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ASAP3 run on Monday, 04 Nov 2019 at 11:36:26

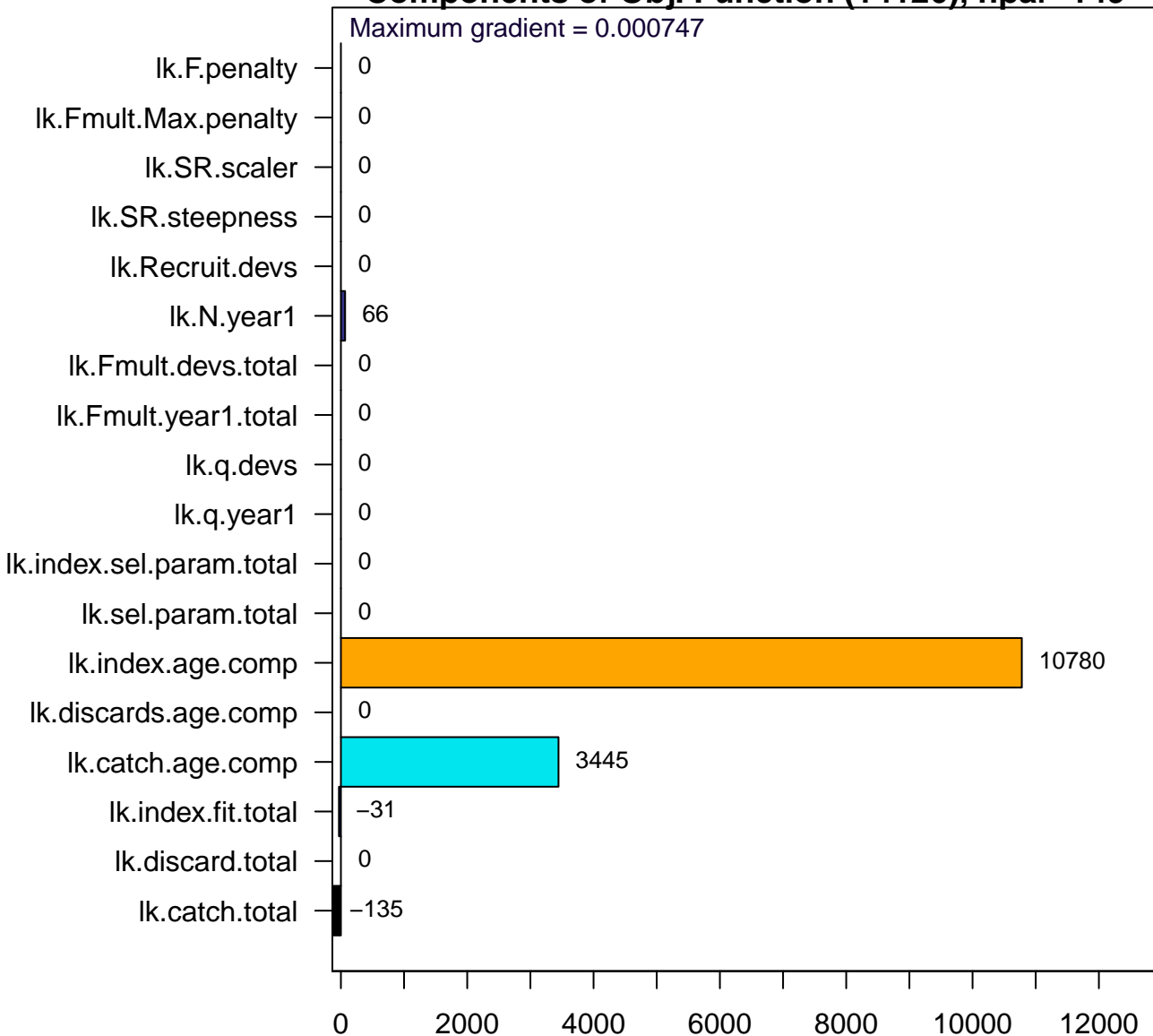
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\w

ASAPplots version = 0.2.14

npar = 149, maximum gradient = 0.000746561

Components of Obj. Function (14126), npar=149

Maximum gradient = 0.000747

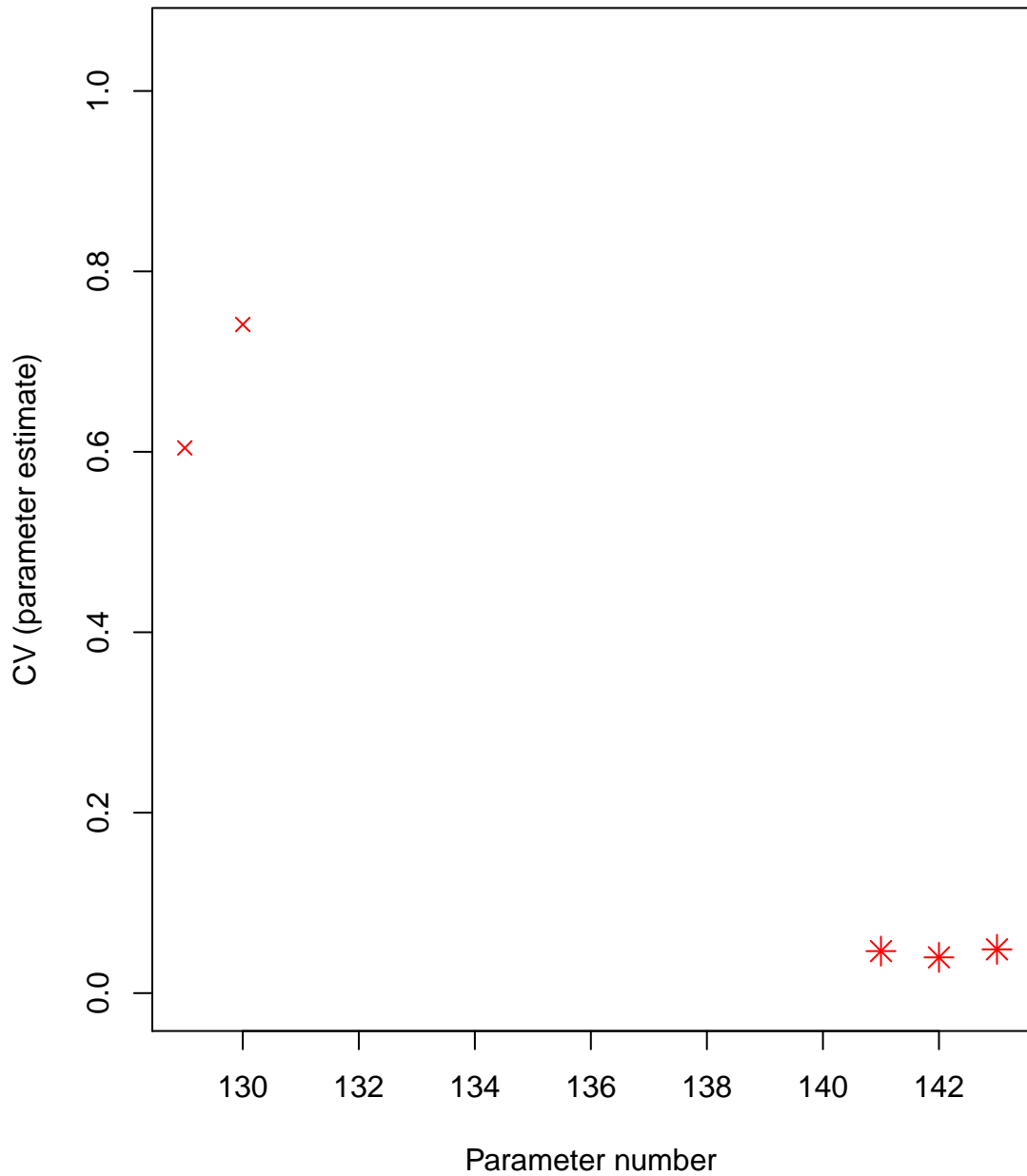


Likelihood Contribution

Model: y2000r9c1m2.4s000001111_000

Monday, 04 Nov 2019 at 11:36

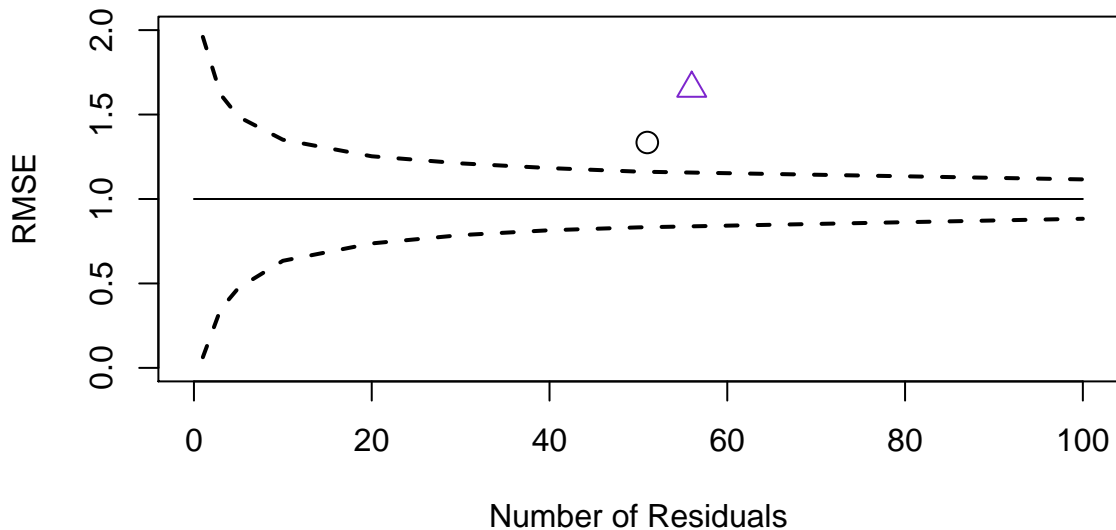




Root Mean Square Error computed from Standardized Residuals

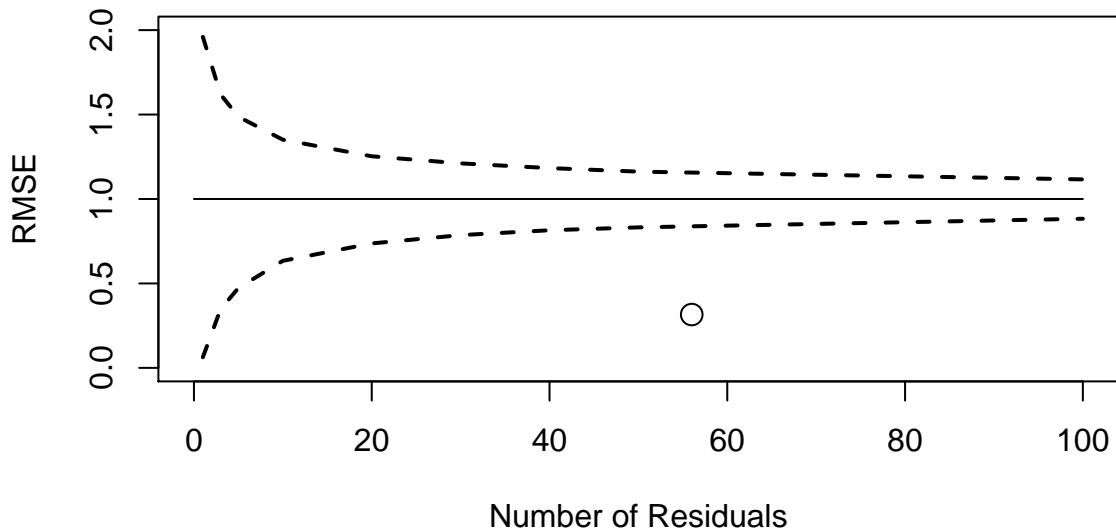
Component	# resids	RMSE
catch.tot	56	0.316
discard.tot	0	0
ind01	51	1.33
ind02	56	1.65
ind.total	107	1.51
N.year1	8	0.574
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



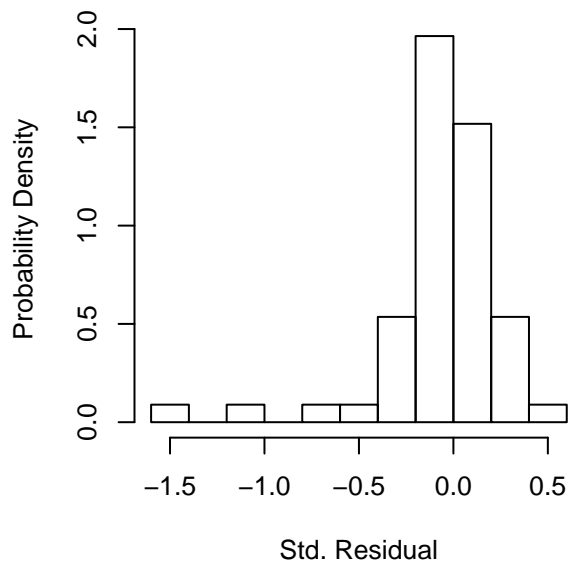
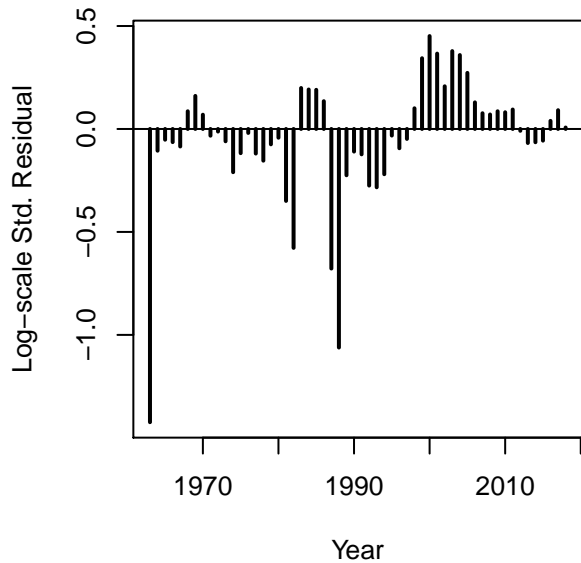
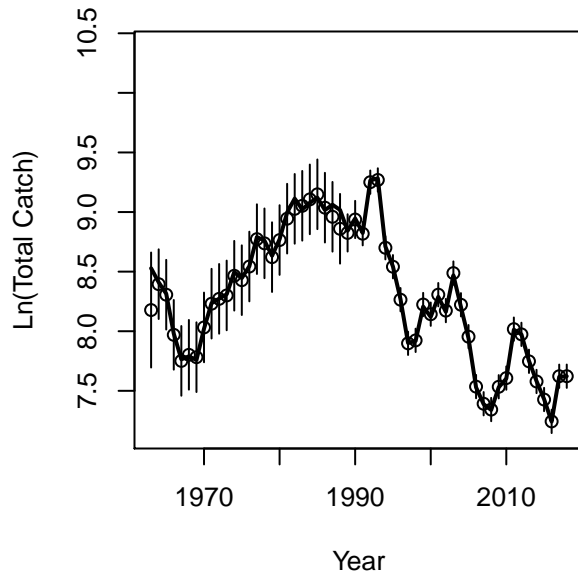
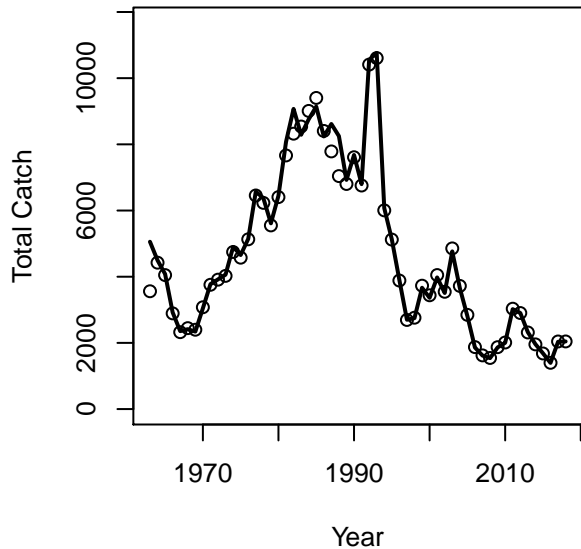
+ ind total
△ INDEX-2
○ INDEX-1

Root Mean Square Error for Catch



○ catch.tot

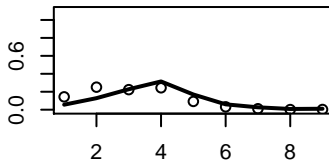
Fleet 1 Catch (FLEET-1)



Catch

Year = 1993

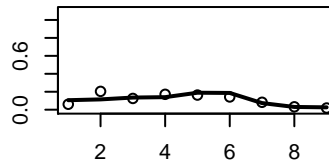
Proportion at Age



Age

Year = 1998

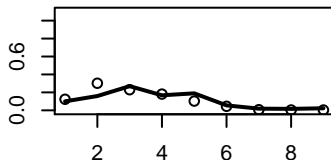
Proportion at Age



Age

Year = 1989

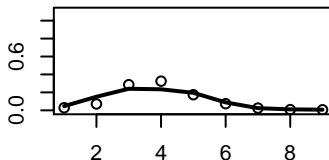
Proportion at Age



Age

Year = 1994

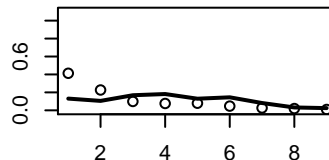
Proportion at Age



Age

Year = 1999

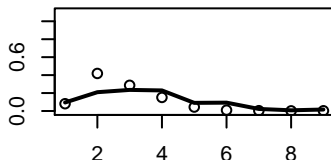
Proportion at Age



Age

Year = 1990

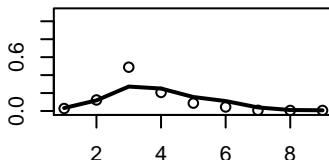
Proportion at Age



Age

Year = 1995

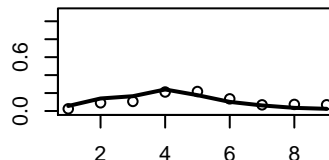
Proportion at Age



Age

Year = 2000

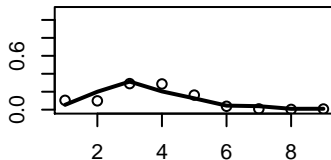
Proportion at Age



Age

Year = 1991

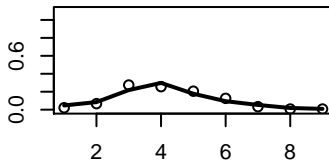
Proportion at Age



Age

Year = 1996

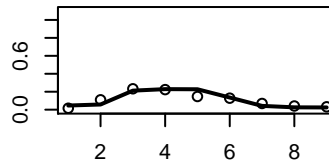
Proportion at Age



Age

Year = 2001

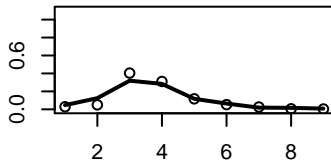
Proportion at Age



Age

Year = 1992

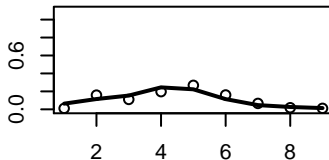
Proportion at Age



Age

Year = 1997

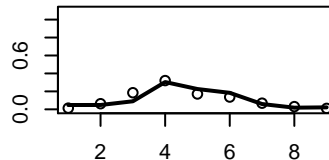
Proportion at Age



Age

Year = 2002

Proportion at Age

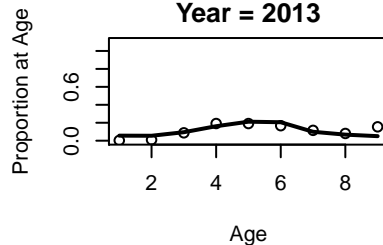
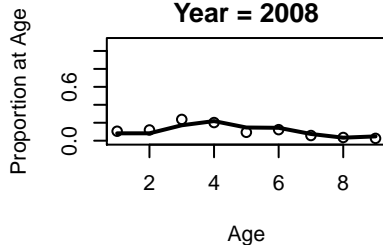
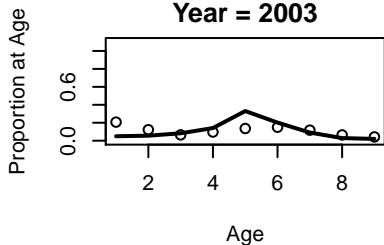


Age

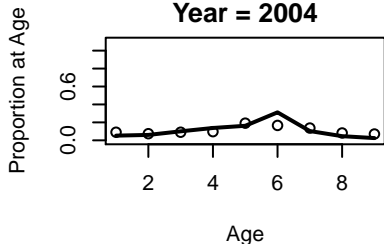
Fleet 1
FLEET-1



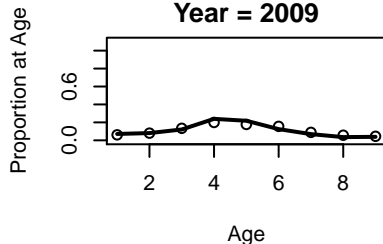
Year = 2008



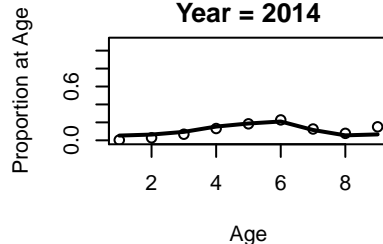
Year = 2004



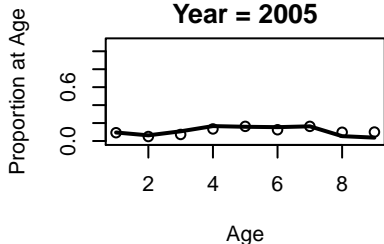
Year = 2009



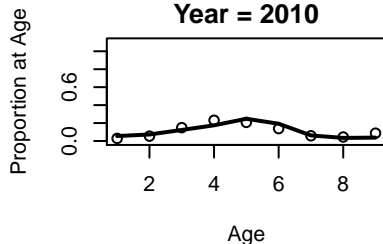
Year = 2014



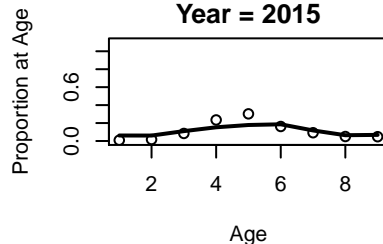
Year = 2005



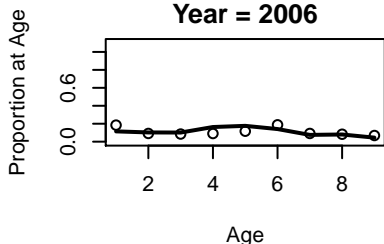
Year = 2010



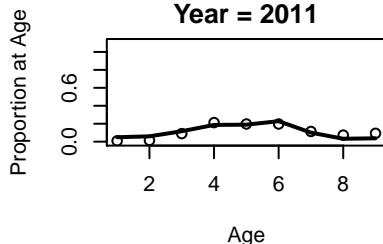
Year = 2015



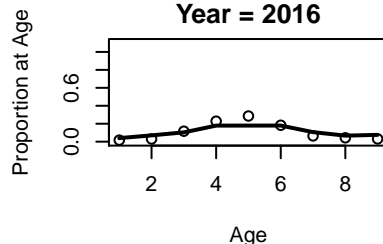
Year = 2006



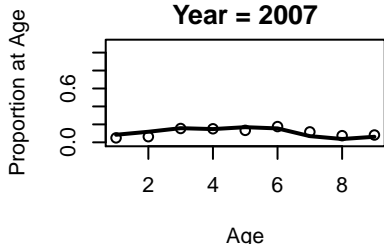
Year = 2011



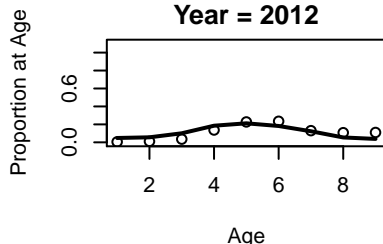
Year = 2016



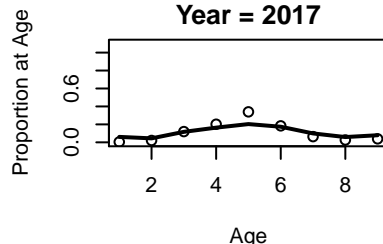
Year = 2007



Year = 2012



Year = 2017



Year = 2018

Proportion at Age

0.0 0.6

2

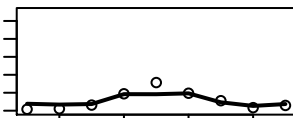
4

6

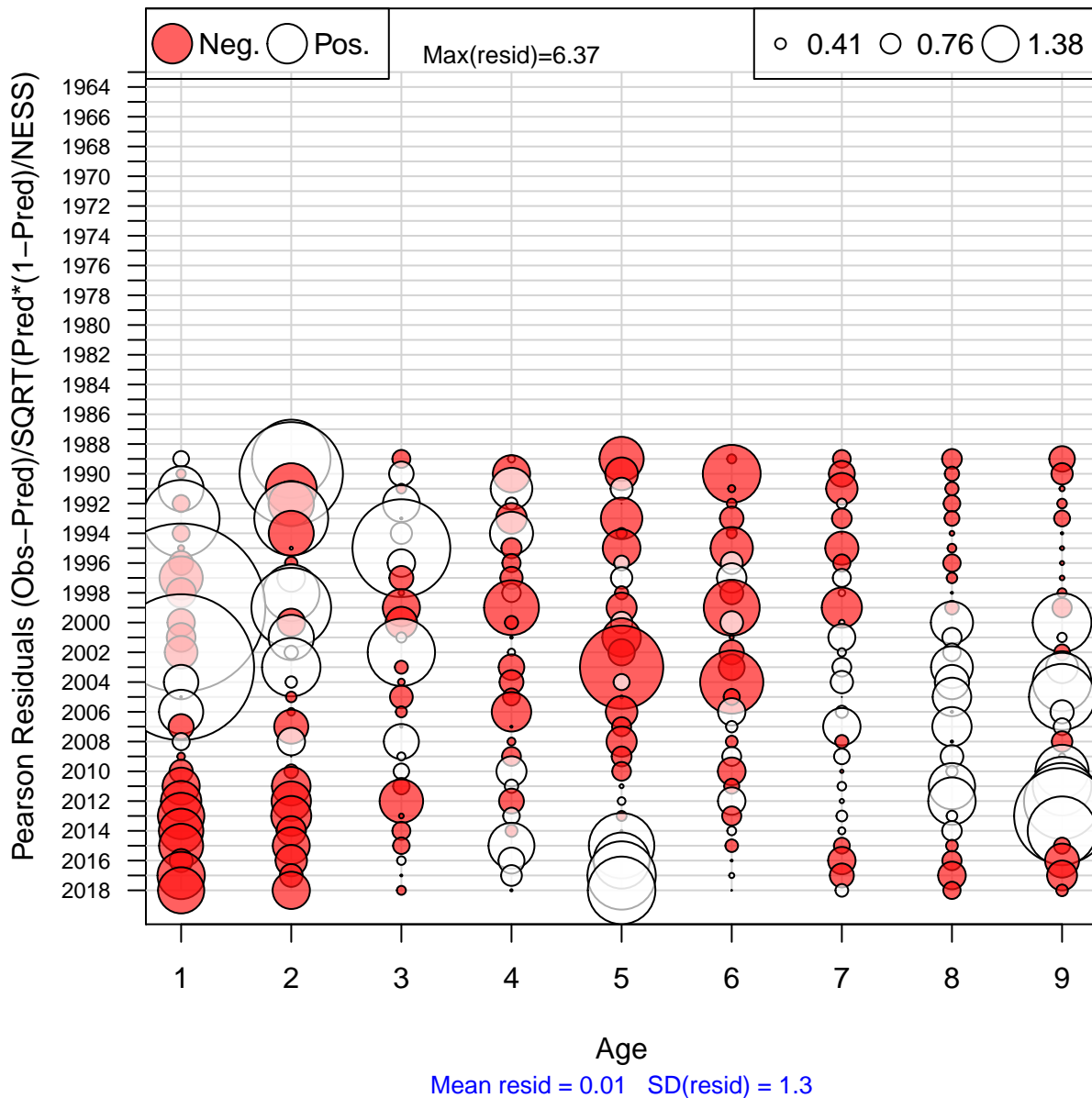
8

Age

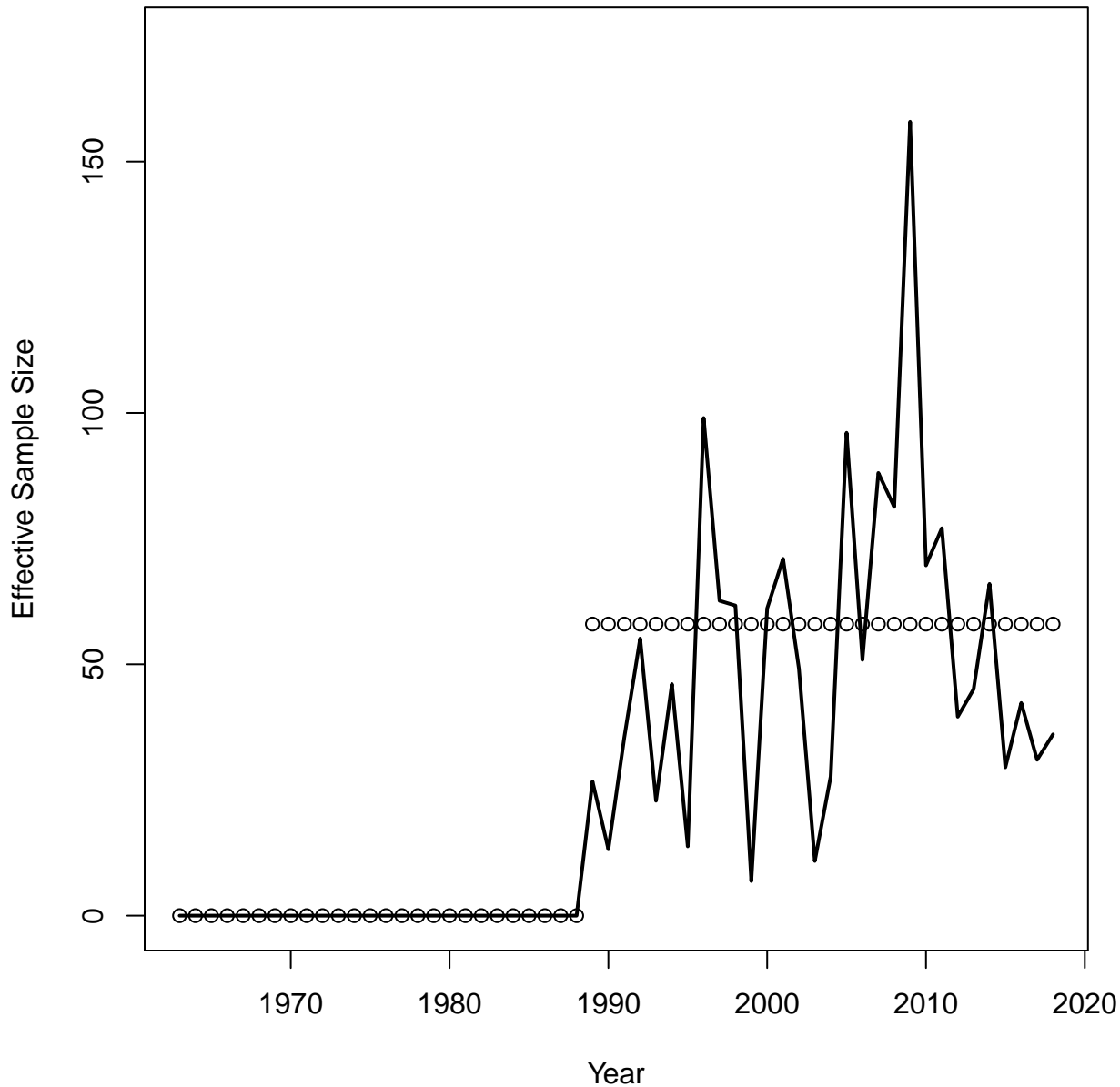
Catch



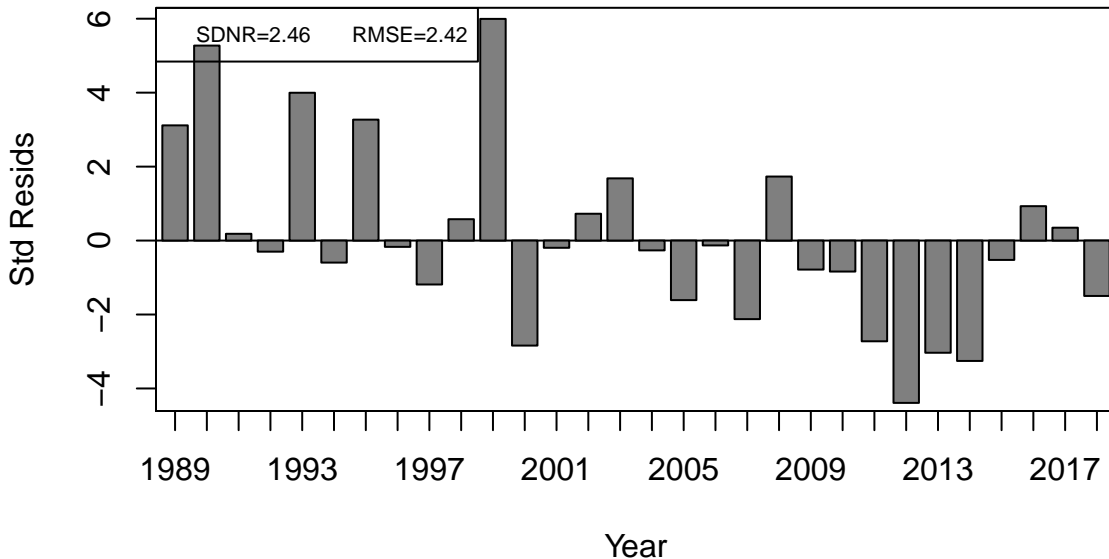
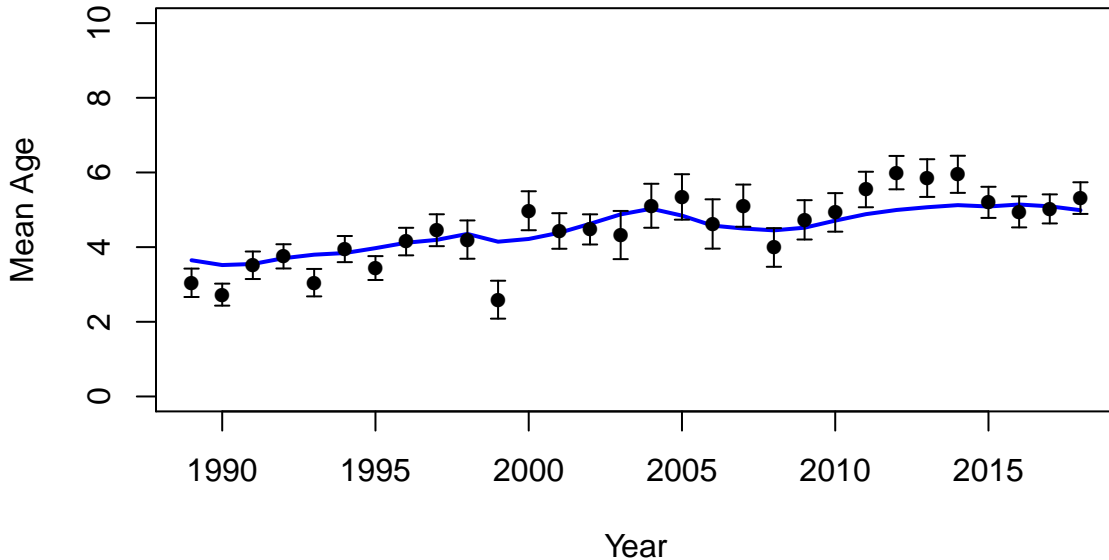
Age Comp Residuals for Catch by Fleet 1 (FLEET-1)



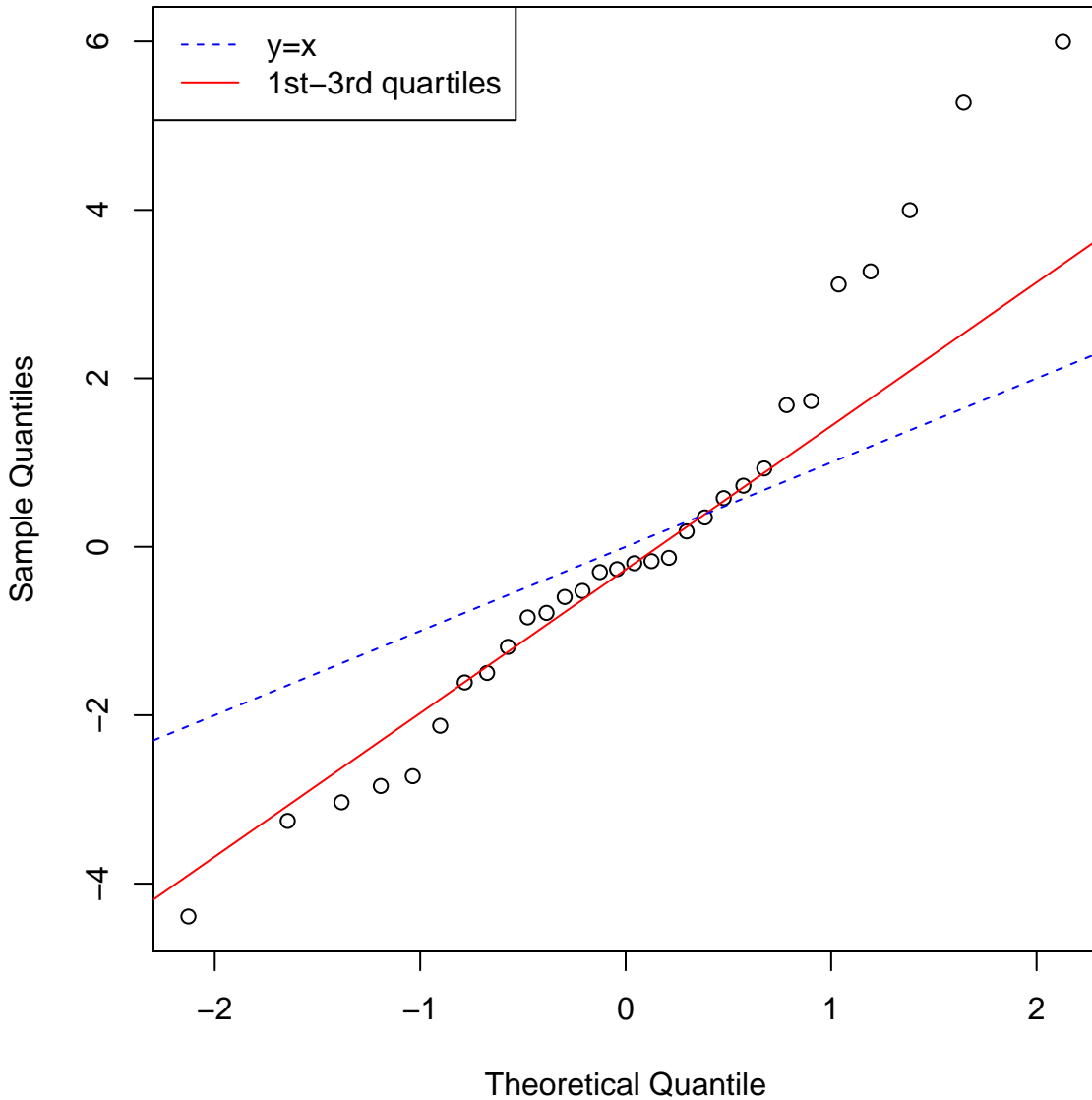
Catch Neff Fleet 1 (FLEET-1)



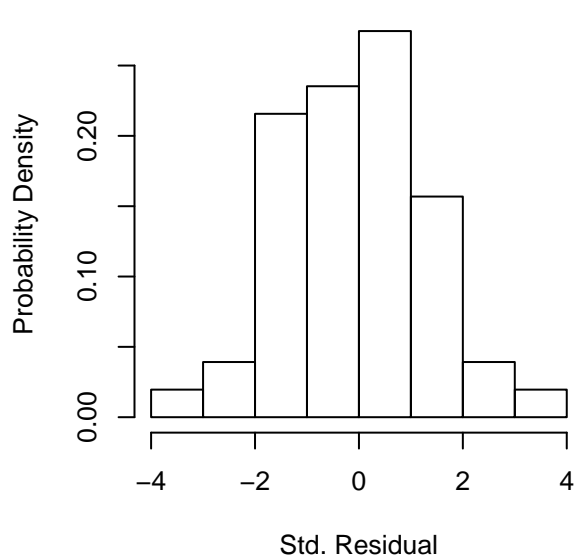
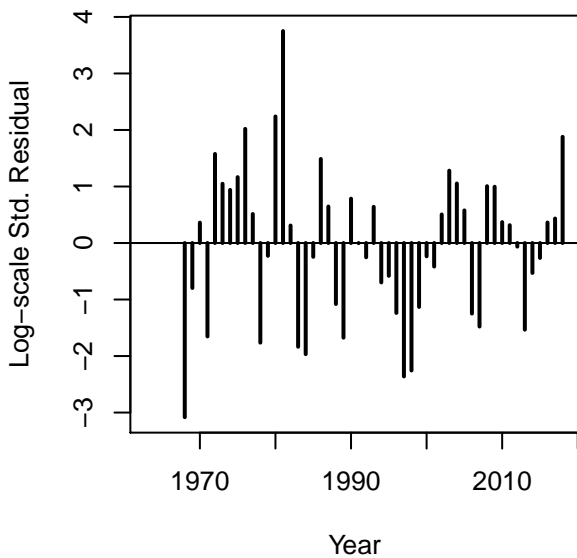
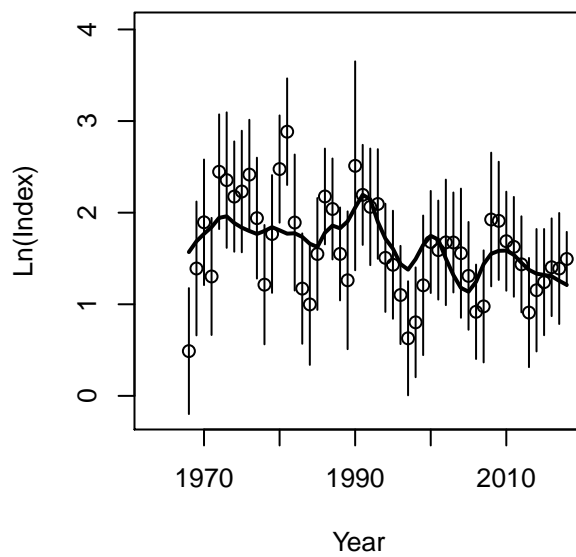
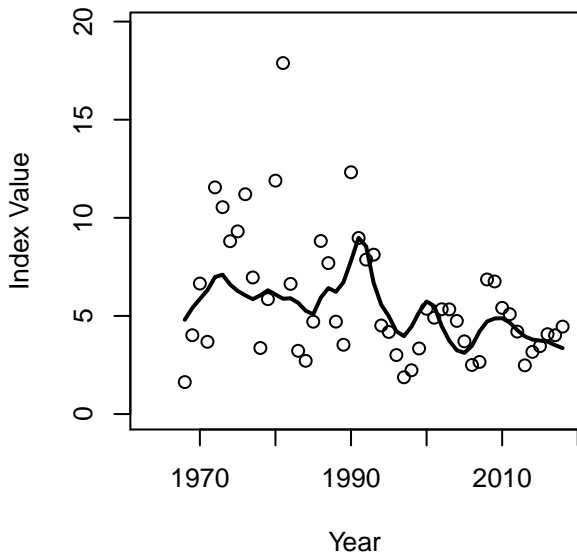
Catch Fleet 1 (FLEET-1) ESS = 58



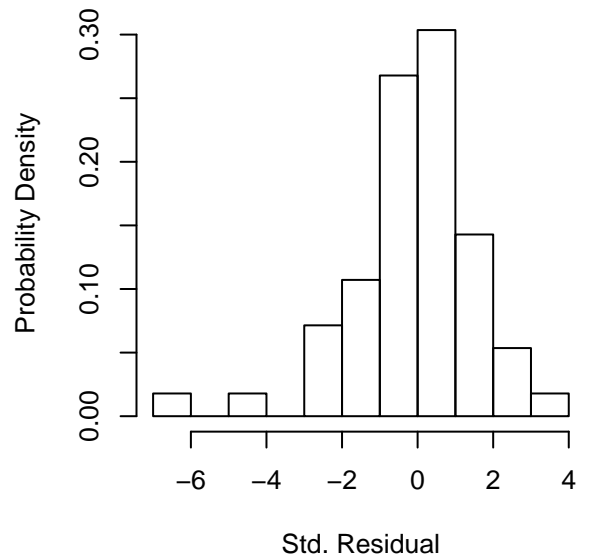
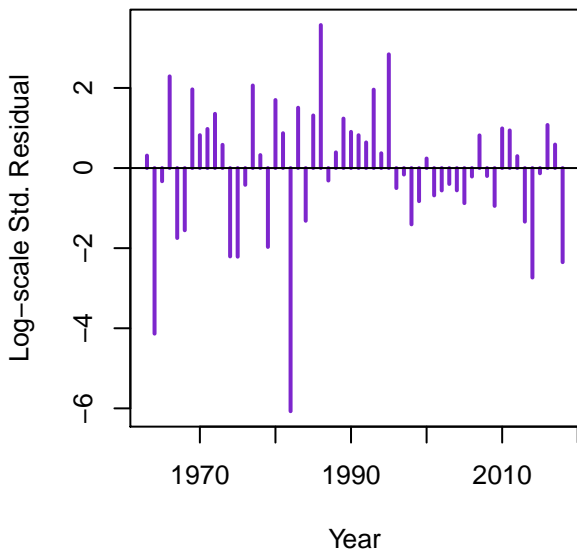
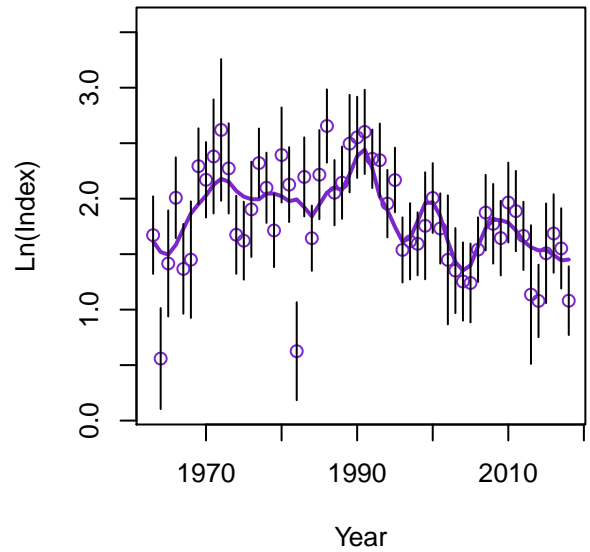
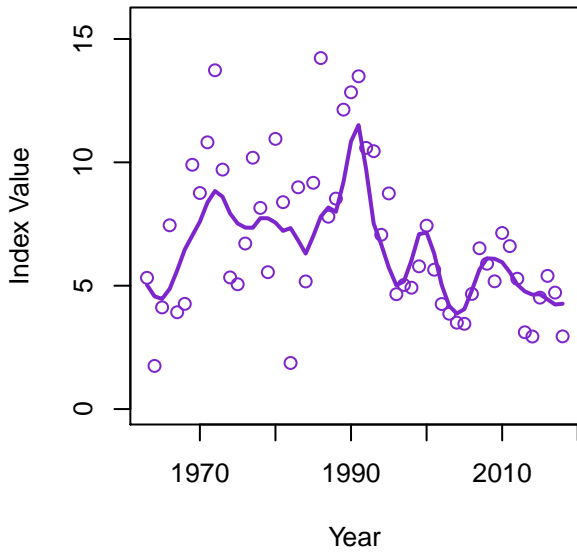
Catch Fleet 1 (FLEET-1) ESS = 58



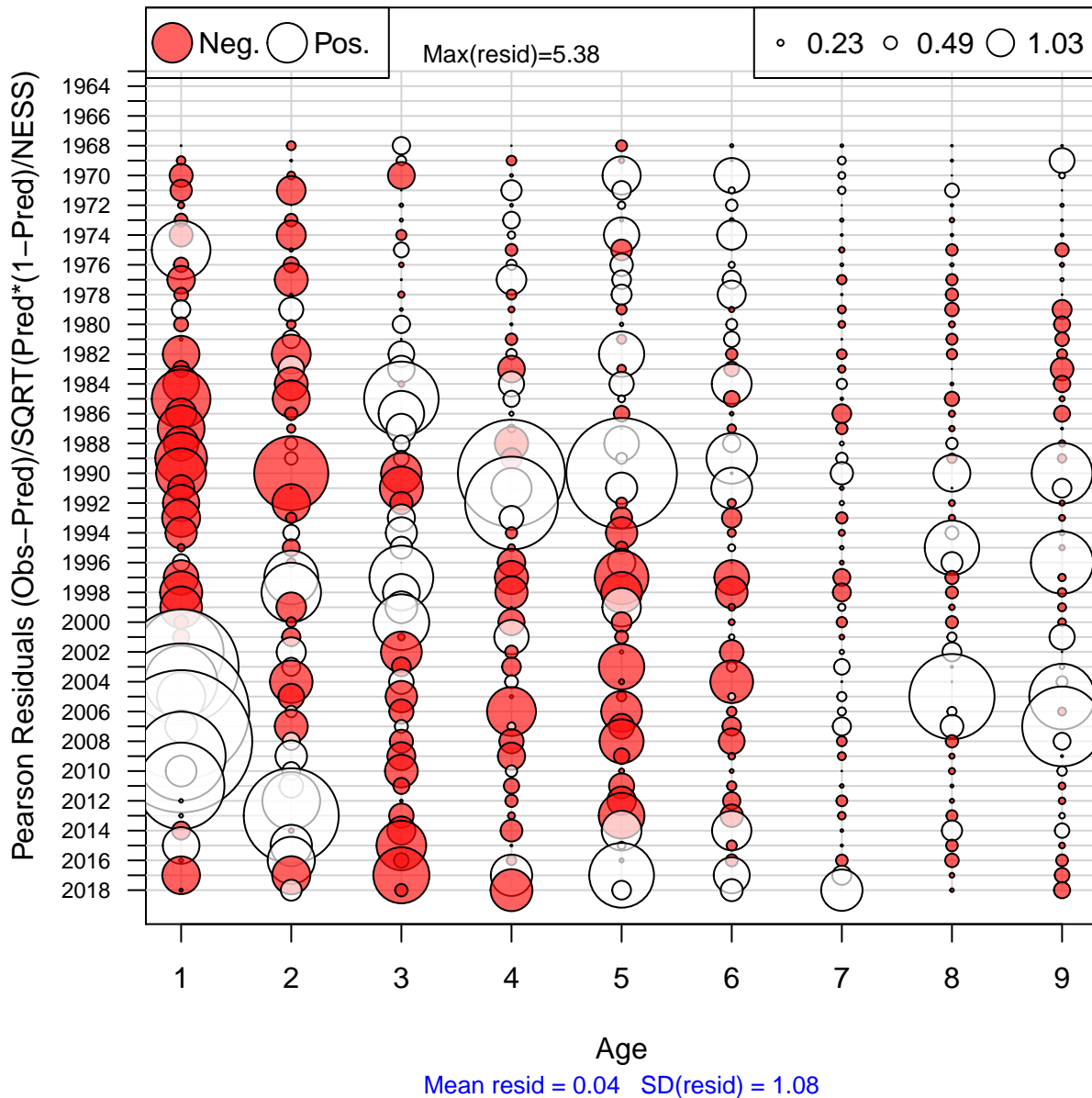
Index 1 (INDEX-1)



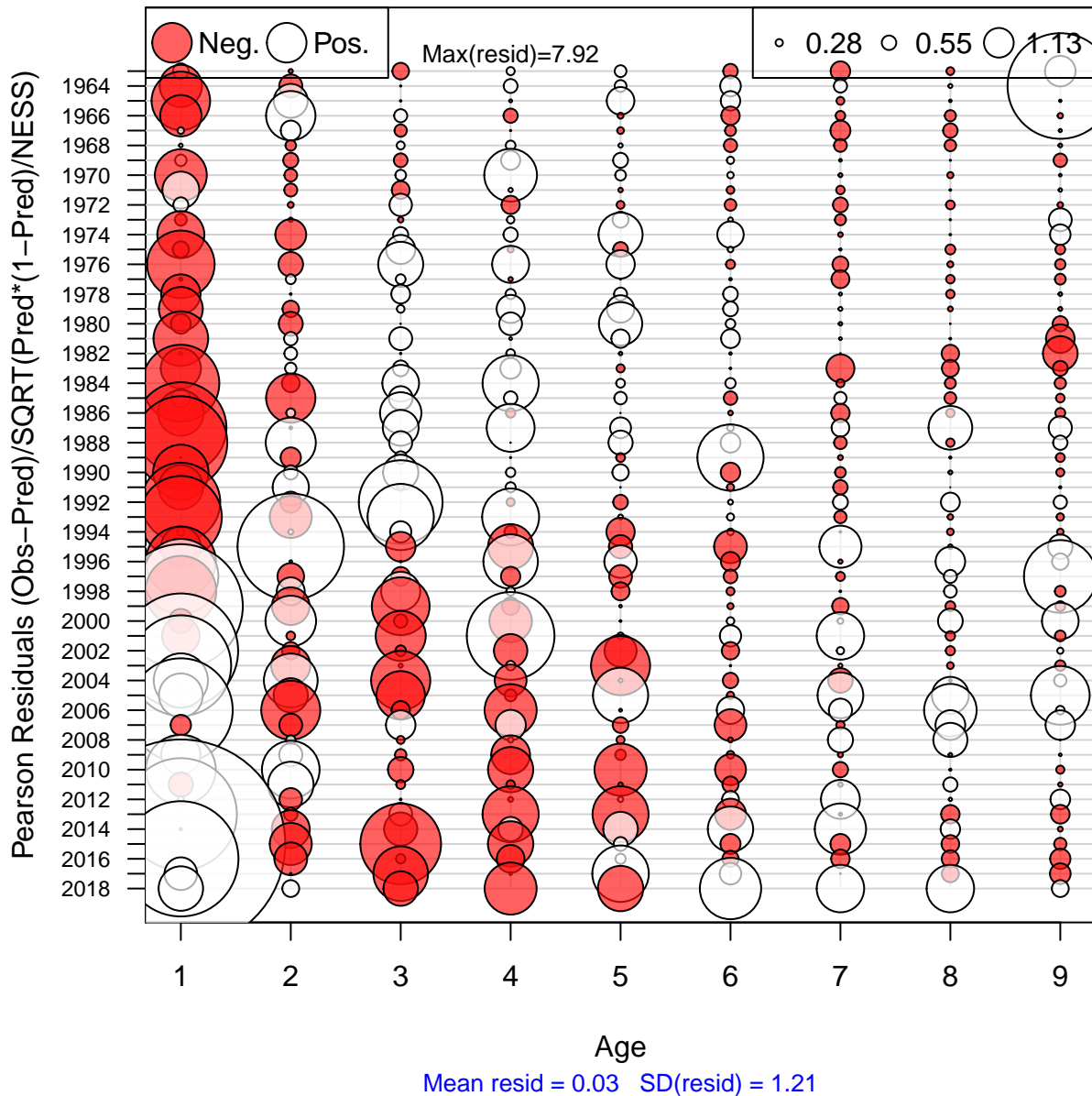
Index 2 (INDEX-2)



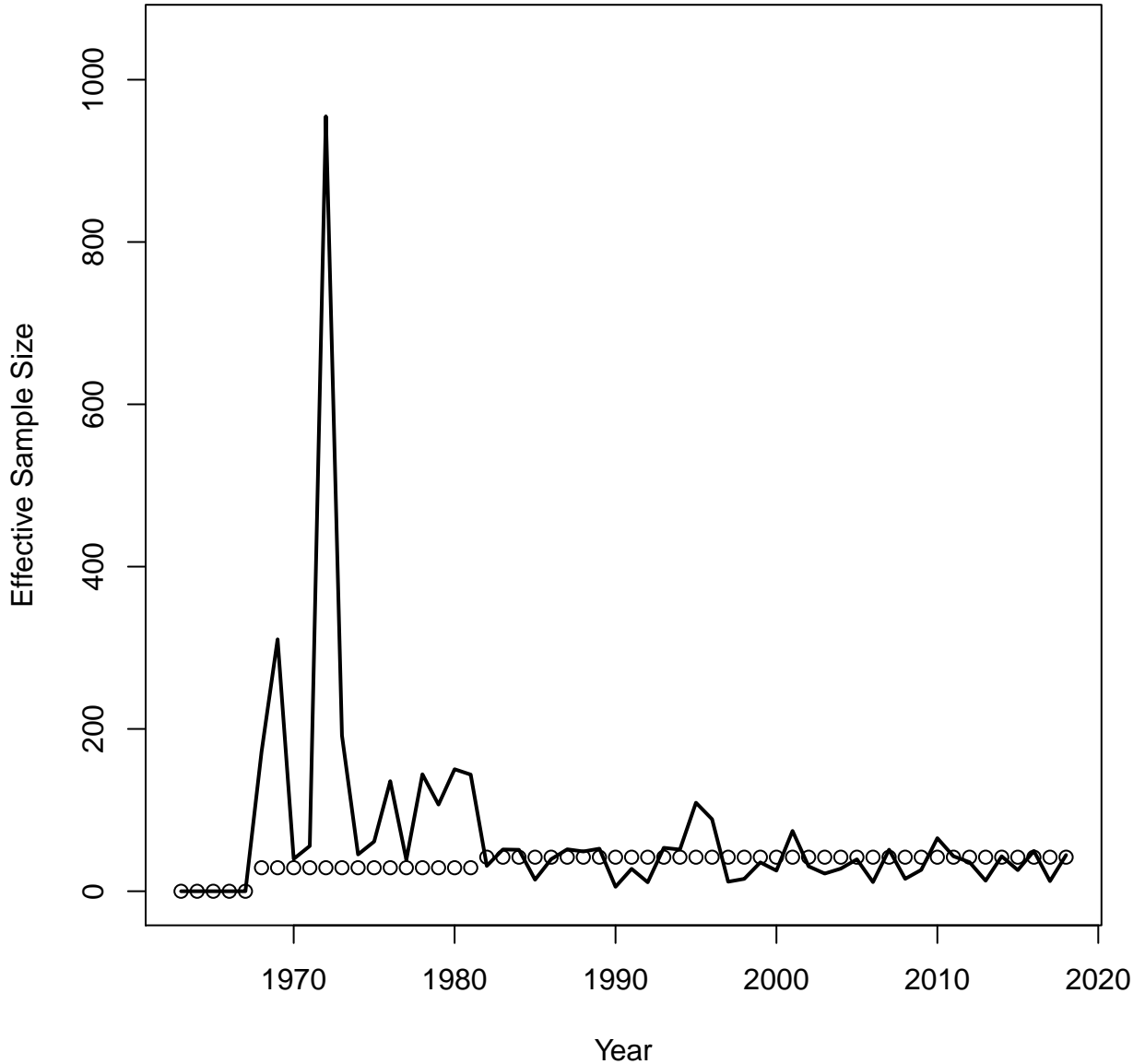
Age Comp Residuals for Index 1 (INDEX-1)



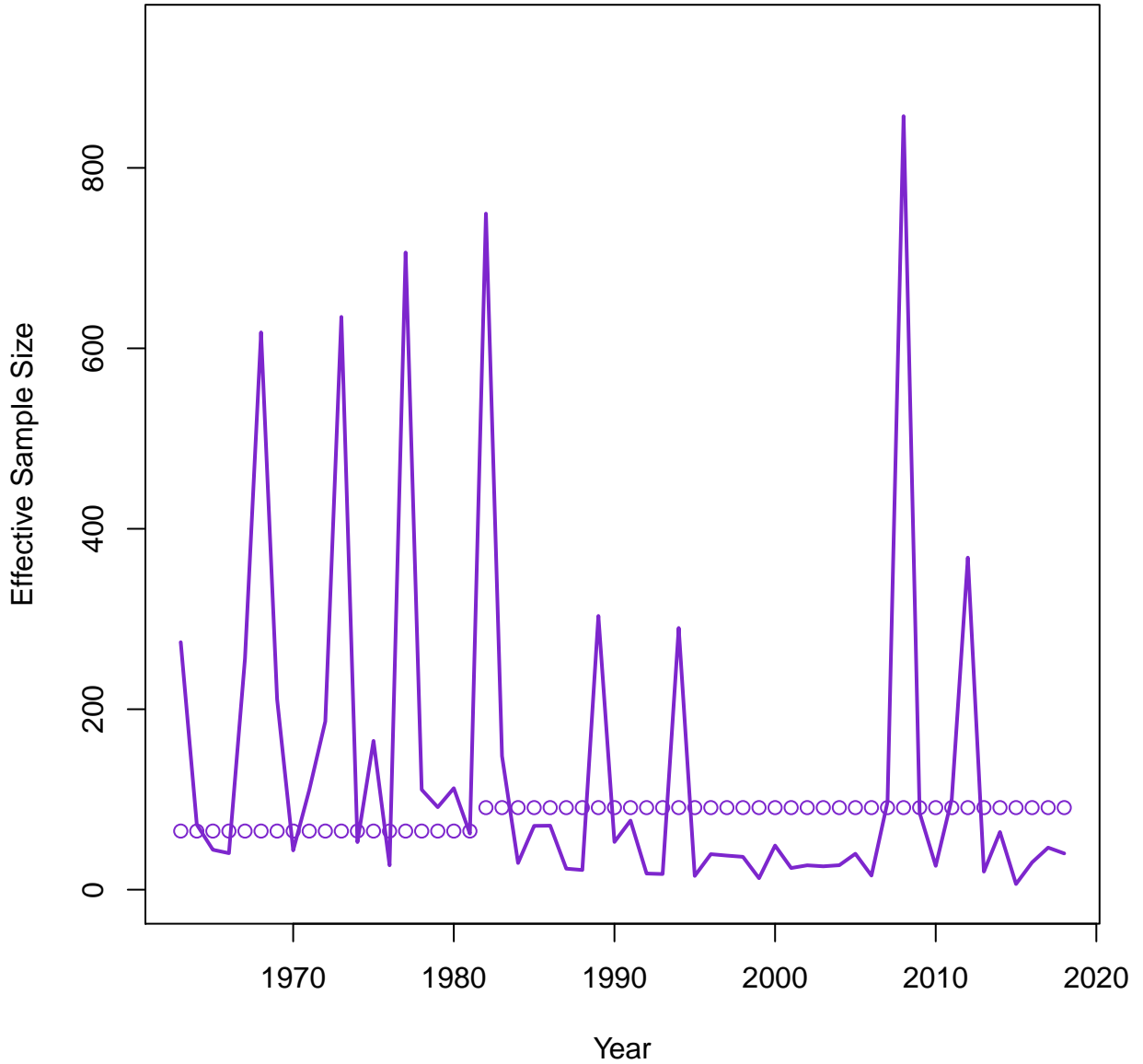
Age Comp Residuals for Index 2 (INDEX-2)



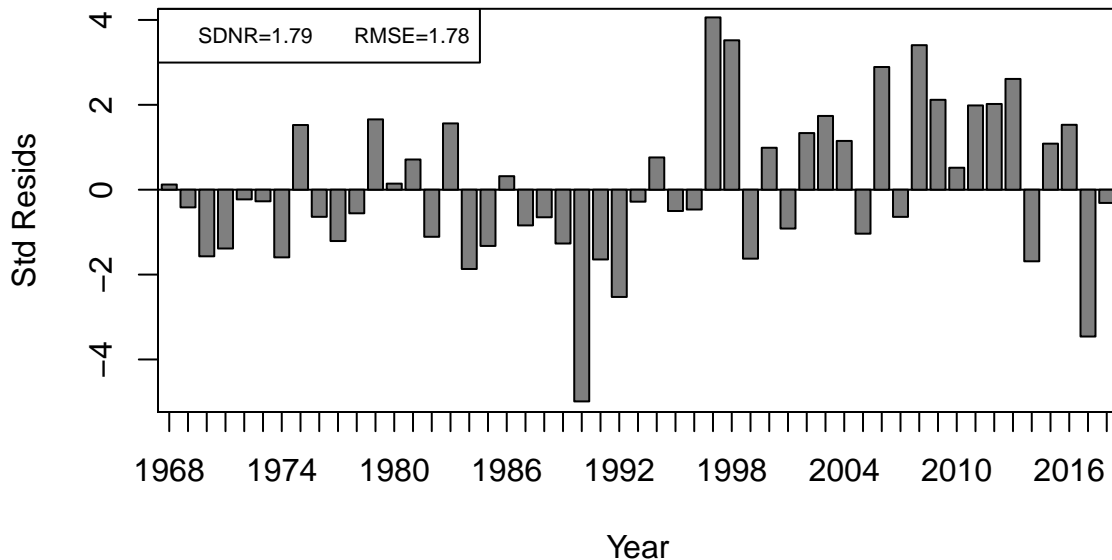
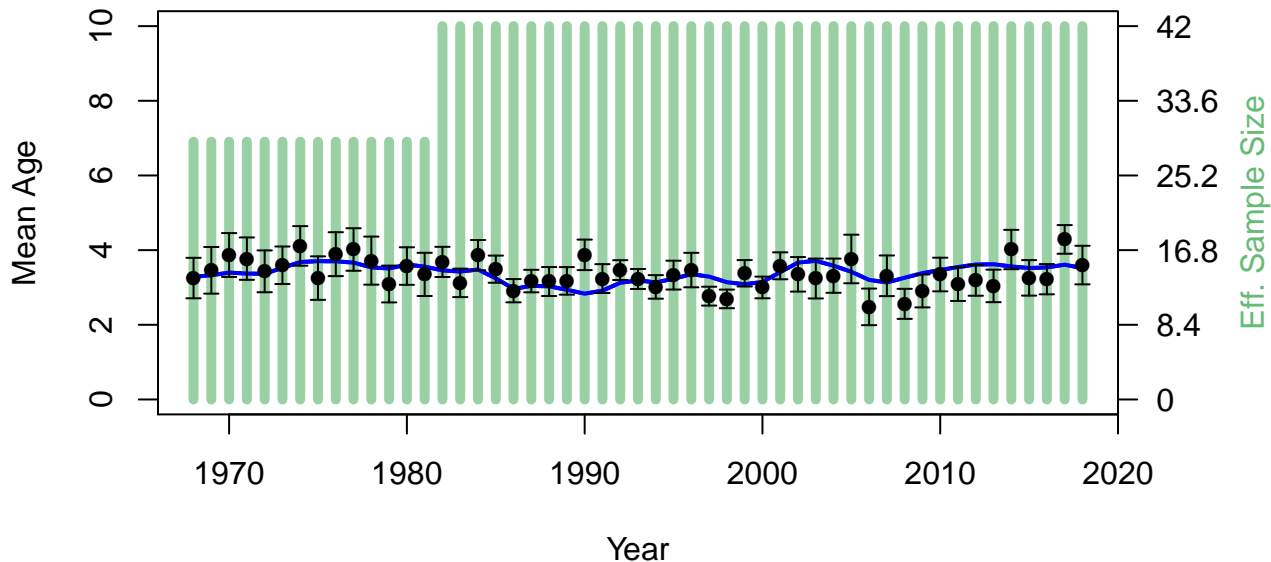
Index Neff 1 (INDEX-1)



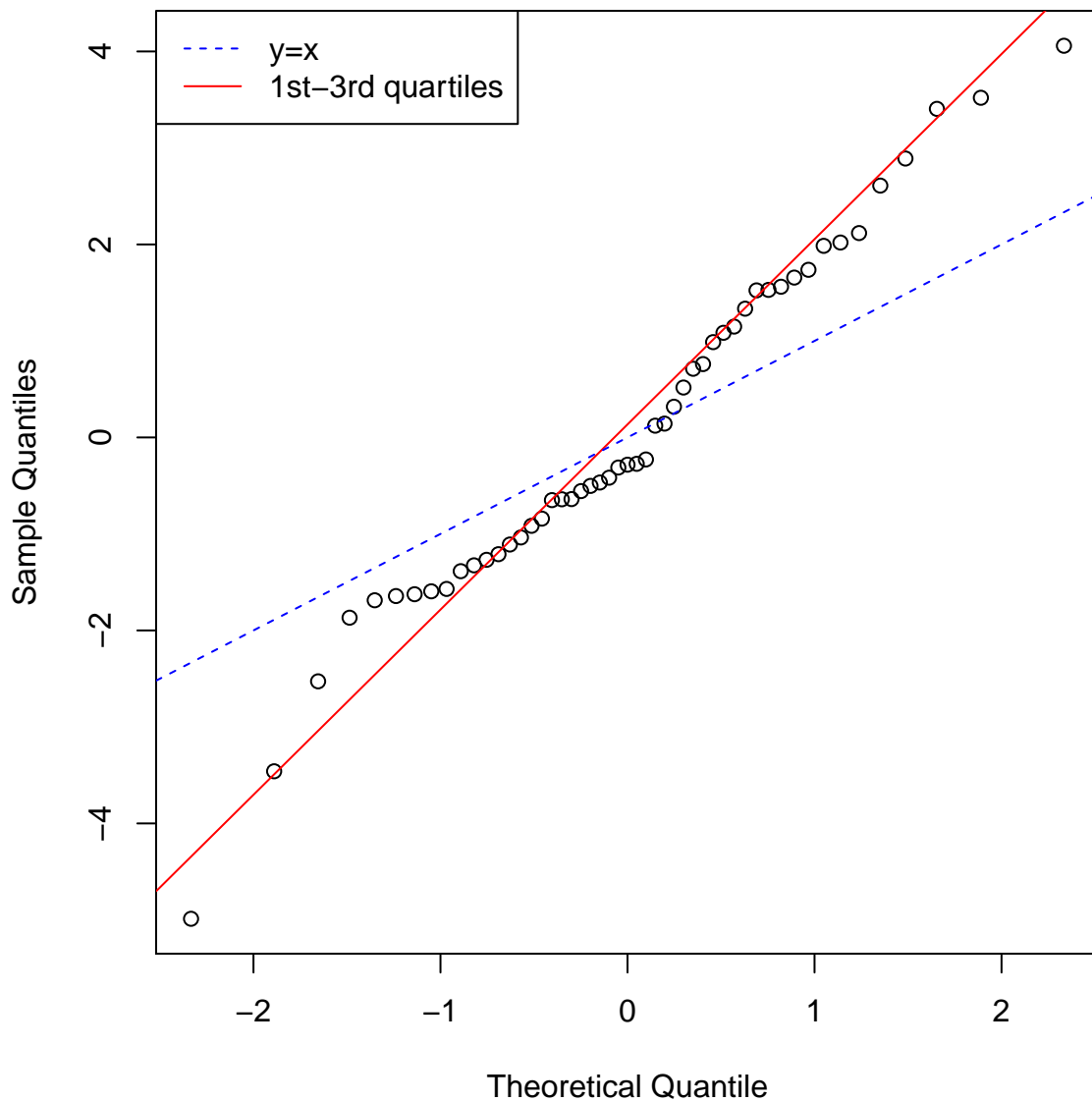
Index Neff 2 (INDEX-2)



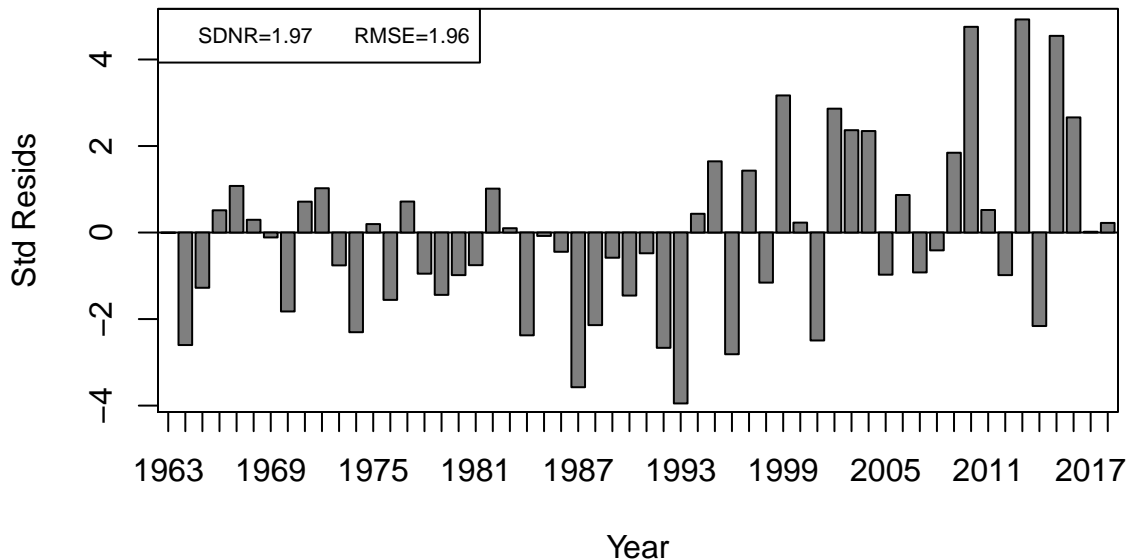
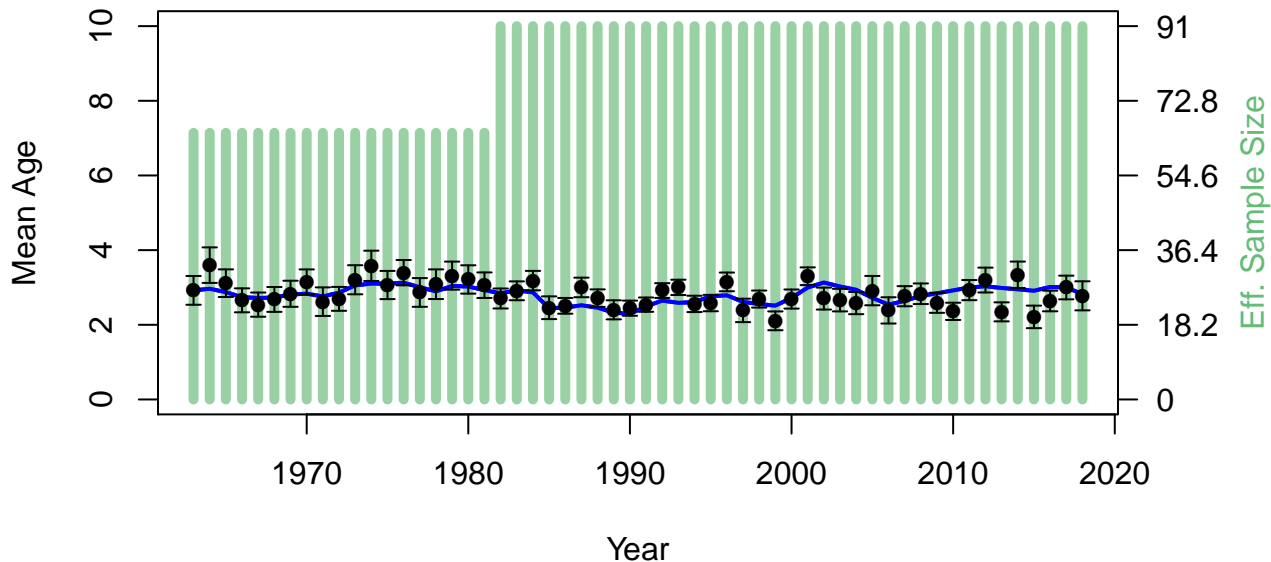
Index 1 (INDEX-1)



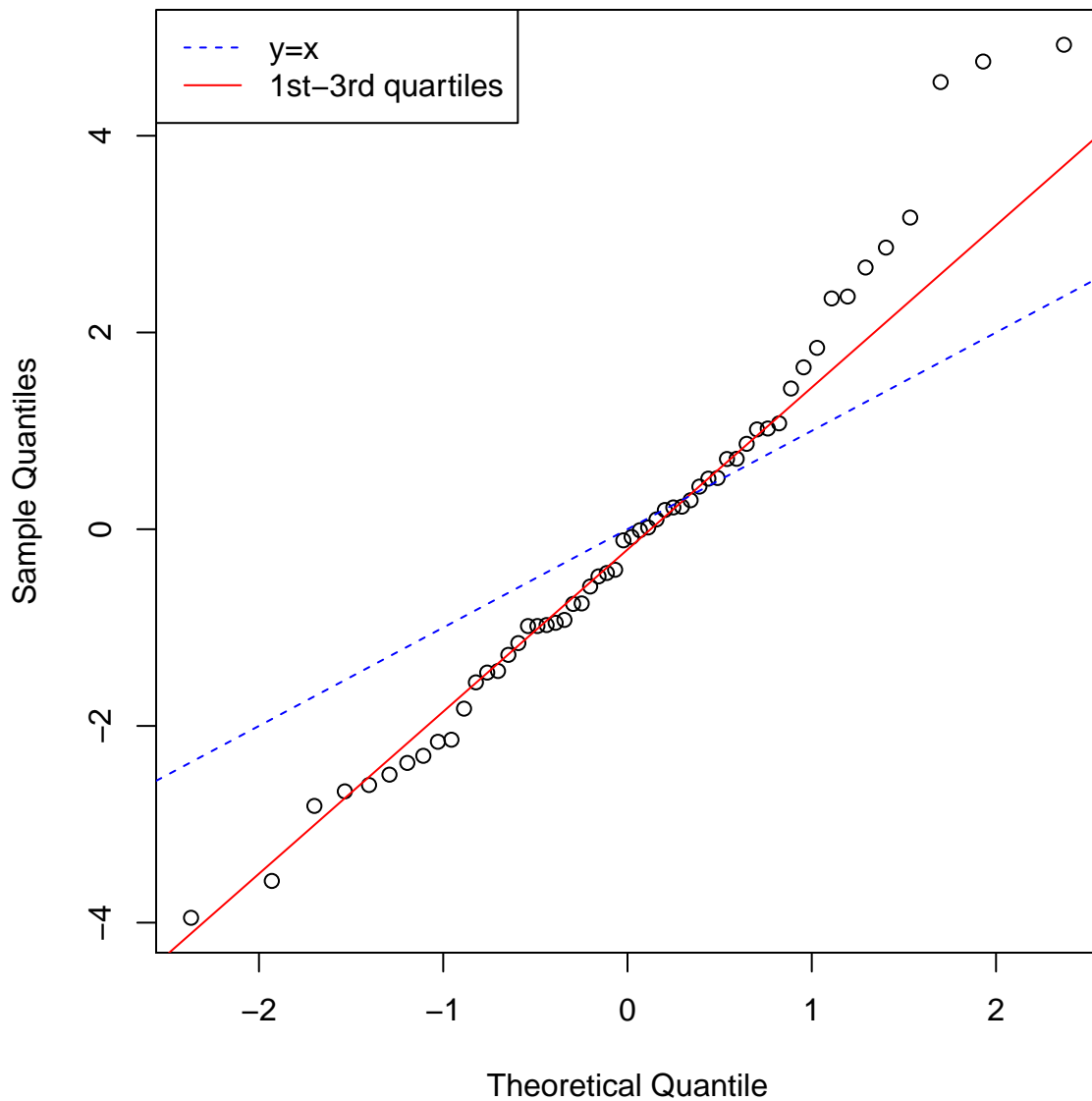
Index 1 (INDEX-1)



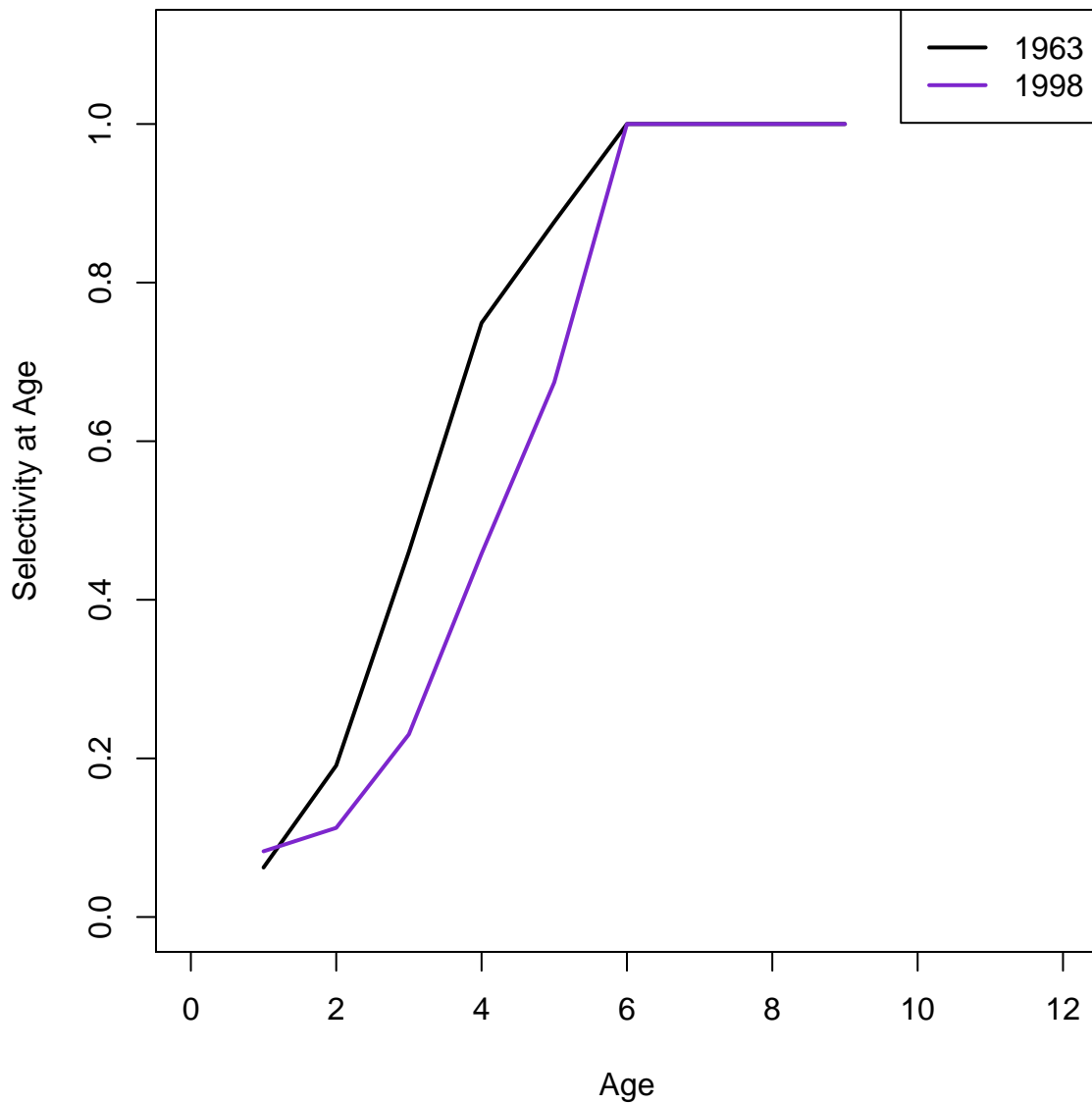
Index 2 (INDEX-2)

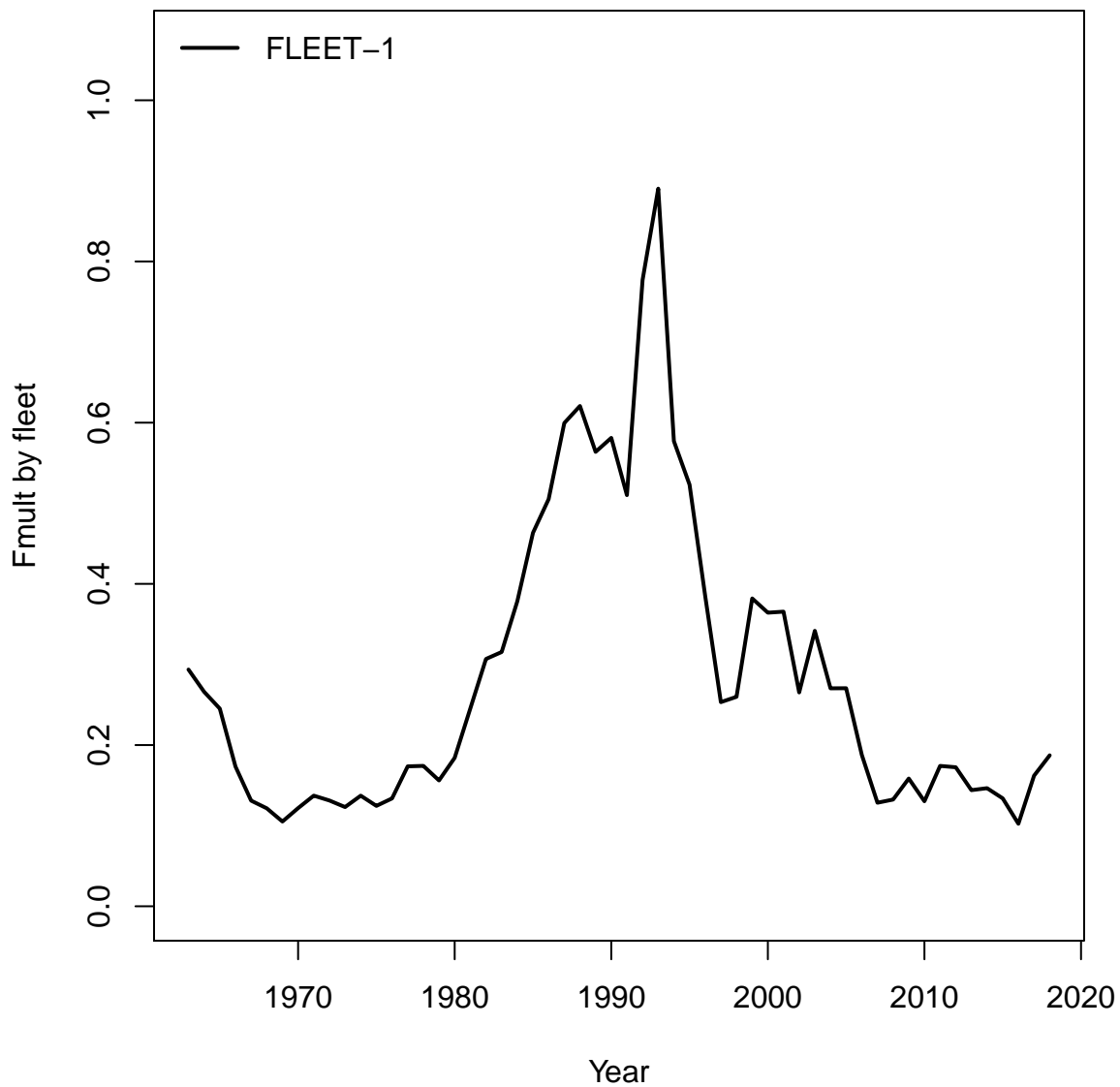


Index 2 (INDEX-2)

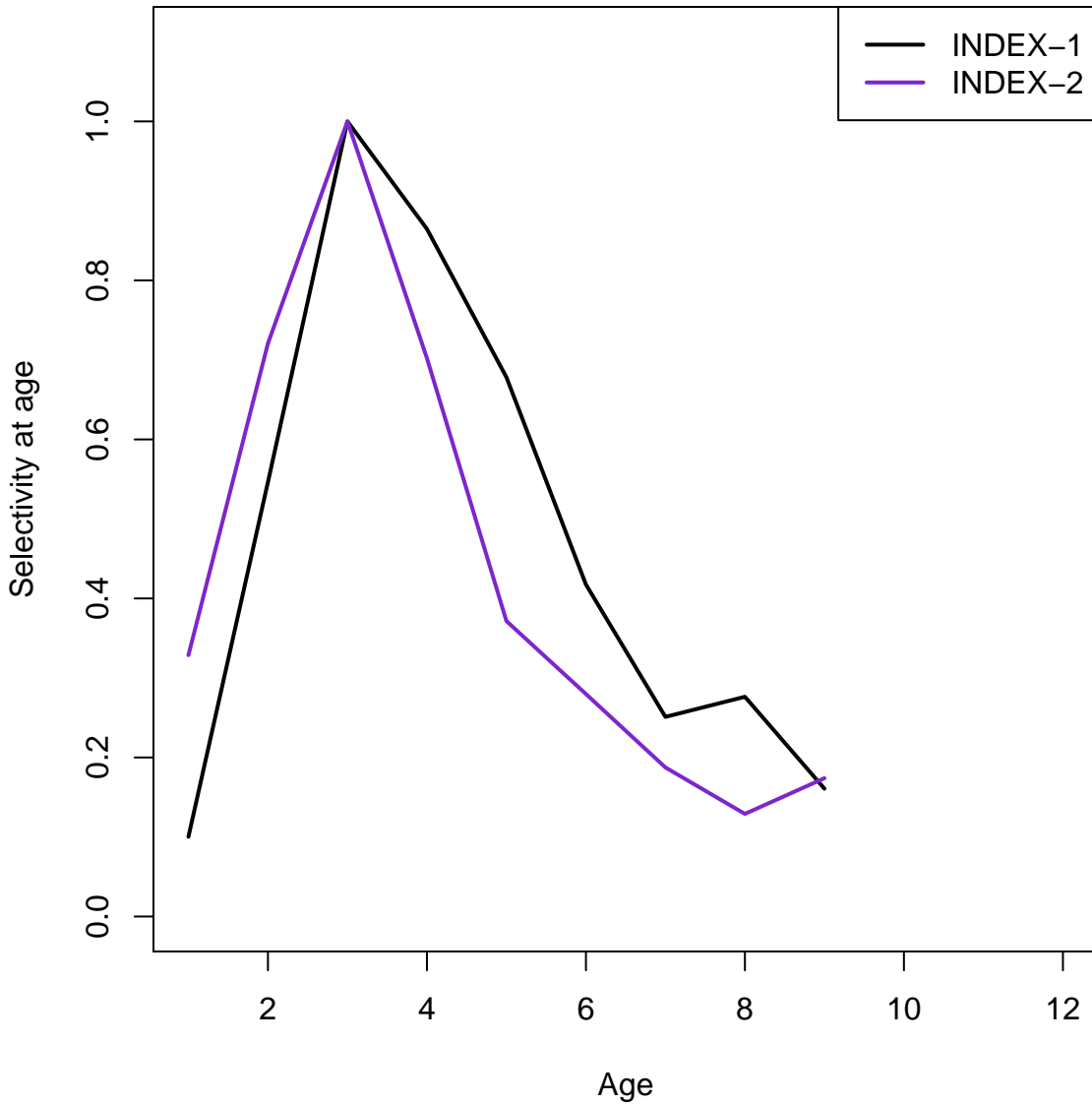


Fleet 1 (FLEET-1)





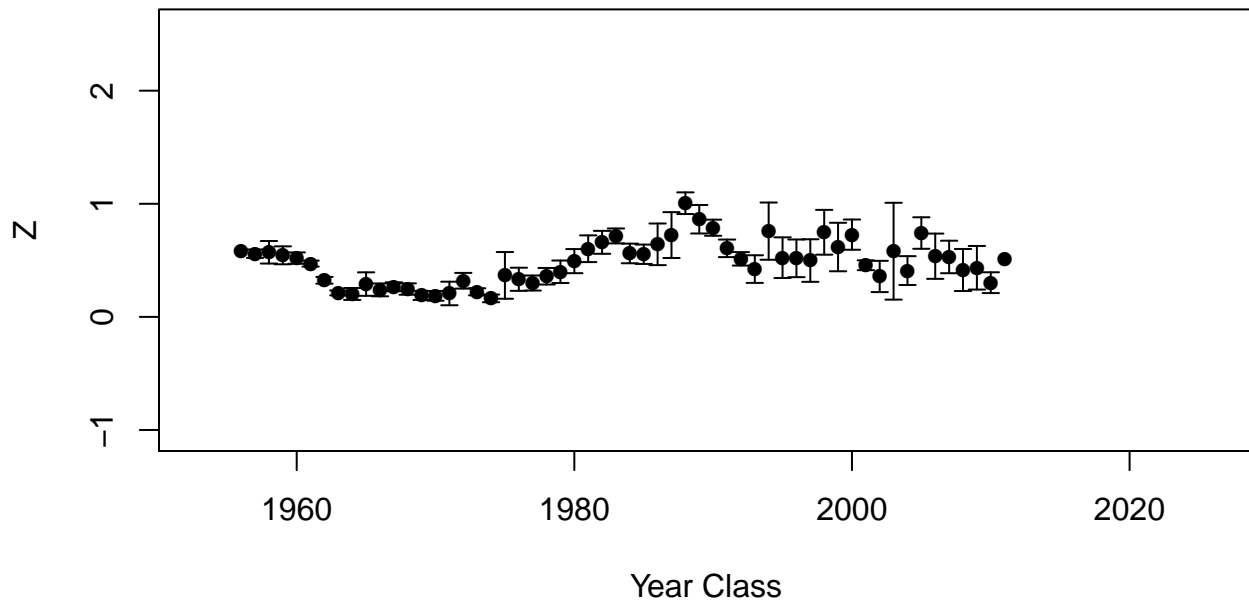
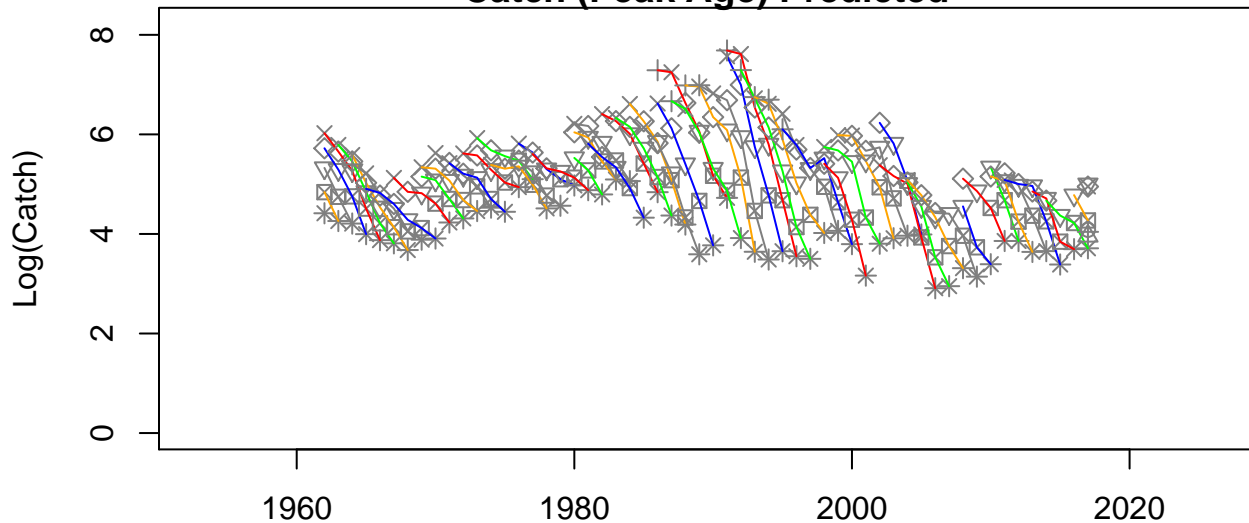
Indices



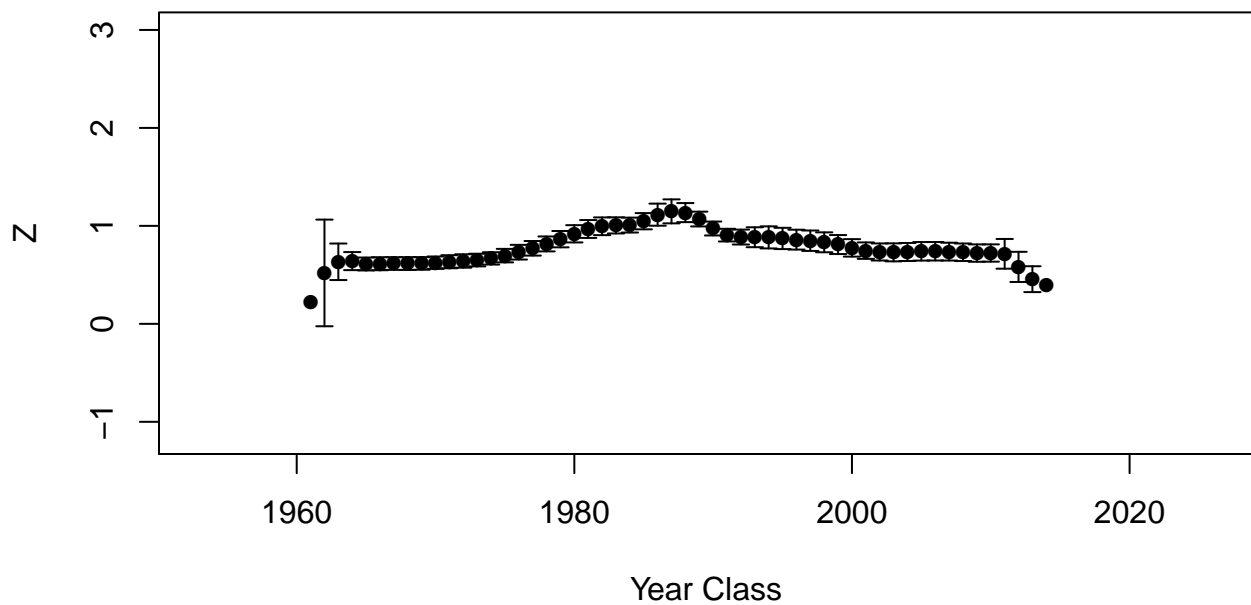
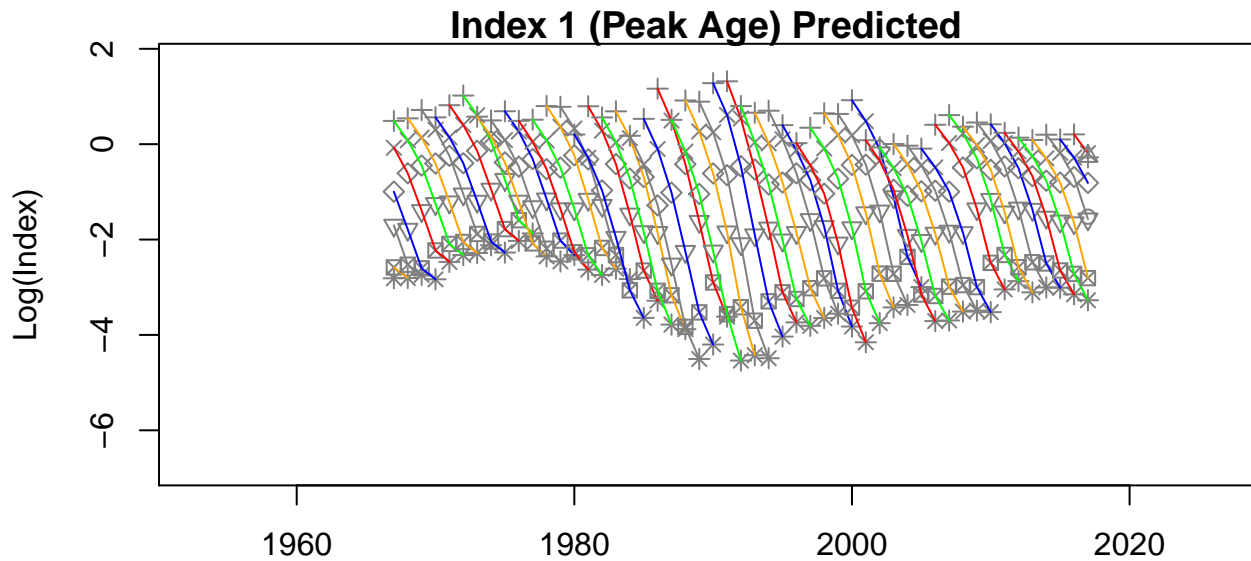
Catch (Peak Age) Observed



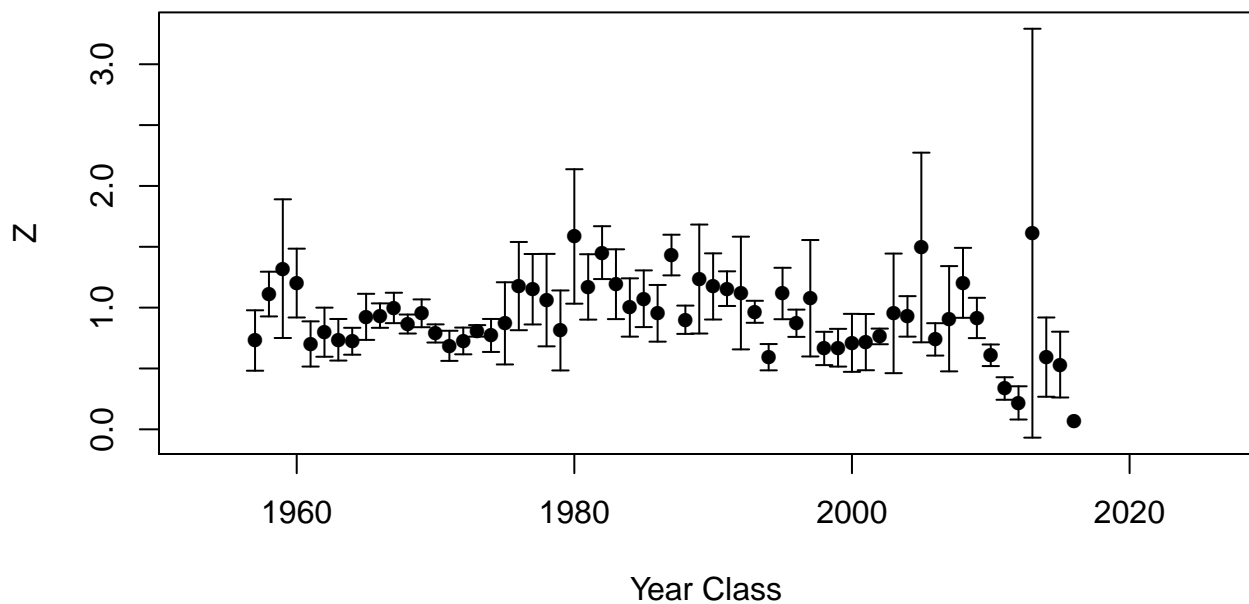
Catch (Peak Age) Predicted



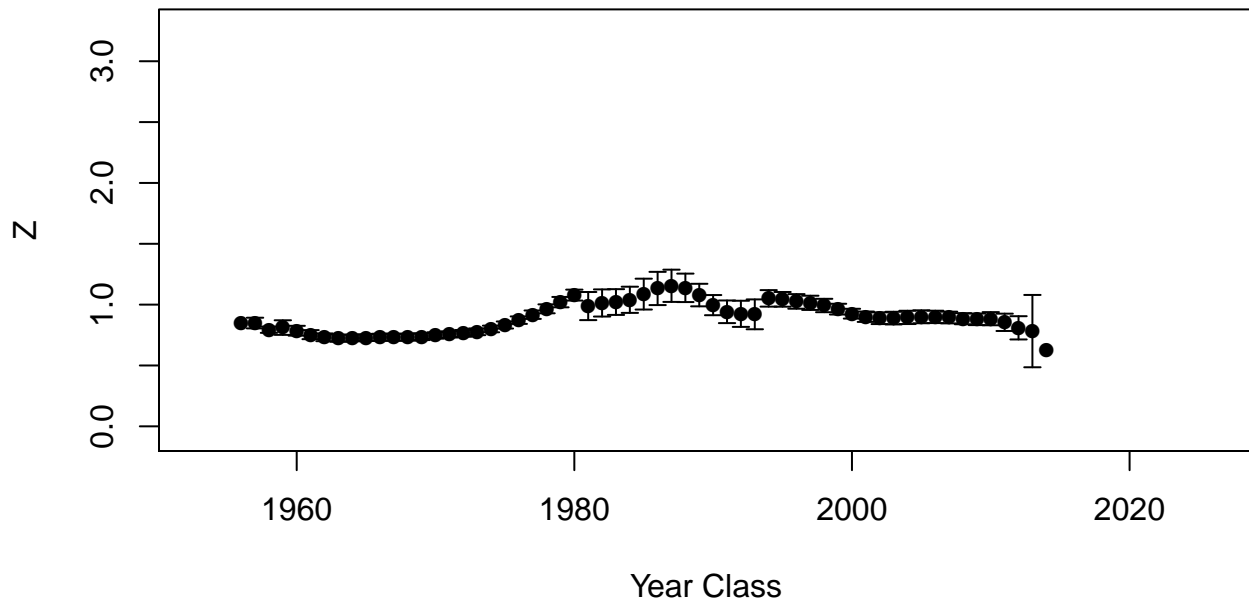
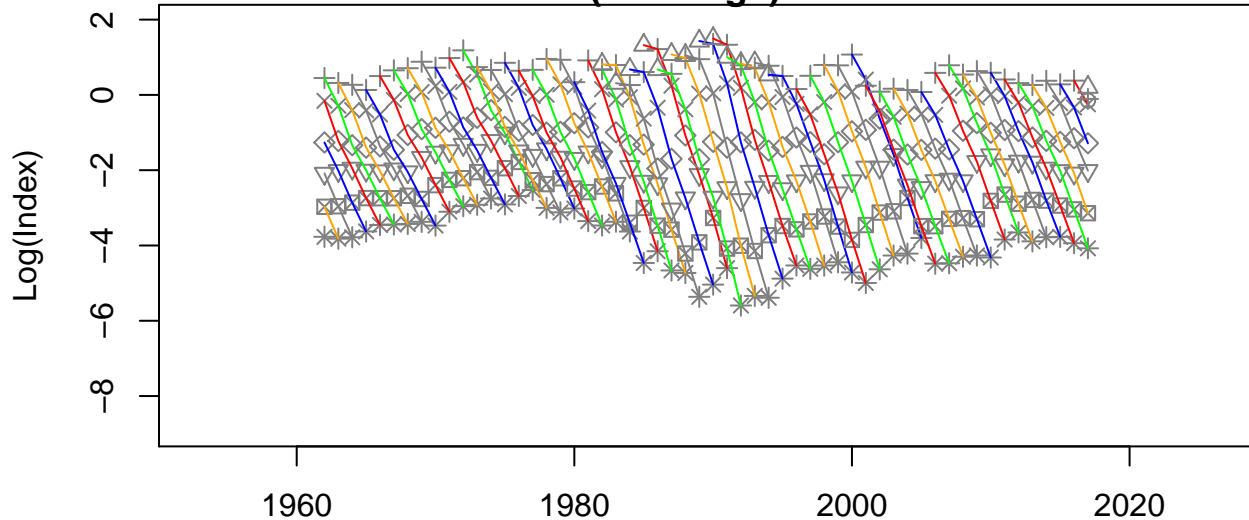




Index 2 (Peak Age) Observed



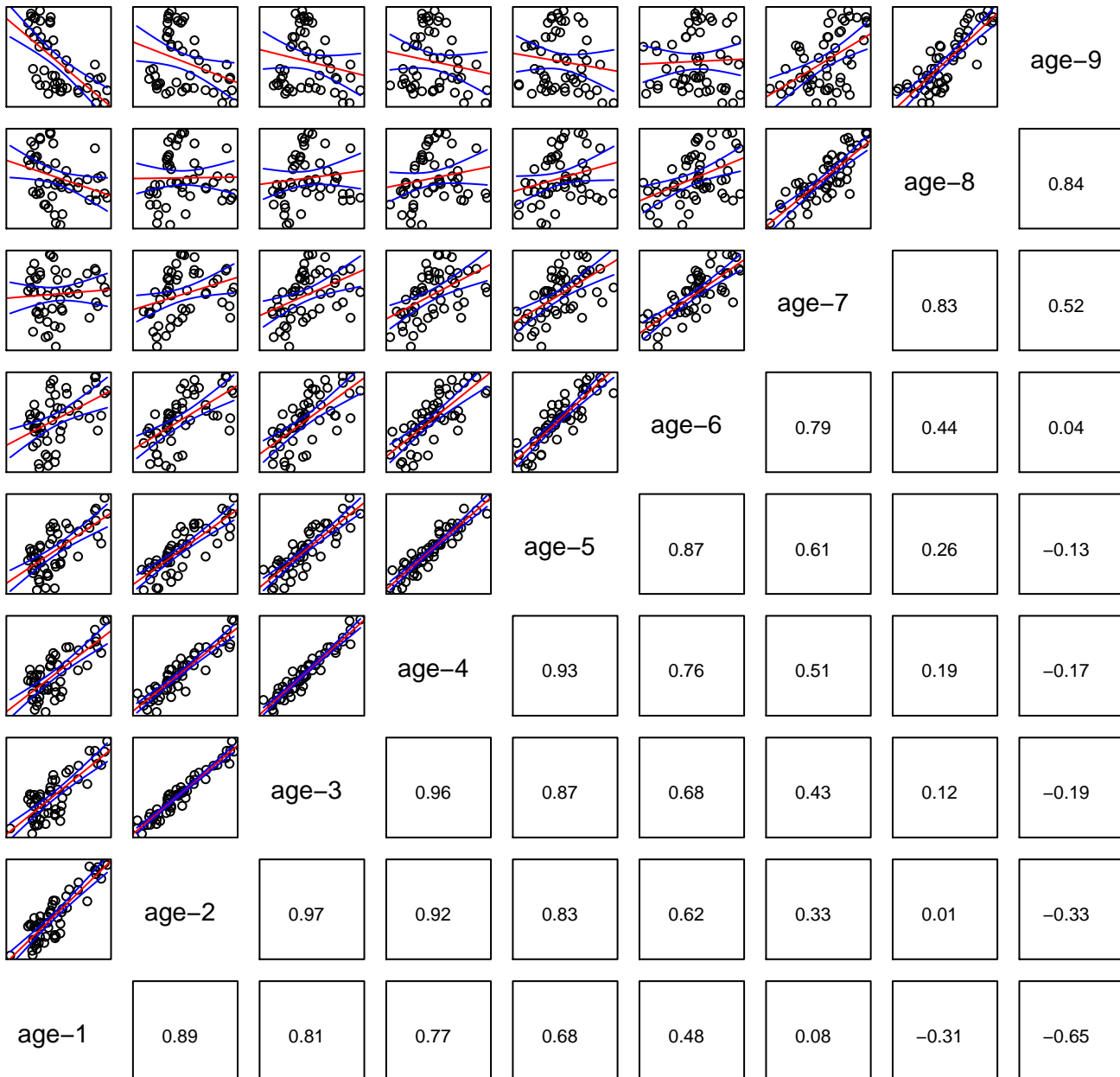
Index 2 (Peak Age) Predicted



Catch Observed



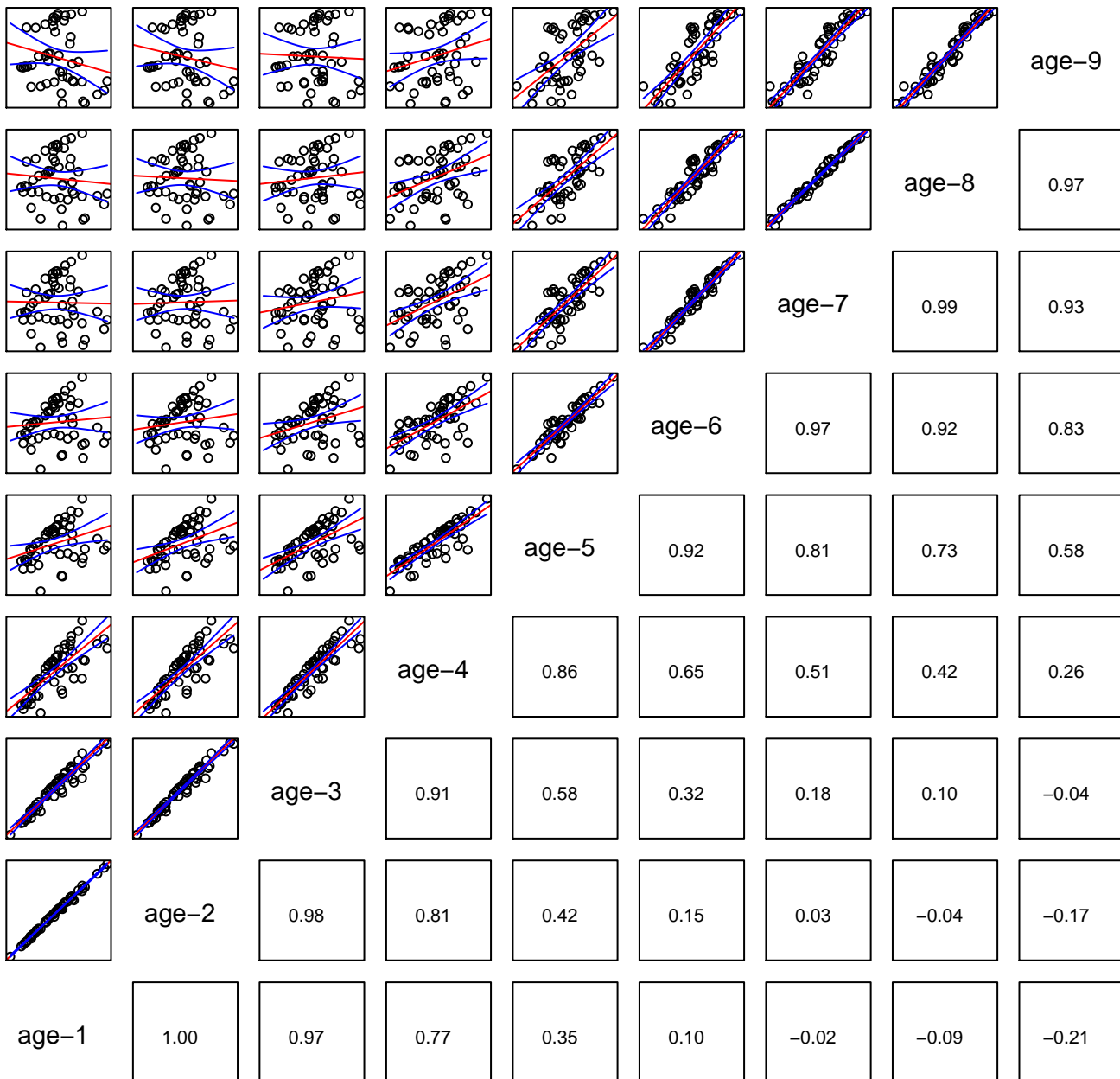
Catch Predicted

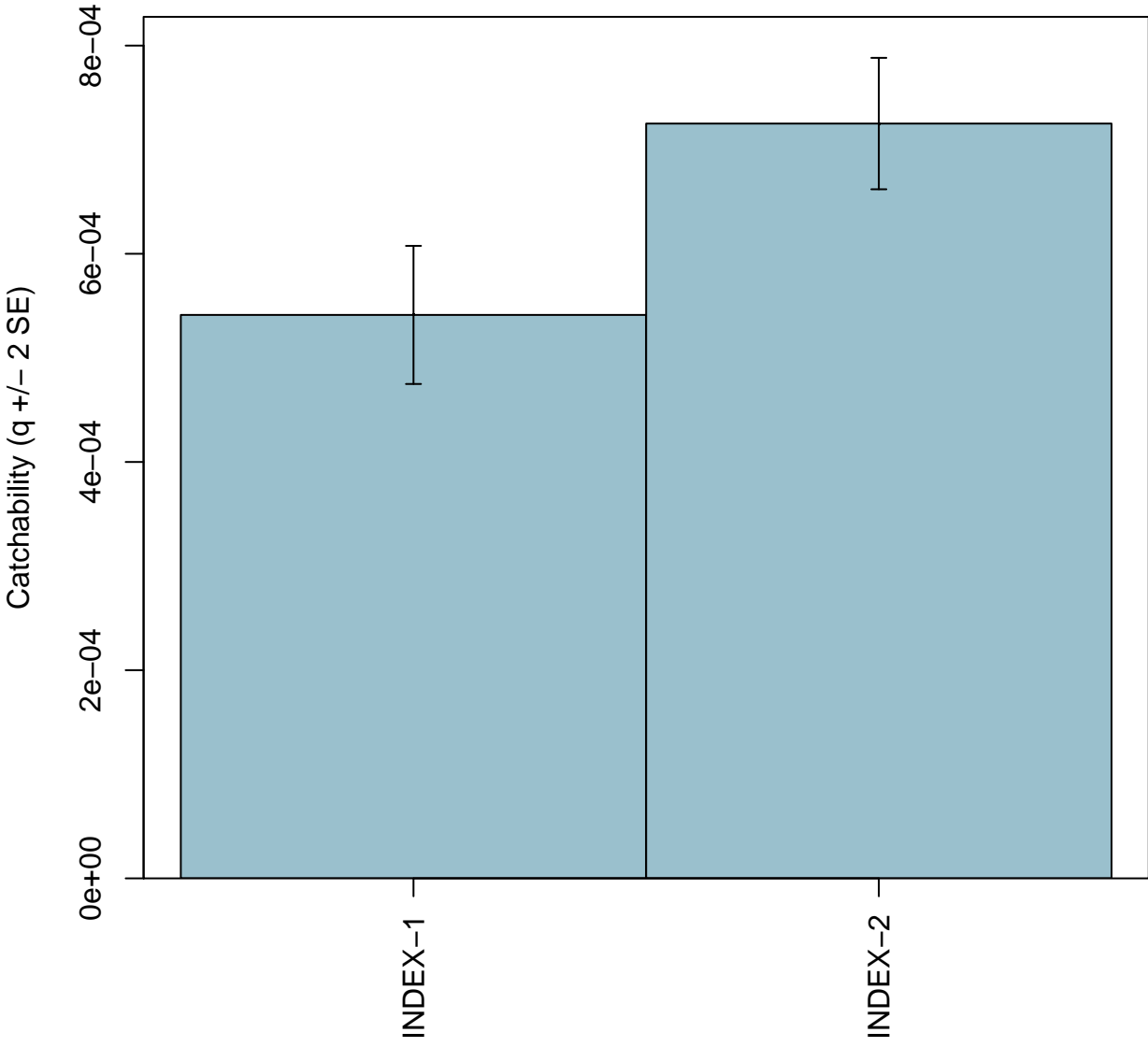


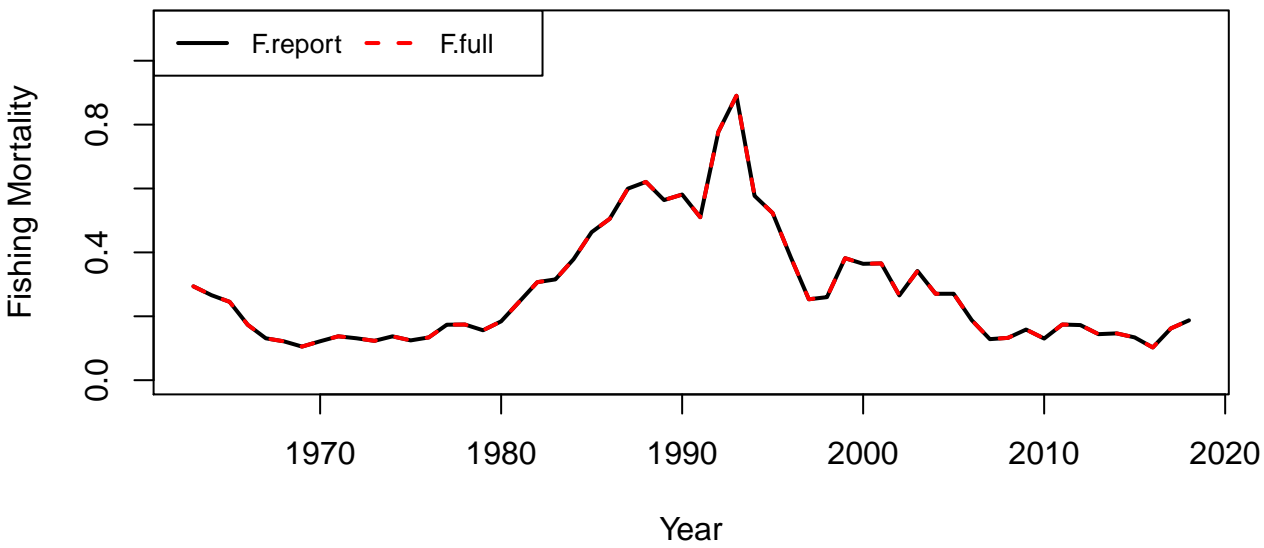
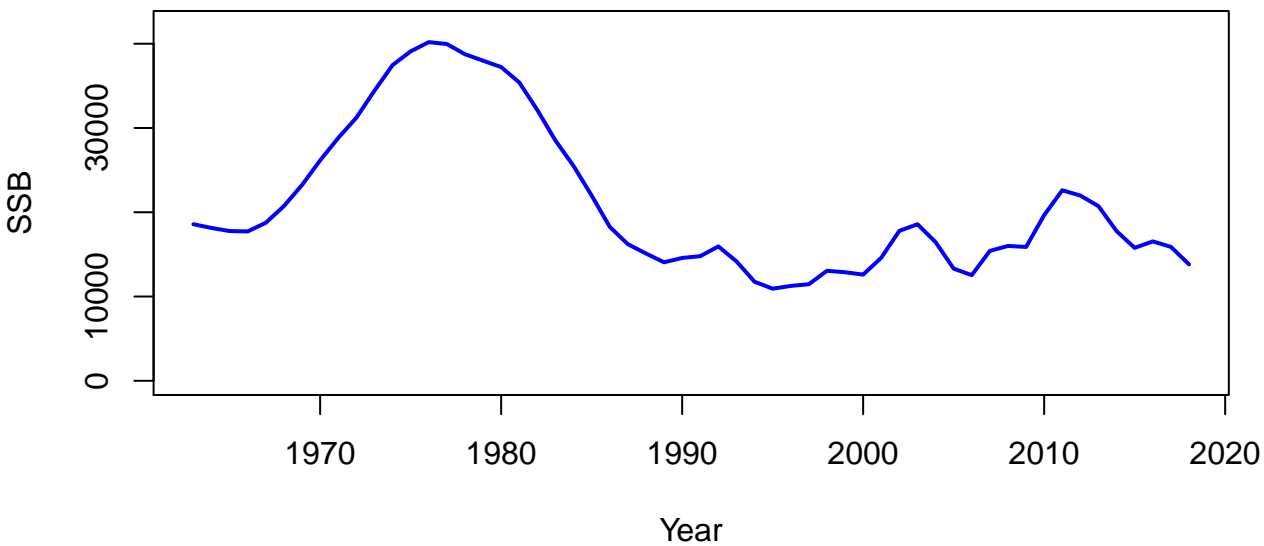
Index 1 (INDEX-1) Observed



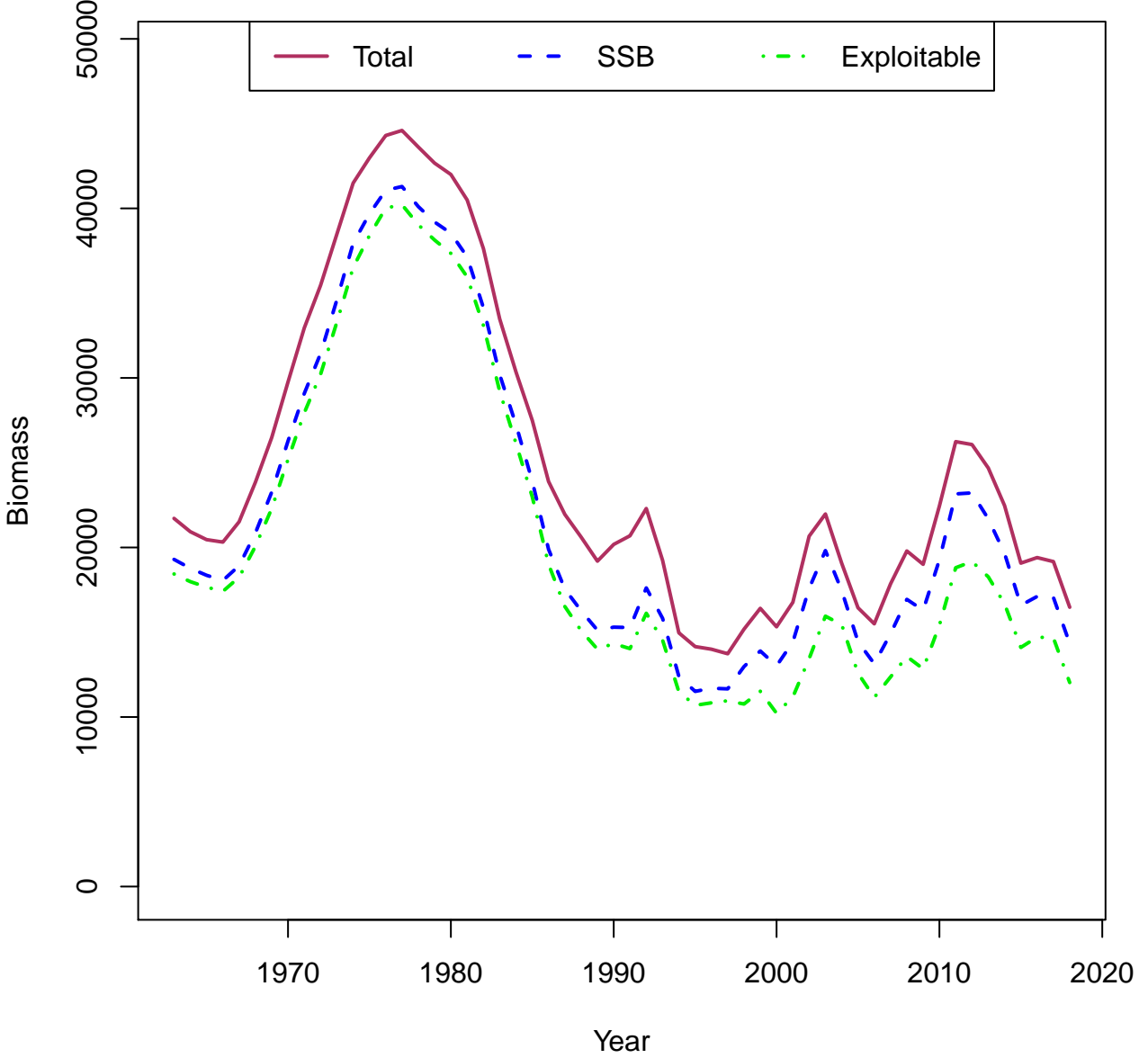
Index 2 (INDEX-2) Predicted



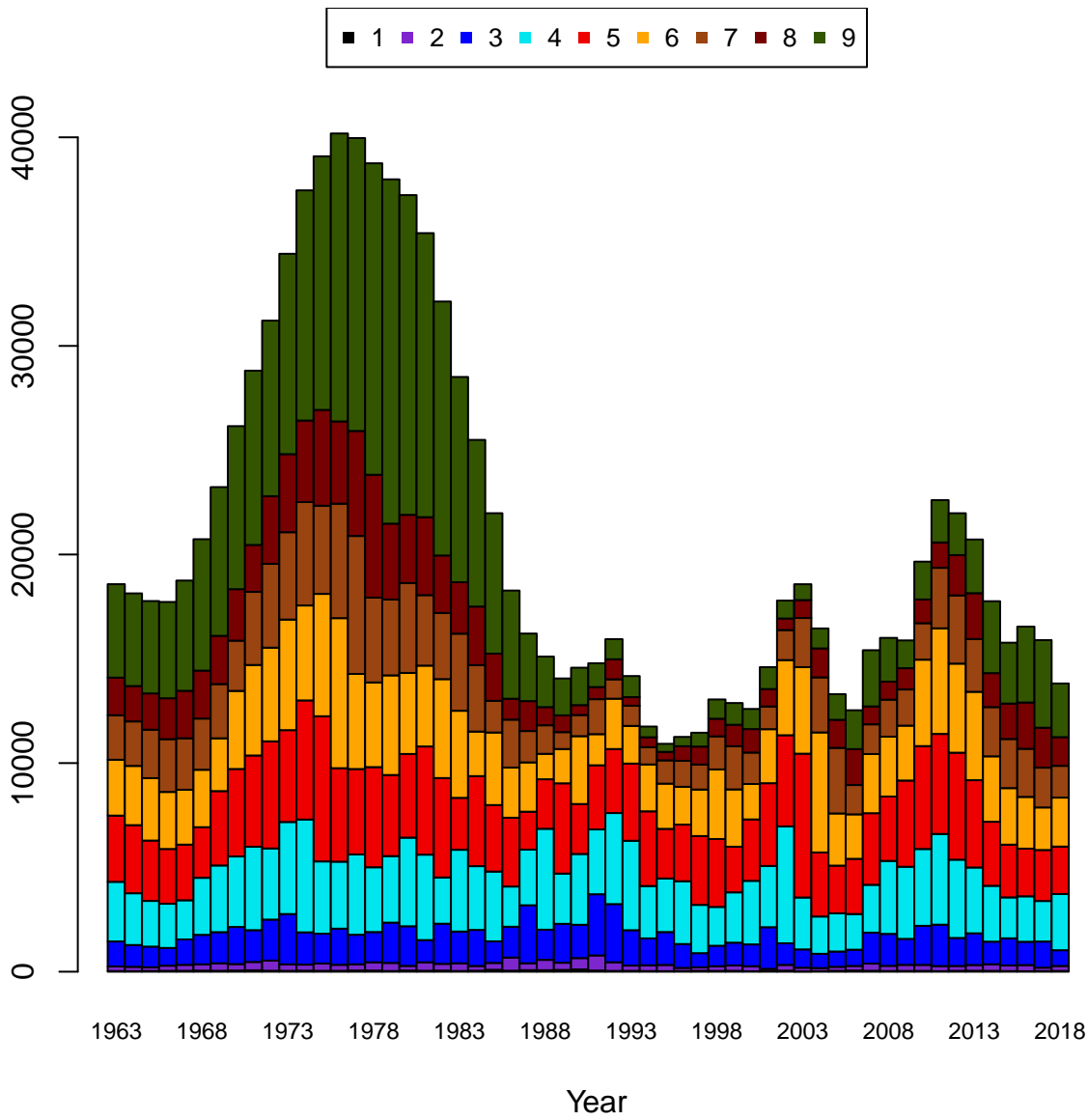


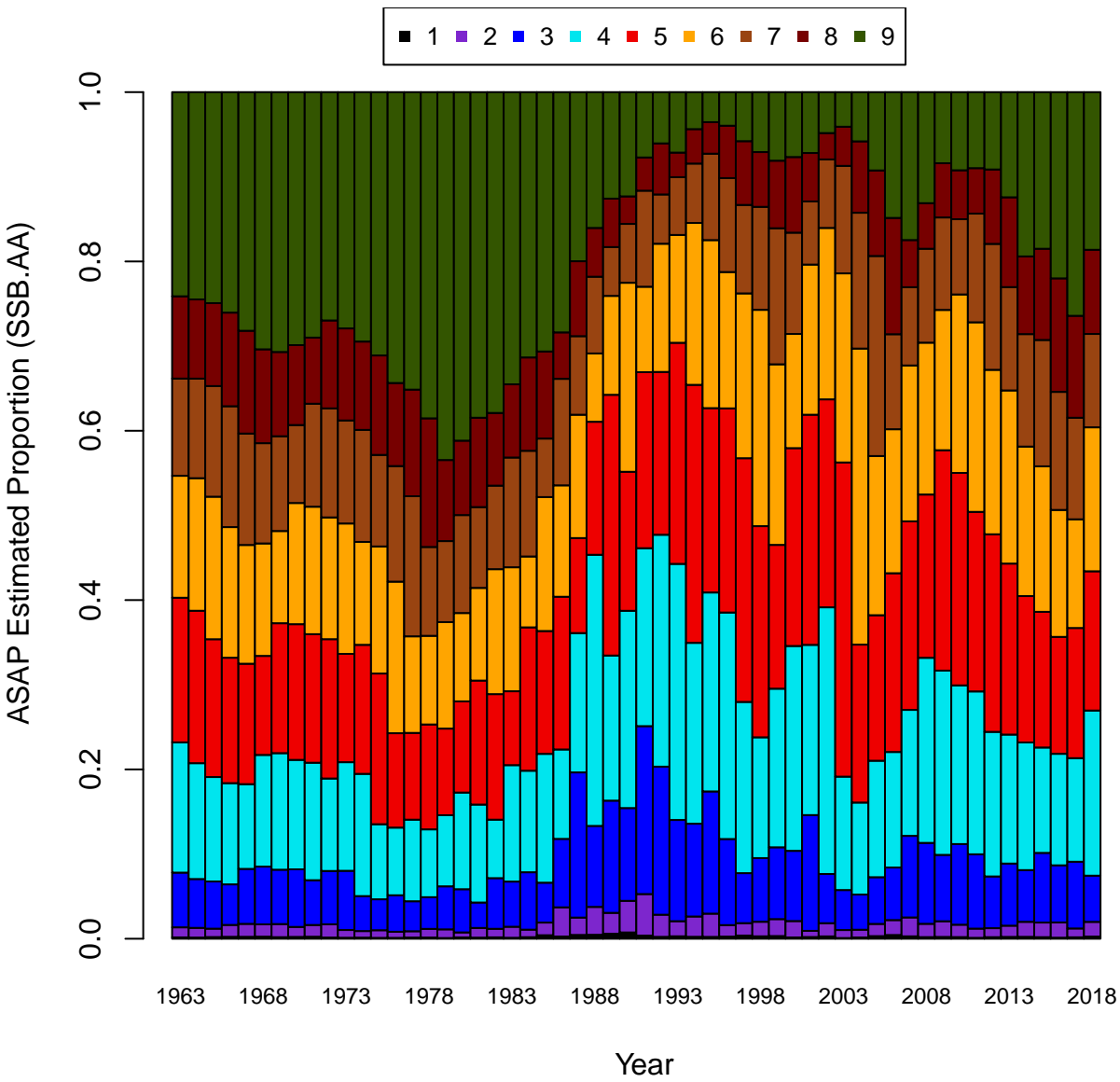


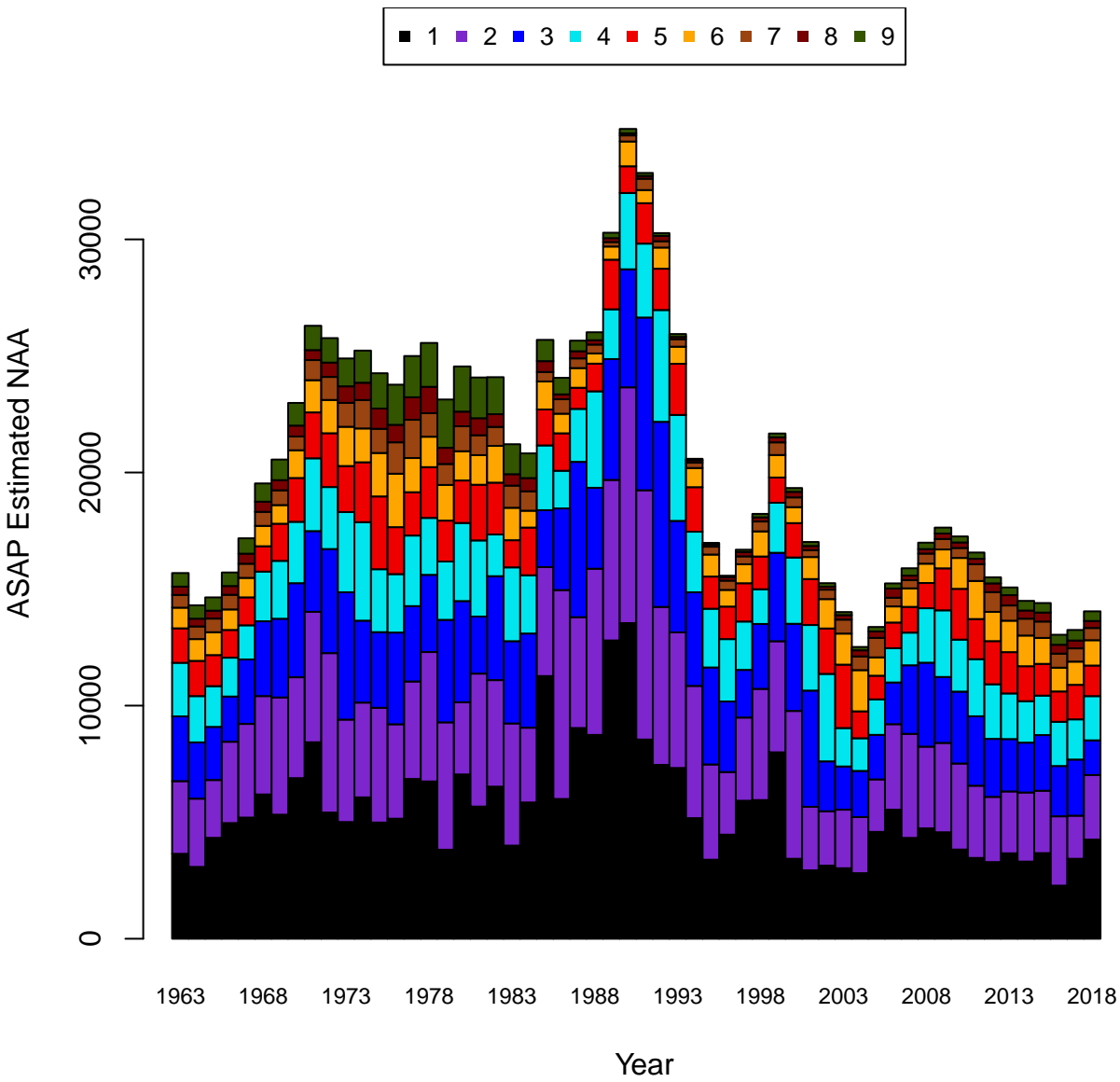
Comparison of January 1 Biomass



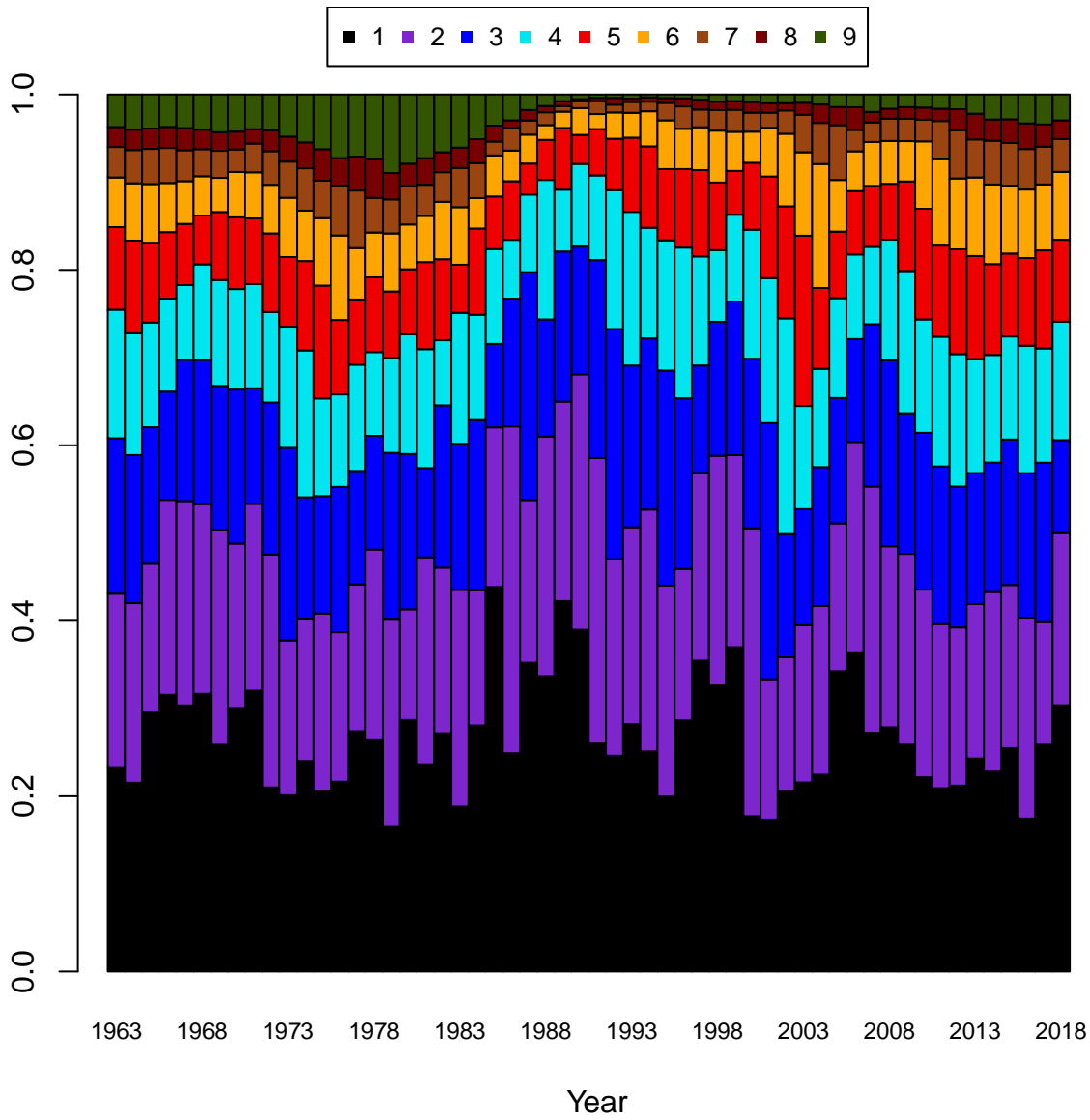
ASAP Estimated SSB.AA

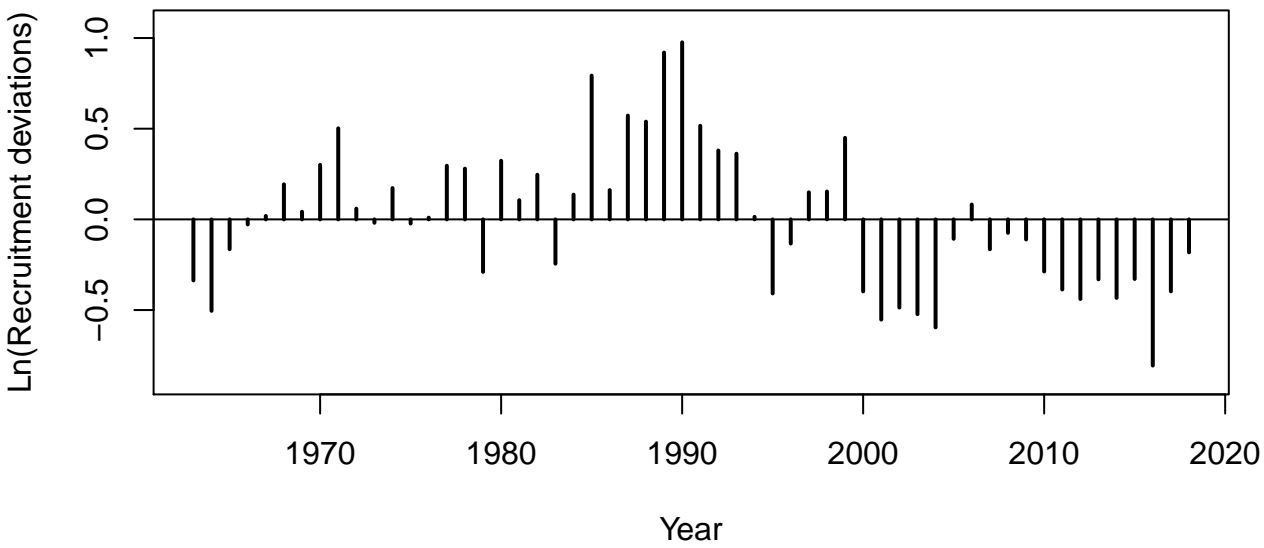
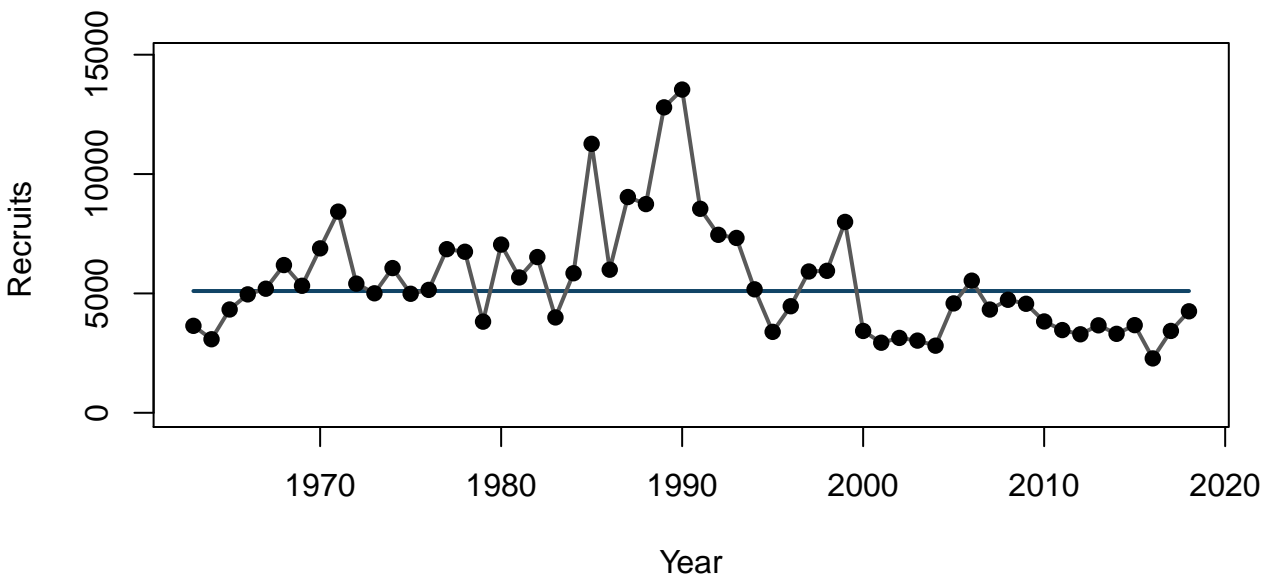


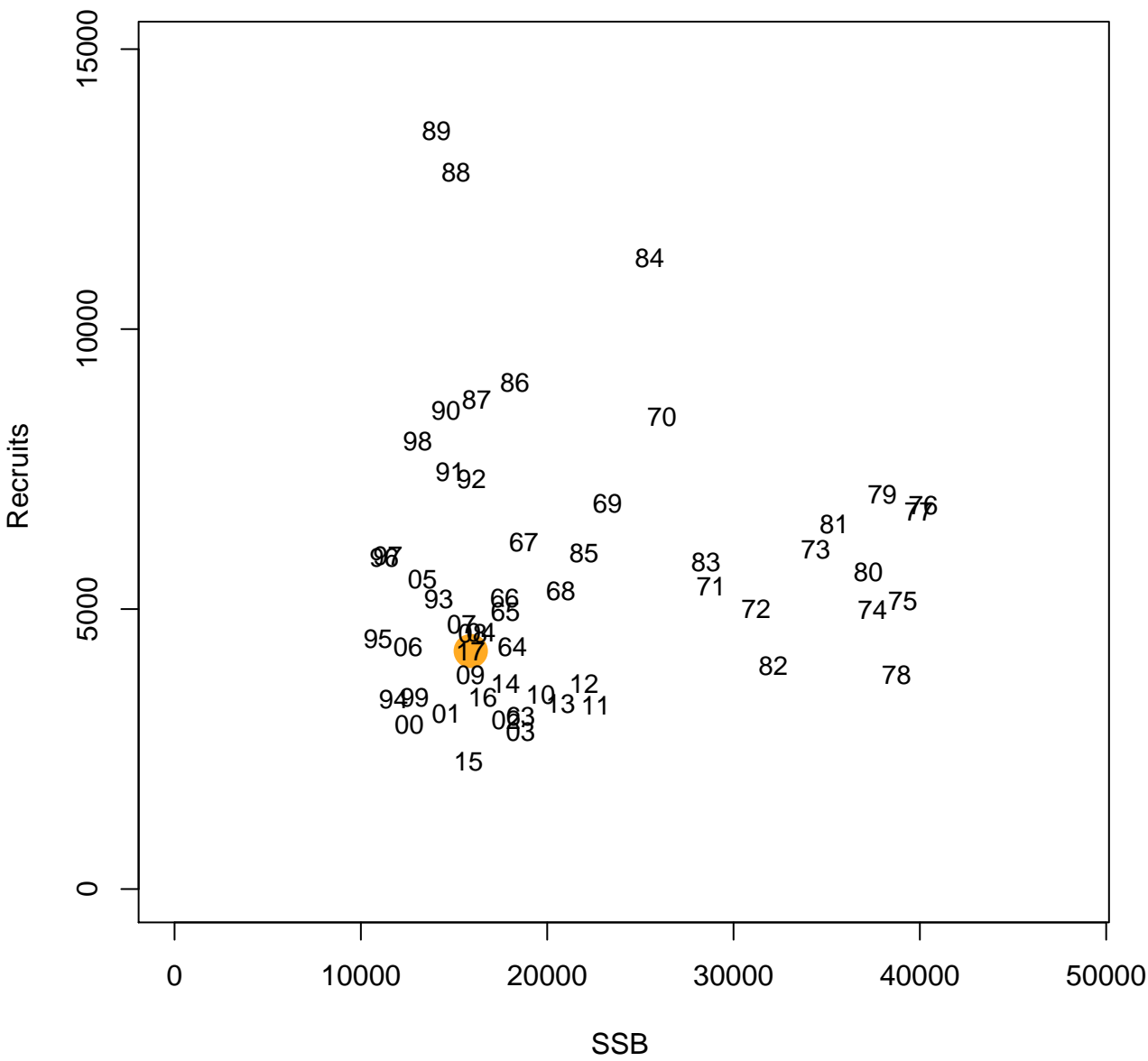


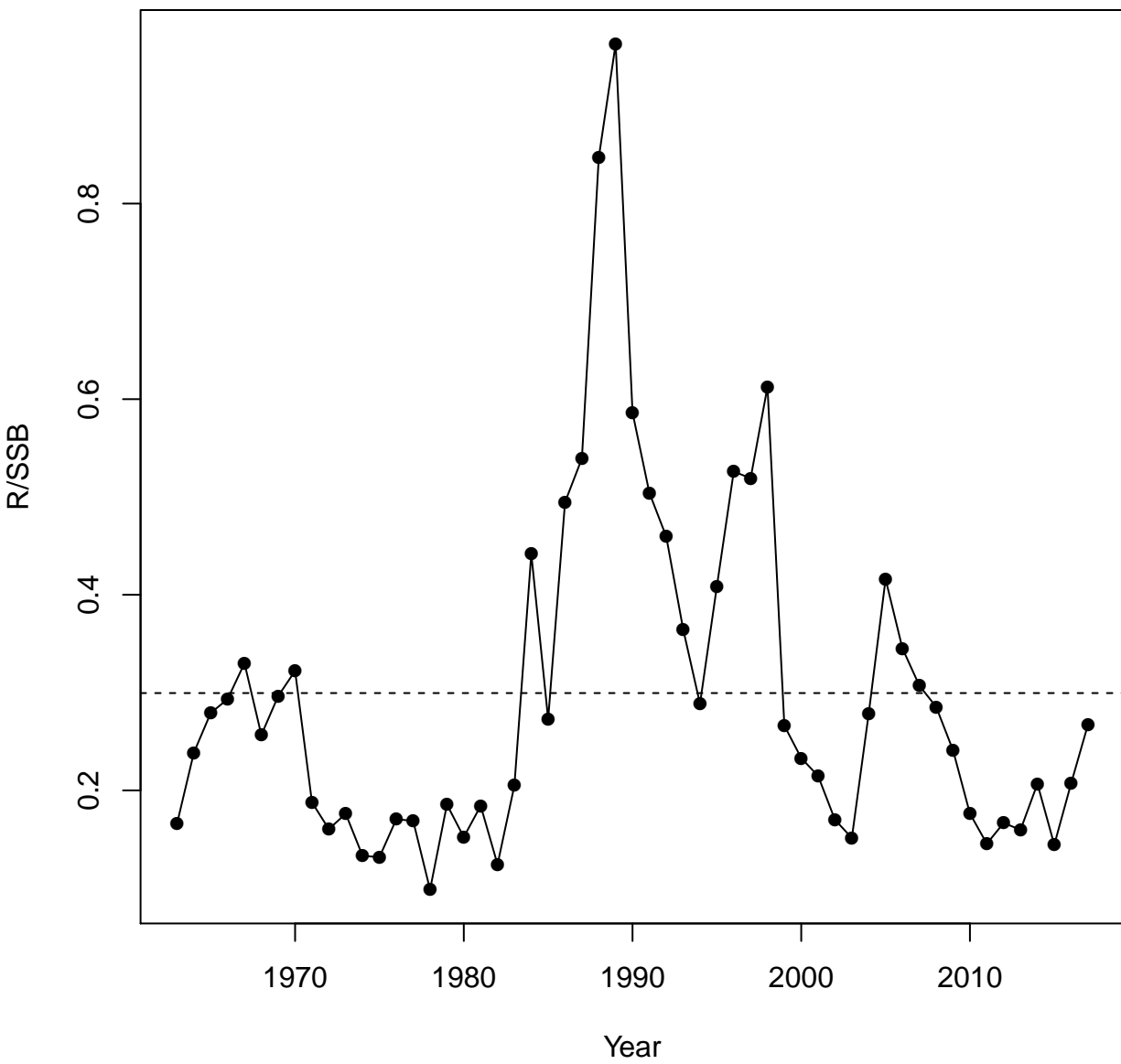


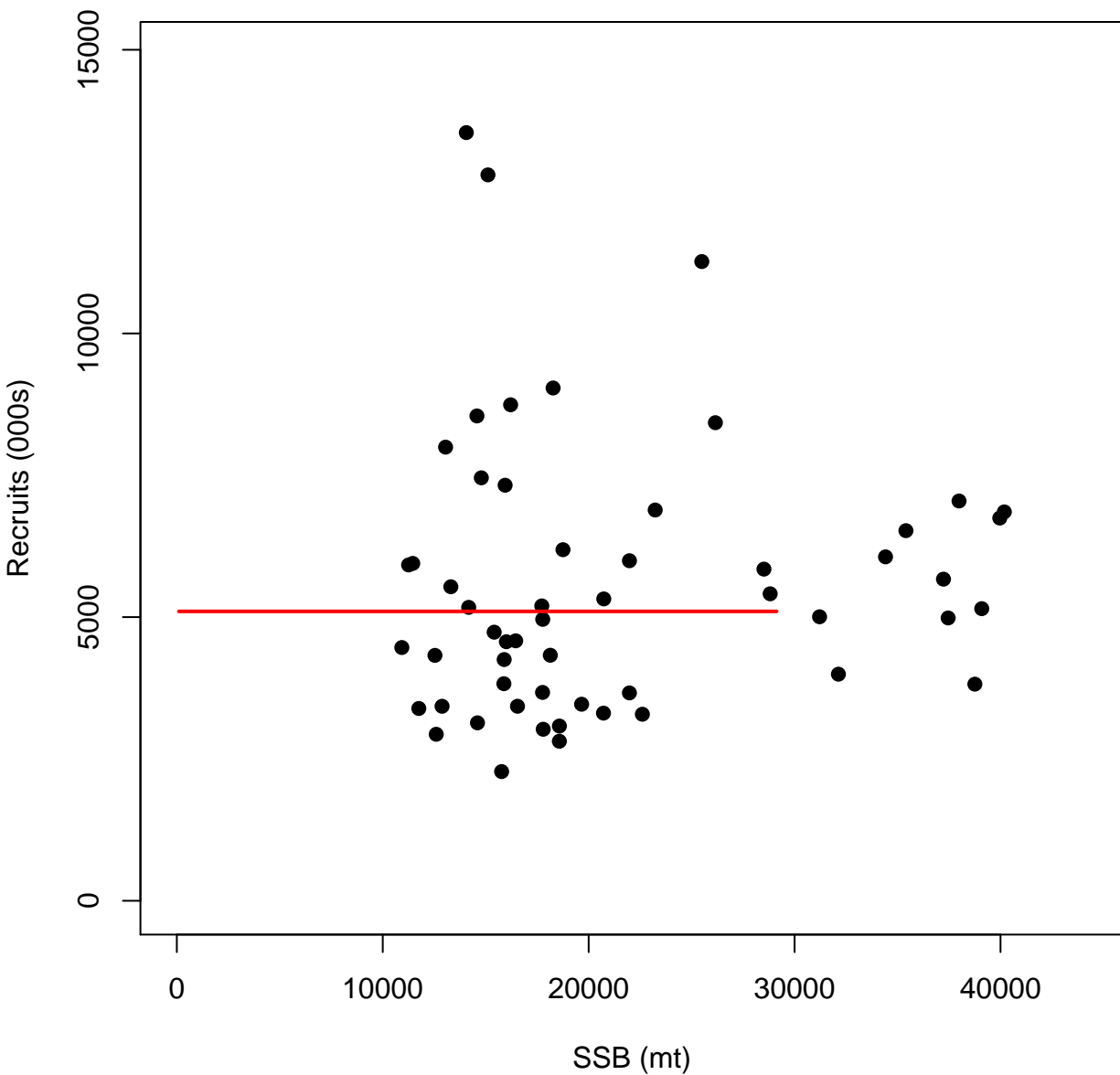
ASAP Estimated Proportion (NAA)

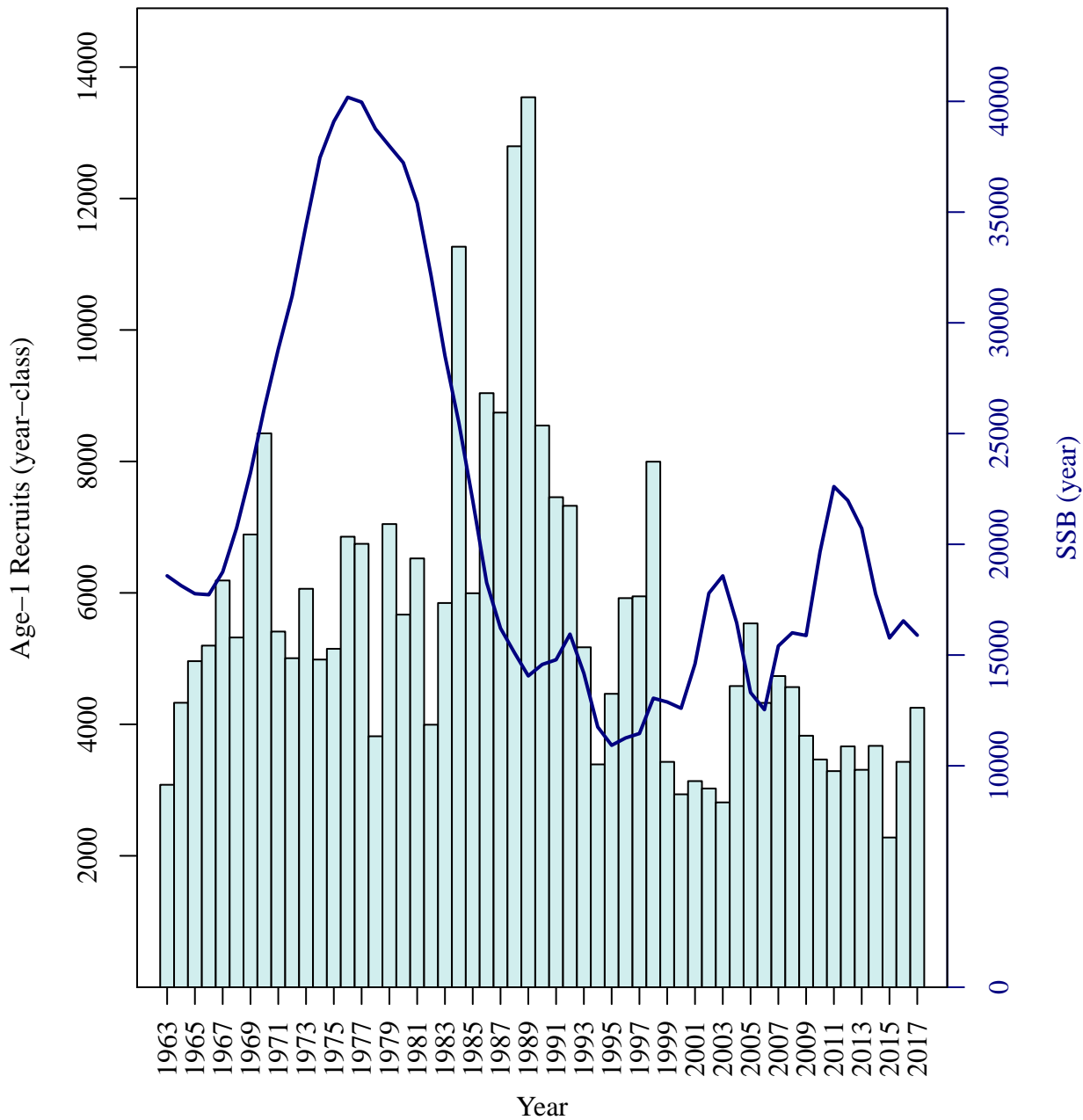




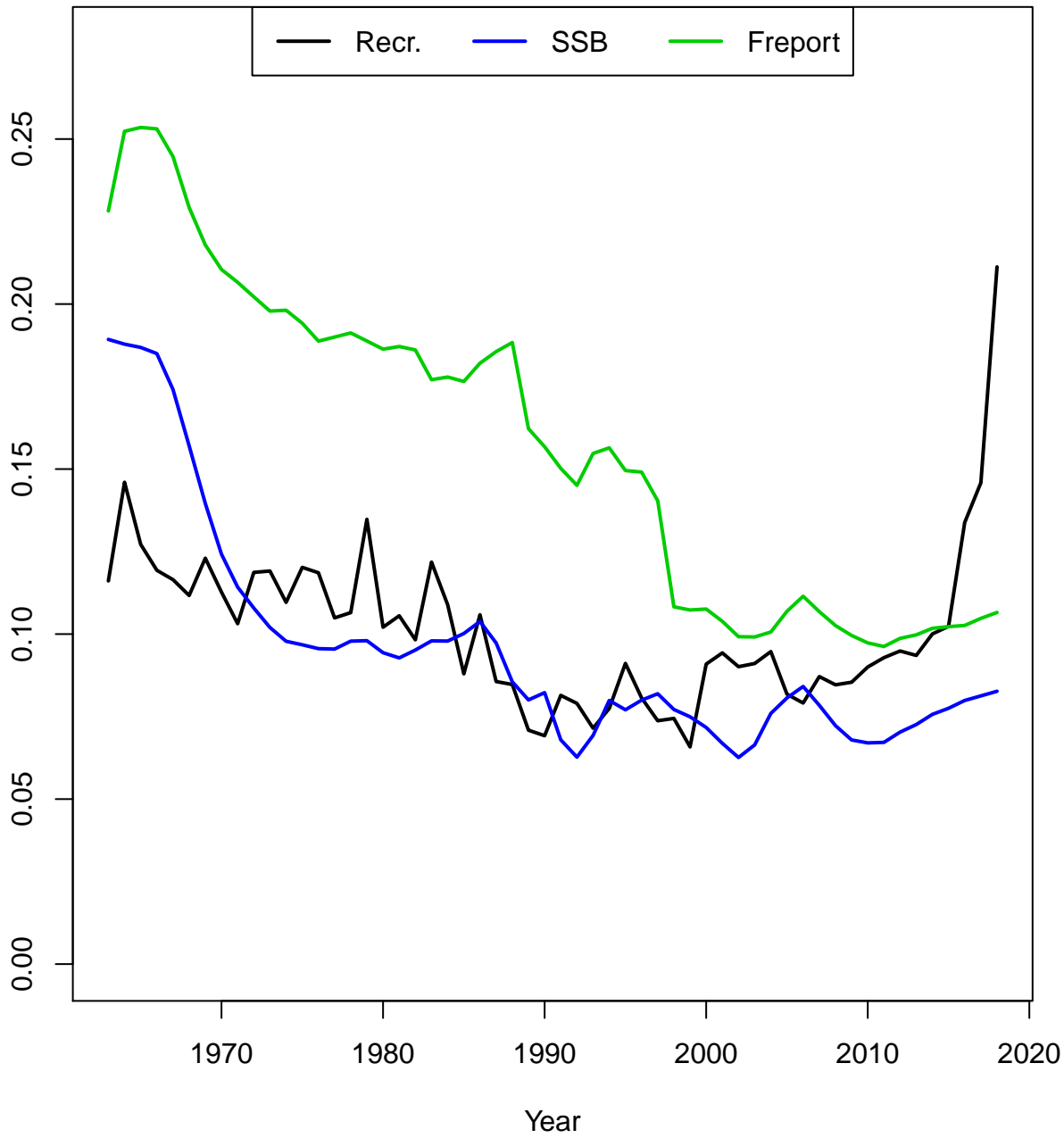




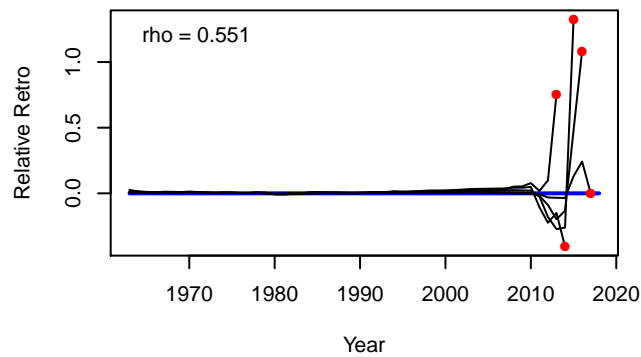
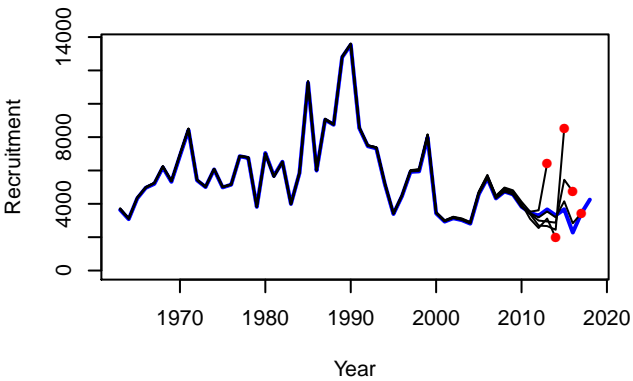
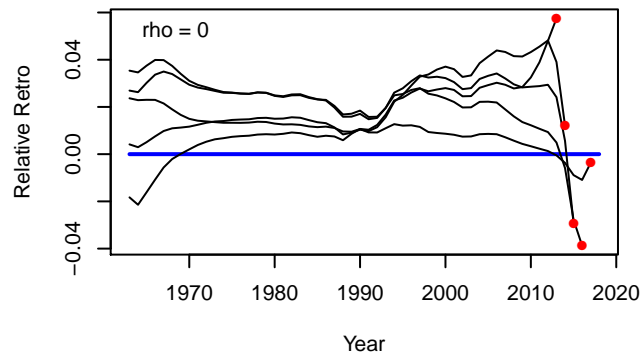
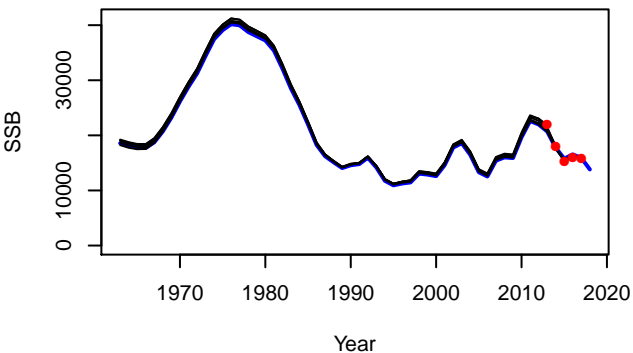
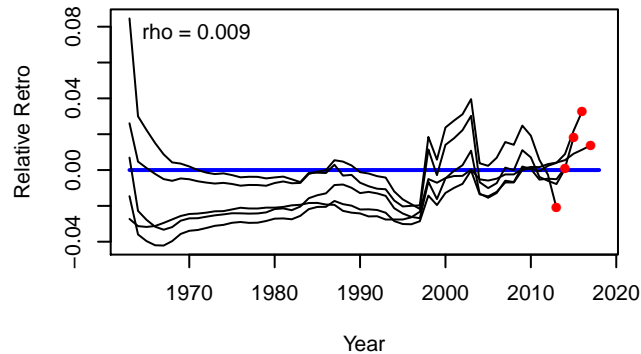
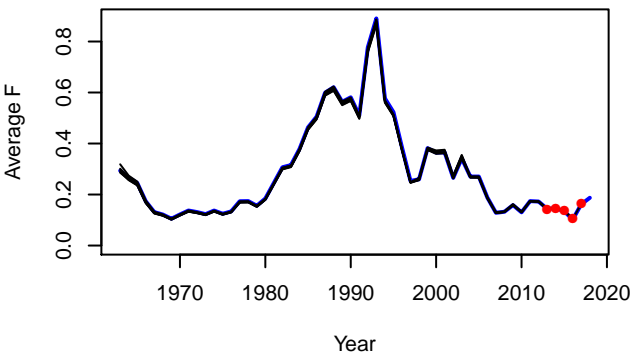




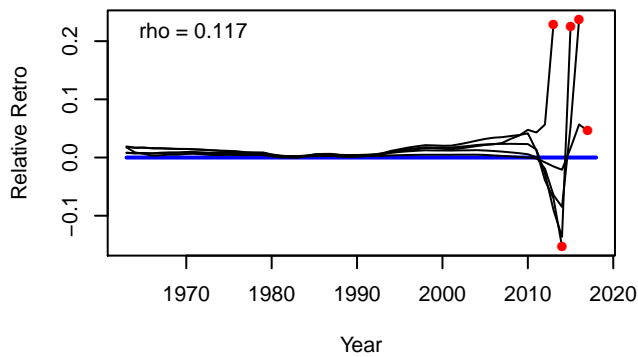
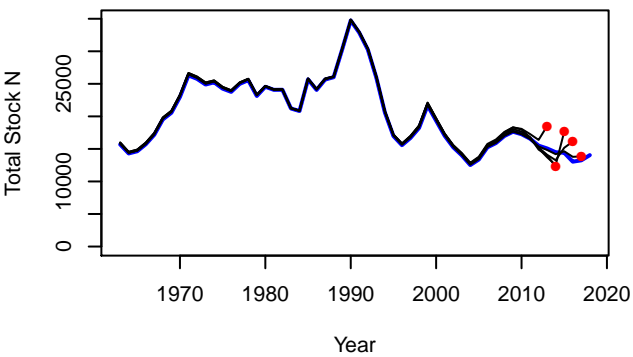
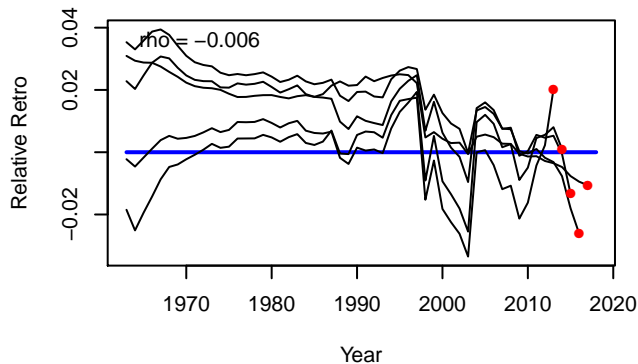
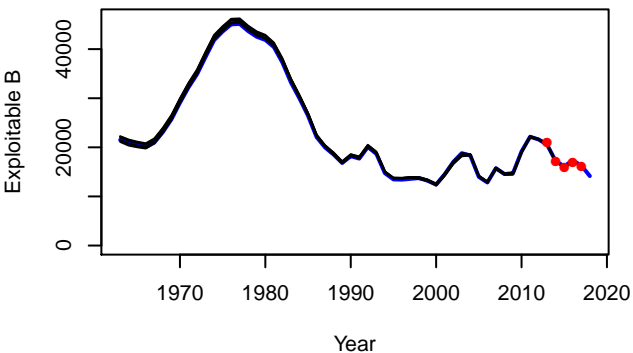
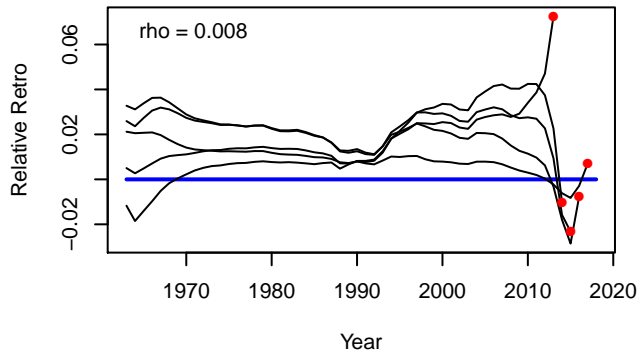
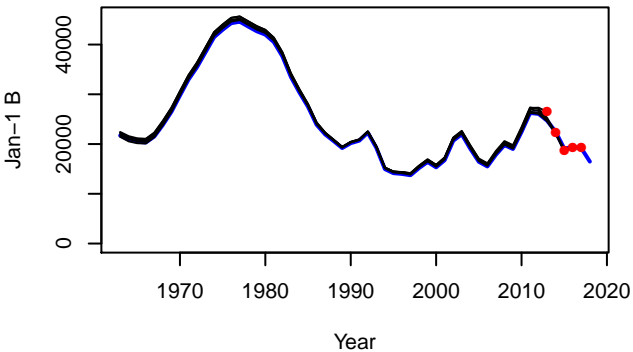
CV



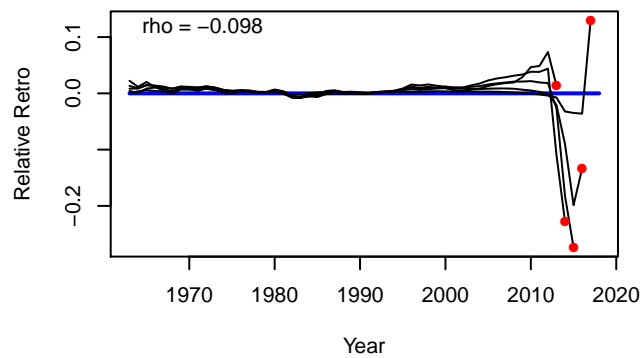
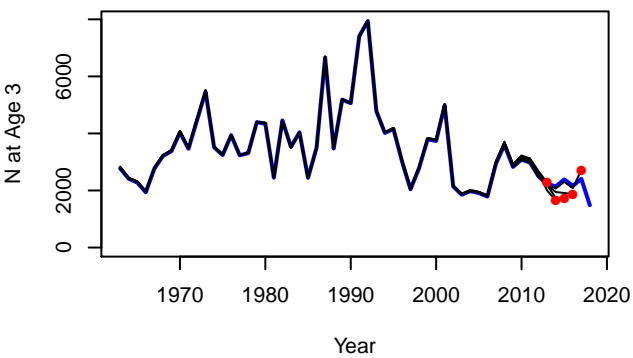
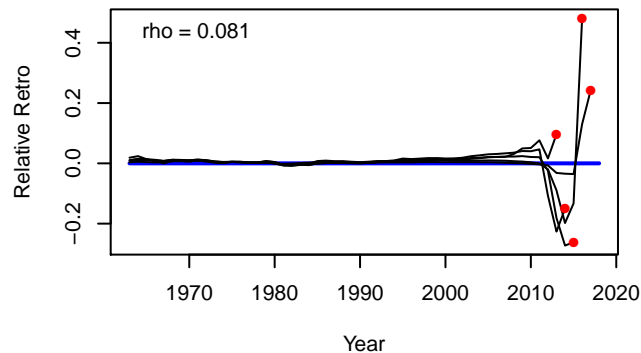
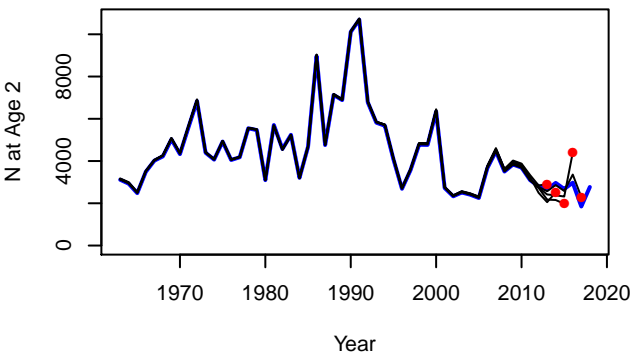
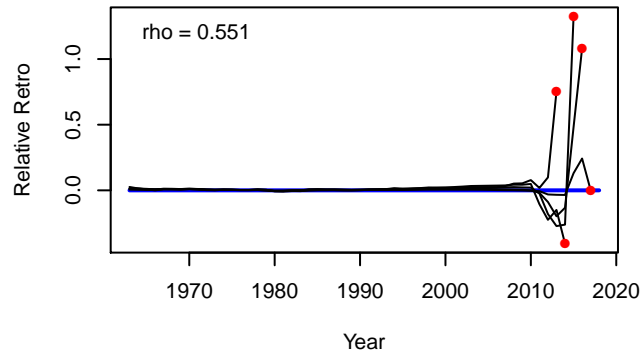
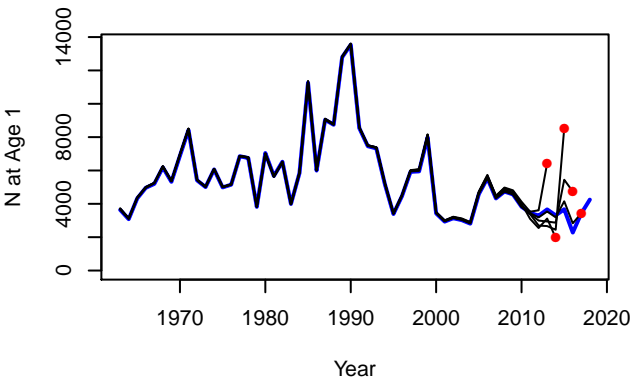
F, SSB, R



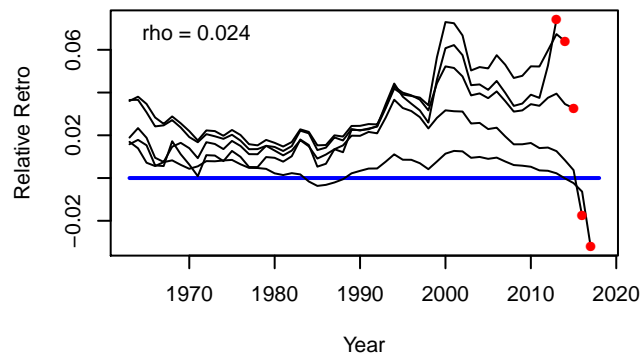
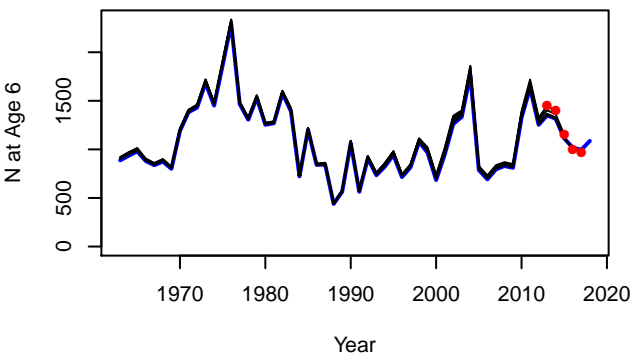
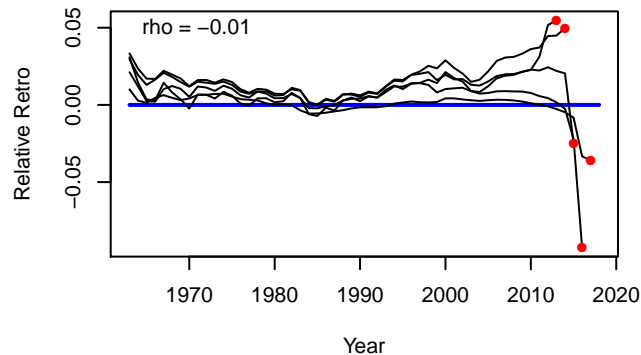
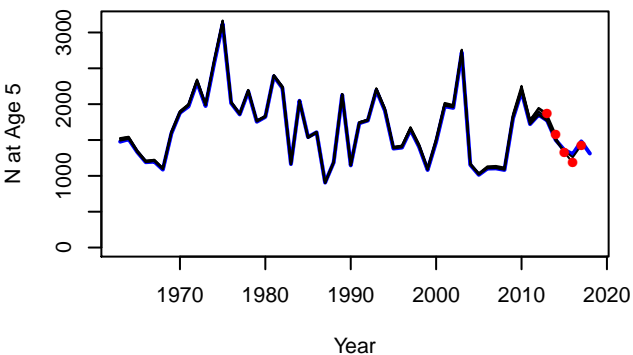
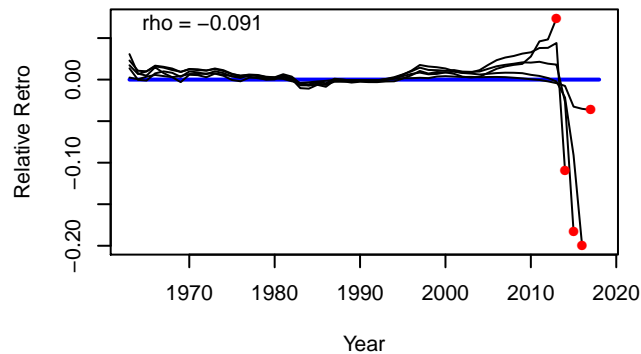
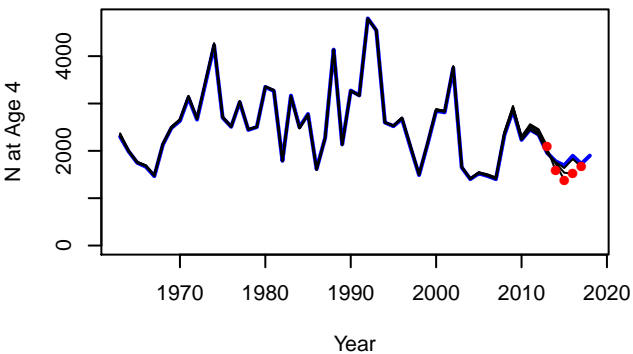
Jan-1 B, Exploitable B, Total Stock N



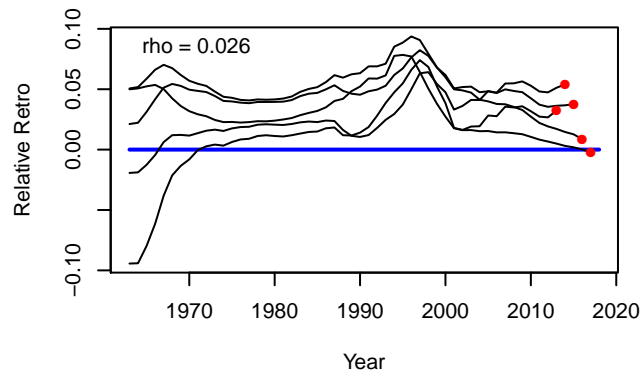
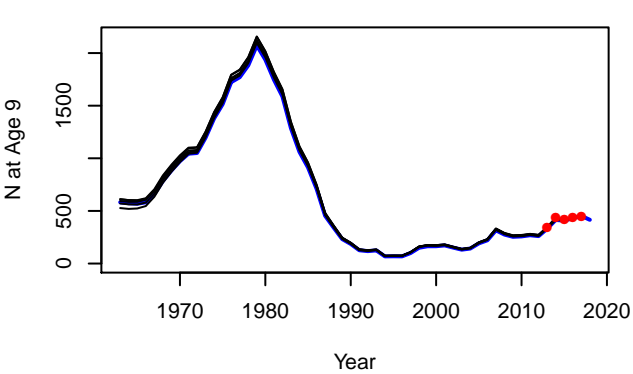
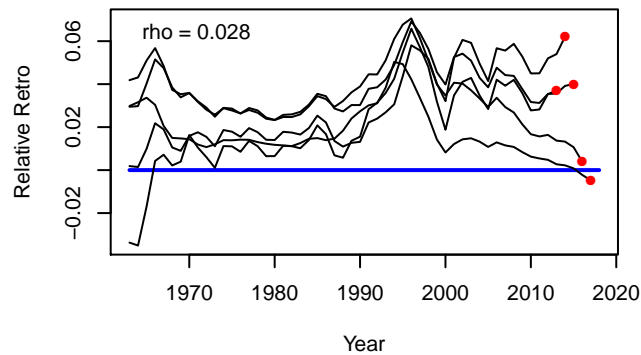
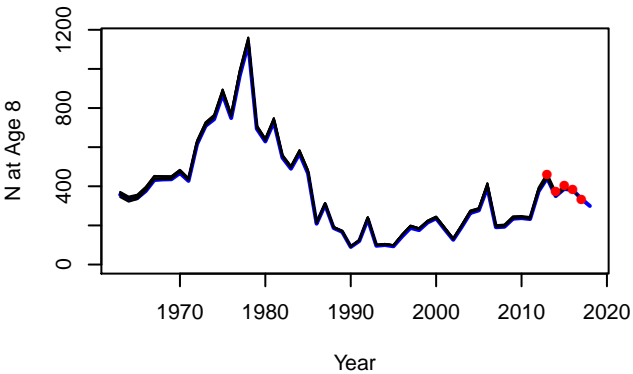
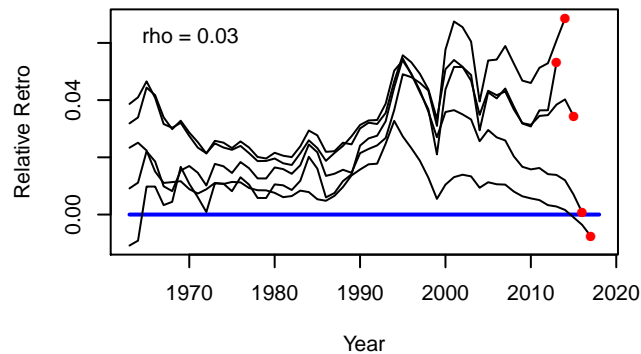
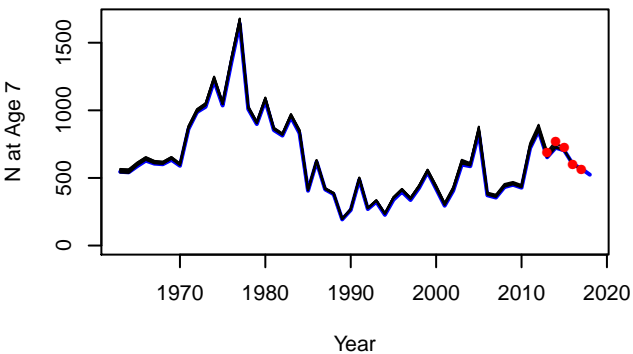
Stock Numbers at Age



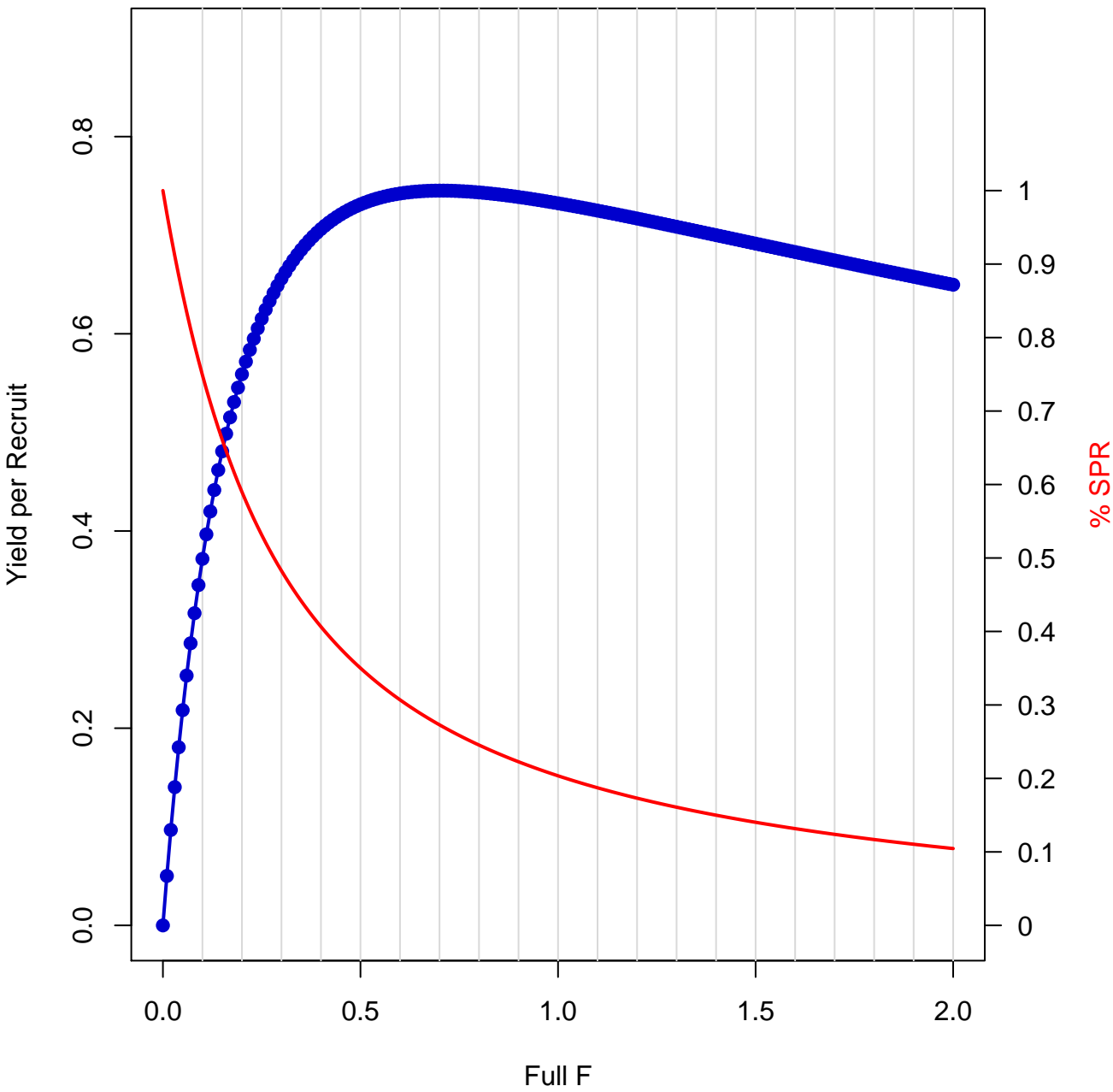
Stock Numbers at Age



Stock Numbers at Age



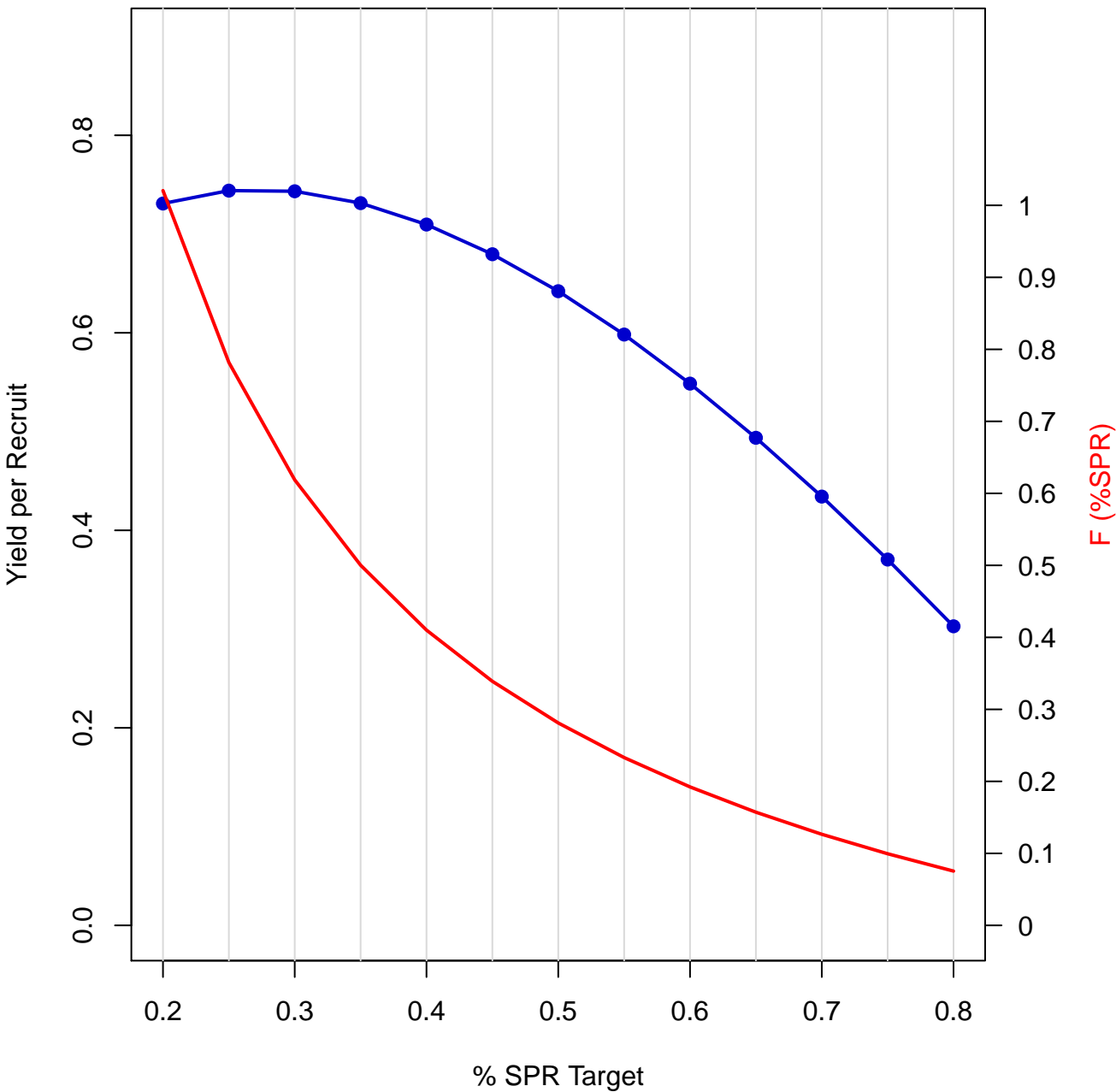
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.6852	0.4415	0.7	0.7452	0.2729
0.01	0.0502	0.9689	0.36	0.69	0.434	0.71	0.7452	0.2699
0.02	0.0968	0.9393	0.37	0.6945	0.4268	0.72	0.7452	0.267
0.03	0.1402	0.9113	0.38	0.6987	0.4198	0.73	0.7451	0.2641
0.04	0.1806	0.8846	0.39	0.7026	0.413	0.74	0.7449	0.2613
0.05	0.2183	0.8592	0.4	0.7062	0.4065	0.75	0.7448	0.2585
0.06	0.2534	0.835	0.41	0.7096	0.4001	0.76	0.7446	0.2558
0.07	0.2861	0.812	0.42	0.7128	0.3939	0.77	0.7443	0.2531
0.08	0.3166	0.79	0.43	0.7157	0.3878	0.78	0.744	0.2505
0.09	0.3451	0.769	0.44	0.7185	0.382	0.79	0.7437	0.2479
0.1	0.3718	0.749	0.45	0.721	0.3763	0.8	0.7434	0.2454
0.11	0.3966	0.7299	0.46	0.7234	0.3708	0.81	0.743	0.2429
0.12	0.4198	0.7115	0.47	0.7256	0.3654	0.82	0.7427	0.2405
0.13	0.4415	0.694	0.48	0.7277	0.3602	0.83	0.7422	0.2381
0.14	0.4618	0.6772	0.49	0.7295	0.3551	0.84	0.7418	0.2358
0.15	0.4808	0.6611	0.5	0.7313	0.3501	0.85	0.7413	0.2335
0.16	0.4986	0.6457	0.51	0.7329	0.3453	0.86	0.7409	0.2313
0.17	0.5152	0.6309	0.52	0.7344	0.3406	0.87	0.7404	0.2291
0.18	0.5308	0.6167	0.53	0.7357	0.336	0.88	0.7398	0.2269
0.19	0.5454	0.6031	0.54	0.737	0.3316	0.89	0.7393	0.2248
0.2	0.559	0.5899	0.55	0.7381	0.3272	0.9	0.7387	0.2227
0.21	0.5718	0.5773	0.56	0.7391	0.323	0.91	0.7382	0.2206
0.22	0.5838	0.5652	0.57	0.74	0.3188	0.92	0.7376	0.2186
0.23	0.595	0.5535	0.58	0.7409	0.3148	0.93	0.737	0.2166
0.24	0.6055	0.5422	0.59	0.7416	0.3108	0.94	0.7364	0.2146
0.25	0.6153	0.5314	0.6	0.7423	0.307	0.95	0.7357	0.2127
0.26	0.6245	0.5209	0.61	0.7429	0.3032	0.96	0.7351	0.2108
0.27	0.6332	0.5108	0.62	0.7434	0.2995	0.97	0.7344	0.209
0.28	0.6413	0.5011	0.63	0.7438	0.2959	0.98	0.7337	0.2071
0.29	0.6489	0.4917	0.64	0.7442	0.2924	0.99	0.7331	0.2053
0.3	0.656	0.4826	0.65	0.7445	0.289	1	0.7324	0.2035
0.31	0.6626	0.4738	0.66	0.7448	0.2856	1.01	0.7317	0.2018
0.32	0.6688	0.4653	0.67	0.745	0.2824	1.02	0.731	0.2001
0.33	0.6747	0.4571	0.68	0.7451	0.2792	1.03	0.7302	0.1984
0.34	0.6801	0.4492	0.69	0.7452	0.276	1.04	0.7295	0.1967

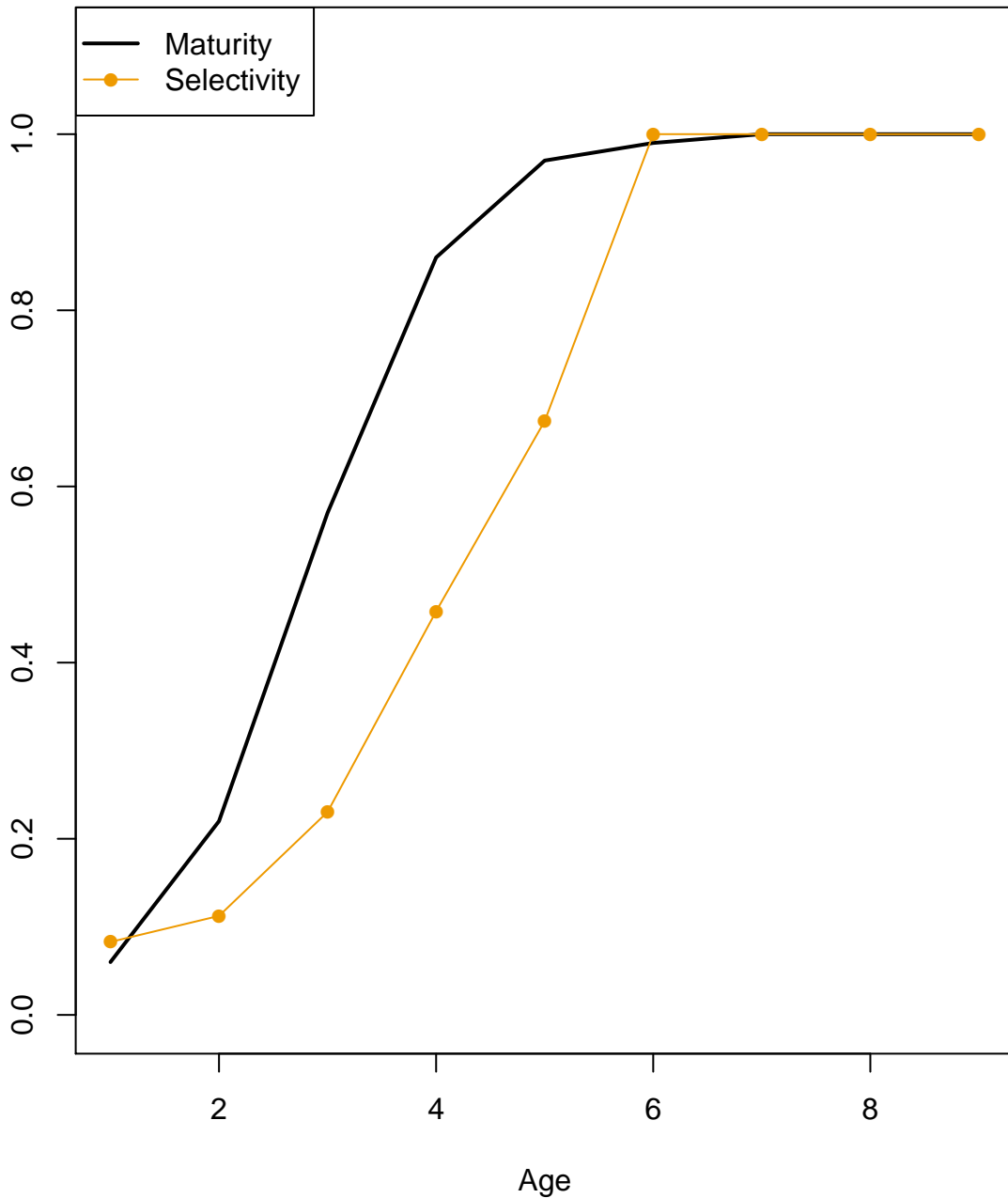
SPR Target Reference Points (Years Avg = 5)



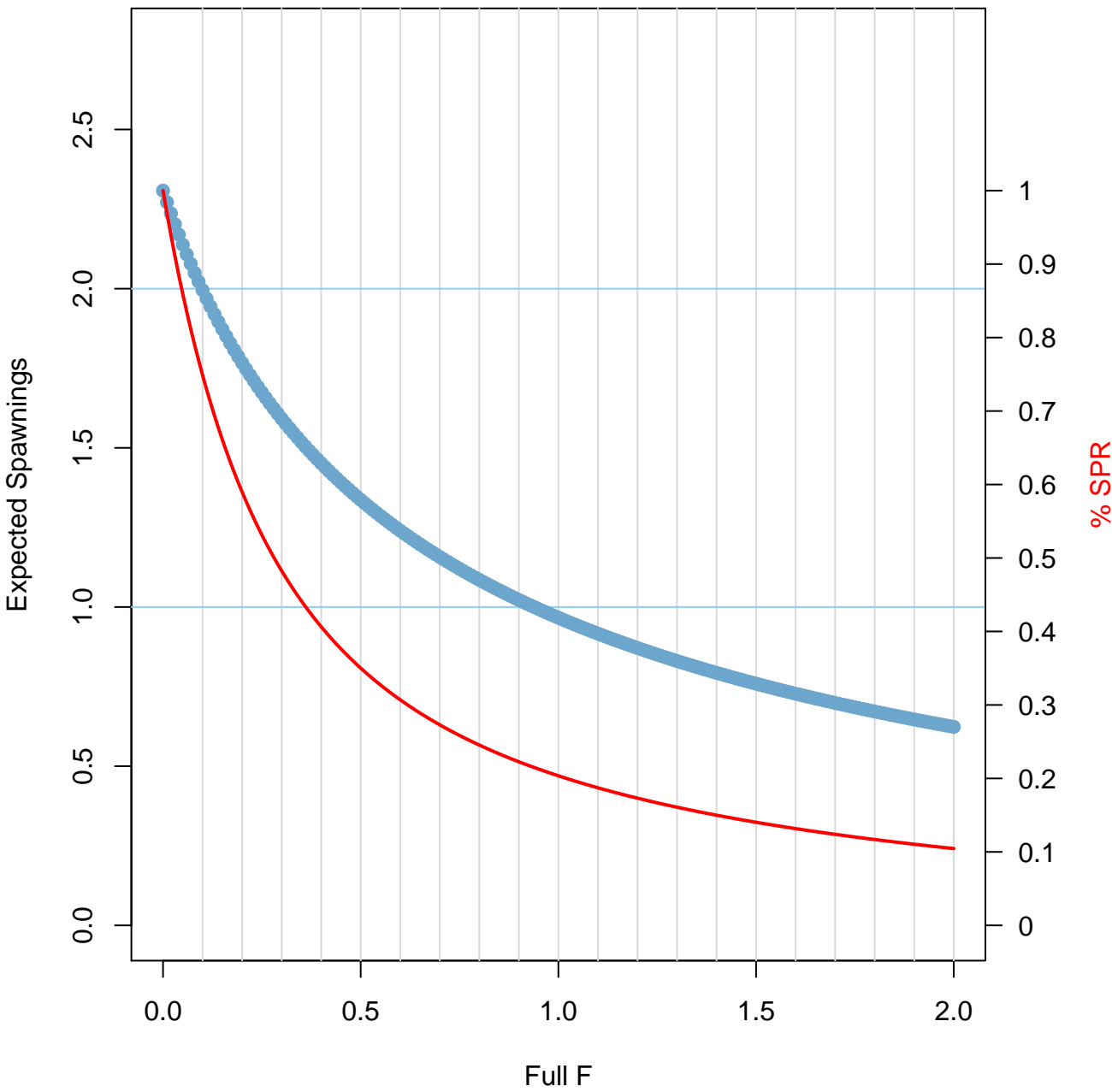
SPR Target Reference Points (Years Avg = 5)

% SPR	F(%SPR)	YPR
0.2	1.0205	0.7309
0.25	0.7818	0.744
0.3	0.6187	0.7433
0.35	0.5003	0.7313
0.4	0.4101	0.7097
0.45	0.339	0.6796
0.5	0.2811	0.6422
0.55	0.2331	0.5983
0.6	0.1923	0.5486
0.65	0.1572	0.4937
0.7	0.1265	0.4342
0.75	0.0995	0.3704
0.8	0.0754	0.3029

Selectivity or Maturity at age



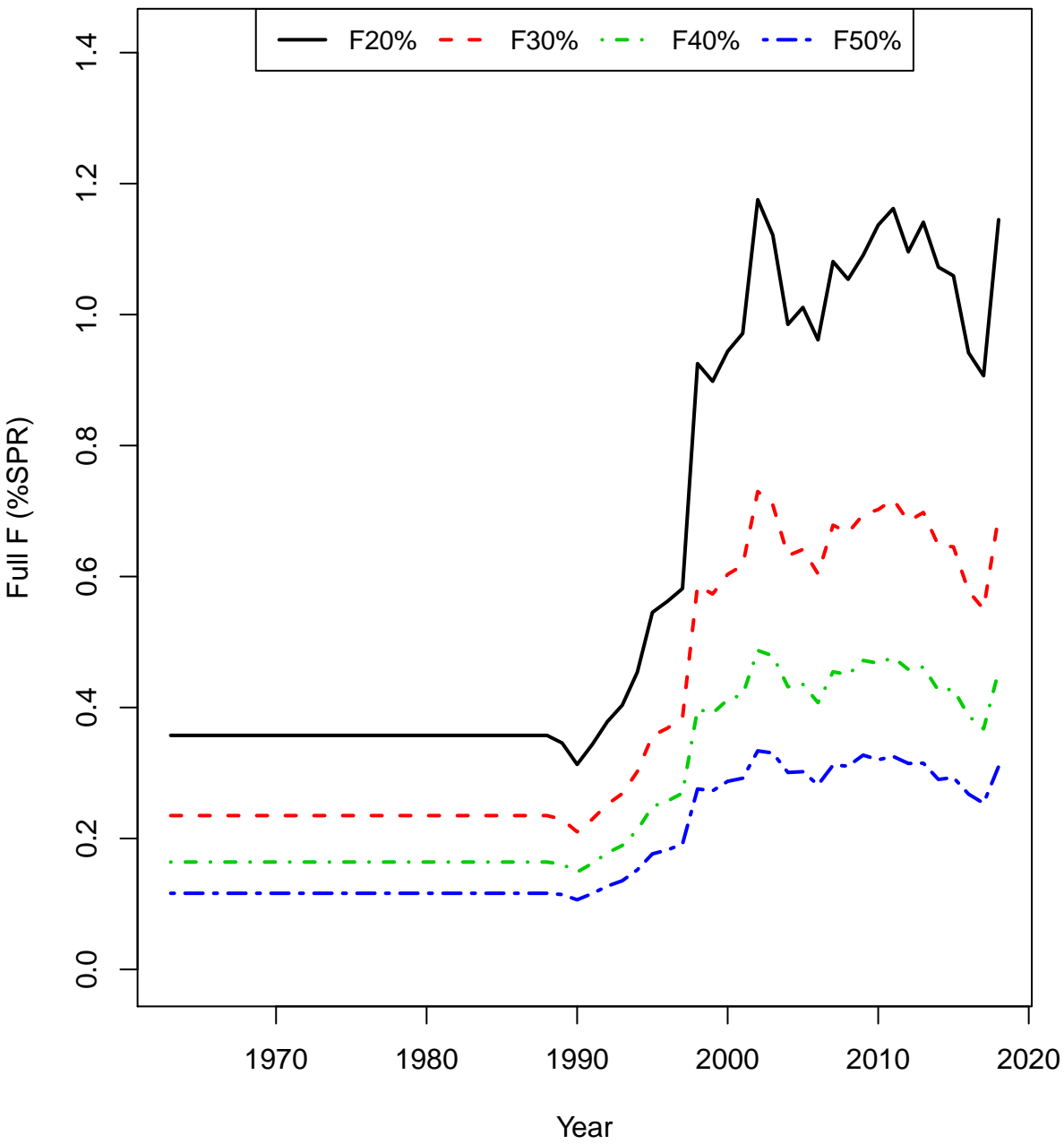
Expected Spawnings and SPR Reference Points (Years Avg = 5)



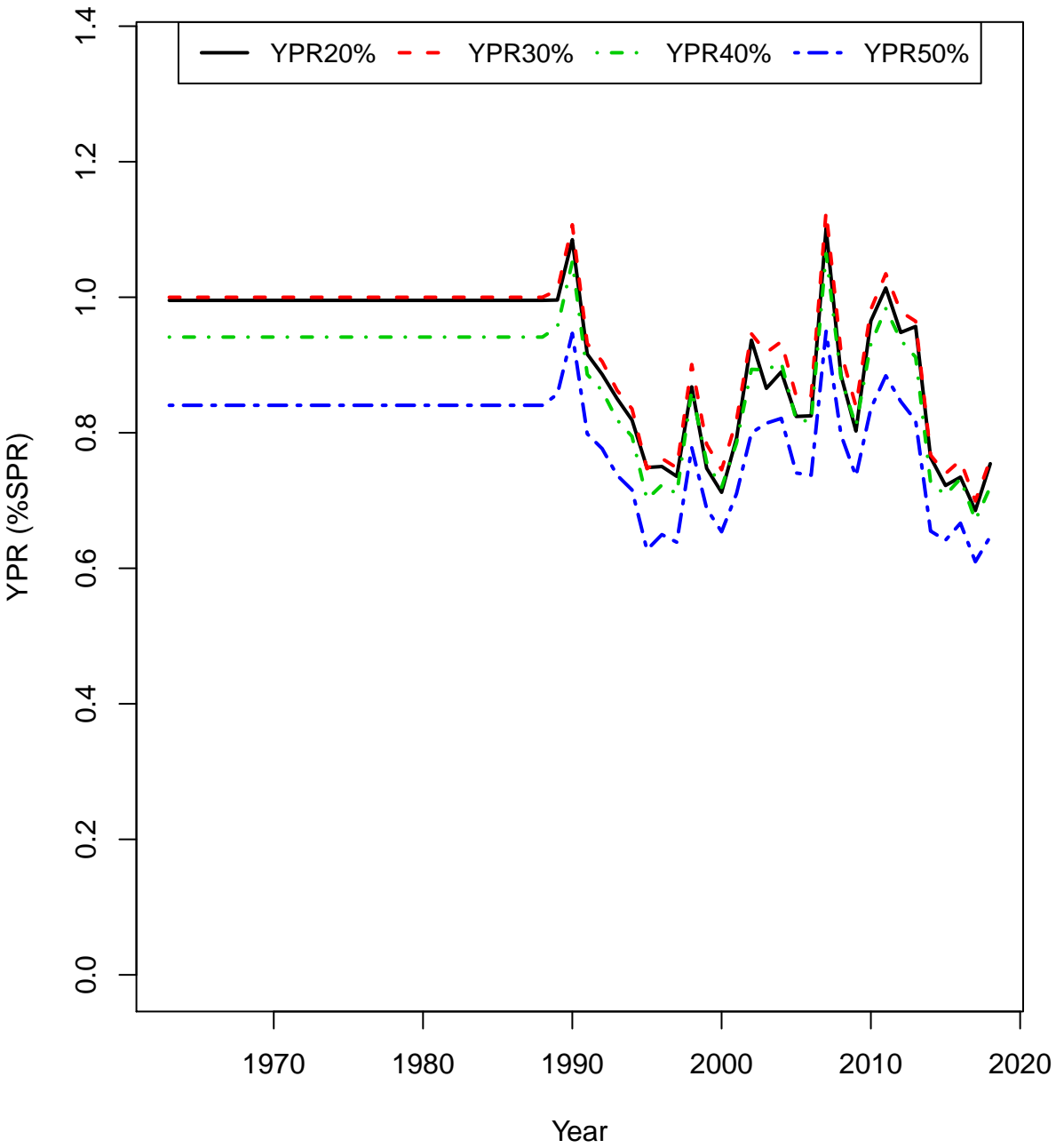
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	2.308	1	0.35	1.5181	0.4415	0.7	1.1572	0.2729
0.01	2.2715	0.9689	0.36	1.5043	0.434	0.71	1.1496	0.2699
0.02	2.2364	0.9393	0.37	1.4908	0.4268	0.72	1.1421	0.267
0.03	2.2025	0.9113	0.38	1.4775	0.4198	0.73	1.1347	0.2641
0.04	2.1698	0.8846	0.39	1.4645	0.413	0.74	1.1273	0.2613
0.05	2.1382	0.8592	0.4	1.4517	0.4065	0.75	1.1201	0.2585
0.06	2.1077	0.835	0.41	1.4392	0.4001	0.76	1.113	0.2558
0.07	2.0782	0.812	0.42	1.427	0.3939	0.77	1.106	0.2531
0.08	2.0497	0.79	0.43	1.4149	0.3878	0.78	1.099	0.2505
0.09	2.0221	0.769	0.44	1.4031	0.382	0.79	1.0922	0.2479
0.1	1.9953	0.749	0.45	1.3916	0.3763	0.8	1.0854	0.2454
0.11	1.9694	0.7299	0.46	1.3802	0.3708	0.81	1.0788	0.2429
0.12	1.9442	0.7115	0.47	1.369	0.3654	0.82	1.0722	0.2405
0.13	1.9198	0.694	0.48	1.358	0.3602	0.83	1.0657	0.2381
0.14	1.8961	0.6772	0.49	1.3472	0.3551	0.84	1.0593	0.2358
0.15	1.8731	0.6611	0.5	1.3367	0.3501	0.85	1.0529	0.2335
0.16	1.8508	0.6457	0.51	1.3262	0.3453	0.86	1.0467	0.2313
0.17	1.829	0.6309	0.52	1.316	0.3406	0.87	1.0405	0.2291
0.18	1.8078	0.6167	0.53	1.3059	0.336	0.88	1.0344	0.2269
0.19	1.7872	0.6031	0.54	1.2961	0.3316	0.89	1.0284	0.2248
0.2	1.7672	0.5899	0.55	1.2863	0.3272	0.9	1.0224	0.2227
0.21	1.7476	0.5773	0.56	1.2767	0.323	0.91	1.0165	0.2206
0.22	1.7286	0.5652	0.57	1.2673	0.3188	0.92	1.0107	0.2186
0.23	1.71	0.5535	0.58	1.2581	0.3148	0.93	1.0049	0.2166
0.24	1.6919	0.5422	0.59	1.2489	0.3108	0.94	0.9993	0.2146
0.25	1.6742	0.5314	0.6	1.2399	0.307	0.95	0.9936	0.2127
0.26	1.6569	0.5209	0.61	1.2311	0.3032	0.96	0.9881	0.2108
0.27	1.6401	0.5108	0.62	1.2224	0.2995	0.97	0.9826	0.209
0.28	1.6236	0.5011	0.63	1.2138	0.2959	0.98	0.9772	0.2071
0.29	1.6075	0.4917	0.64	1.2054	0.2924	0.99	0.9718	0.2053
0.3	1.5918	0.4826	0.65	1.1971	0.289	1	0.9665	0.2035
0.31	1.5764	0.4738	0.66	1.1889	0.2856	1.01	0.9612	0.2018
0.32	1.5614	0.4653	0.67	1.1808	0.2824	1.02	0.9561	0.2001
0.33	1.5466	0.4571	0.68	1.1728	0.2792	1.03	0.9509	0.1984
0.34	1.5322	0.4492	0.69	1.165	0.276	1.04	0.9458	0.1967

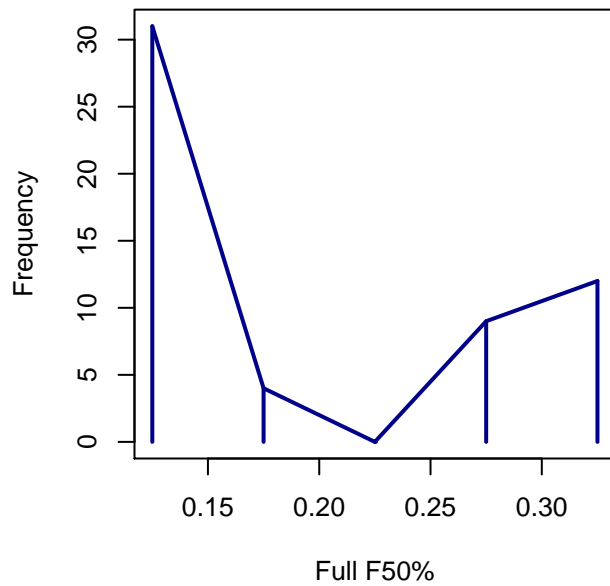
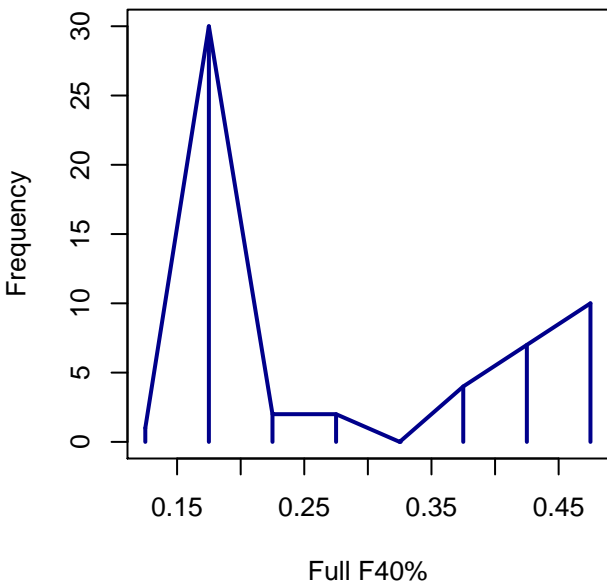
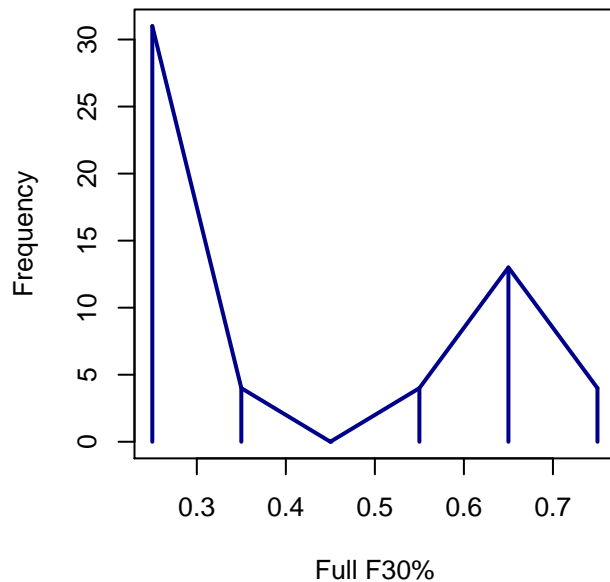
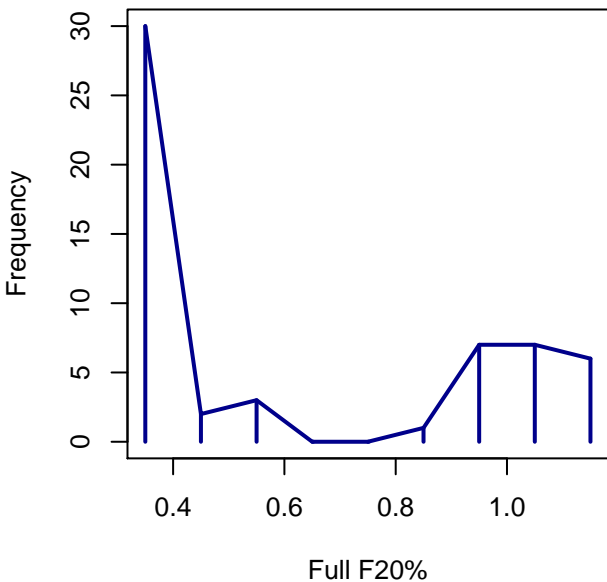
Annual F(%SPR) Reference Points



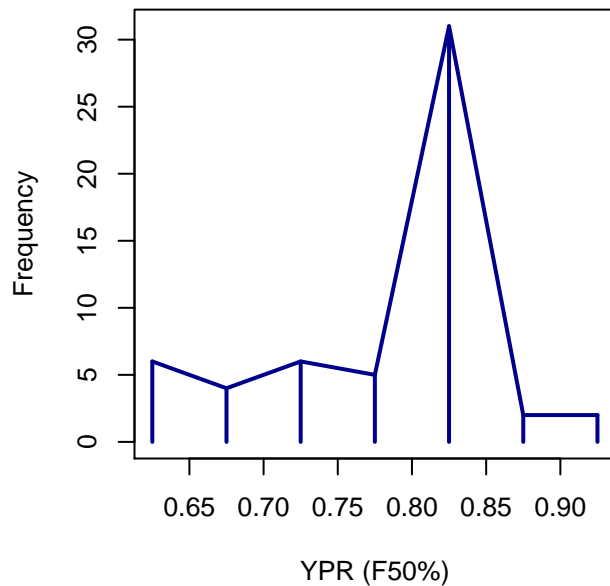
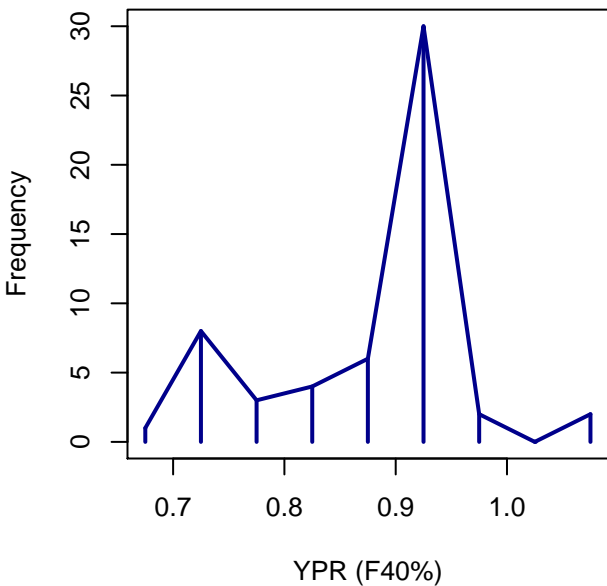
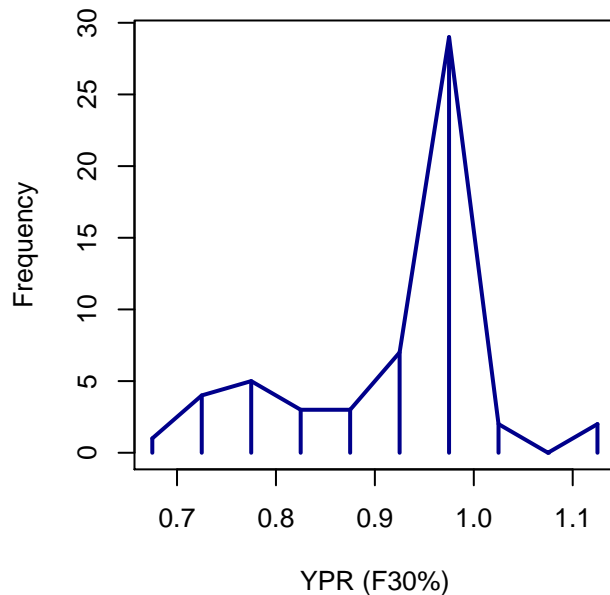
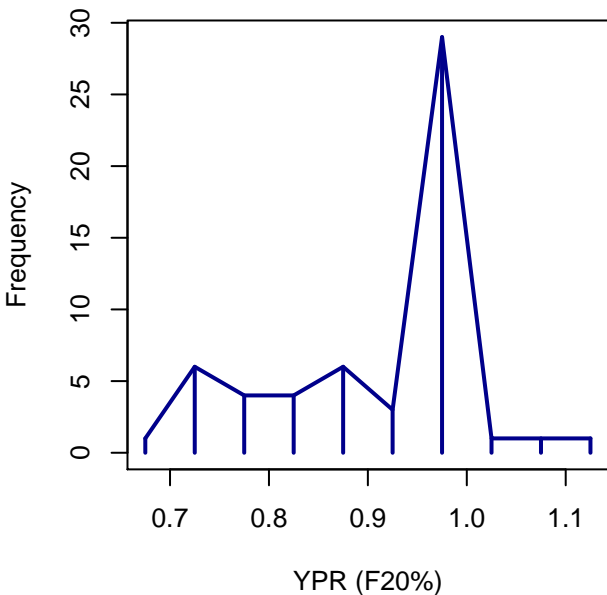
Annual YPR(%SPR) Reference Points



Annual F (%SPR) Reference Points



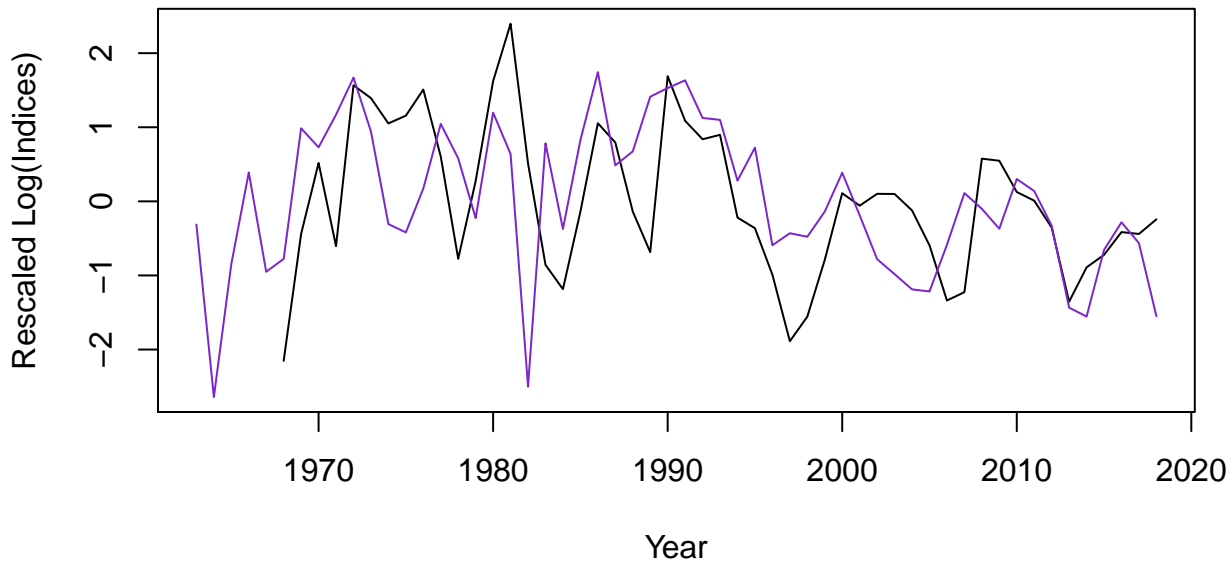
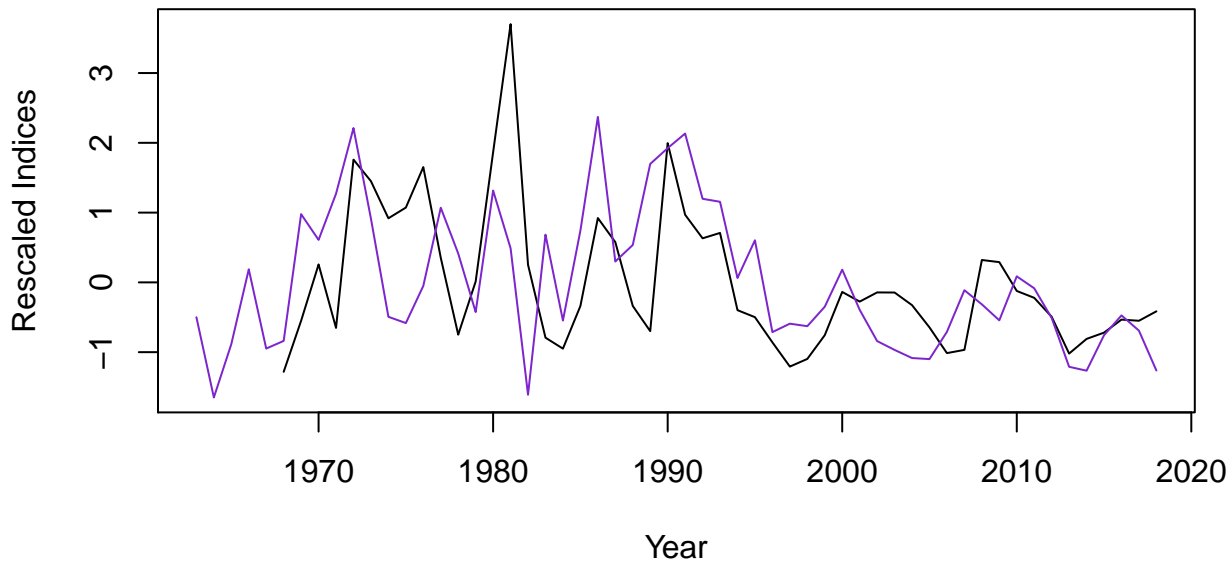
Annual YPR (%SPR) Reference Points





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





Age Comps for Index 1 (INDEX-1)

• 0.05 • 0.2 • 0.4



Age

Age Comps for Index 2 (INDEX-2)



WAA matrix 1



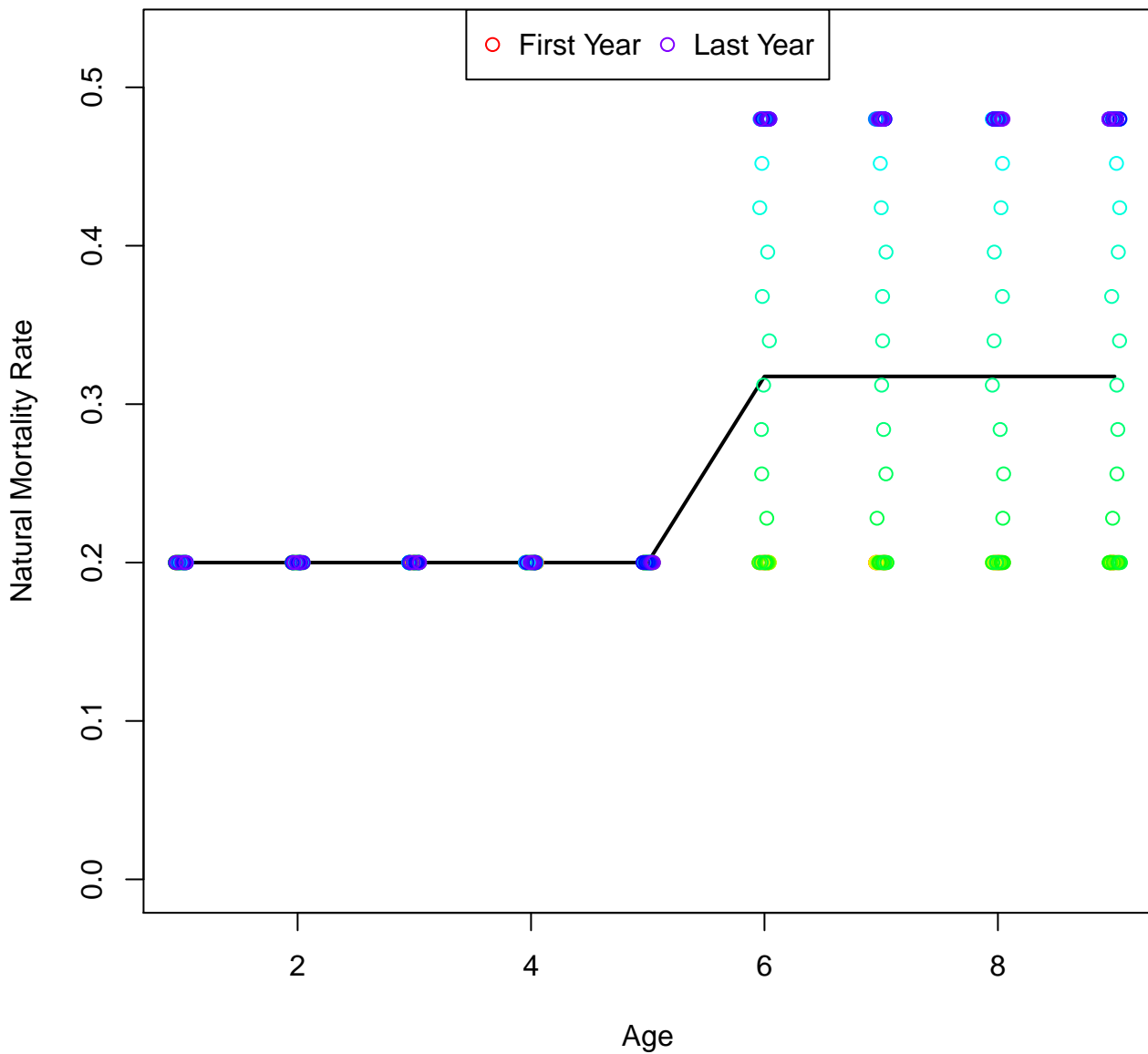
WAA matrix 2



WAA matrix 3



M



Maturity

