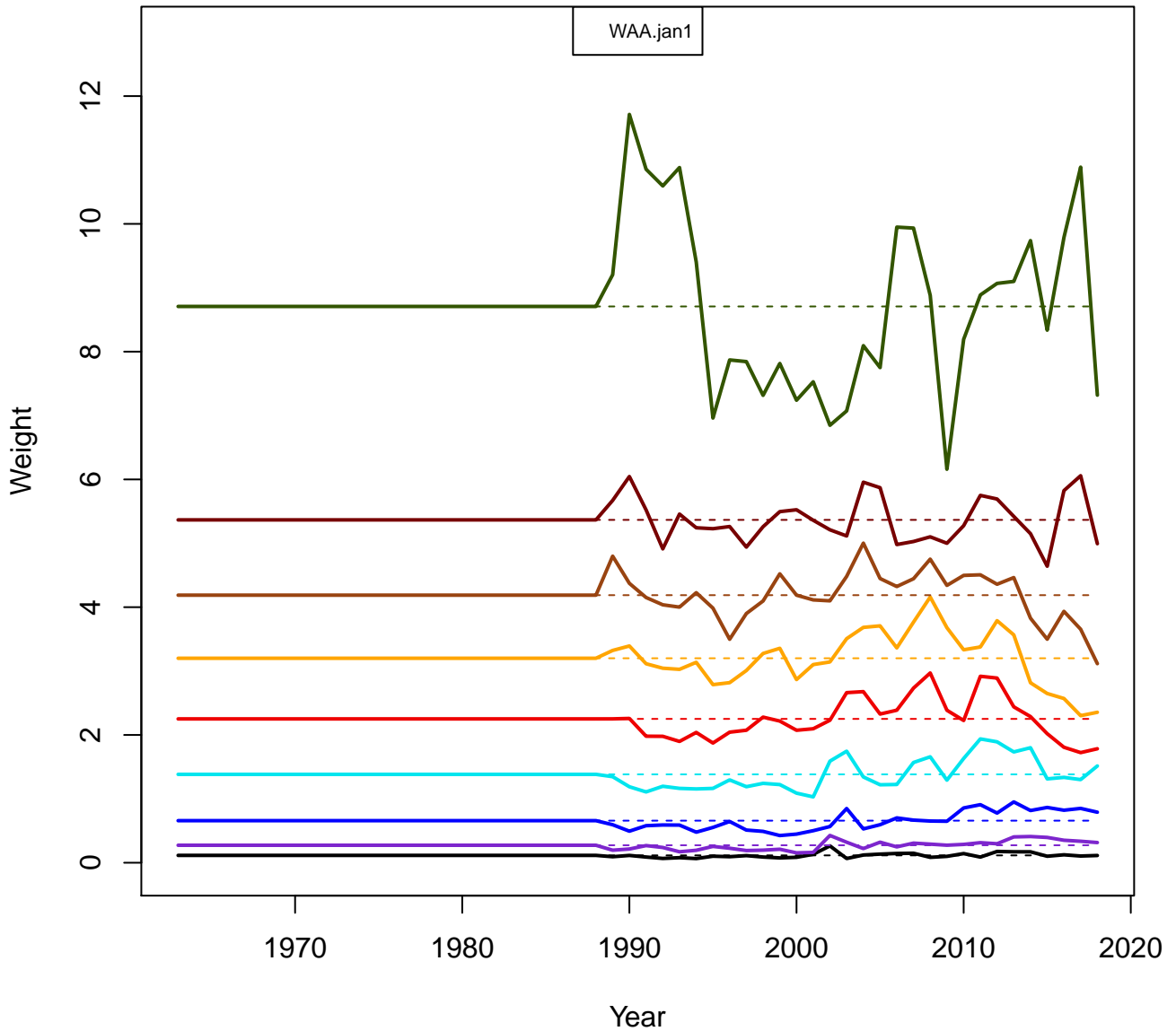
WAA matrix 1



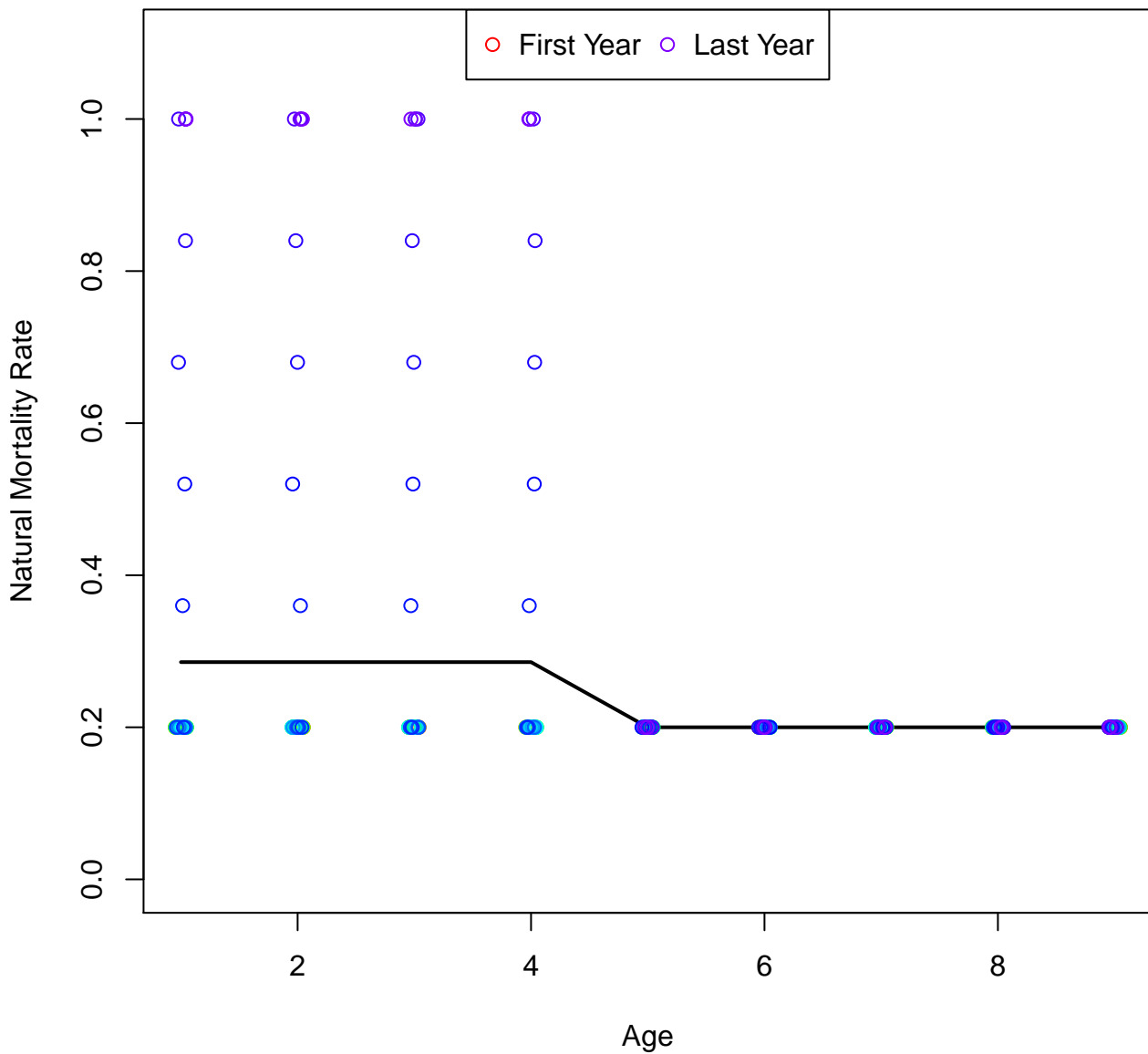
WAA matrix 2



WAA matrix 3



M



Maturity

