

File = Run9.dat

ASAP3 run on Thursday, 06 Jul 2023 at 15:30:06

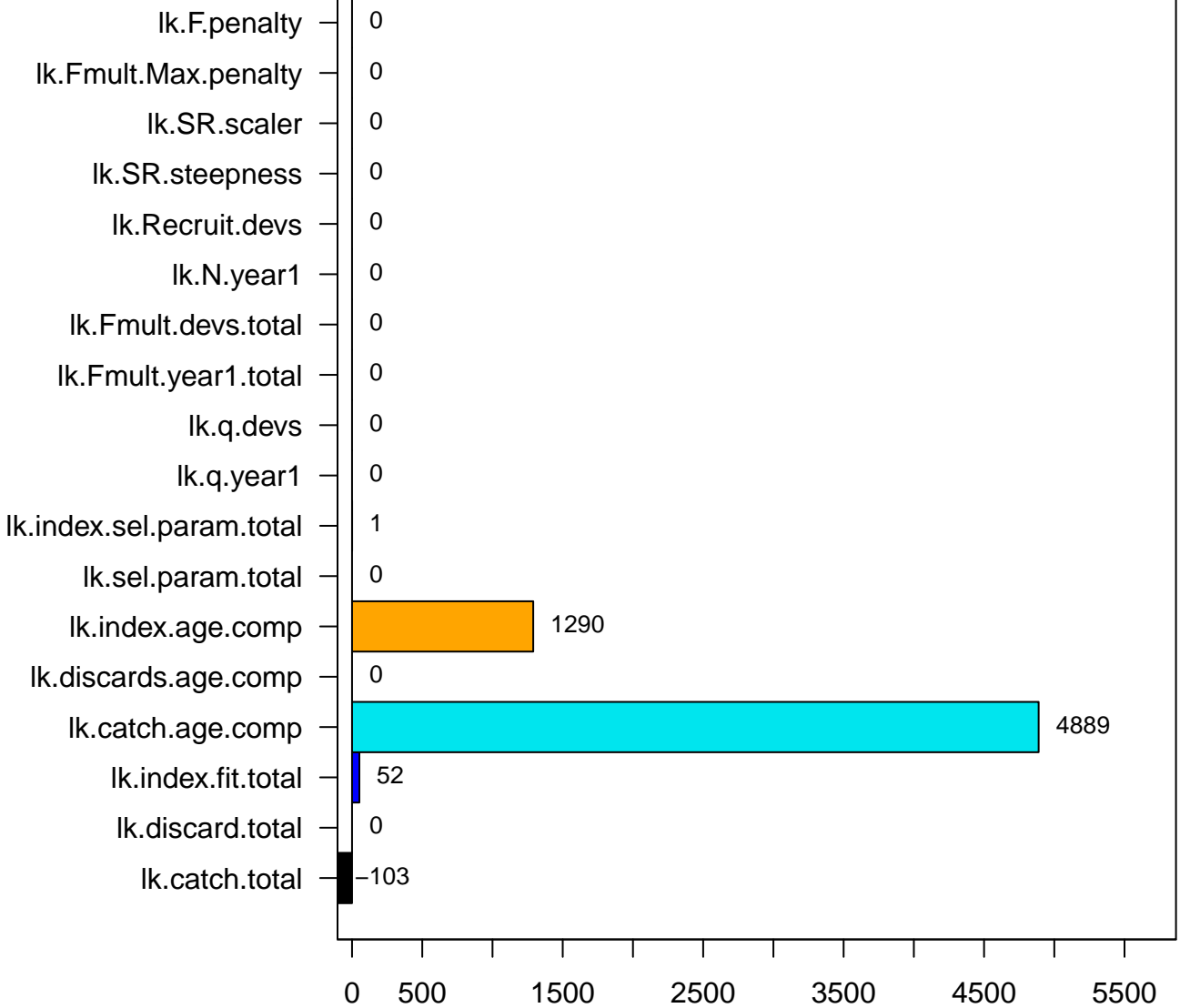
\\Users\Kiersten.Curti\Desktop\Work\Mackerel\2023.Management.Track\Run9

ASAPplots version = 0.2.18

npar = 138, maximum gradient = 2.20575e-005

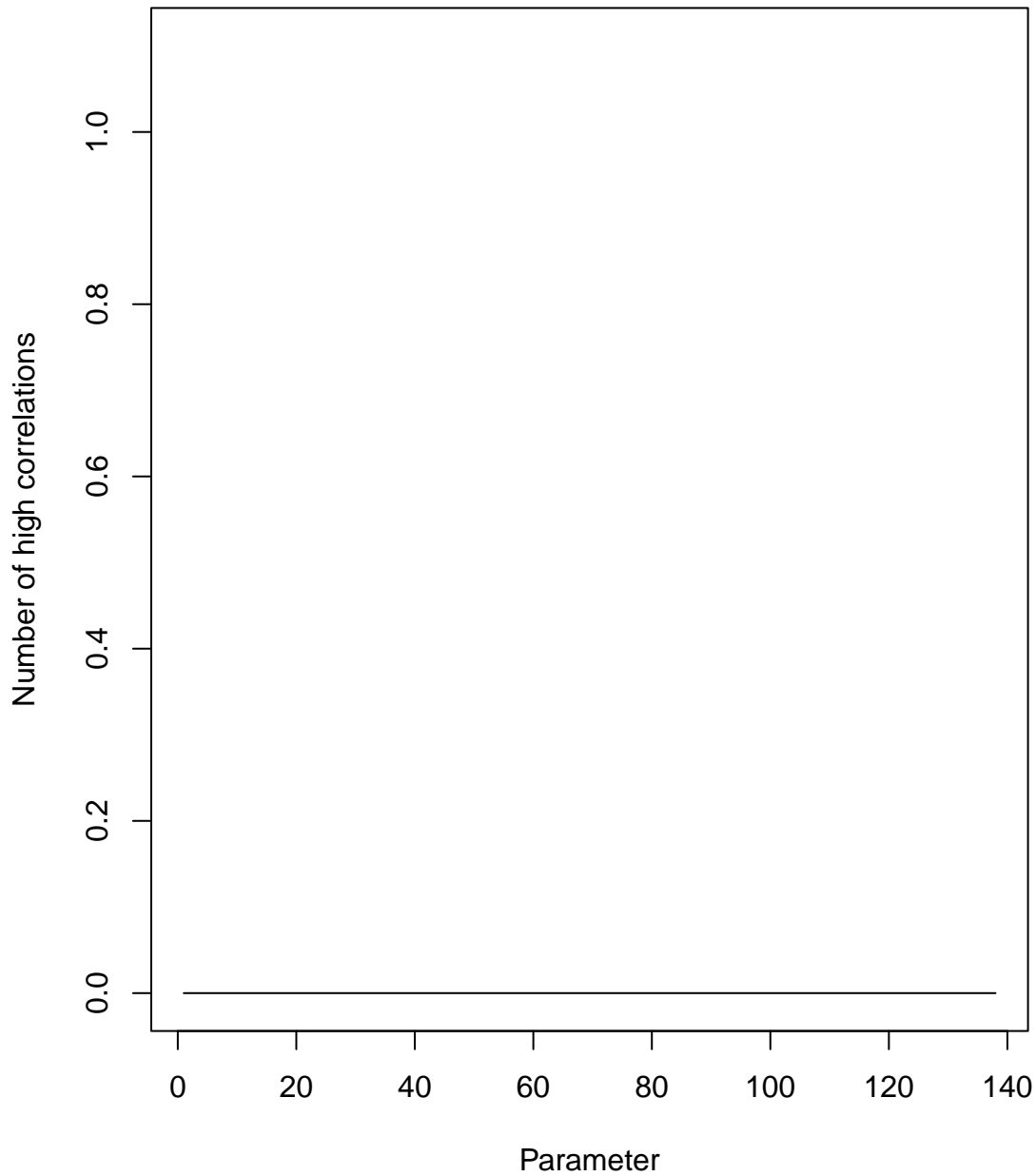
Components of Obj. Function (6128), npar=138

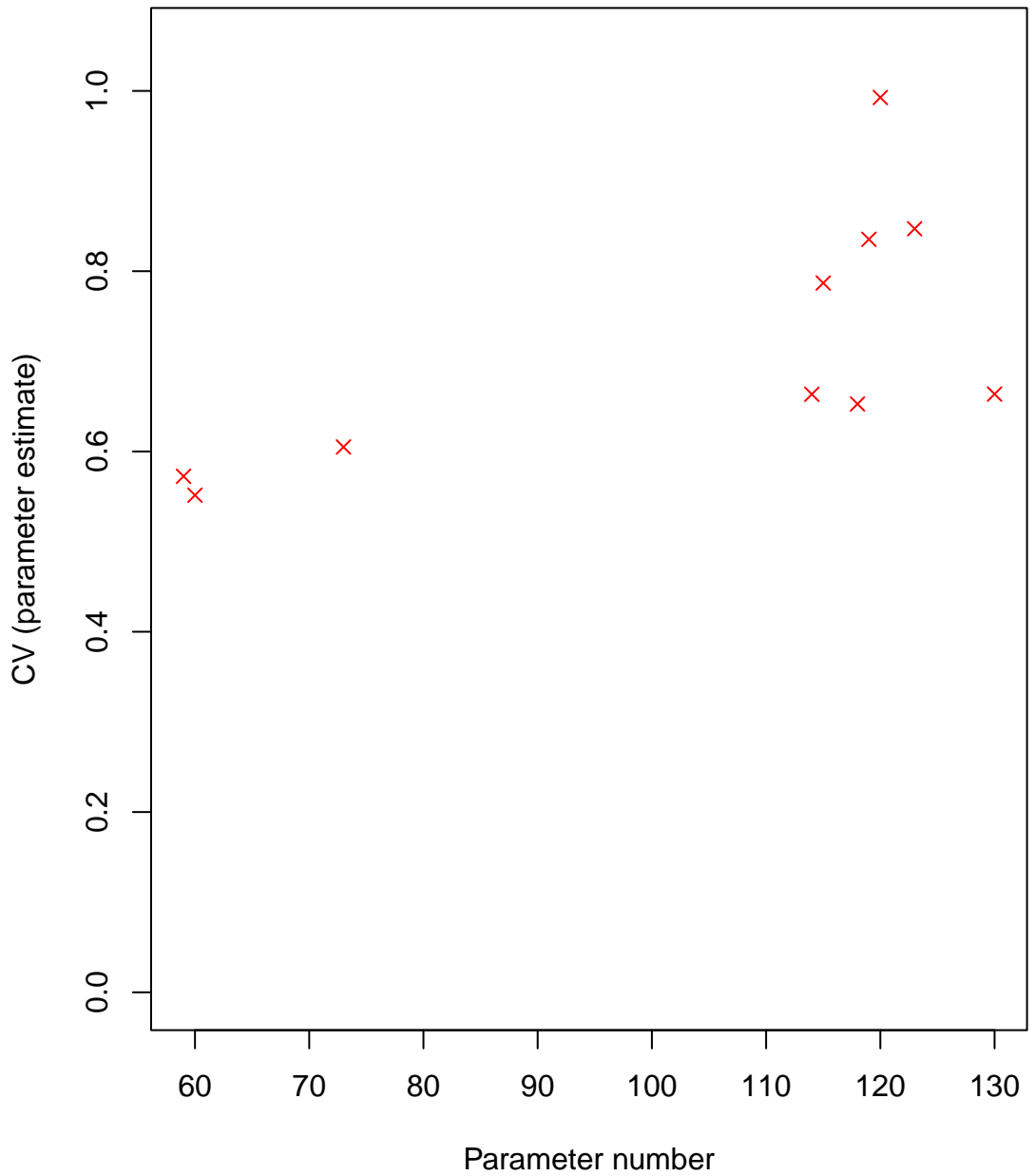
Maximum gradient = 2.2e-05



Likelihood Contribution

Model: Run9 Thursday, 06 Jul 2023 at 15:30:06

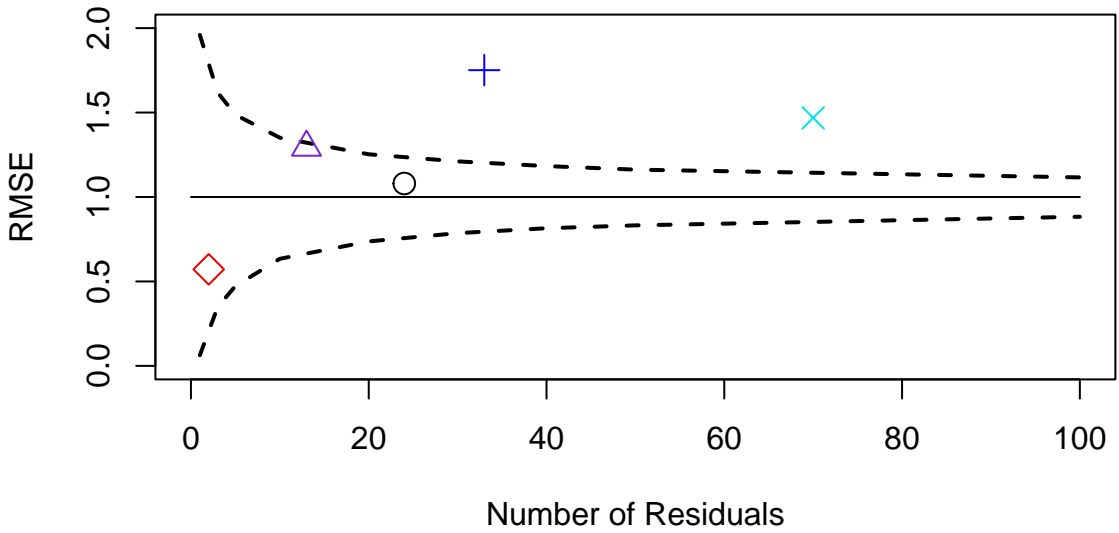




Root Mean Square Error computed from Standardized Residuals

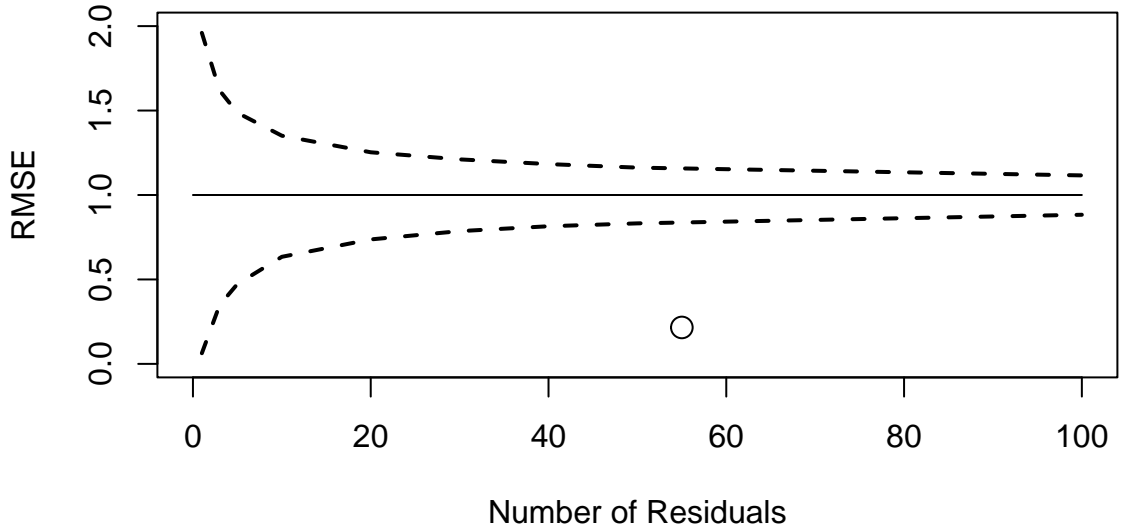
Component	# resids	RMSE
catch.tot	55	0.216
discard.tot	0	0
ind01	24	1.08
ind02	13	1.29
ind03	33	1.75
ind.total	70	1.47
N.year1	0	0
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	2	0.572
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



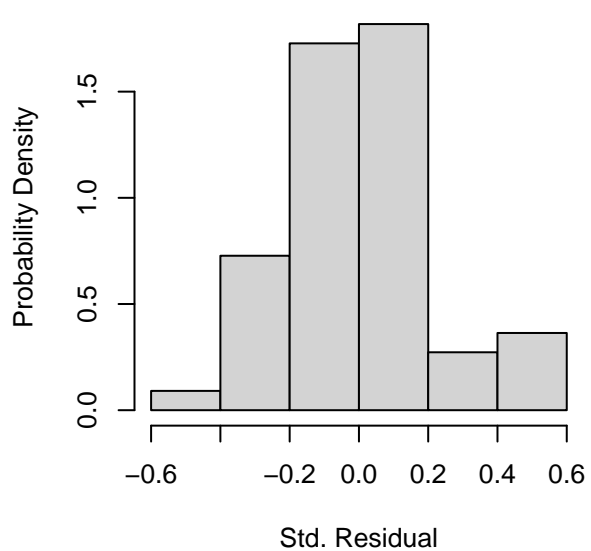
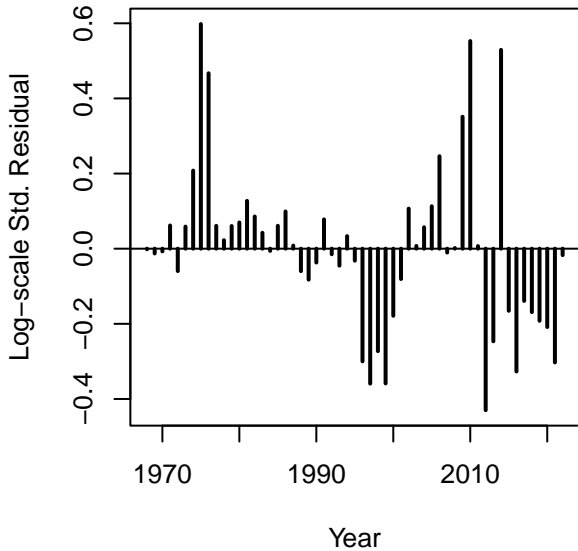
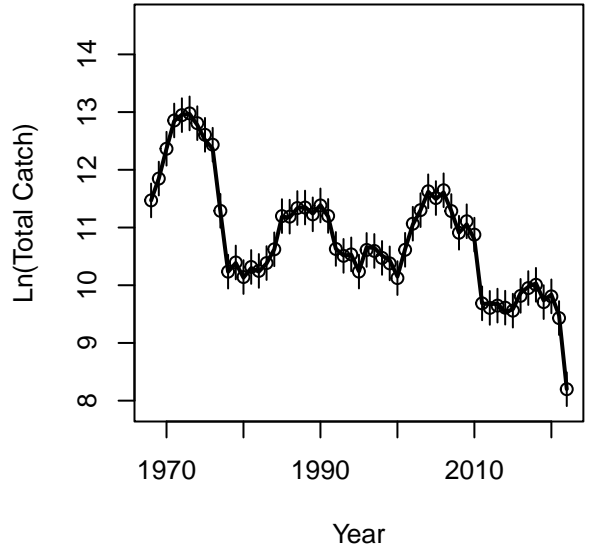
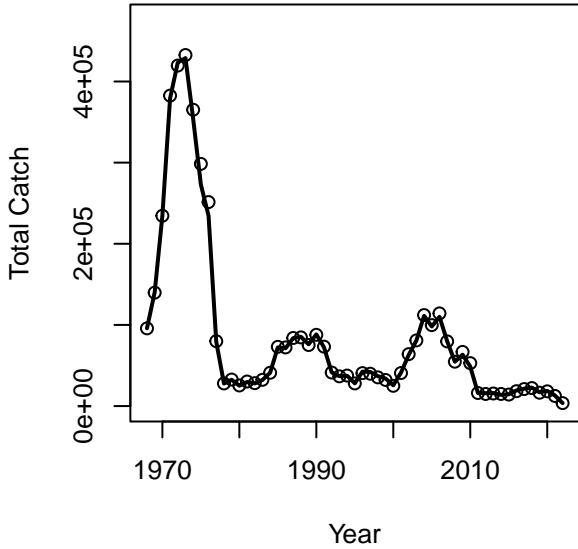
- index.sel.params
- ind.total
- Spring Alb 3+
- Spring Big 3+
- Combined SSB

Root Mean Square Error for Catch



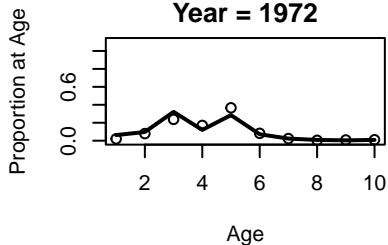
○ catch.tot

Fleet 1 Catch (Combined)

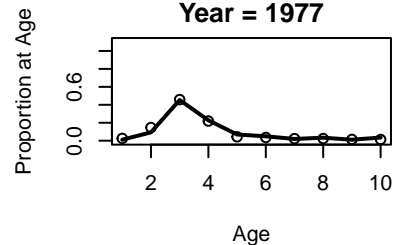


Catch

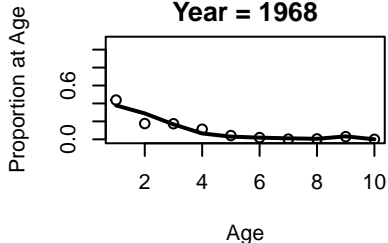
Year = 1972



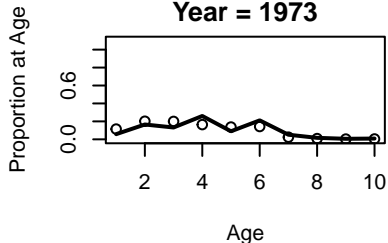
Year = 1977



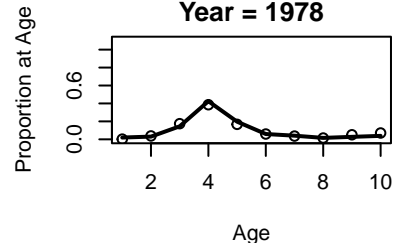
Year = 1968



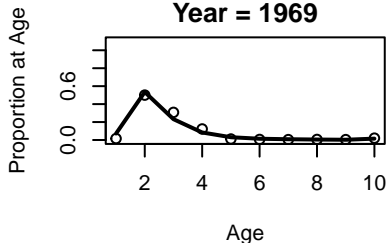
Year = 1973



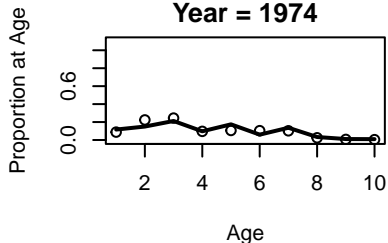
Year = 1978



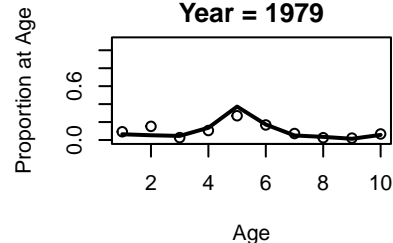
Year = 1969



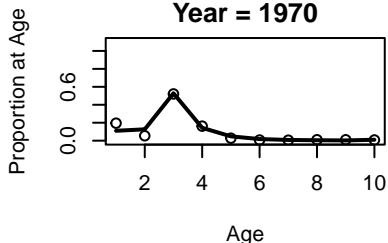
Year = 1974



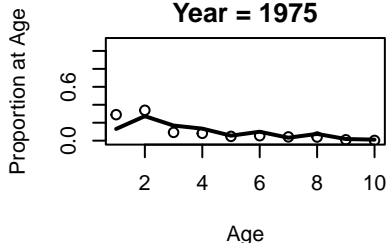
Year = 1979



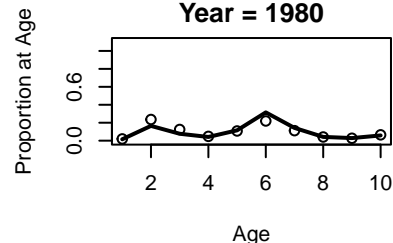
Year = 1970



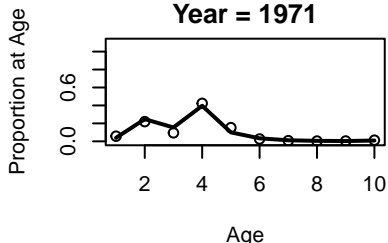
Year = 1975



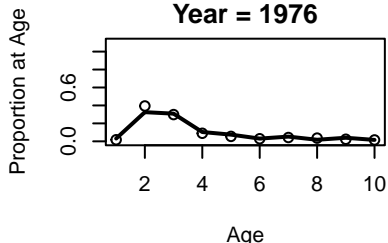
Year = 1980



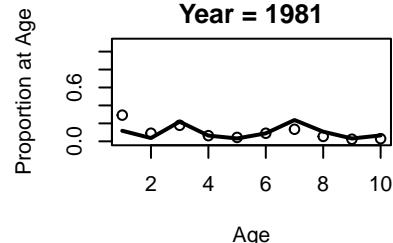
Year = 1971



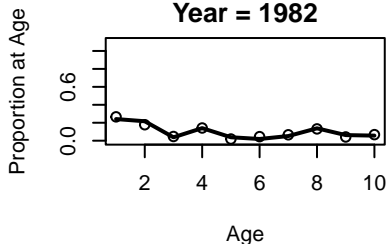
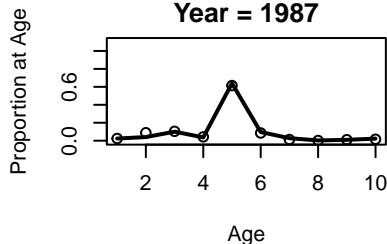
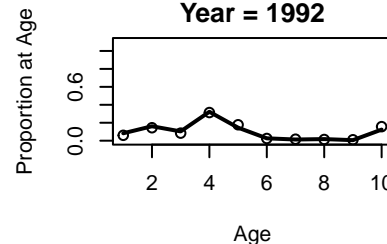
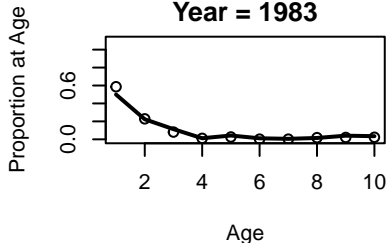
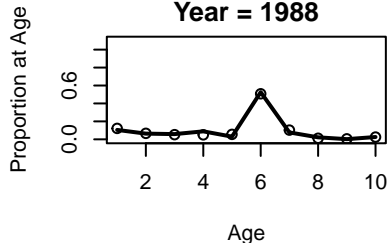
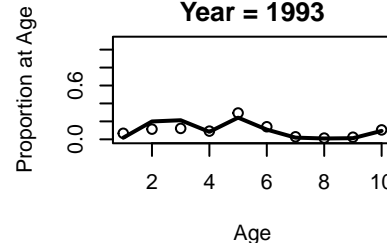
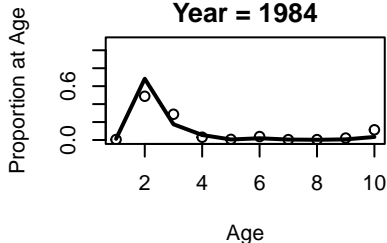
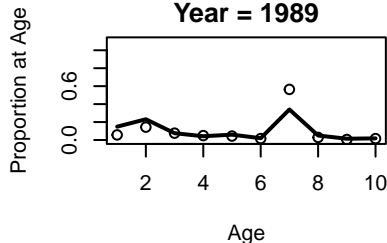
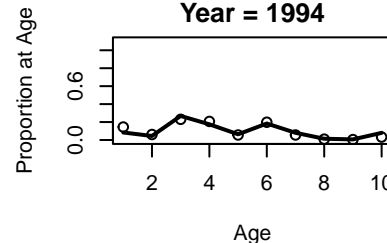
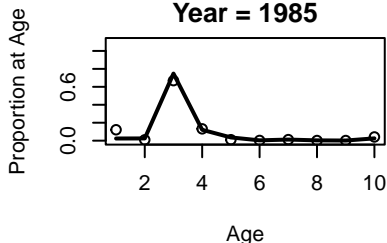
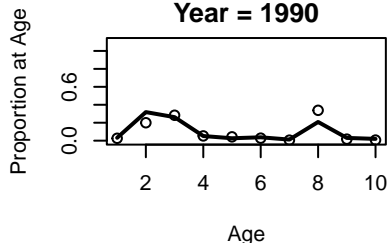
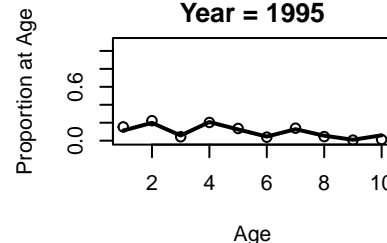
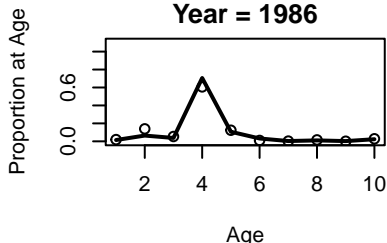
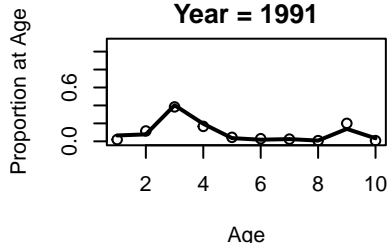
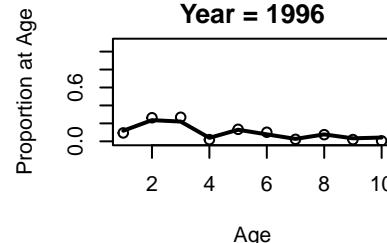
Year = 1976



Year = 1981

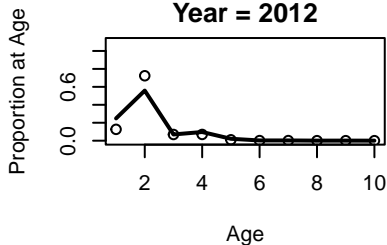


Fleet 1
Combined
↓

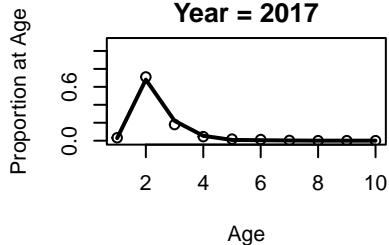
Catch**Year = 1982****Year = 1987****Year = 1992****Year = 1983****Year = 1988****Year = 1993****Year = 1984****Year = 1989****Year = 1994****Year = 1985****Year = 1990****Year = 1995****Year = 1986****Year = 1991****Year = 1996**

Catch

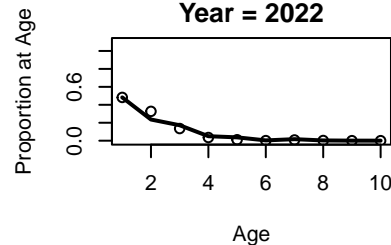
Year = 2012



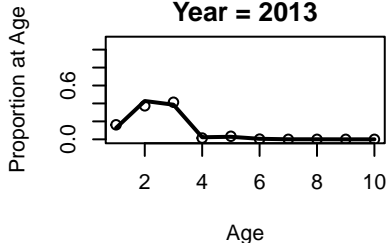
Year = 2017



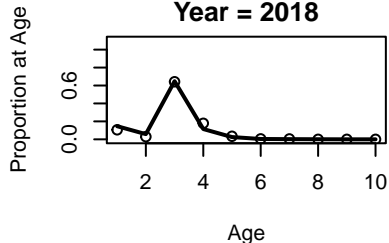
Year = 2022



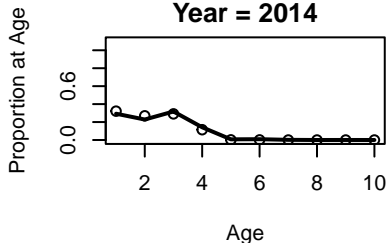
Year = 2013



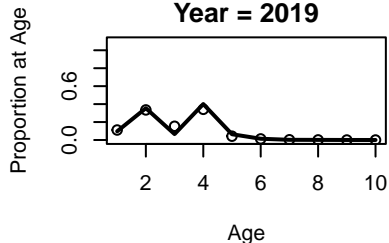
Year = 2018



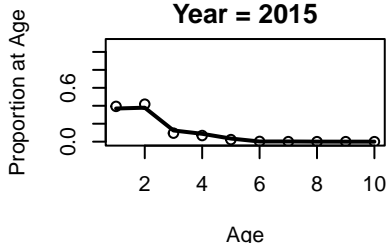
Year = 2014



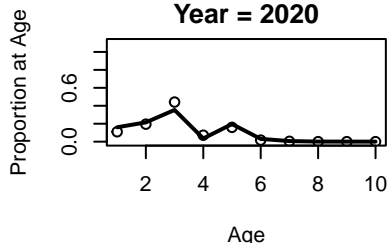
Year = 2019



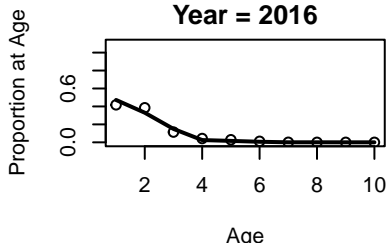
Year = 2015



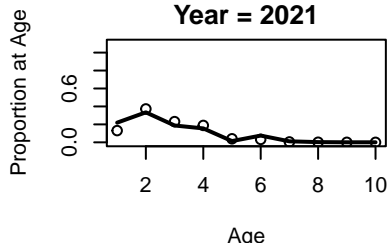
Year = 2020



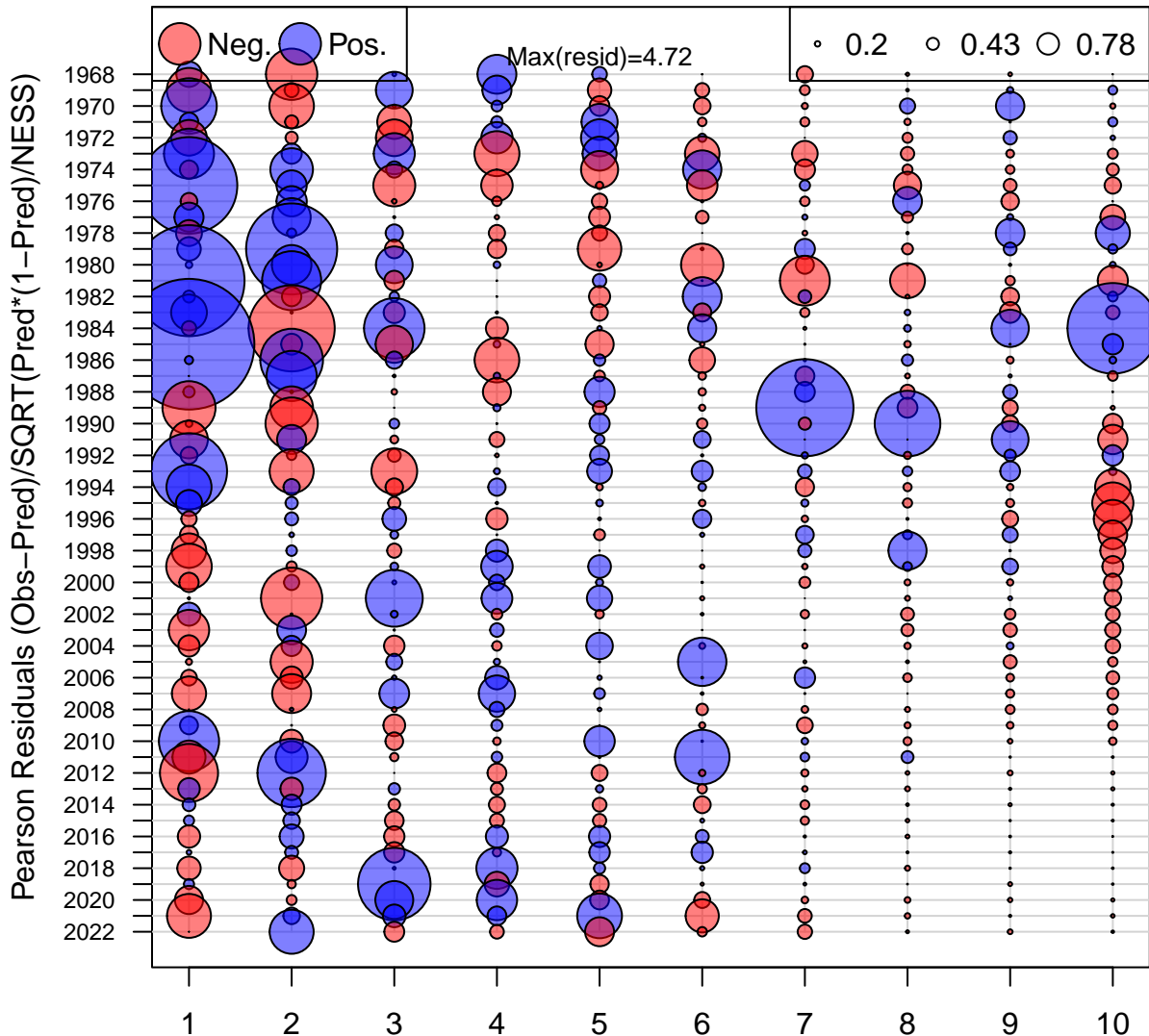
Year = 2016



Year = 2021

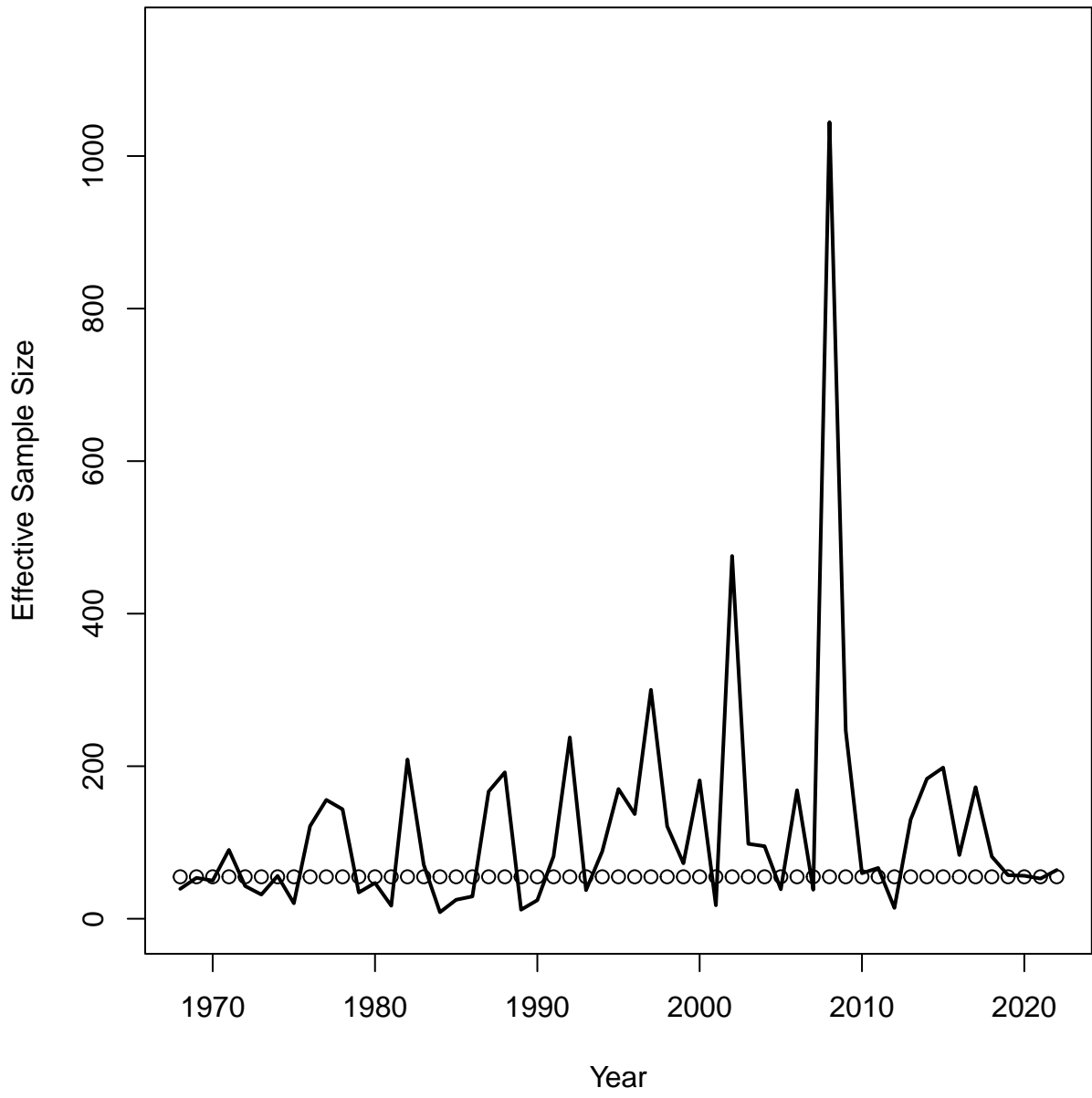


Age Comp Residuals for Catch by Fleet 1 (Combined)

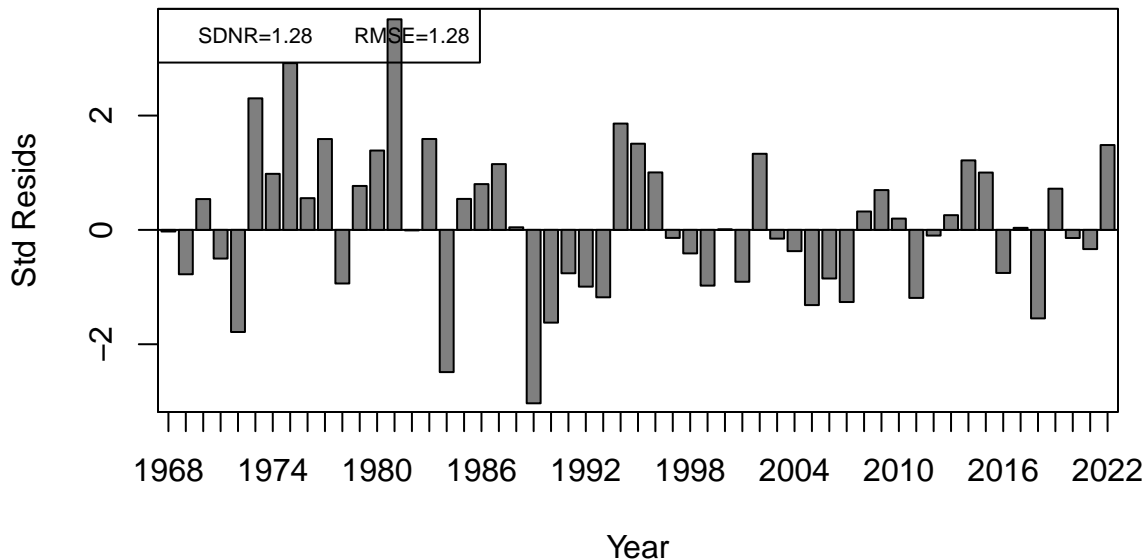
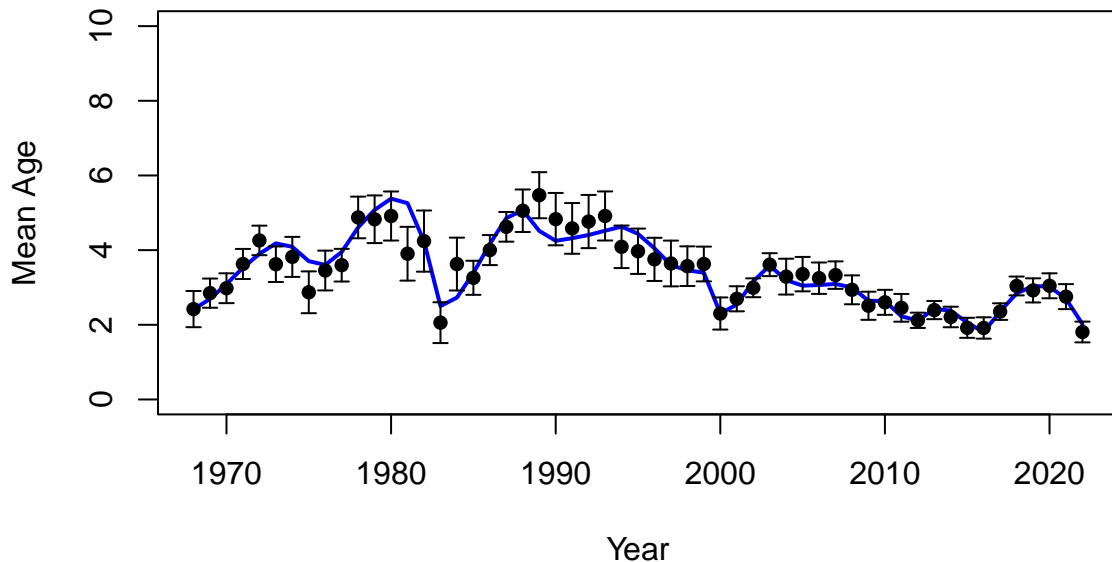


Age
Mean resid = 0 SD(resid) = 0.87

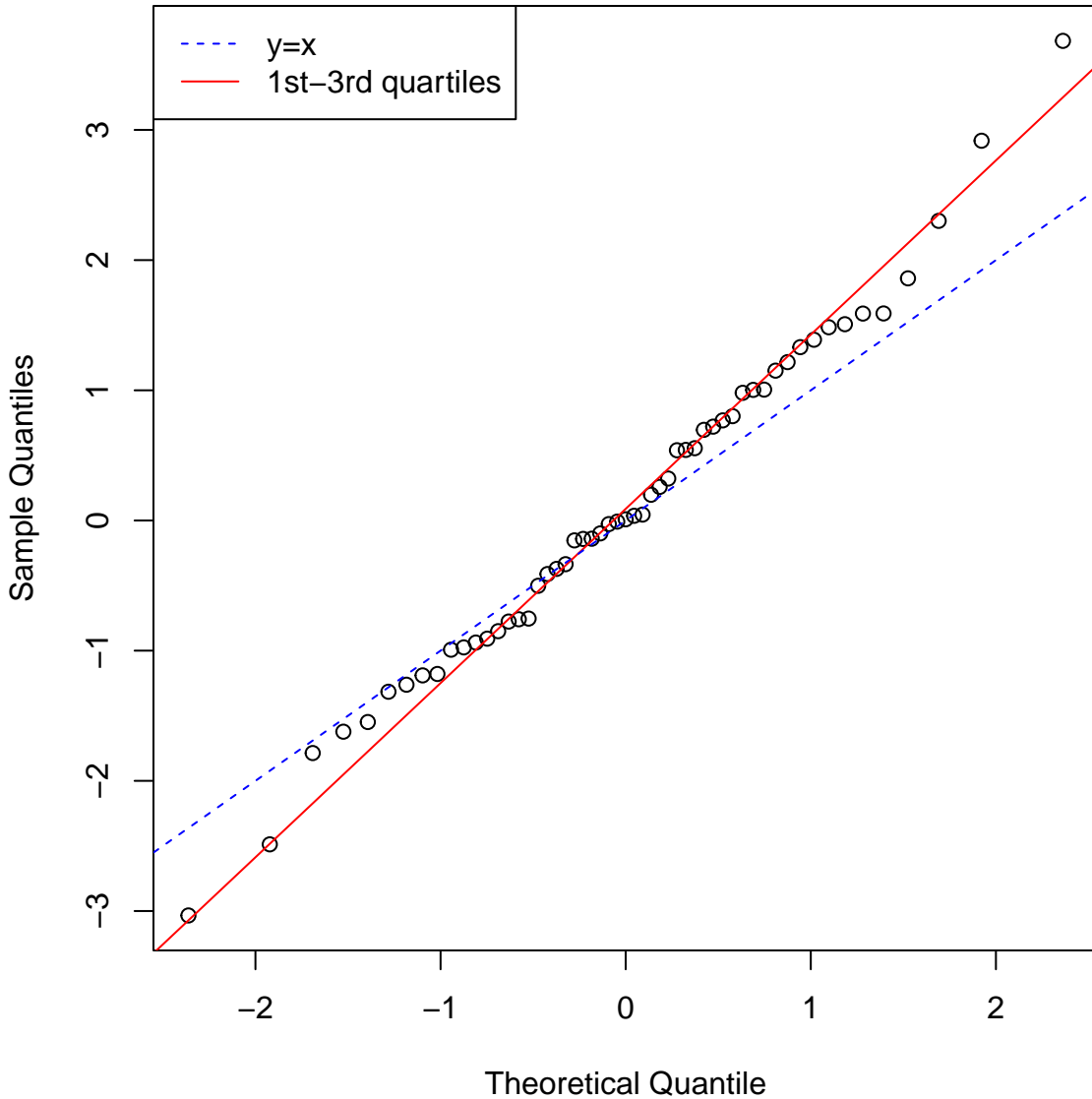
Catch Neff Fleet 1 (Combined)



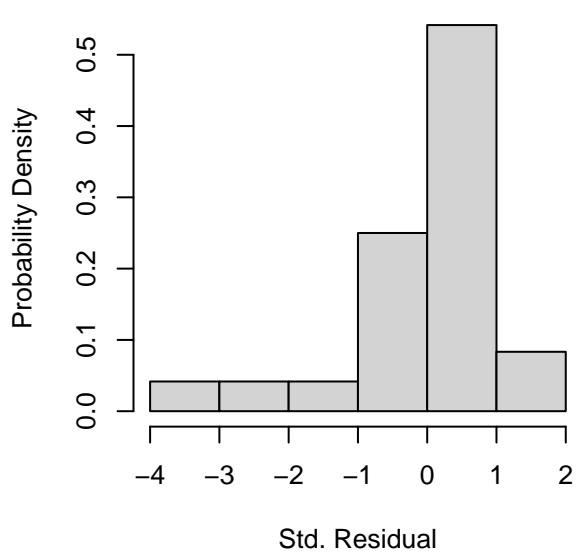
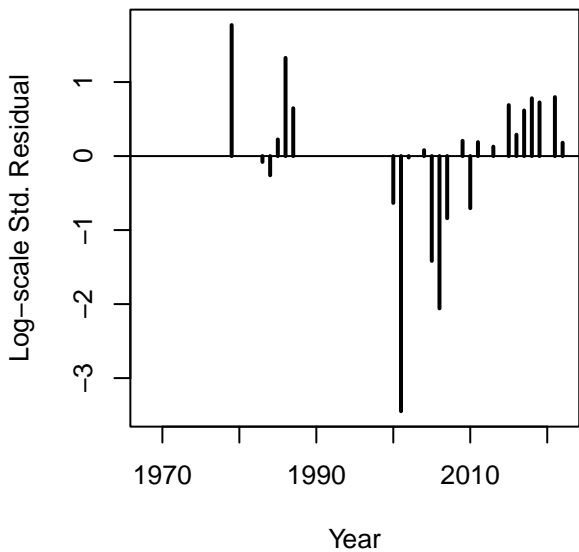
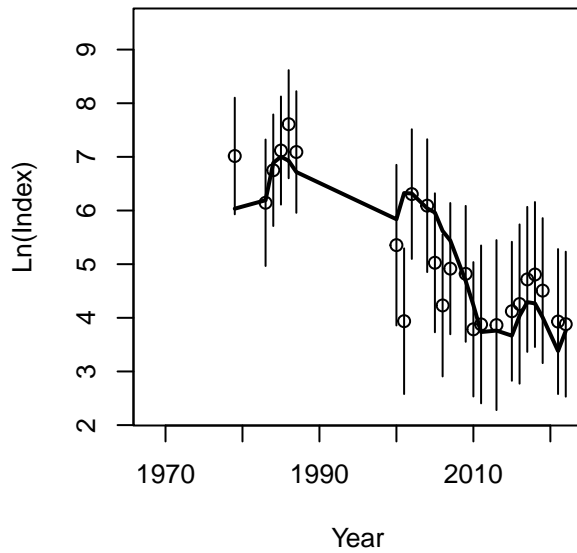
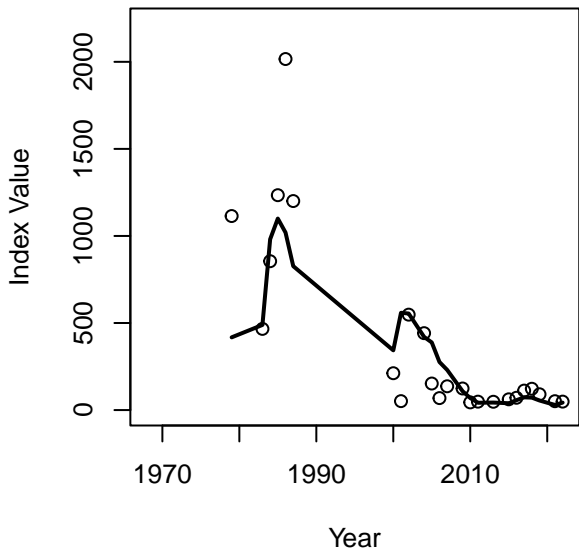
Catch Fleet 1 (Combined) ESS = 55



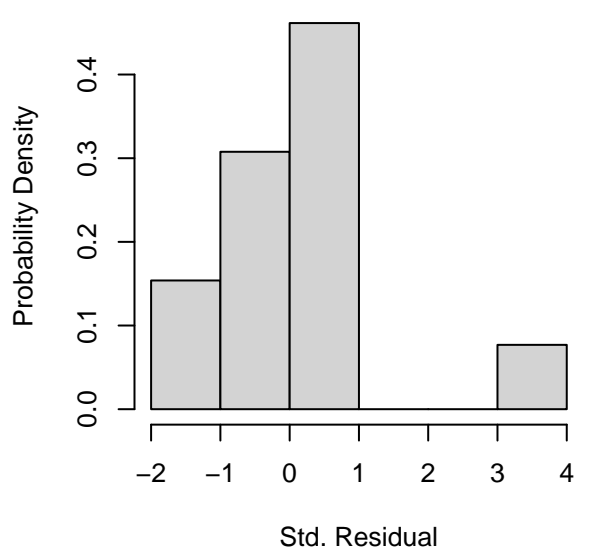
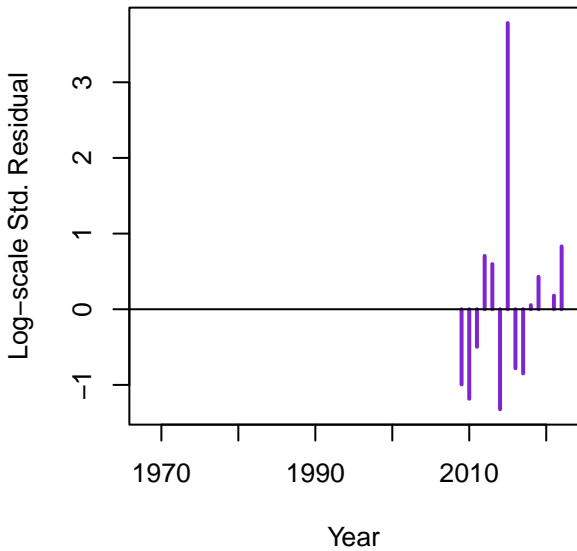
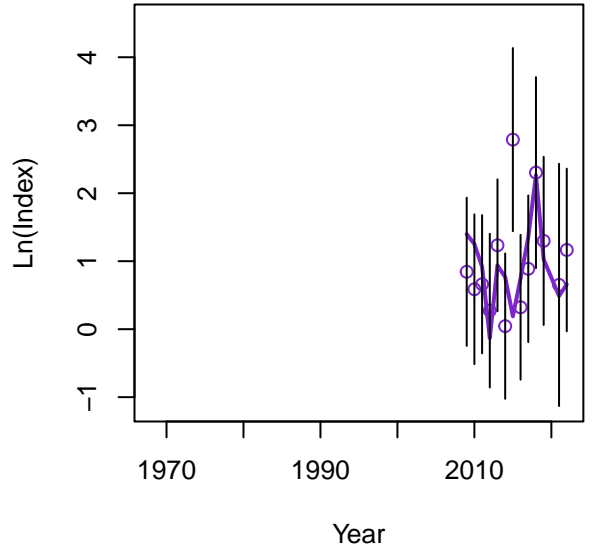
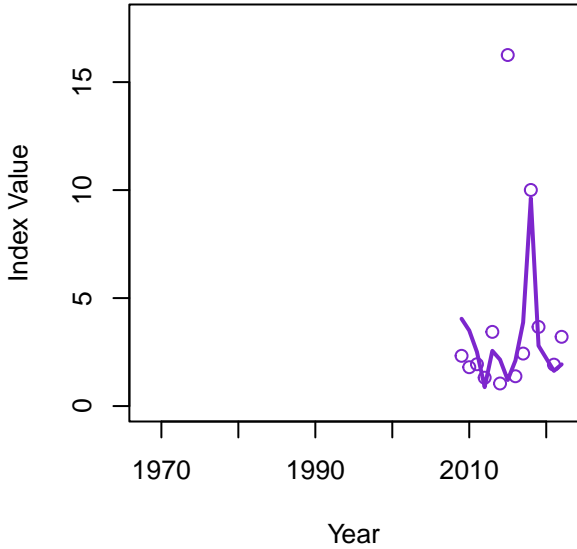
Catch Fleet 1 (Combined) ESS = 55



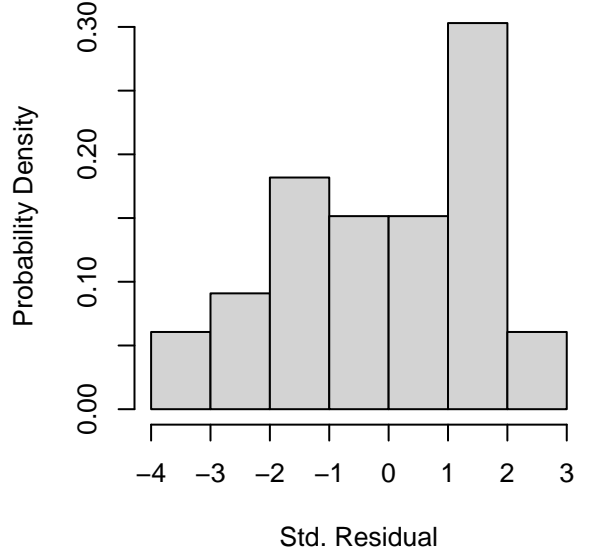
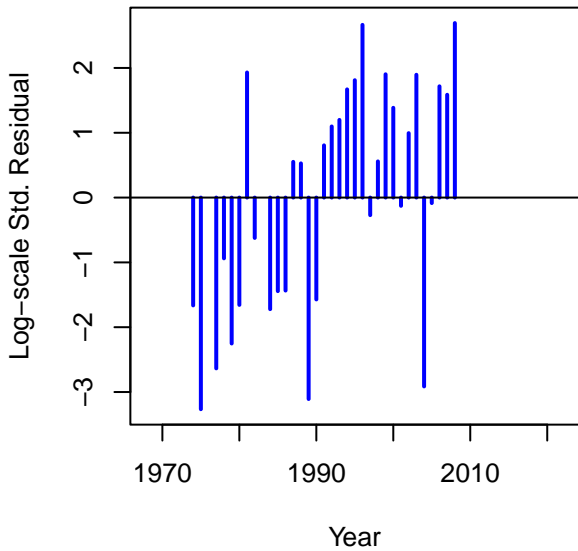
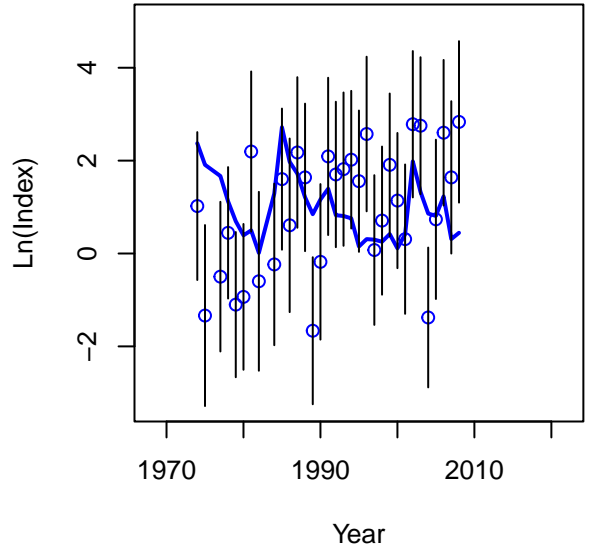
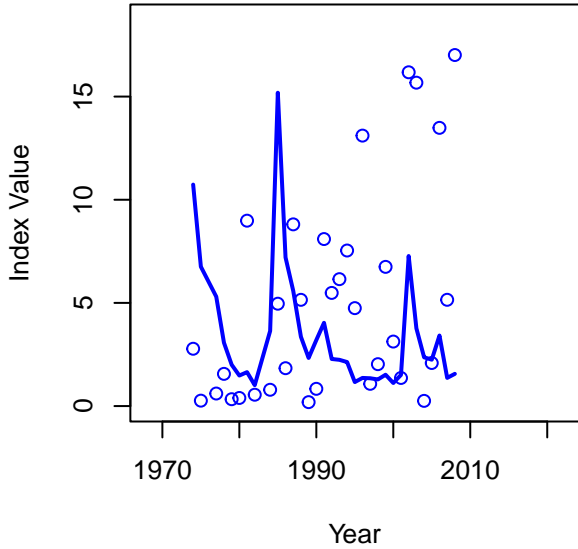
Index 1 (Combined SSB)



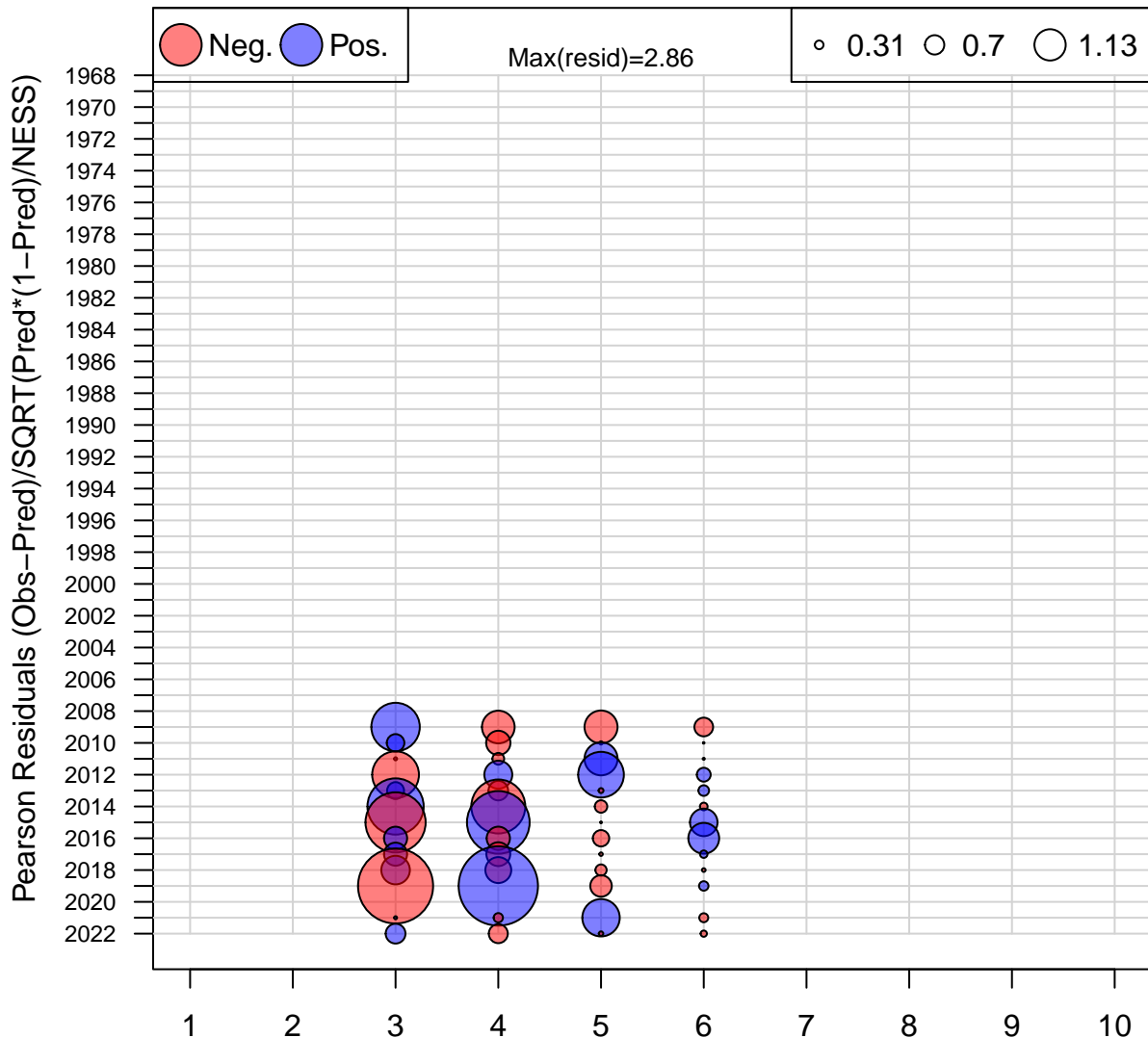
Index 2 (Spring Big 3+)



Index 3 (Spring Alb 3+)



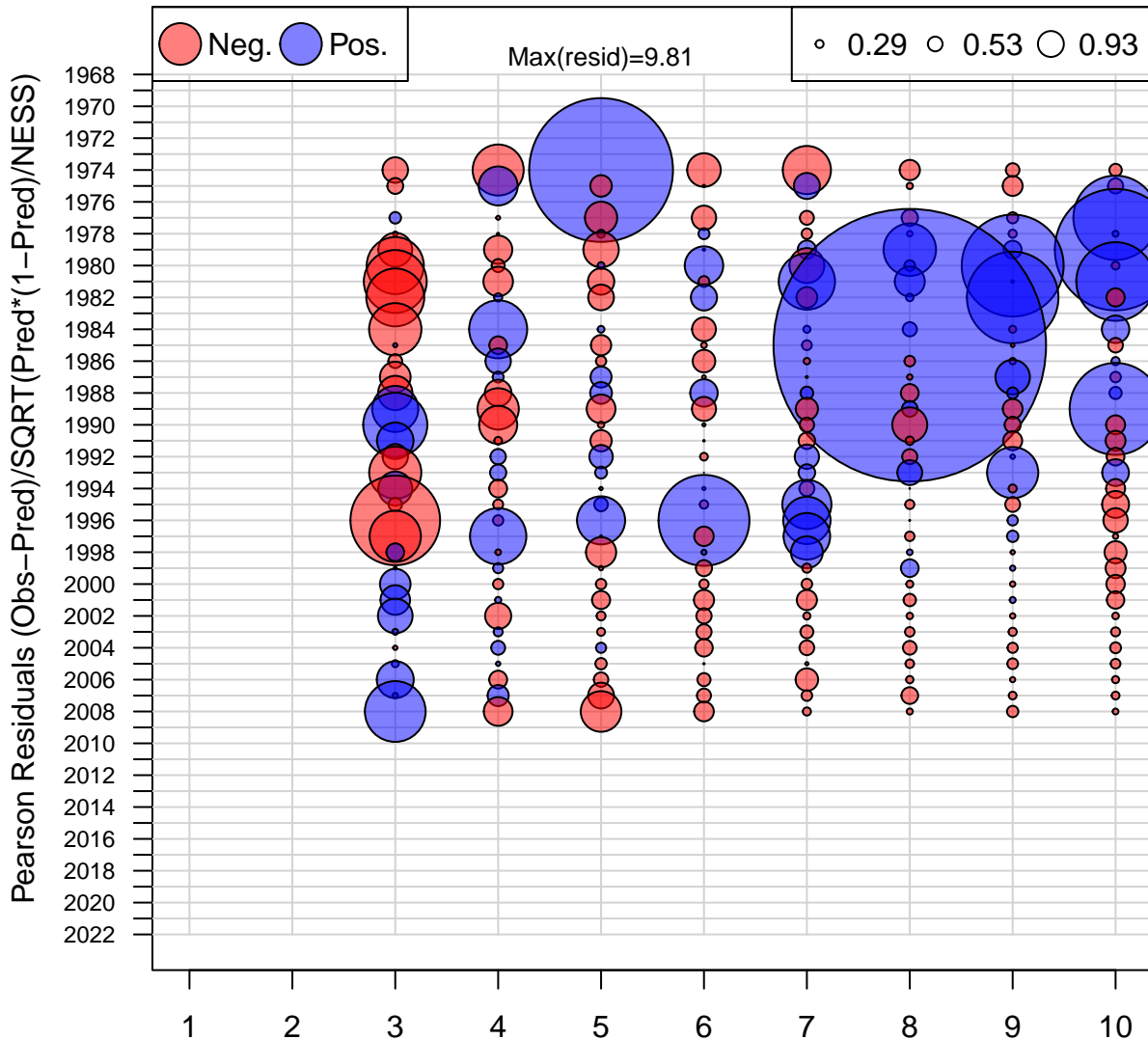
Age Comp Residuals for Index 2 (Spring Big 3+)



Age

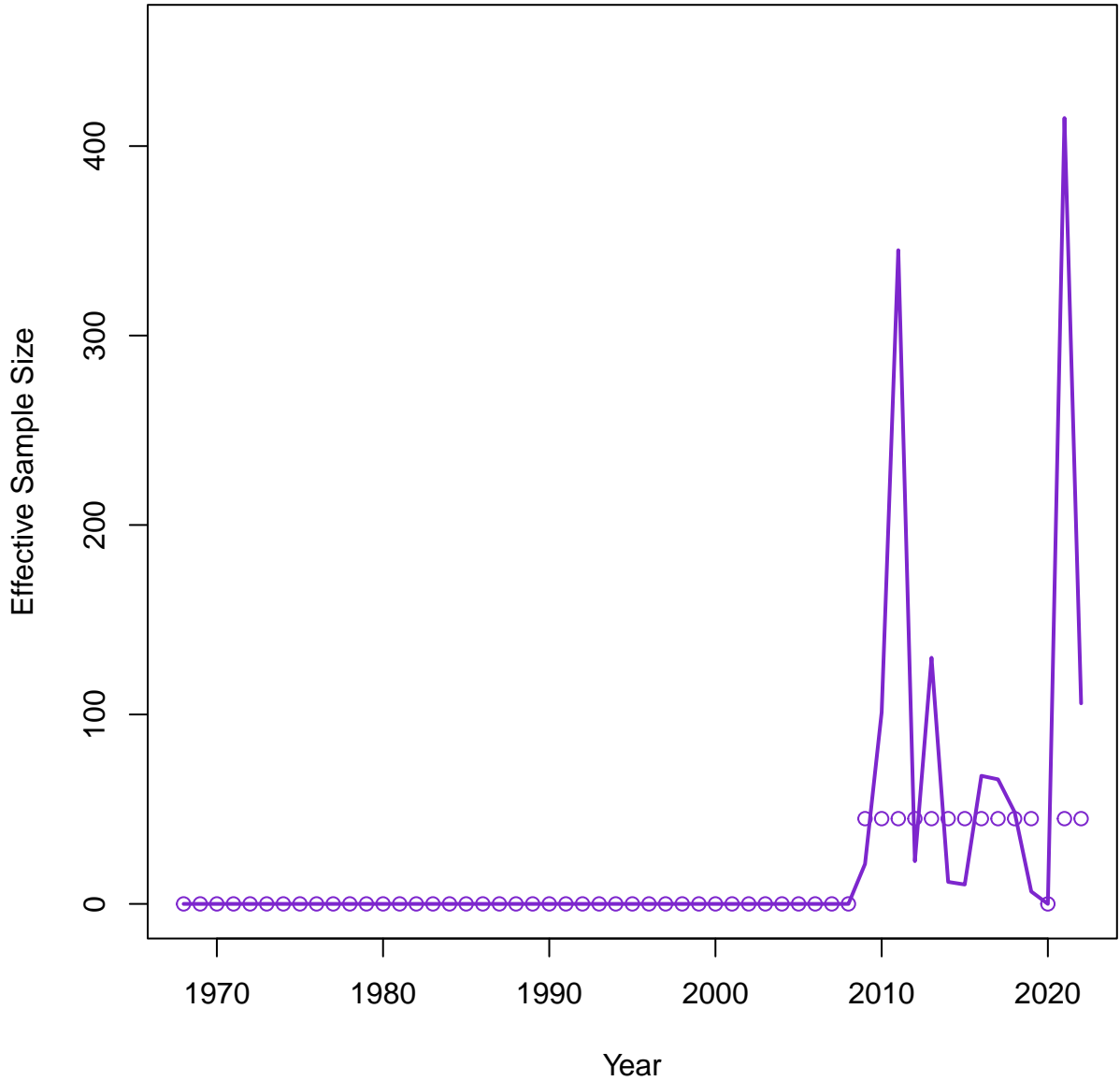
Mean resid = 0.04 SD(resid) = 1.1

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

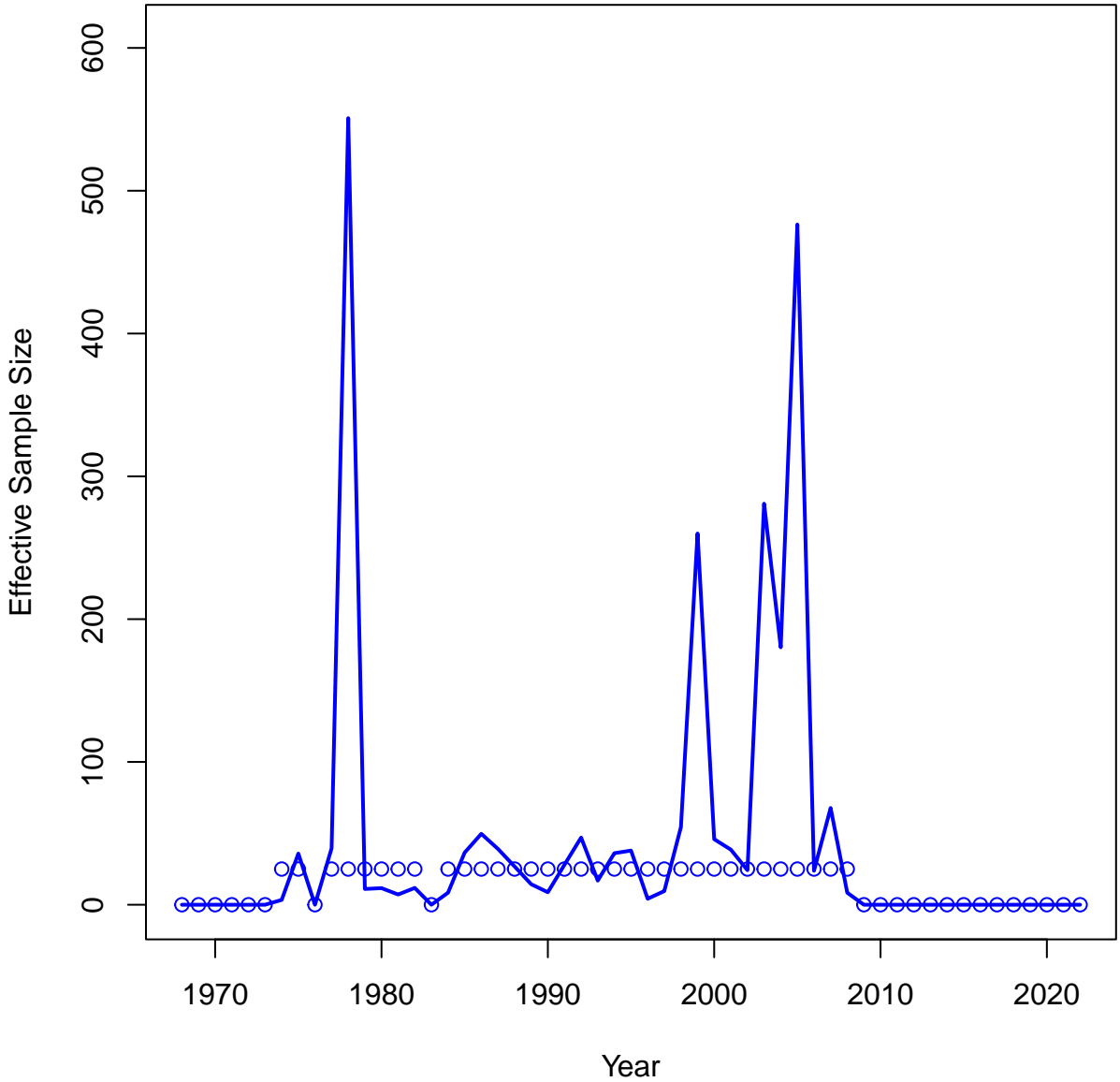


Mean resid = -0.01 SD(resid) = 1.21

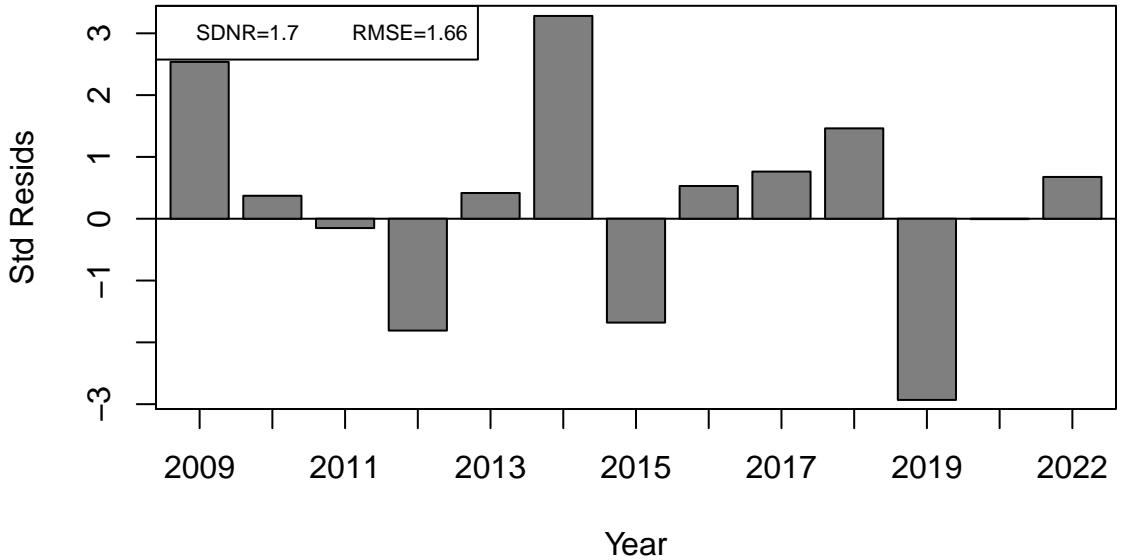
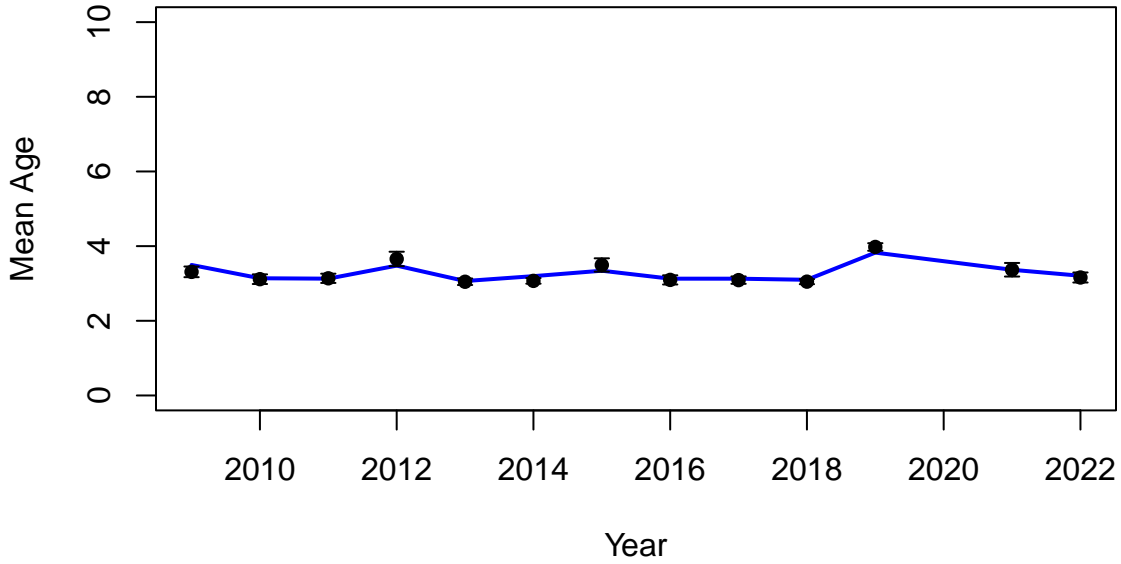
Index Neff 2 (Spring Big 3+)



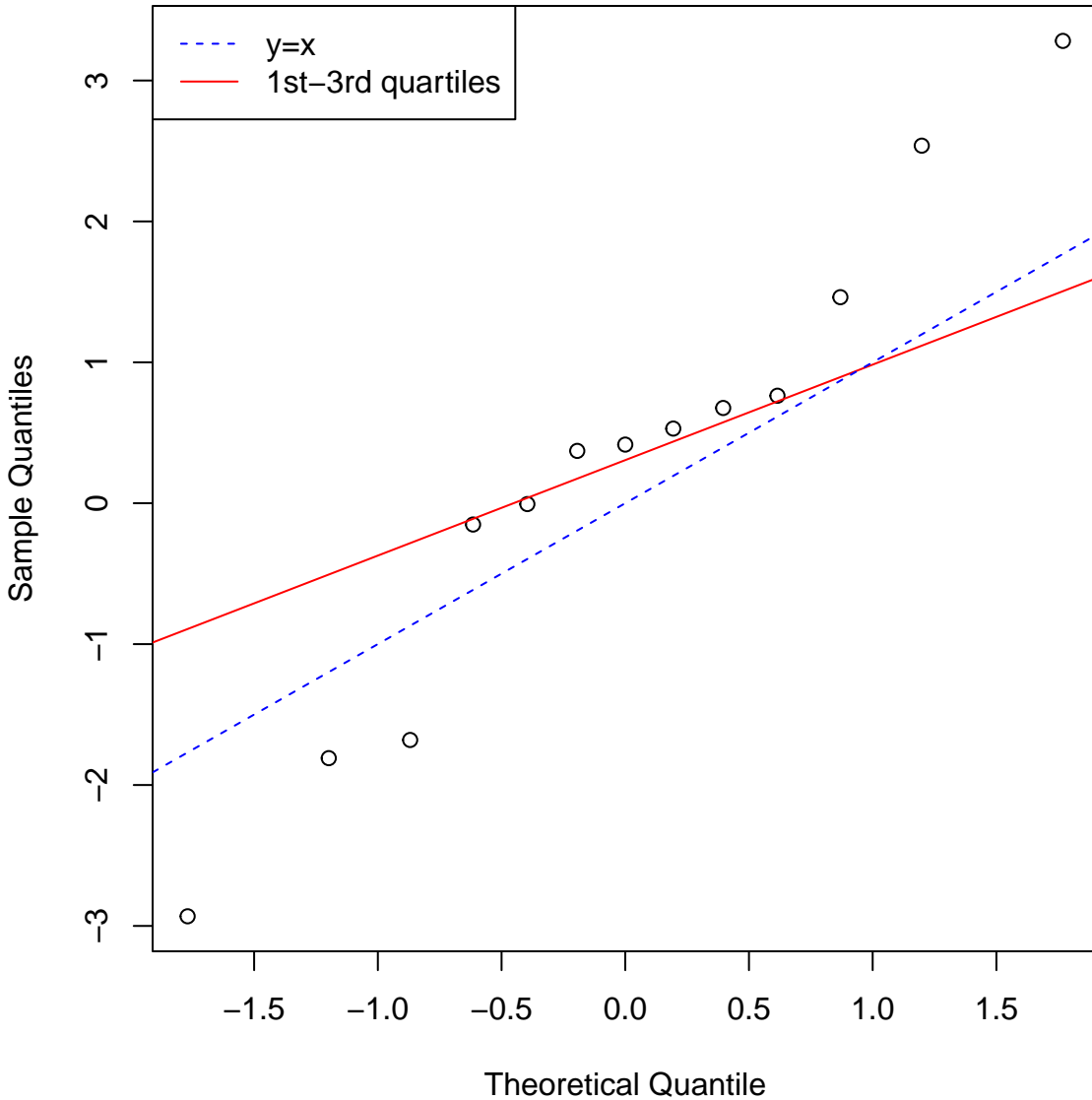
Index Neff 3 (Spring Alb 3+)



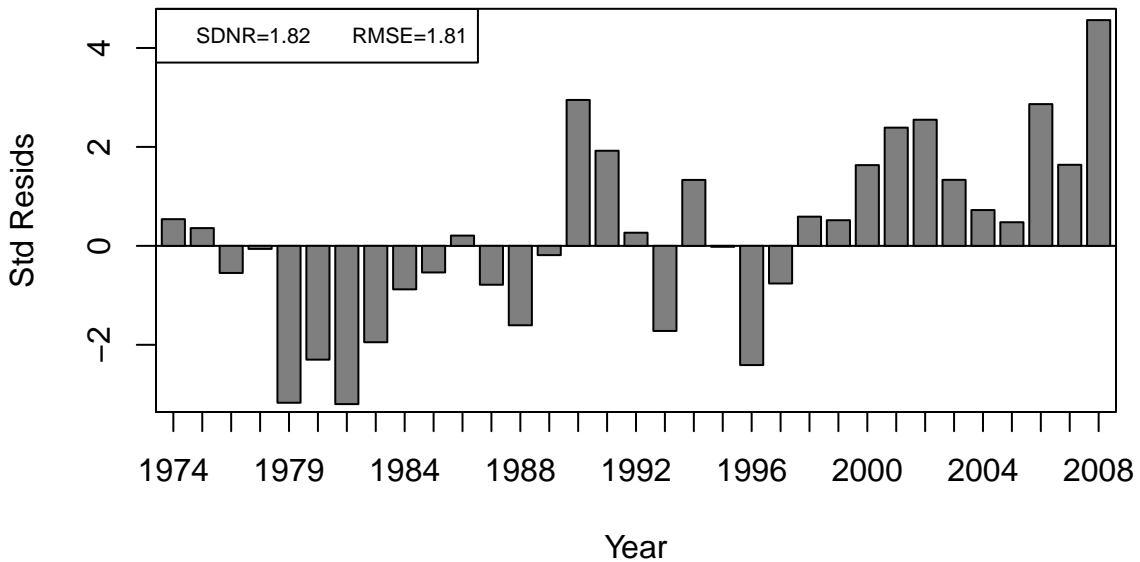
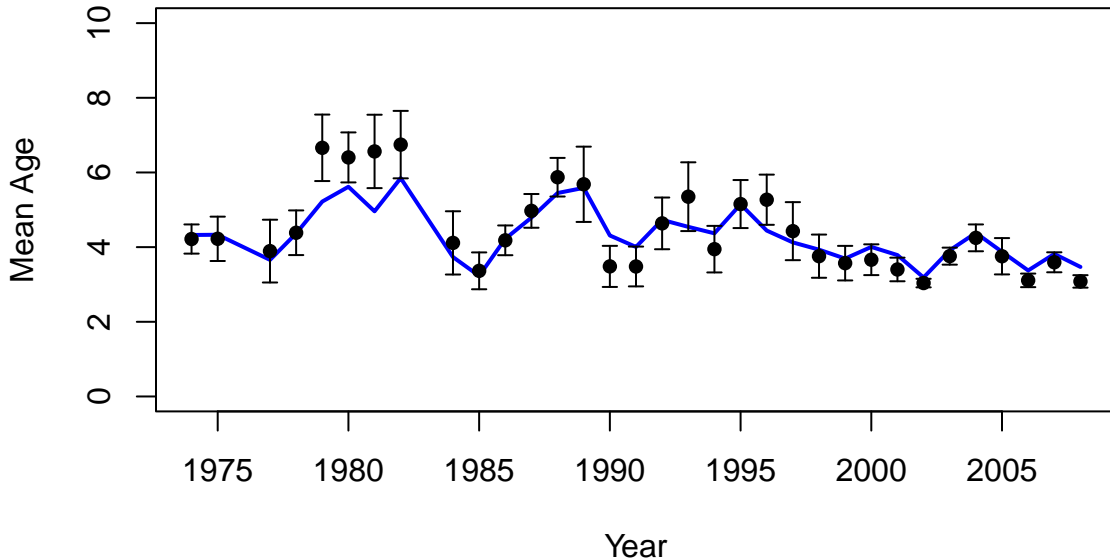
Index 2 (Spring Big 3+) ESS = 45



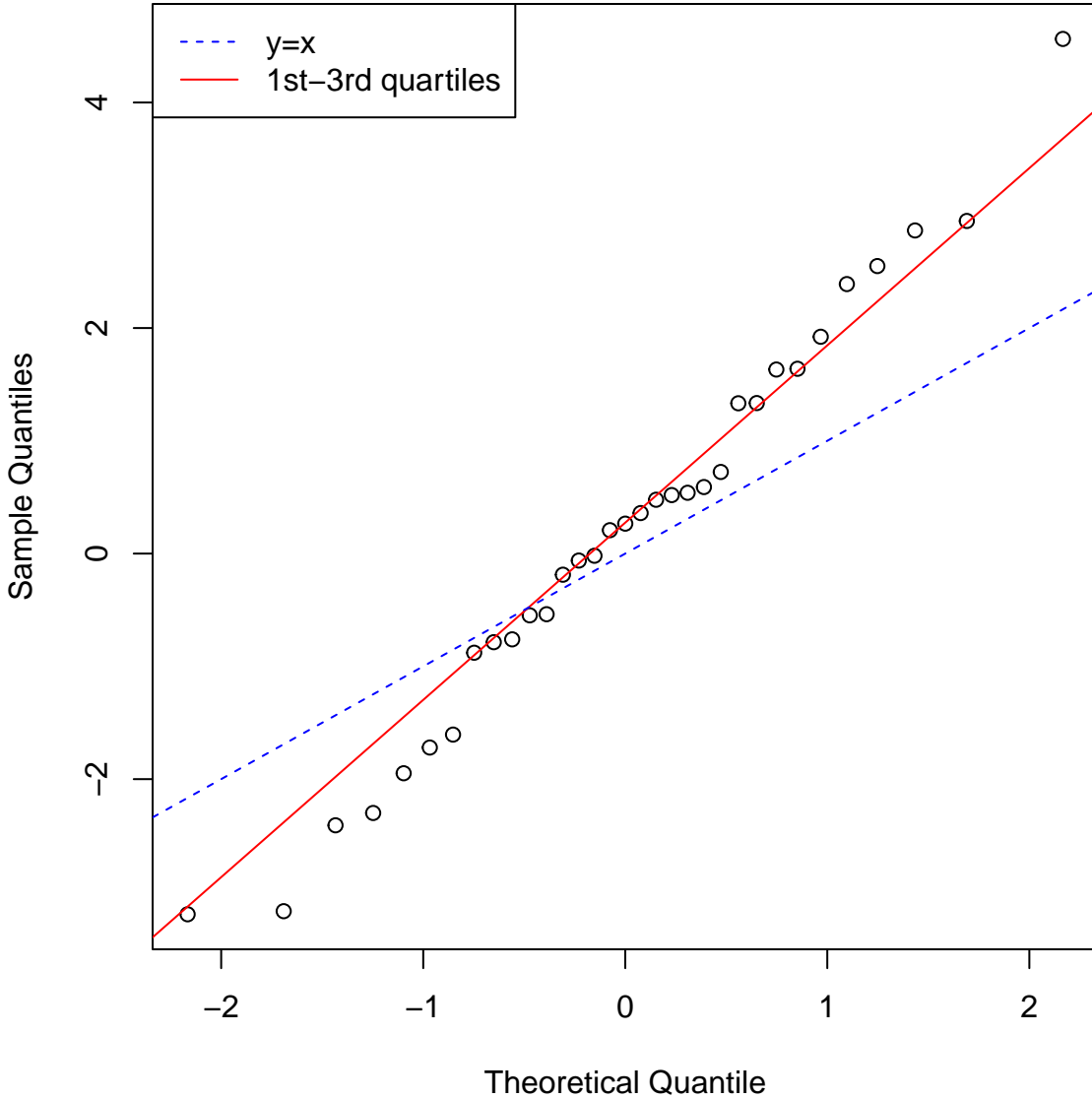
Index 2 (Spring Big 3+) ESS = 45



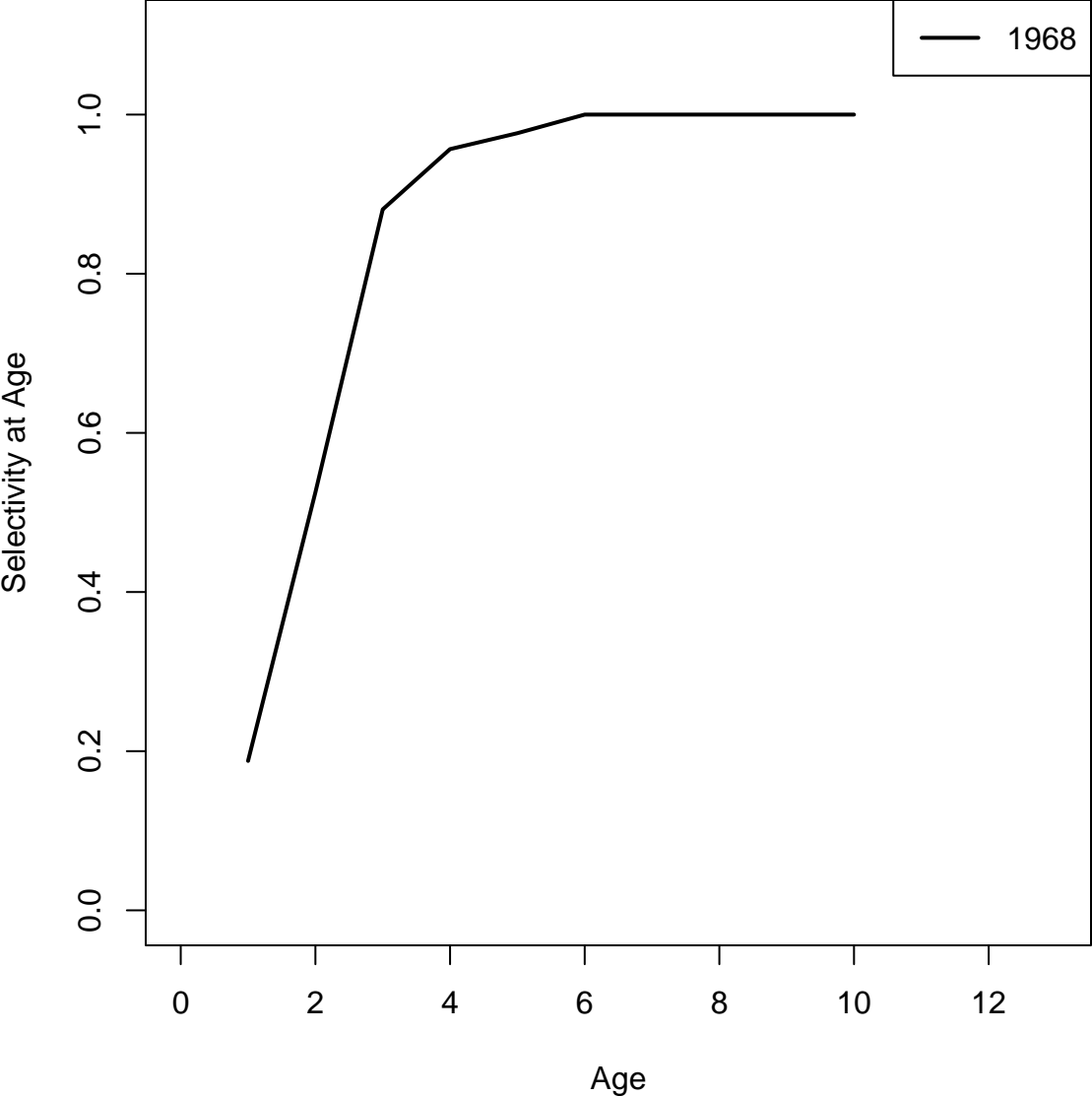
Index 3 (Spring Alb 3+) ESS = 25

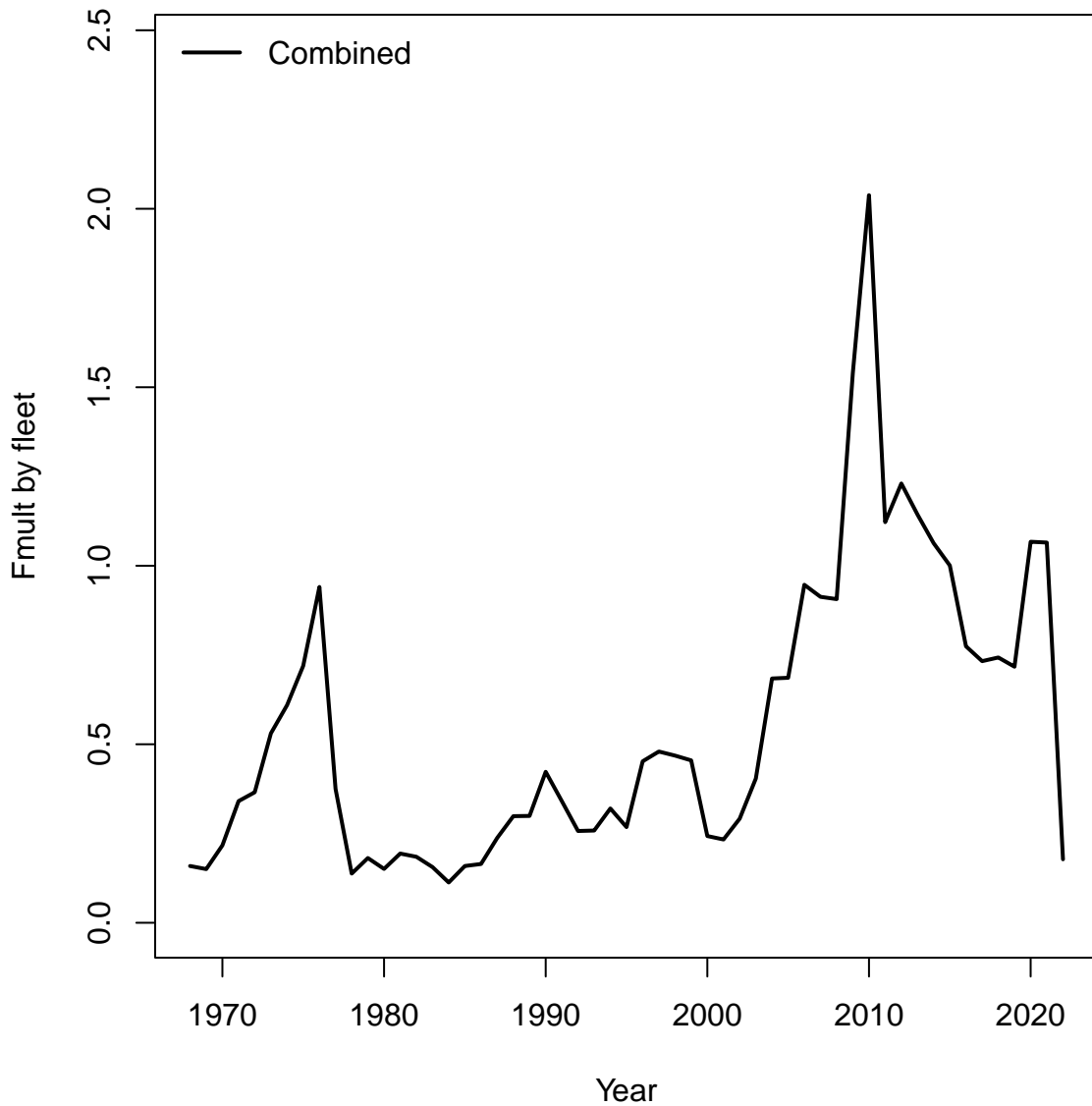


Index 3 (Spring Alb 3+) ESS = 25

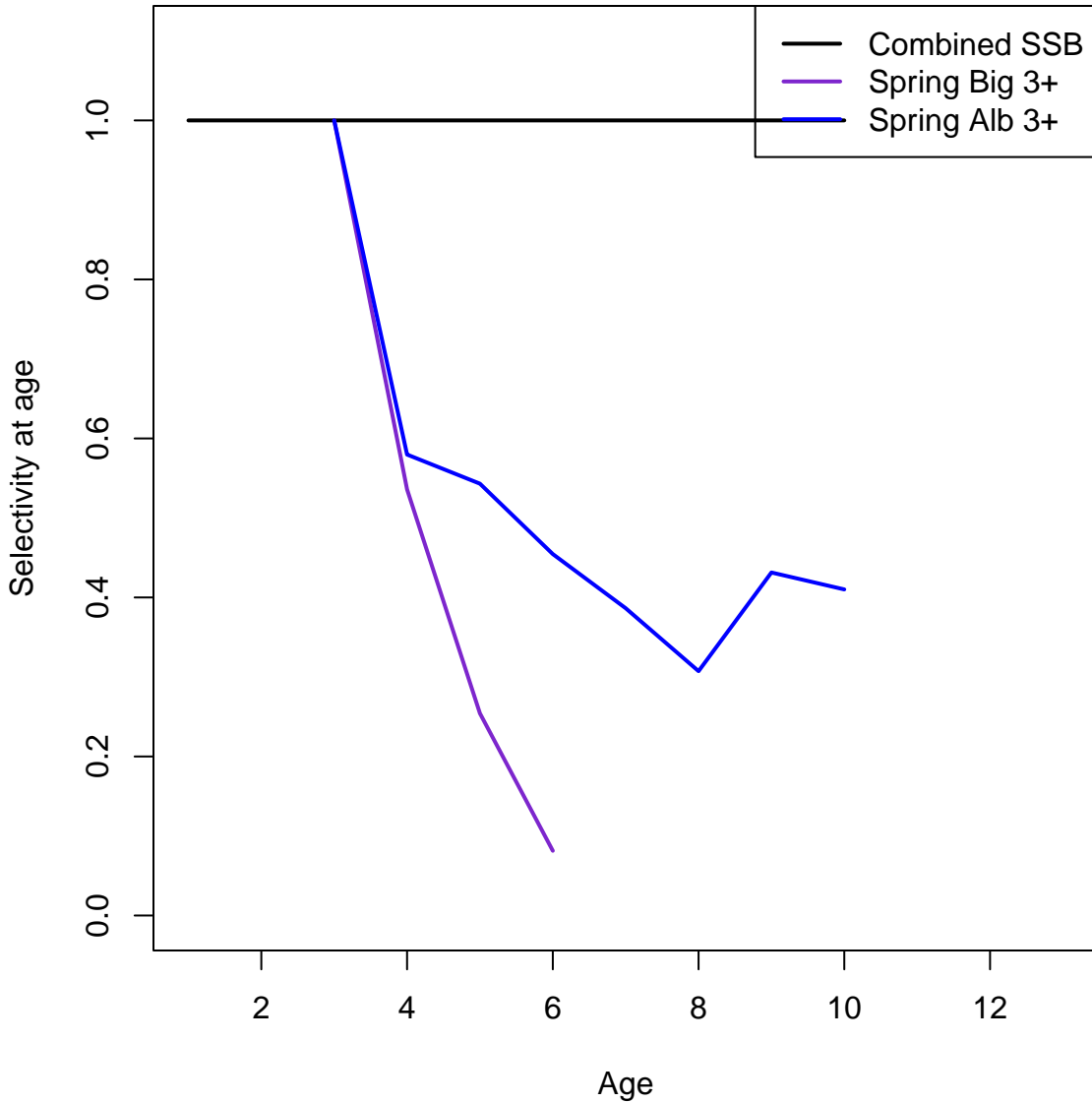


Fleet 1 (Combined)

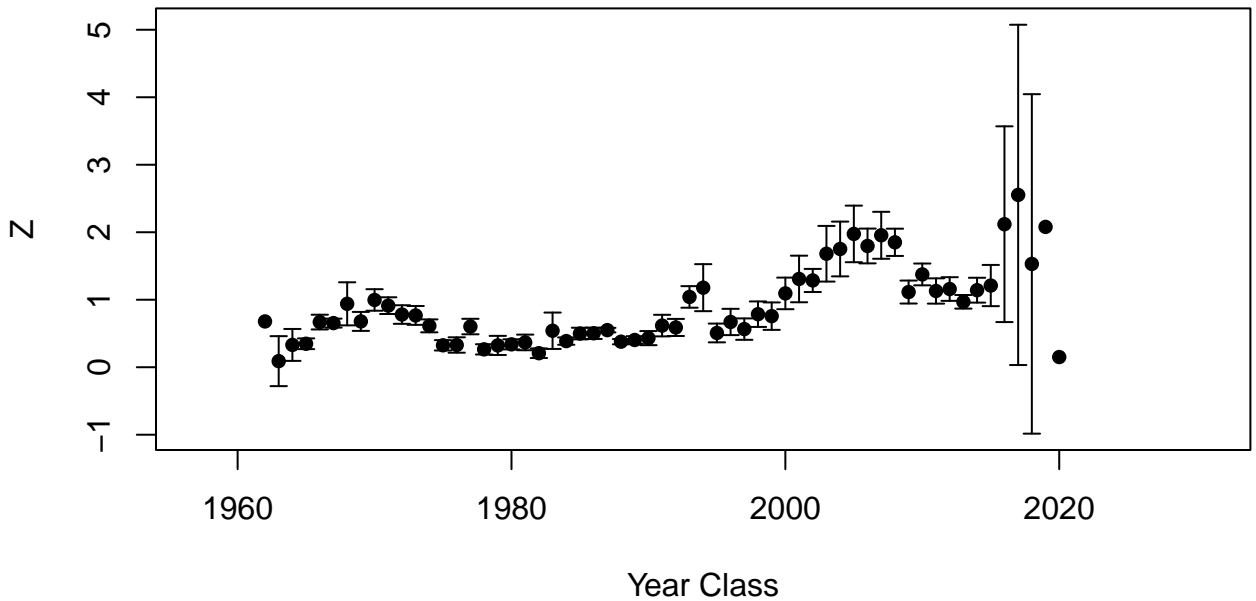
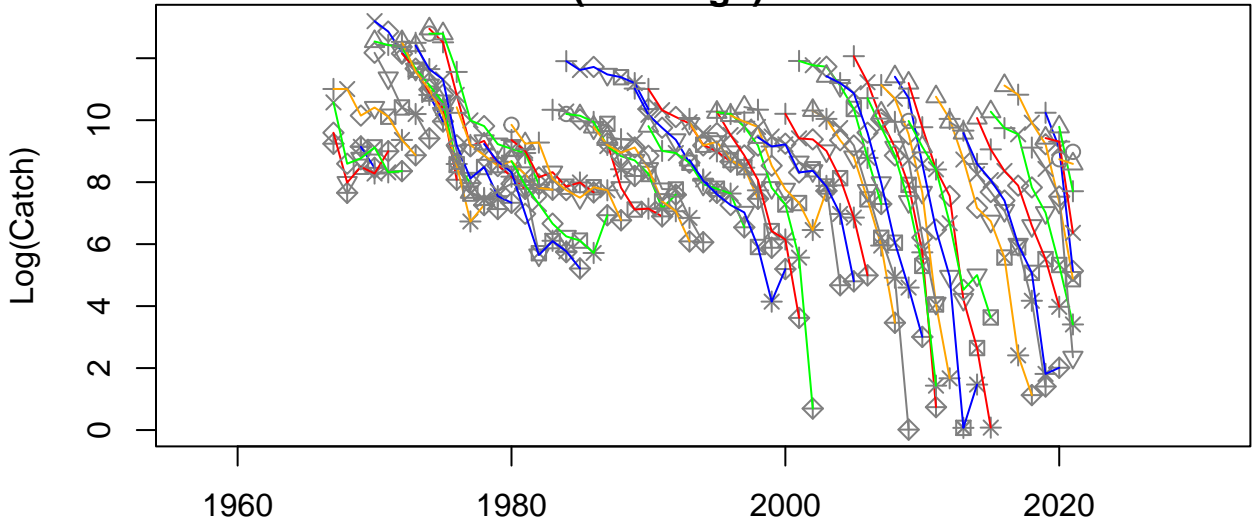




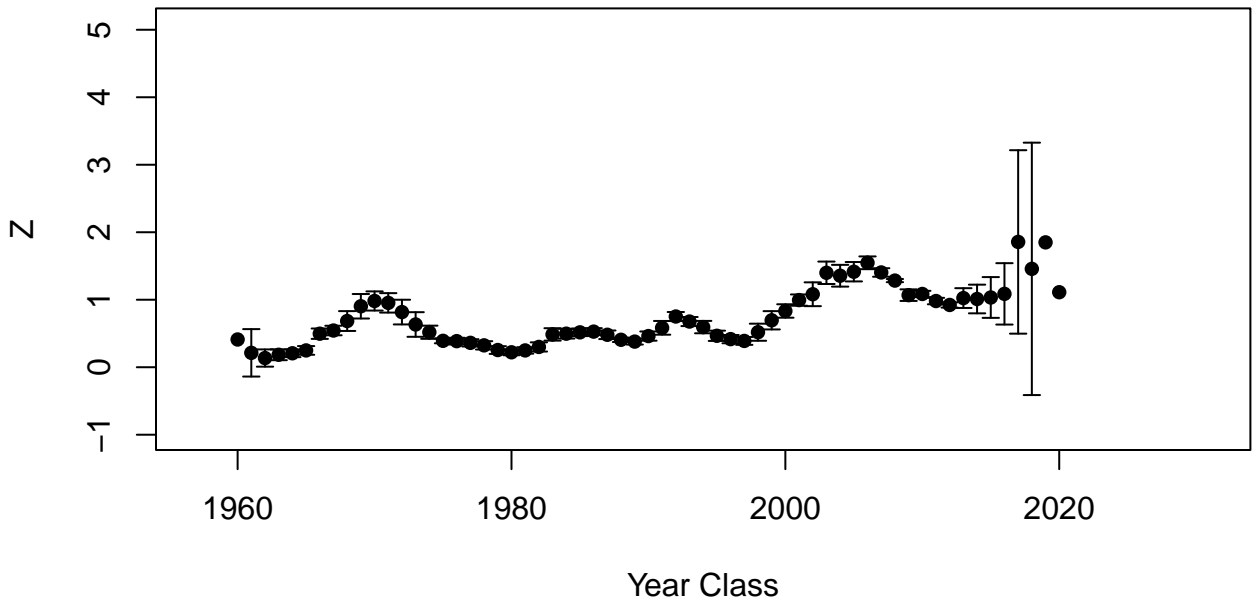
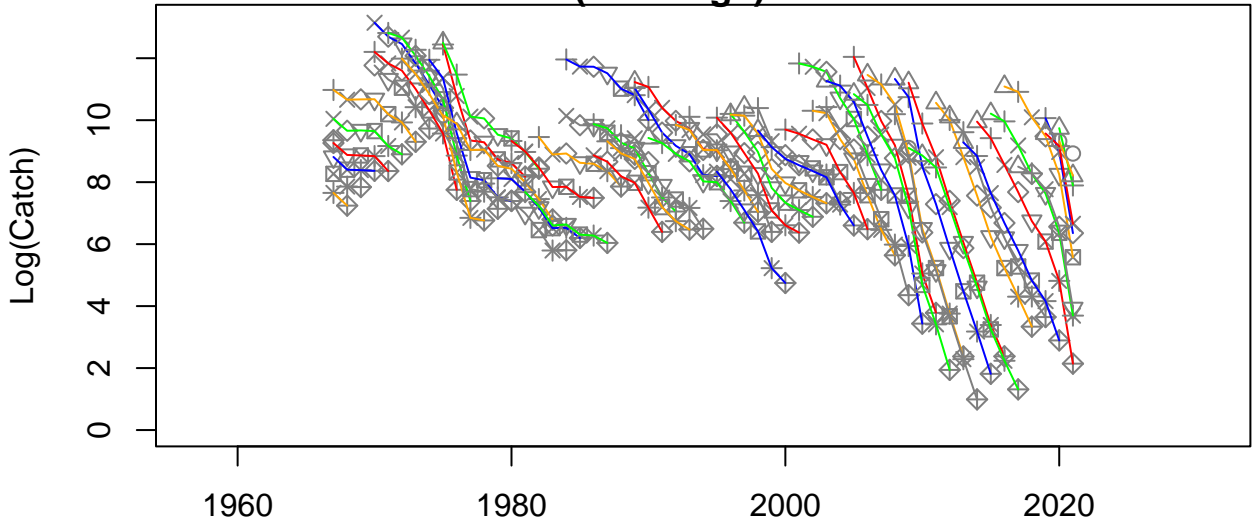
Indices



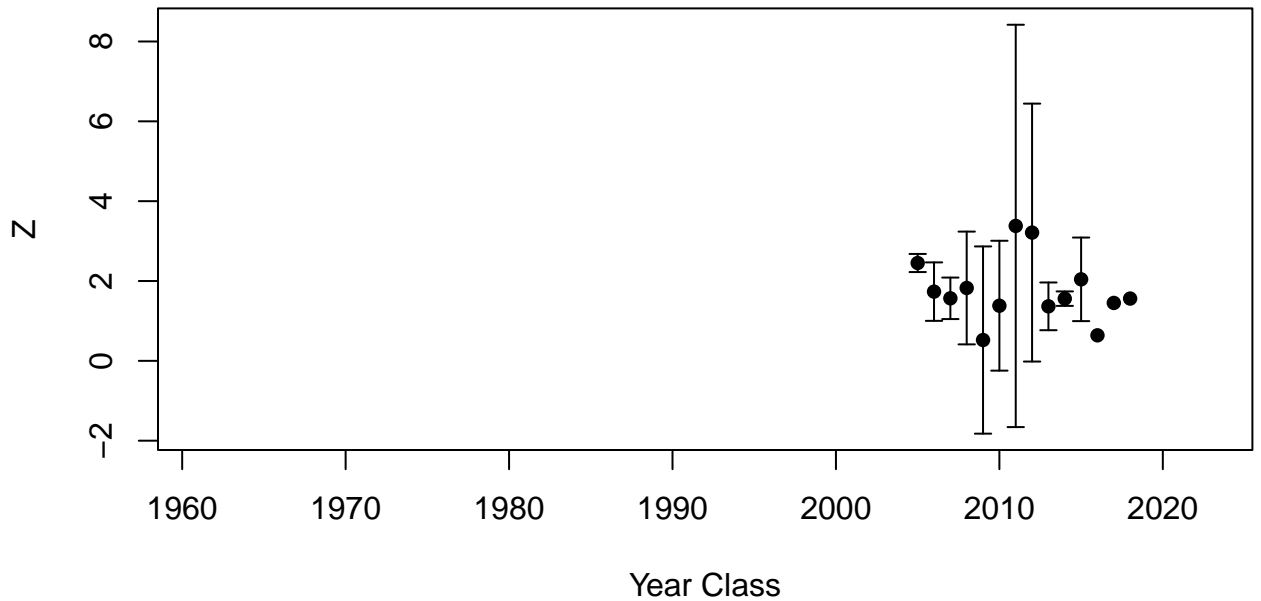
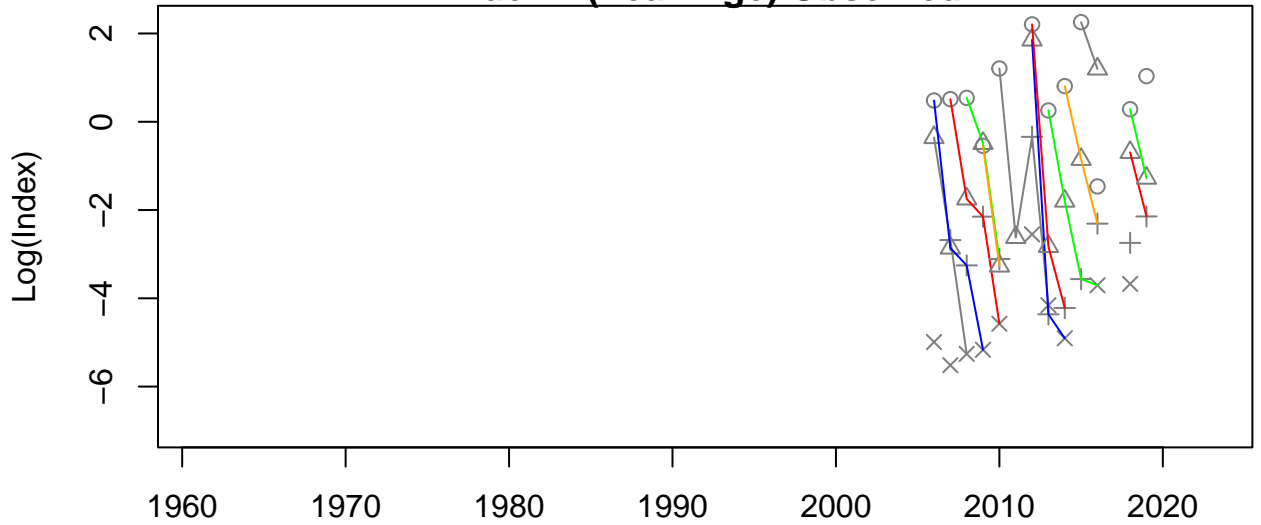
Catch (Peak Age) Observed



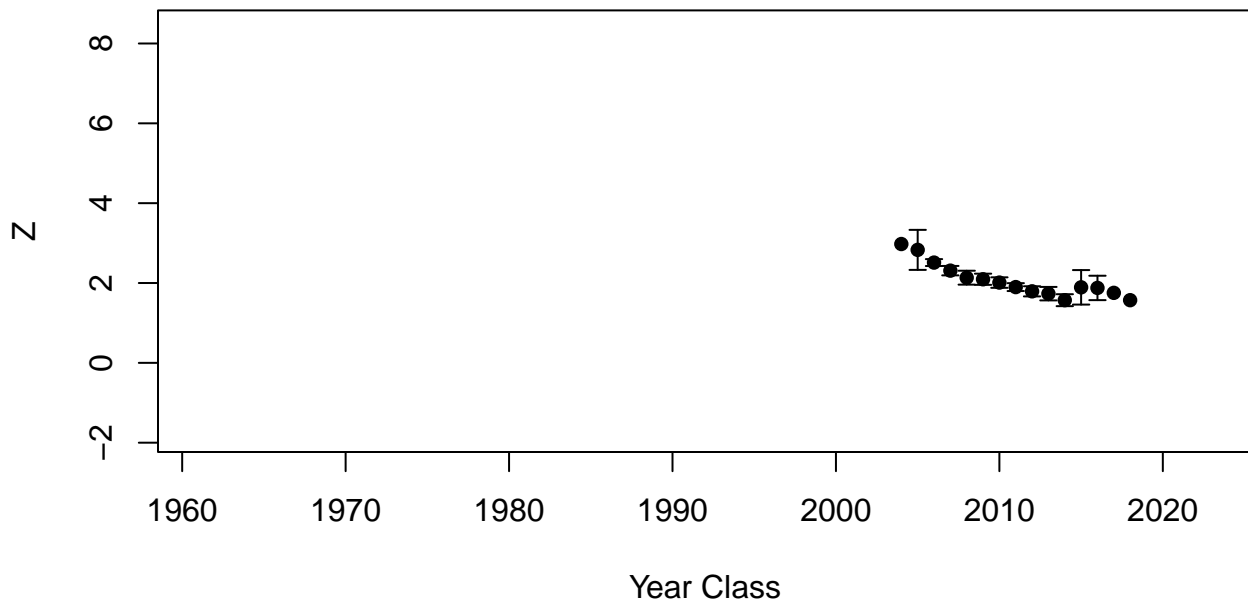
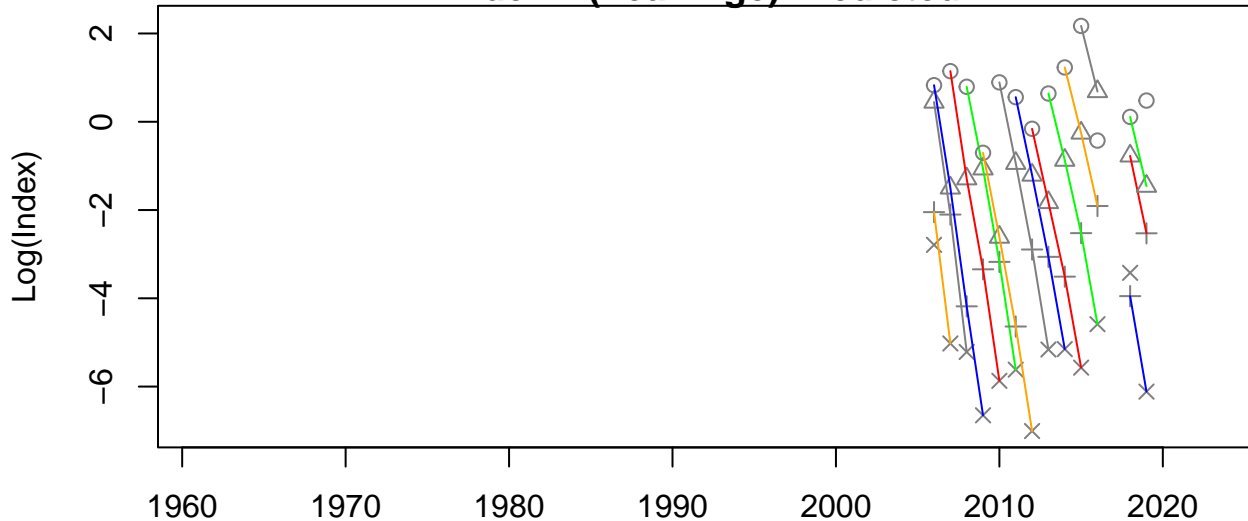
Catch (Peak Age) Predicted



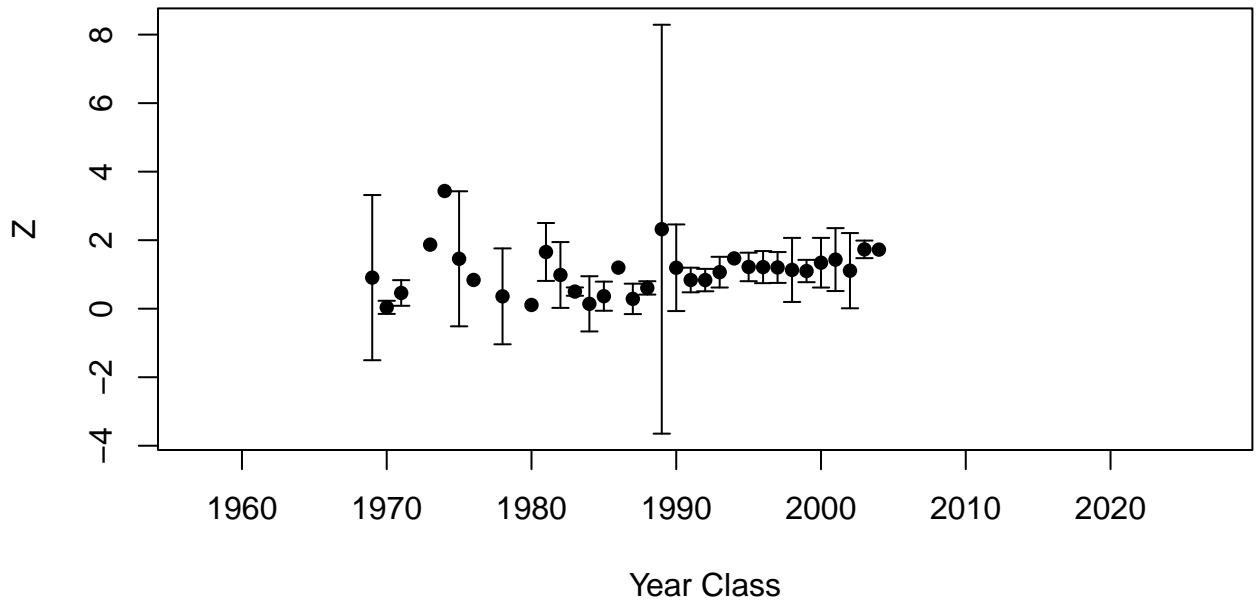
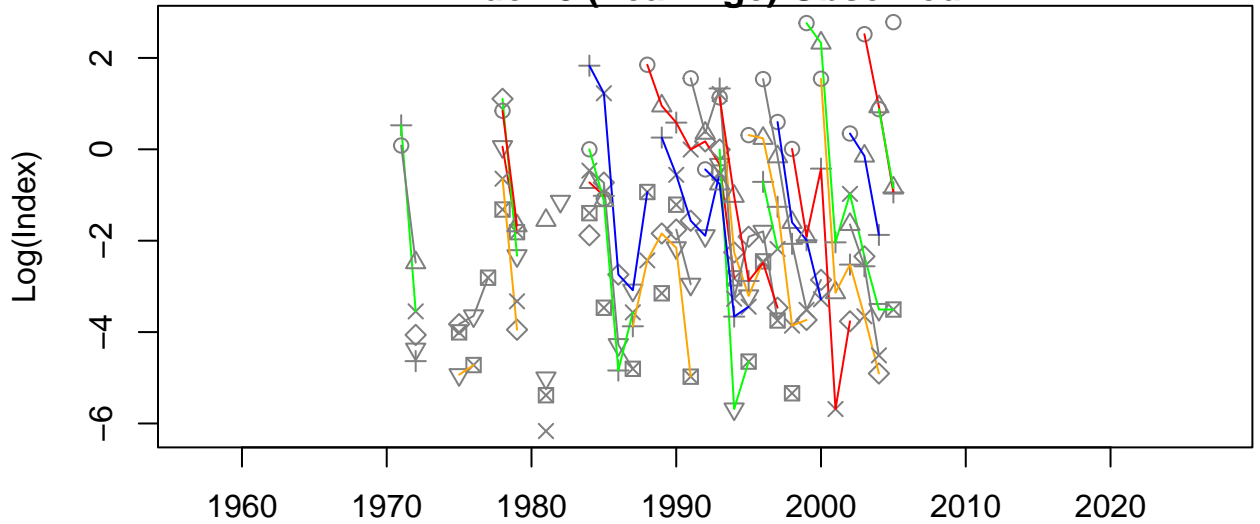
Index 2 (Peak Age) Observed



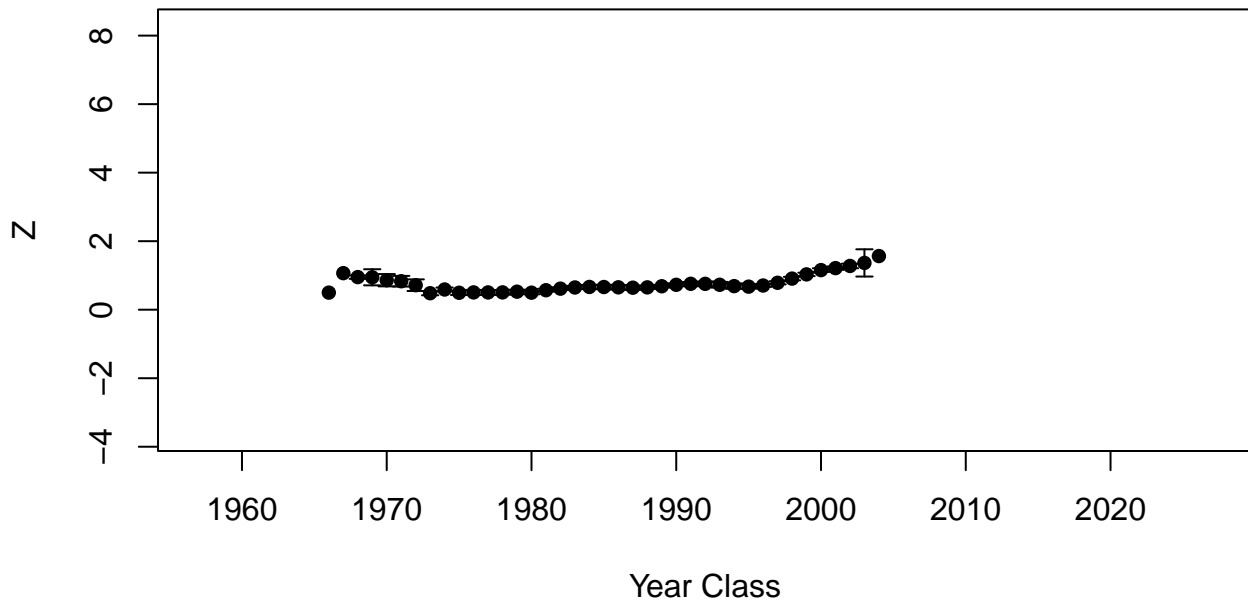
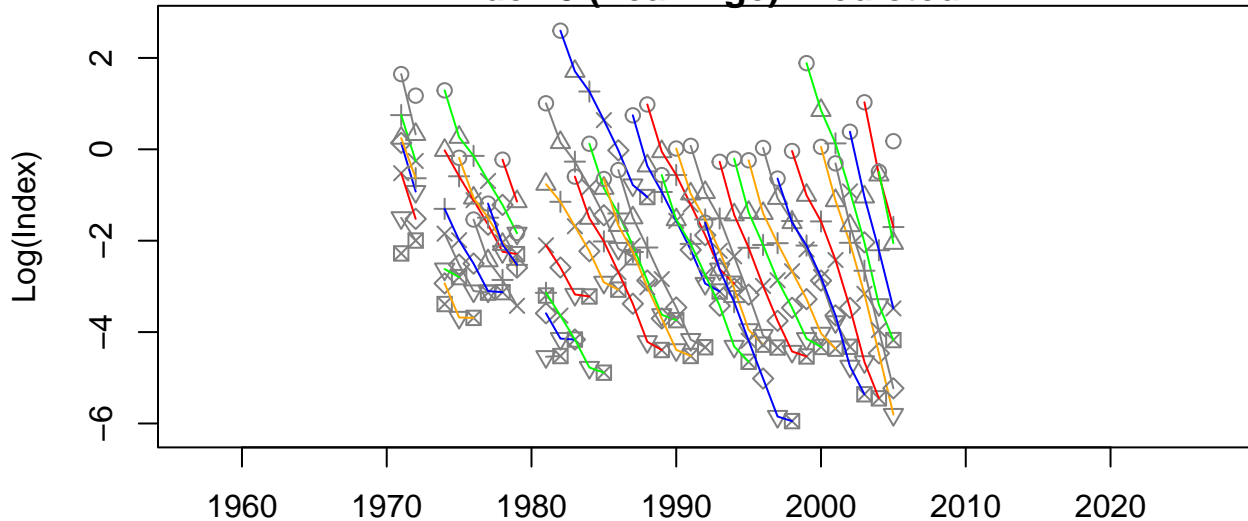
Index 2 (Peak Age) Predicted



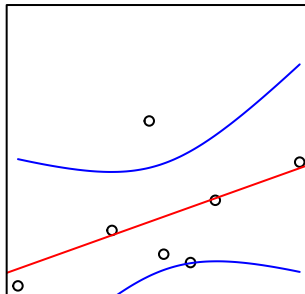
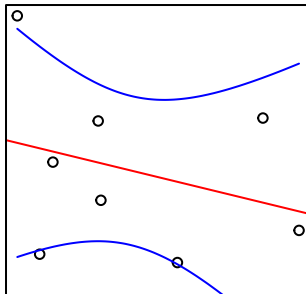
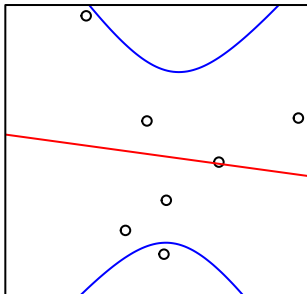
Index 3 (Peak Age) Observed



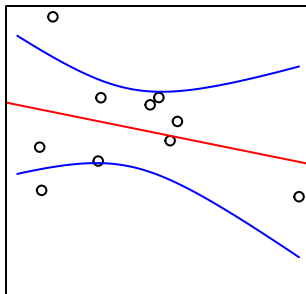
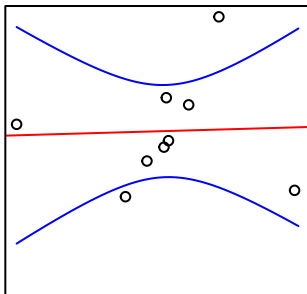
Index 3 (Peak Age) Predicted



Index 2 (Spring Big 3+) Observed

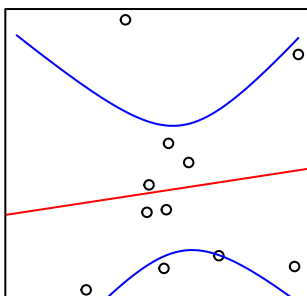


age-6



age-5

0.53



age-4

-0.31

-0.30

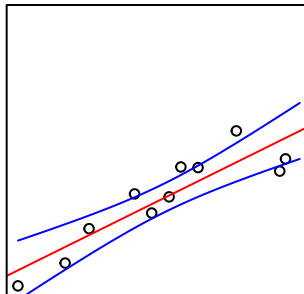
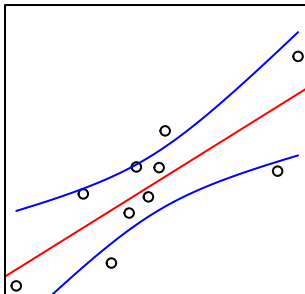
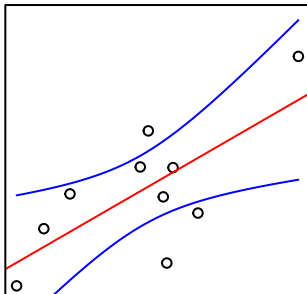
age-3

0.11

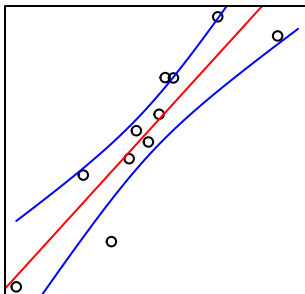
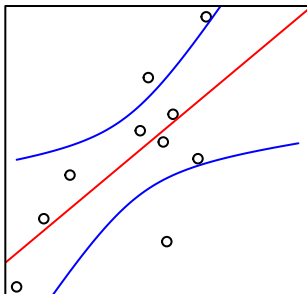
0.04

-0.12

Index 2 (Spring Big 3+) Predicted

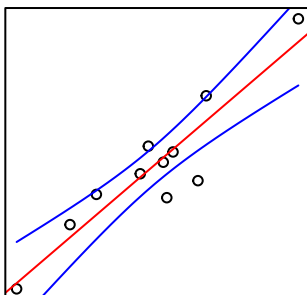


age-6



age-5

0.90



age-4

0.91

0.81

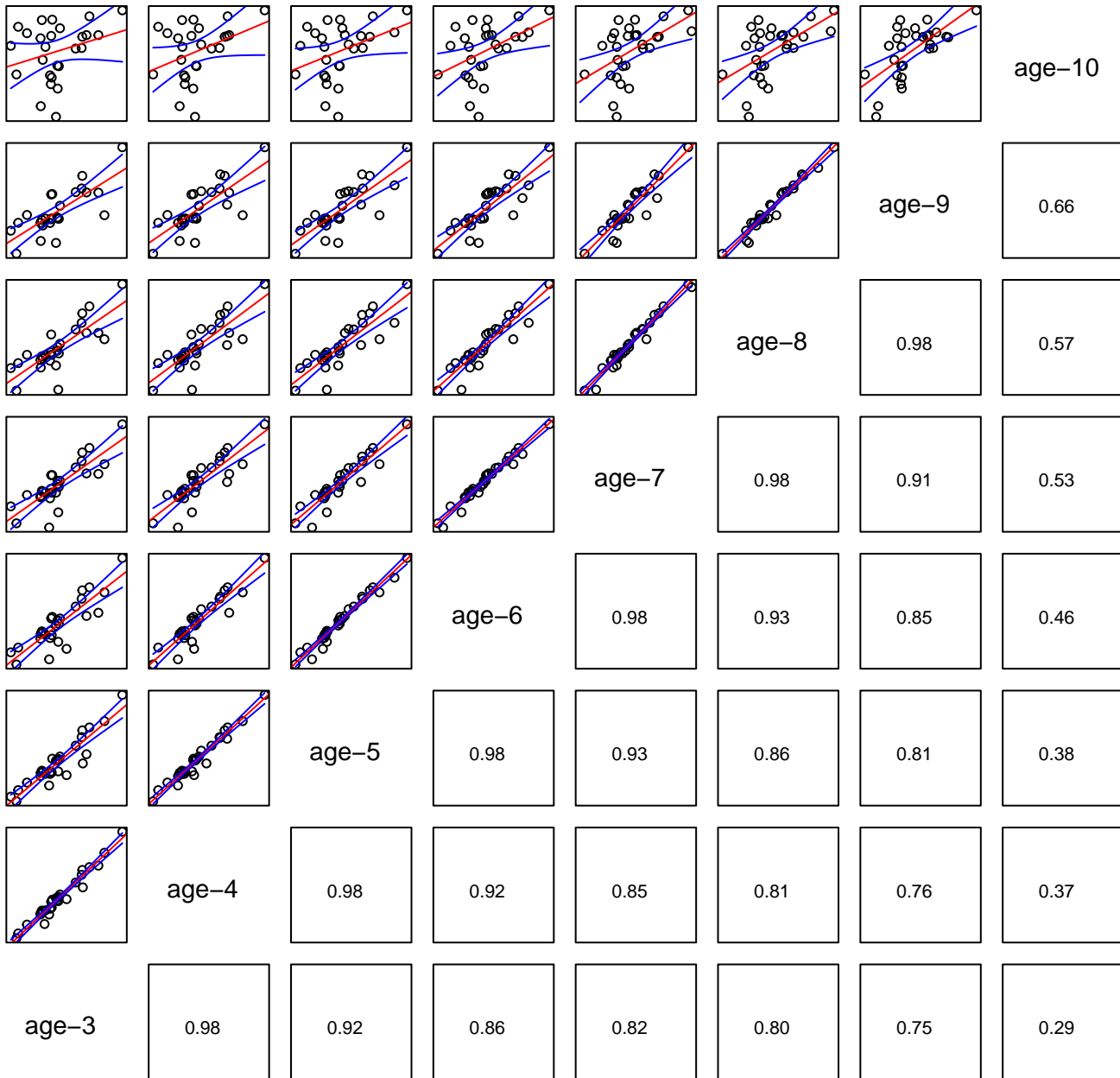
age-3

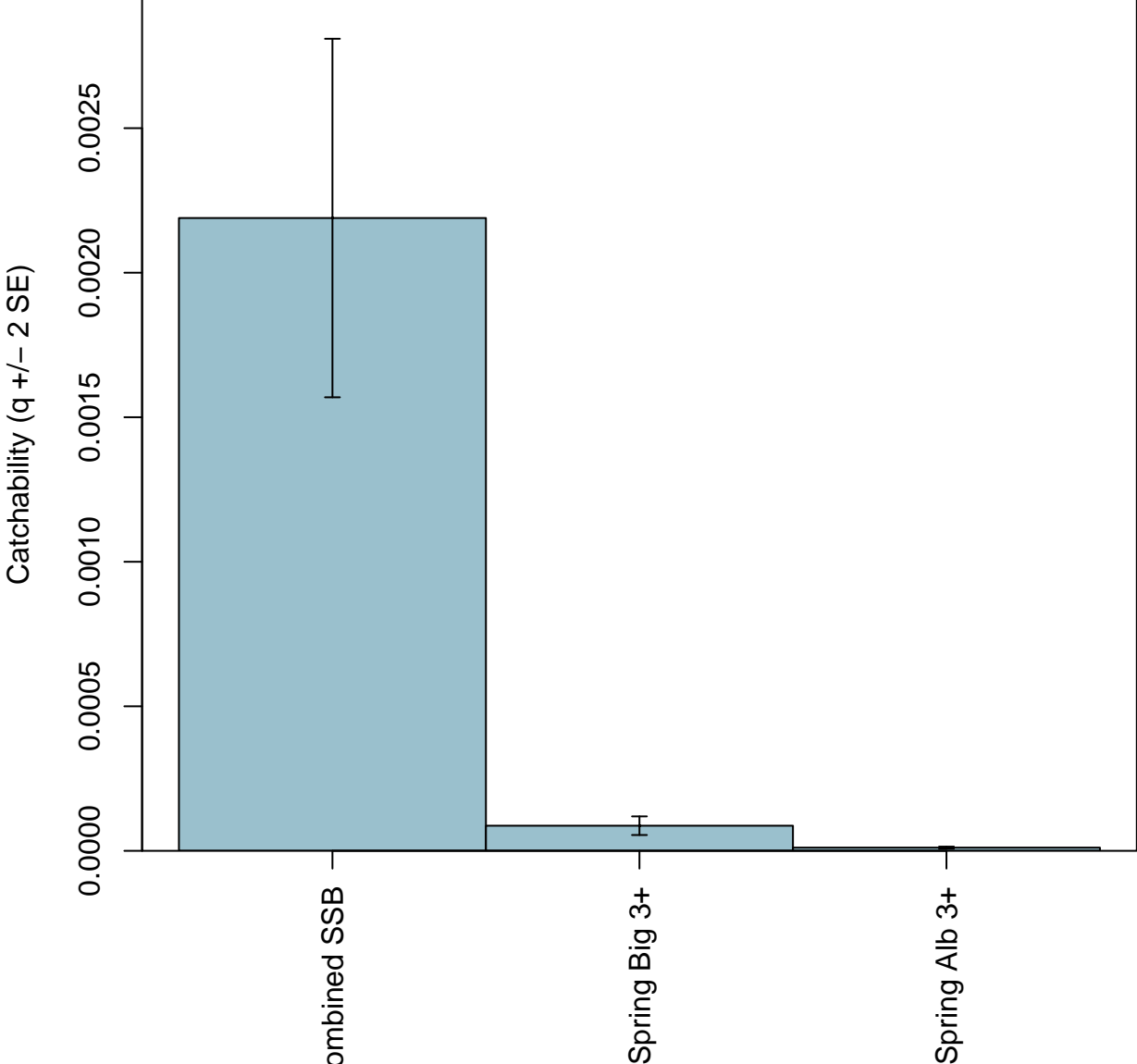
0.92

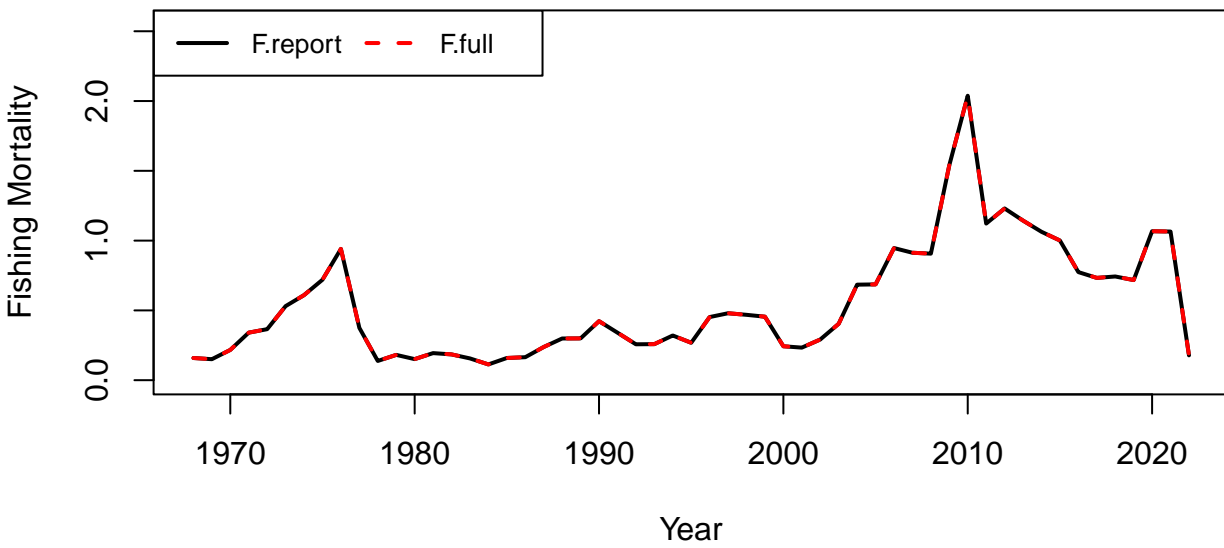
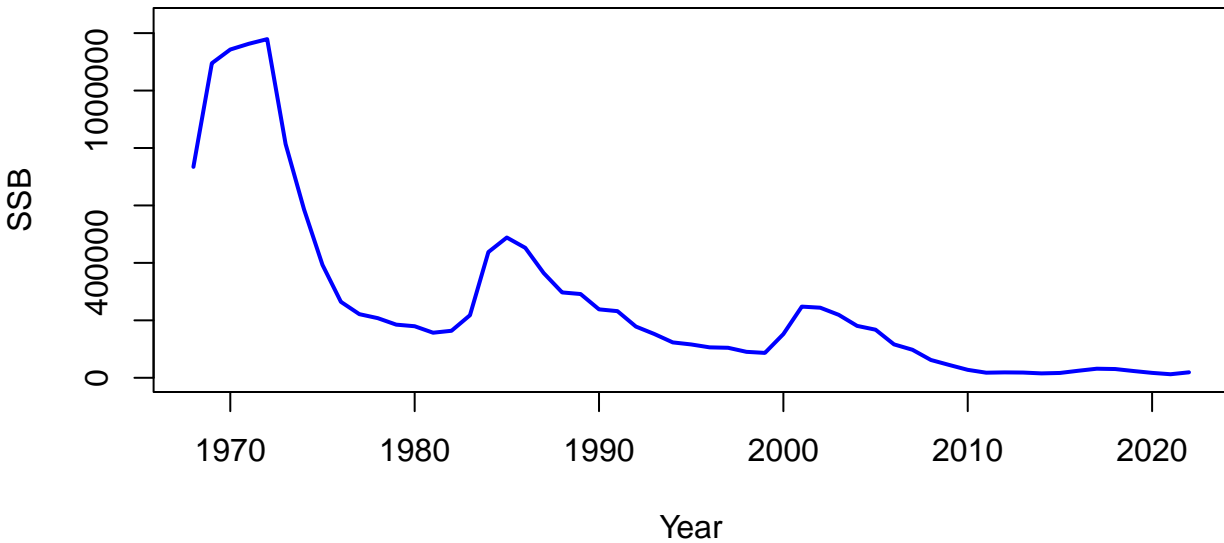
0.69

0.72

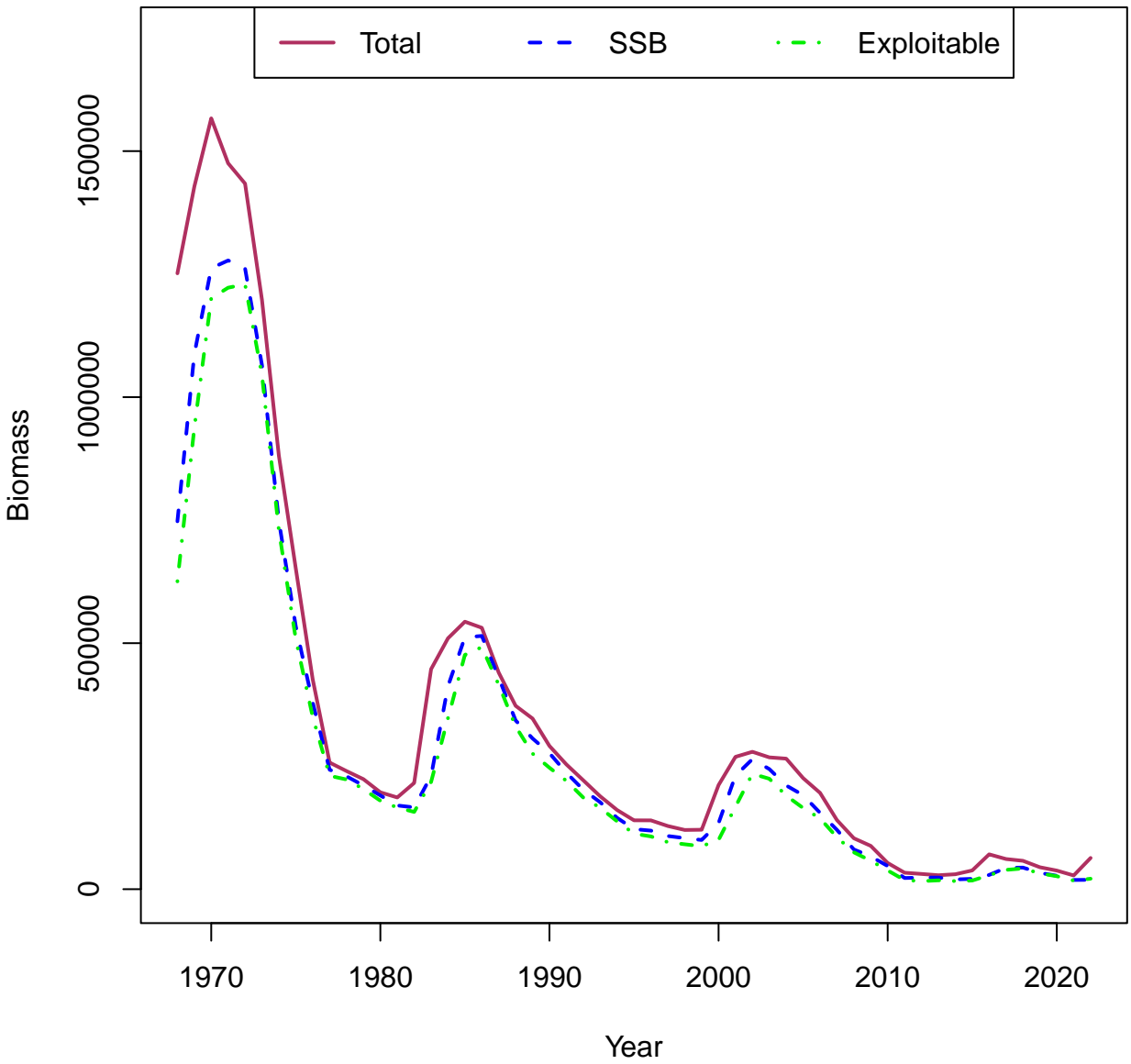
Index 3 (Spring Alb 3+) Predicted

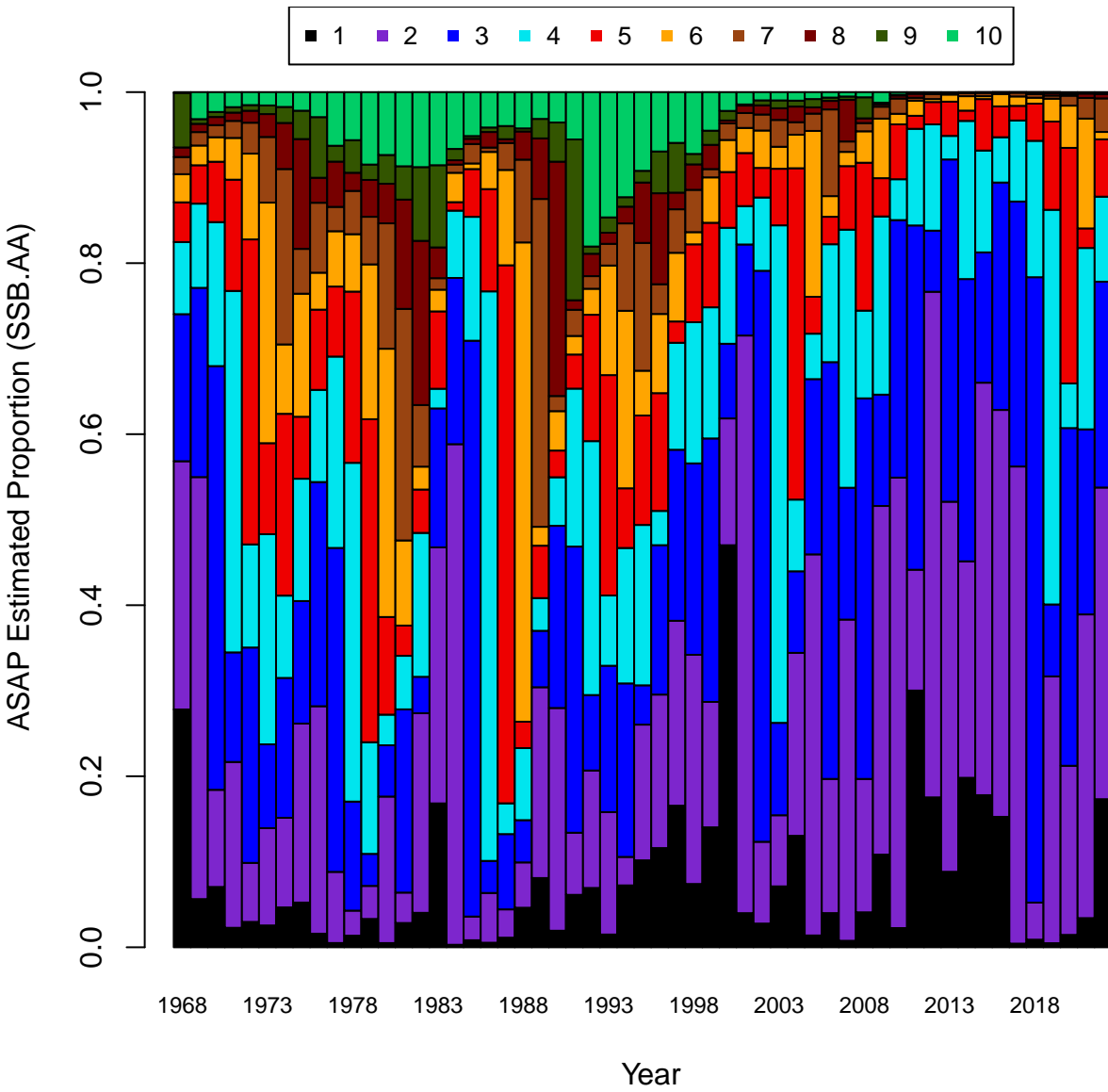




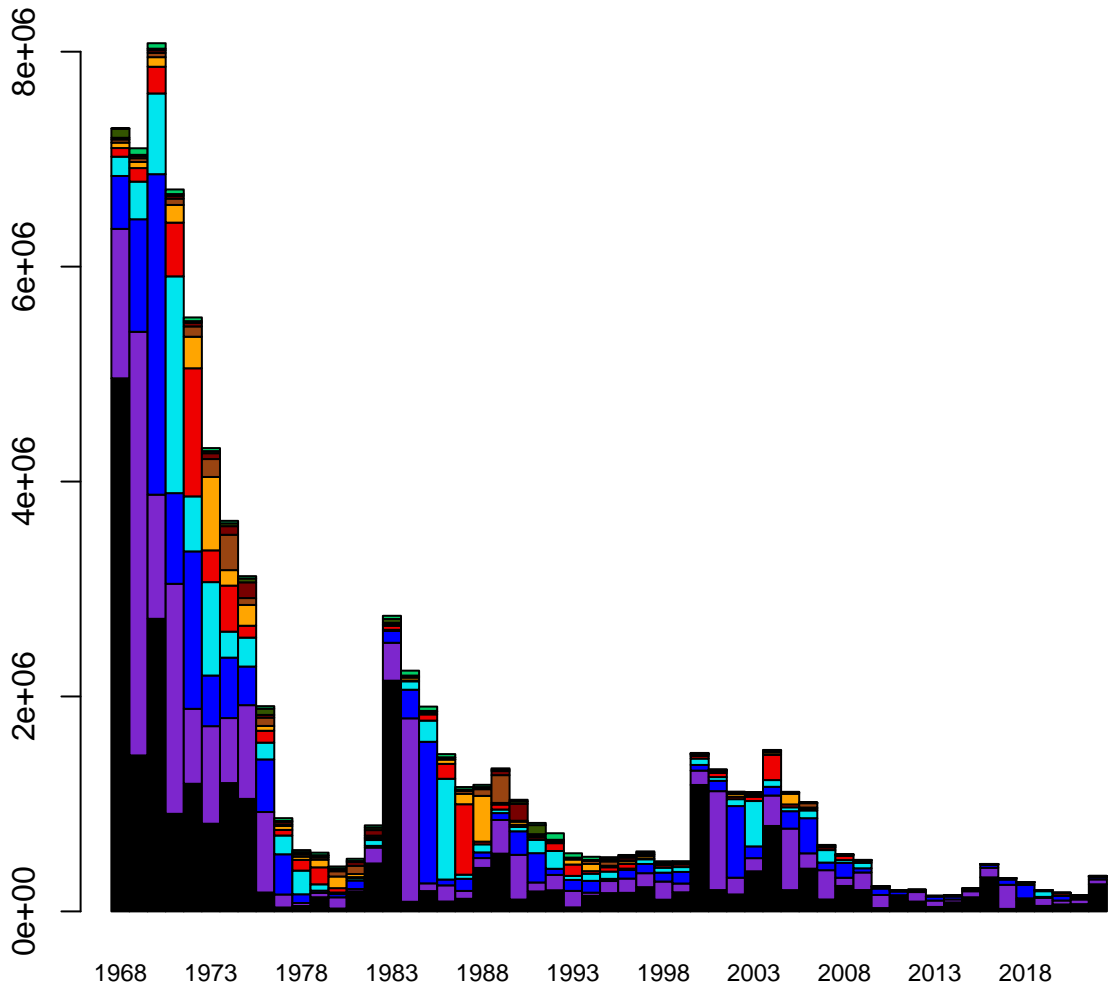


Comparison of January 1 Biomass

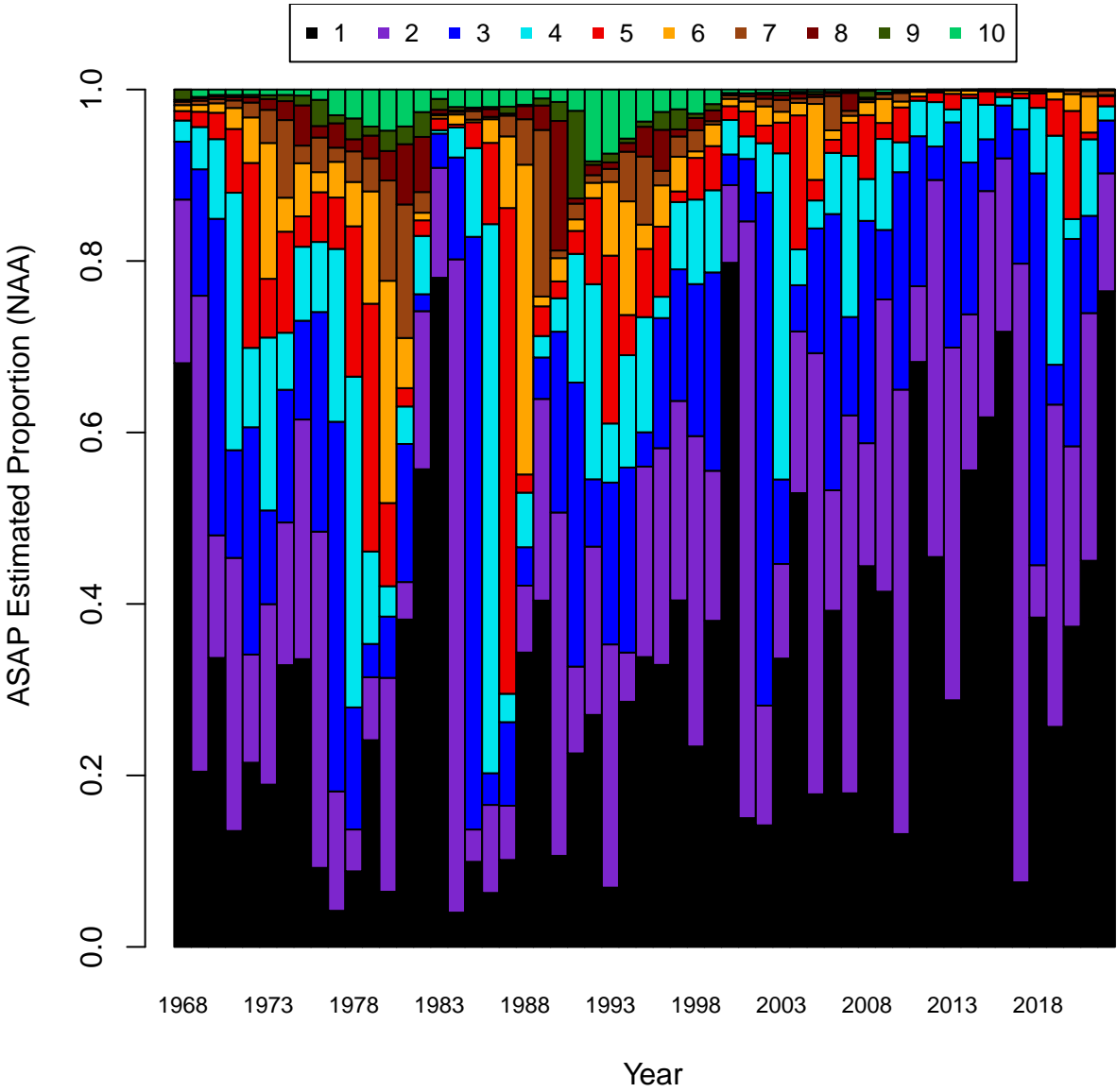


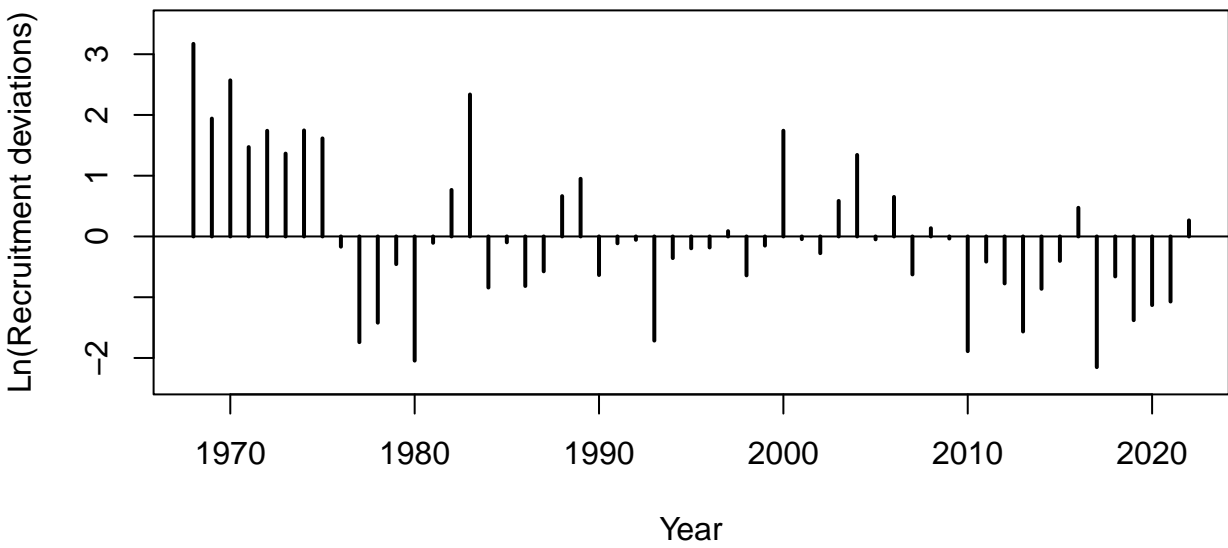
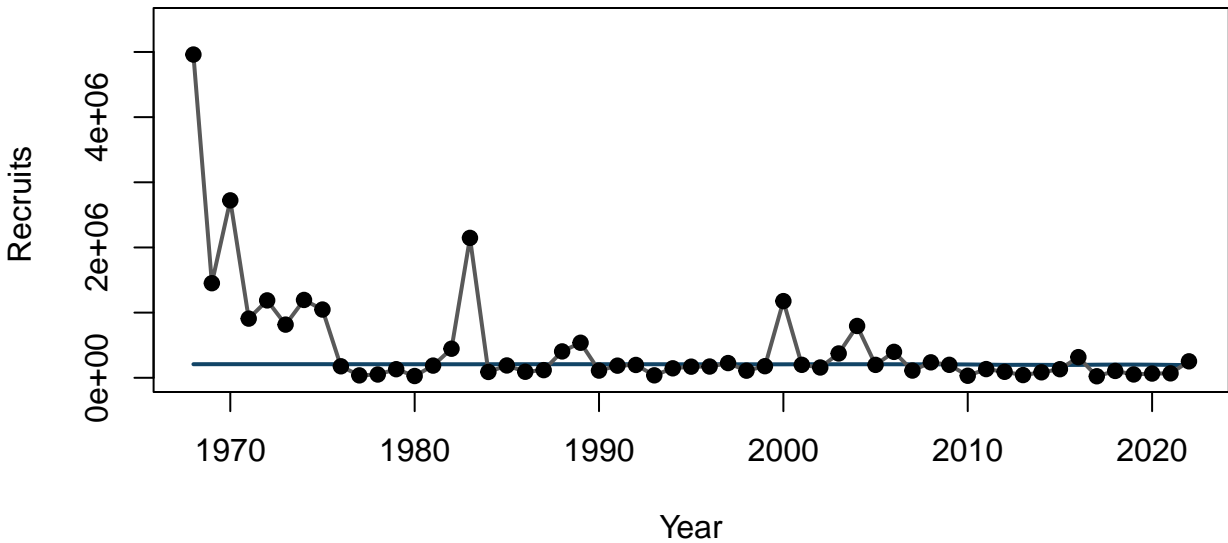


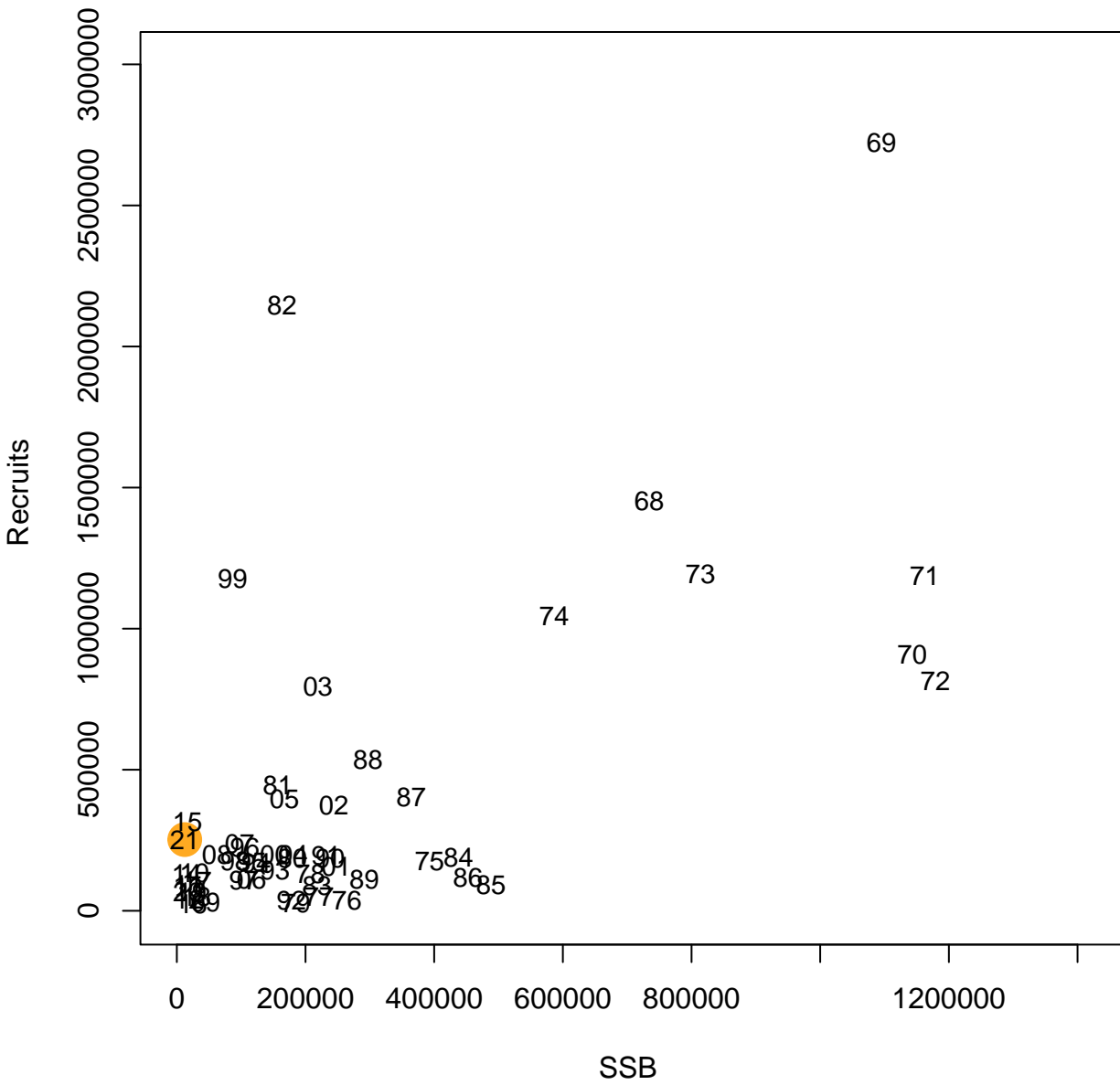
ASAP Estimated NAA

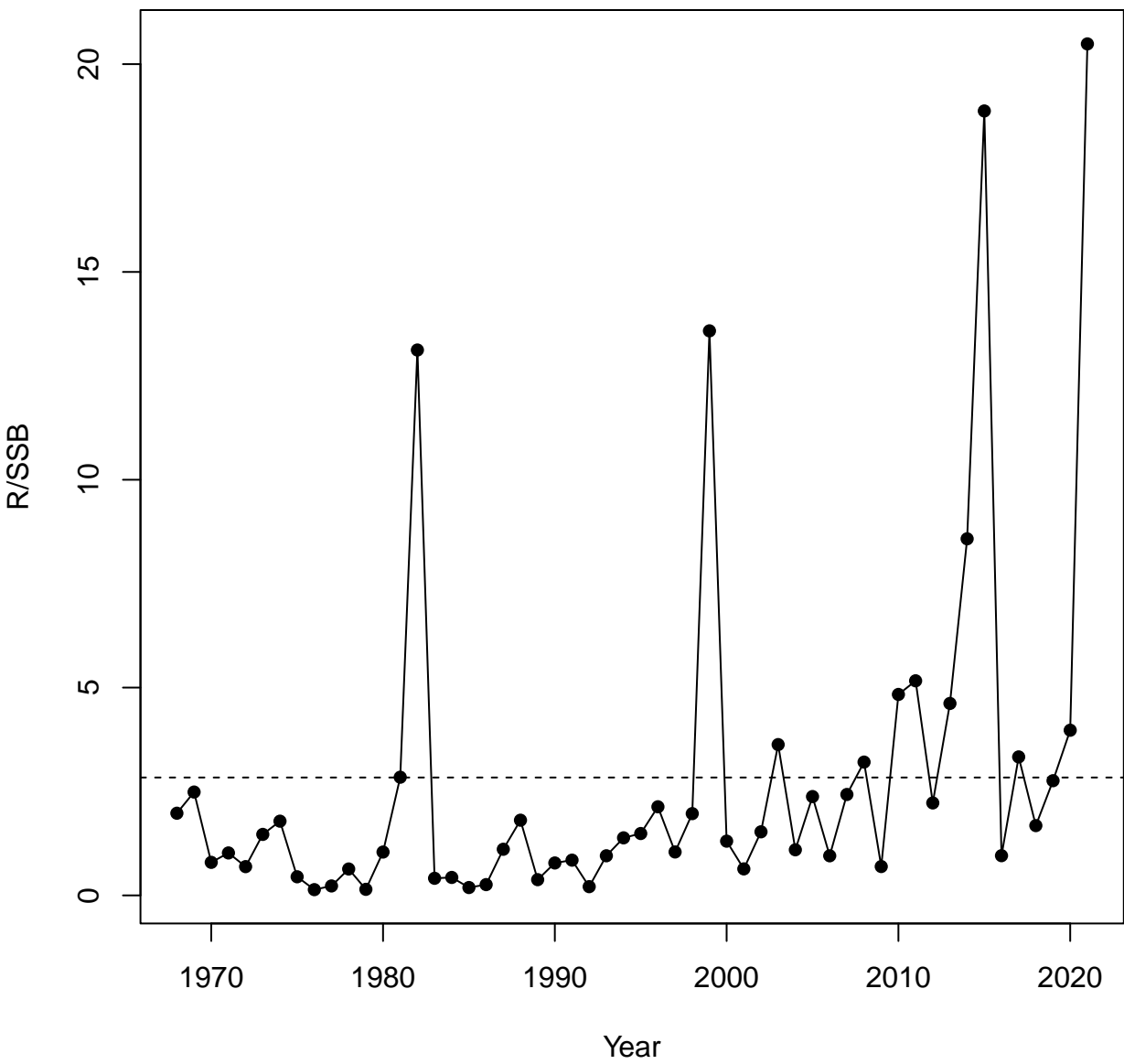


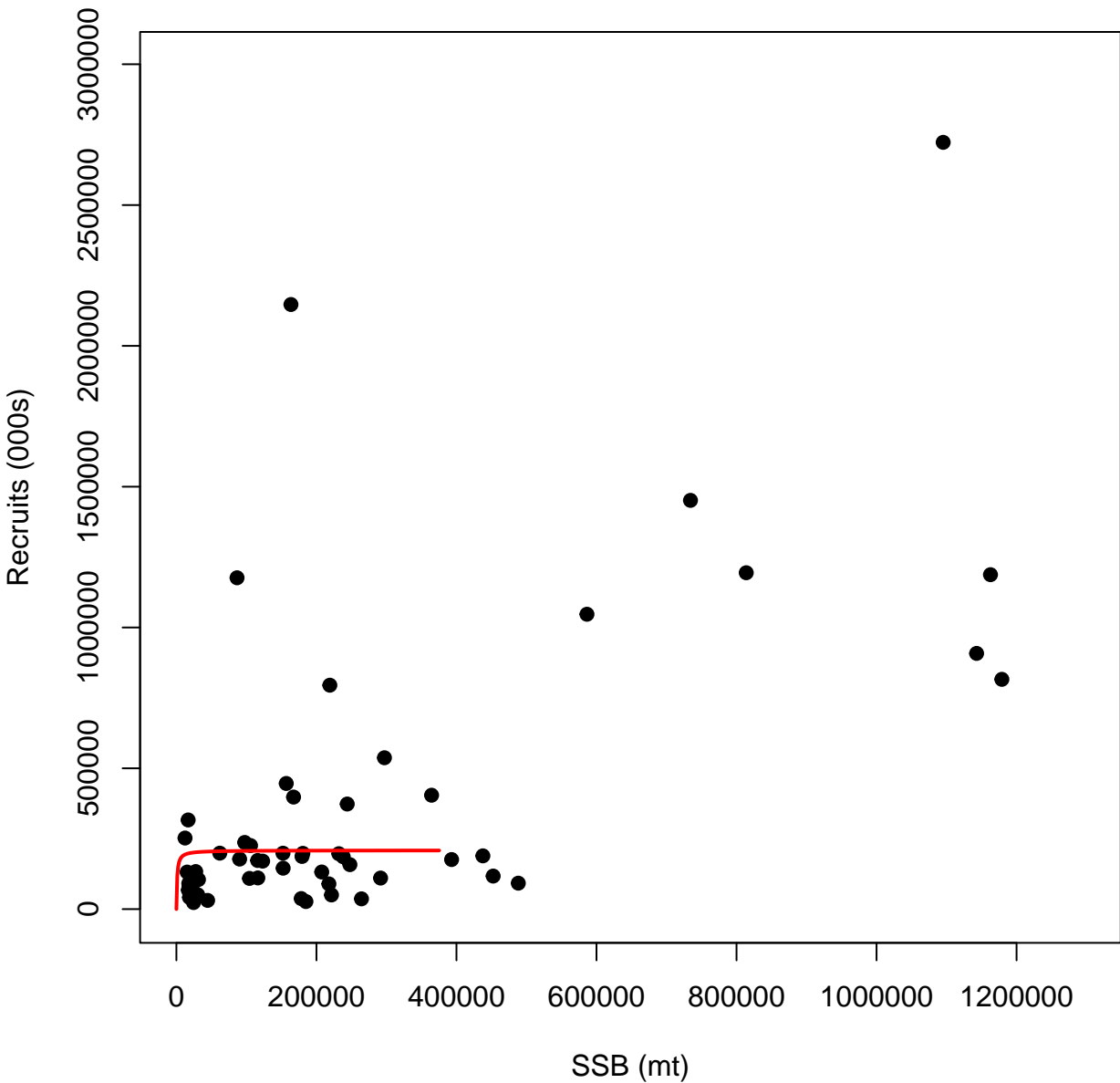
Year

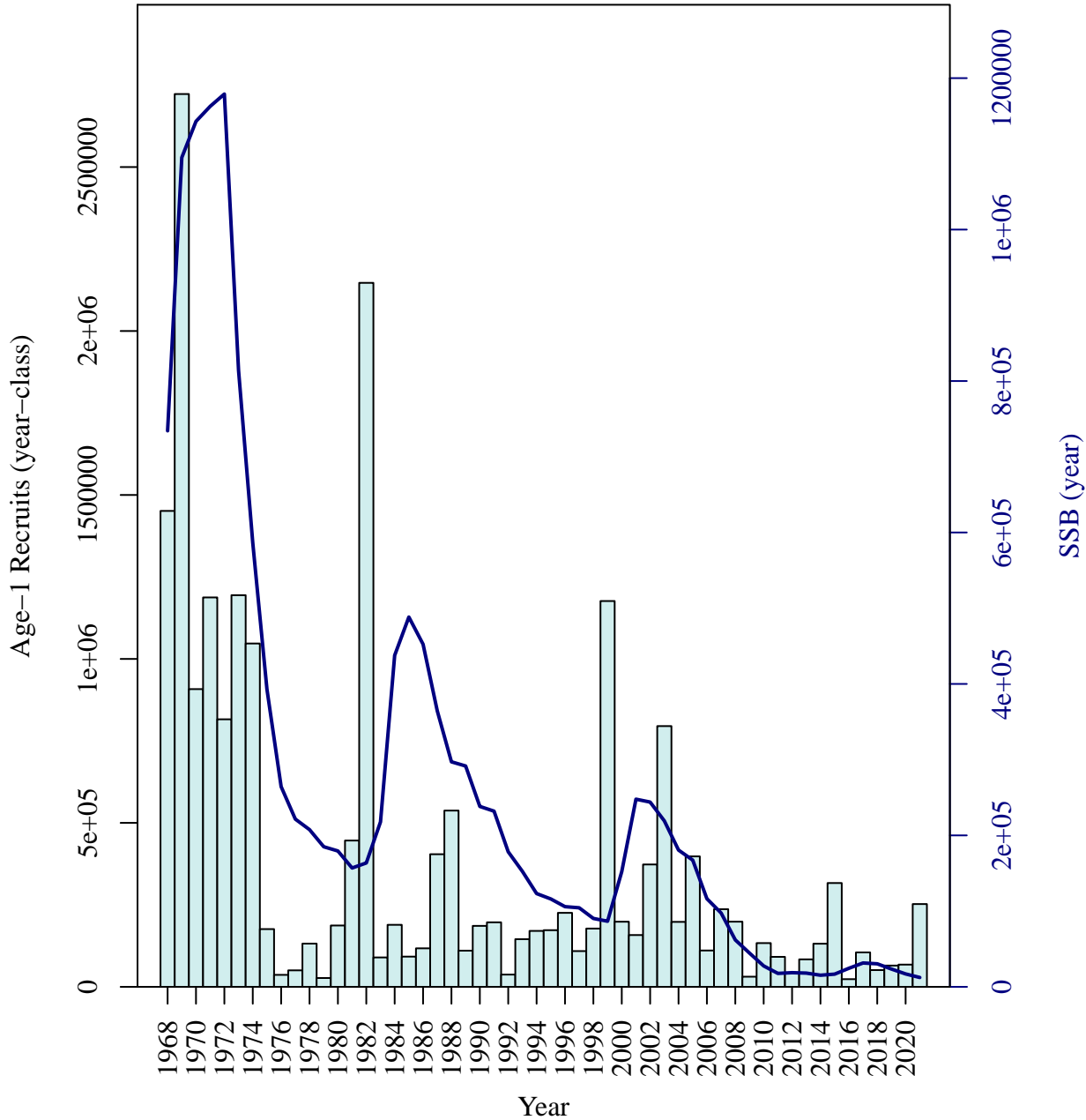


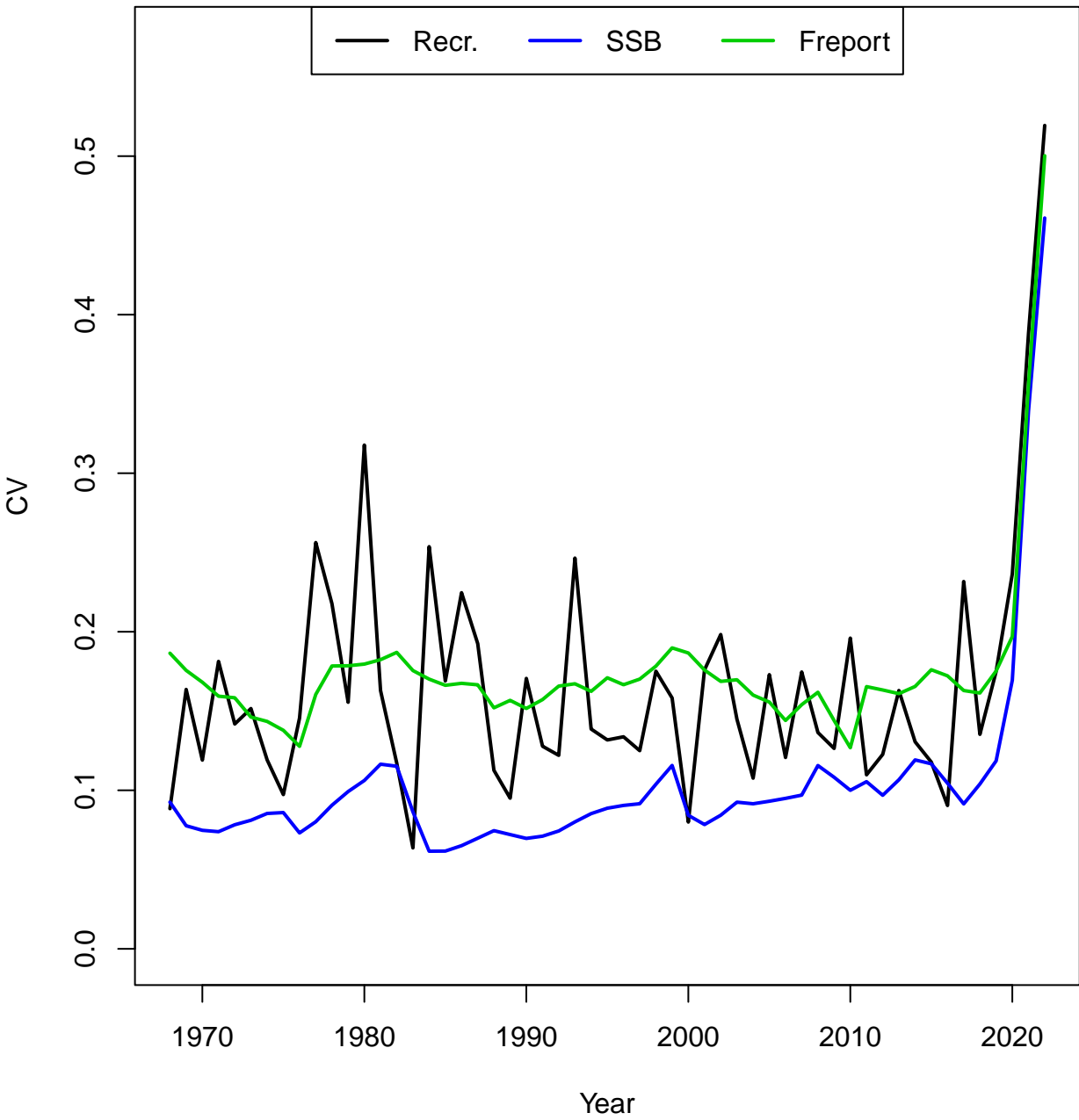




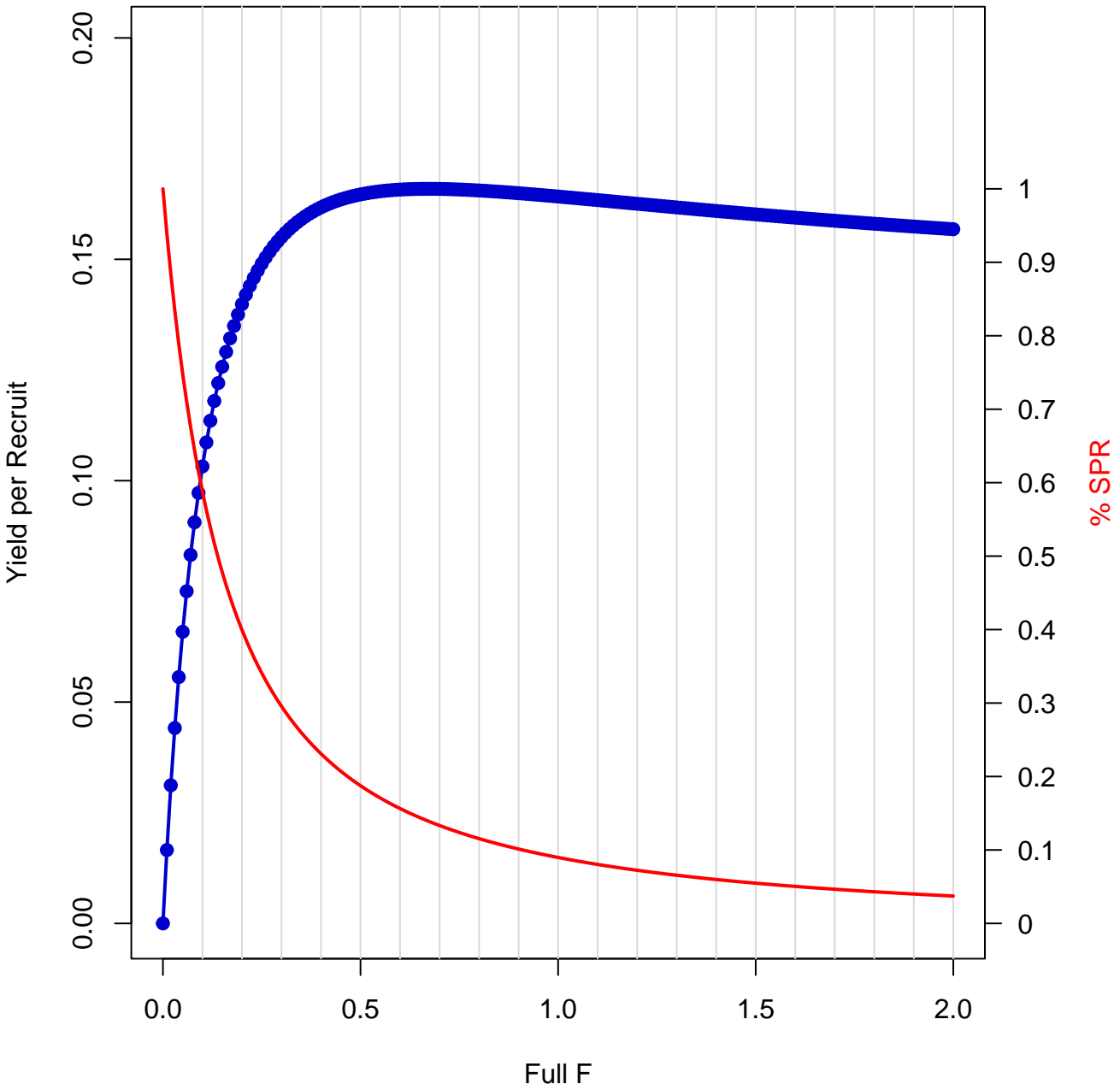








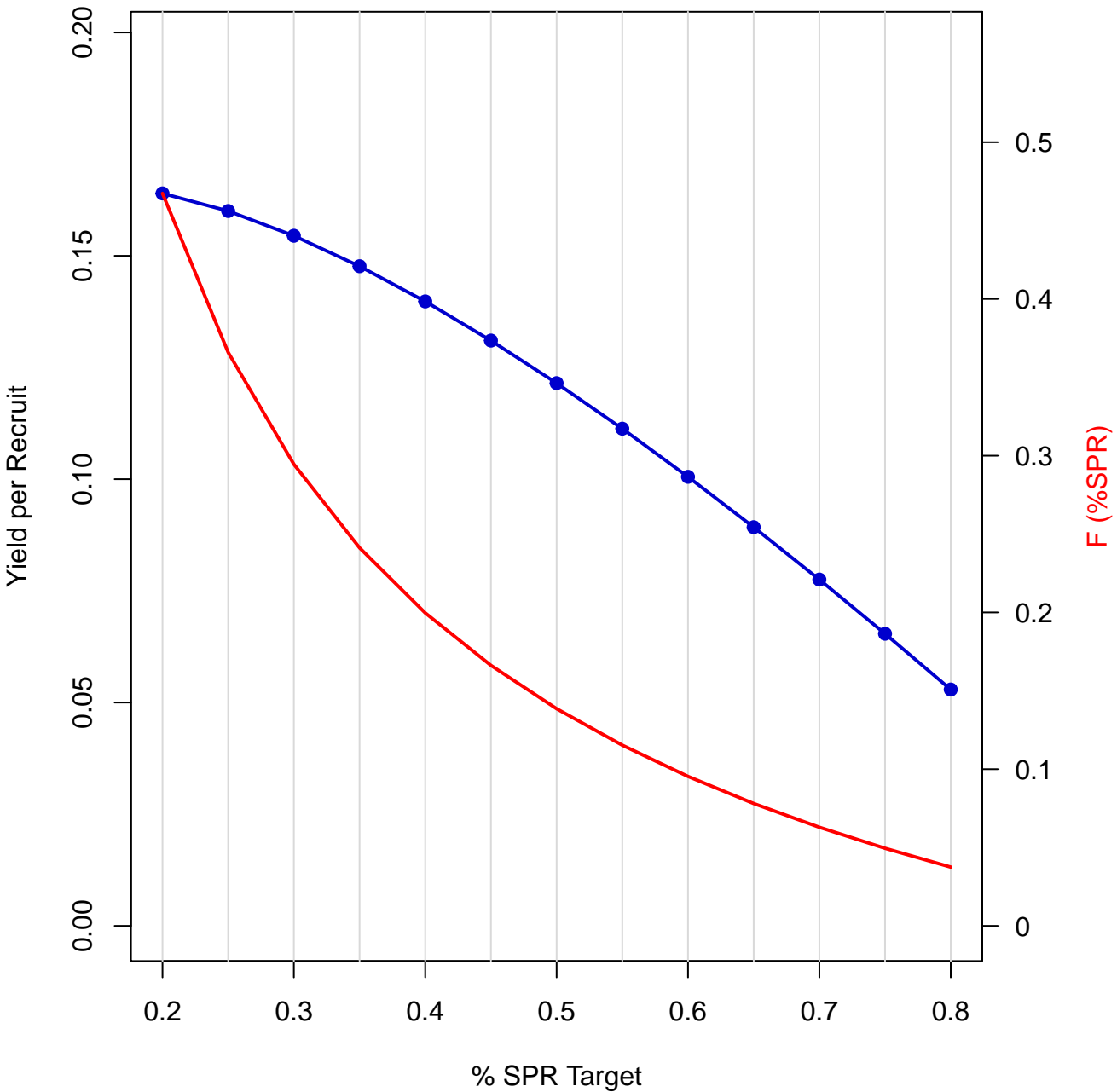
YPR-SPR Reference Points (Years Avg = 5)



YPR-SPR Reference Points (Years Avg = 5)

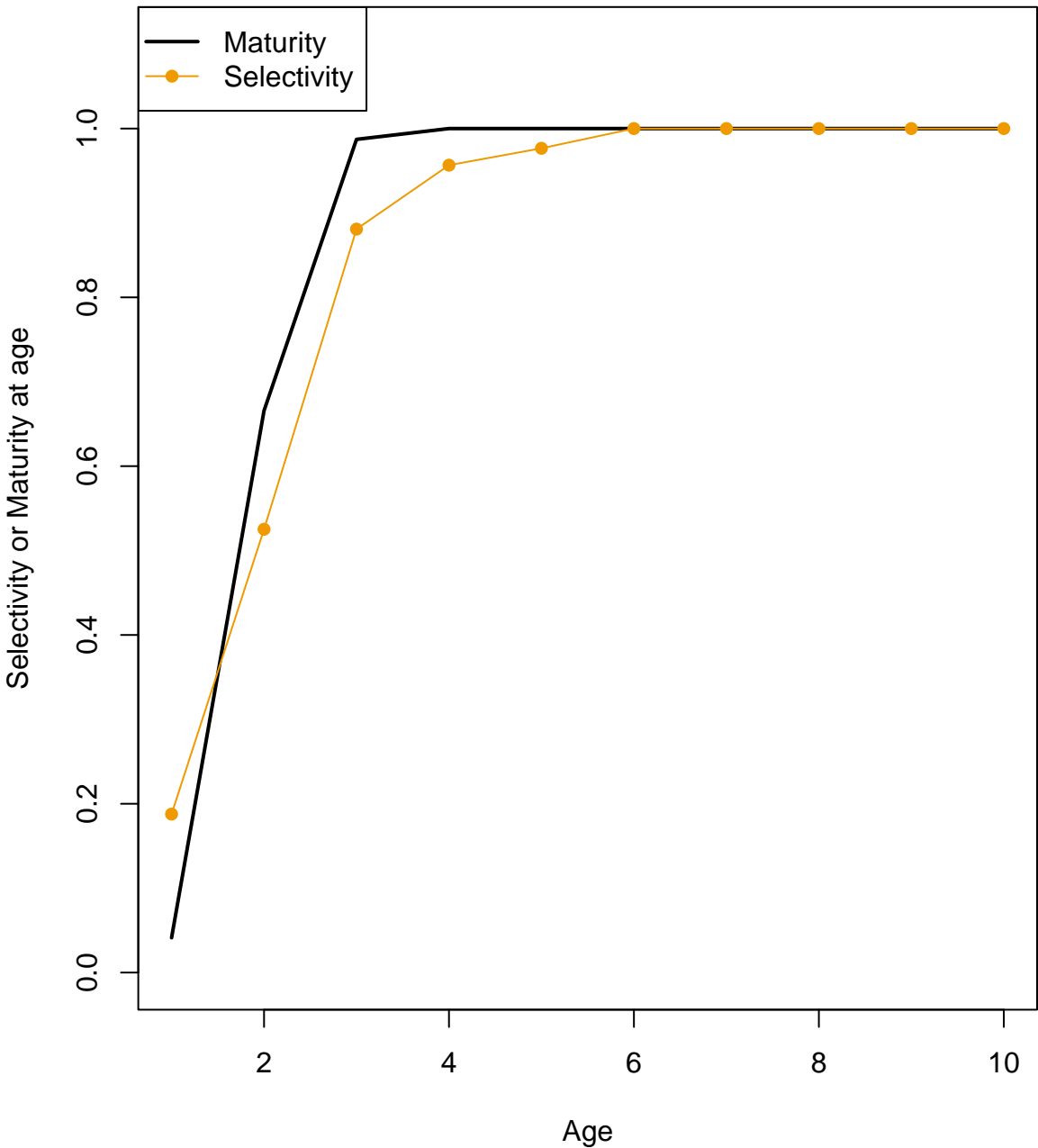
F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.159	0.2598	0.7	0.1659	0.1333
0.01	0.0166	0.939	0.36	0.1597	0.2536	0.71	0.1659	0.1313
0.02	0.0312	0.8841	0.37	0.1603	0.2476	0.72	0.1659	0.1294
0.03	0.0441	0.8344	0.38	0.1608	0.2418	0.73	0.1658	0.1275
0.04	0.0556	0.7892	0.39	0.1613	0.2363	0.74	0.1658	0.1256
0.05	0.0659	0.7481	0.4	0.1617	0.231	0.75	0.1658	0.1238
0.06	0.075	0.7104	0.41	0.1621	0.2258	0.76	0.1657	0.1221
0.07	0.0832	0.6759	0.42	0.1625	0.2209	0.77	0.1657	0.1203
0.08	0.0906	0.6441	0.43	0.1629	0.2162	0.78	0.1656	0.1187
0.09	0.0972	0.6148	0.44	0.1632	0.2116	0.79	0.1656	0.117
0.1	0.1032	0.5877	0.45	0.1635	0.2072	0.8	0.1655	0.1154
0.11	0.1086	0.5626	0.46	0.1638	0.203	0.81	0.1655	0.1139
0.12	0.1135	0.5392	0.47	0.164	0.1989	0.82	0.1654	0.1123
0.13	0.118	0.5175	0.48	0.1643	0.195	0.83	0.1654	0.1108
0.14	0.122	0.4972	0.49	0.1645	0.1912	0.84	0.1653	0.1094
0.15	0.1257	0.4782	0.5	0.1647	0.1875	0.85	0.1653	0.108
0.16	0.1291	0.4605	0.51	0.1648	0.1839	0.86	0.1652	0.1066
0.17	0.1322	0.4438	0.52	0.165	0.1804	0.87	0.1651	0.1052
0.18	0.135	0.4282	0.53	0.1651	0.1771	0.88	0.1651	0.1039
0.19	0.1375	0.4134	0.54	0.1652	0.1739	0.89	0.165	0.1025
0.2	0.1399	0.3996	0.55	0.1654	0.1707	0.9	0.1649	0.1013
0.21	0.142	0.3865	0.56	0.1655	0.1677	0.91	0.1649	0.1
0.22	0.144	0.3741	0.57	0.1655	0.1648	0.92	0.1648	0.0988
0.23	0.1458	0.3624	0.58	0.1656	0.1619	0.93	0.1647	0.0976
0.24	0.1475	0.3513	0.59	0.1657	0.1591	0.94	0.1646	0.0964
0.25	0.149	0.3408	0.6	0.1657	0.1564	0.95	0.1646	0.0952
0.26	0.1504	0.3308	0.61	0.1658	0.1538	0.96	0.1645	0.0941
0.27	0.1517	0.3214	0.62	0.1658	0.1513	0.97	0.1644	0.093
0.28	0.1529	0.3123	0.63	0.1659	0.1488	0.98	0.1643	0.0919
0.29	0.154	0.3038	0.64	0.1659	0.1464	0.99	0.1643	0.0908
0.3	0.155	0.2956	0.65	0.1659	0.1441	1	0.1642	0.0898
0.31	0.156	0.2878	0.66	0.1659	0.1418	1.01	0.1641	0.0888
0.32	0.1568	0.2803	0.67	0.1659	0.1396	1.02	0.164	0.0877
0.33	0.1576	0.2732	0.68	0.1659	0.1374	1.03	0.1639	0.0868
0.34	0.1584	0.2663	0.69	0.1659	0.1353	1.04	0.1639	0.0858

SPR Target Reference Points (Years Avg = 5)

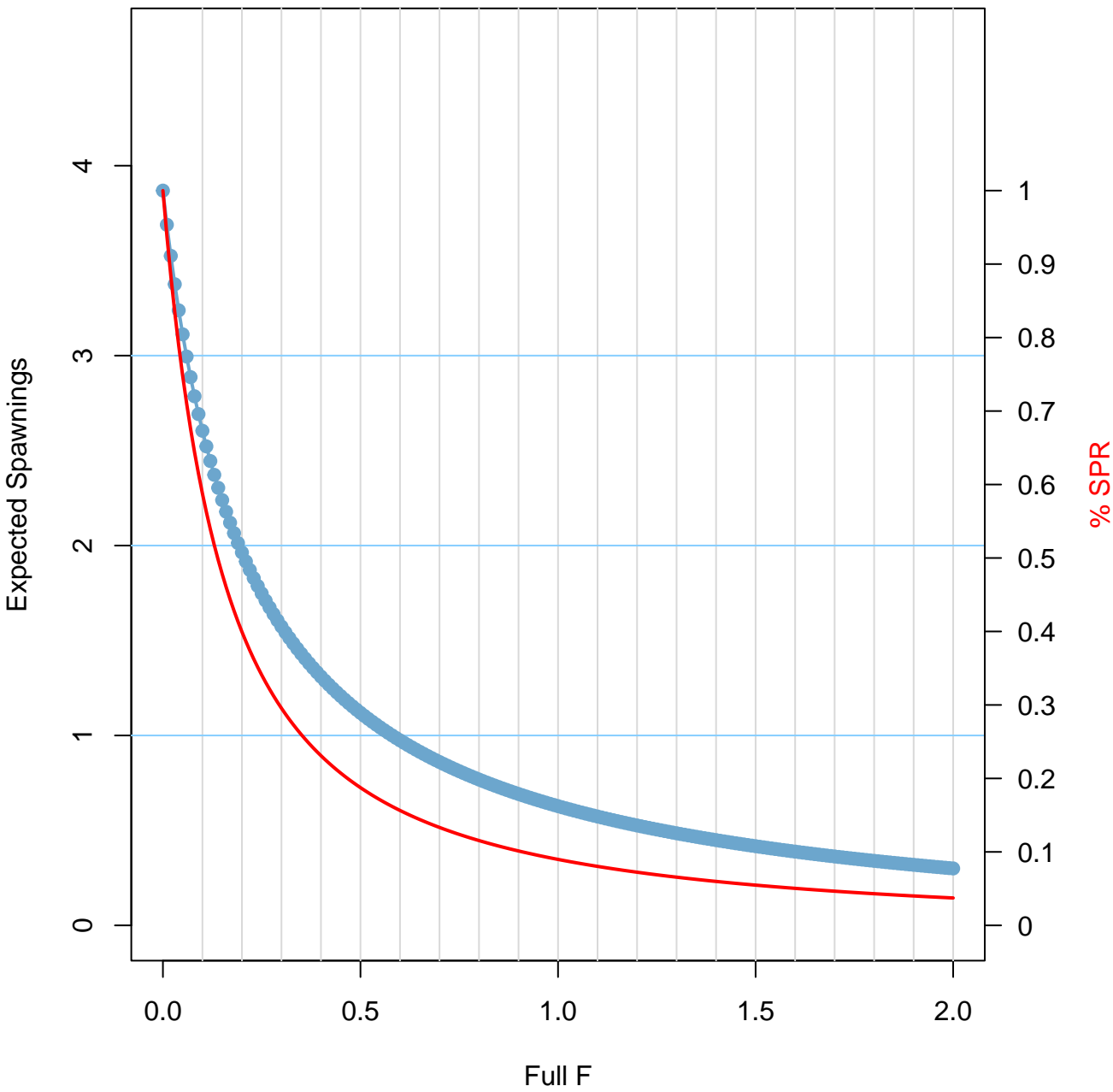


SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	0.4673	0.164
0.25	0.3659	0.16
0.3	0.2945	0.1545
0.35	0.2412	0.1477
0.4	0.1997	0.1398
0.45	0.1662	0.131
0.5	0.1386	0.1215
0.55	0.1153	0.1113
0.6	0.0954	0.1005
0.65	0.0781	0.0893
0.7	0.0629	0.0775
0.75	0.0495	0.0654
0.8	0.0375	0.0529



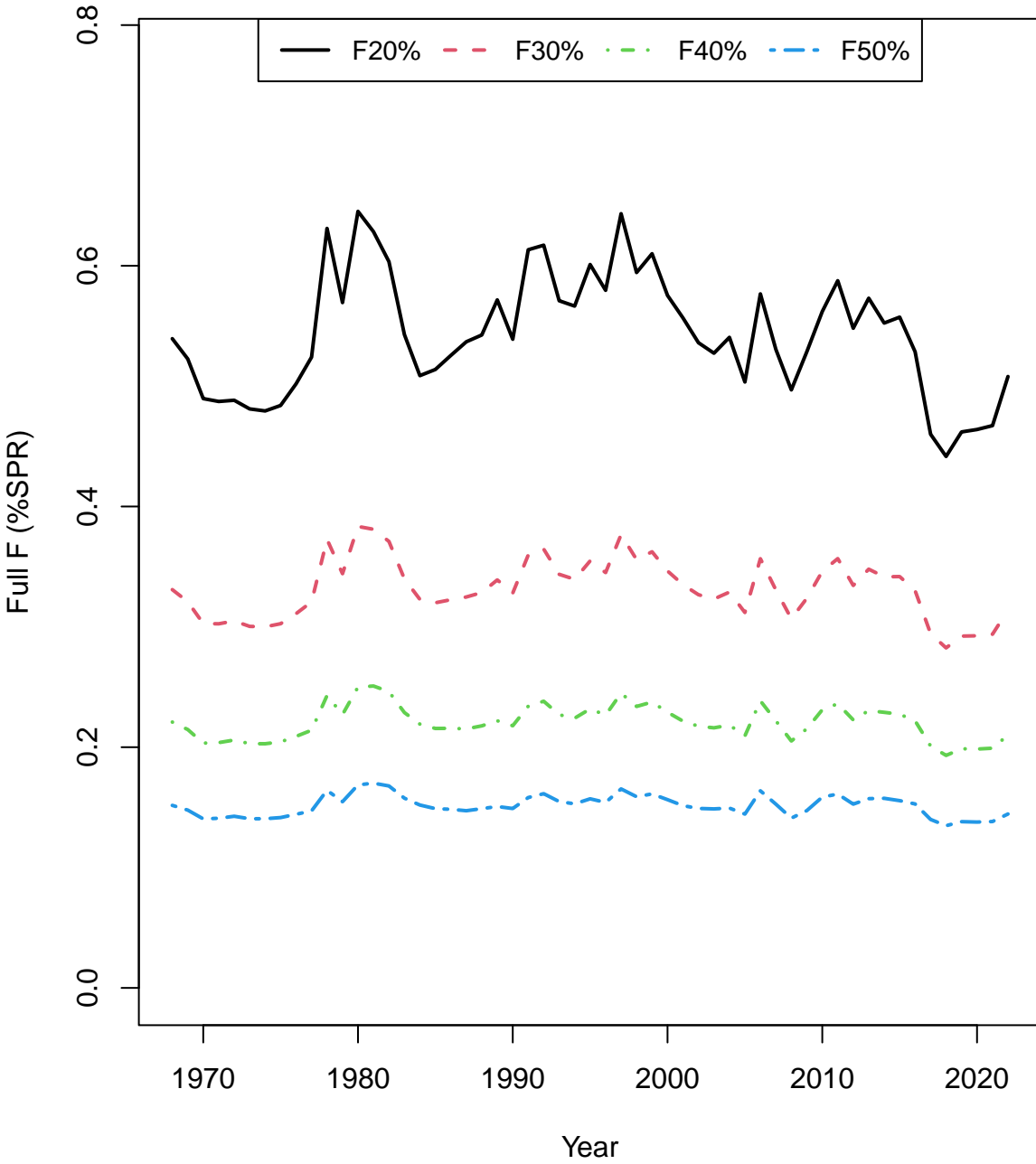
Expected Spawnings and SPR Reference Points (Years Avg = 5)



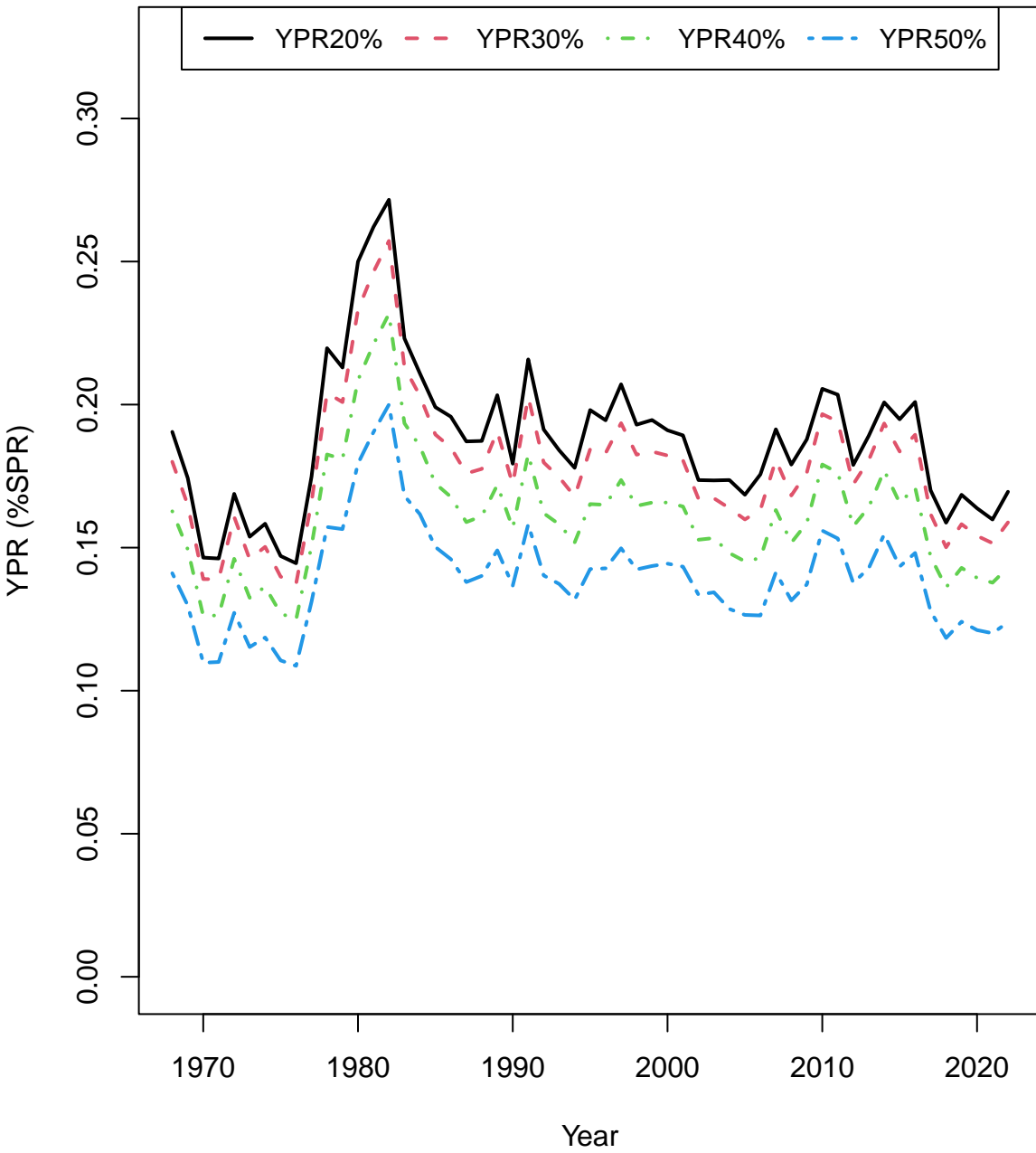
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	3.8688	1	0.35	1.4303	0.2598	0.7	0.8602	0.1333
0.01	3.689	0.939	0.36	1.4046	0.2536	0.71	0.8501	0.1313
0.02	3.5253	0.8841	0.37	1.3797	0.2476	0.72	0.8402	0.1294
0.03	3.3757	0.8344	0.38	1.3557	0.2418	0.73	0.8305	0.1275
0.04	3.2384	0.7892	0.39	1.3325	0.2363	0.74	0.8211	0.1256
0.05	3.1119	0.7481	0.4	1.31	0.231	0.75	0.8118	0.1238
0.06	2.9951	0.7104	0.41	1.2882	0.2258	0.76	0.8027	0.1221
0.07	2.8867	0.6759	0.42	1.2671	0.2209	0.77	0.7937	0.1203
0.08	2.7859	0.6441	0.43	1.2467	0.2162	0.78	0.785	0.1187
0.09	2.692	0.6148	0.44	1.2268	0.2116	0.79	0.7764	0.117
0.1	2.6042	0.5877	0.45	1.2076	0.2072	0.8	0.768	0.1154
0.11	2.522	0.5626	0.46	1.1889	0.203	0.81	0.7597	0.1139
0.12	2.4448	0.5392	0.47	1.1707	0.1989	0.82	0.7516	0.1123
0.13	2.3722	0.5175	0.48	1.153	0.195	0.83	0.7436	0.1108
0.14	2.3038	0.4972	0.49	1.1359	0.1912	0.84	0.7358	0.1094
0.15	2.2392	0.4782	0.5	1.1192	0.1875	0.85	0.7281	0.108
0.16	2.1781	0.4605	0.51	1.1029	0.1839	0.86	0.7206	0.1066
0.17	2.1202	0.4438	0.52	1.0871	0.1804	0.87	0.7132	0.1052
0.18	2.0653	0.4282	0.53	1.0717	0.1771	0.88	0.7059	0.1039
0.19	2.0131	0.4134	0.54	1.0567	0.1739	0.89	0.6988	0.1025
0.2	1.9635	0.3996	0.55	1.0421	0.1707	0.9	0.6918	0.1013
0.21	1.9162	0.3865	0.56	1.0278	0.1677	0.91	0.6849	0.1
0.22	1.8711	0.3741	0.57	1.0139	0.1648	0.92	0.6781	0.0988
0.23	1.8281	0.3624	0.58	1.0004	0.1619	0.93	0.6714	0.0976
0.24	1.7869	0.3513	0.59	0.9871	0.1591	0.94	0.6649	0.0964
0.25	1.7476	0.3408	0.6	0.9742	0.1564	0.95	0.6584	0.0952
0.26	1.7098	0.3308	0.61	0.9616	0.1538	0.96	0.6521	0.0941
0.27	1.6737	0.3214	0.62	0.9493	0.1513	0.97	0.6459	0.093
0.28	1.639	0.3123	0.63	0.9373	0.1488	0.98	0.6397	0.0919
0.29	1.6056	0.3038	0.64	0.9255	0.1464	0.99	0.6337	0.0908
0.3	1.5736	0.2956	0.65	0.914	0.1441	1	0.6278	0.0898
0.31	1.5428	0.2878	0.66	0.9028	0.1418	1.01	0.6219	0.0888
0.32	1.5131	0.2803	0.67	0.8918	0.1396	1.02	0.6162	0.0877
0.33	1.4845	0.2732	0.68	0.881	0.1374	1.03	0.6105	0.0868
0.34	1.4569	0.2663	0.69	0.8705	0.1353	1.04	0.6049	0.0858

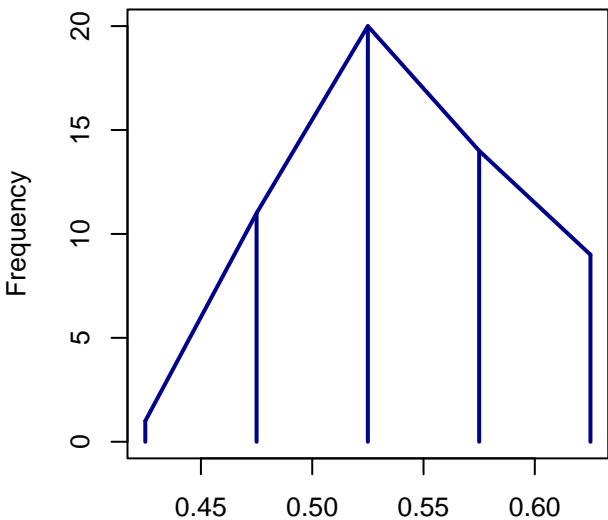
Annual F(%SPR) Reference Points



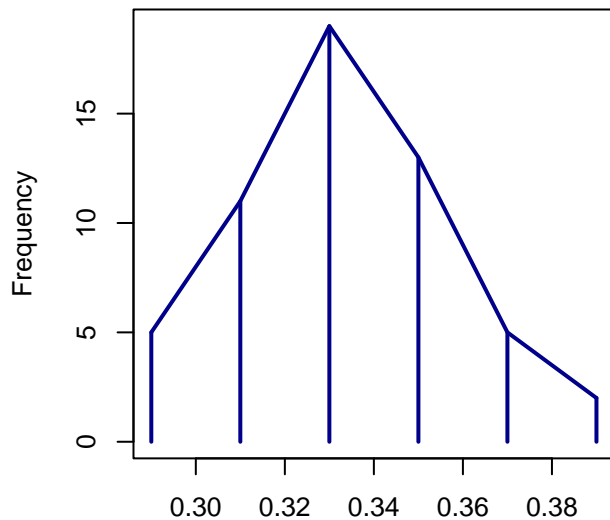
Annual YPR(%SPR) Reference Points



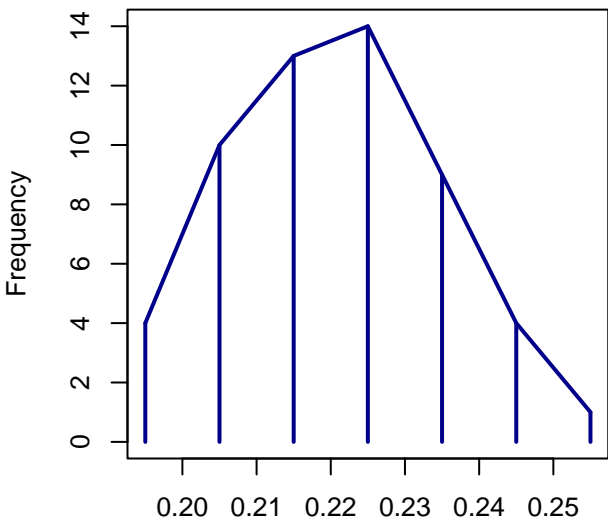
Annual F (%SPR) Reference Points



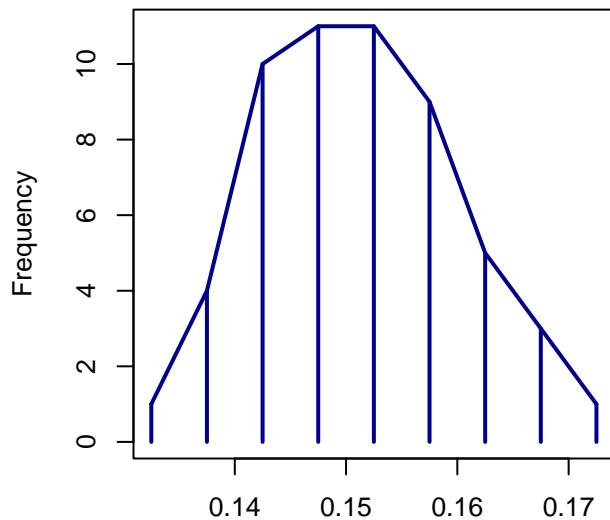
Full F20%



Full F30%

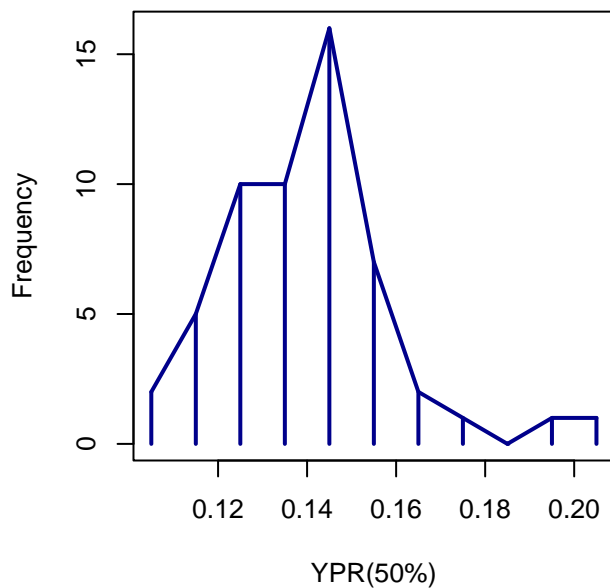
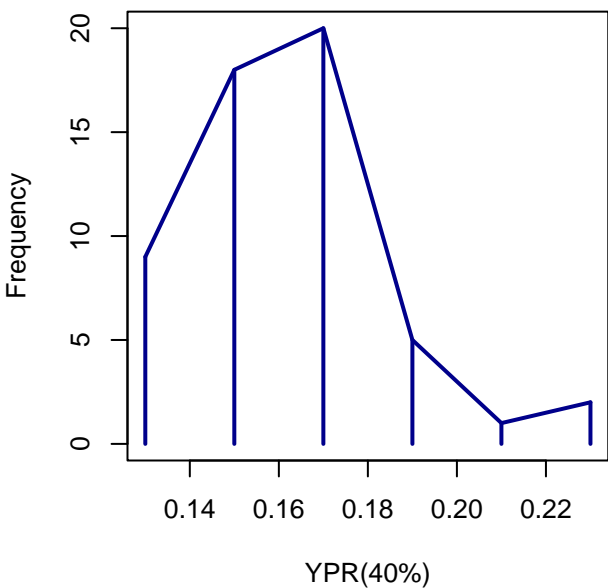
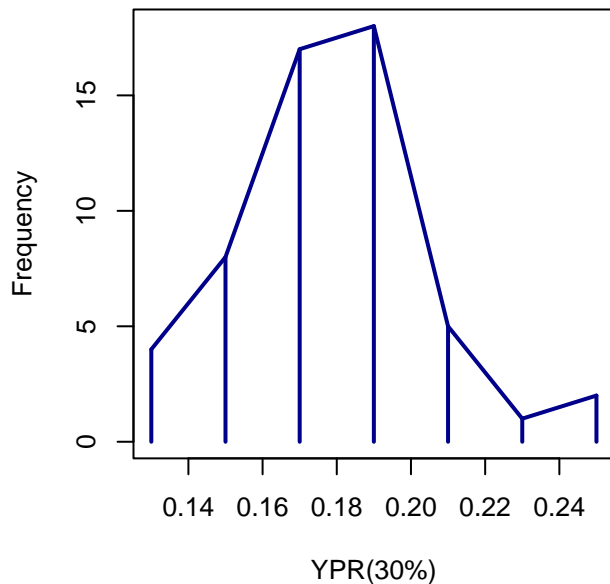
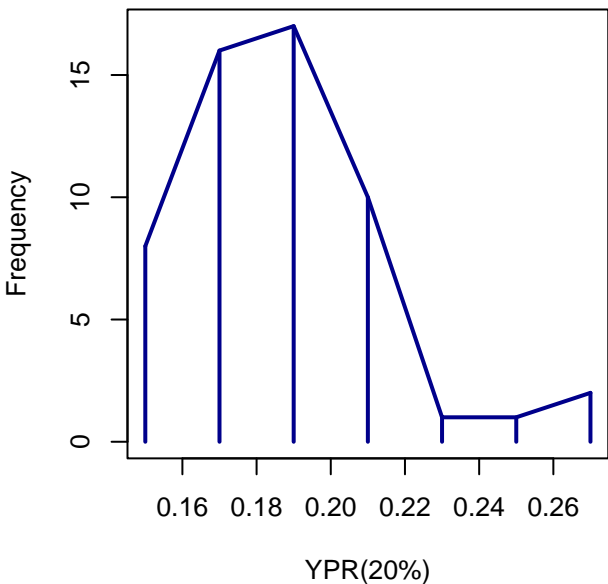


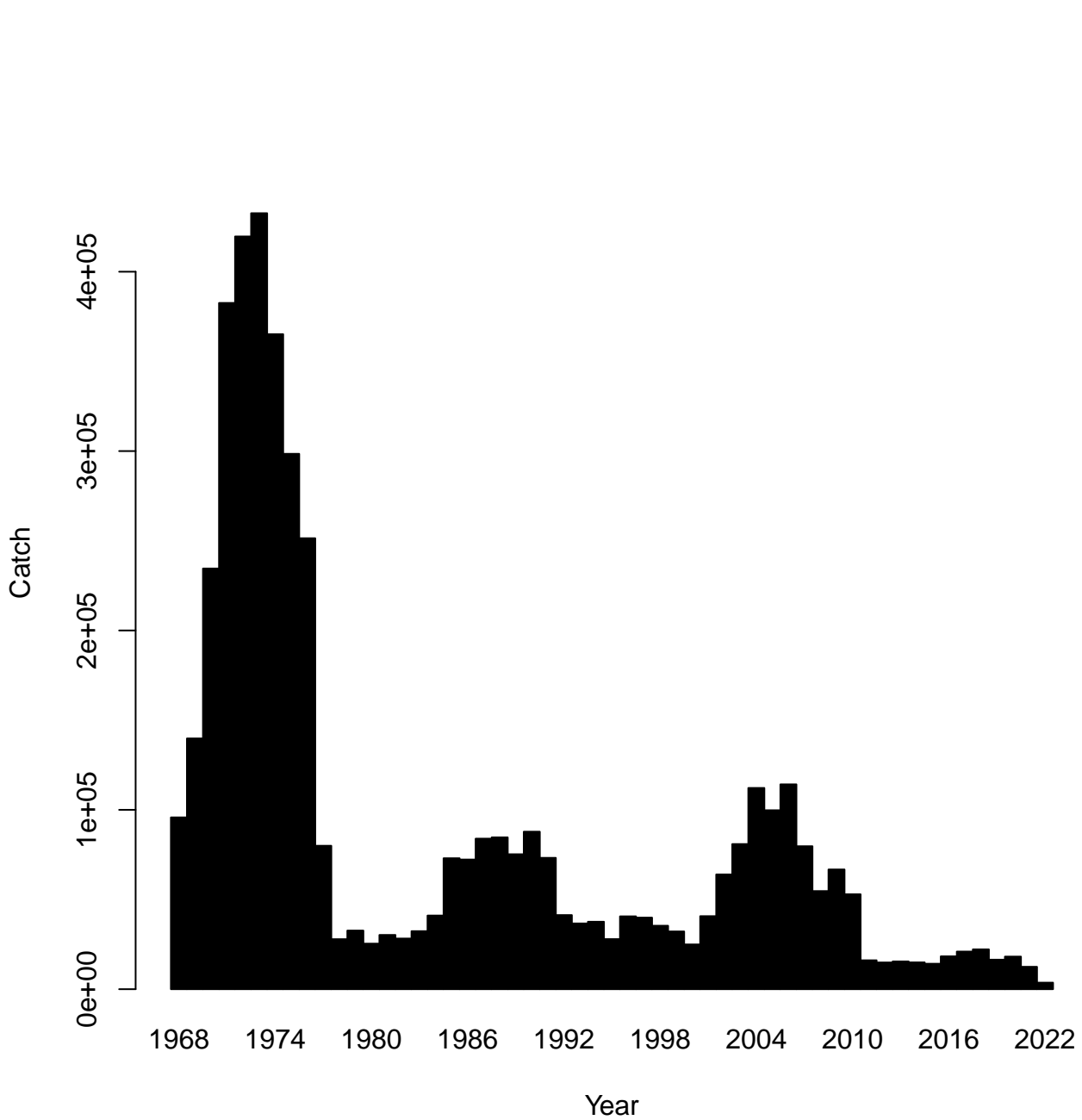
Full F40%

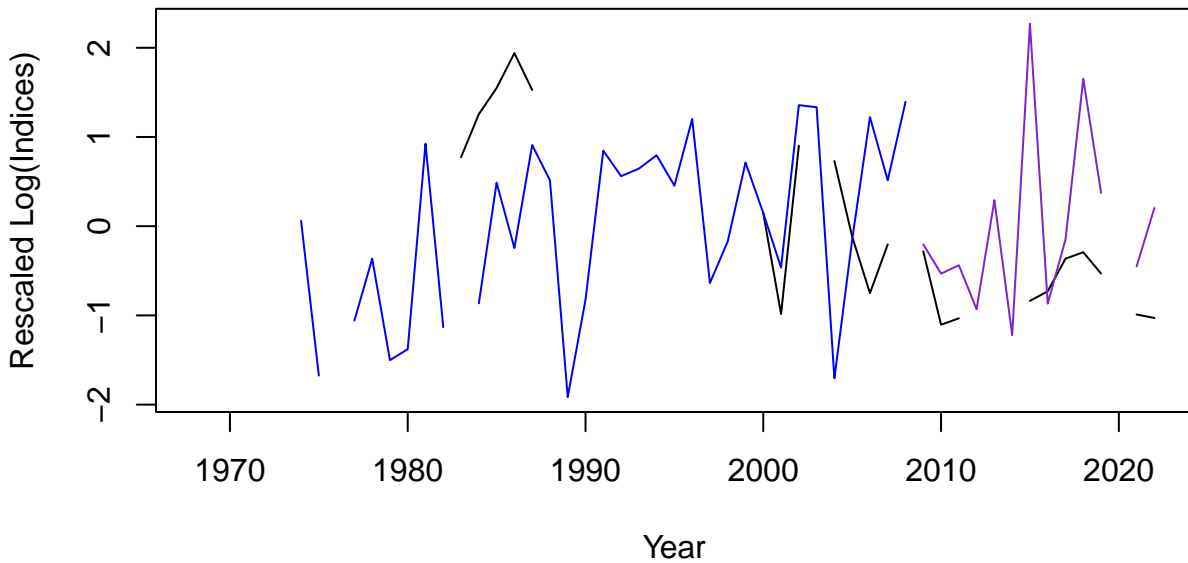
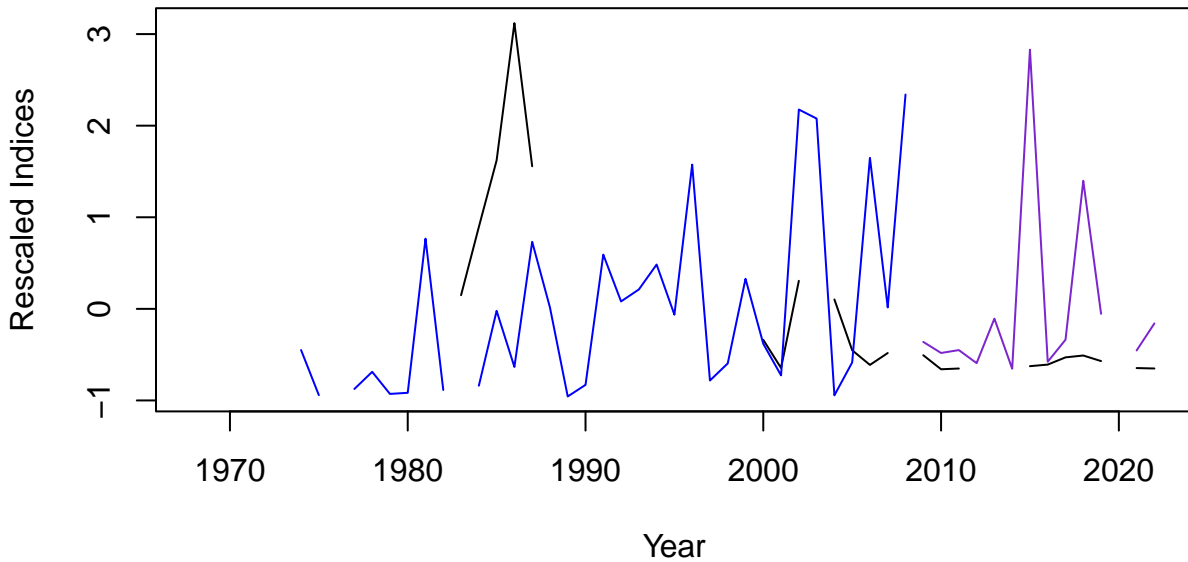


Full F50%

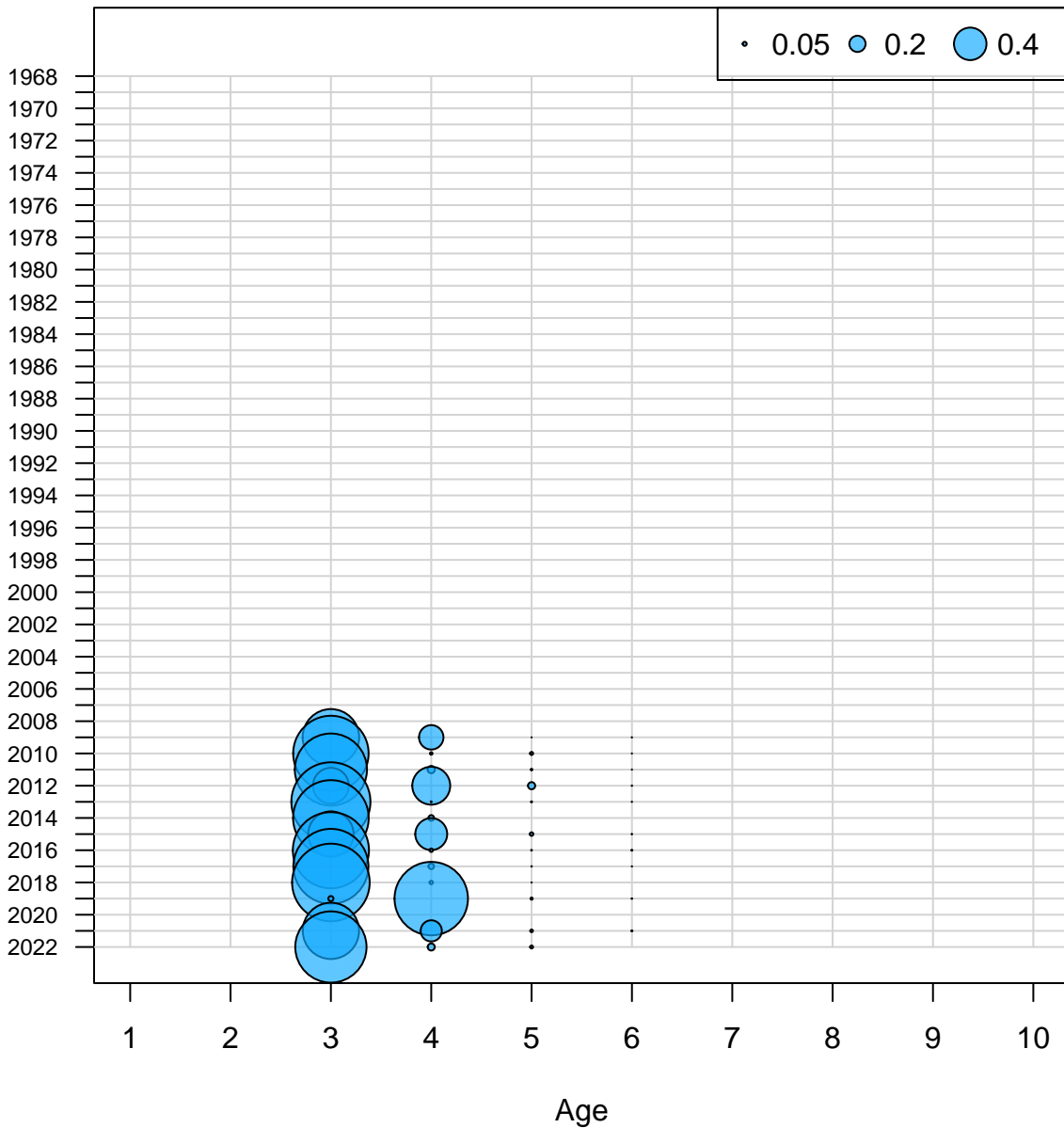
Annual YPR (%SPR) Reference Points



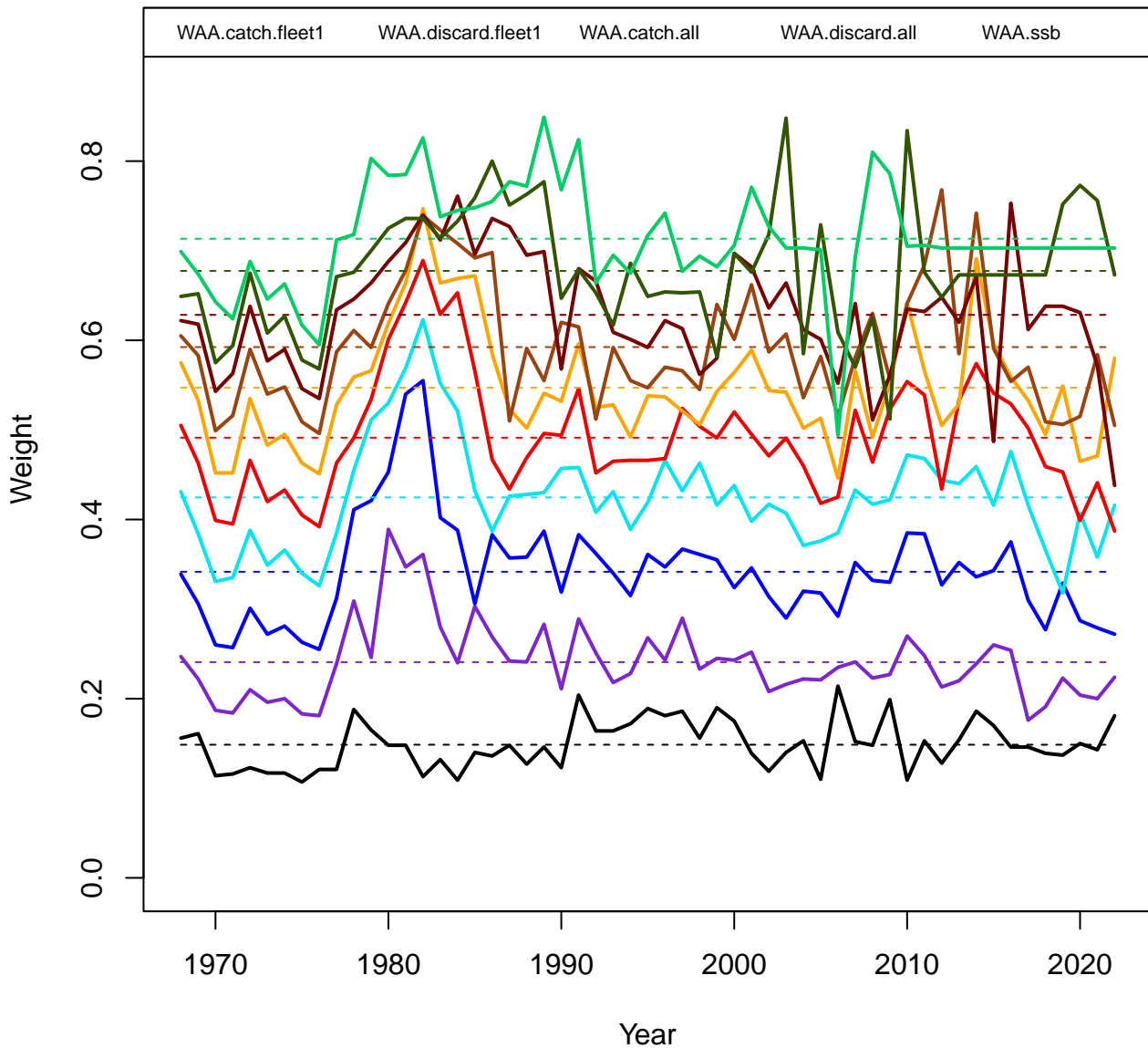




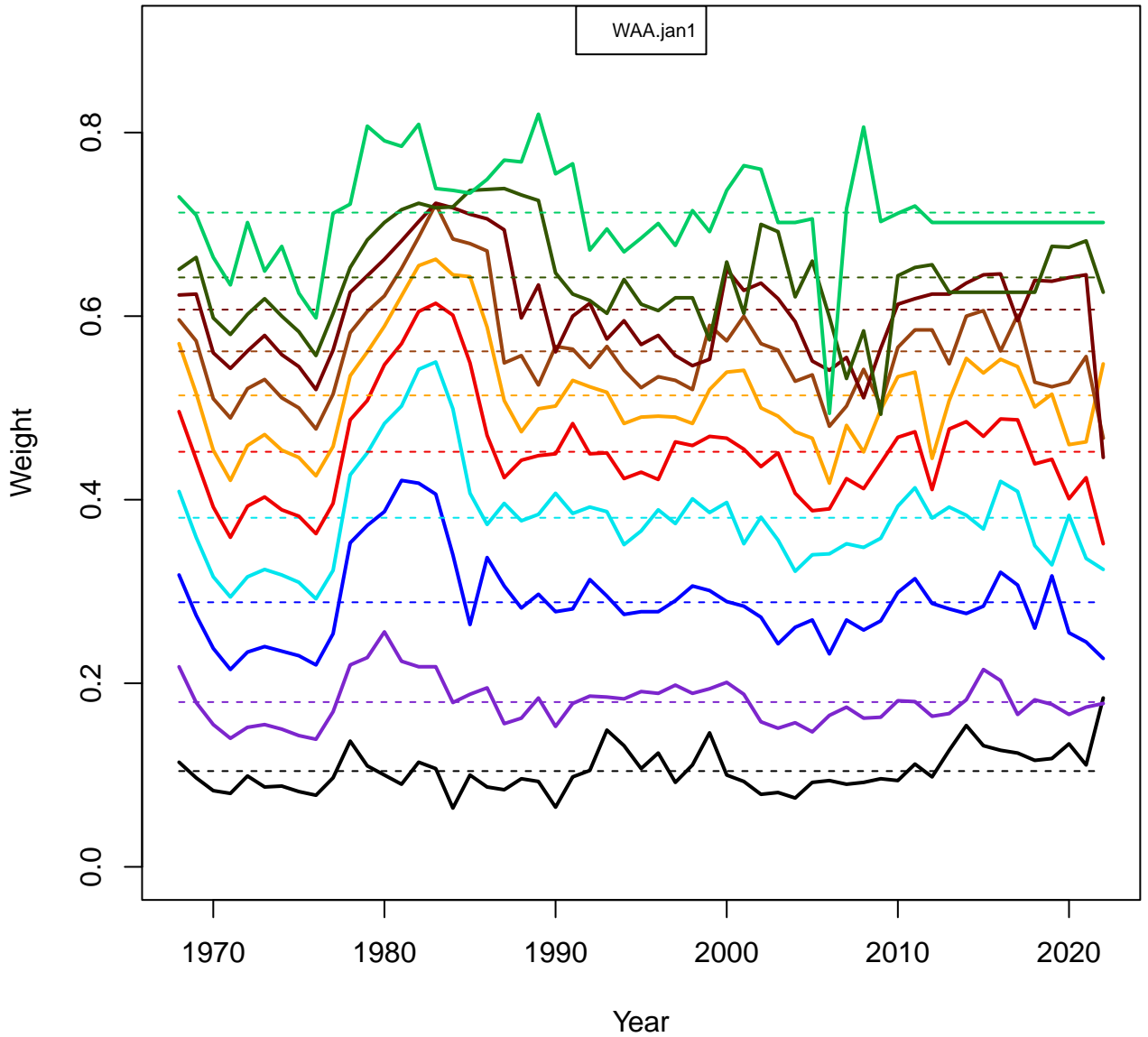
Age Comps for Index 2 (Spring Big 3+)



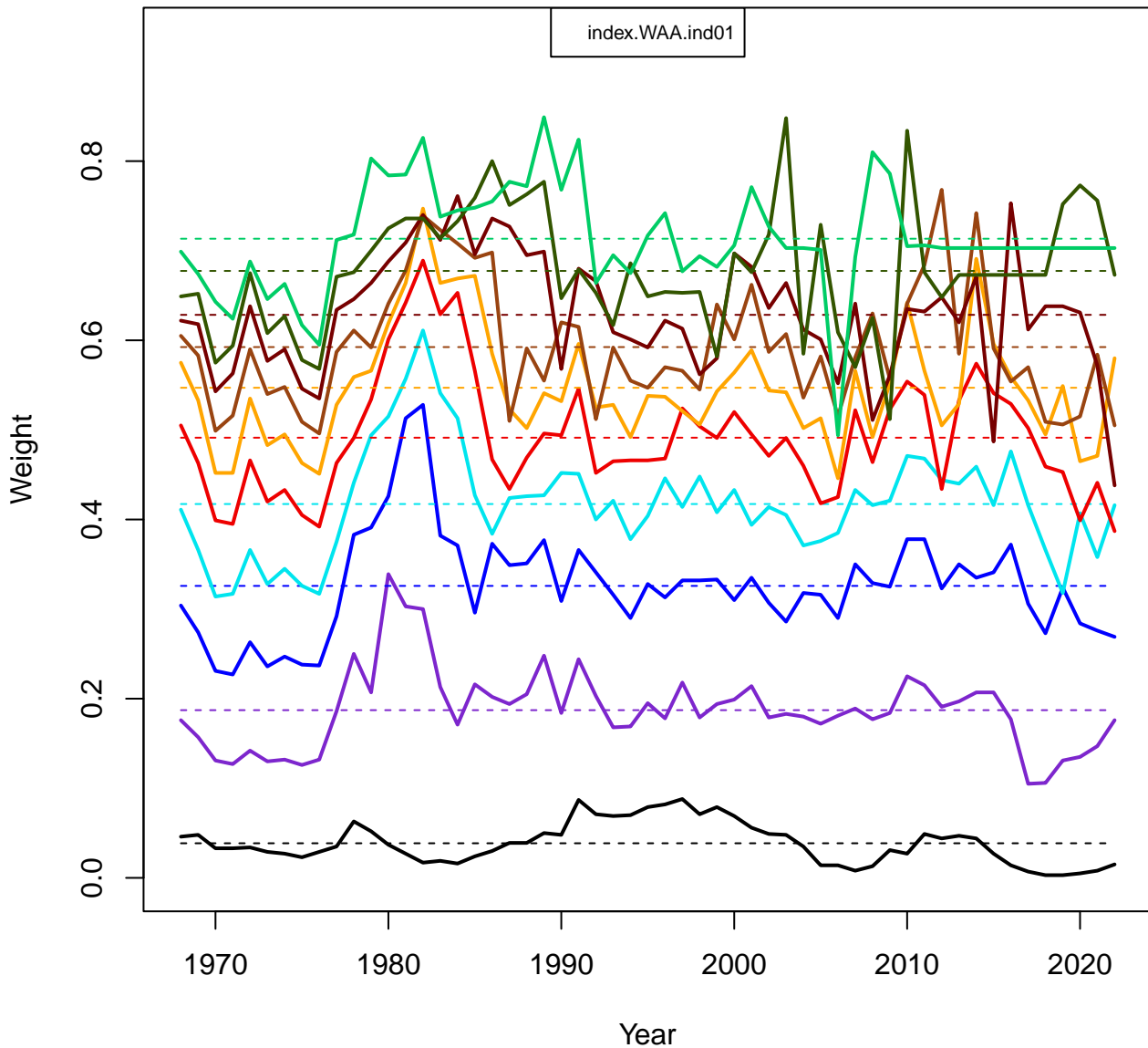
WAA matrix 1



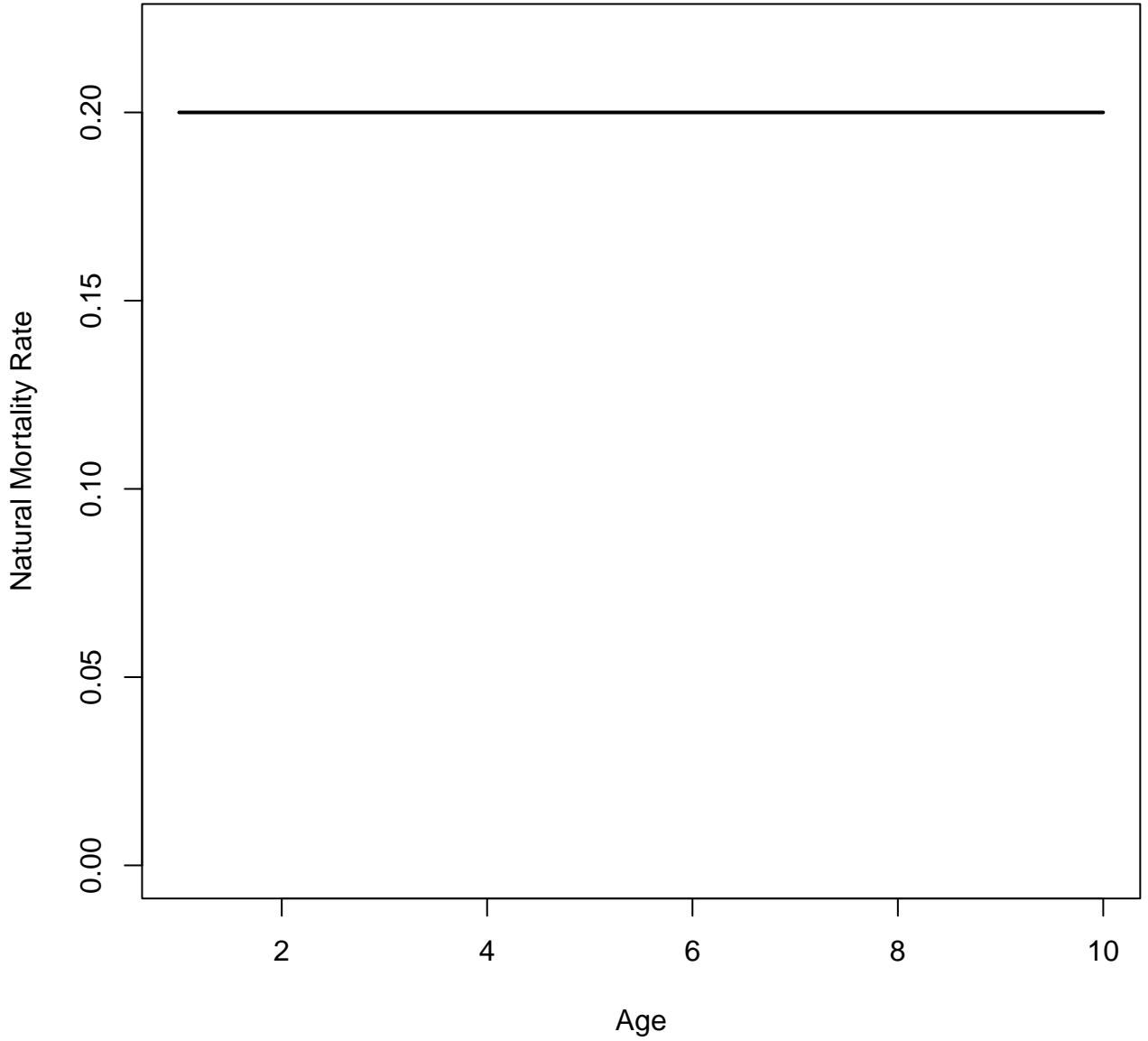
WAA matrix 2



WAA matrix 3



M



Maturity

