

File = Run4.dat

ASAP3 run on Saturday, 29 May 2021 at 19:06:46

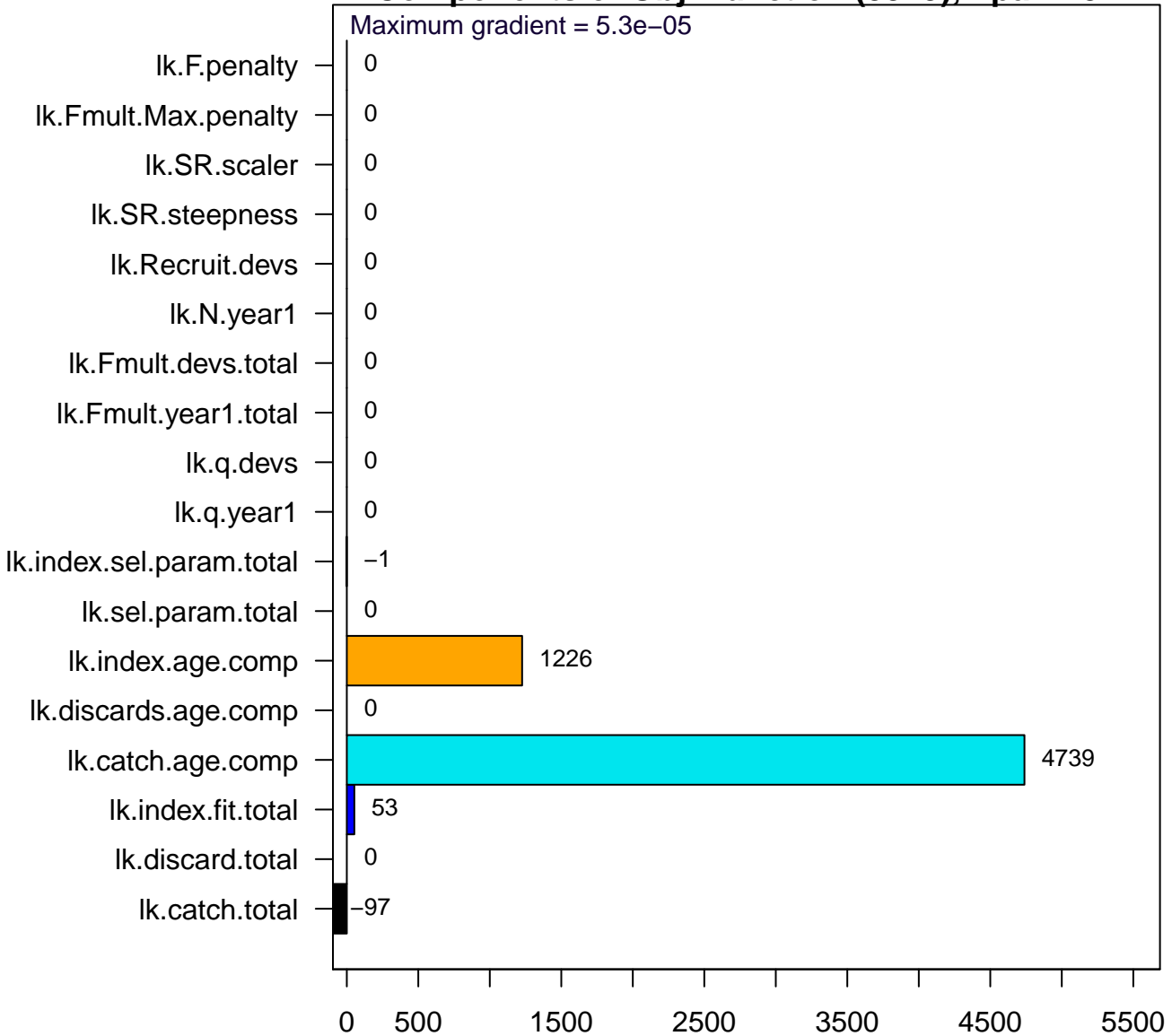
= C:\Users\kiersten.curti\Desktop\Work\Mackerel\2021.MT.Modeling\Run4

ASAPplots version = 0.2.18

npar = 132, maximum gradient = 5.33507e-005

Components of Obj. Function (5919), npar=132

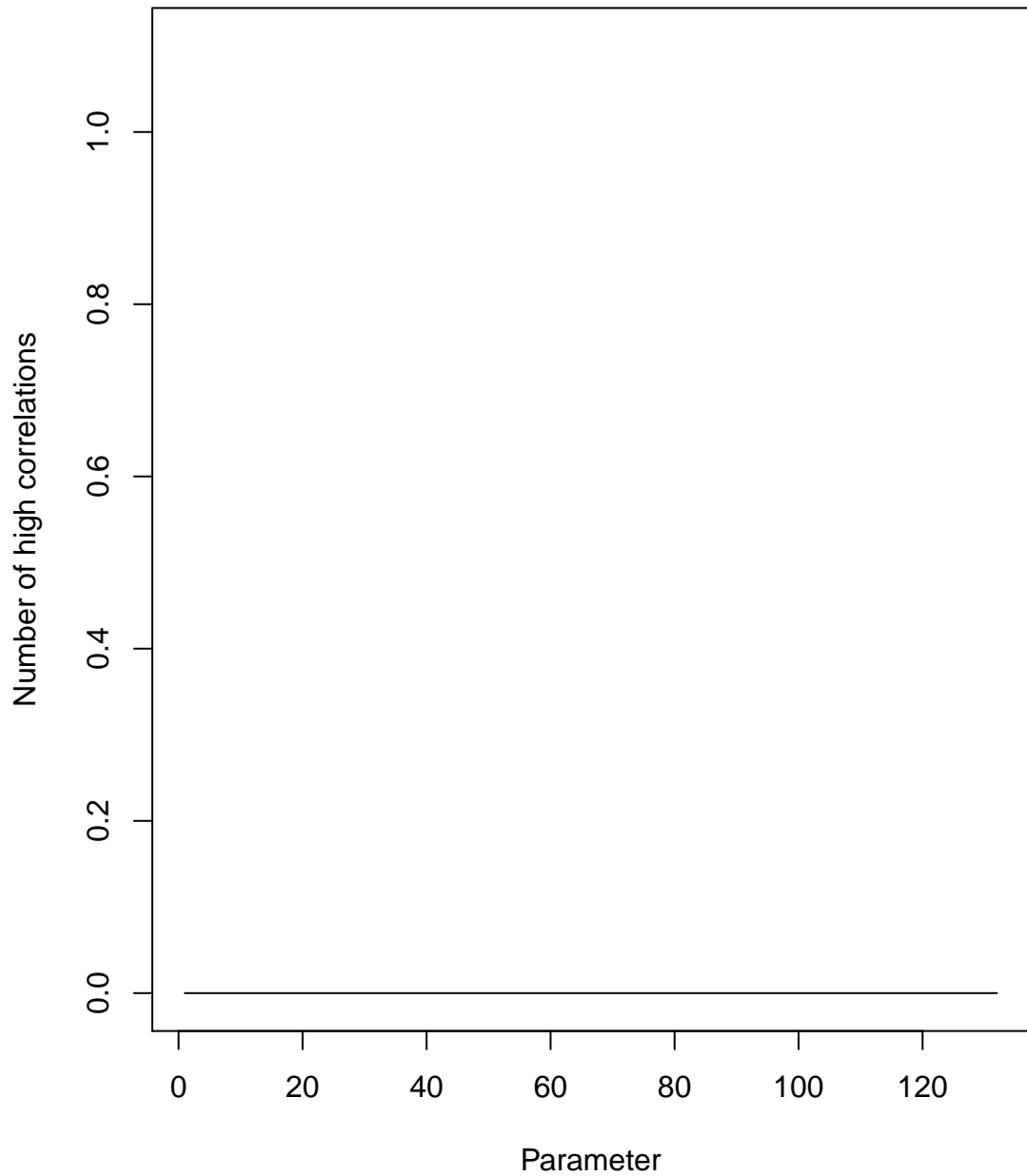
Maximum gradient = 5.3×10^{-5}

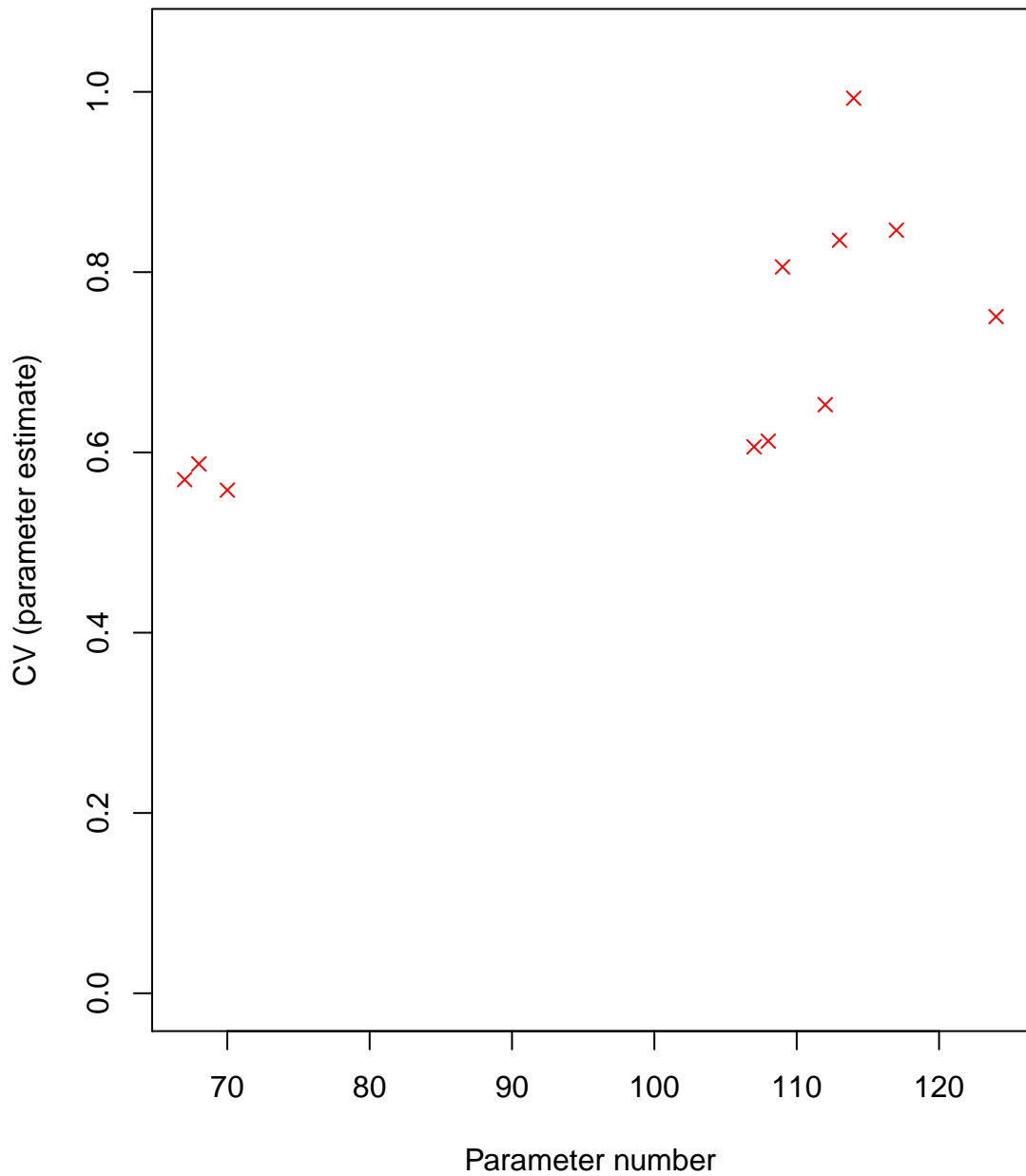


Likelihood Contribution

Model: Run4

Saturday, 29 May 2021 at 19:06:46

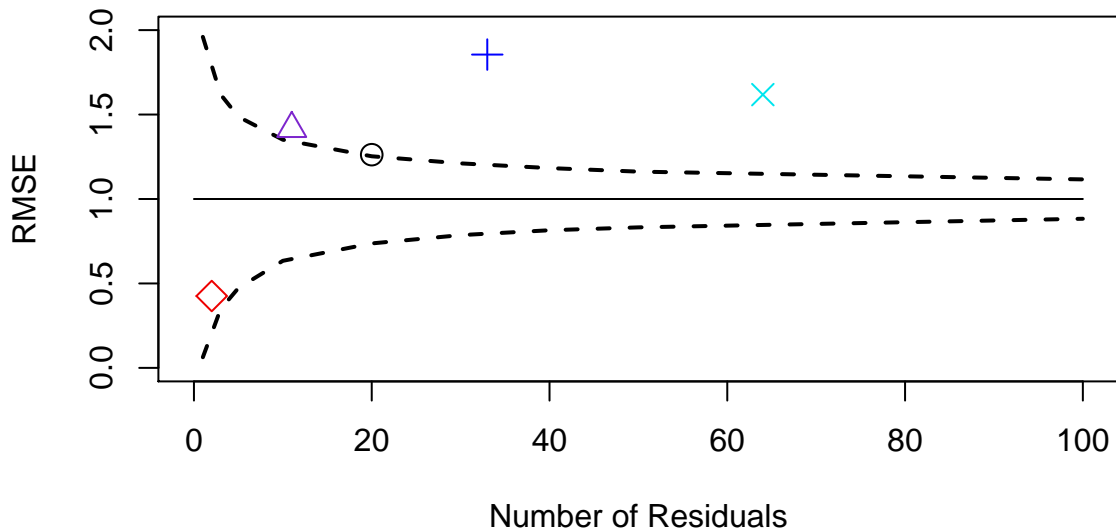




Root Mean Square Error computed from Standardized Residuals

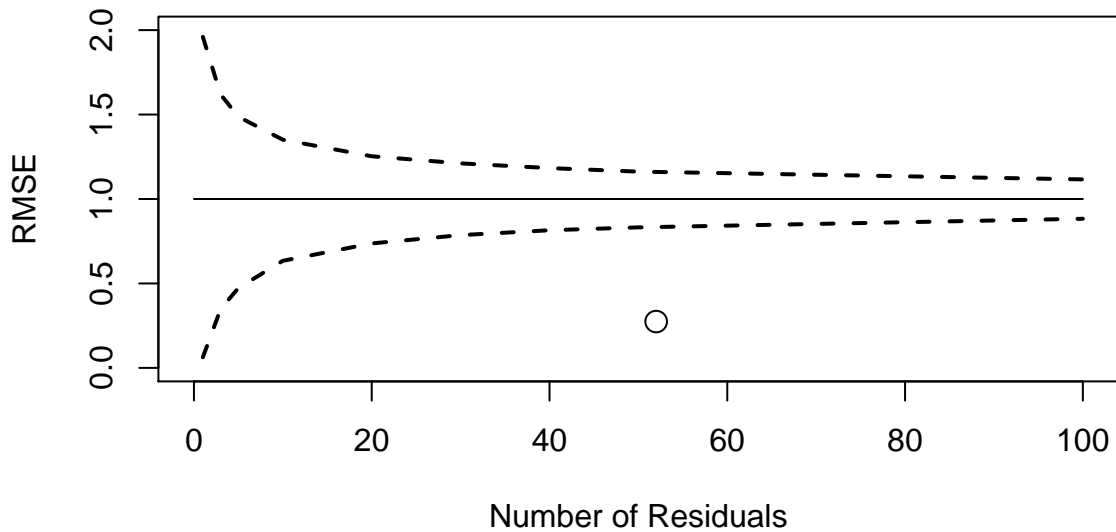
Component	# resids	RMSE
catch.tot	52	0.274
discard.tot	0	0
ind01	20	1.26
ind02	11	1.42
ind03	33	1.86
ind.total	64	1.62
N.year1	0	0
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	2	0.426
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



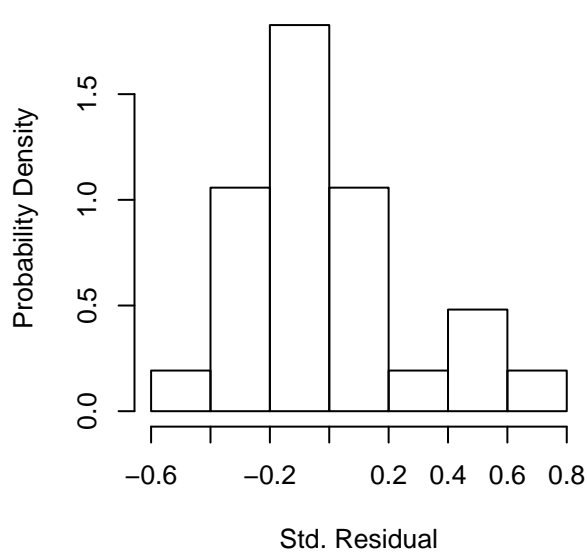
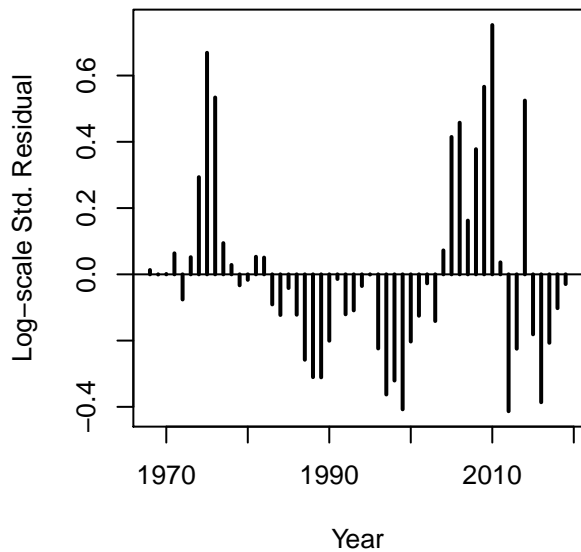
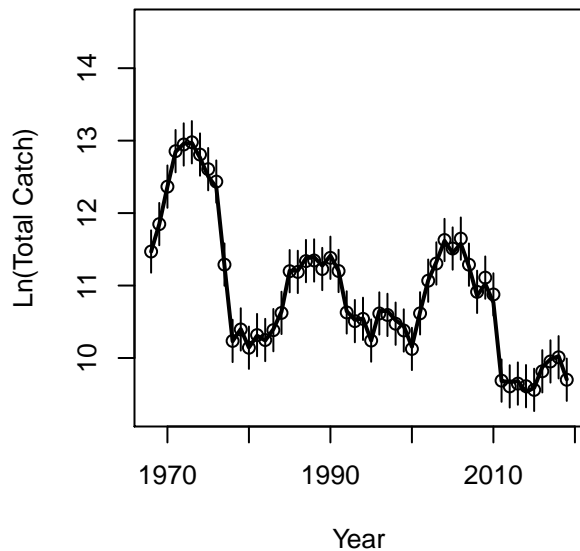
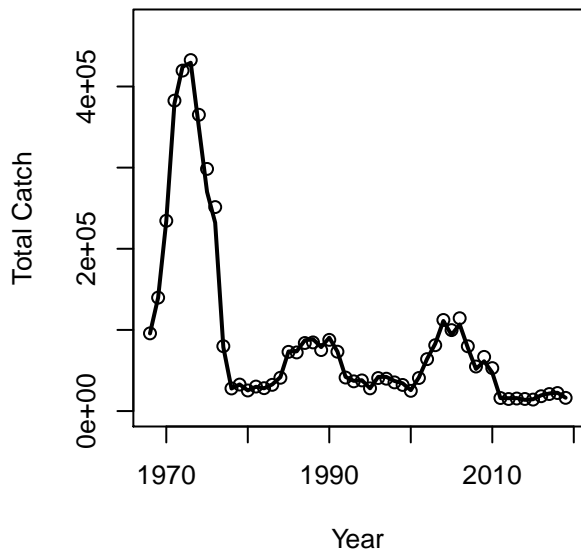
index.sel.params
ind.total
Spring Alb 3+
Spring Big 3+
Combined SSB

Root Mean Square Error for Catch



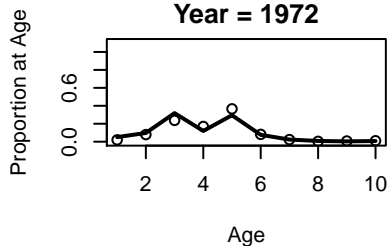
○ catch.tot

Fleet 1 Catch (Combined)

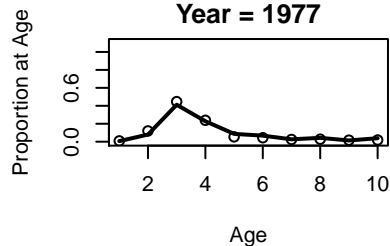


Catch

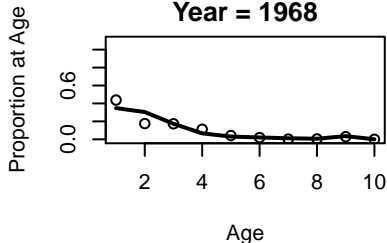
Year = 1972



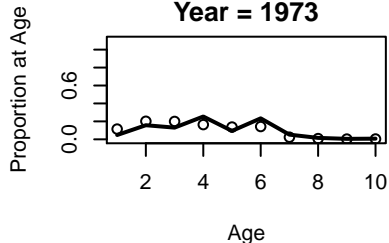
Year = 1977



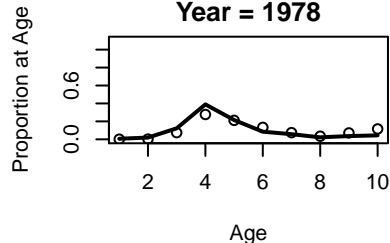
Year = 1968



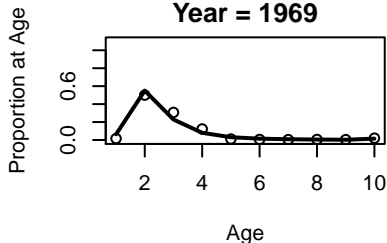
Year = 1973



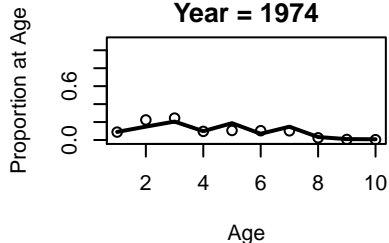
Year = 1978



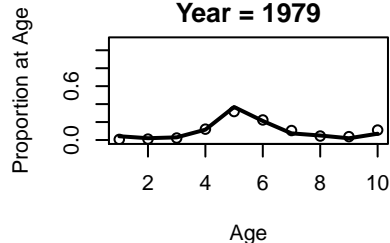
Year = 1969



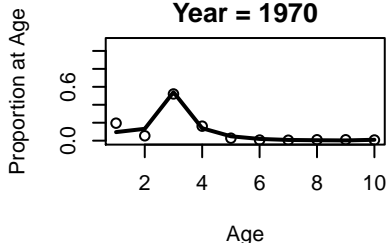
Year = 1974



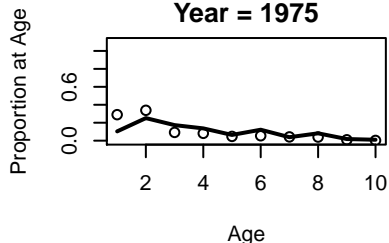
Year = 1979



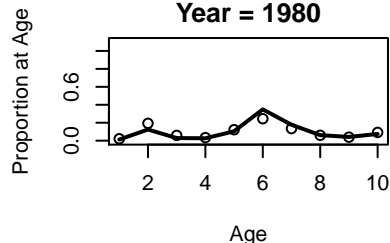
Year = 1970



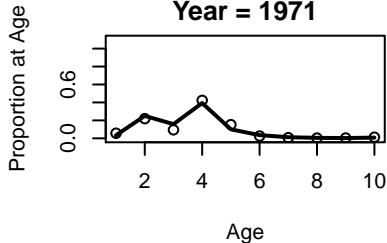
Year = 1975



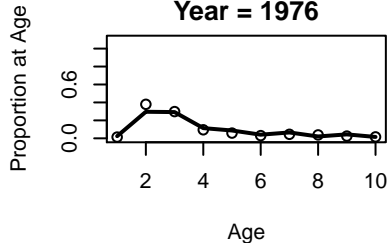
Year = 1980



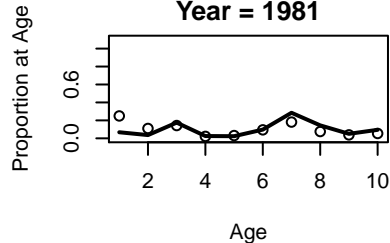
Year = 1971



Year = 1976

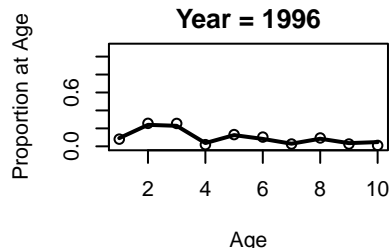
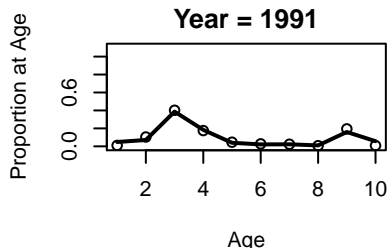
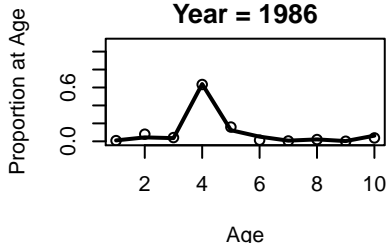
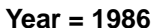
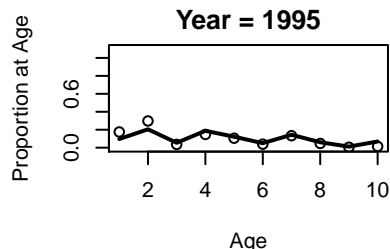
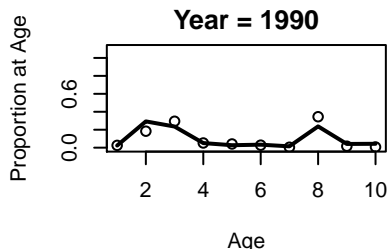
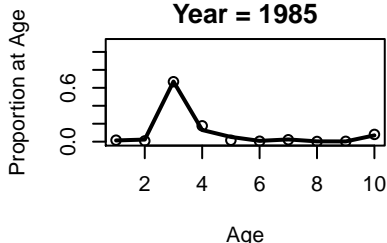
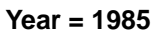
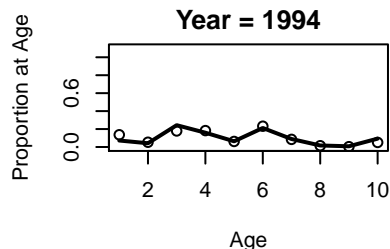
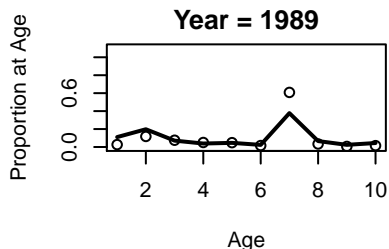
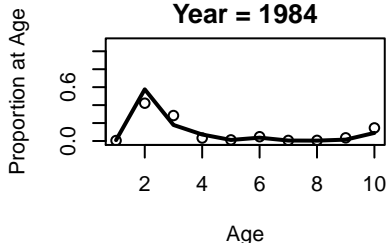
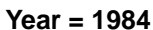
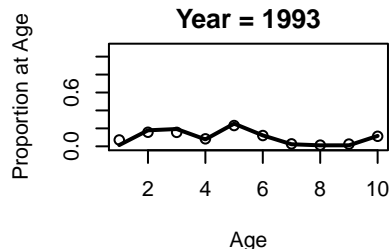
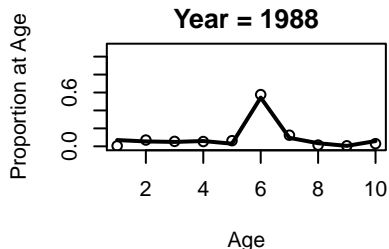
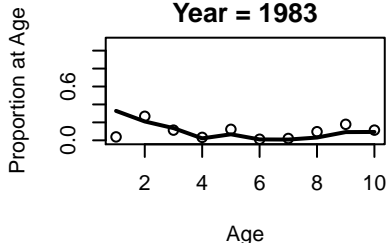
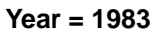
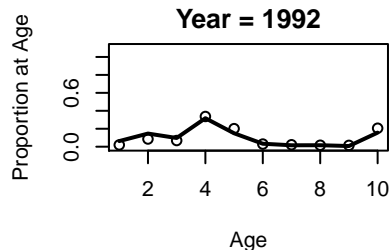
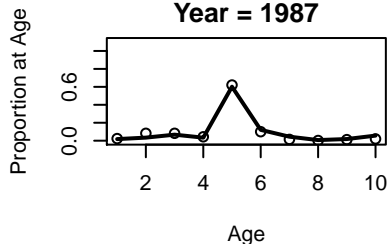
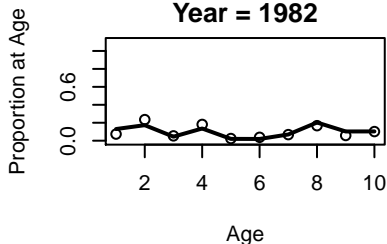
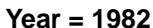


Year = 1981

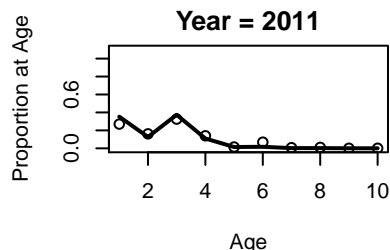
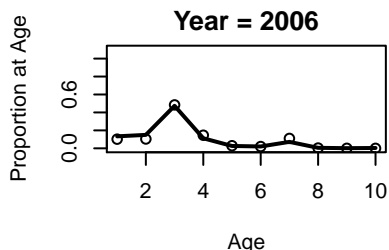
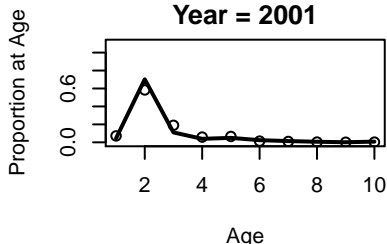
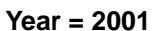
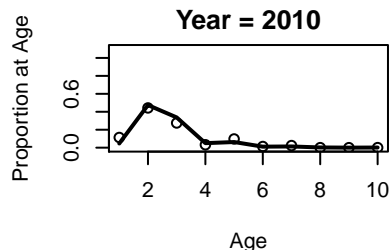
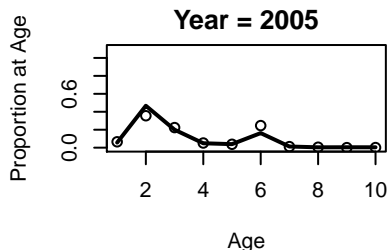
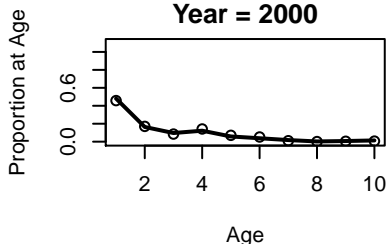
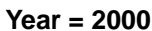
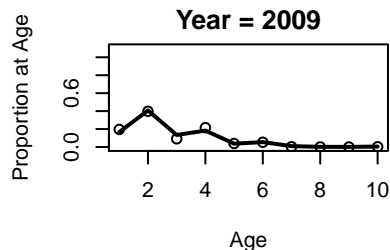
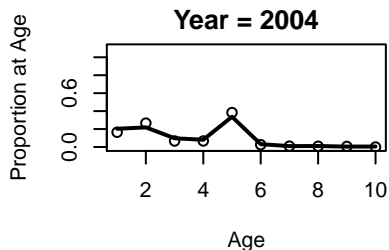
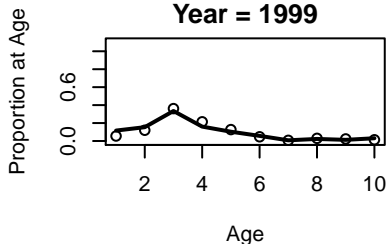
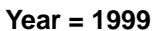
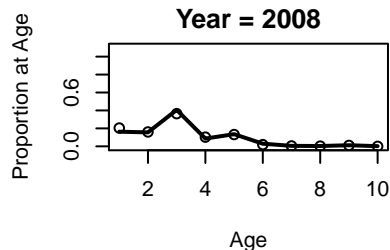
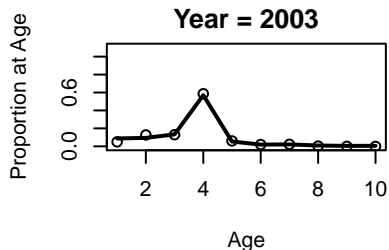
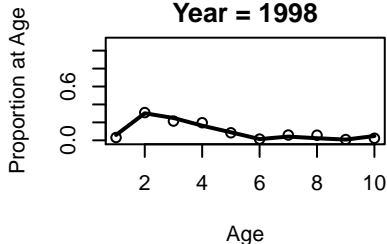
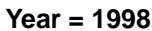
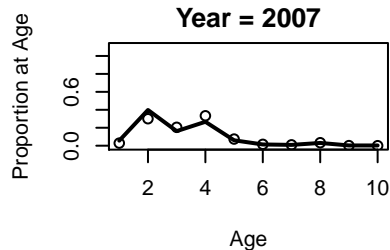
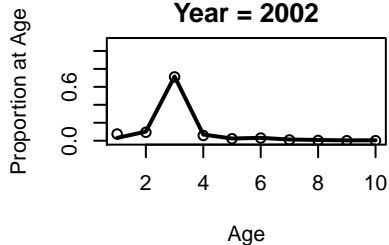
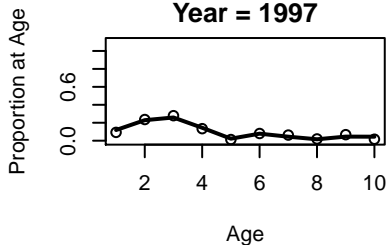
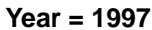


Fleet 1
Combined
↓

Year = 1987

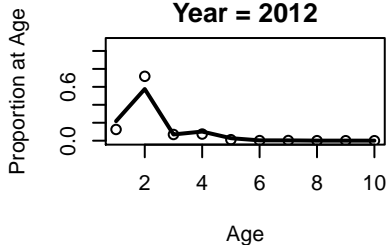


Year = 2002

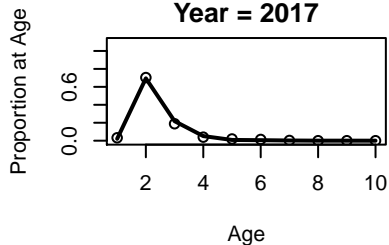


Catch

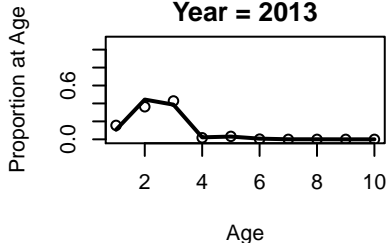
Year = 2012



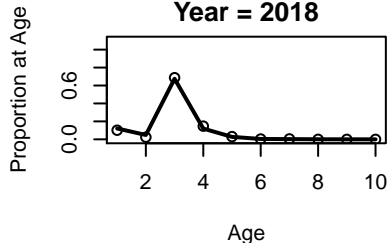
Year = 2017



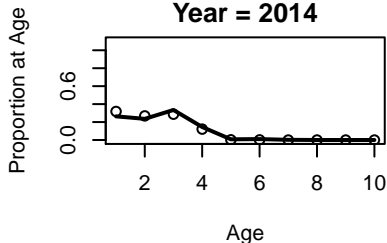
Year = 2013



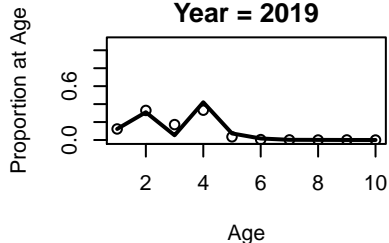
Year = 2018



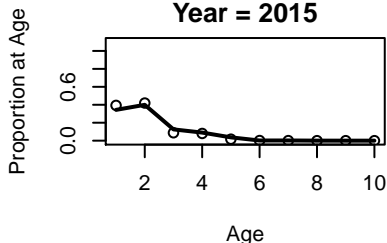
Year = 2014



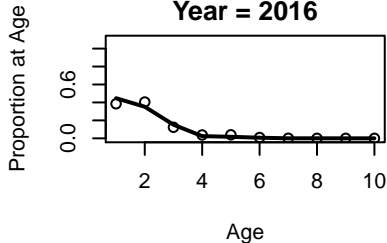
Year = 2019



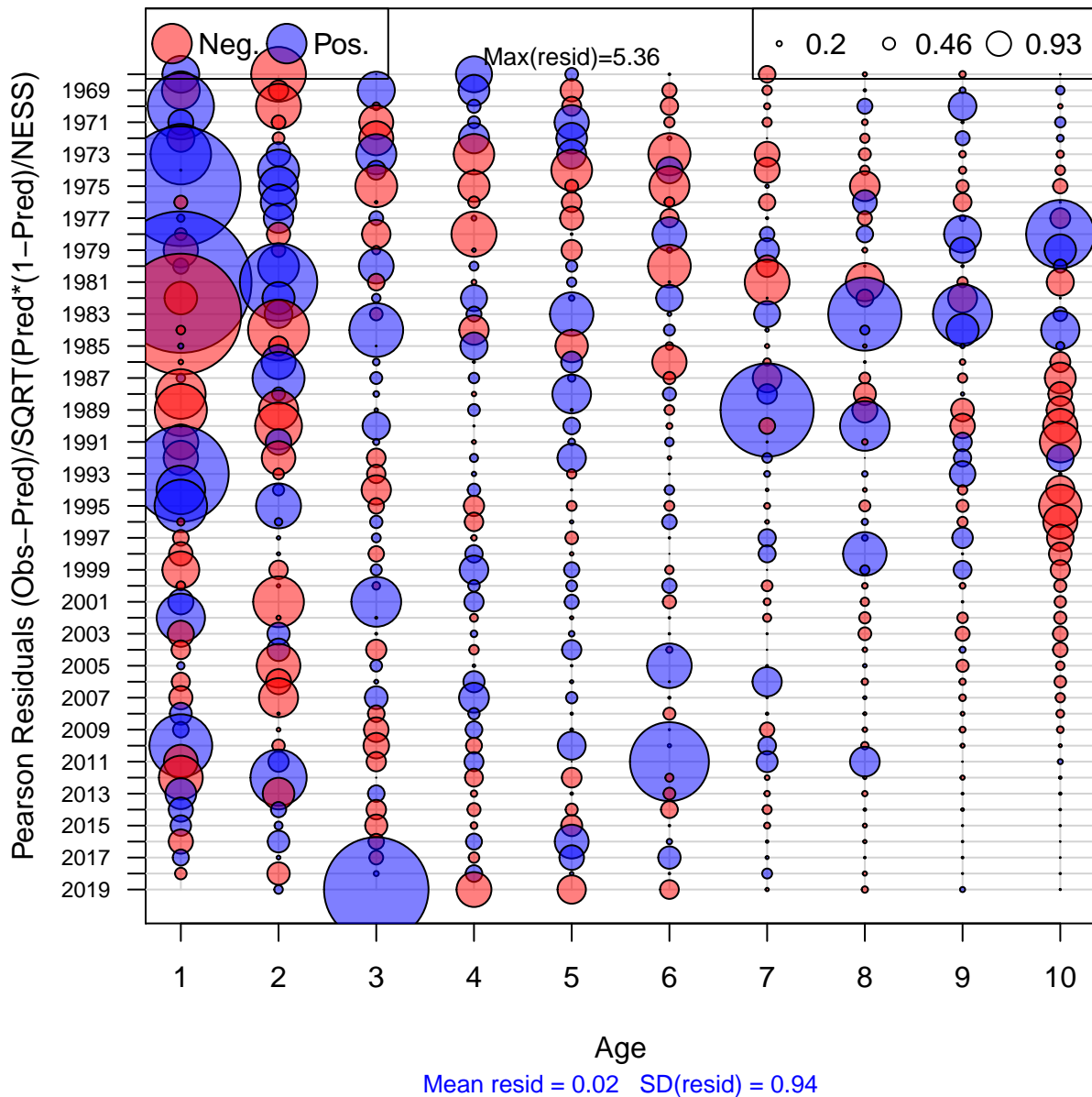
Year = 2015



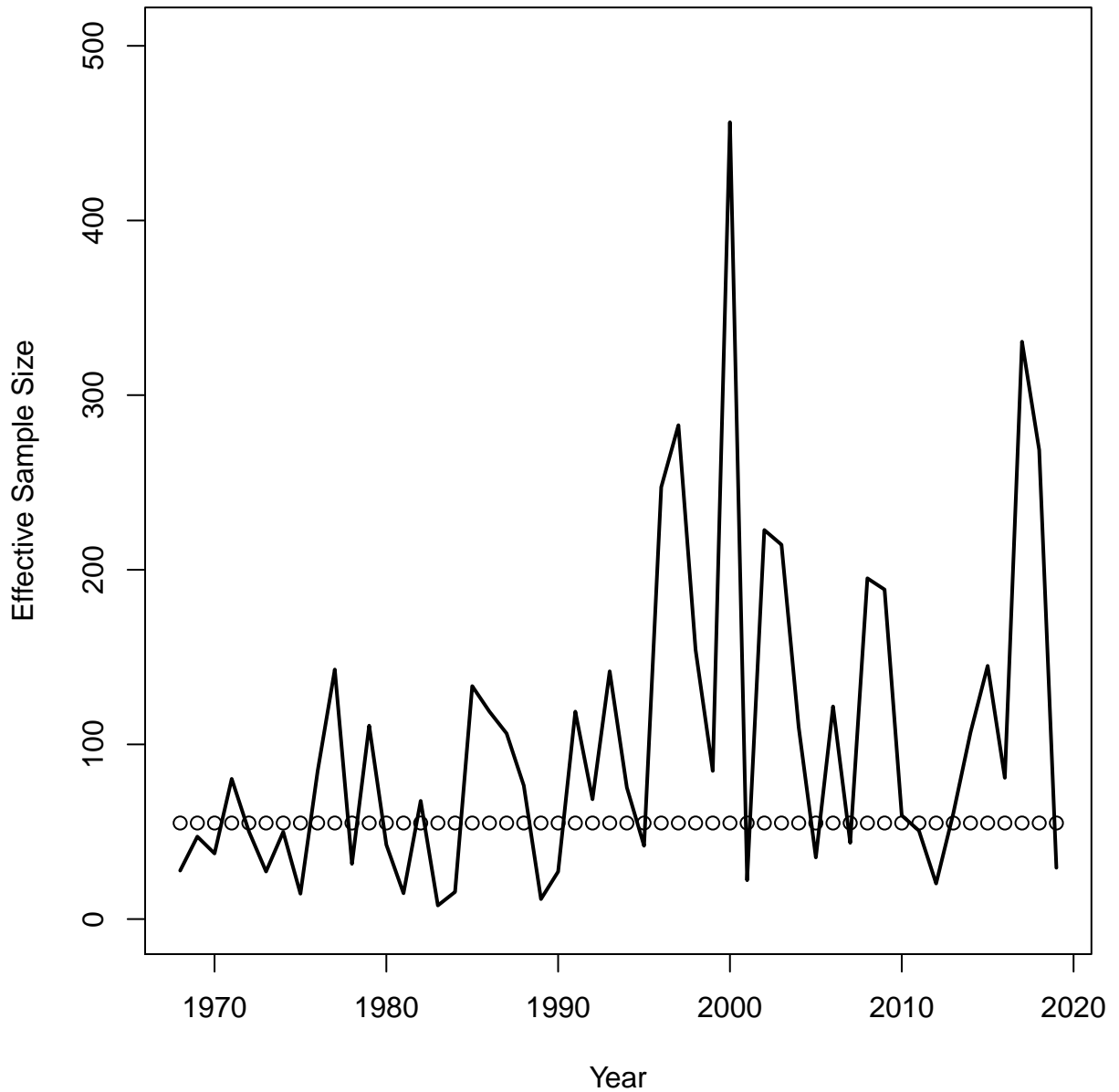
Year = 2016



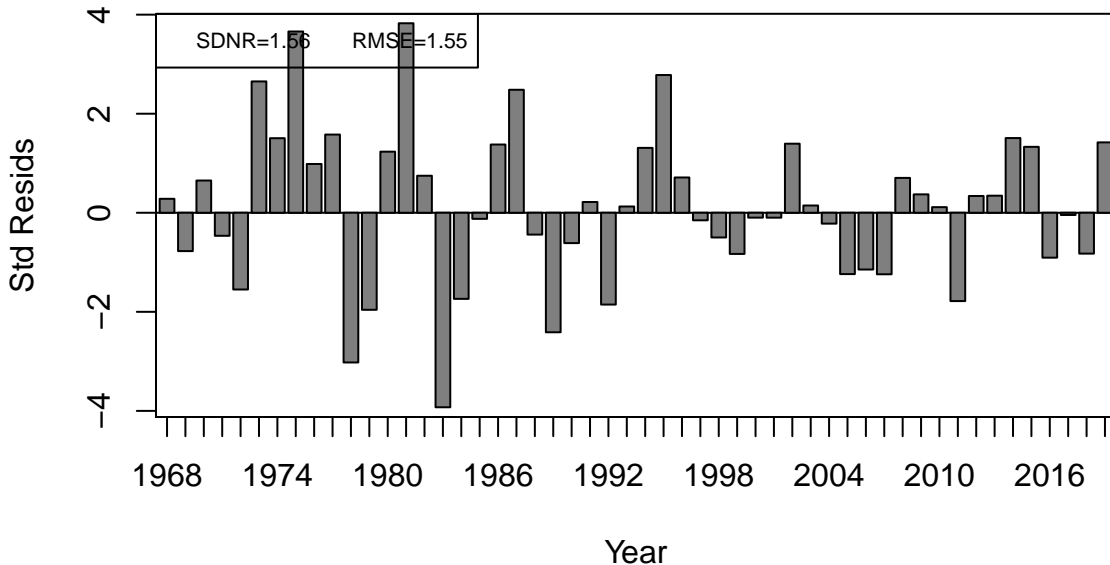
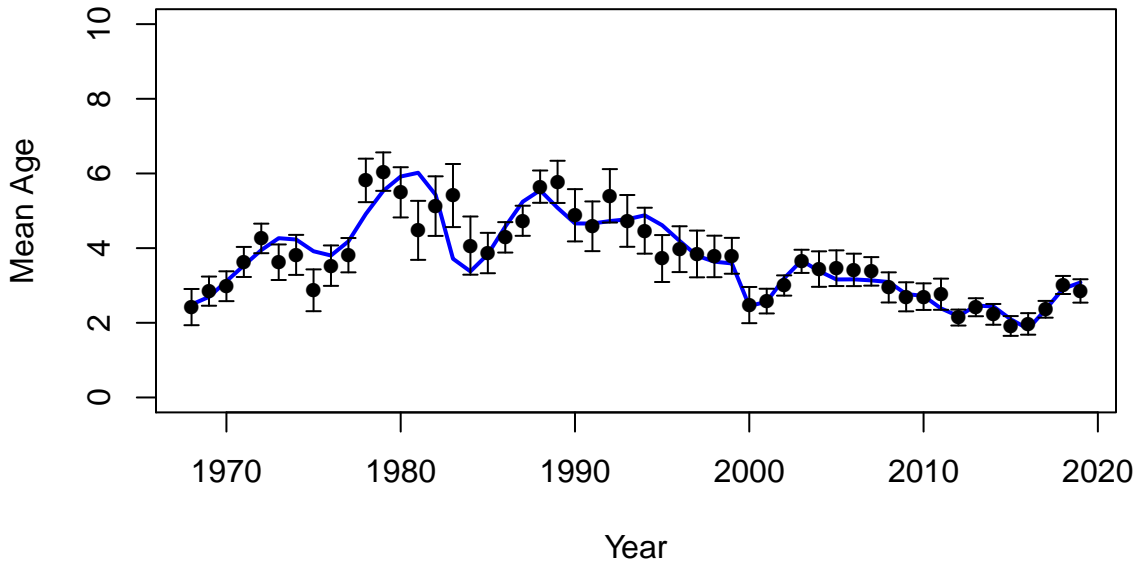
Age Comp Residuals for Catch by Fleet 1 (Combined)



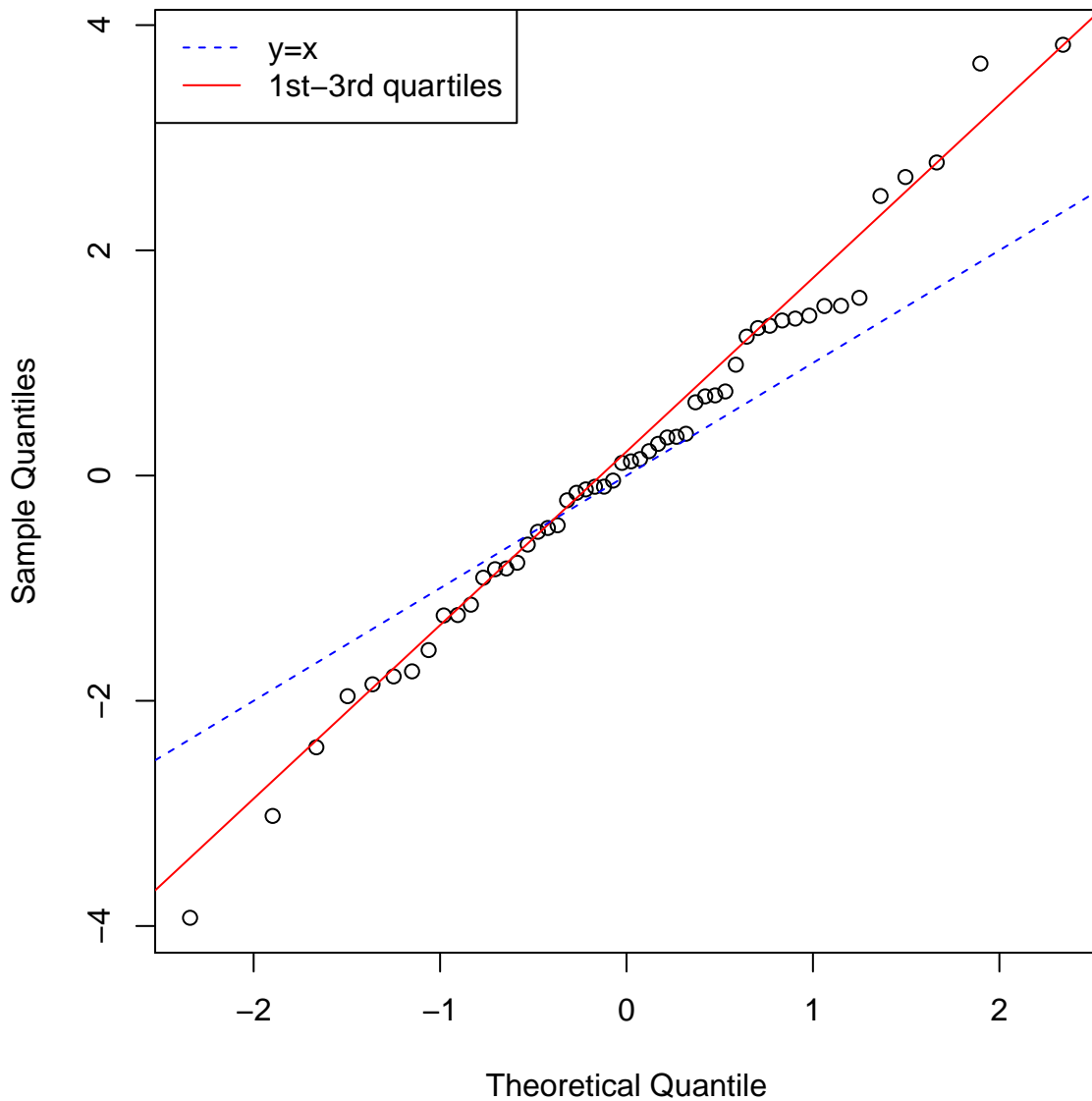
Catch Neff Fleet 1 (Combined)



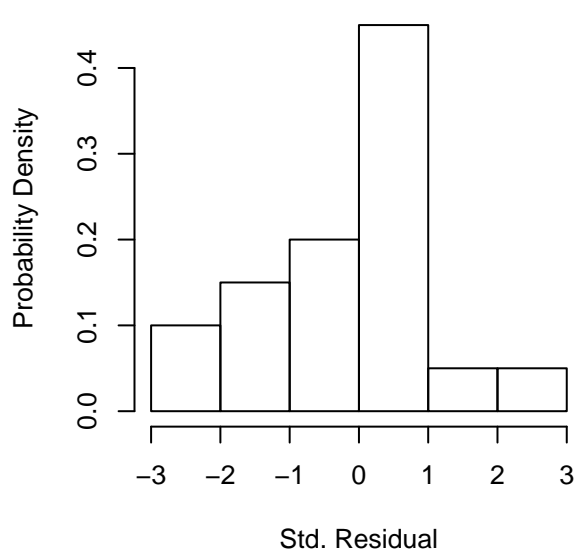
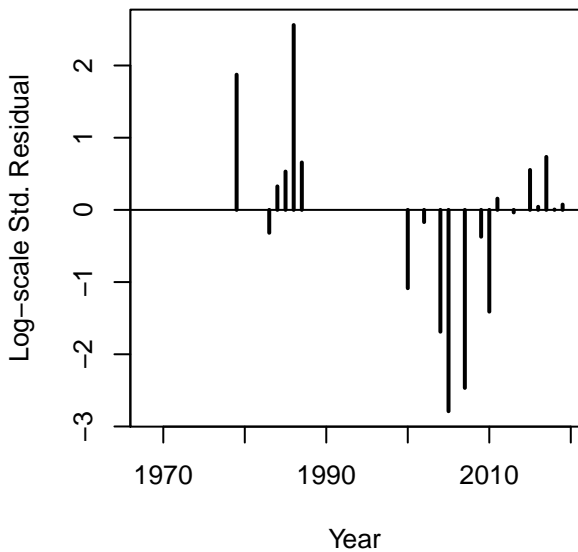
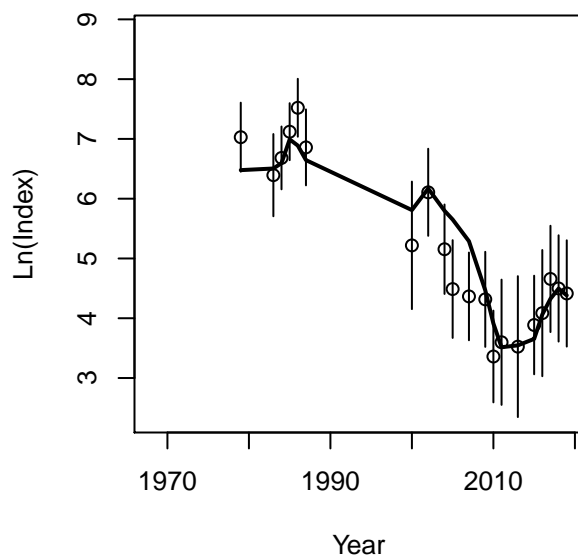
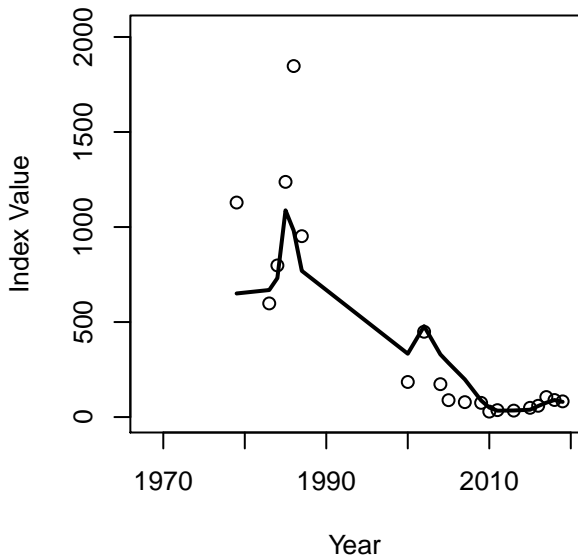
Catch Fleet 1 (Combined) ESS = 55



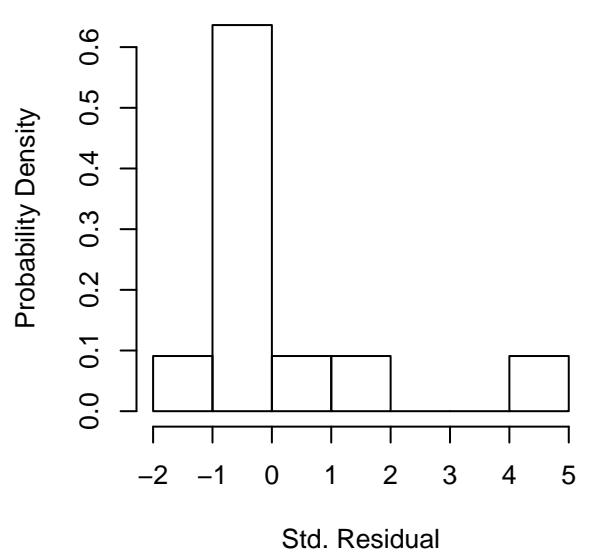
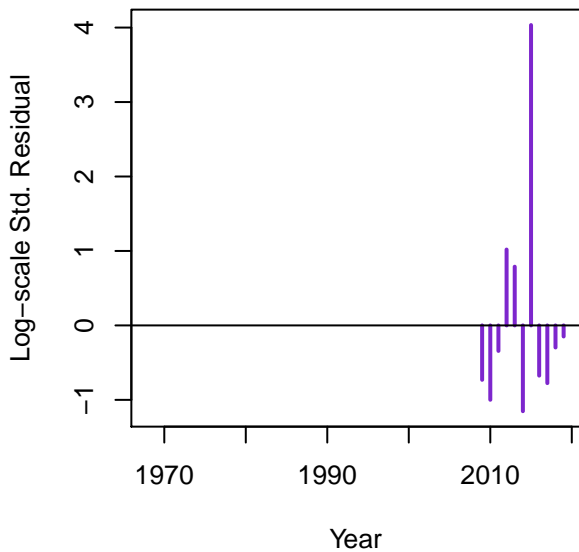
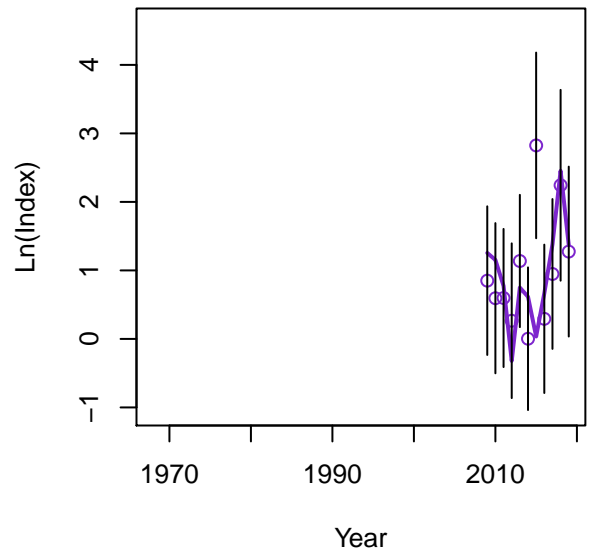
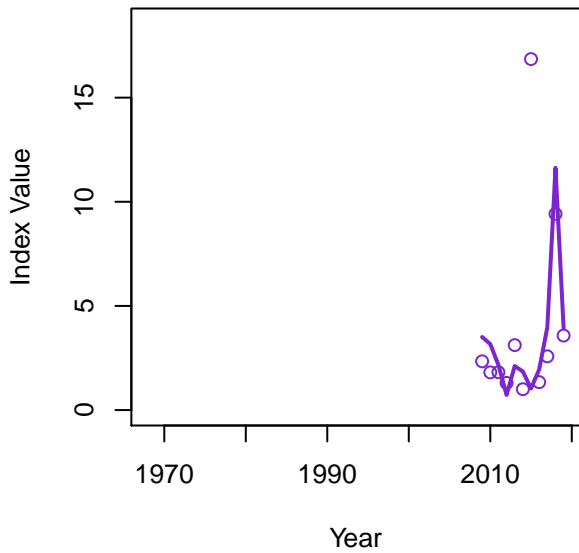
Catch Fleet 1 (Combined) ESS = 55



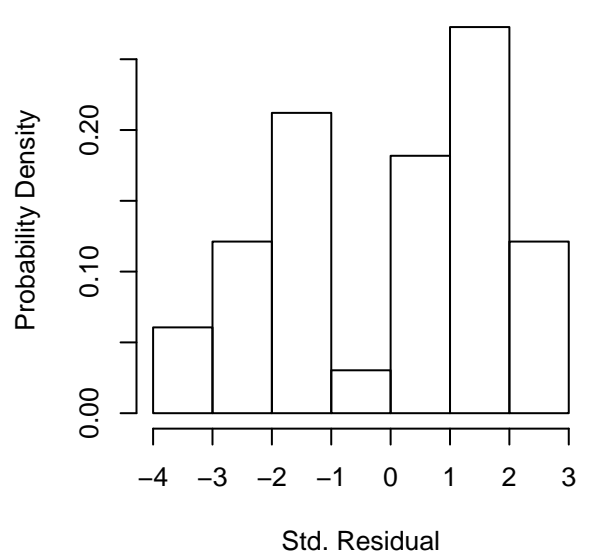
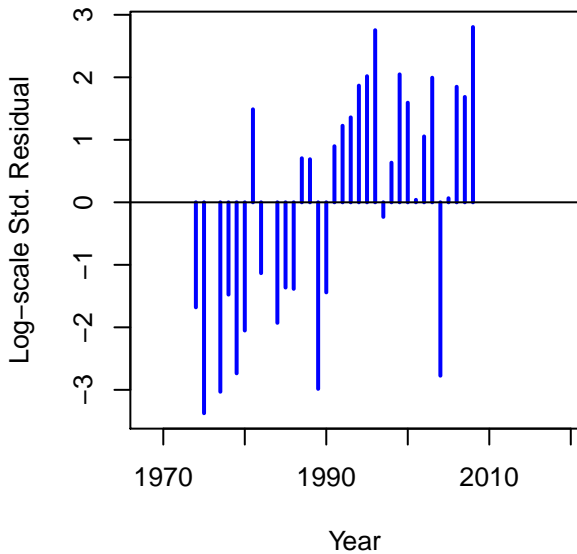
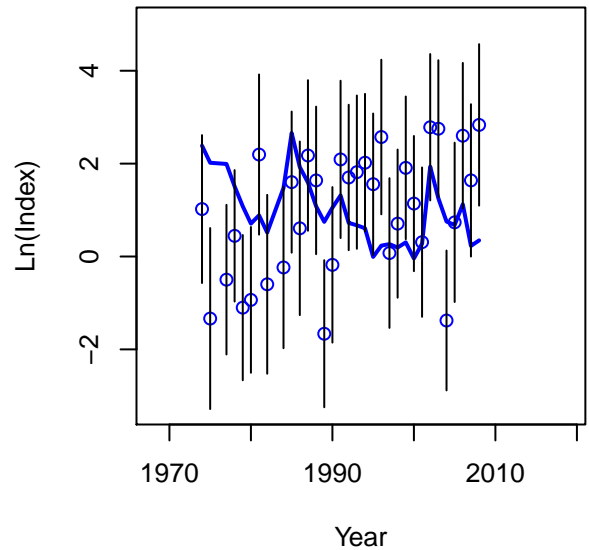
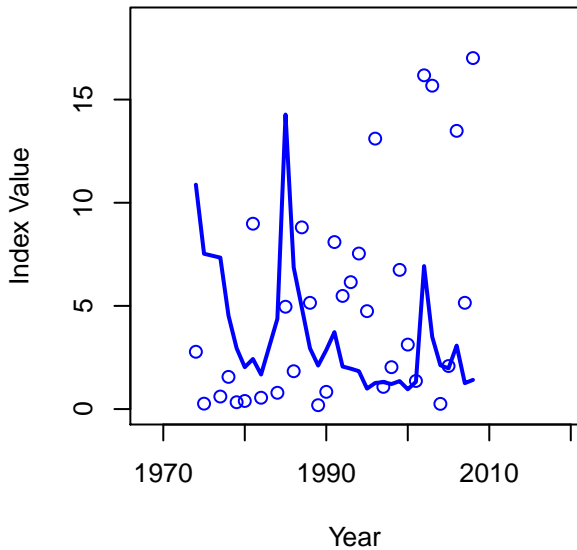
Index 1 (Combined SSB)



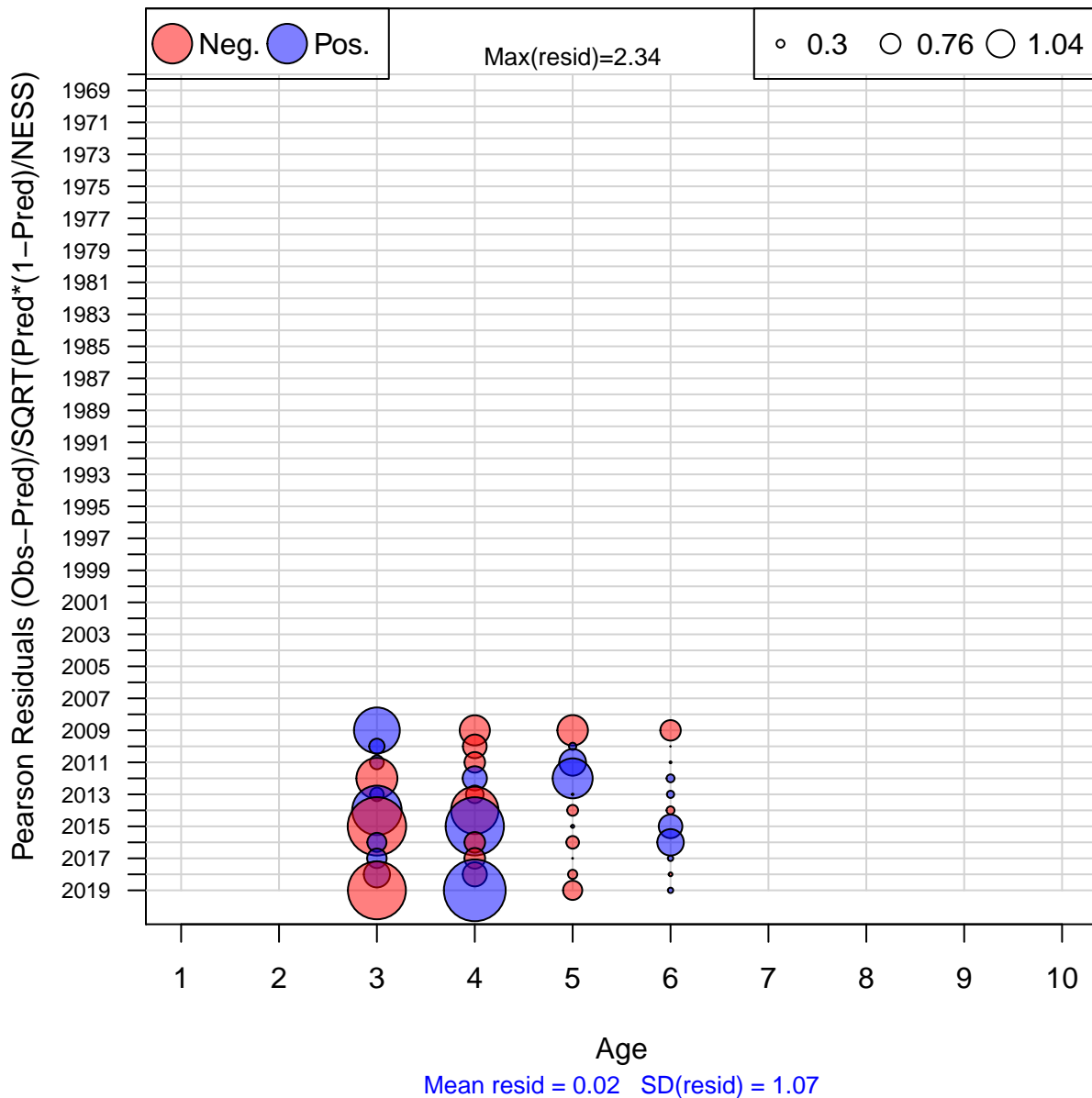
Index 2 (Spring Big 3+)



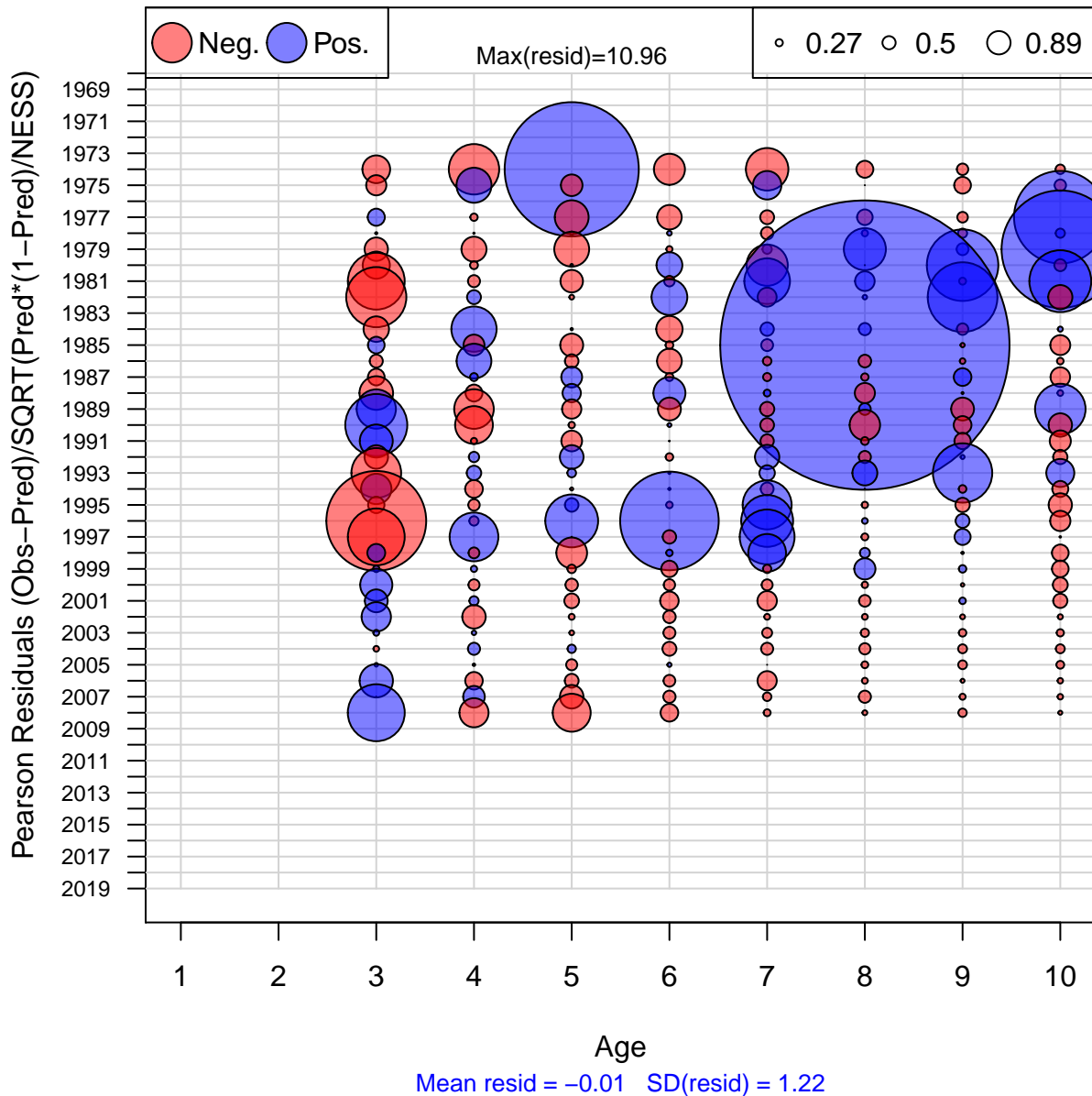
Index 3 (Spring Alb 3+)



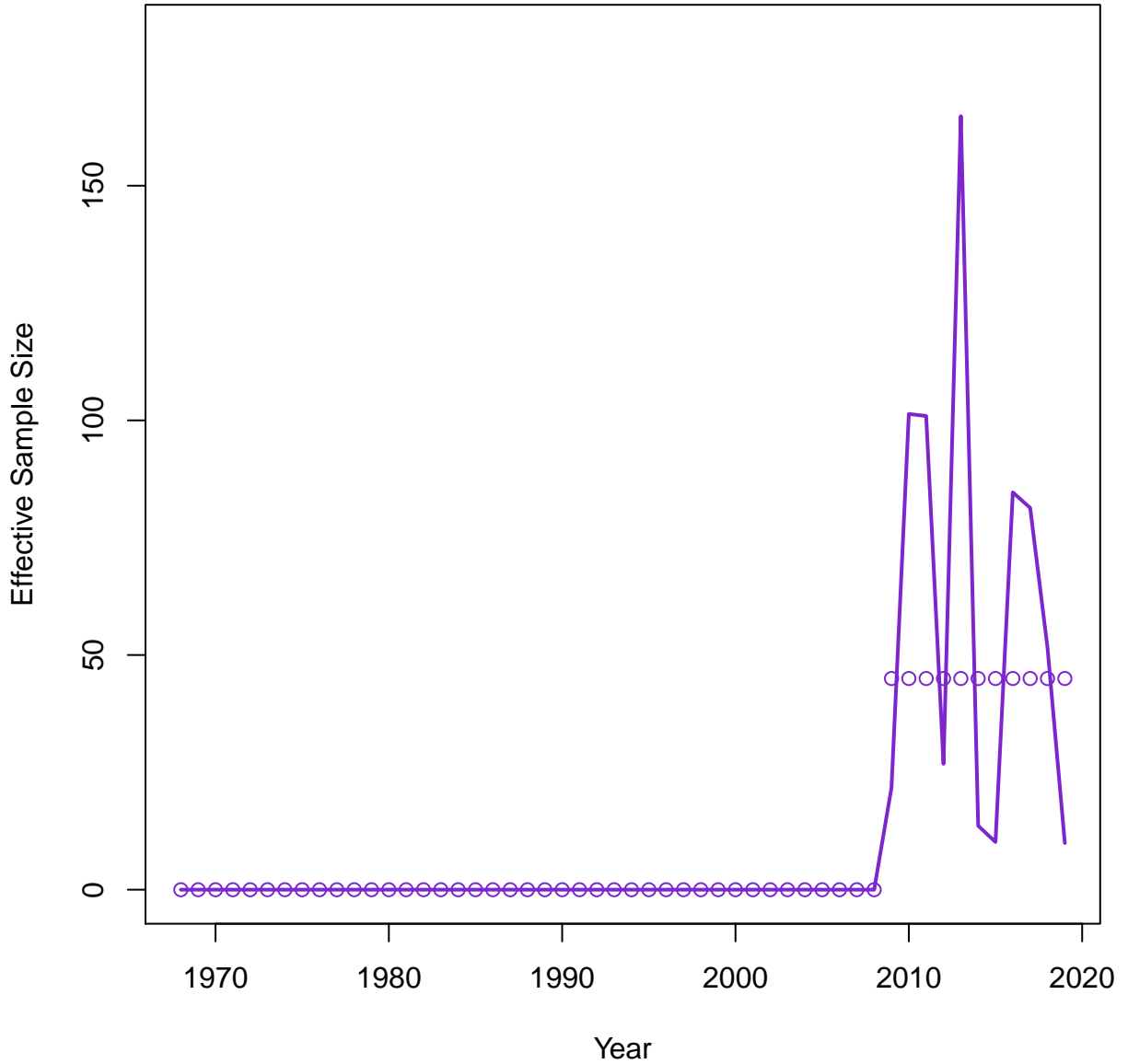
Age Comp Residuals for Index 2 (Spring Big 3+)



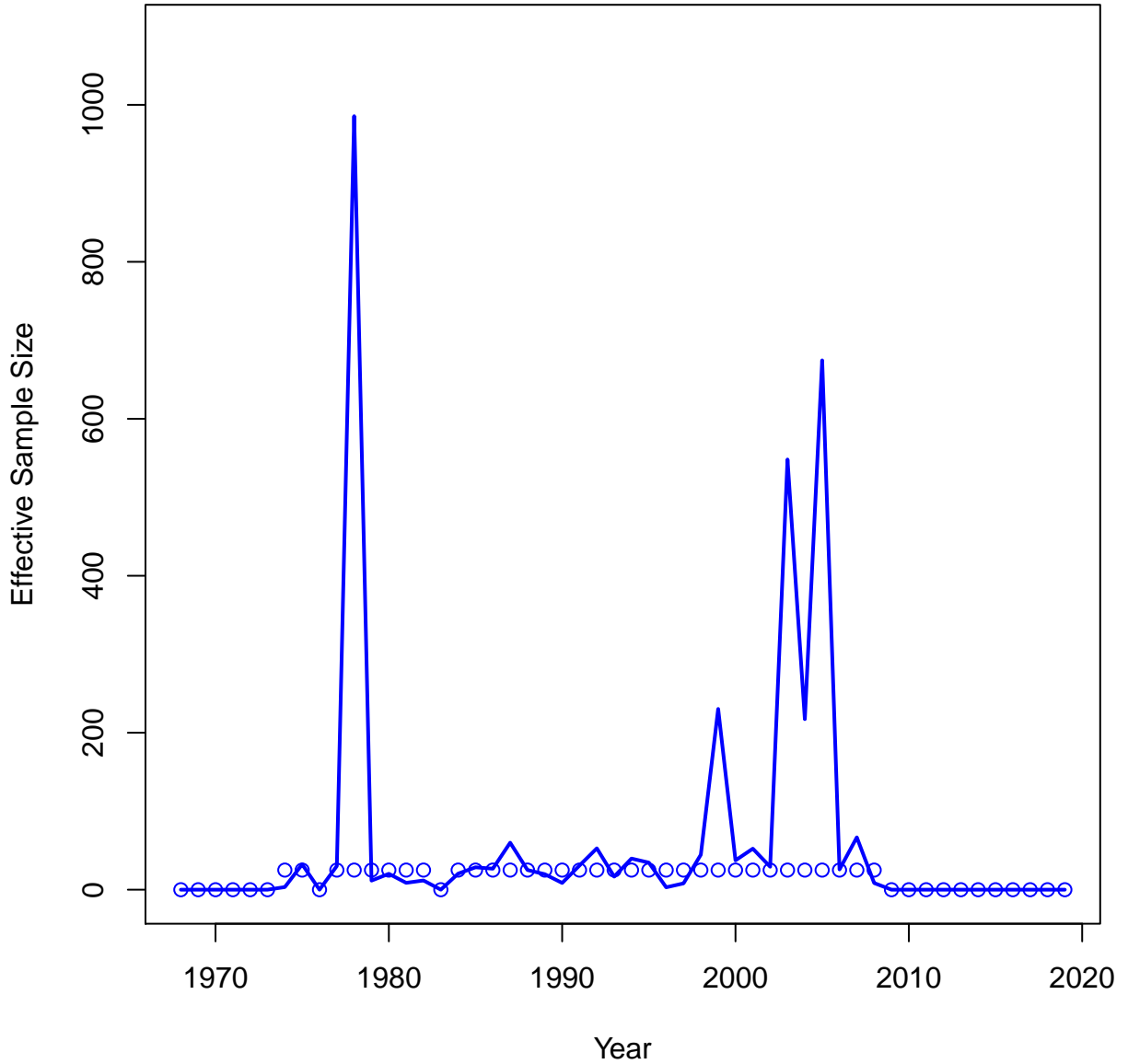
Age Comp Residuals for Index 3 (Spring Alb 3+)



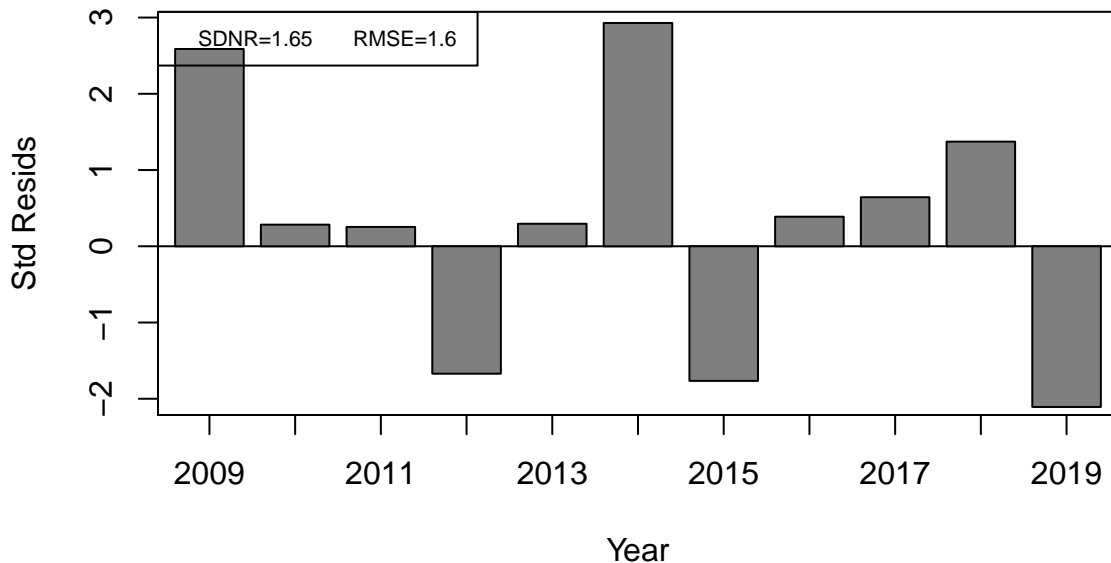
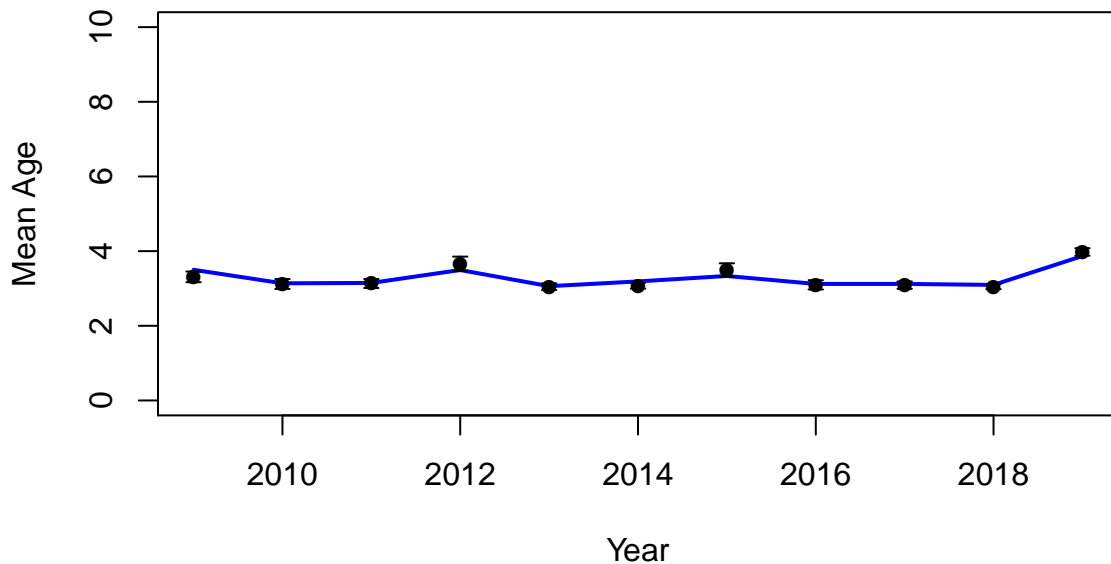
Index Neff 2 (Spring Big 3+)



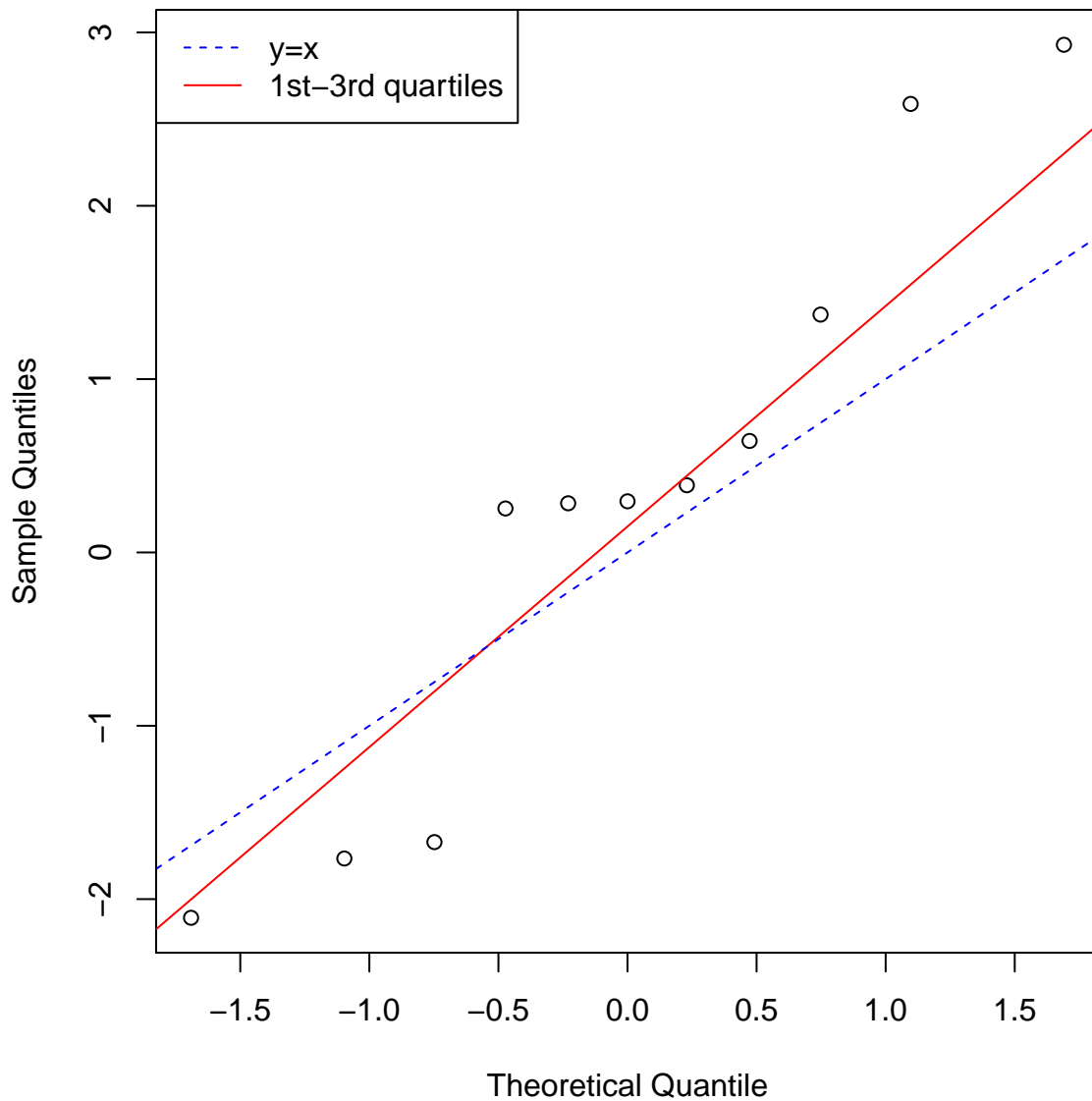
Index Neff 3 (Spring Alb 3+)



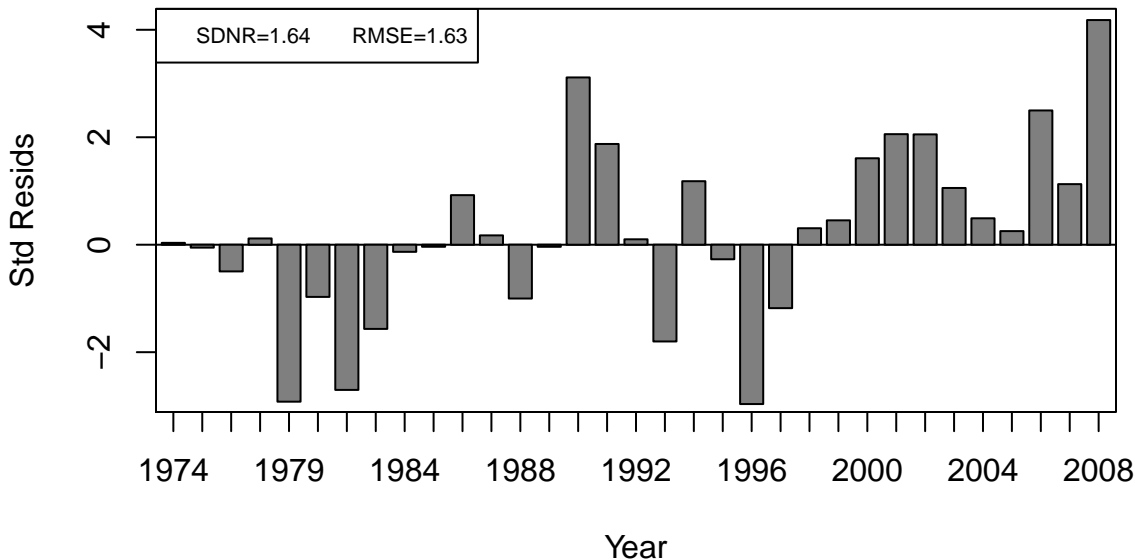
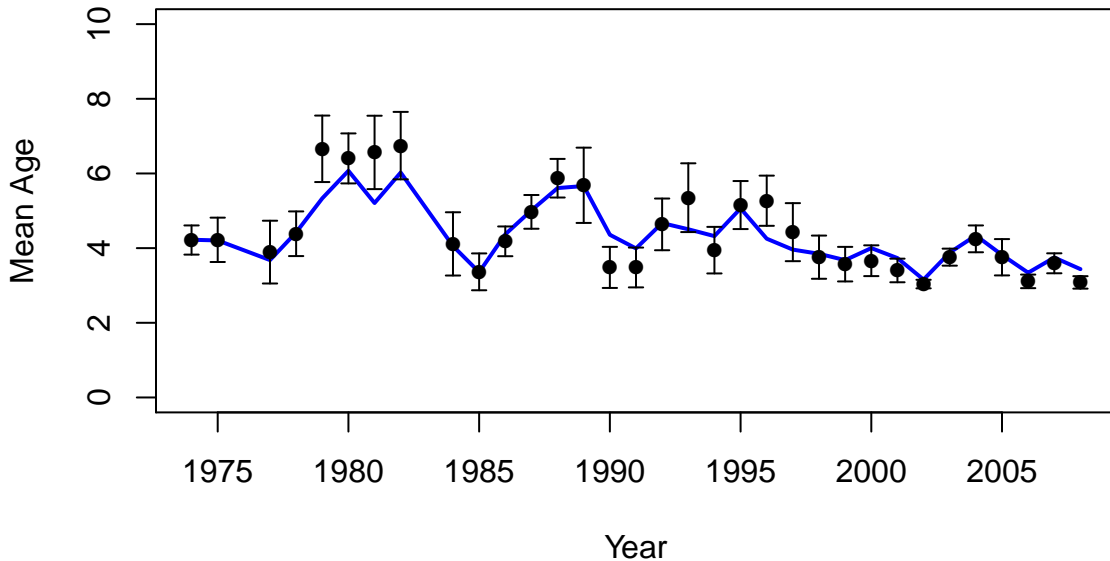
Index 2 (Spring Big 3+) ESS = 45



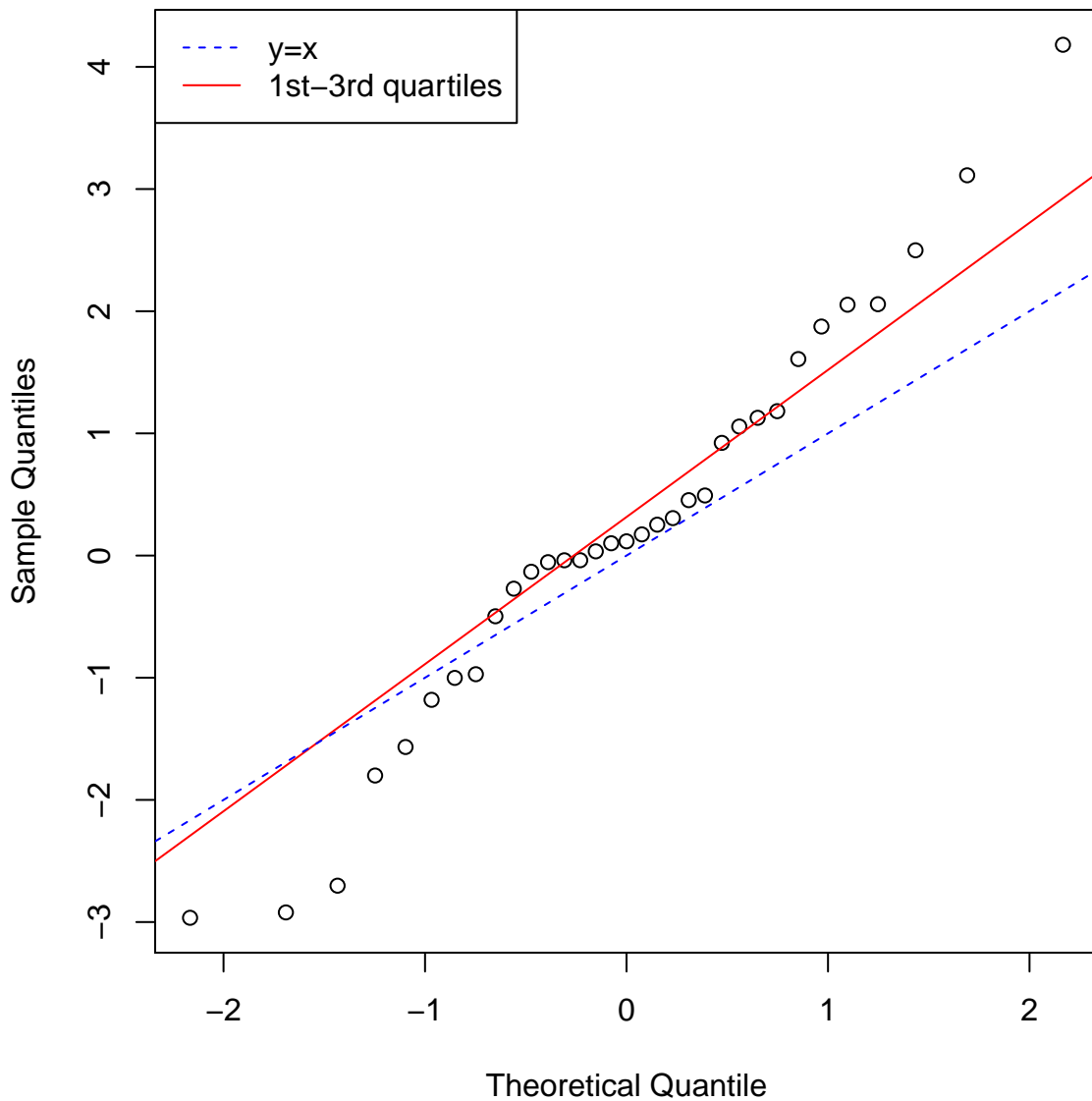
Index 2 (Spring Big 3+) ESS = 45



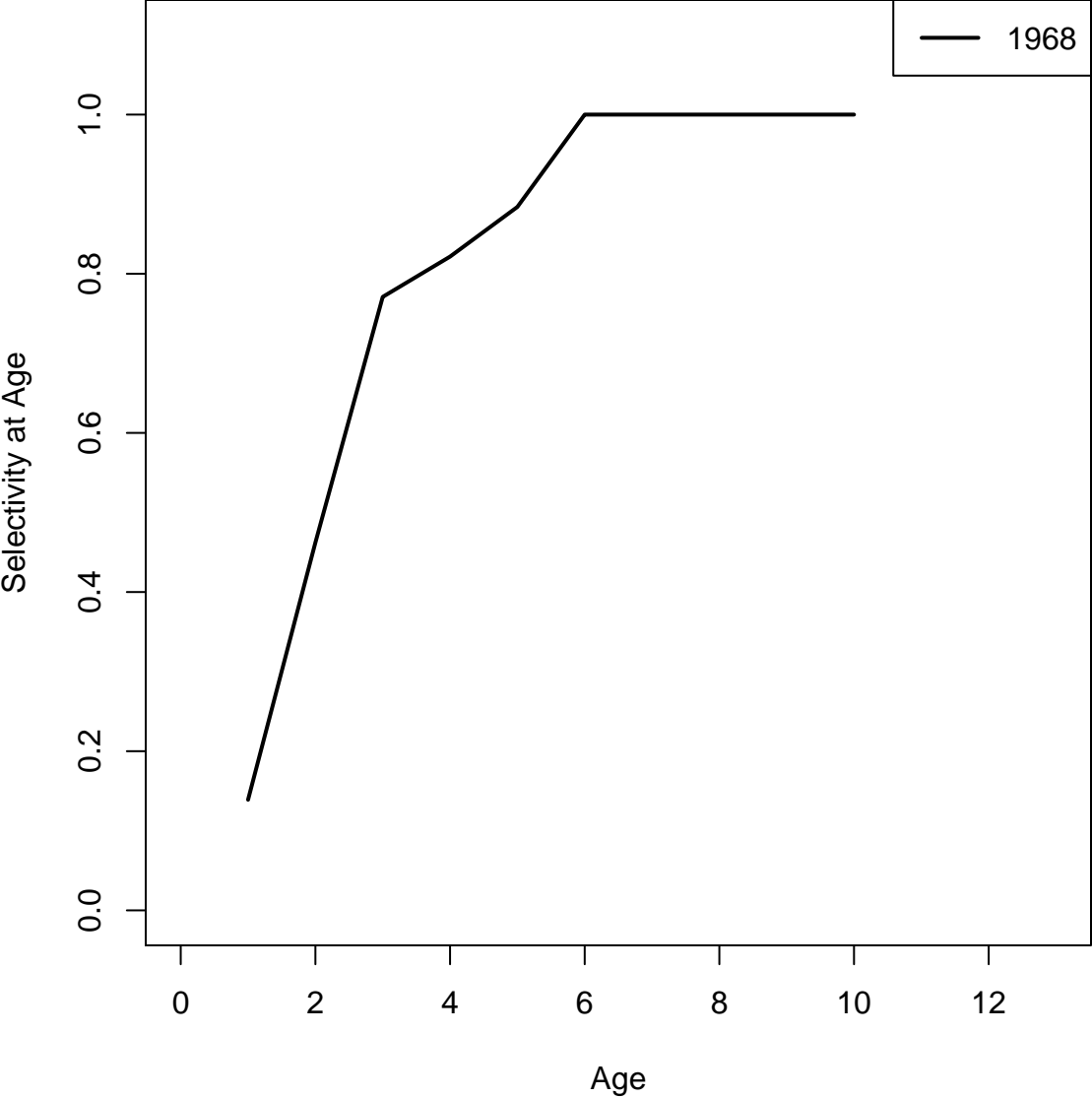
Index 3 (Spring Alb 3+) ESS = 25

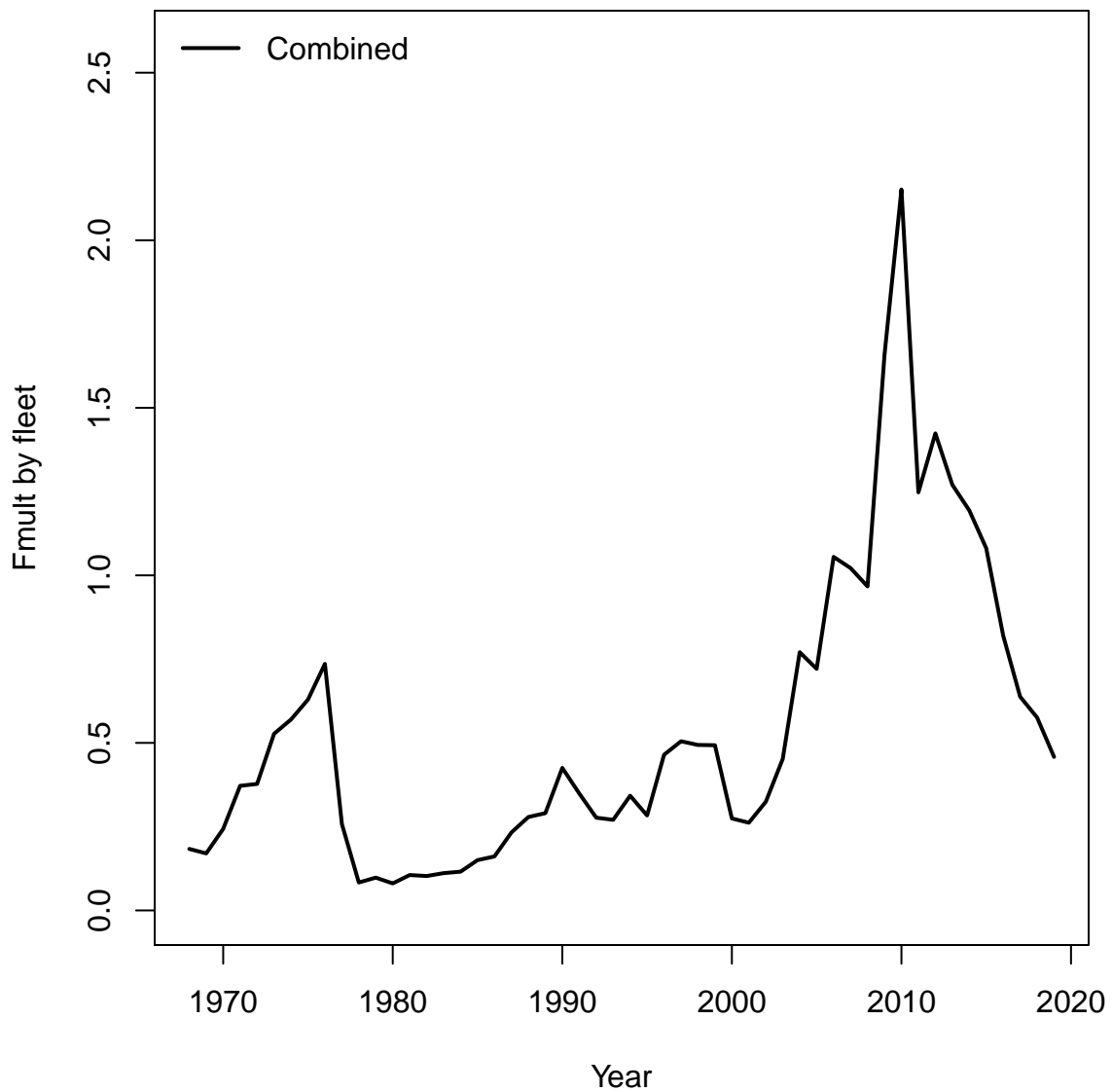


Index 3 (Spring Alb 3+) ESS = 25

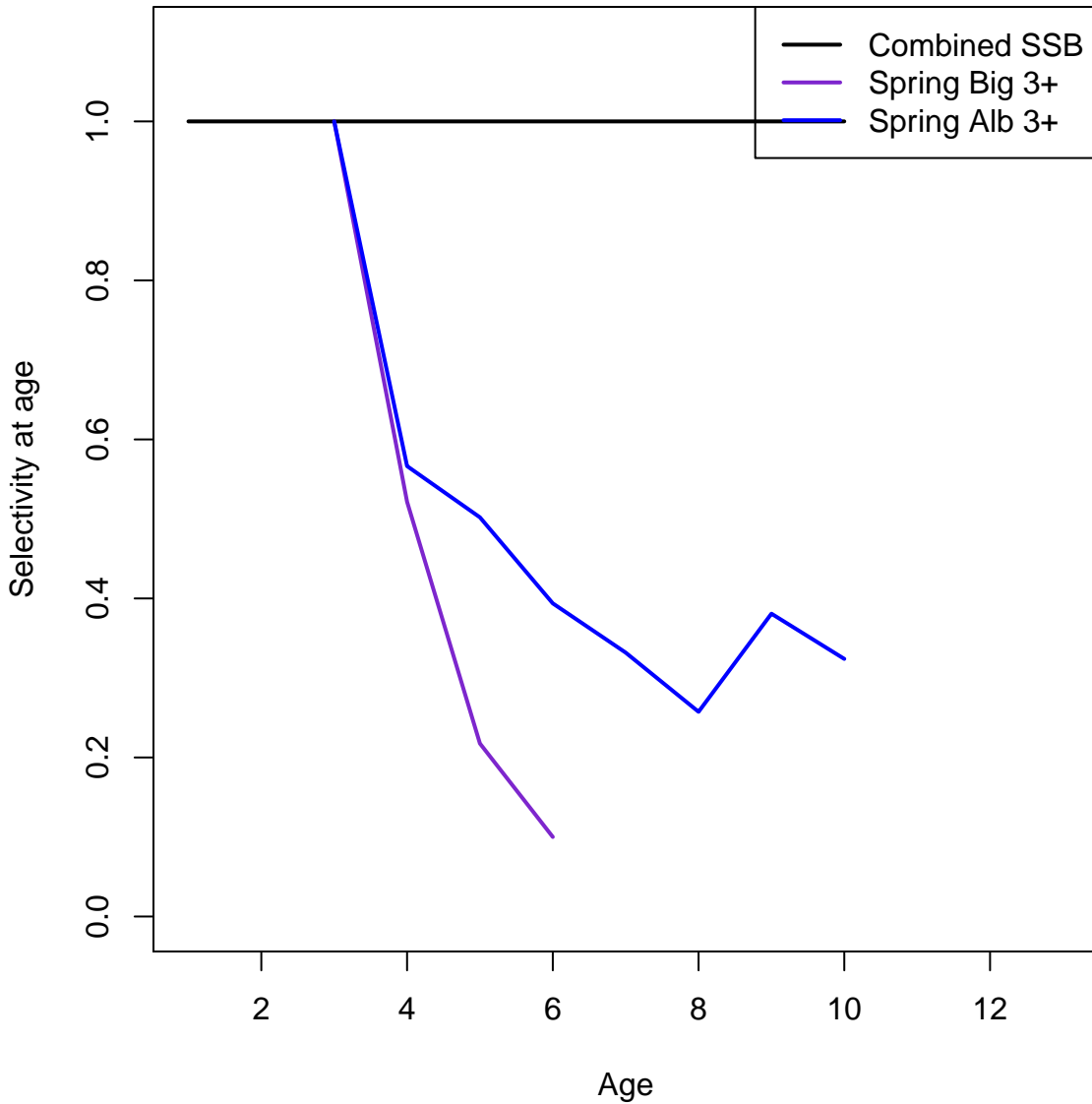


Fleet 1 (Combined)

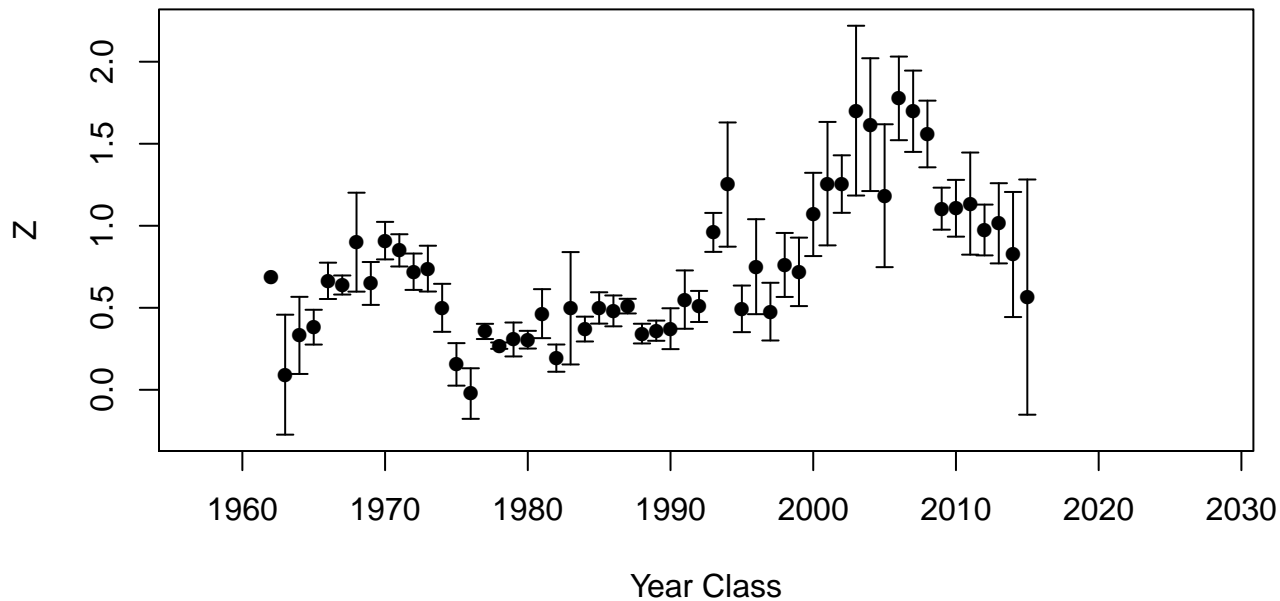
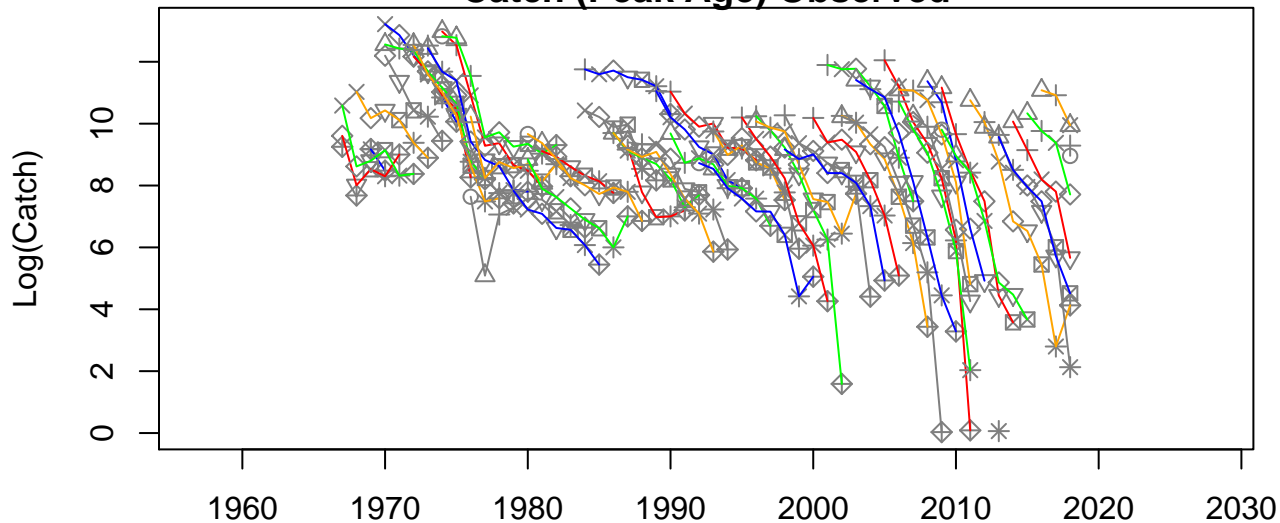




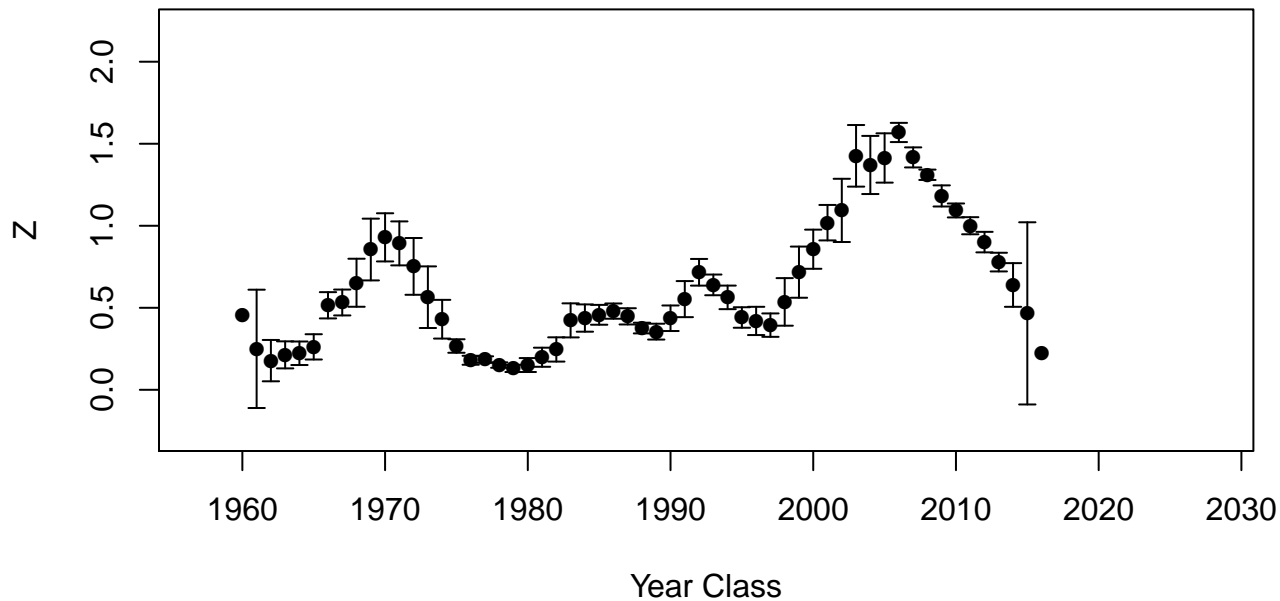
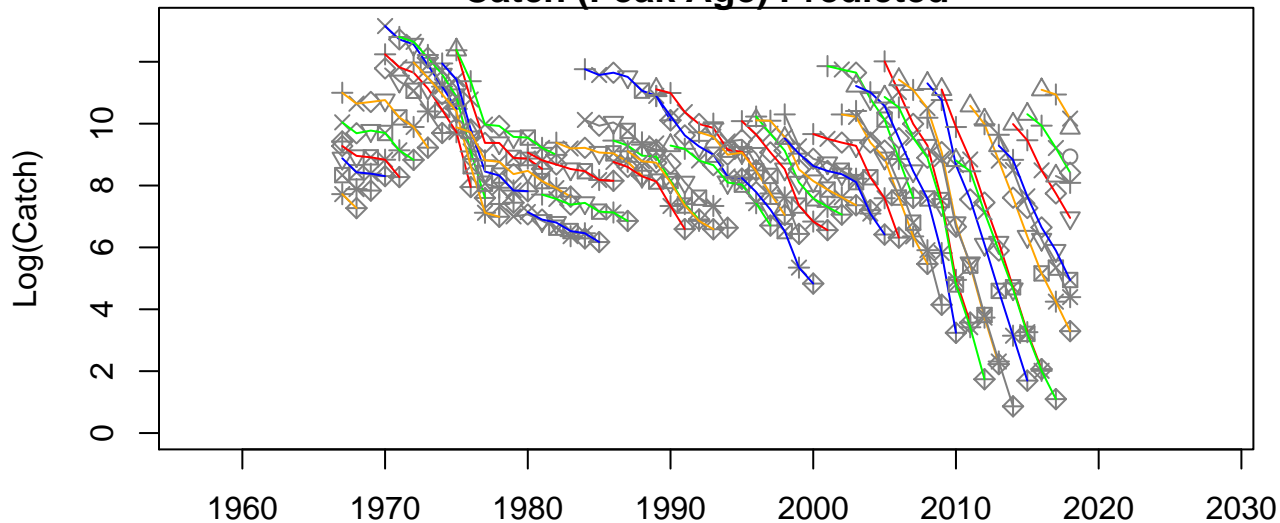
Indices



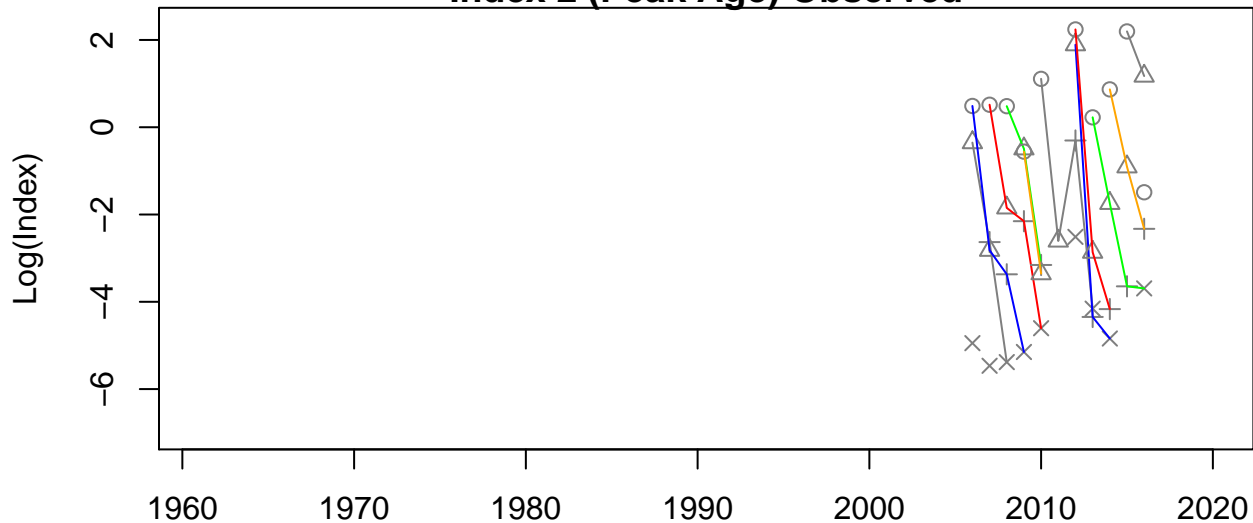
Catch (Peak Age) Observed



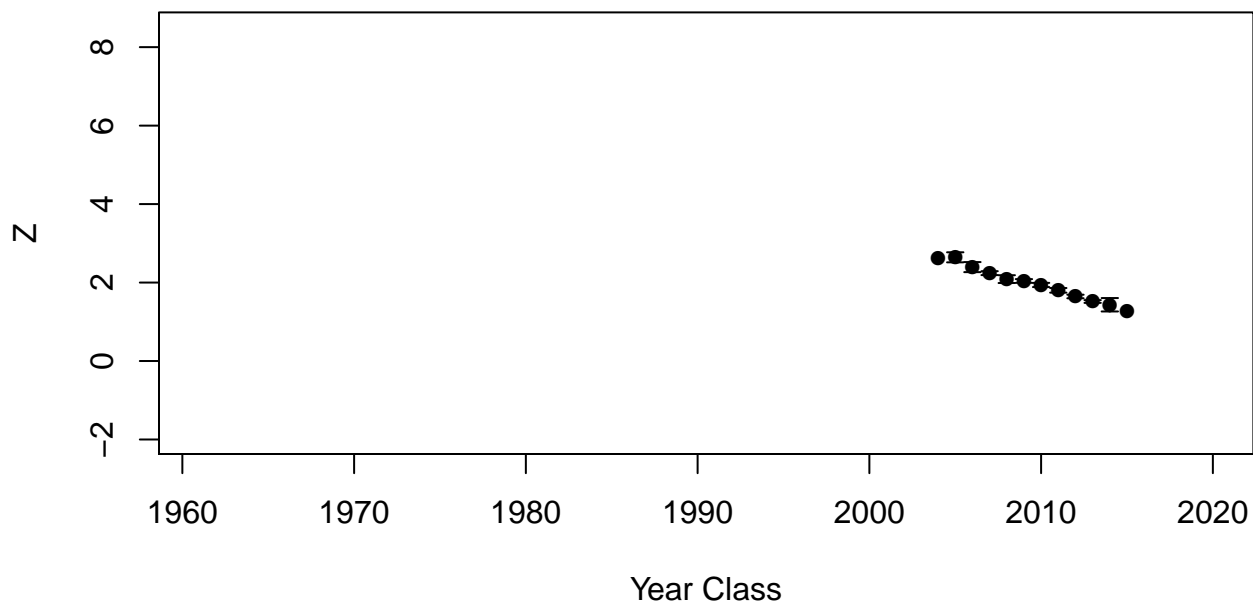
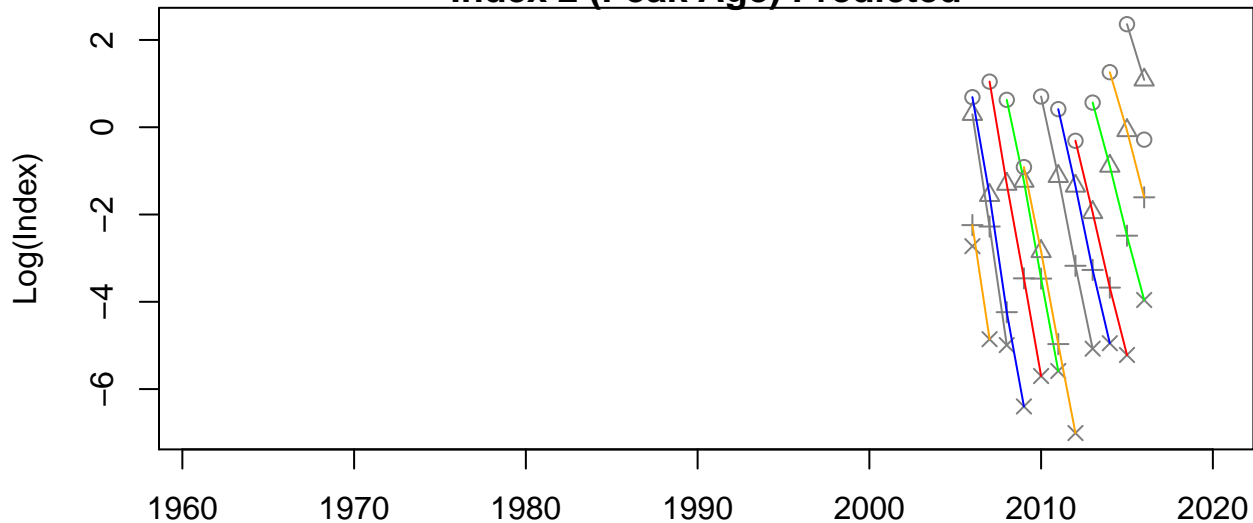
Catch (Peak Age) Predicted



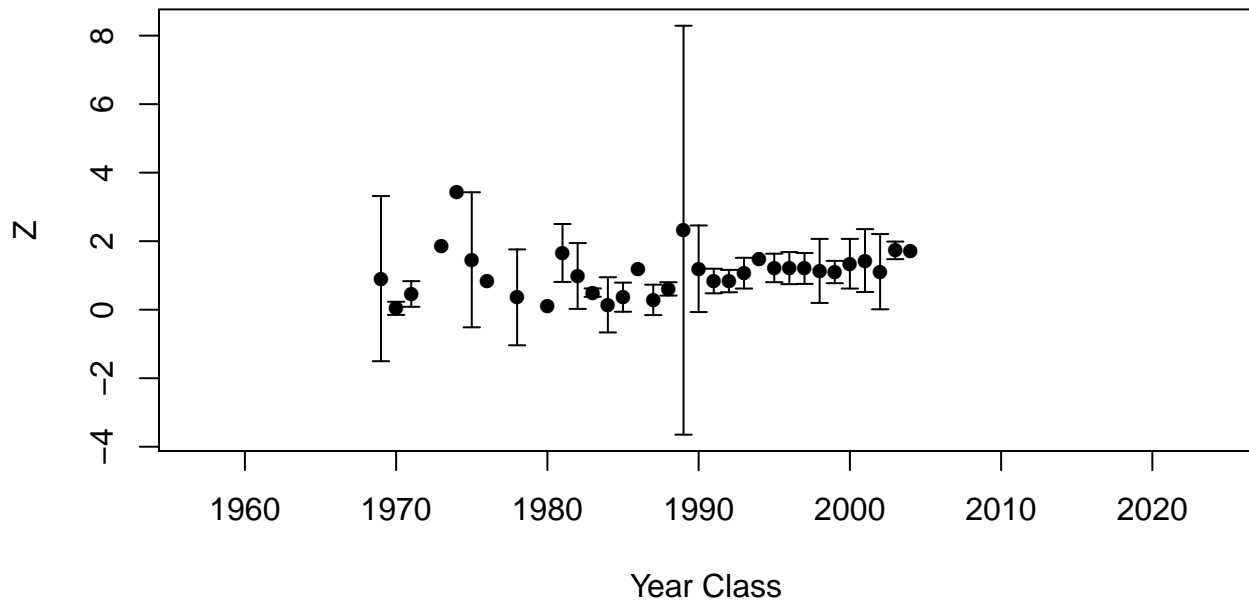
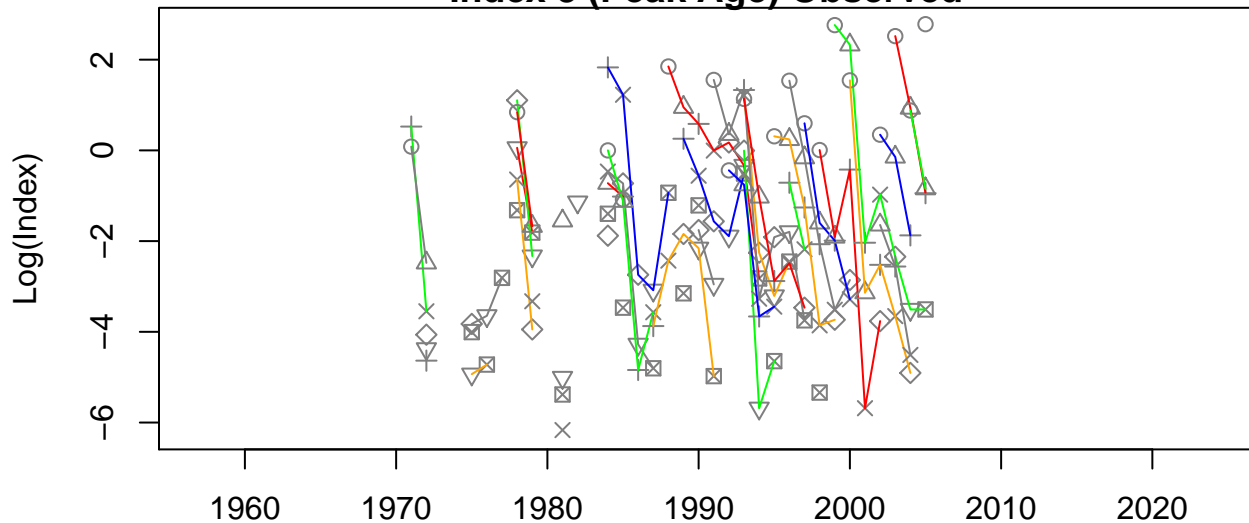
Index 2 (Peak Age) Observed



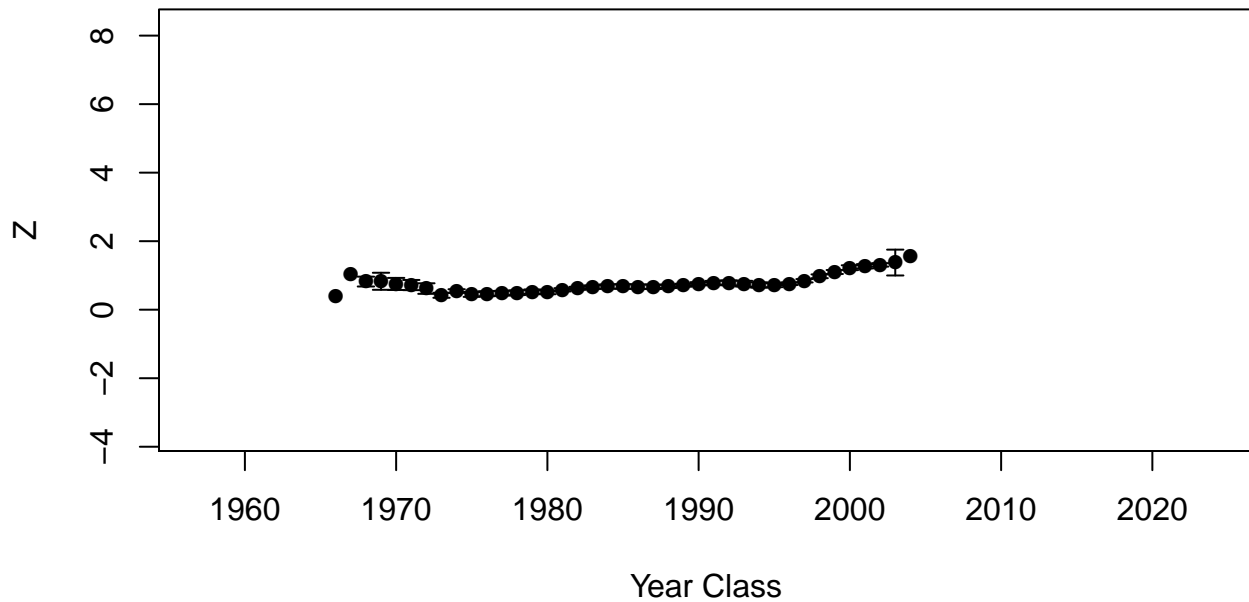
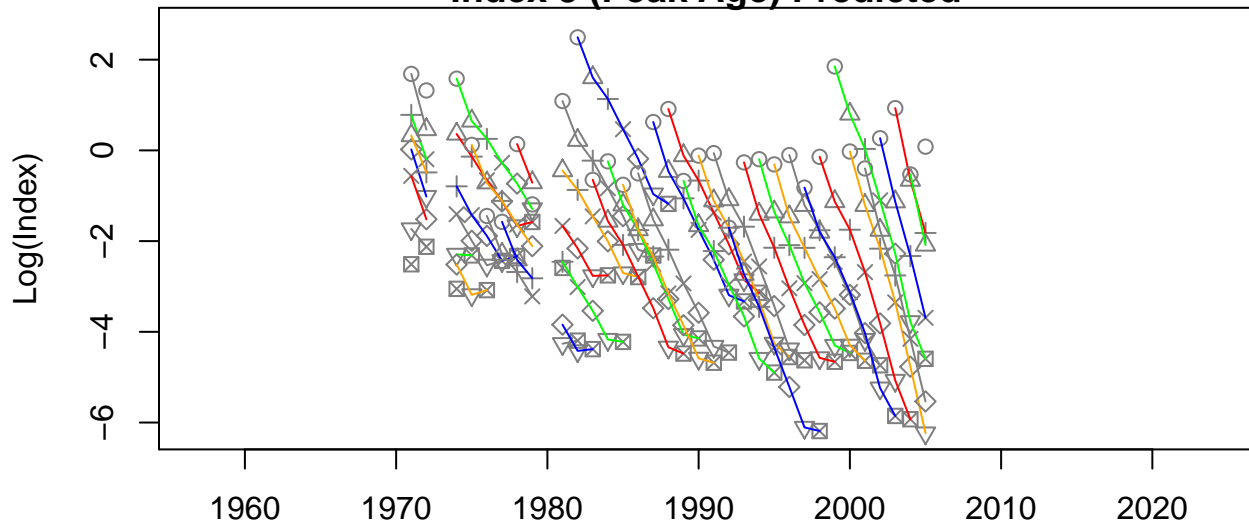
Index 2 (Peak Age) Predicted



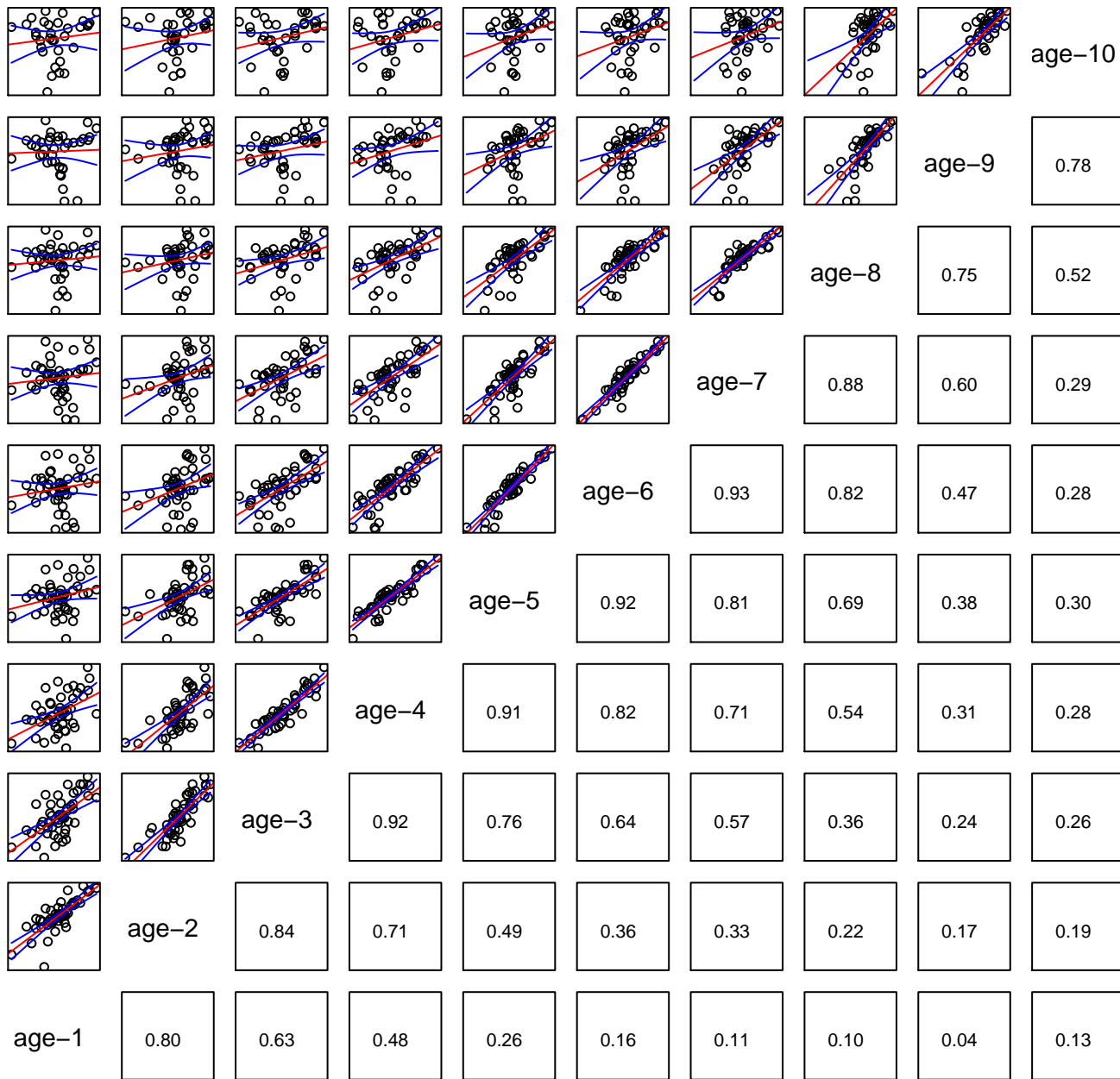
Index 3 (Peak Age) Observed



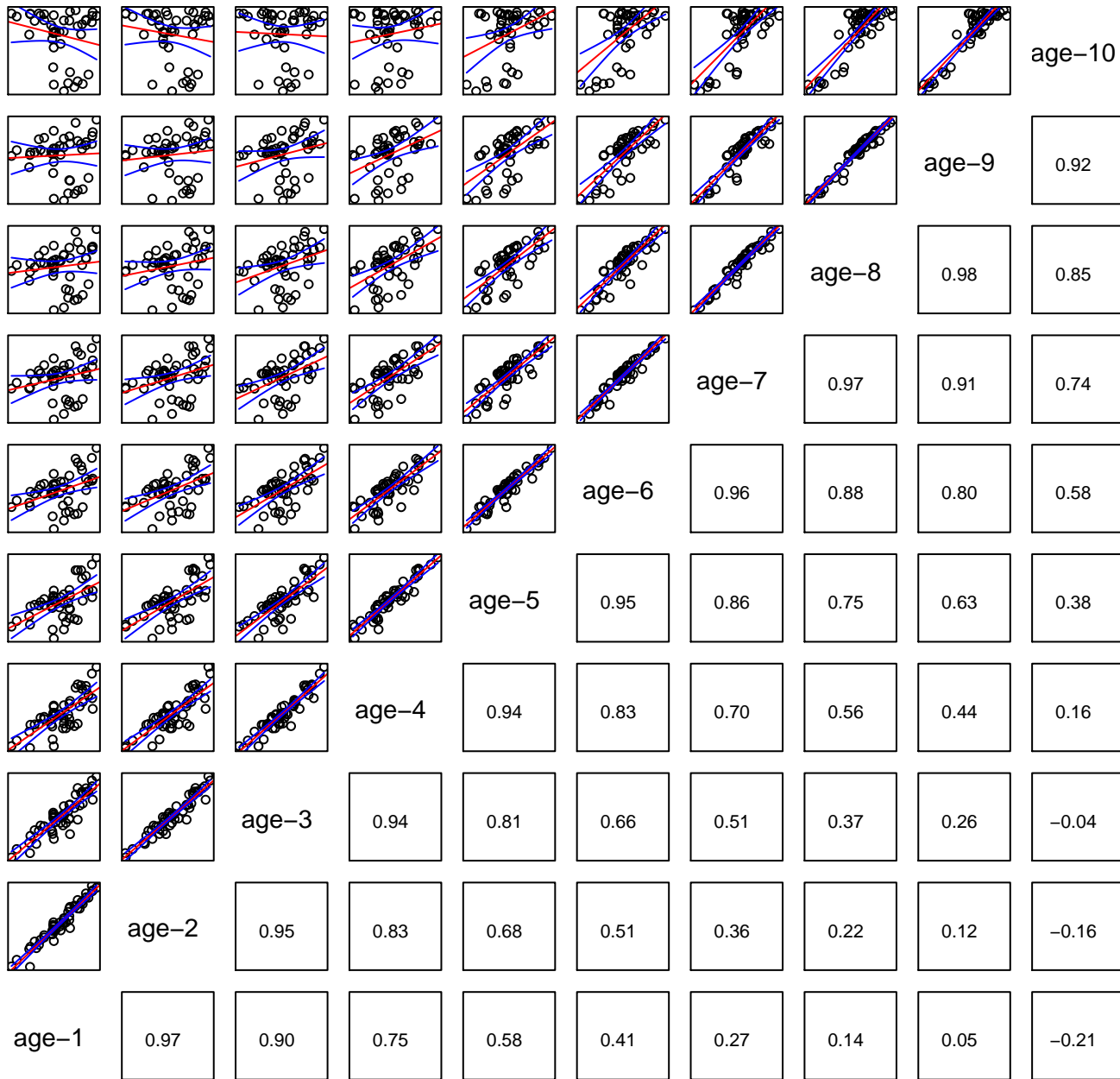
Index 3 (Peak Age) Predicted



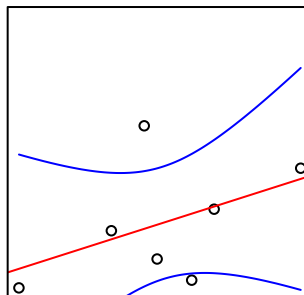
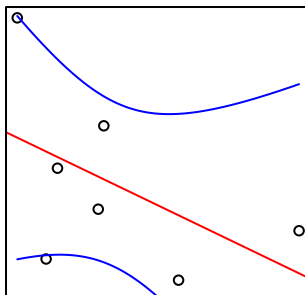
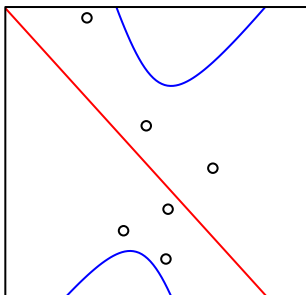
Catch Observed



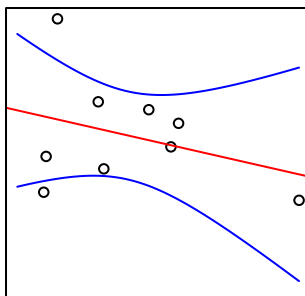
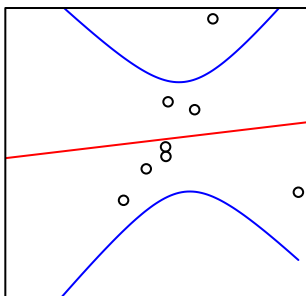
Catch Predicted



Index 2 (Spring Big 3+) Observed

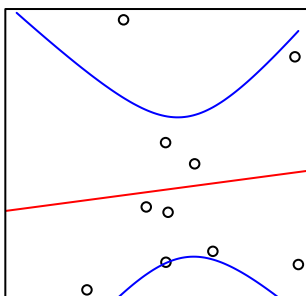


age-6



age-5

0.47



age-4

-0.34

-0.51

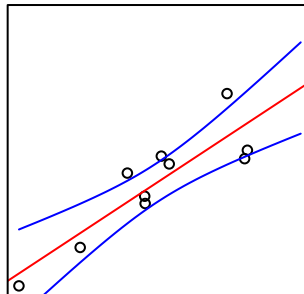
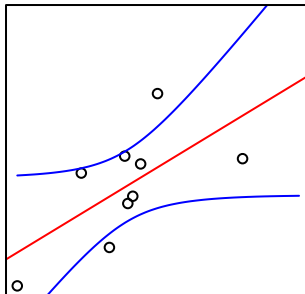
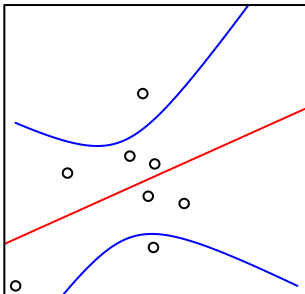
age-3

0.10

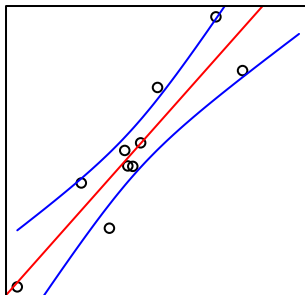
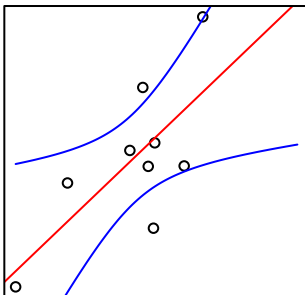
0.11

-0.54

Index 2 (Spring Big 3+) Predicted

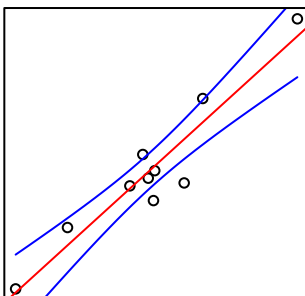


age-6



age-5

0.88



age-4

0.92

0.65

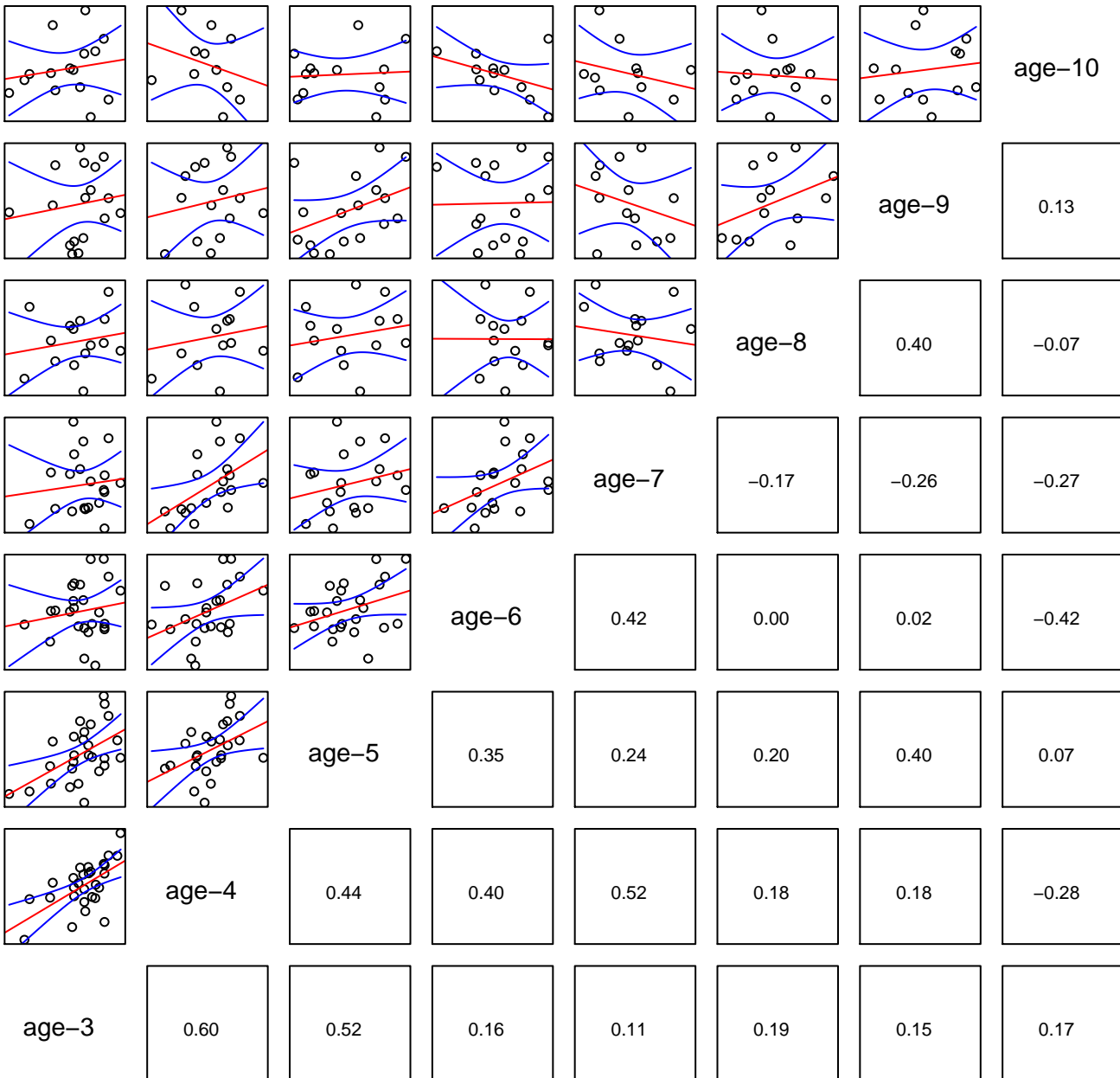
age-3

0.95

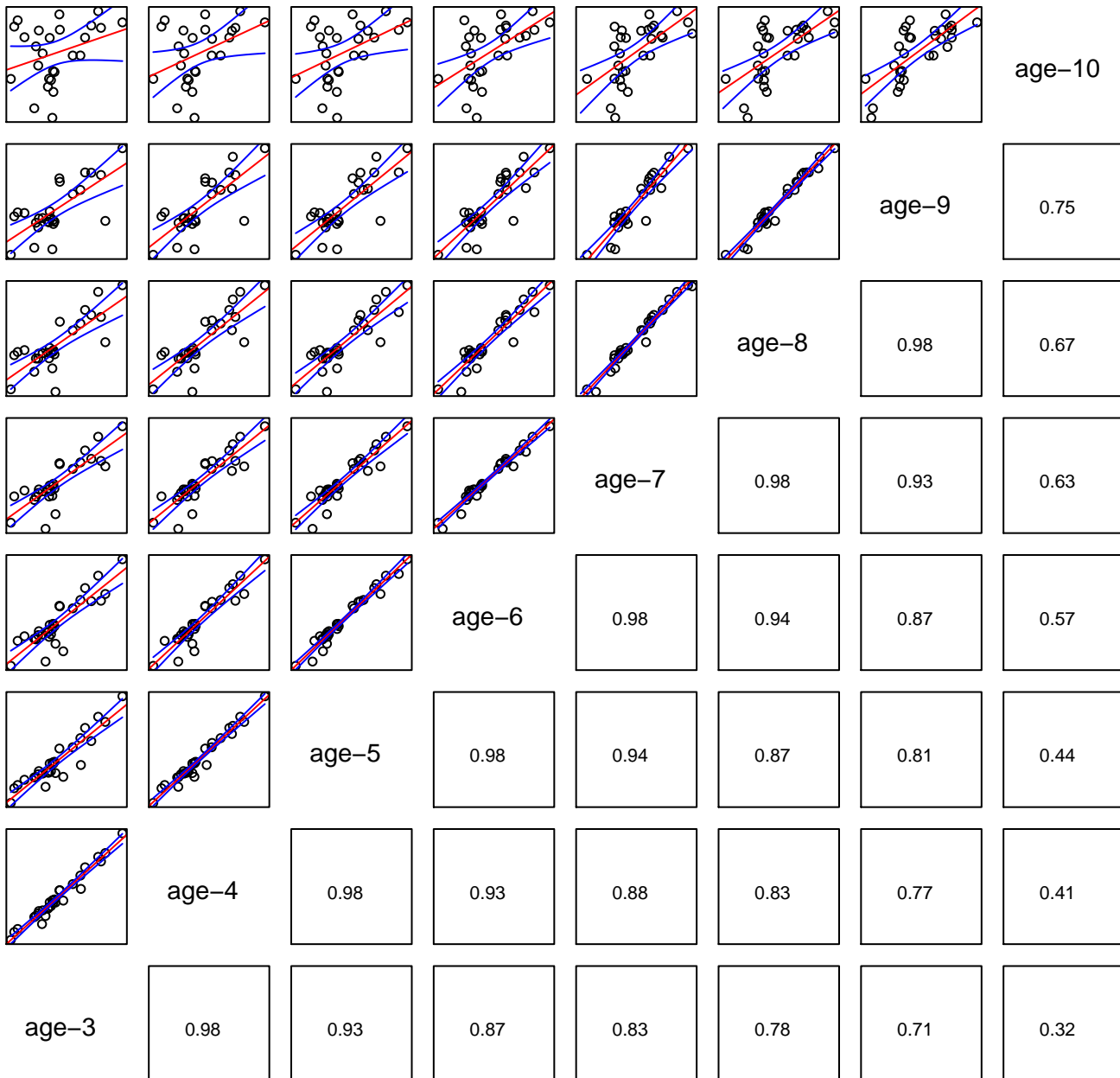
0.72

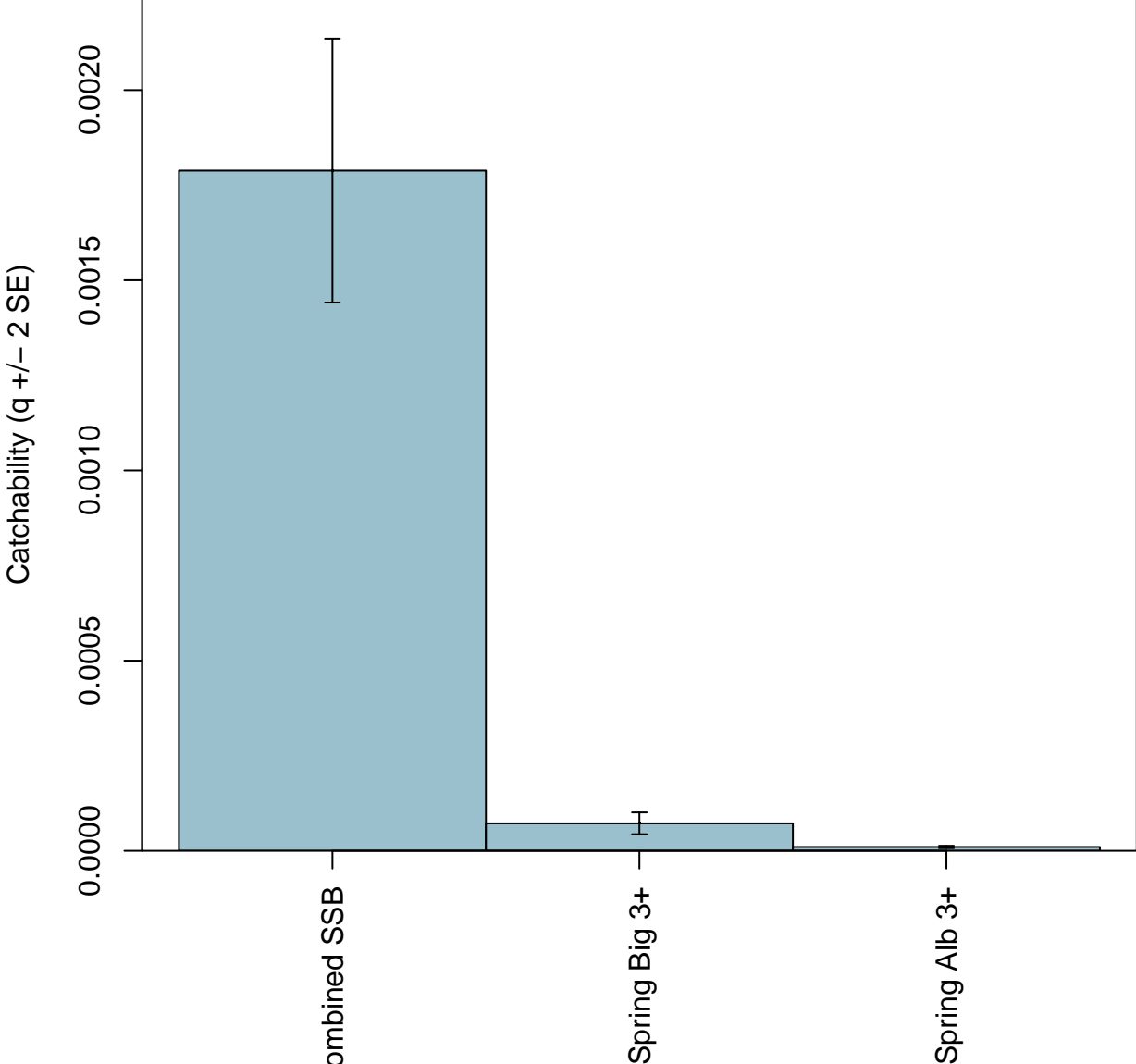
0.42

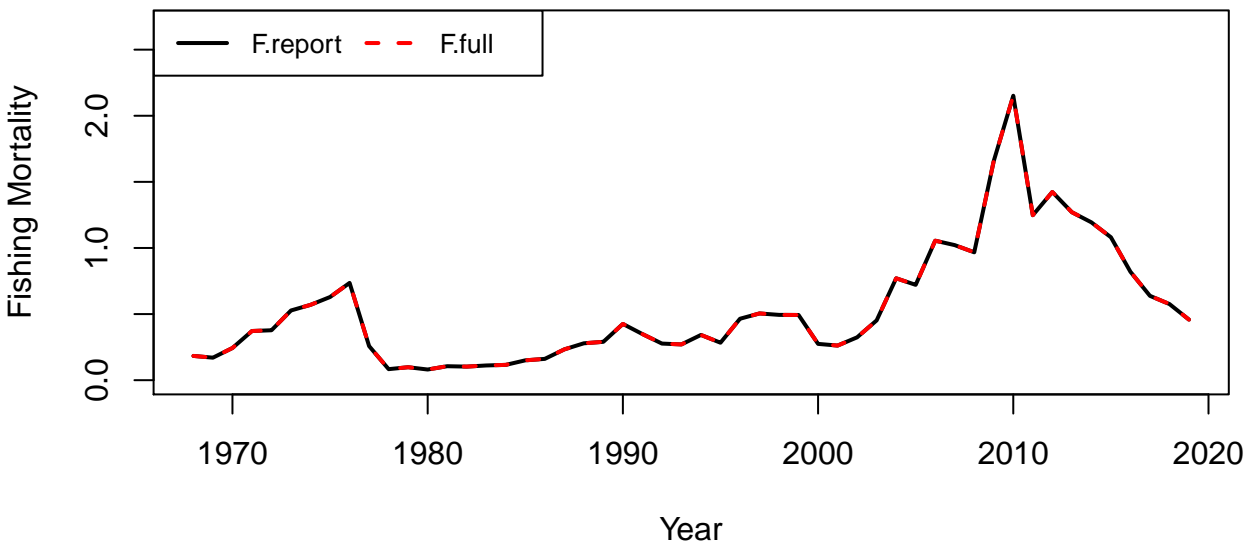
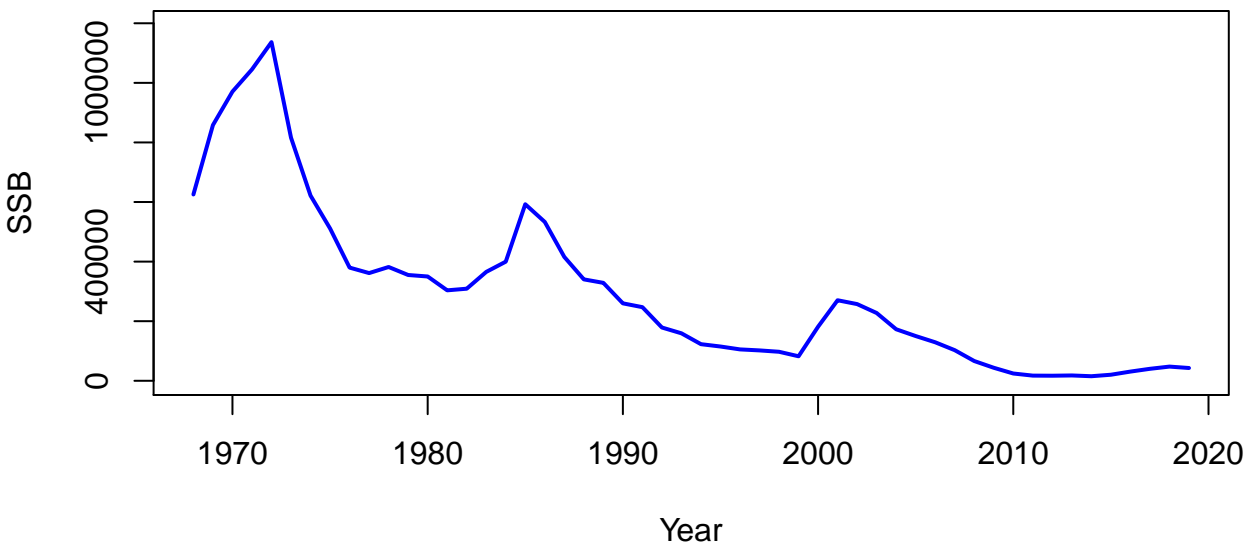
Index 3 (Spring Alb 3+) Observed



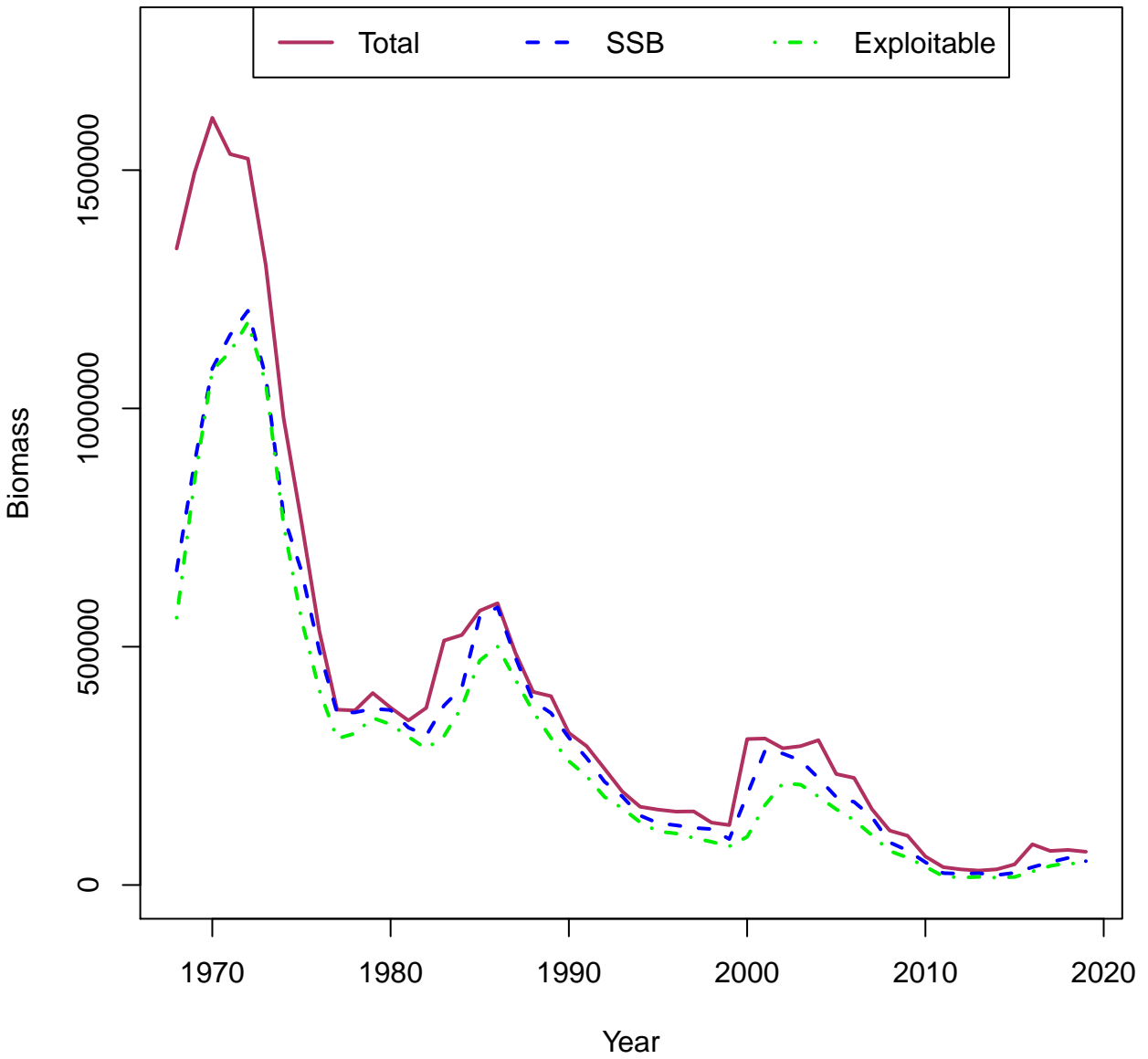
Index 3 (Spring Alb 3+) Predicted

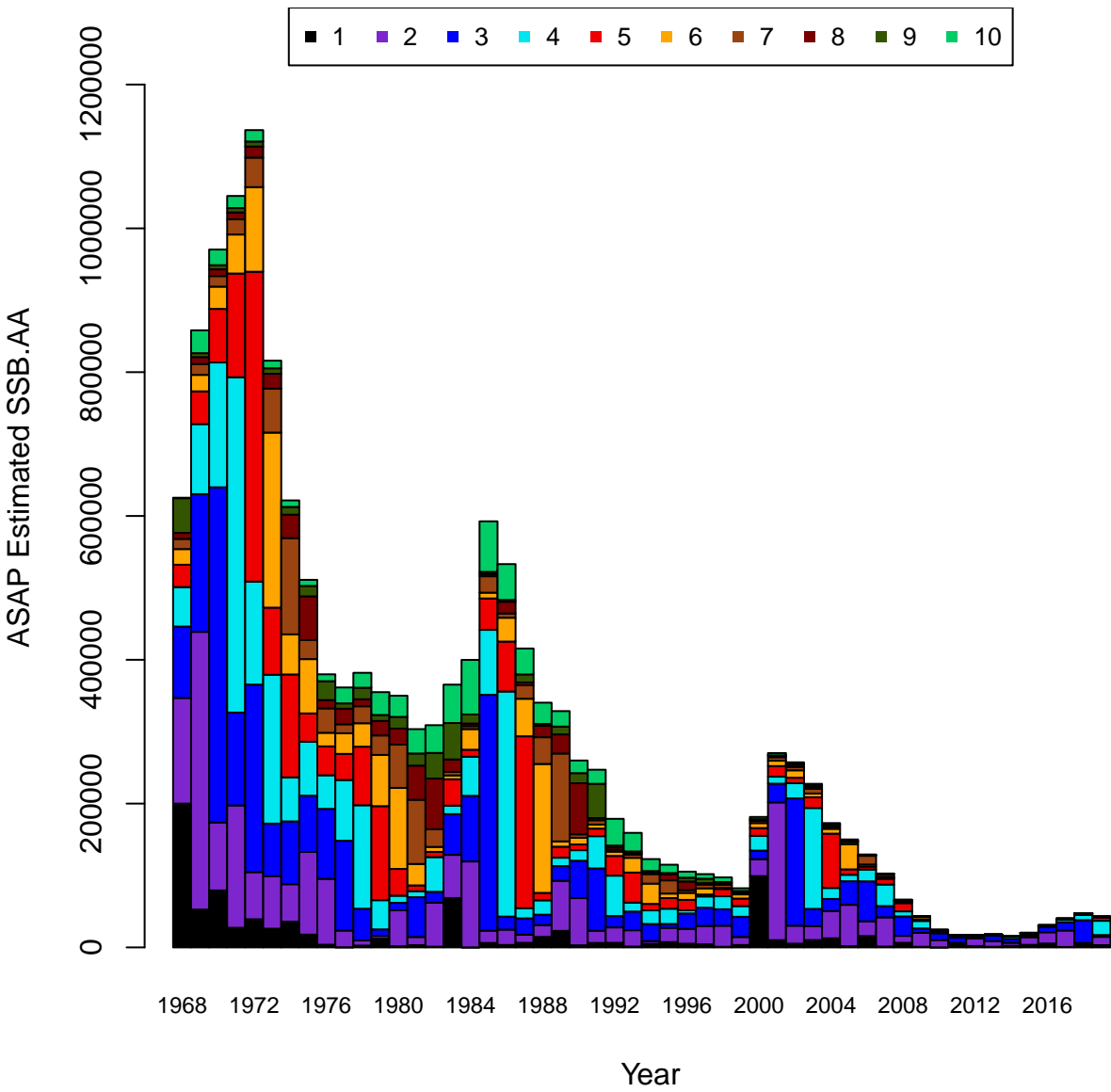


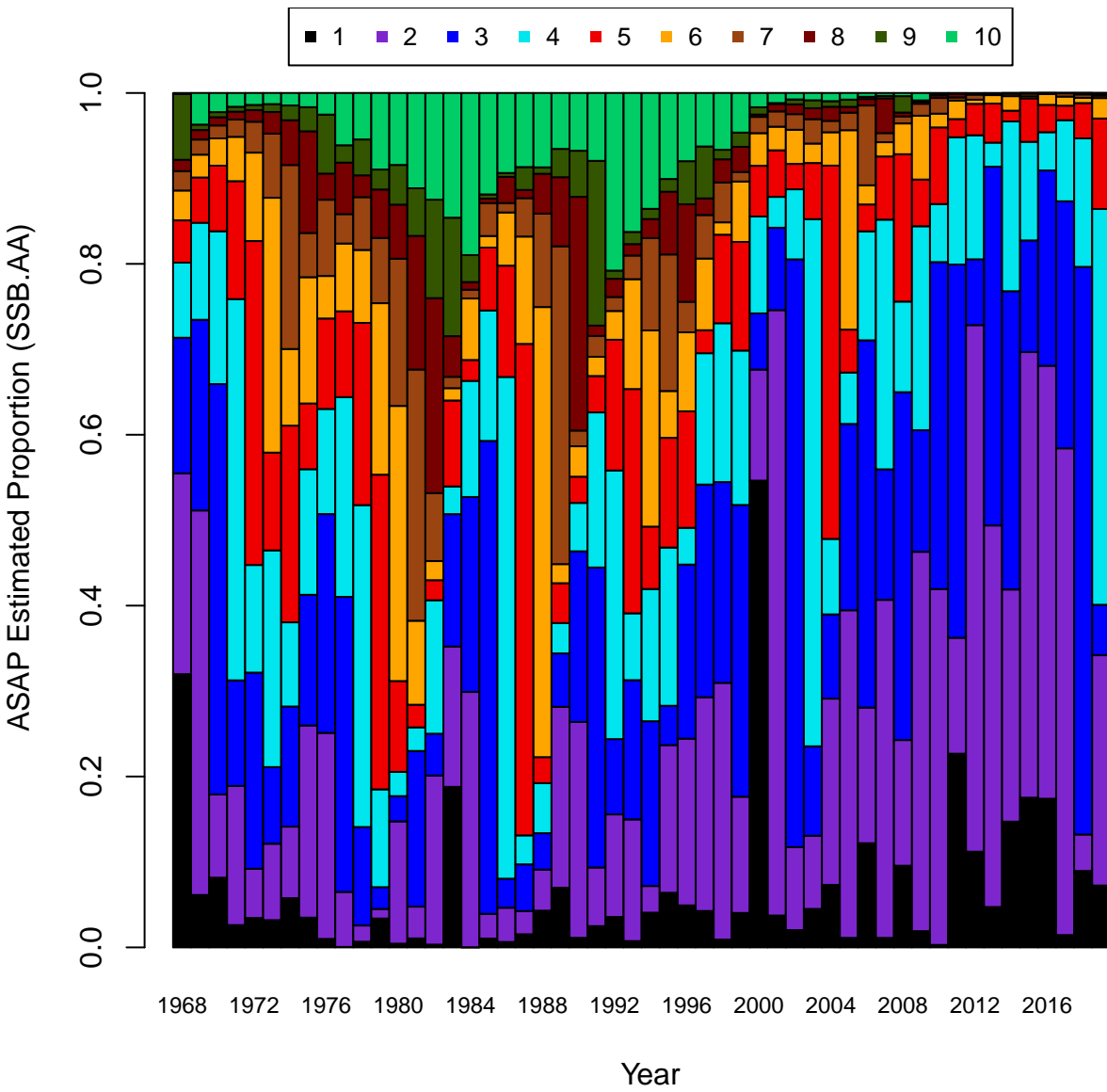




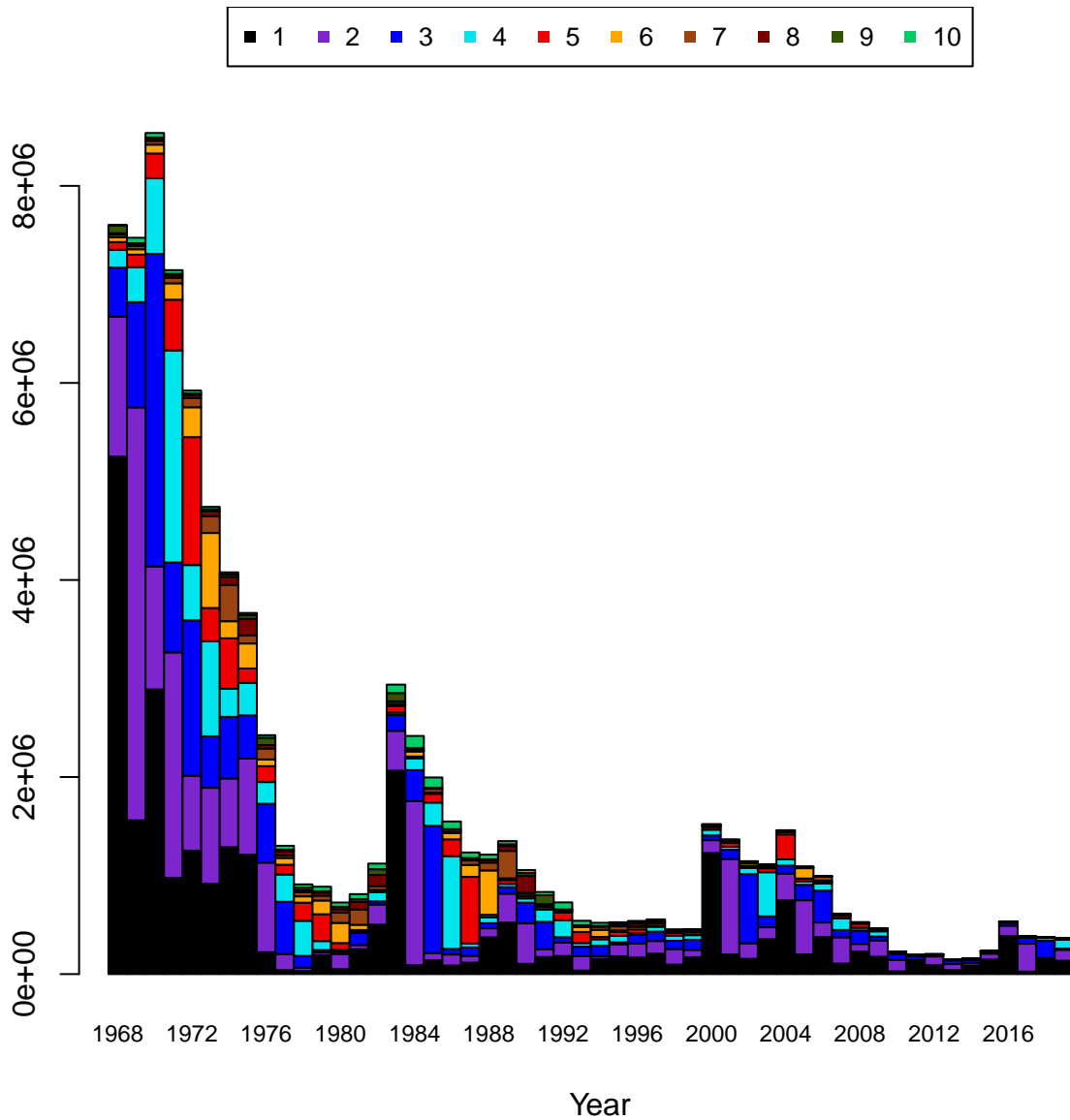
Comparison of January 1 Biomass

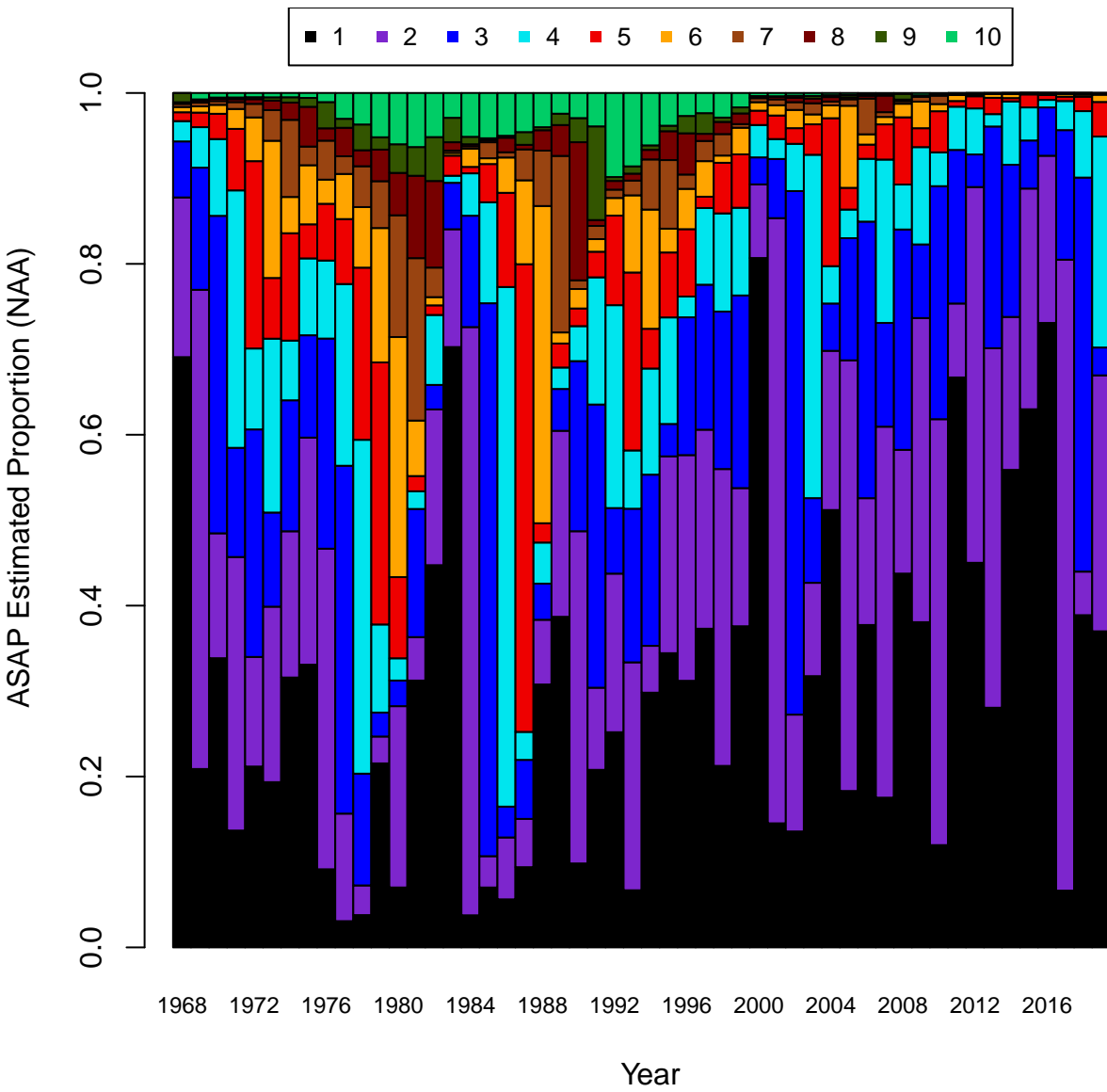


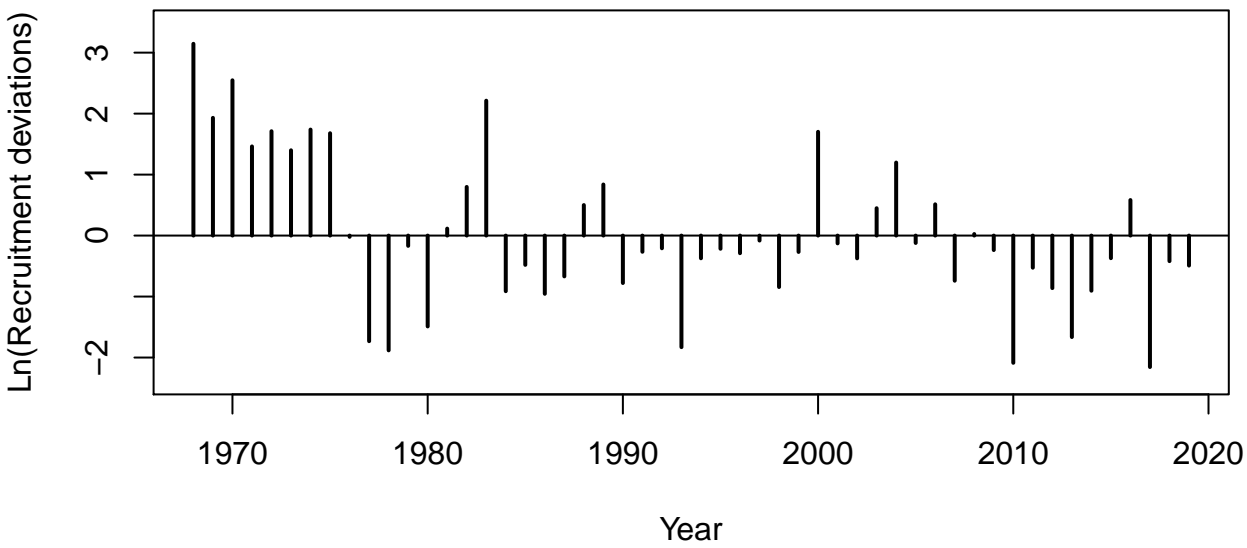
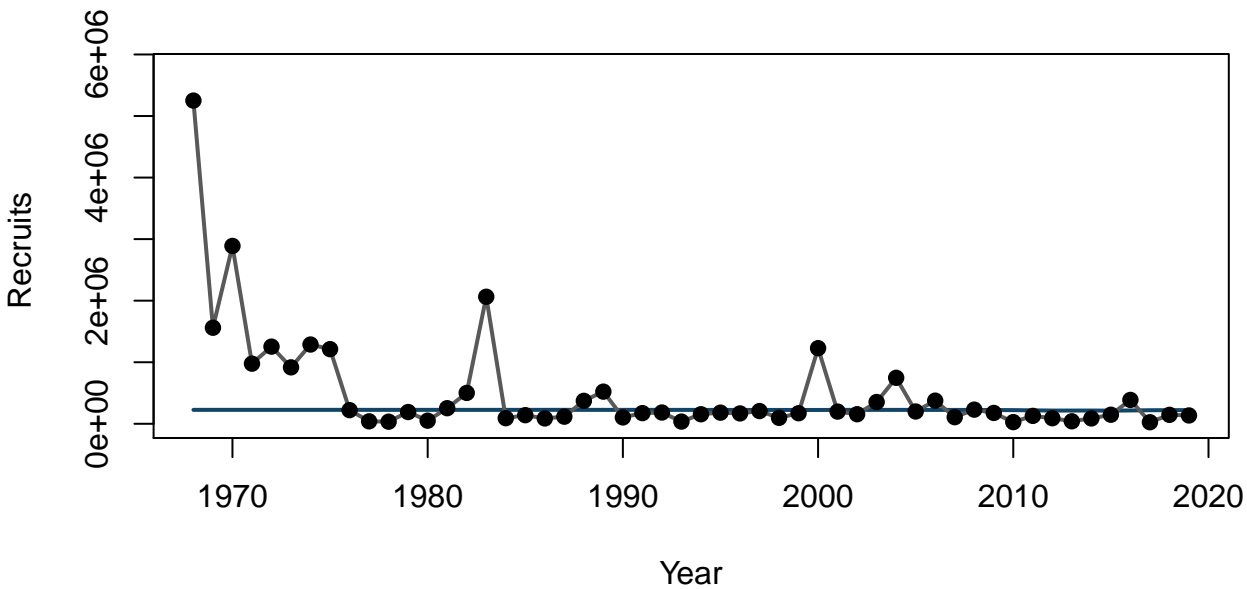


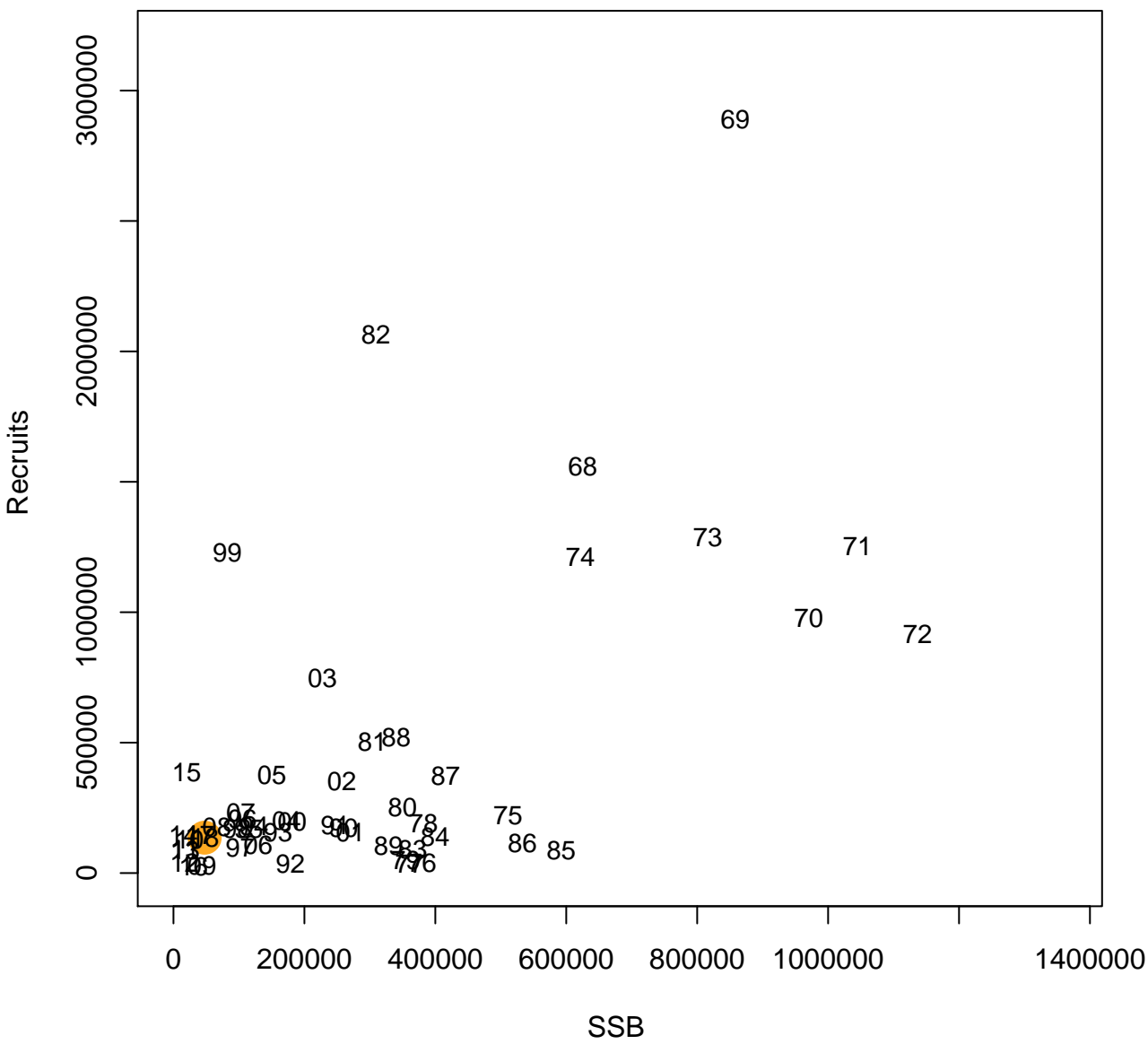


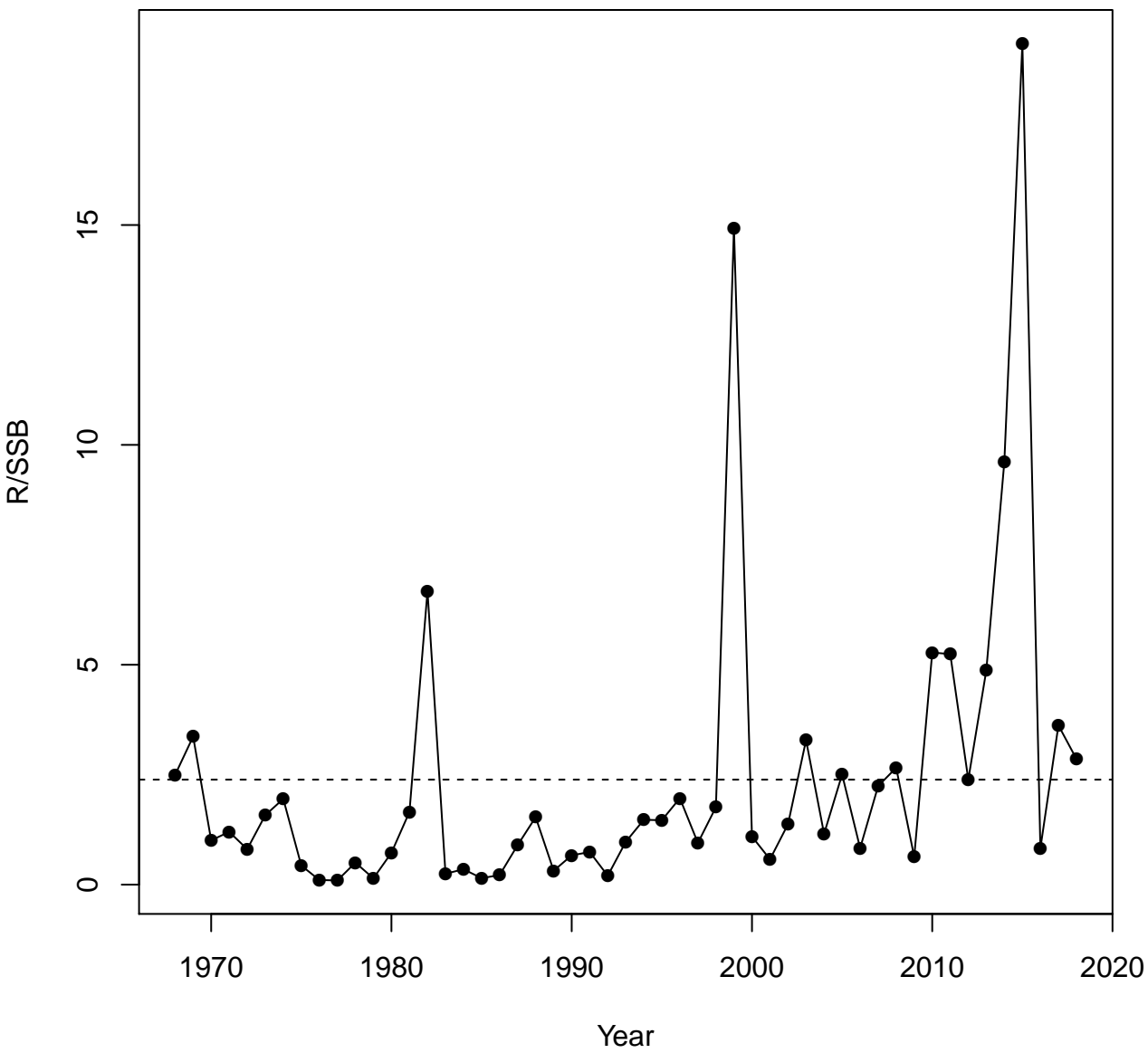
ASAP Estimated NAA

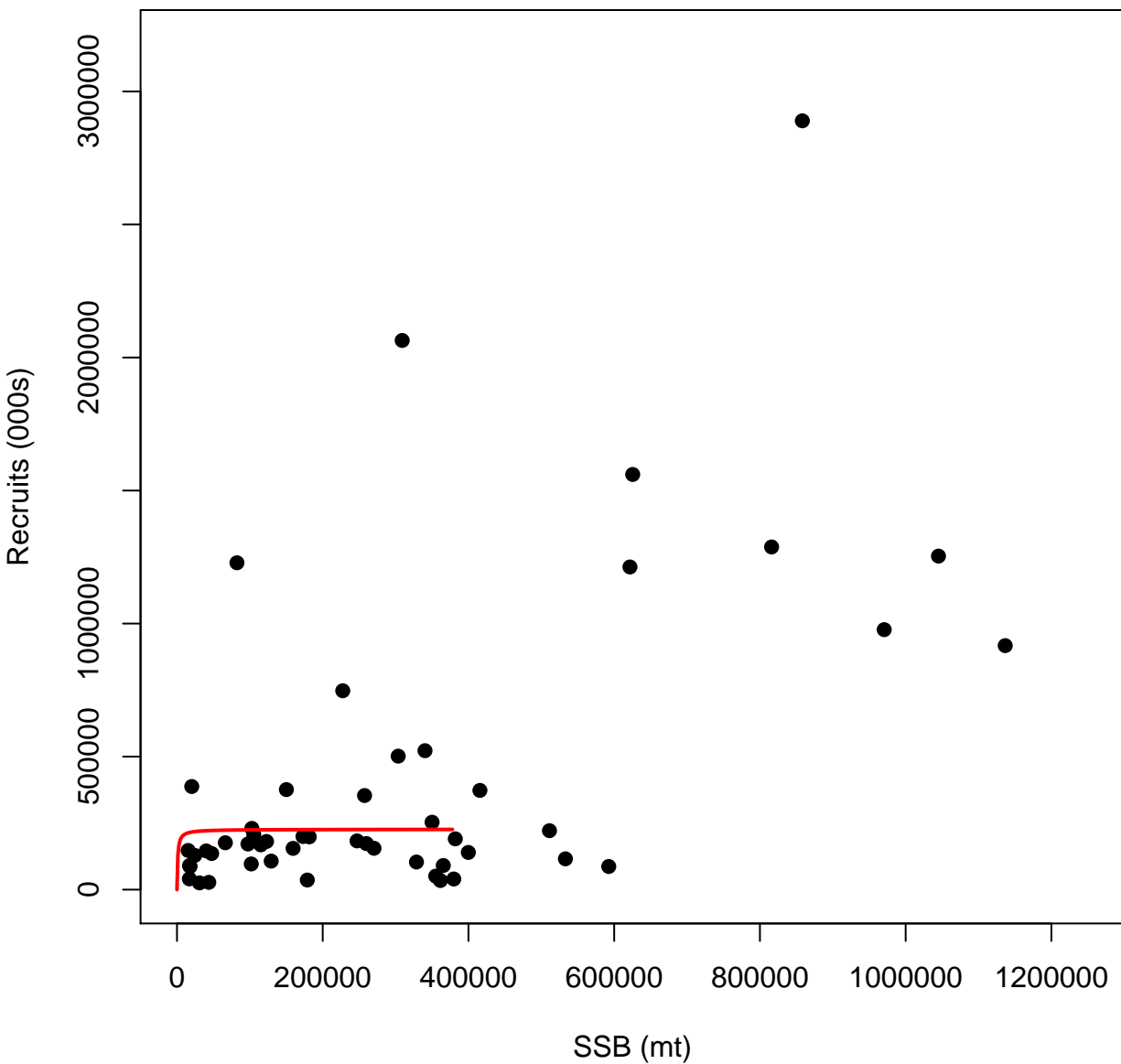


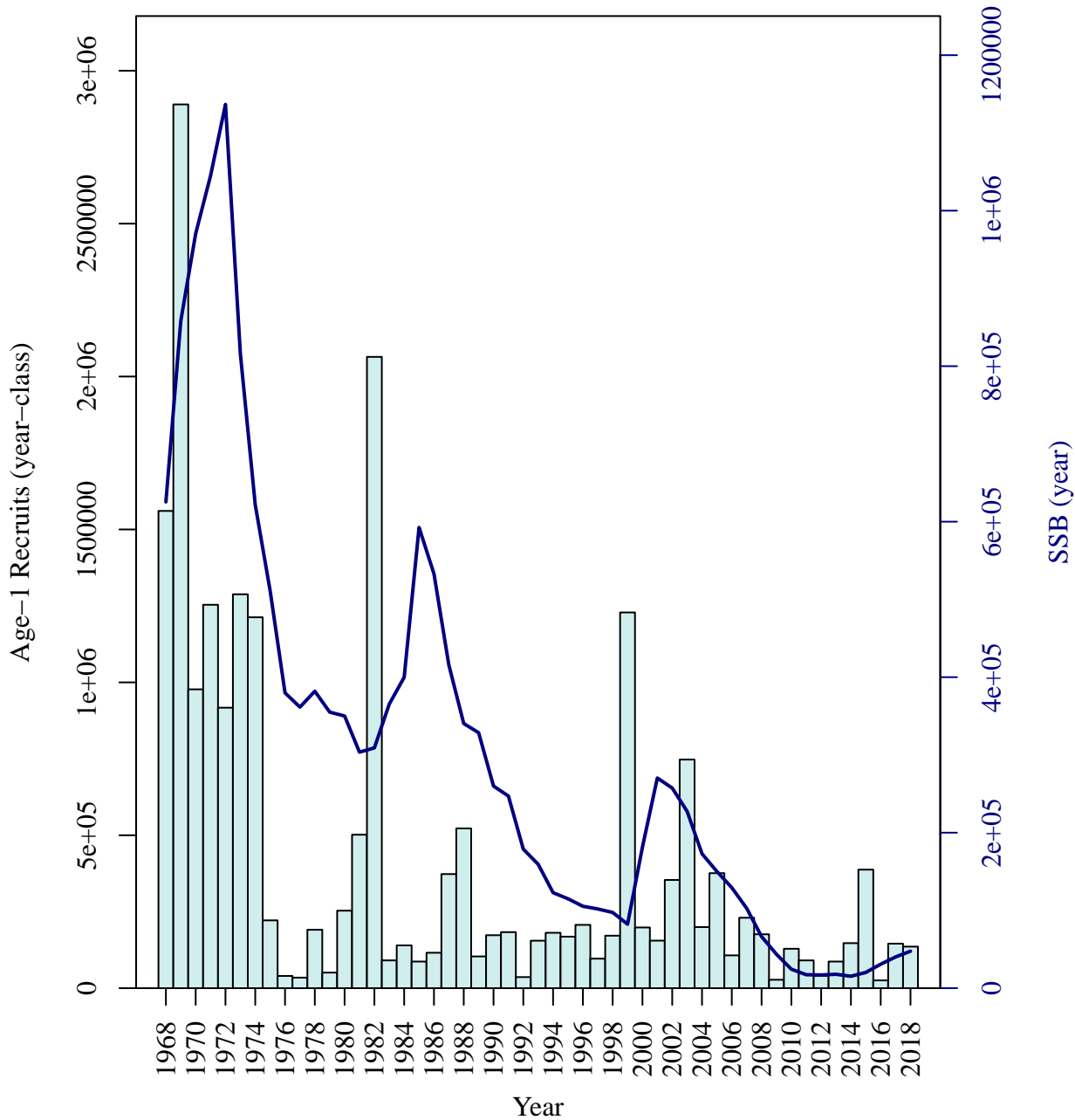




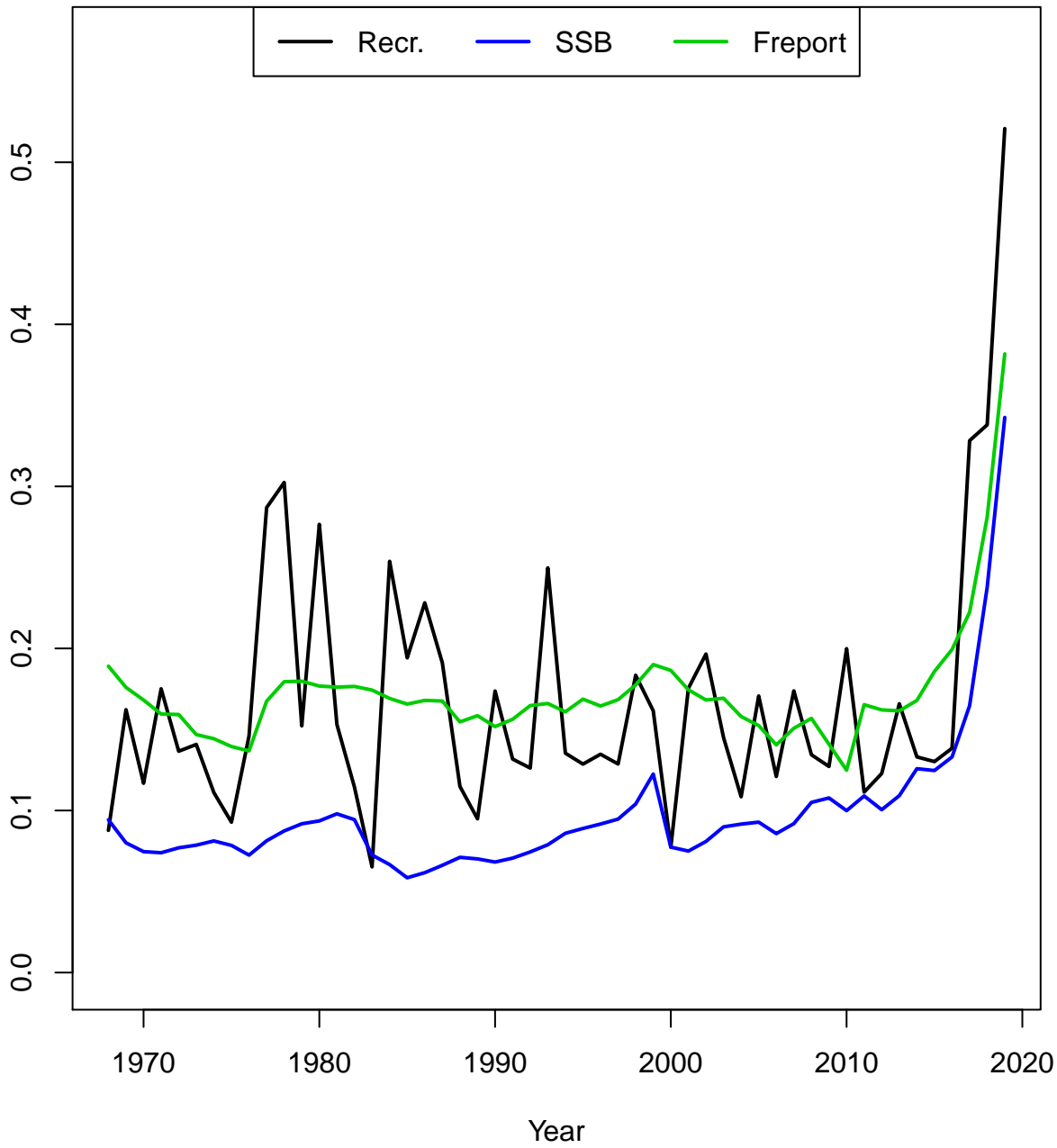




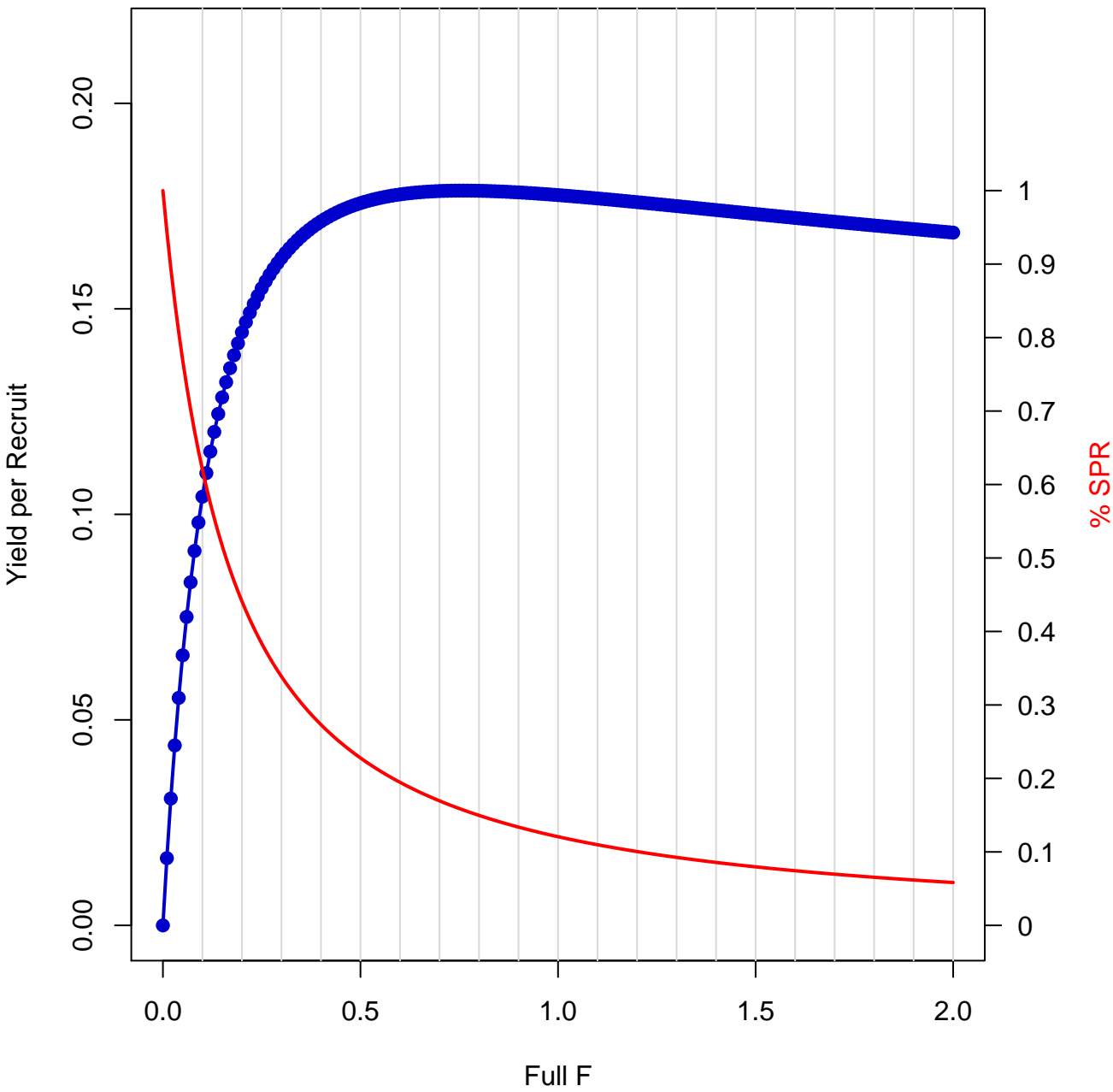




CV



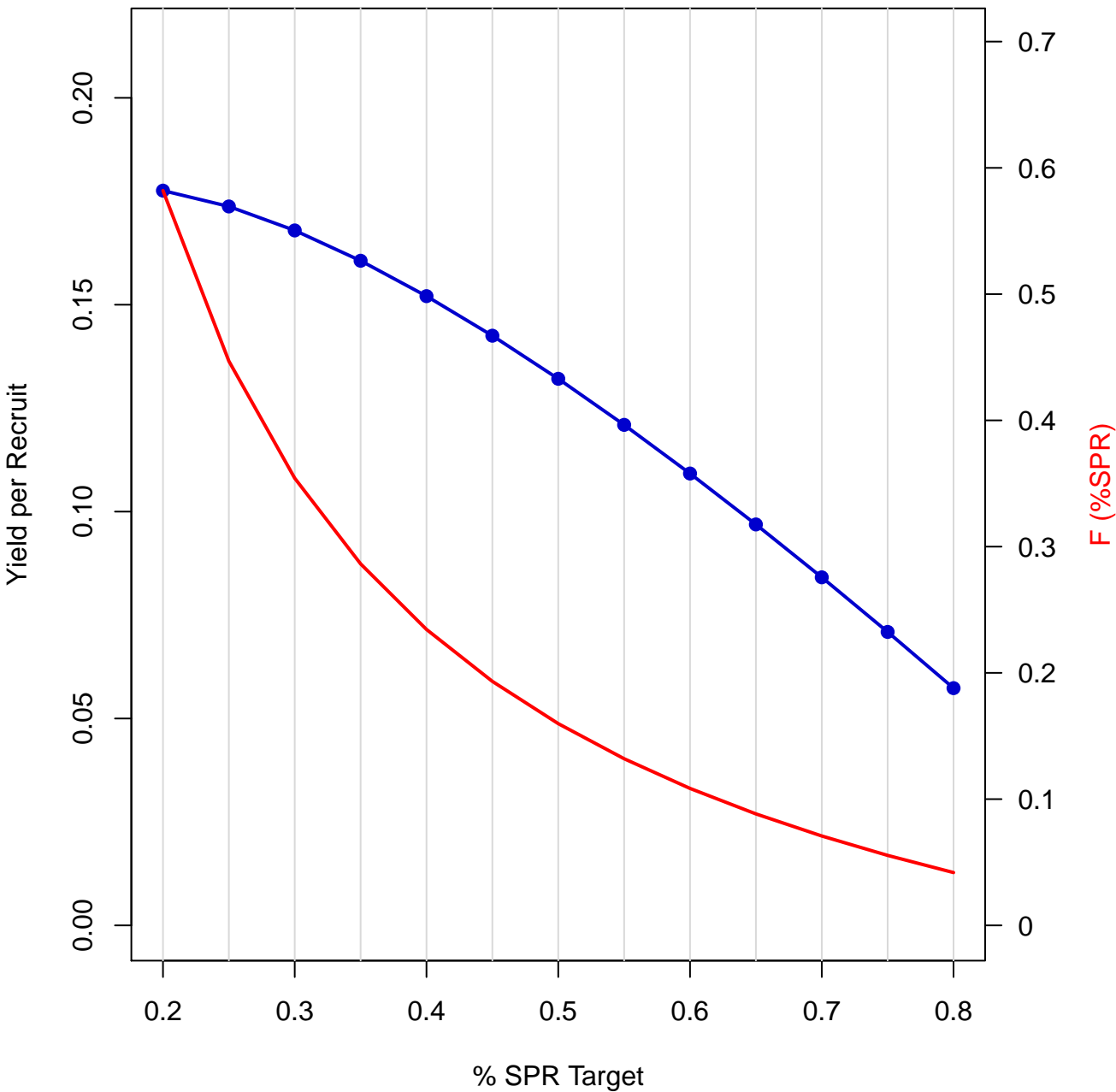
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.1676	0.3027	0.7	0.1787	0.1695
0.01	0.0164	0.9444	0.36	0.1684	0.2963	0.71	0.1787	0.1673
0.02	0.0309	0.8943	0.37	0.1692	0.2902	0.72	0.1787	0.1652
0.03	0.0438	0.8487	0.38	0.17	0.2843	0.73	0.1787	0.1631
0.04	0.0553	0.8072	0.39	0.1706	0.2787	0.74	0.1788	0.161
0.05	0.0657	0.7693	0.4	0.1713	0.2732	0.75	0.1788	0.159
0.06	0.0751	0.7345	0.41	0.1719	0.2679	0.76	0.1788	0.1571
0.07	0.0835	0.7025	0.42	0.1724	0.2628	0.77	0.1788	0.1552
0.08	0.0911	0.6729	0.43	0.1729	0.2579	0.78	0.1788	0.1533
0.09	0.098	0.6455	0.44	0.1734	0.2532	0.79	0.1787	0.1515
0.1	0.1043	0.6201	0.45	0.1739	0.2486	0.8	0.1787	0.1497
0.11	0.11	0.5965	0.46	0.1743	0.2442	0.81	0.1787	0.1479
0.12	0.1153	0.5745	0.47	0.1747	0.2399	0.82	0.1787	0.1462
0.13	0.1201	0.5539	0.48	0.1751	0.2358	0.83	0.1786	0.1446
0.14	0.1244	0.5347	0.49	0.1754	0.2317	0.84	0.1786	0.1429
0.15	0.1285	0.5166	0.5	0.1757	0.2278	0.85	0.1786	0.1413
0.16	0.1322	0.4997	0.51	0.176	0.2241	0.86	0.1785	0.1397
0.17	0.1356	0.4837	0.52	0.1763	0.2204	0.87	0.1785	0.1382
0.18	0.1387	0.4687	0.53	0.1765	0.2169	0.88	0.1784	0.1367
0.19	0.1416	0.4545	0.54	0.1768	0.2134	0.89	0.1784	0.1352
0.2	0.1443	0.441	0.55	0.177	0.2101	0.9	0.1783	0.1338
0.21	0.1468	0.4283	0.56	0.1772	0.2068	0.91	0.1783	0.1323
0.22	0.1491	0.4163	0.57	0.1774	0.2037	0.92	0.1782	0.1309
0.23	0.1512	0.4049	0.58	0.1775	0.2006	0.93	0.1782	0.1296
0.24	0.1532	0.394	0.59	0.1777	0.1976	0.94	0.1781	0.1282
0.25	0.155	0.3837	0.6	0.1778	0.1947	0.95	0.178	0.1269
0.26	0.1567	0.3738	0.61	0.178	0.1919	0.96	0.178	0.1256
0.27	0.1583	0.3644	0.62	0.1781	0.1891	0.97	0.1779	0.1243
0.28	0.1597	0.3555	0.63	0.1782	0.1865	0.98	0.1778	0.1231
0.29	0.1611	0.3469	0.64	0.1783	0.1838	0.99	0.1778	0.1219
0.3	0.1624	0.3387	0.65	0.1784	0.1813	1	0.1777	0.1207
0.31	0.1636	0.3309	0.66	0.1784	0.1788	1.01	0.1776	0.1195
0.32	0.1647	0.3234	0.67	0.1785	0.1764	1.02	0.1775	0.1183
0.33	0.1657	0.3162	0.68	0.1786	0.174	1.03	0.1774	0.1172
0.34	0.1667	0.3093	0.69	0.1786	0.1717	1.04	0.1774	0.1161

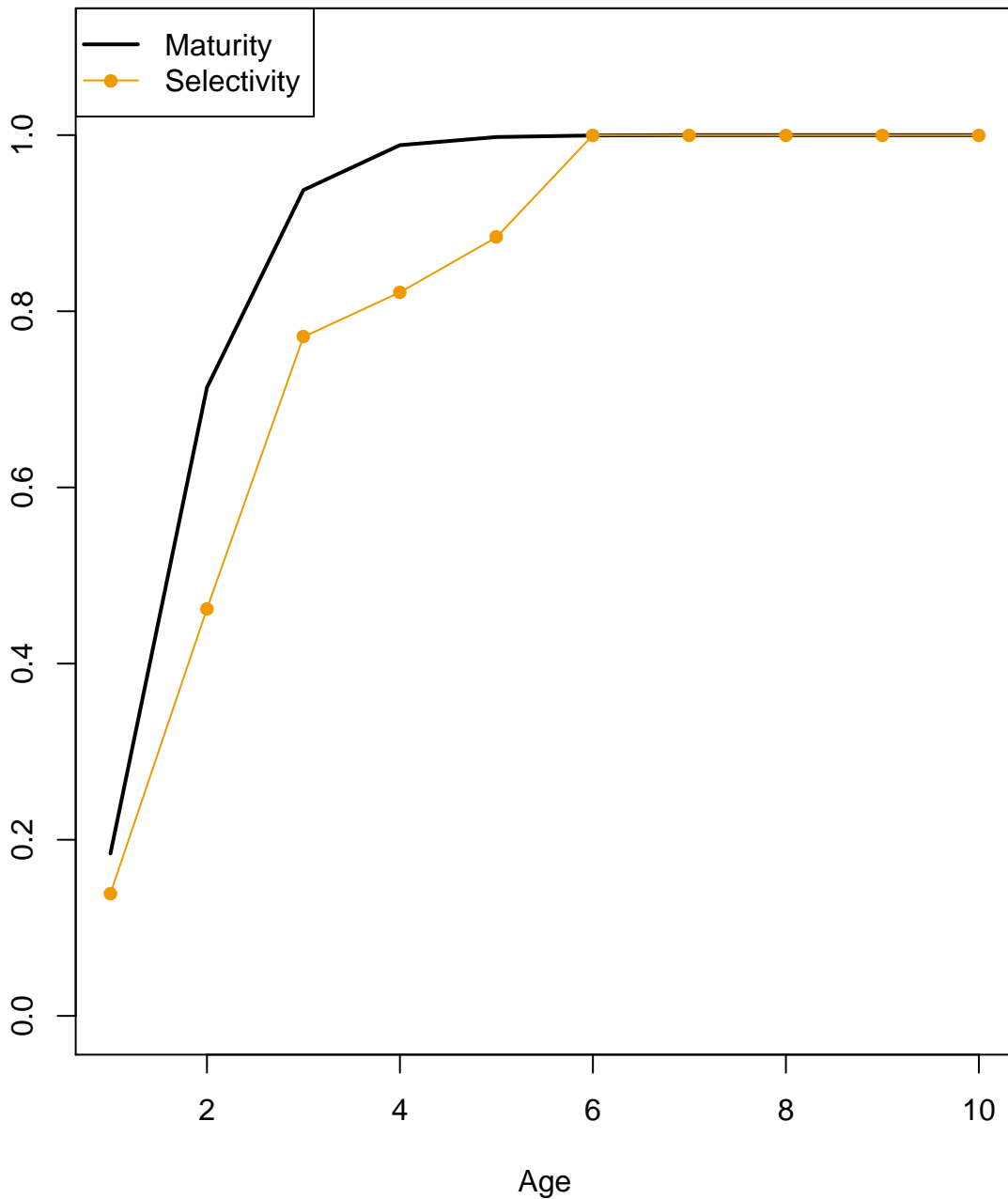
SPR Target Reference Points (Years Avg = 5)



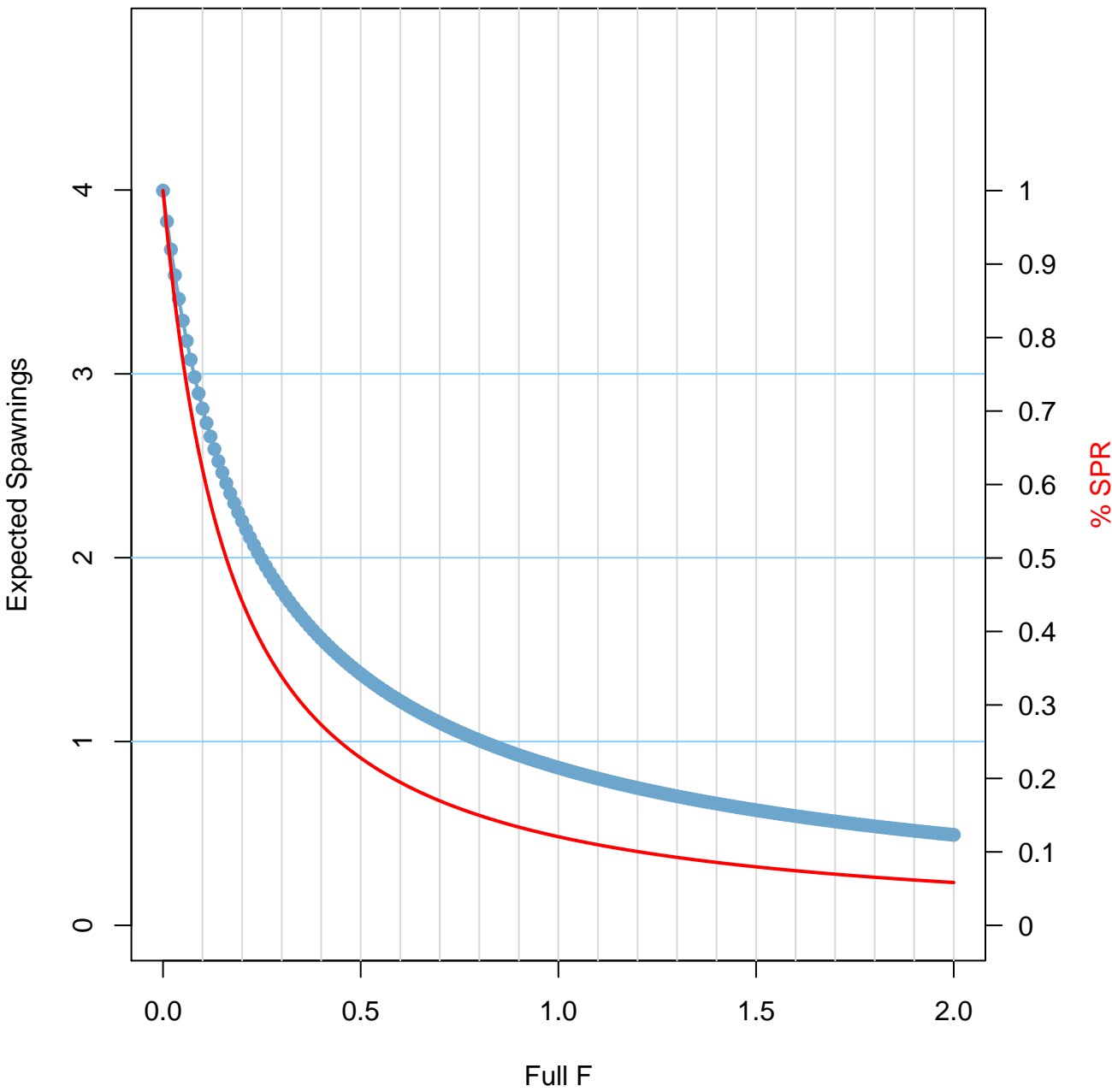
SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	0.582	0.1776
0.25	0.4469	0.1738
0.3	0.3542	0.168
0.35	0.2863	0.1606
0.4	0.2344	0.1521
0.45	0.1933	0.1425
0.5	0.1598	0.1321
0.55	0.132	0.121
0.6	0.1085	0.1092
0.65	0.0883	0.0969
0.7	0.0708	0.0841
0.75	0.0554	0.0709
0.8	0.0418	0.0573

Selectivity or Maturity at age



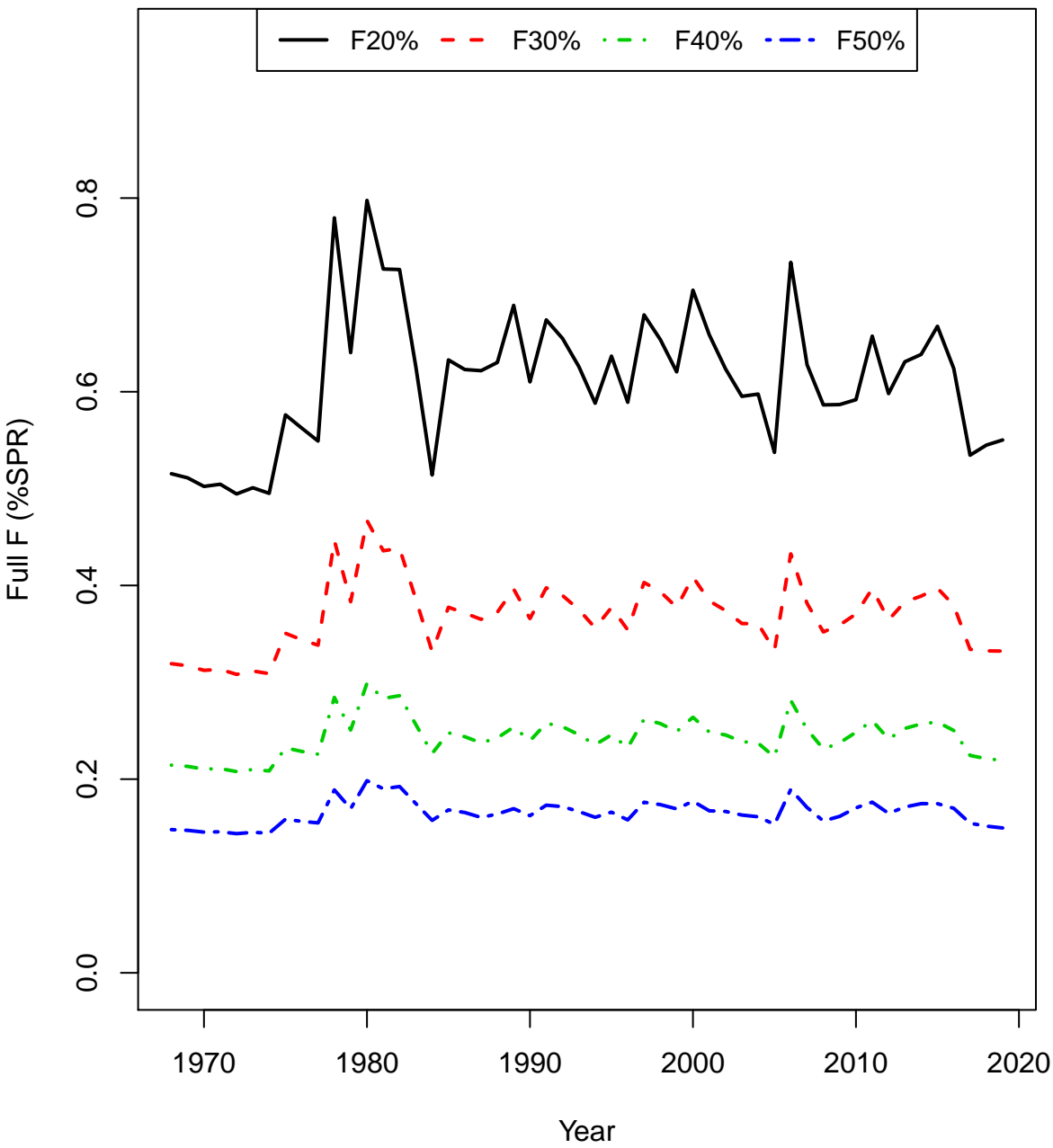
Expected Spawns and SPR Reference Points (Years Avg = 5)



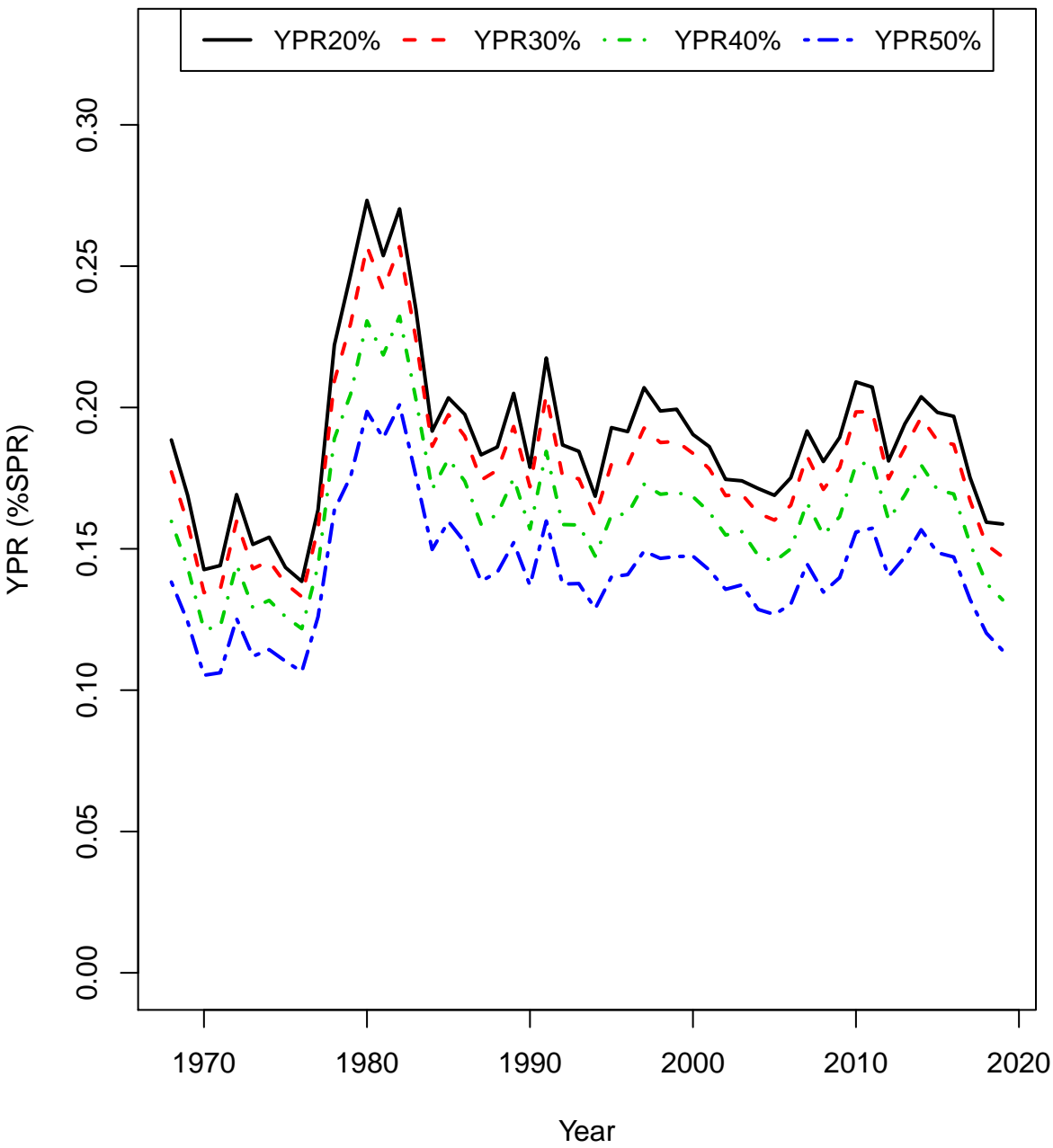
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	3.9968	1	0.35	1.679	0.3027	0.7	1.1028	0.1695
0.01	3.8292	0.9444	0.36	1.6535	0.2963	0.71	1.0923	0.1673
0.02	3.6764	0.8943	0.37	1.6289	0.2902	0.72	1.082	0.1652
0.03	3.5365	0.8487	0.38	1.6051	0.2843	0.73	1.0719	0.1631
0.04	3.4079	0.8072	0.39	1.582	0.2787	0.74	1.062	0.161
0.05	3.2893	0.7693	0.4	1.5596	0.2732	0.75	1.0523	0.159
0.06	3.1794	0.7345	0.41	1.5379	0.2679	0.76	1.0428	0.1571
0.07	3.0774	0.7025	0.42	1.5168	0.2628	0.77	1.0335	0.1552
0.08	2.9824	0.6729	0.43	1.4963	0.2579	0.78	1.0243	0.1533
0.09	2.8937	0.6455	0.44	1.4765	0.2532	0.79	1.0153	0.1515
0.1	2.8107	0.6201	0.45	1.4571	0.2486	0.8	1.0064	0.1497
0.11	2.7327	0.5965	0.46	1.4383	0.2442	0.81	0.9978	0.1479
0.12	2.6594	0.5745	0.47	1.4201	0.2399	0.82	0.9892	0.1462
0.13	2.5904	0.5539	0.48	1.4023	0.2358	0.83	0.9808	0.1446
0.14	2.5251	0.5347	0.49	1.3849	0.2317	0.84	0.9726	0.1429
0.15	2.4635	0.5166	0.5	1.3681	0.2278	0.85	0.9645	0.1413
0.16	2.405	0.4997	0.51	1.3516	0.2241	0.86	0.9565	0.1397
0.17	2.3496	0.4837	0.52	1.3356	0.2204	0.87	0.9487	0.1382
0.18	2.2969	0.4687	0.53	1.3199	0.2169	0.88	0.941	0.1367
0.19	2.2467	0.4545	0.54	1.3047	0.2134	0.89	0.9334	0.1352
0.2	2.199	0.441	0.55	1.2898	0.2101	0.9	0.926	0.1338
0.21	2.1534	0.4283	0.56	1.2753	0.2068	0.91	0.9186	0.1323
0.22	2.1098	0.4163	0.57	1.2611	0.2037	0.92	0.9114	0.1309
0.23	2.0681	0.4049	0.58	1.2472	0.2006	0.93	0.9043	0.1296
0.24	2.0282	0.394	0.59	1.2337	0.1976	0.94	0.8974	0.1282
0.25	1.9899	0.3837	0.6	1.2204	0.1947	0.95	0.8905	0.1269
0.26	1.9532	0.3738	0.61	1.2075	0.1919	0.96	0.8837	0.1256
0.27	1.918	0.3644	0.62	1.1948	0.1891	0.97	0.877	0.1243
0.28	1.8841	0.3555	0.63	1.1825	0.1865	0.98	0.8705	0.1231
0.29	1.8515	0.3469	0.64	1.1703	0.1838	0.99	0.864	0.1219
0.3	1.8201	0.3387	0.65	1.1585	0.1813	1	0.8576	0.1207
0.31	1.7898	0.3309	0.66	1.1469	0.1788	1.01	0.8514	0.1195
0.32	1.7607	0.3234	0.67	1.1355	0.1764	1.02	0.8452	0.1183
0.33	1.7325	0.3162	0.68	1.1244	0.174	1.03	0.8391	0.1172
0.34	1.7053	0.3093	0.69	1.1135	0.1717	1.04	0.8331	0.1161

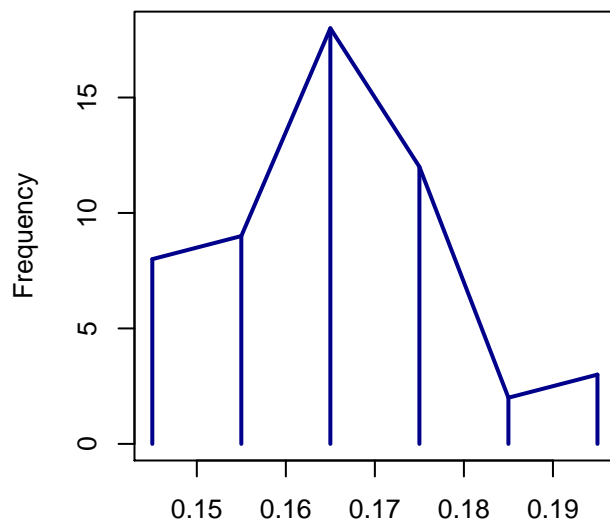
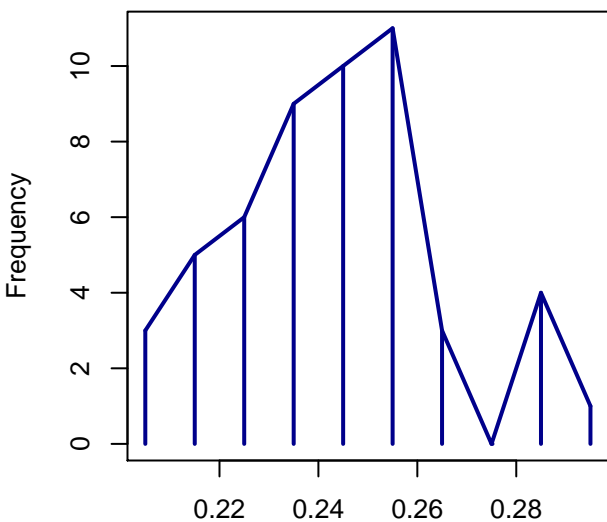
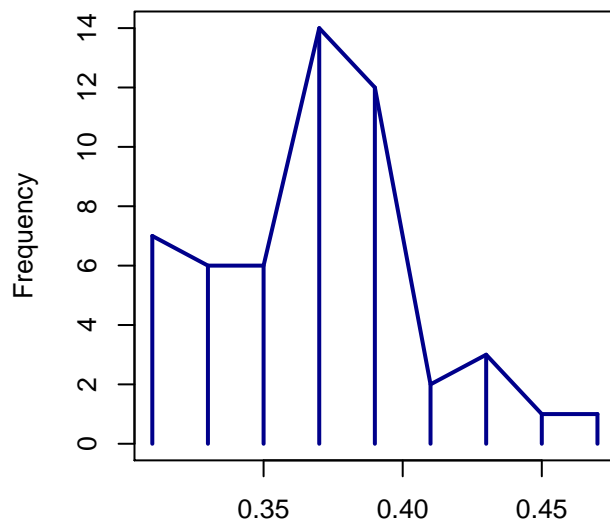
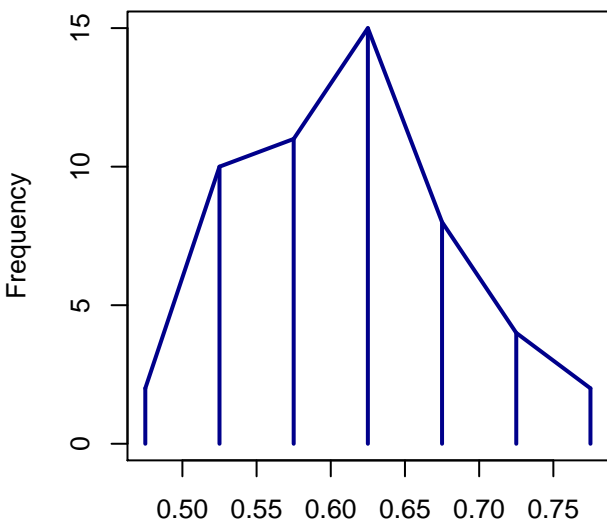
Annual F(%SPR) Reference Points



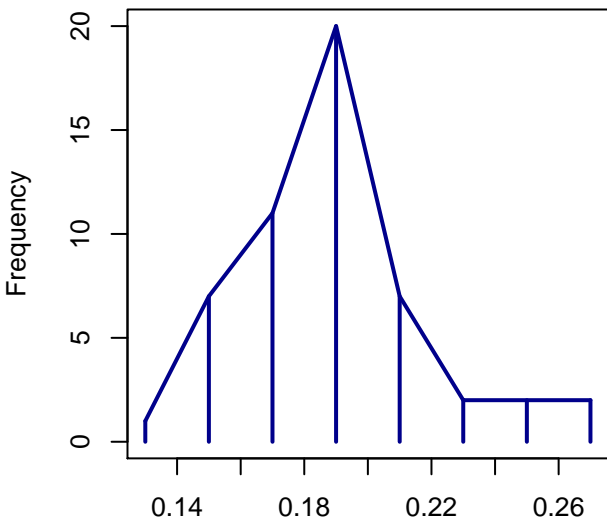
Annual YPR(%SPR) Reference Points



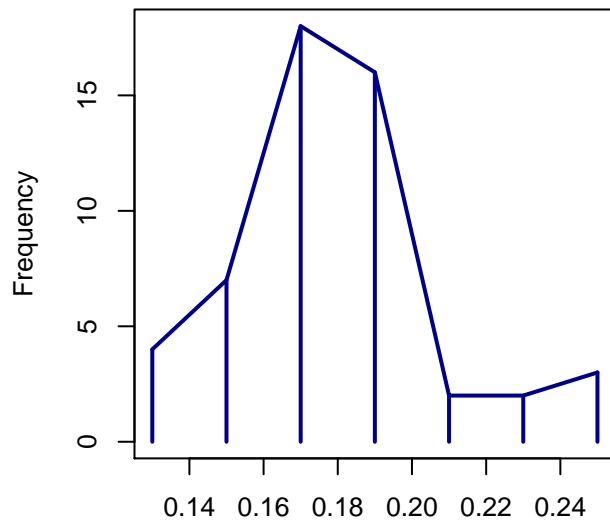
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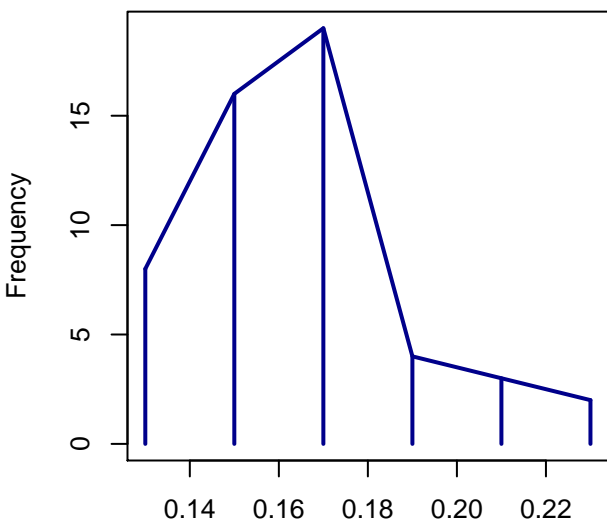
Annual YPR (%SPR) Reference Points



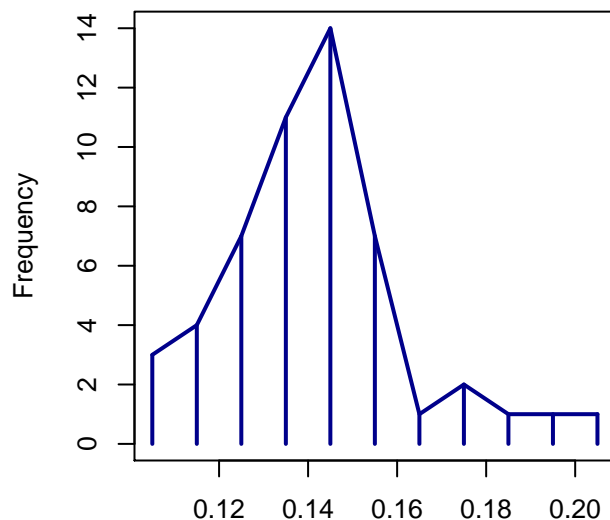
YPR(20%)



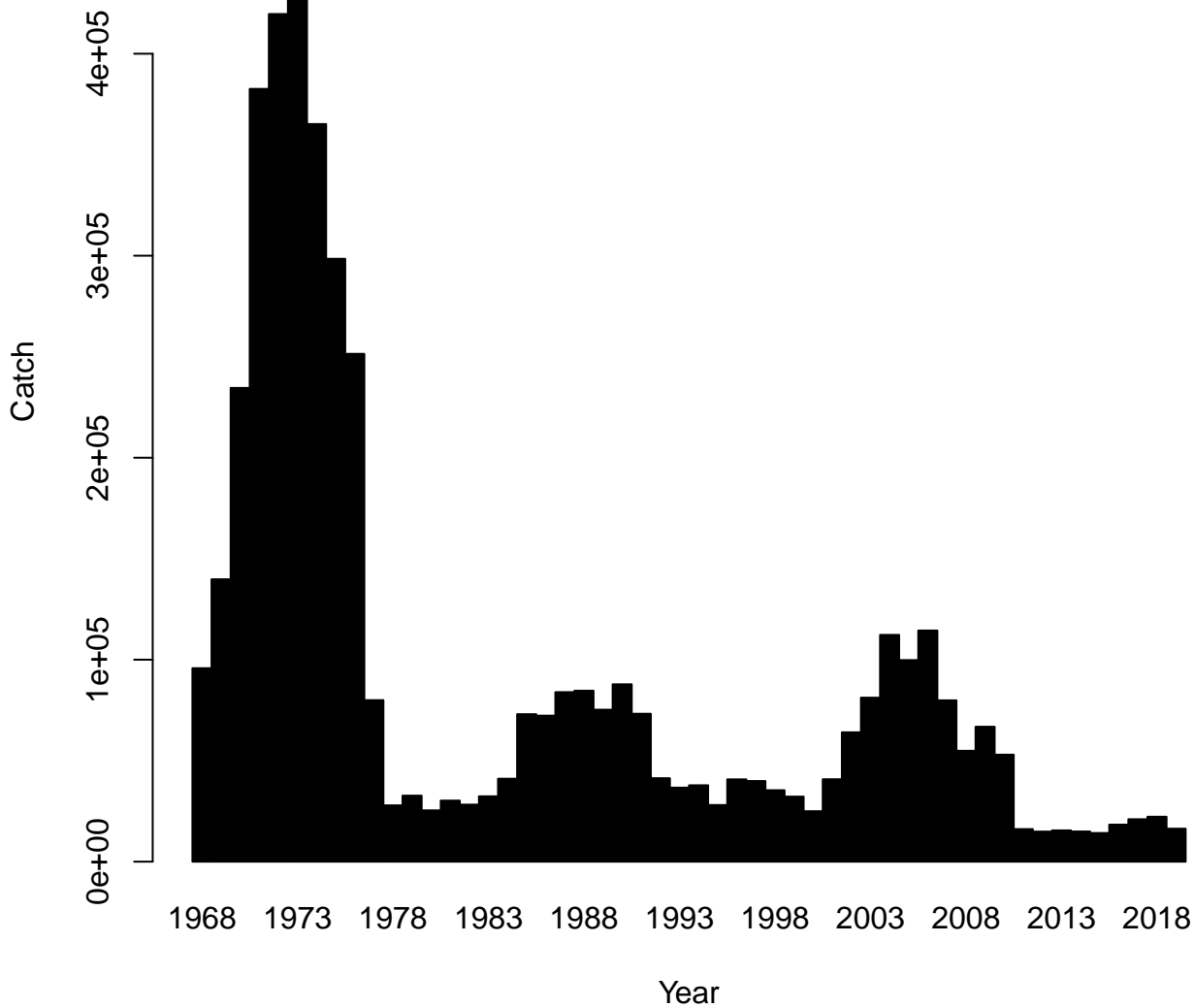
YPR(30%)



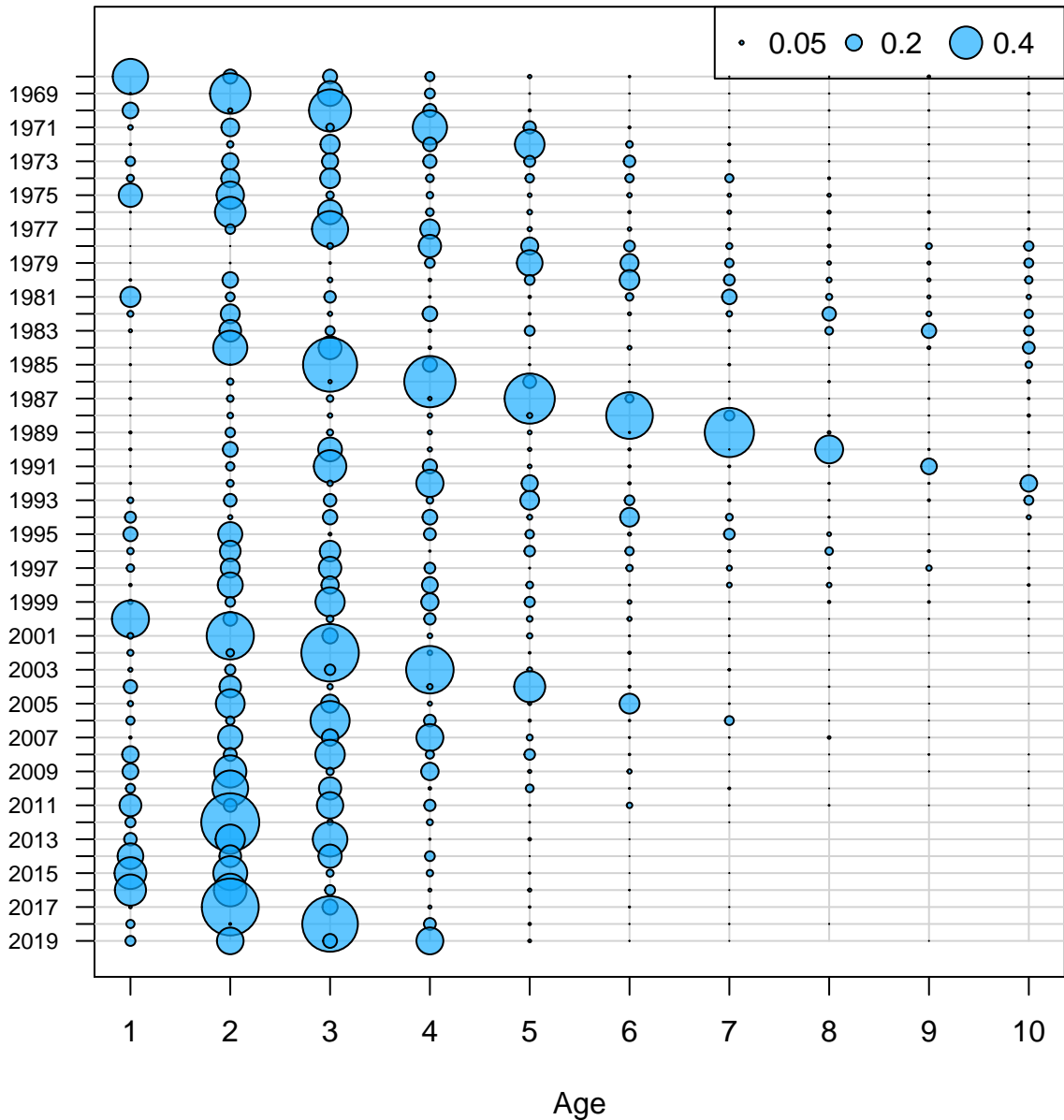
YPR(40%)

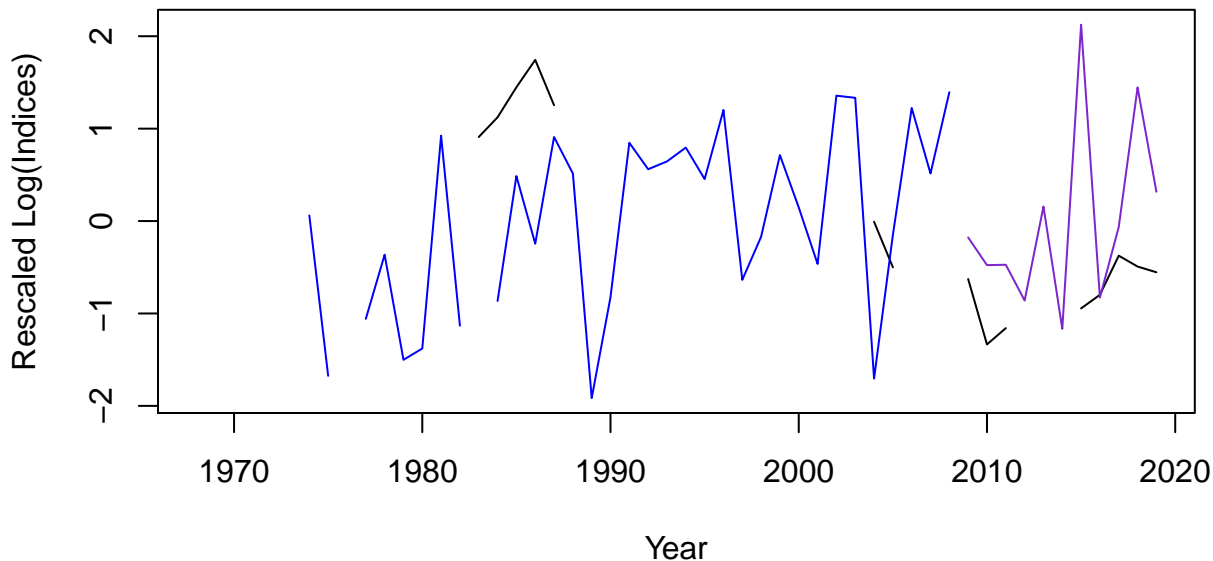
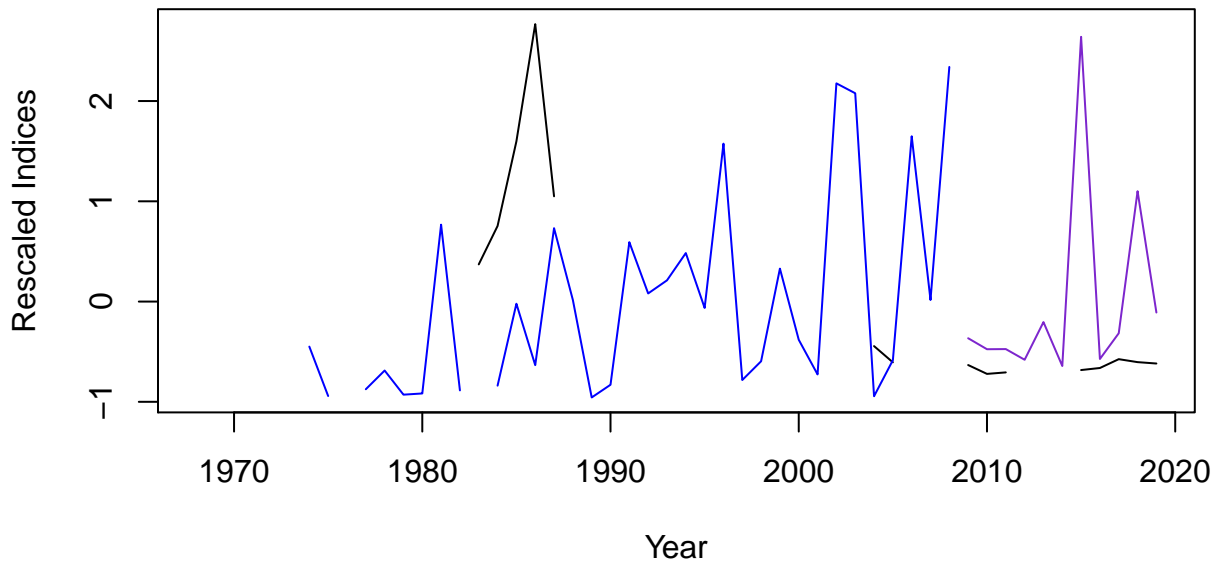


YPR(50%)

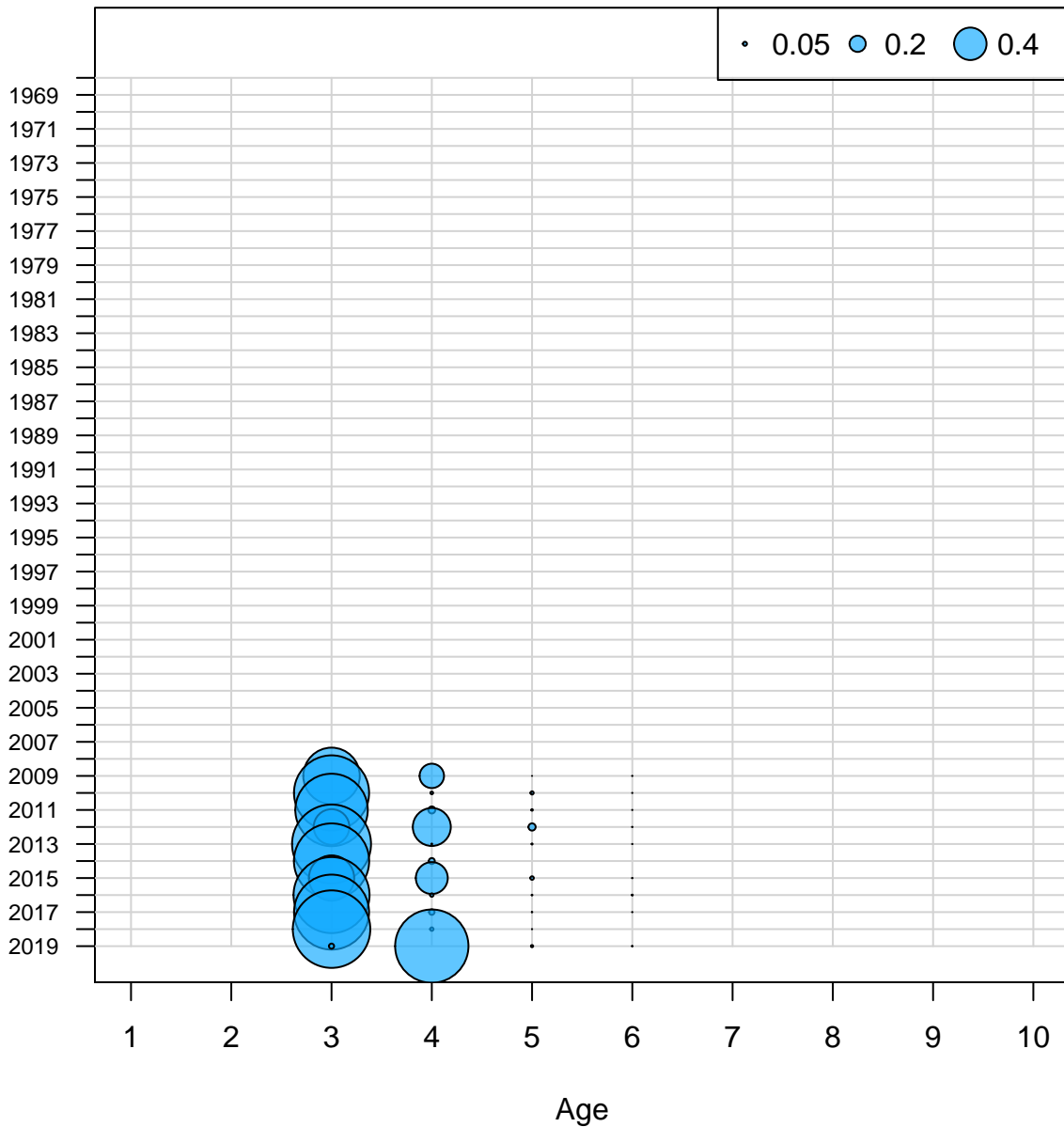


Age Comps for Catch by Fleet 1 (Combined)



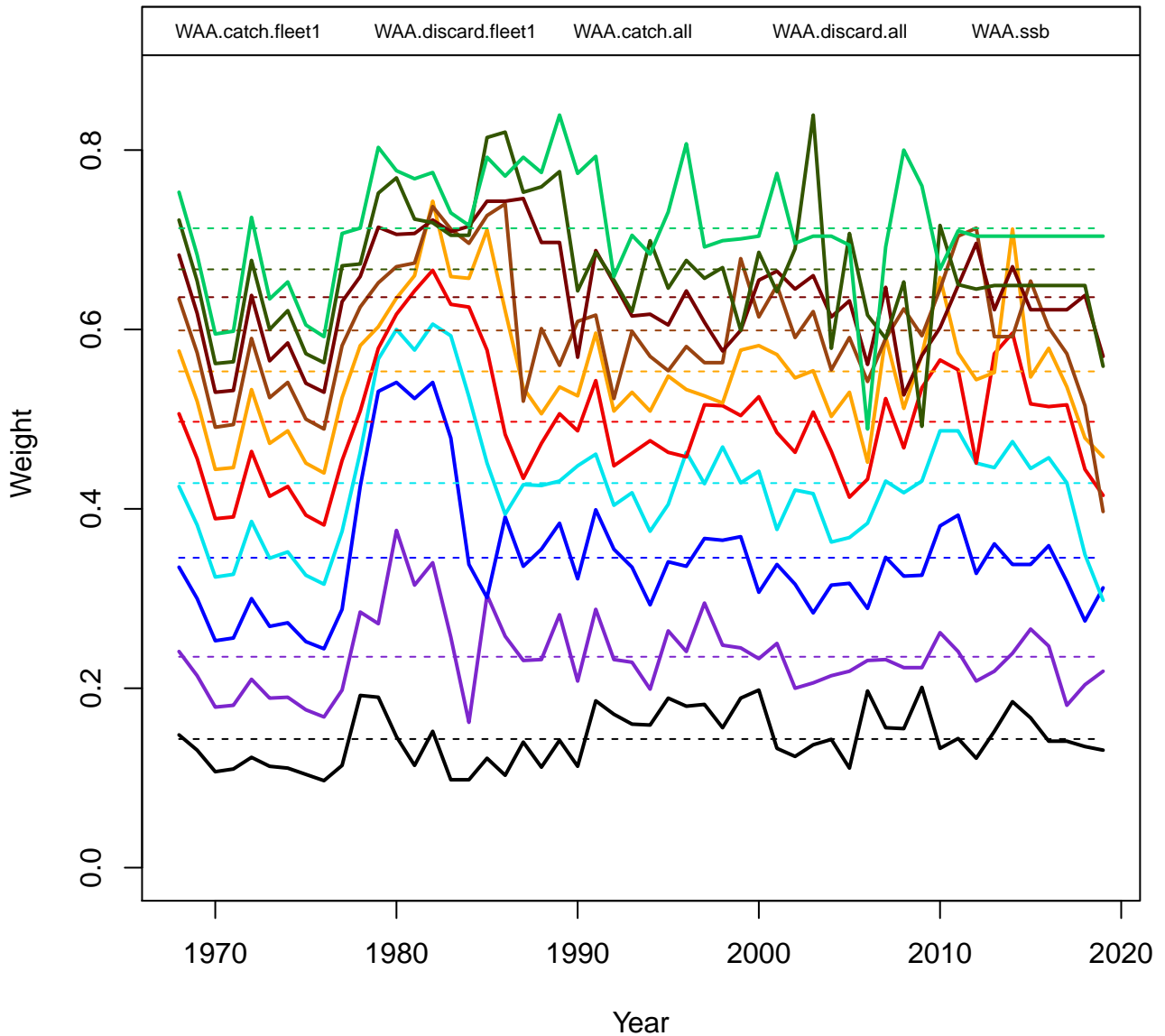


Age Comps for Index 2 (Spring Big 3+)

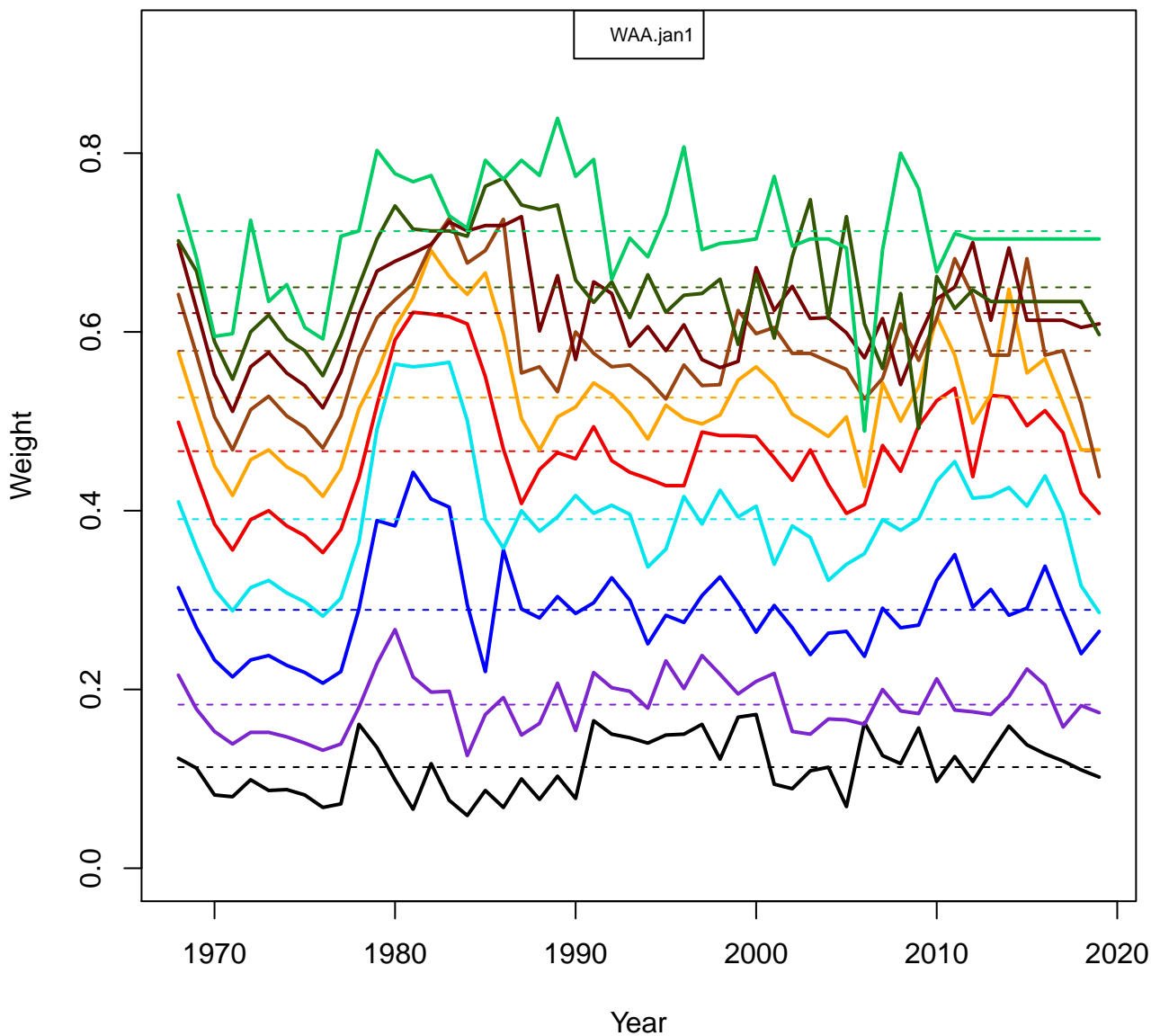


Age

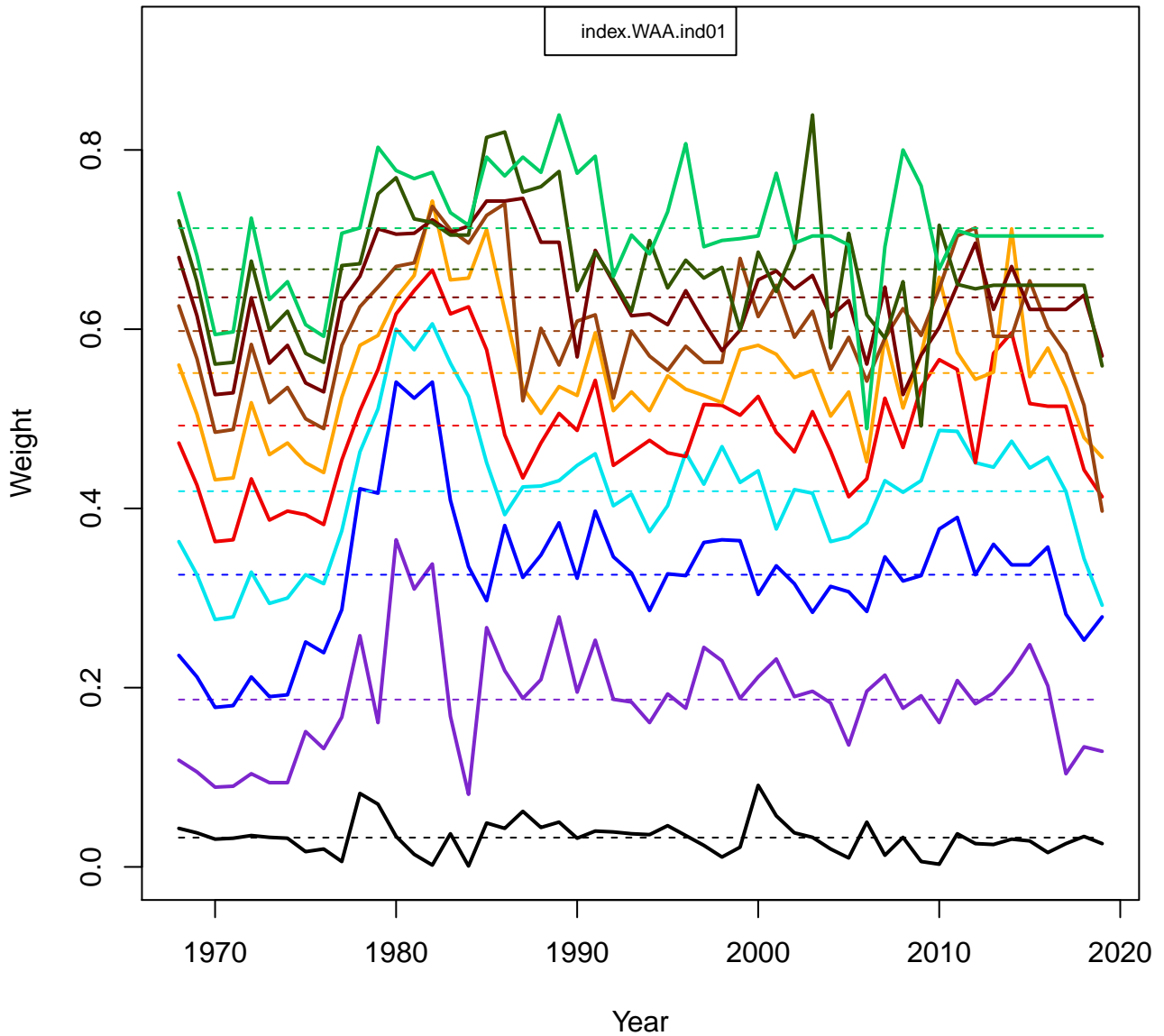
WAA matrix 1



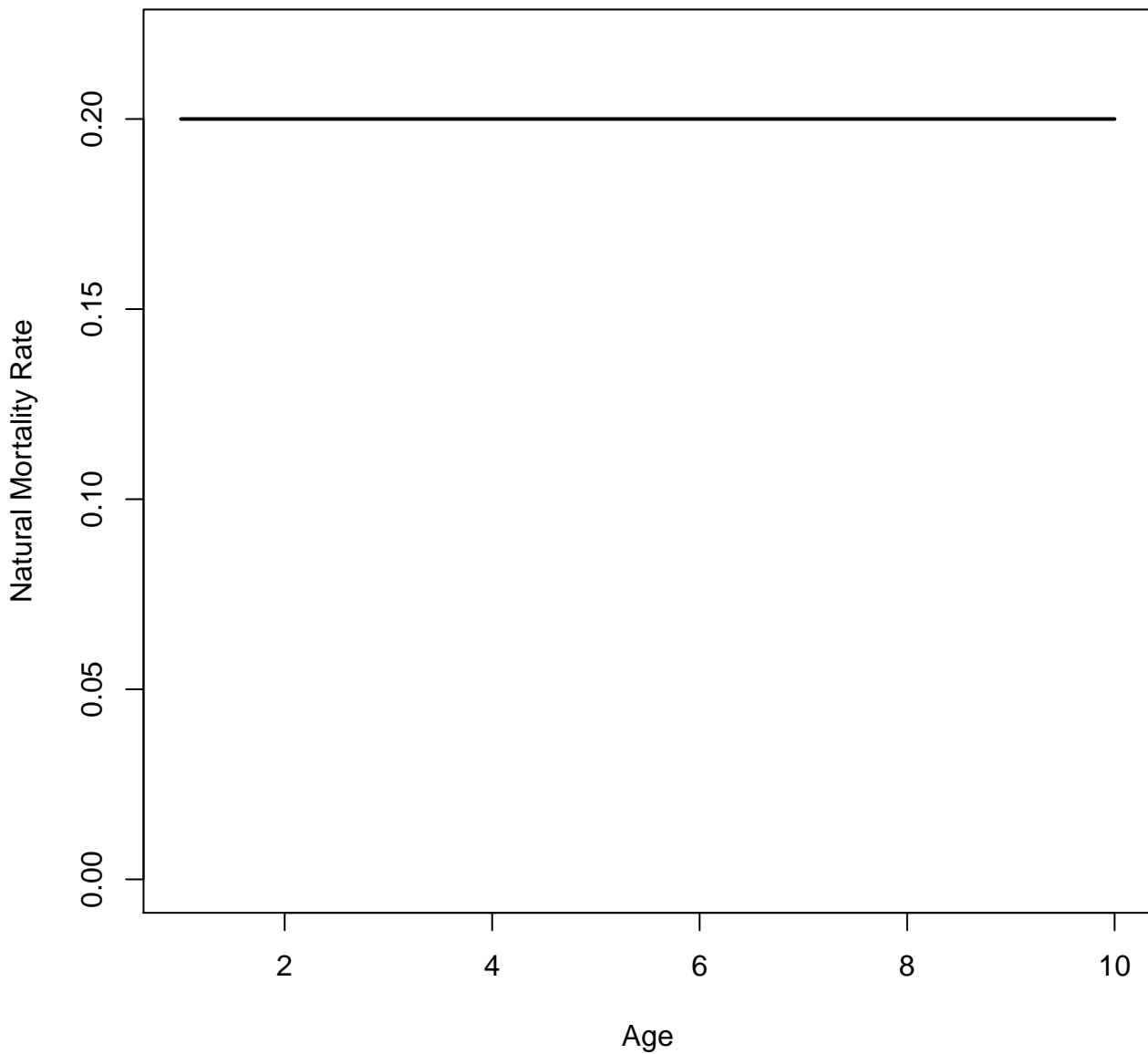
WAA matrix 2



WAA matrix 3



M



Maturity

