

File = y2015r0c1m2.6s111111111_000.dat

ASAP3 run on Monday, 04 Nov 2019 at 10:52:30

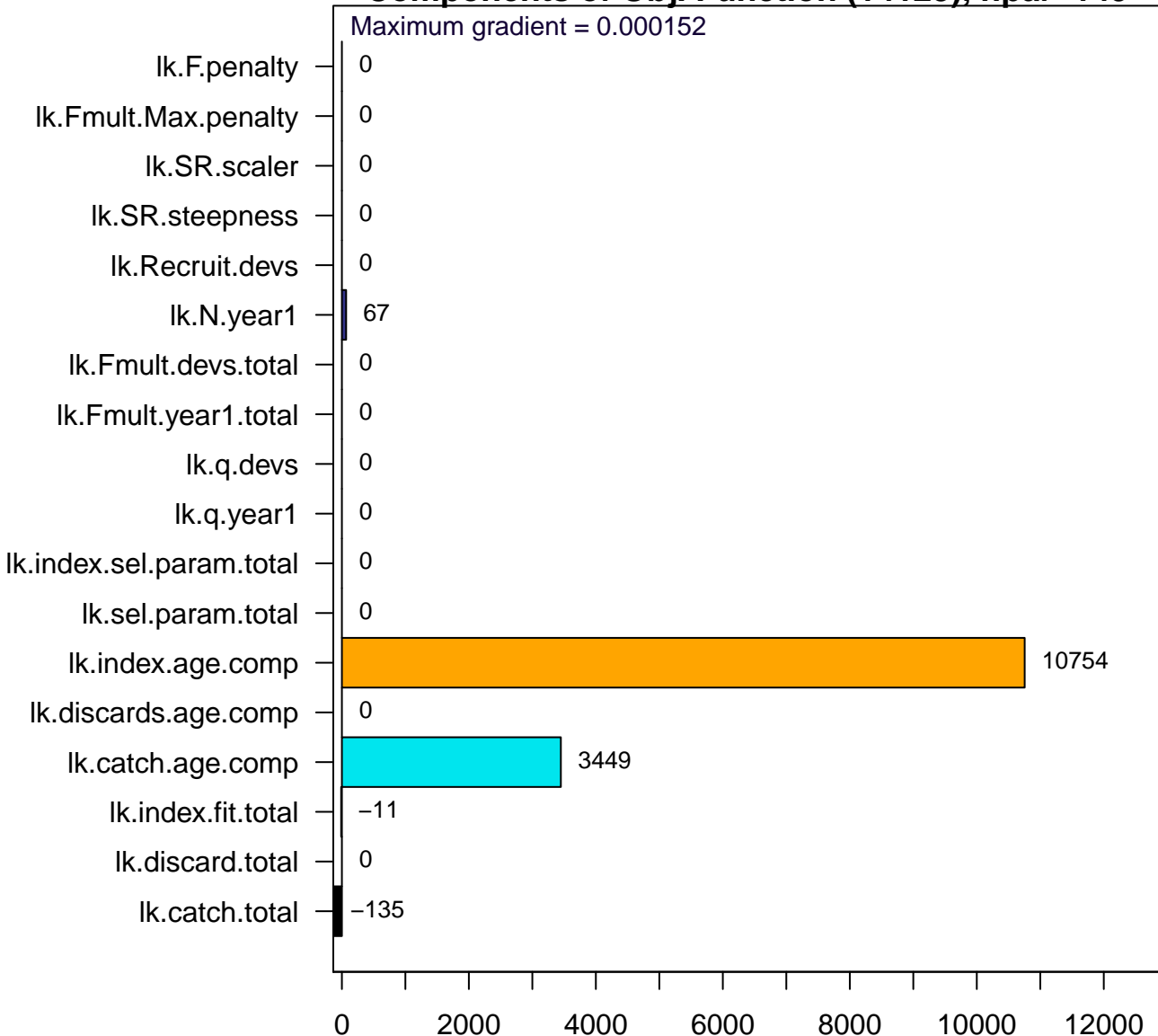
chris.legault\Documents\Working\ICES-WKFORBIAS 2019\WhiteHake\Rose\w

ASAPplots version = 0.2.14

npar = 149, maximum gradient = 0.000151514

Components of Obj. Function (14123), npar=149

Maximum gradient = 0.000152

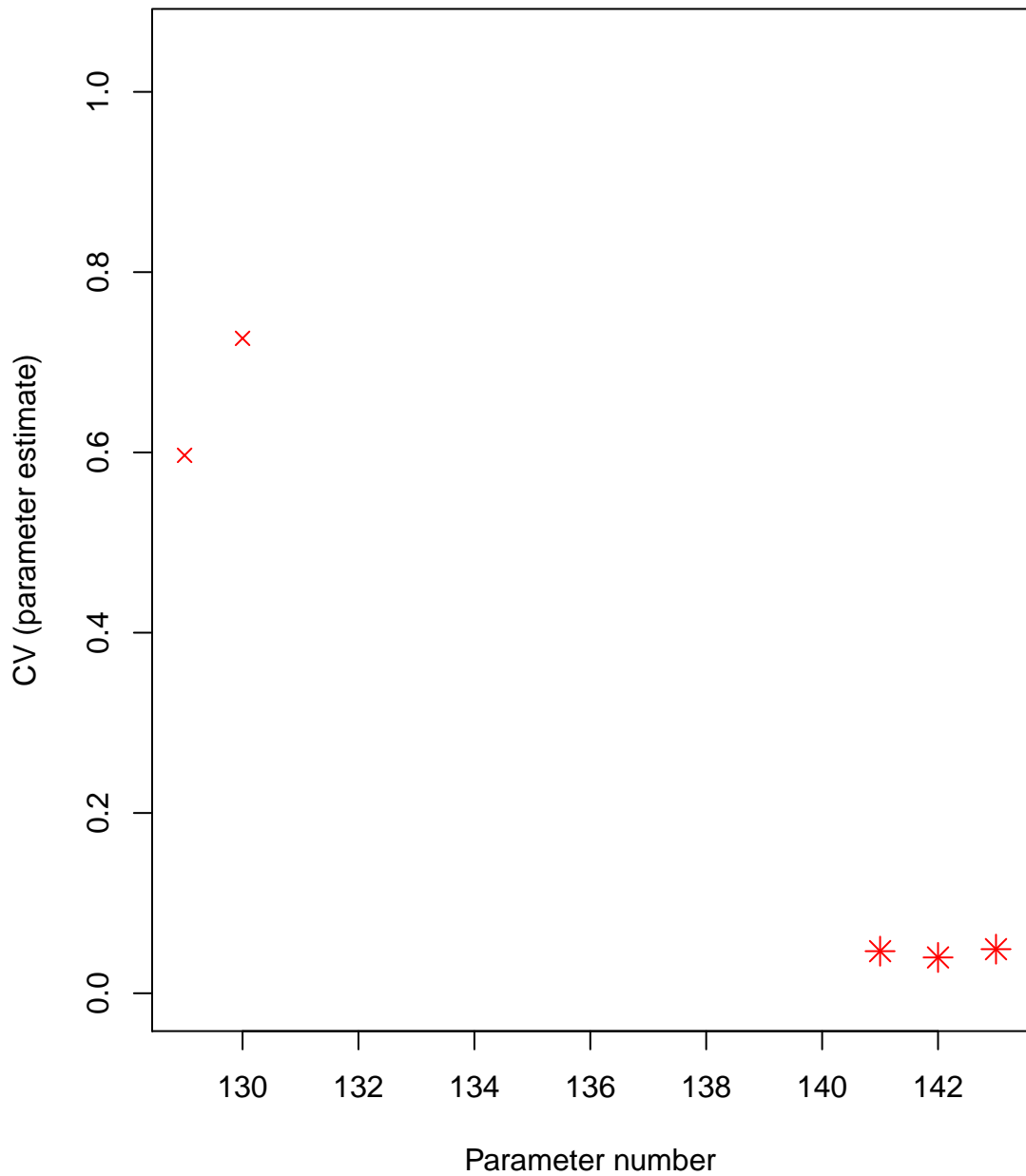


Likelihood Contribution

Model: y2015r0c1m2.6s111111111_000

Monday, 04 Nov 2019 at 10:52

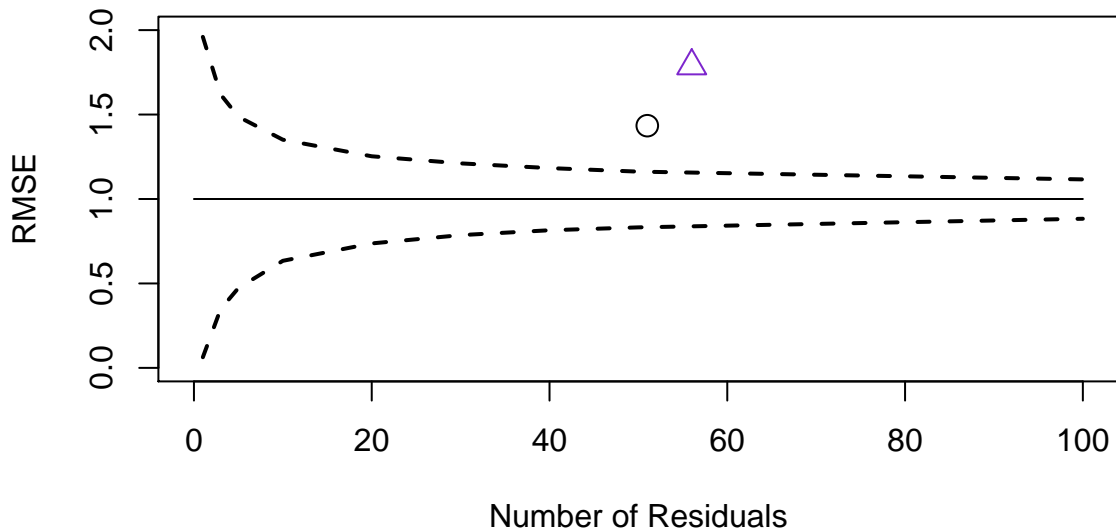




Root Mean Square Error computed from Standardized Residuals

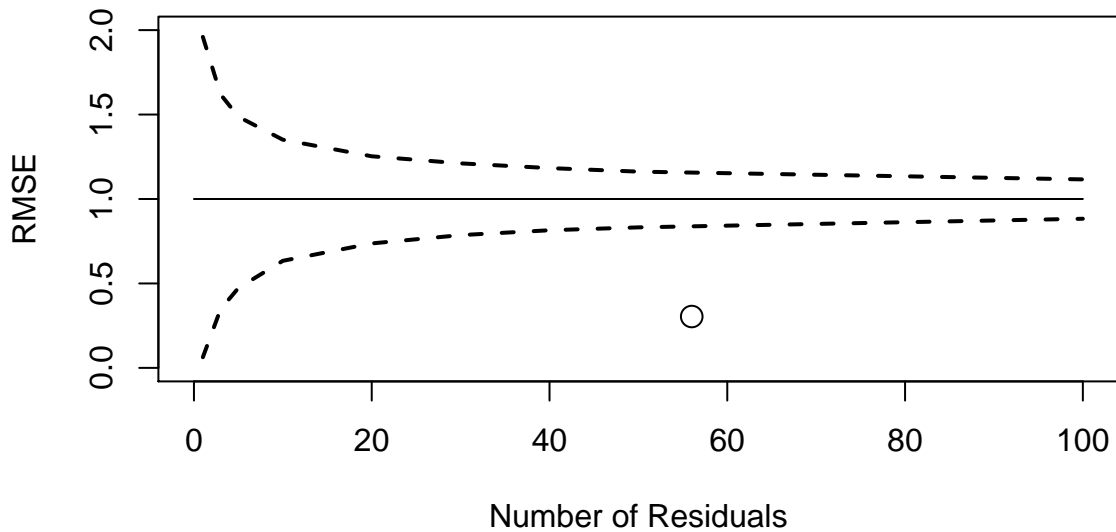
Component	# resids	RMSE
catch.tot	56	0.304
discard.tot	0	0
ind01	51	1.43
ind02	56	1.79
ind.total	107	1.63
N.year1	8	0.639
Fmult.year1	0	0
Fmult.devs.total	0	0
recruit.devs	0	0
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

Root Mean Square Error for Indices



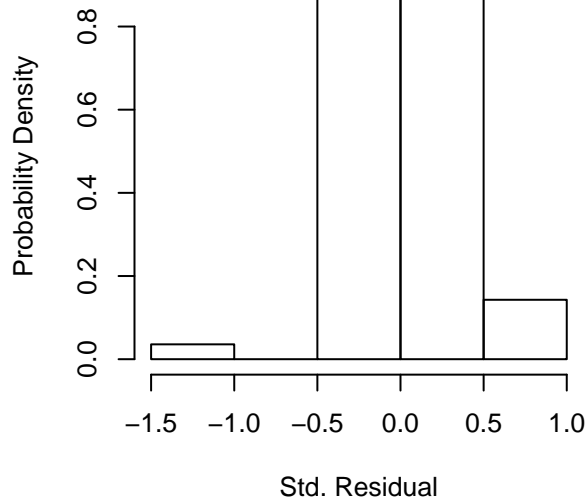
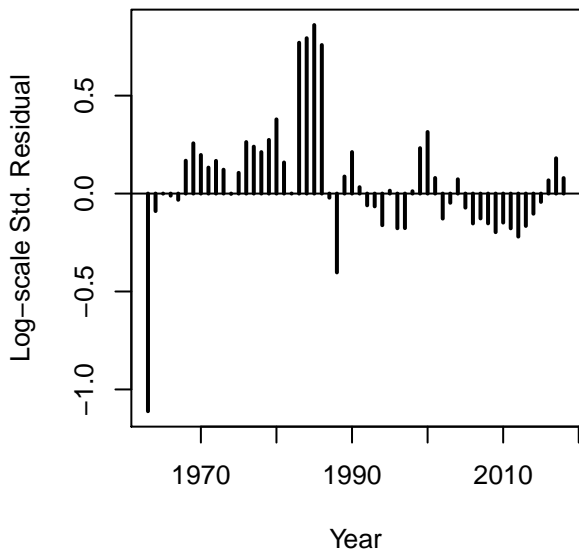
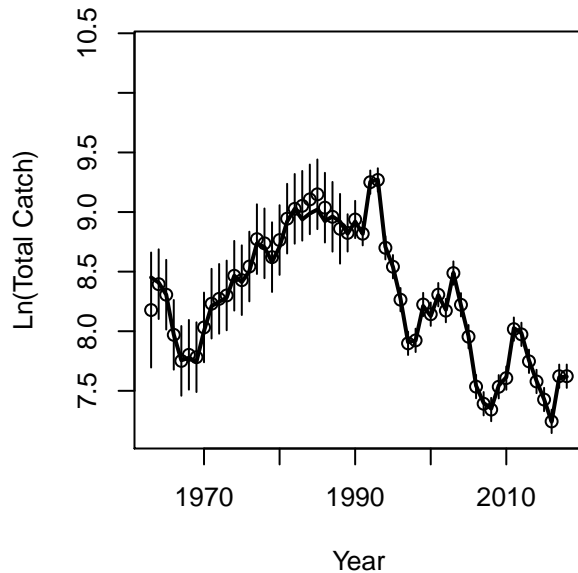
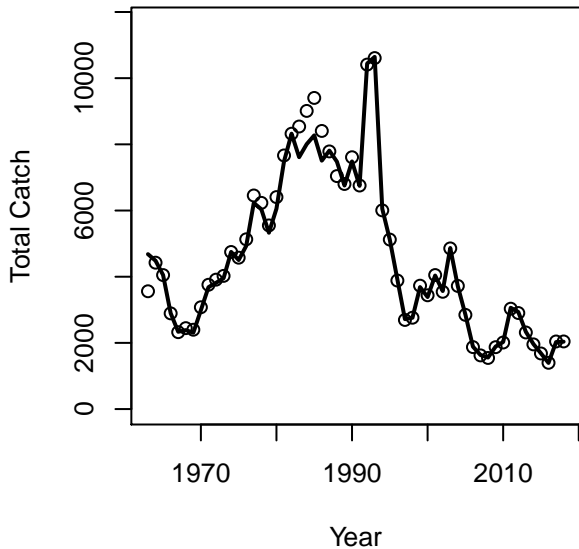
+ ind total
△ INDEX-2
○ INDEX-1

Root Mean Square Error for Catch



○ catch.tot

Fleet 1 Catch (FLEET-1)

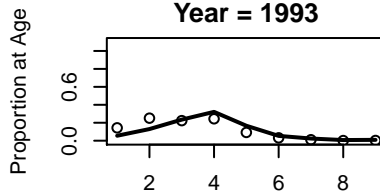


Catch

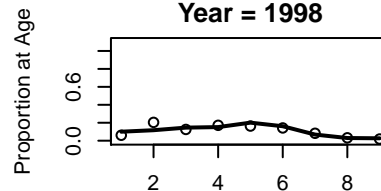
Fleet 1
FLEET-1



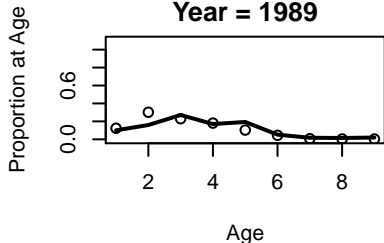
Year = 1993



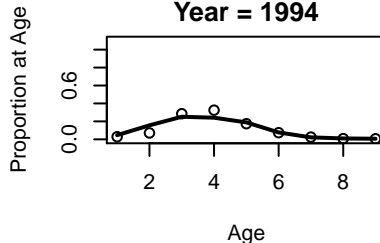
Year = 1998



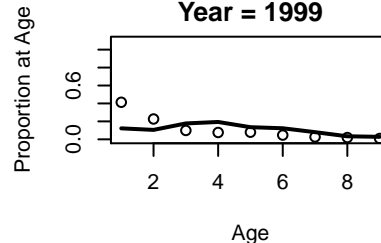
Year = 1989



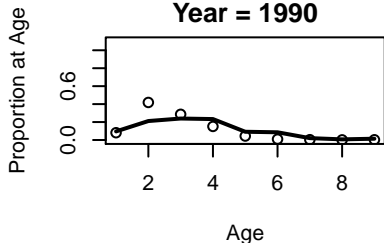
Year = 1994



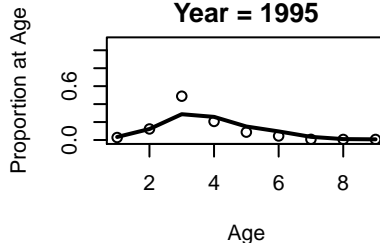
Year = 1999



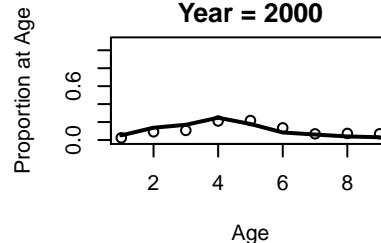
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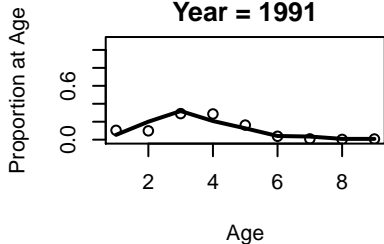
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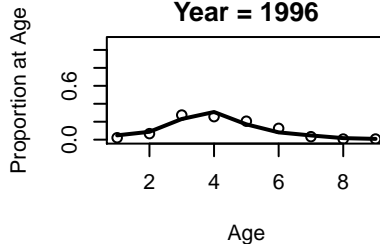
Year = 2000



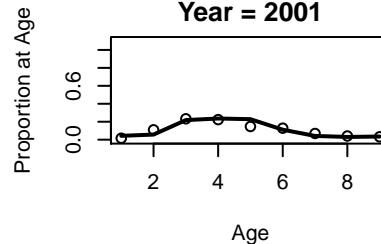
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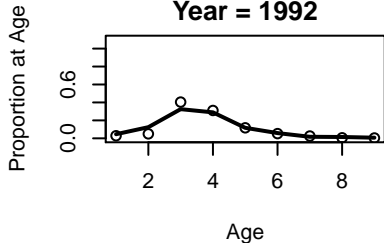
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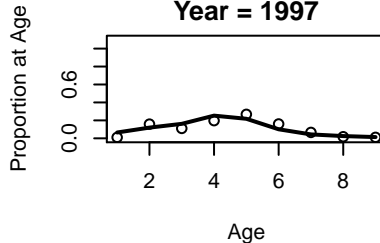
Year = 2001



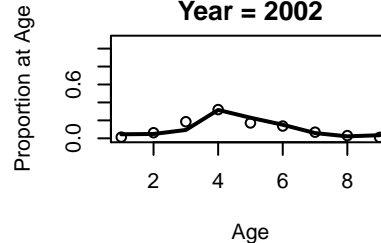
Year = 1992



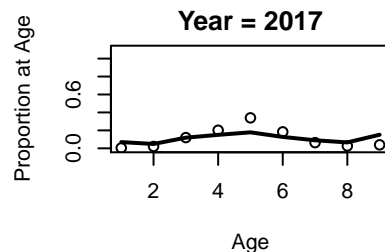
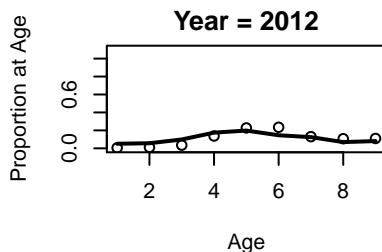
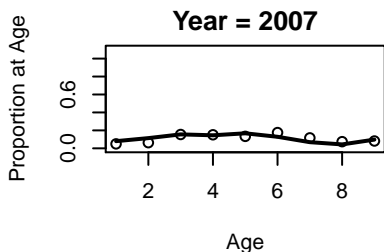
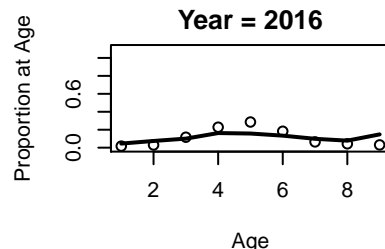
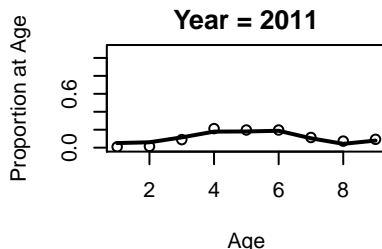
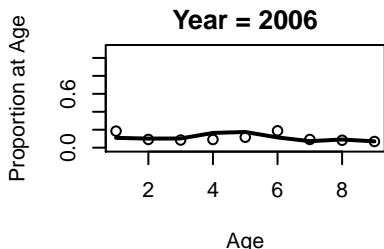
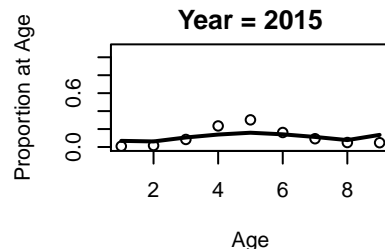
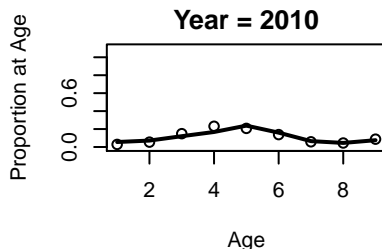
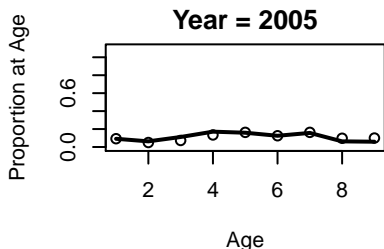
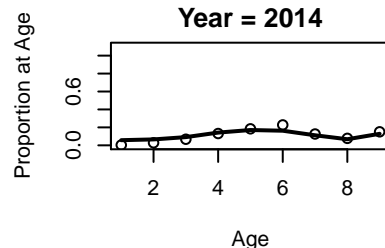
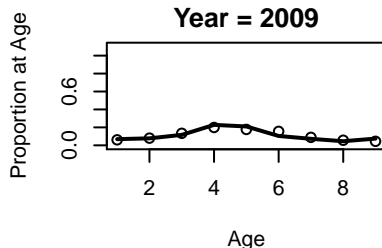
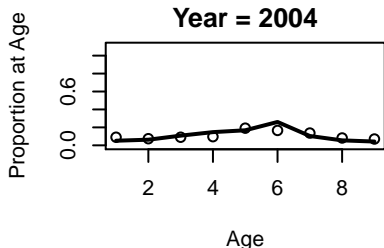
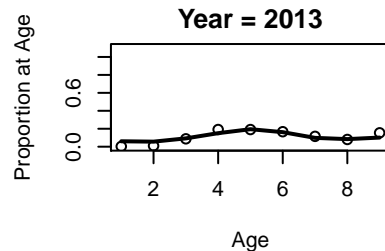
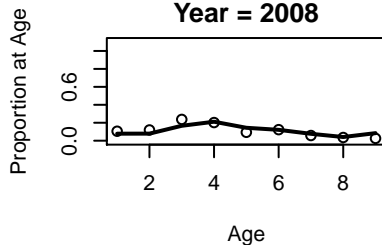
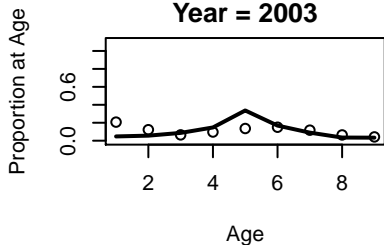
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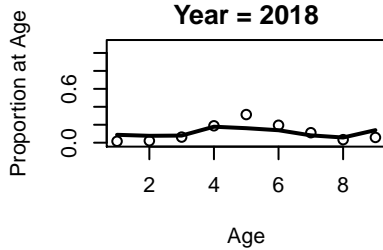
Year = 2002



Year = 2008

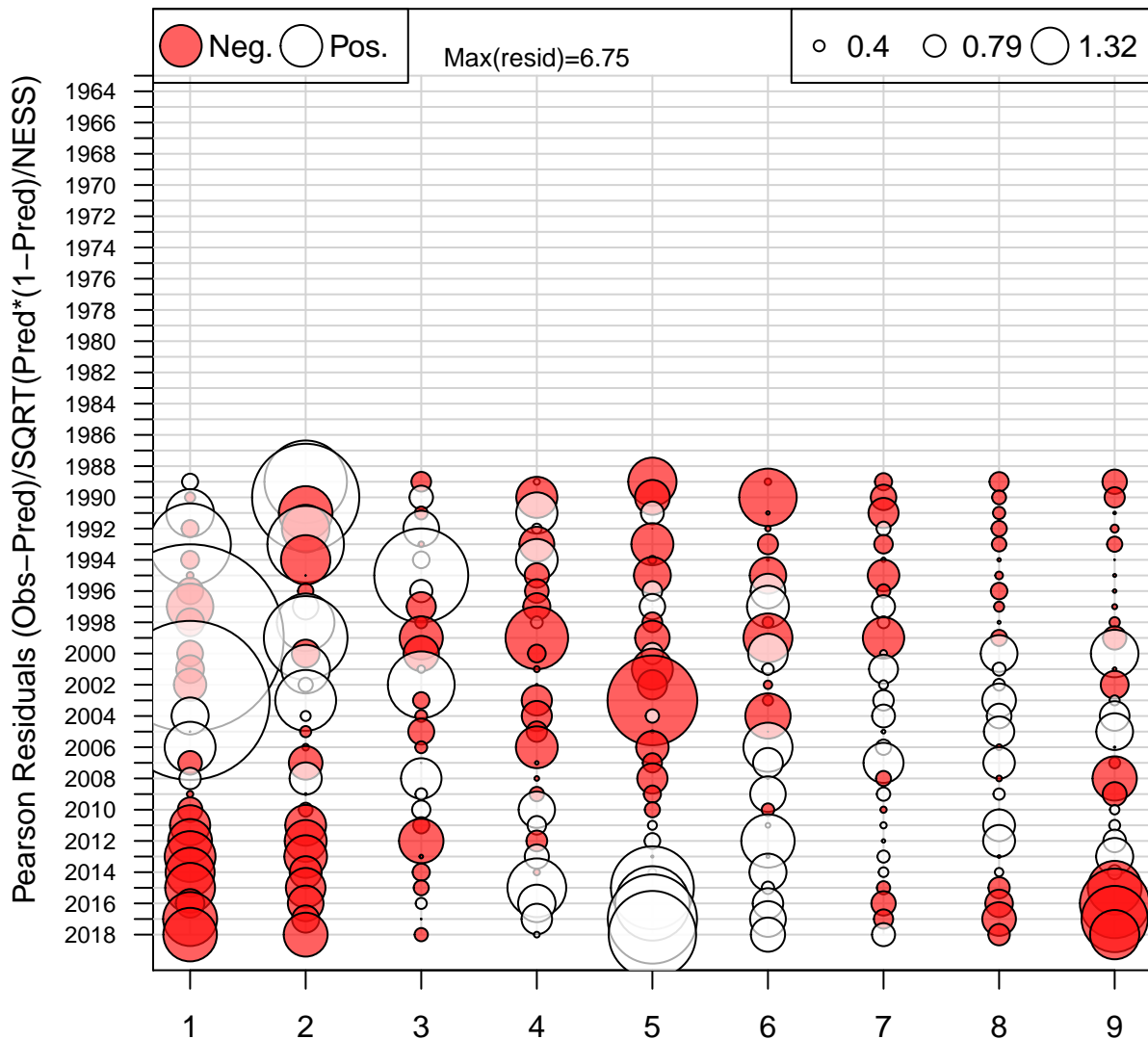


Year = 2018



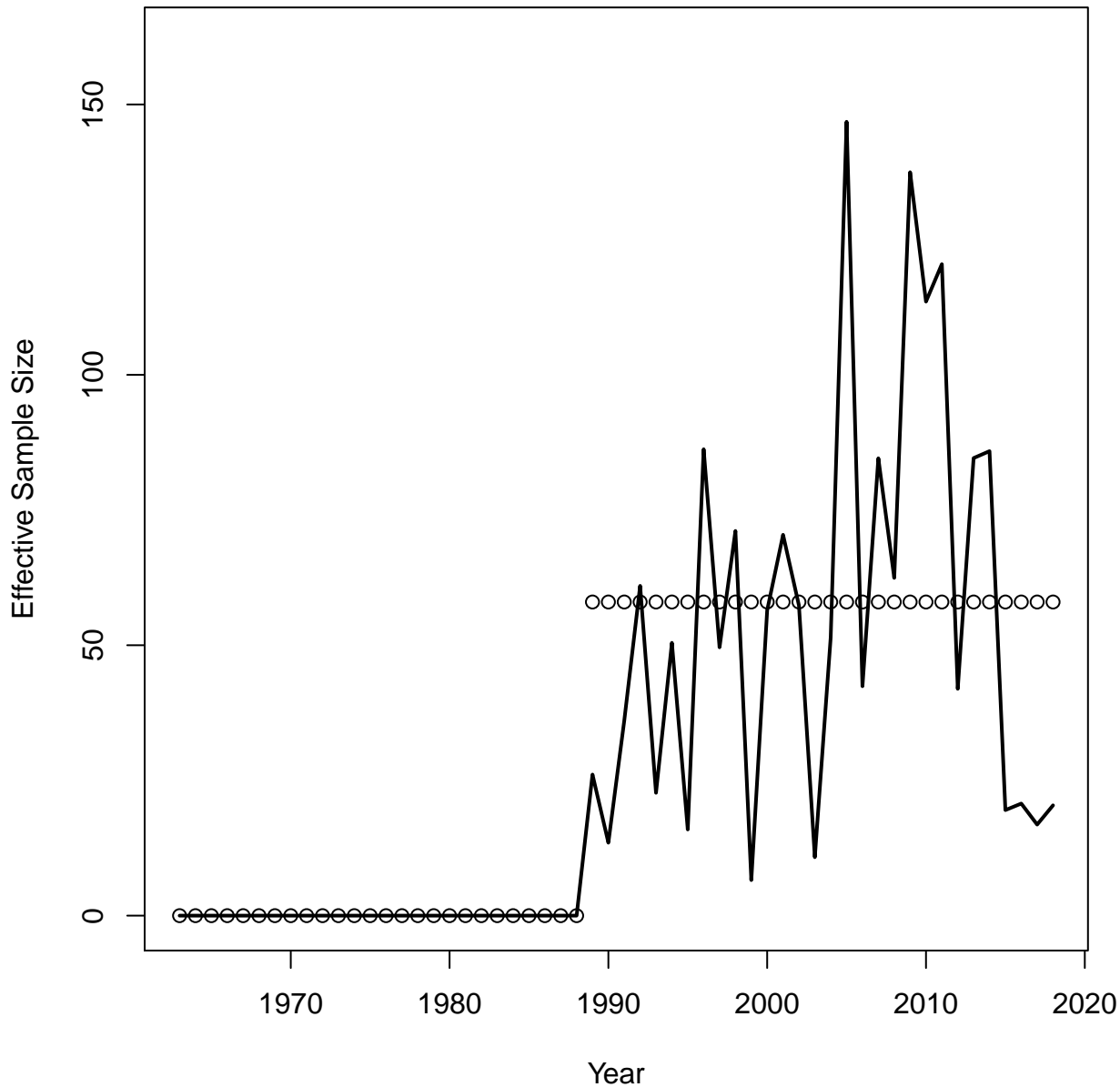
Catch

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

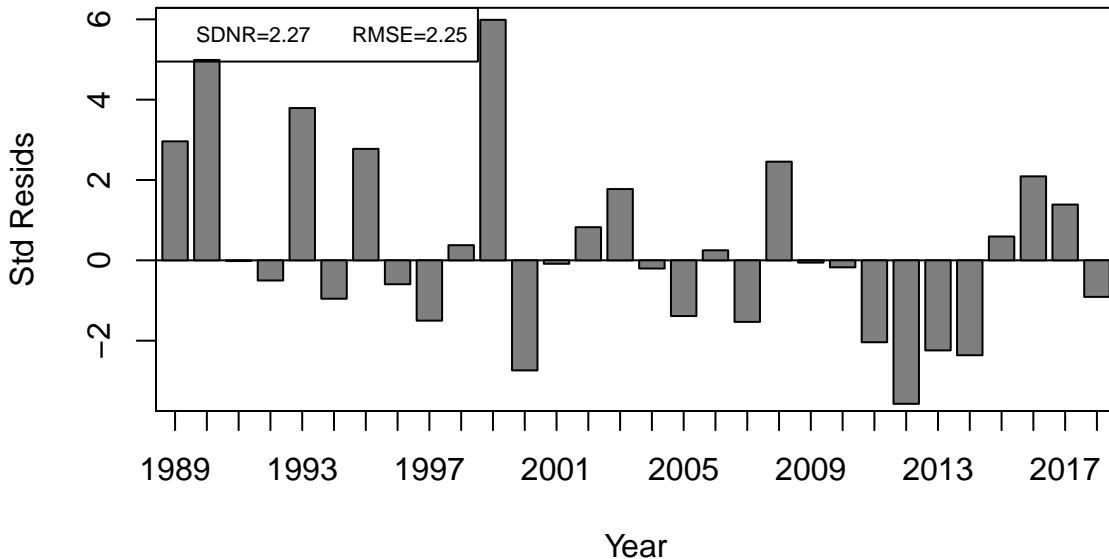
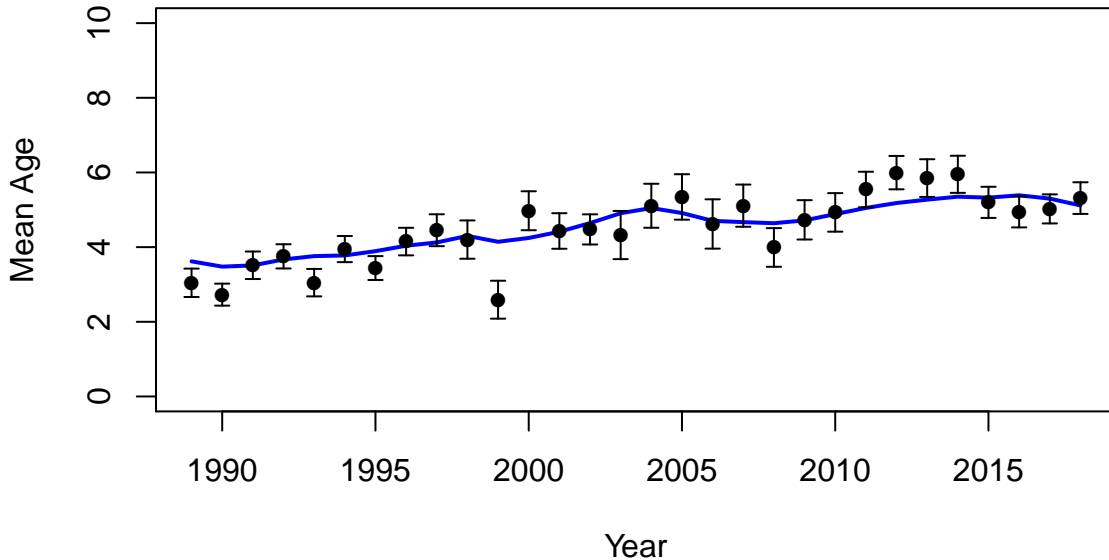


Mean resid = -0.02 SD(resid) = 1.3

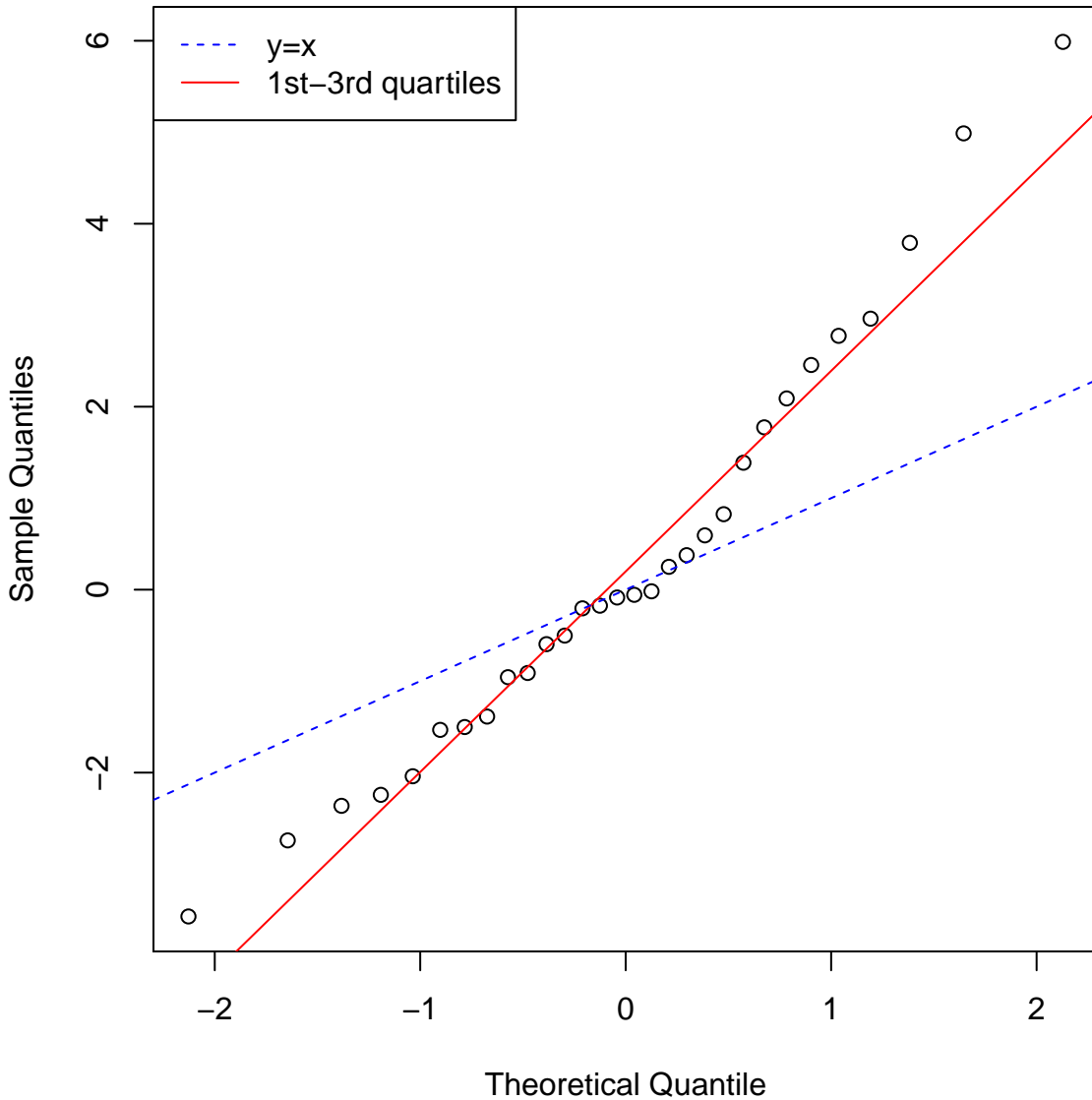
Catch Neff Fleet 1 (FLEET-1)



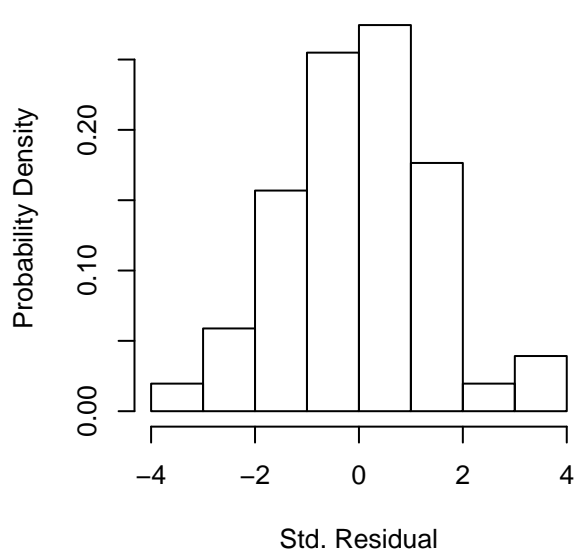
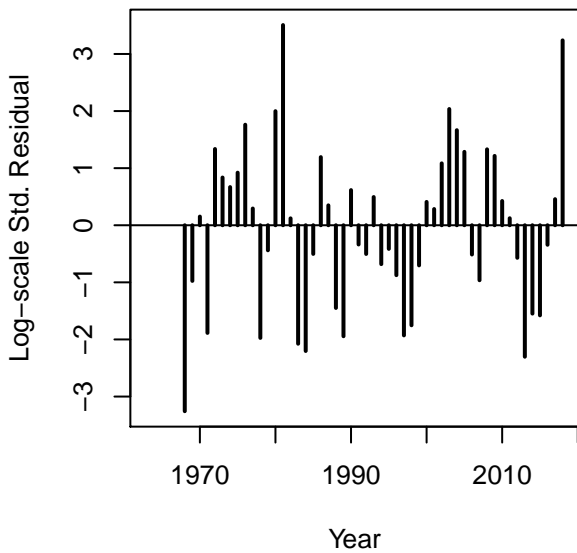
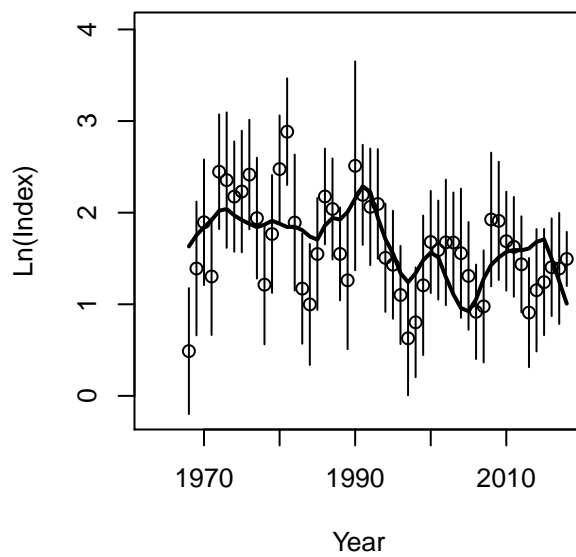
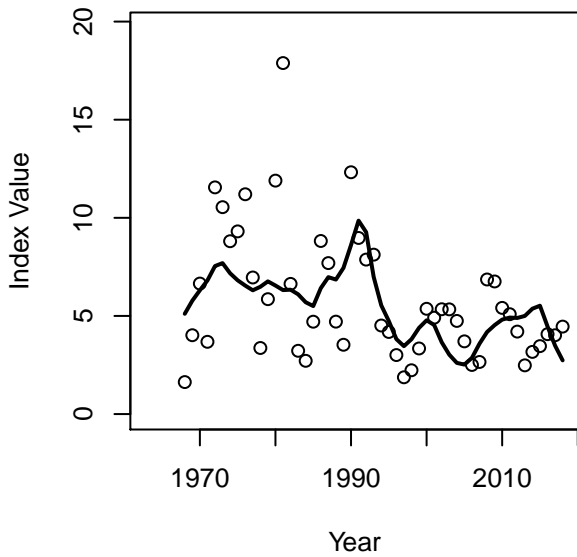
Catch Fleet 1 (FLEET-1) ESS = 58



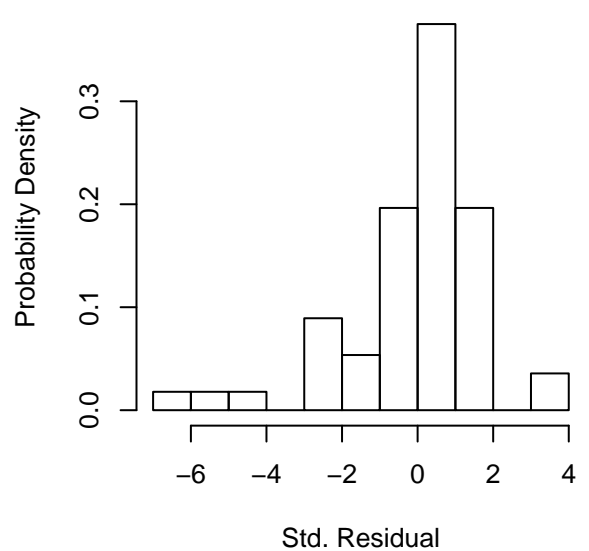
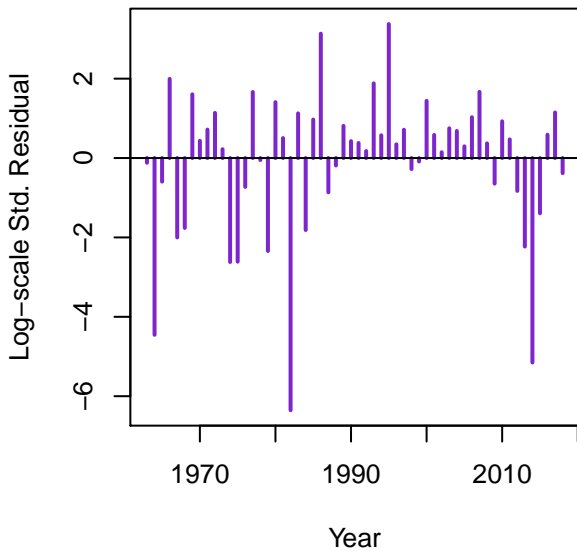
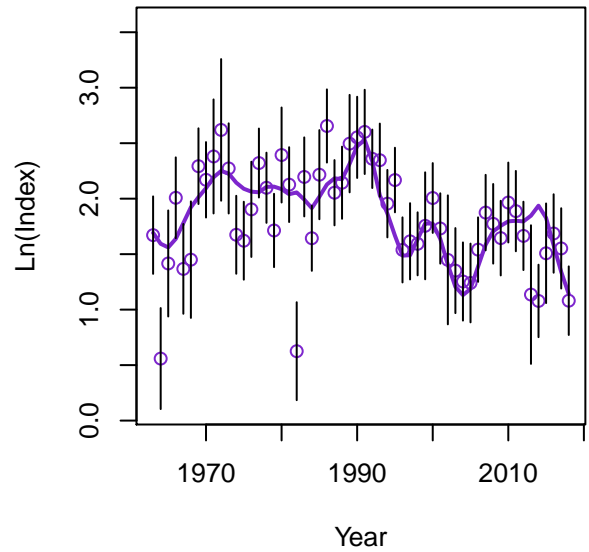
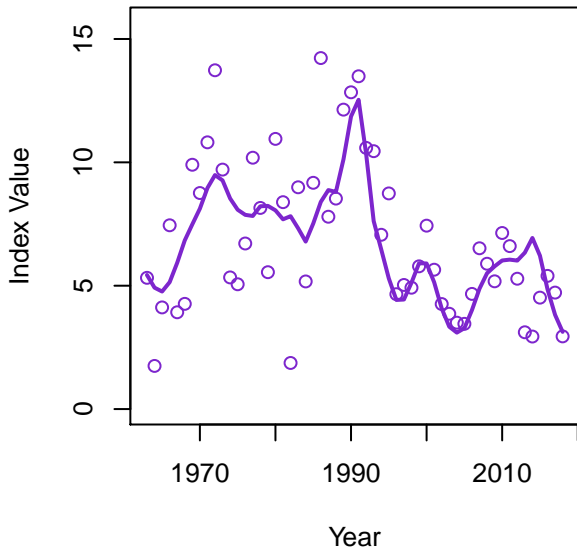
Catch Fleet 1 (FLEET-1) ESS = 58



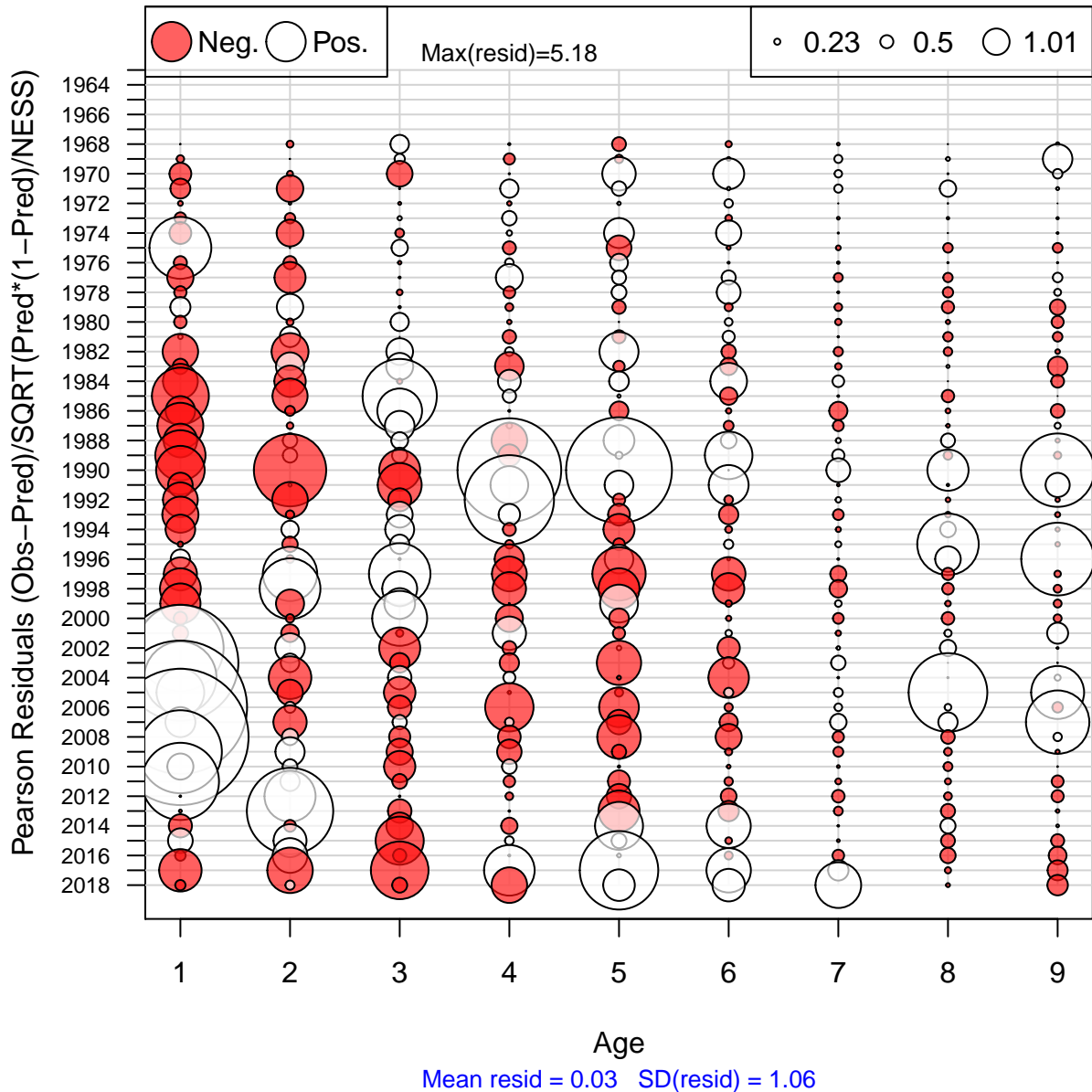
Index 1 (INDEX-1)



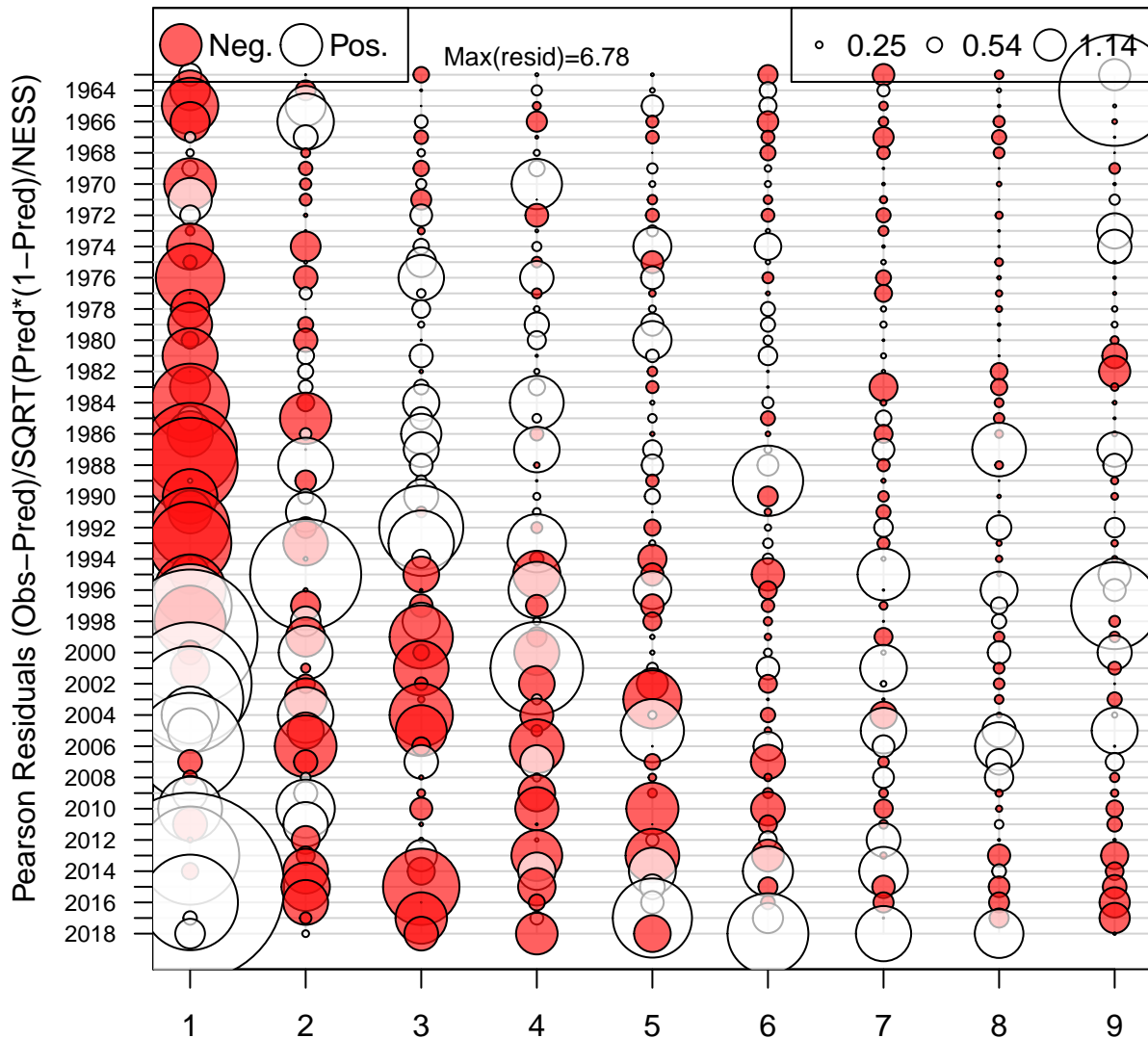
Index 2 (INDEX-2)



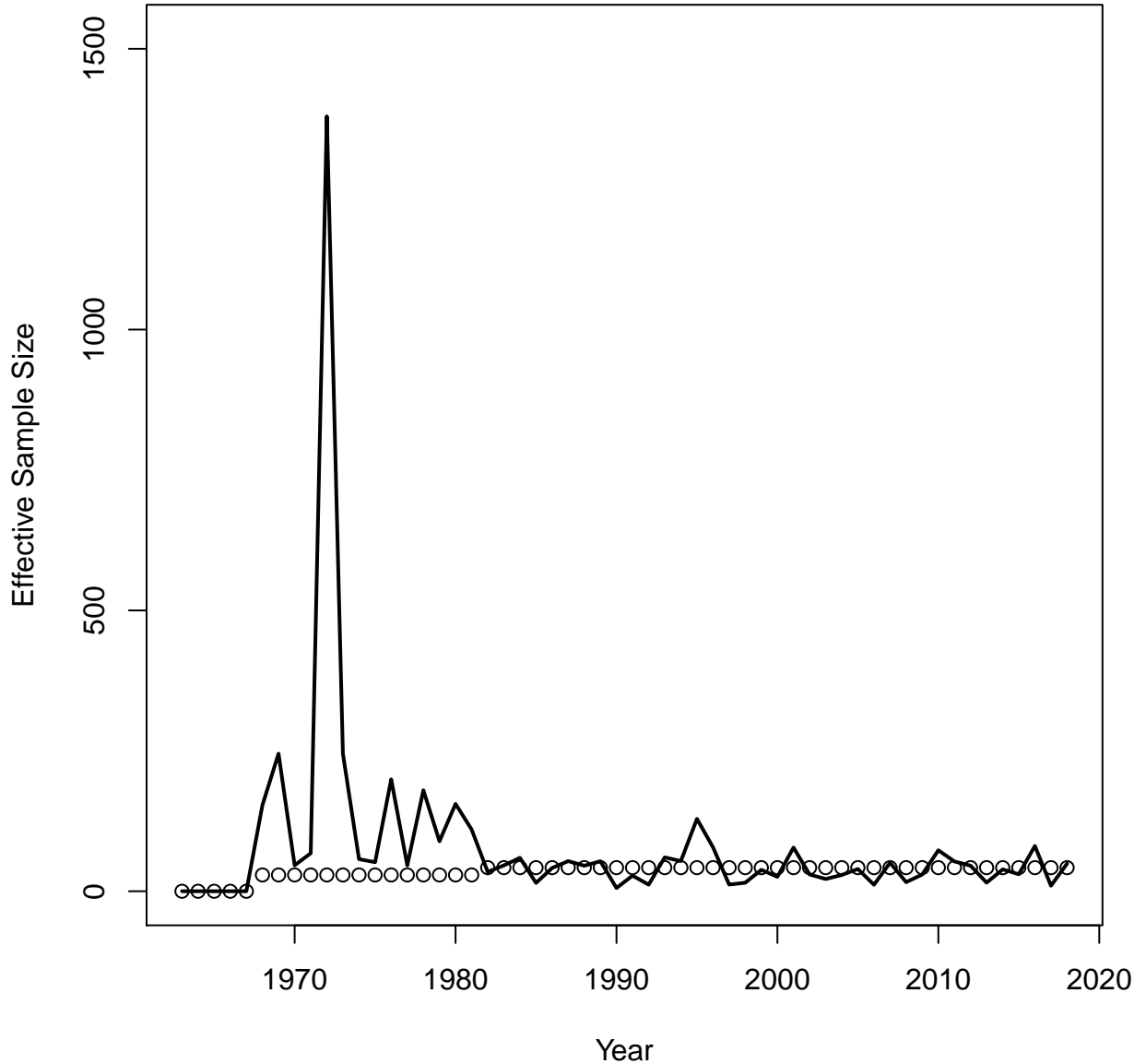
Age Comp Residuals for Index 1 (INDEX-1)



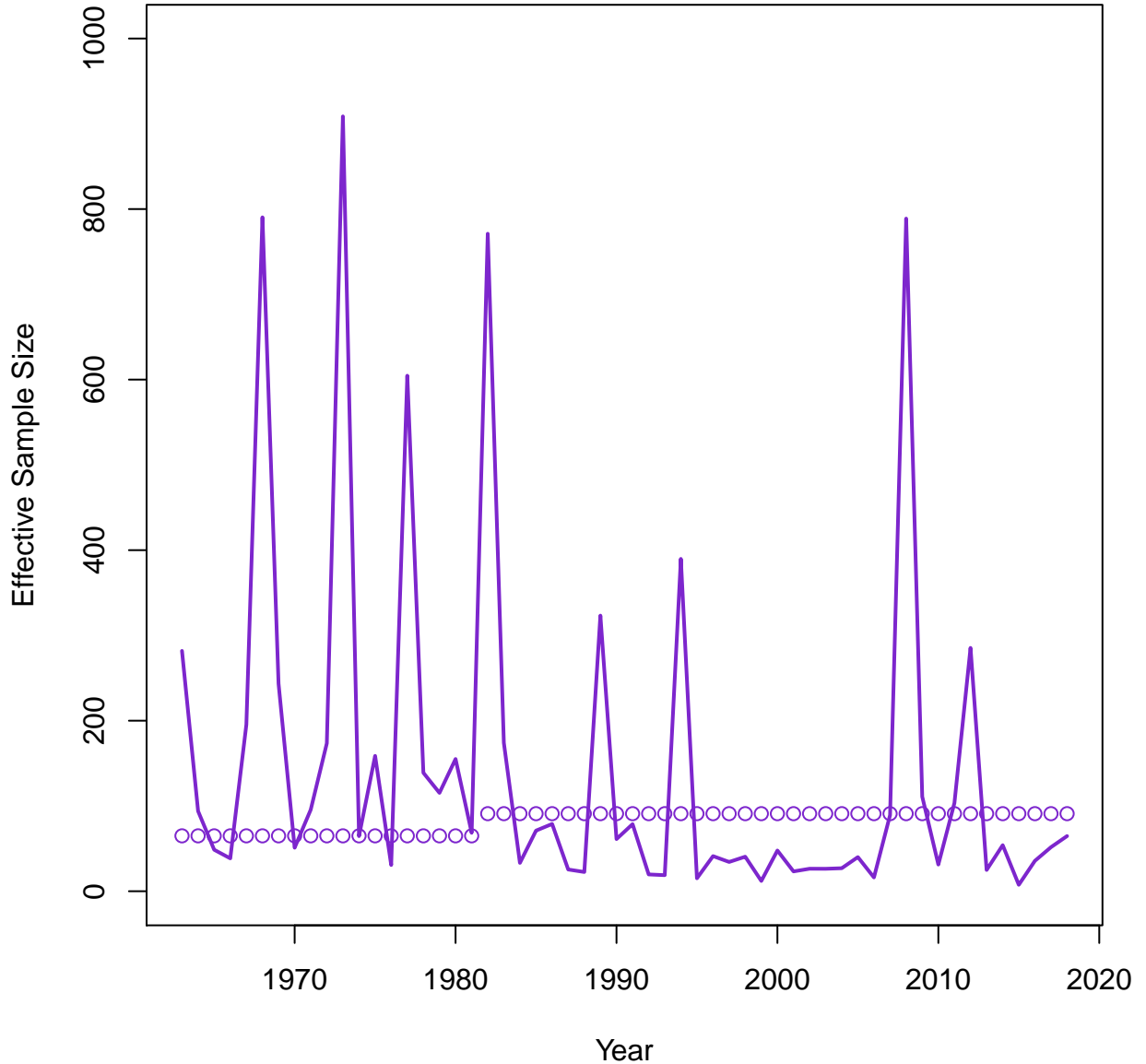
Age Comp Residuals for Index 2 (INDEX-2)



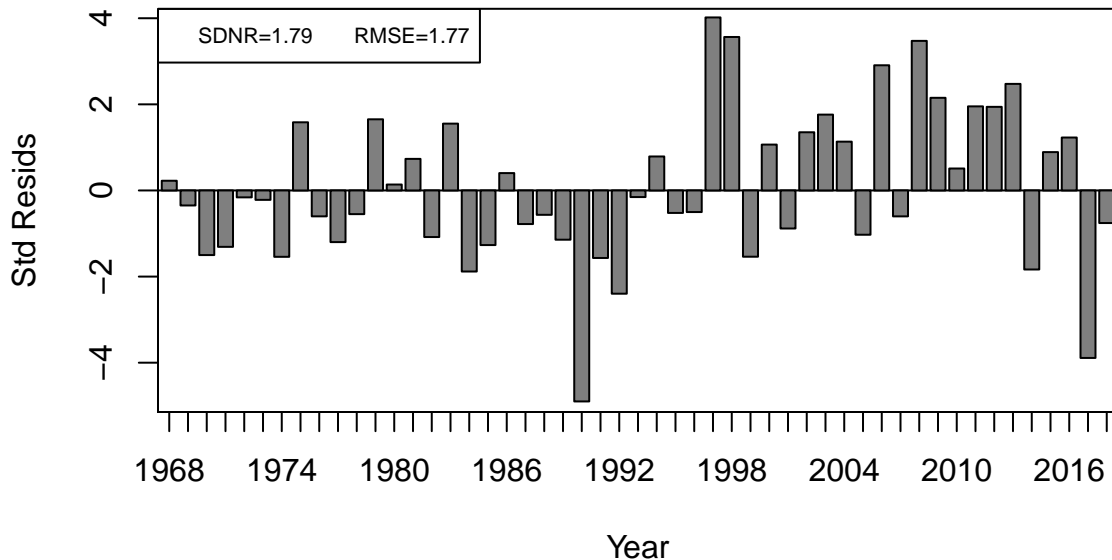
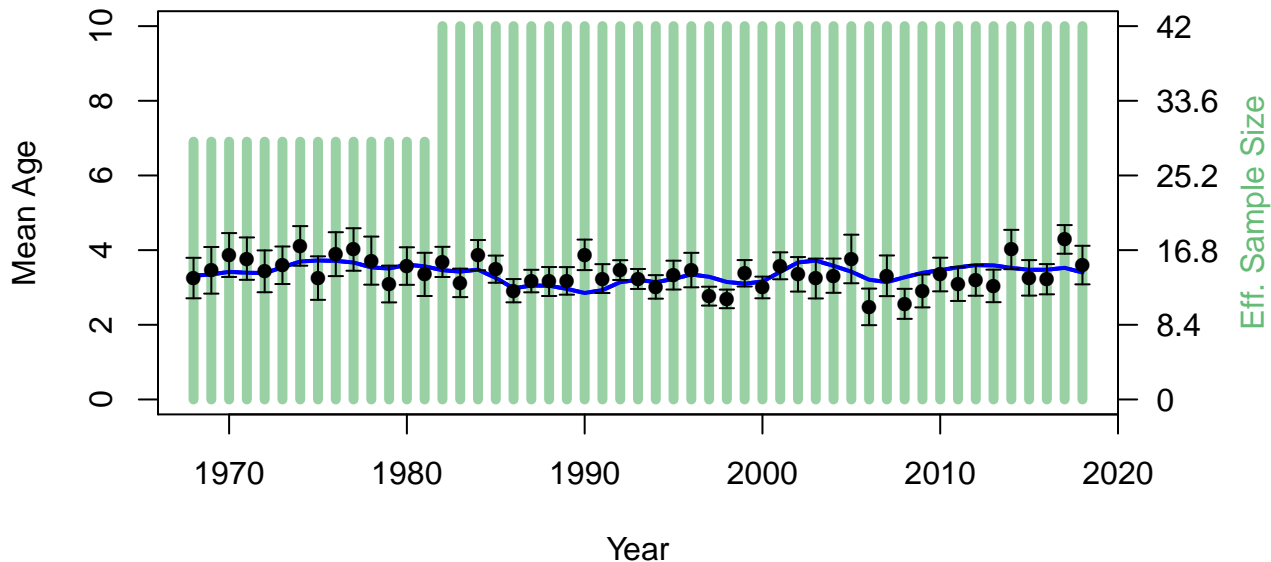
Index Neff 1 (INDEX-1)



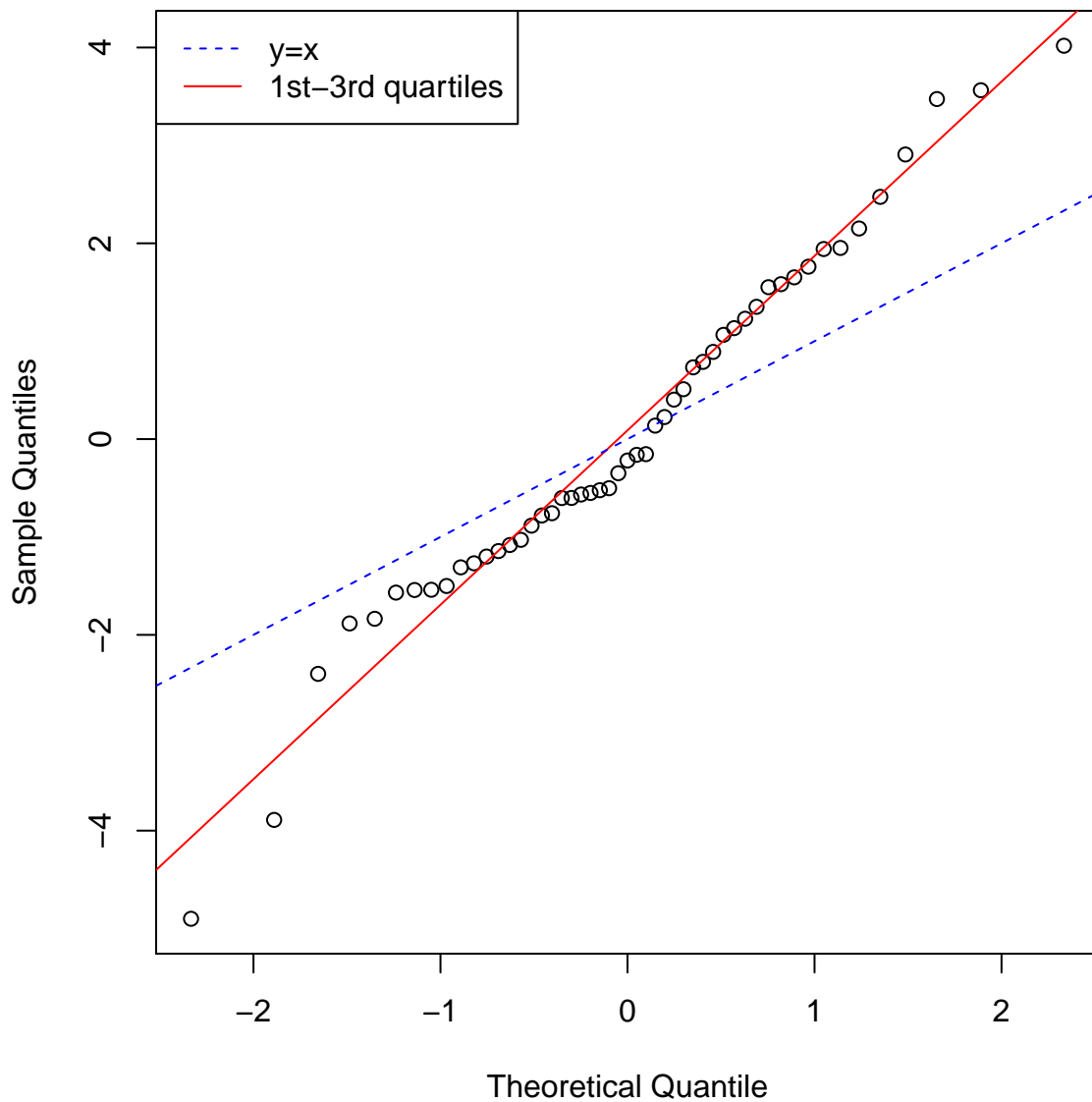
Index Neff 2 (INDEX-2)



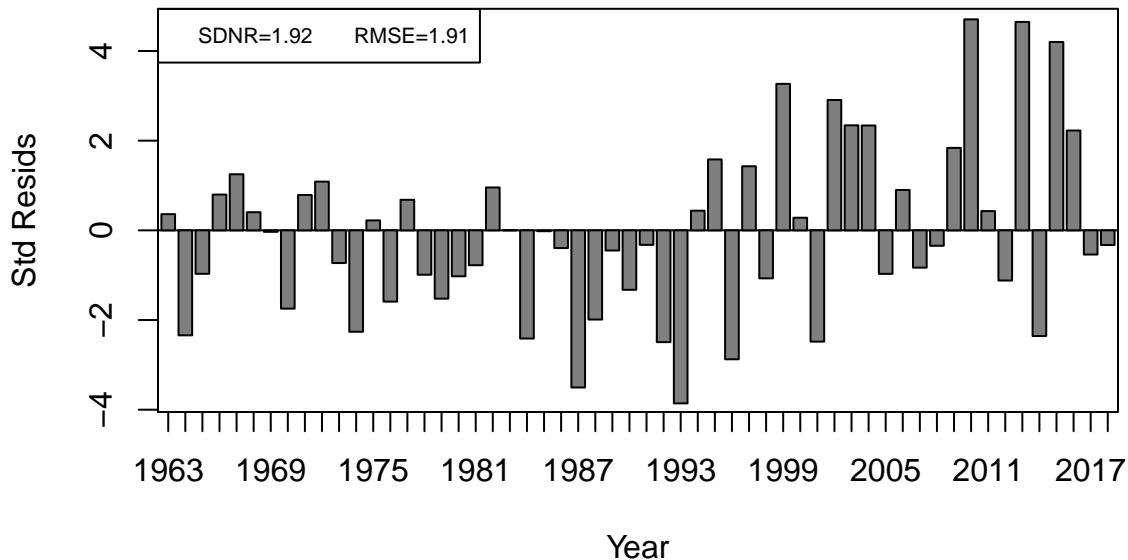
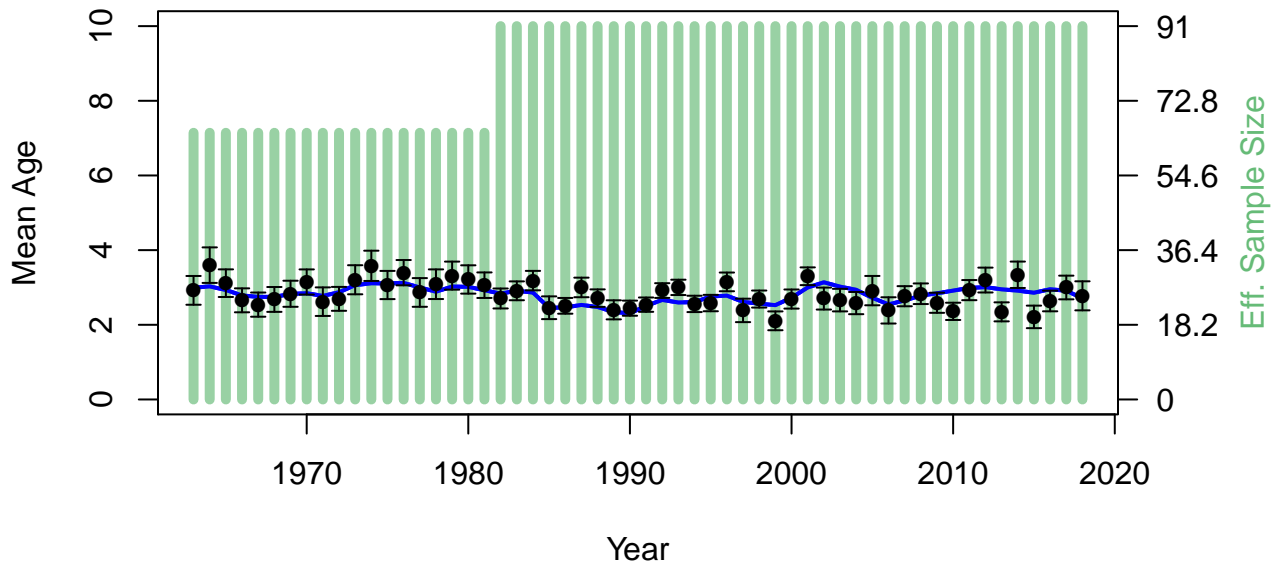
Index 1 (INDEX-1)



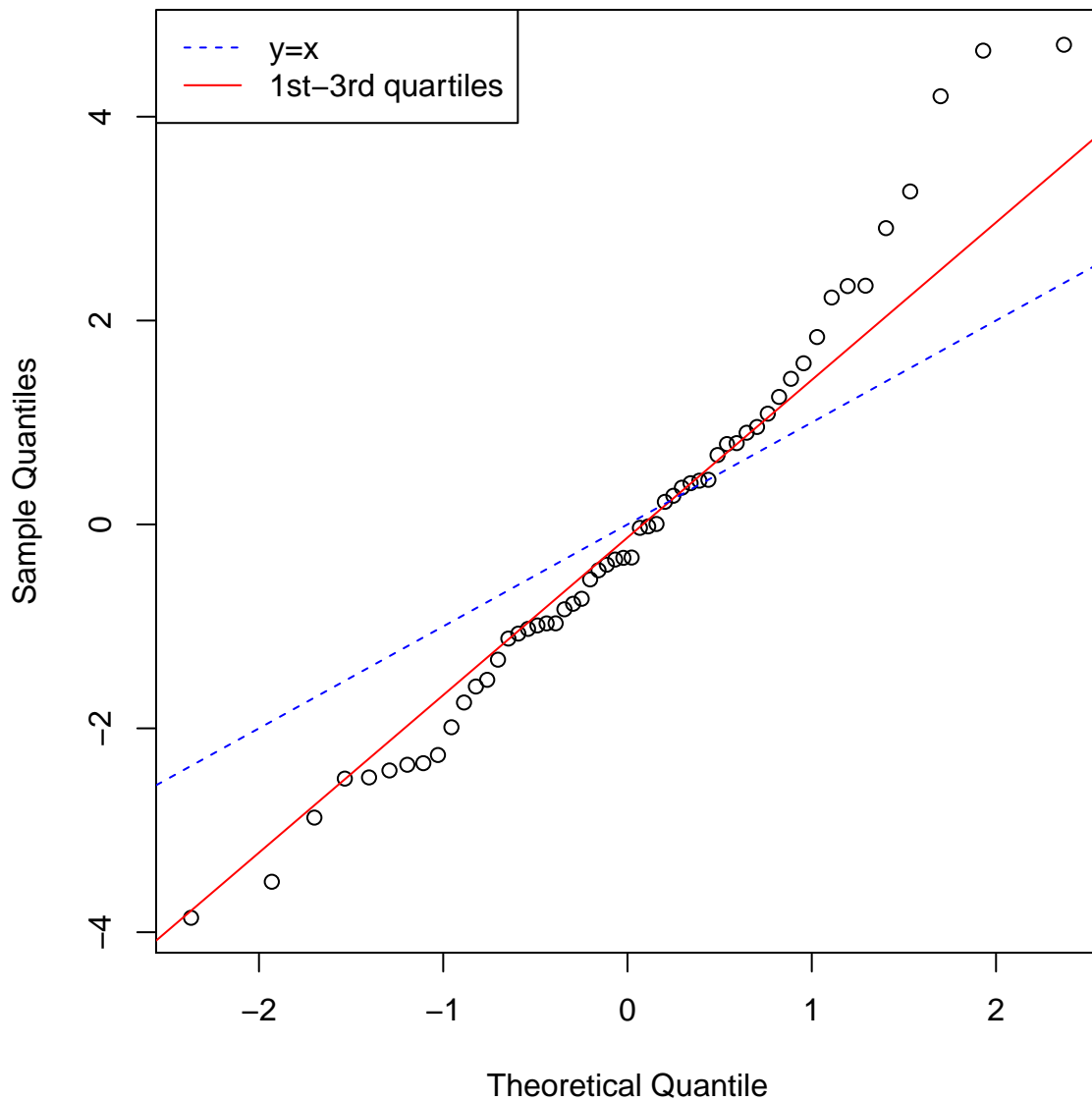
Index 1 (INDEX-1)



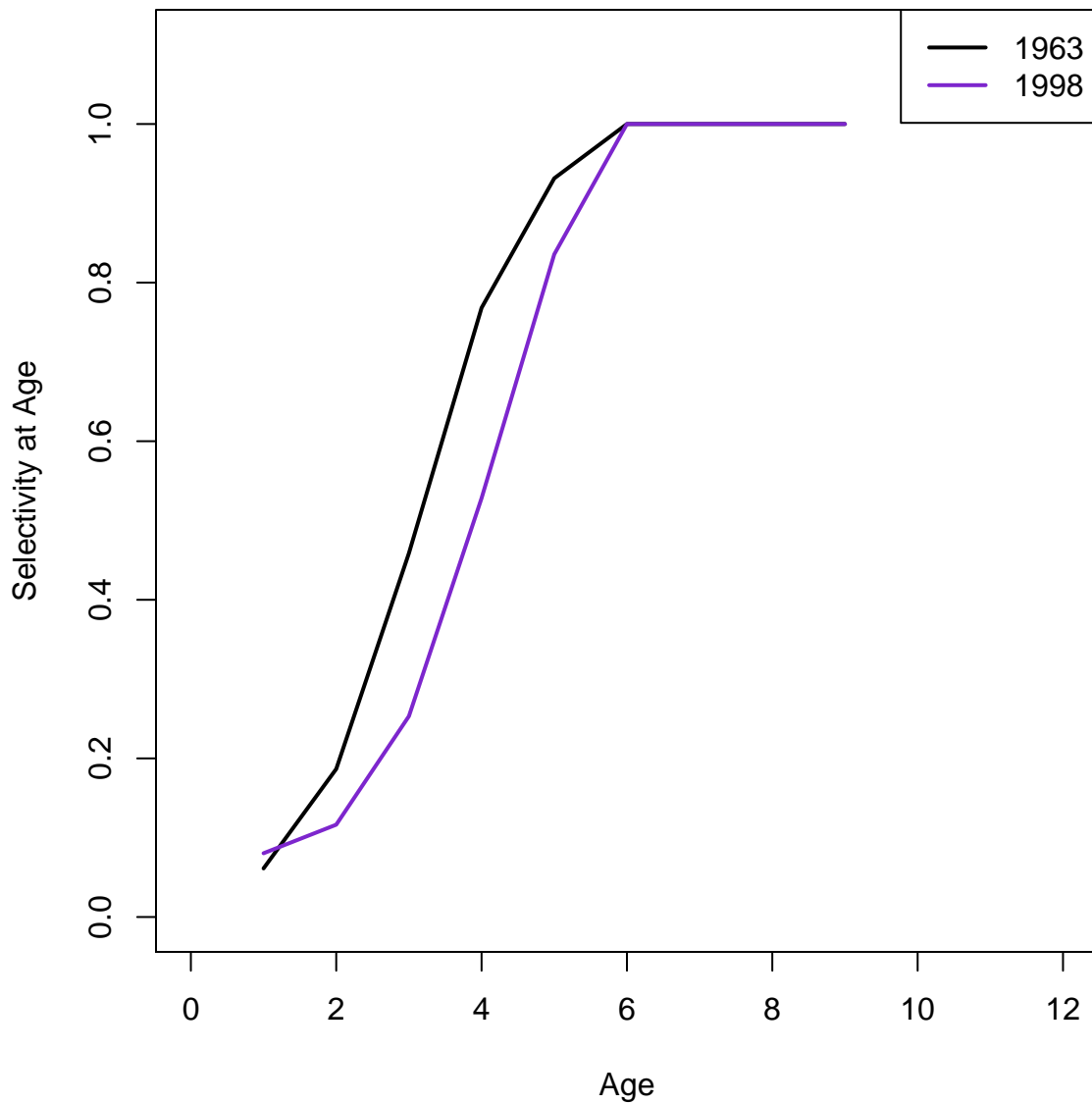
Index 2 (INDEX-2)

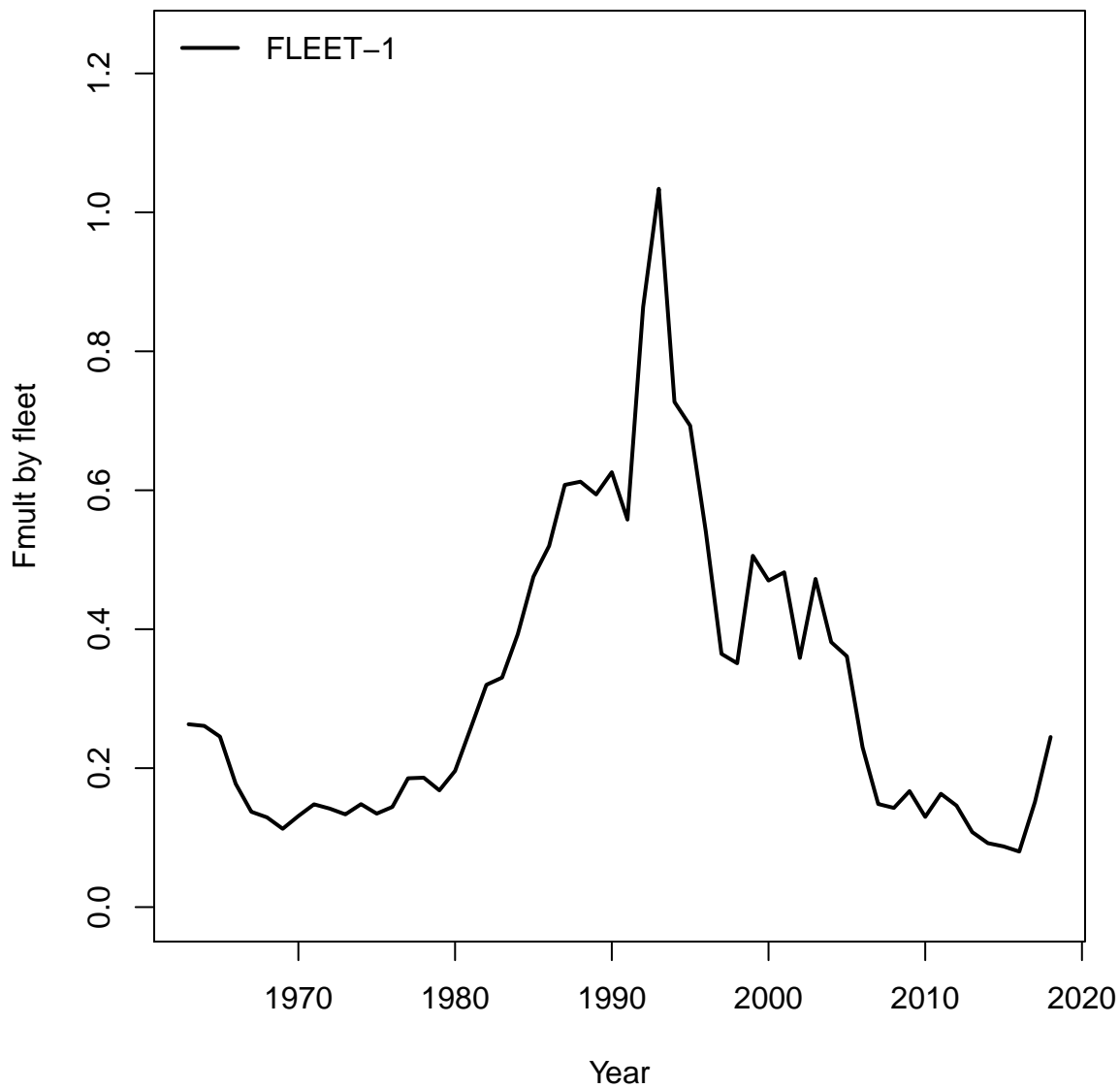


Index 2 (INDEX-2)

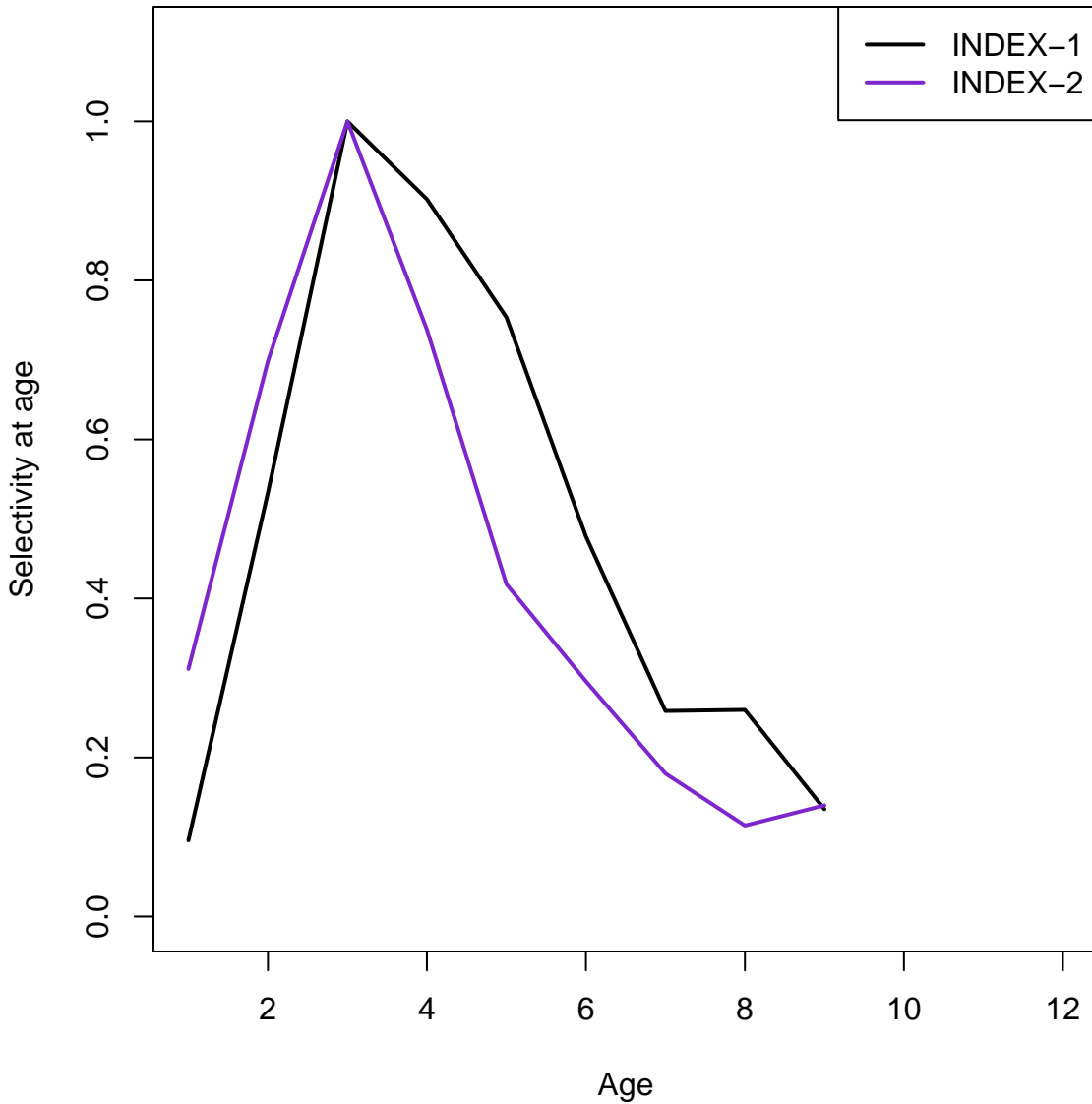


Fleet 1 (FLEET-1)





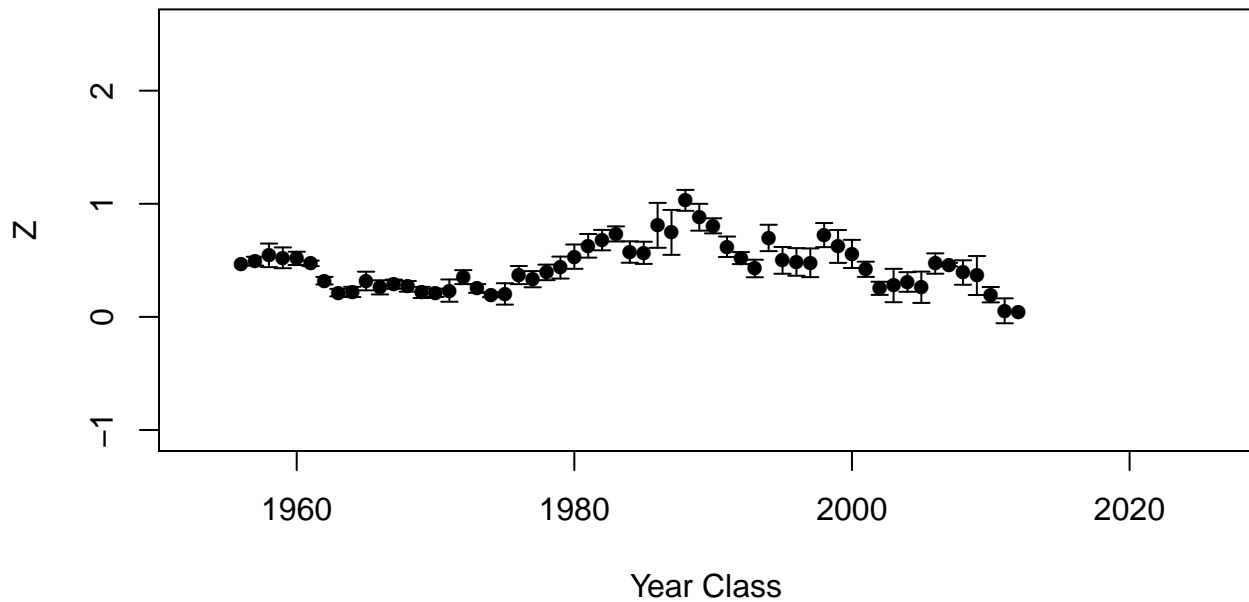
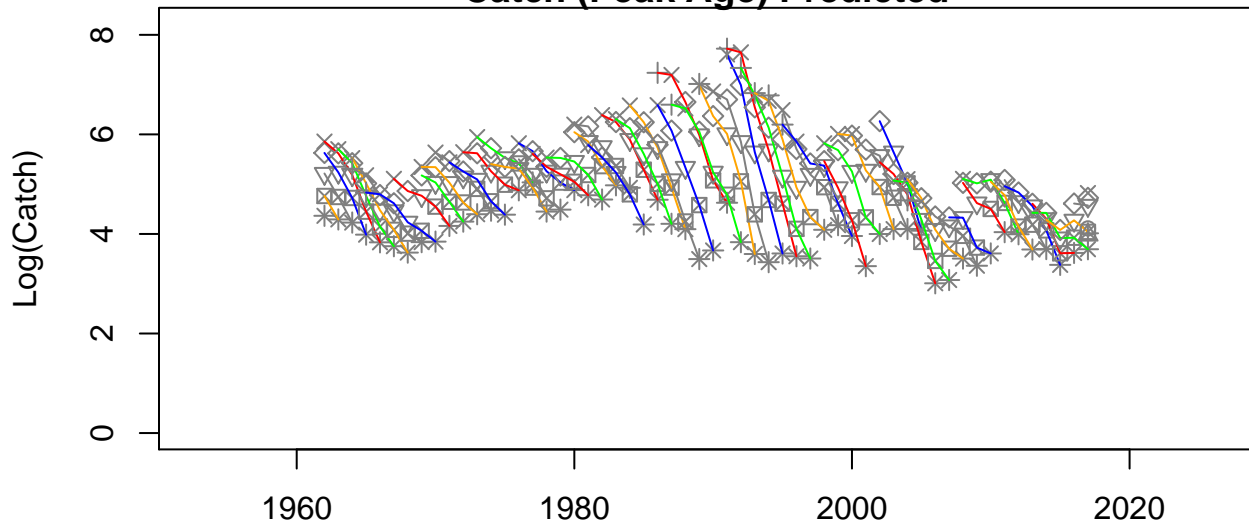
Indices



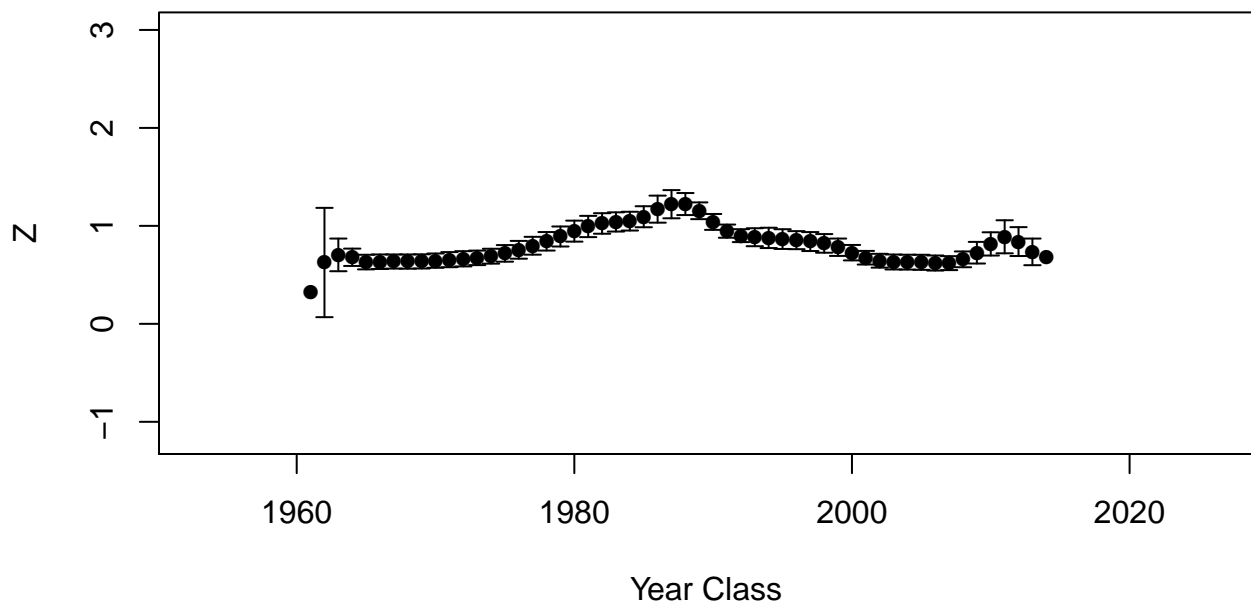
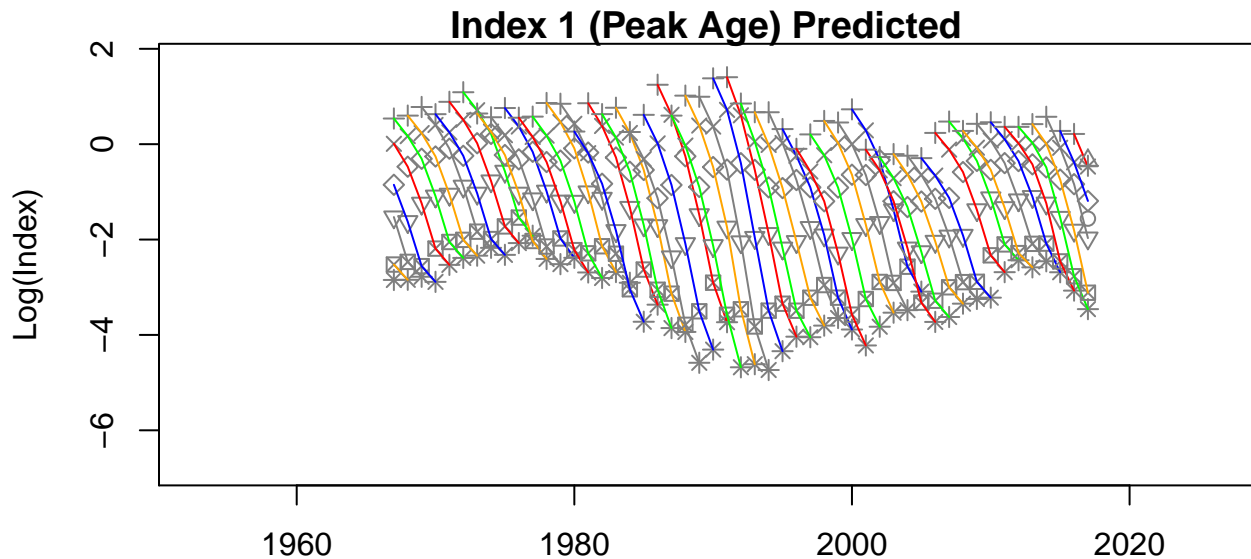
Catch (Peak Age) Observed



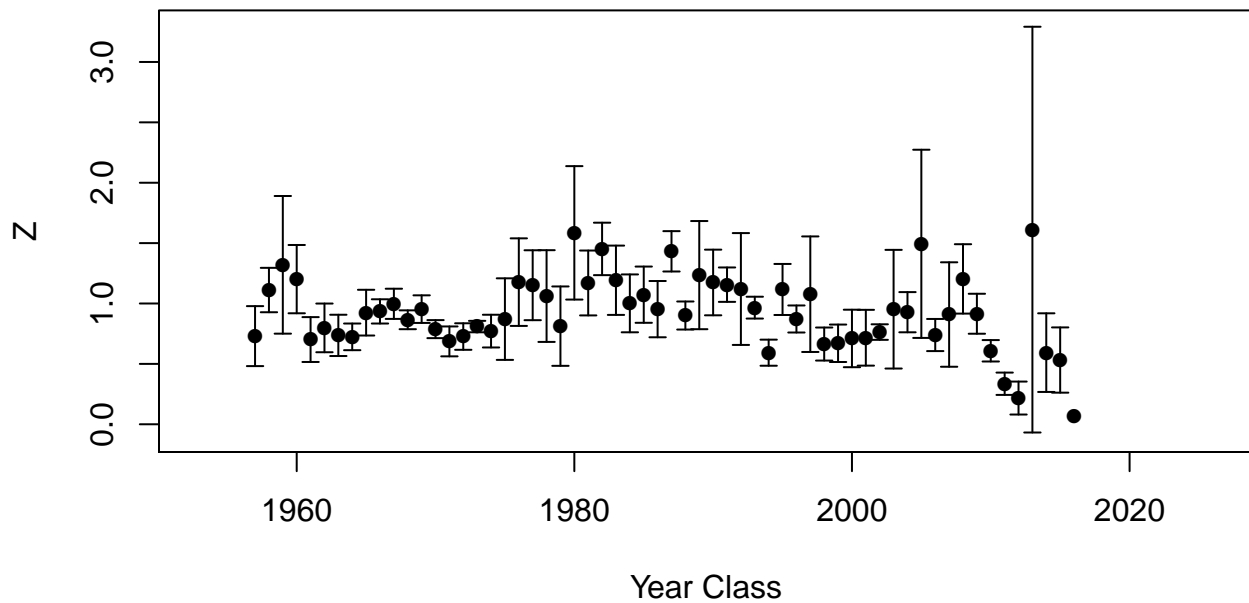
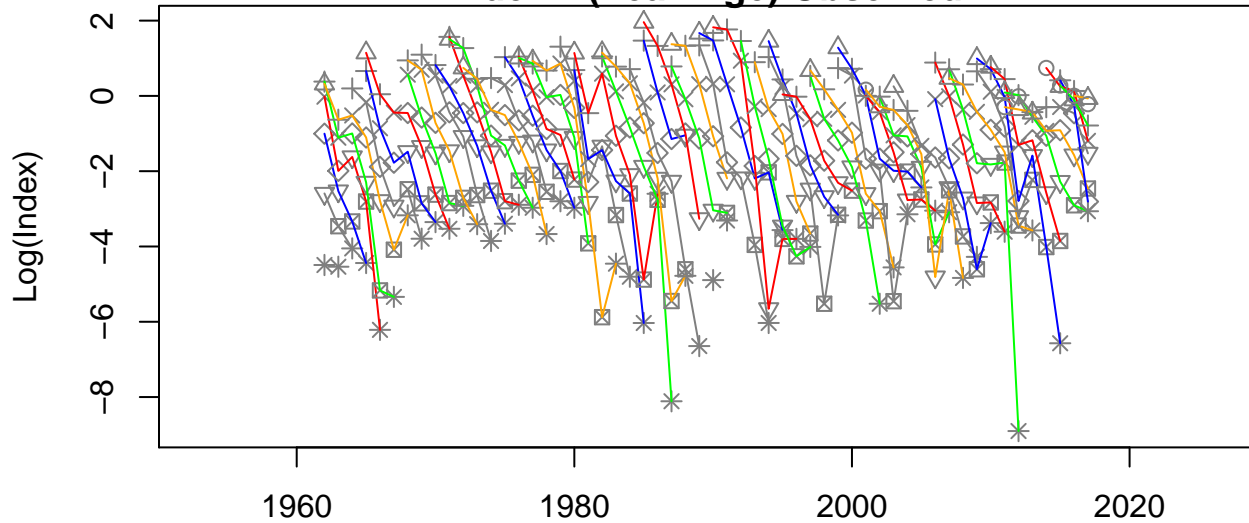
Catch (Peak Age) Predicted



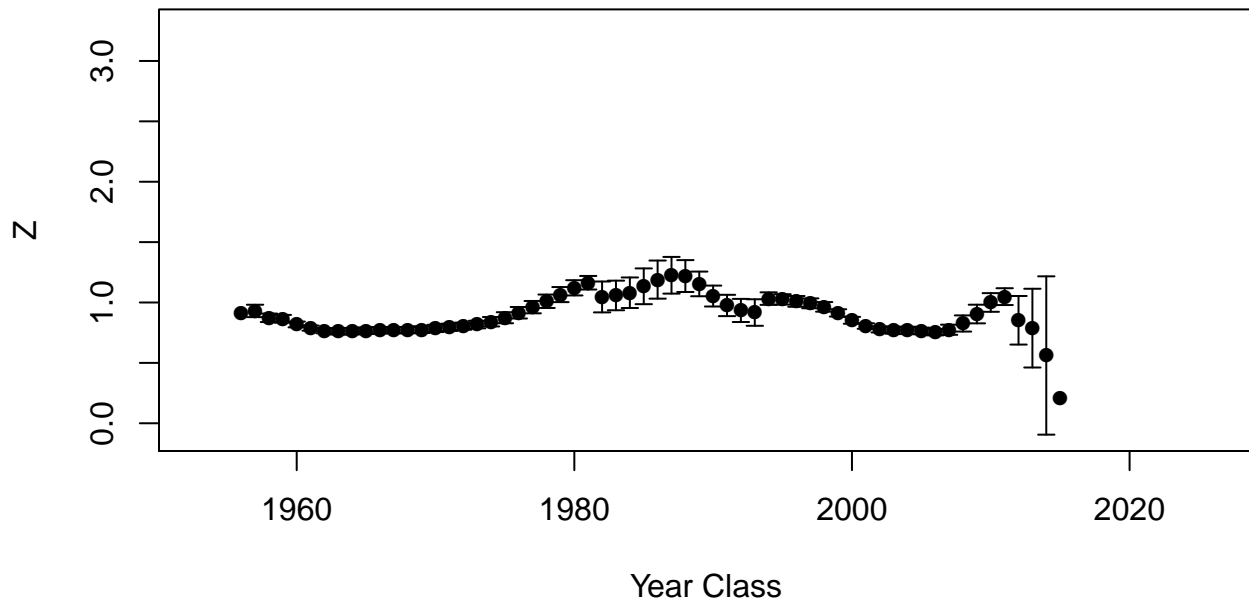
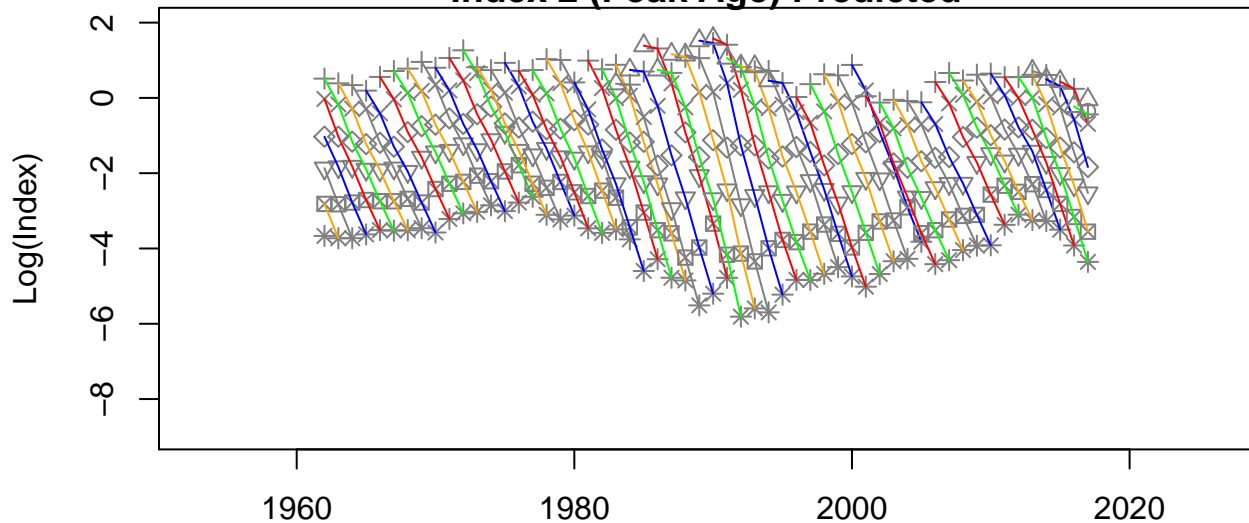




Index 2 (Peak Age) Observed



Index 2 (Peak Age) Predicted



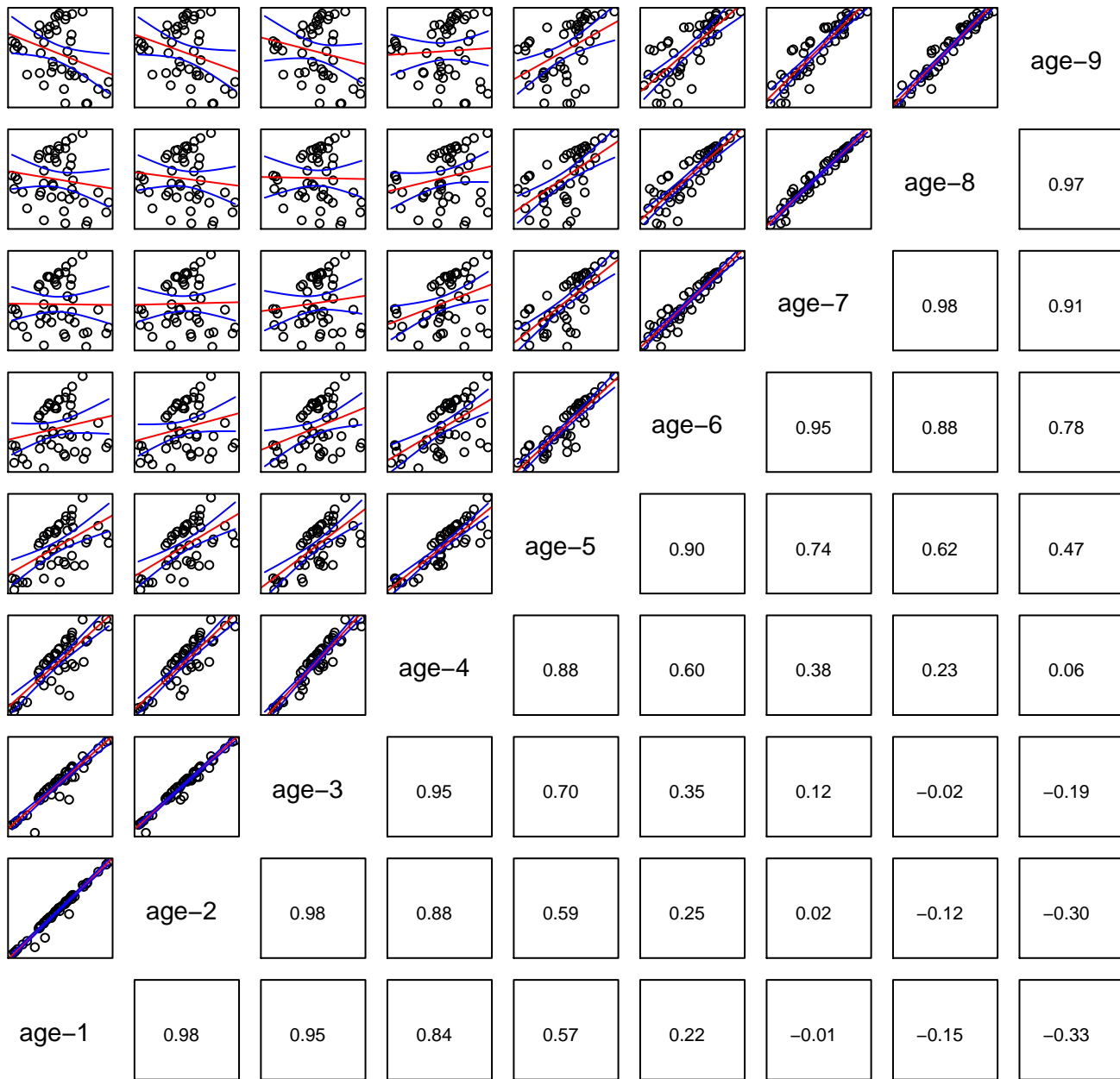
Catch Observed



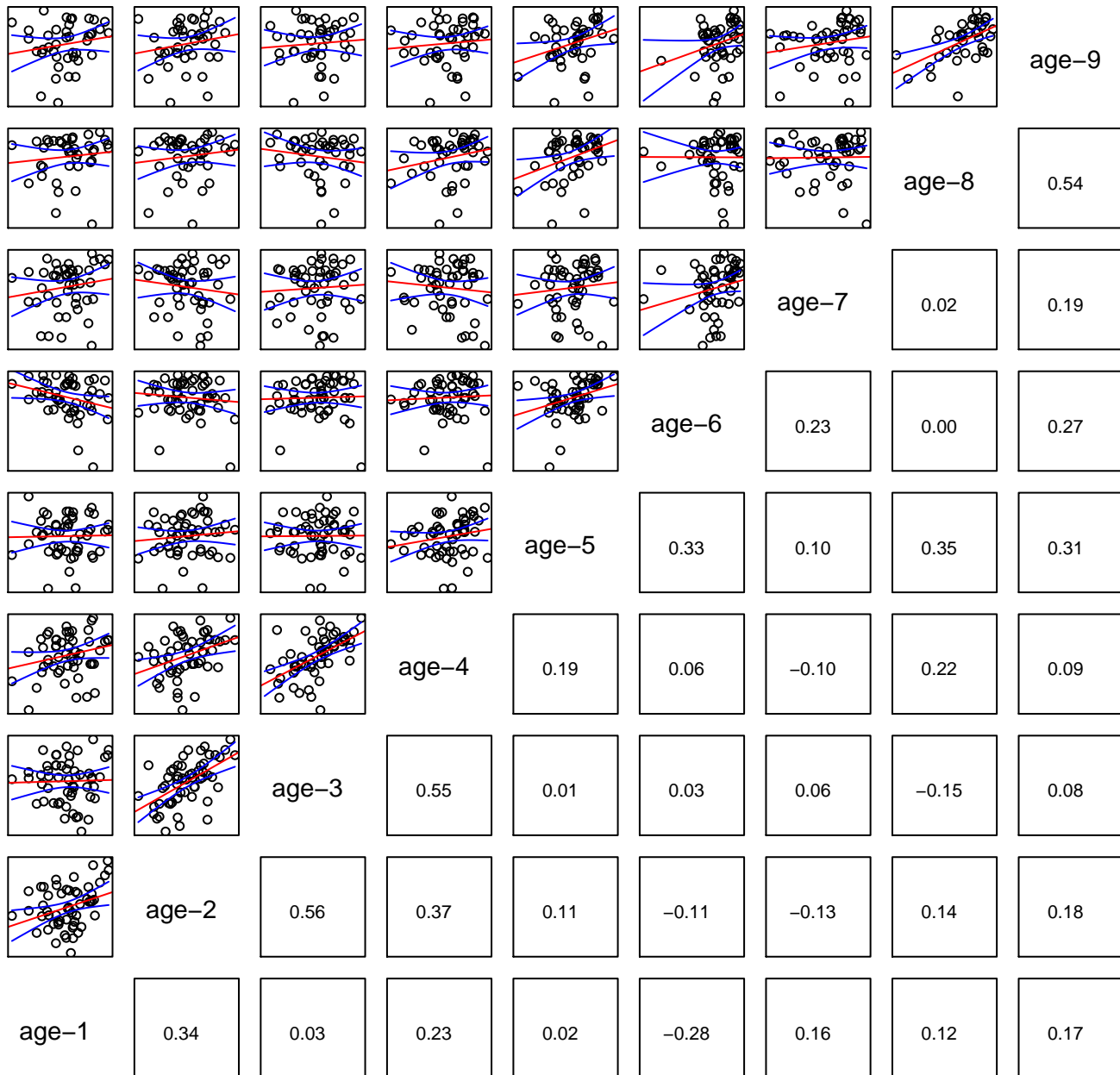
Index 1 (INDEX-1) Observed



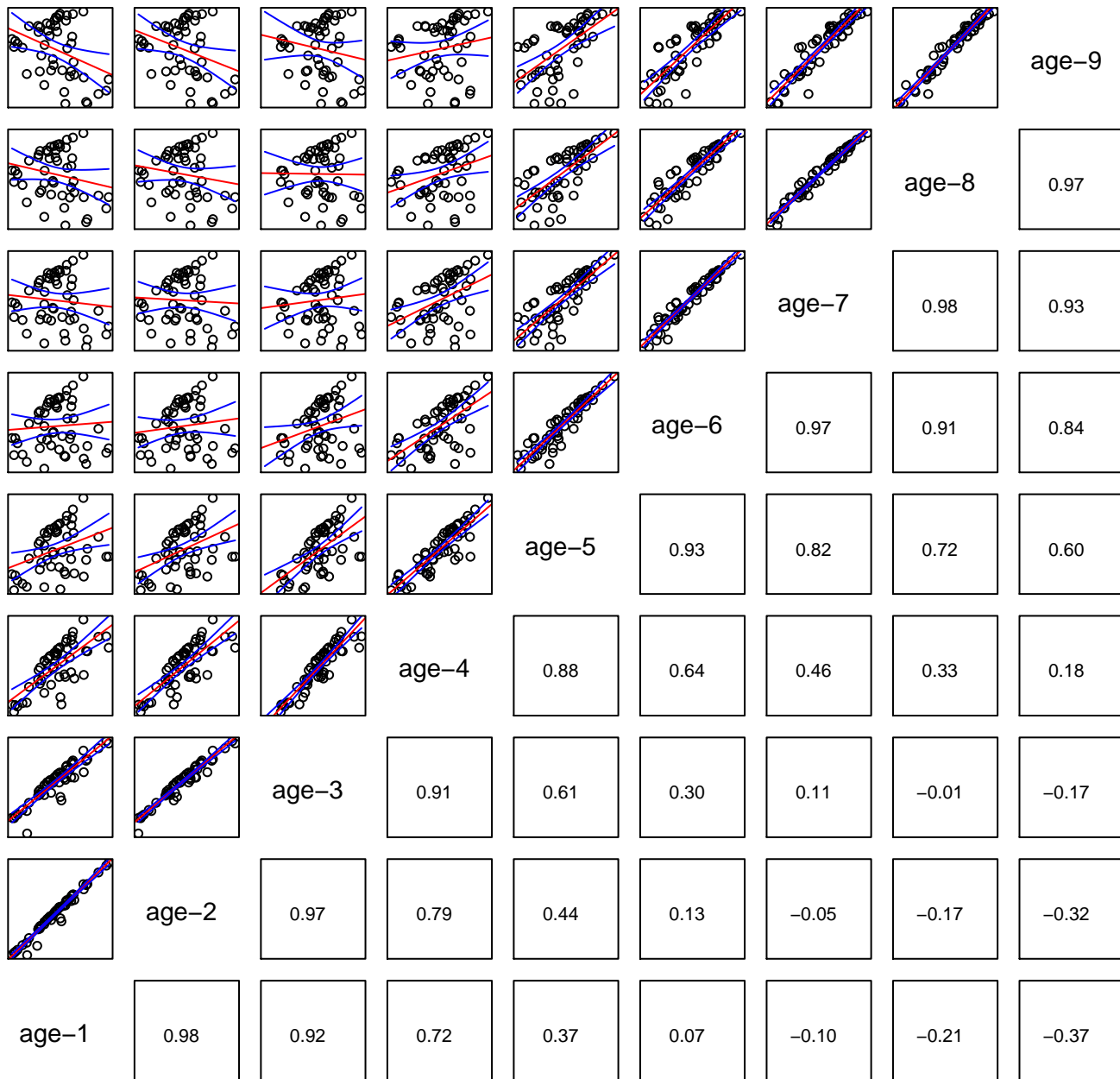
Index 1 (INDEX-1) Predicted

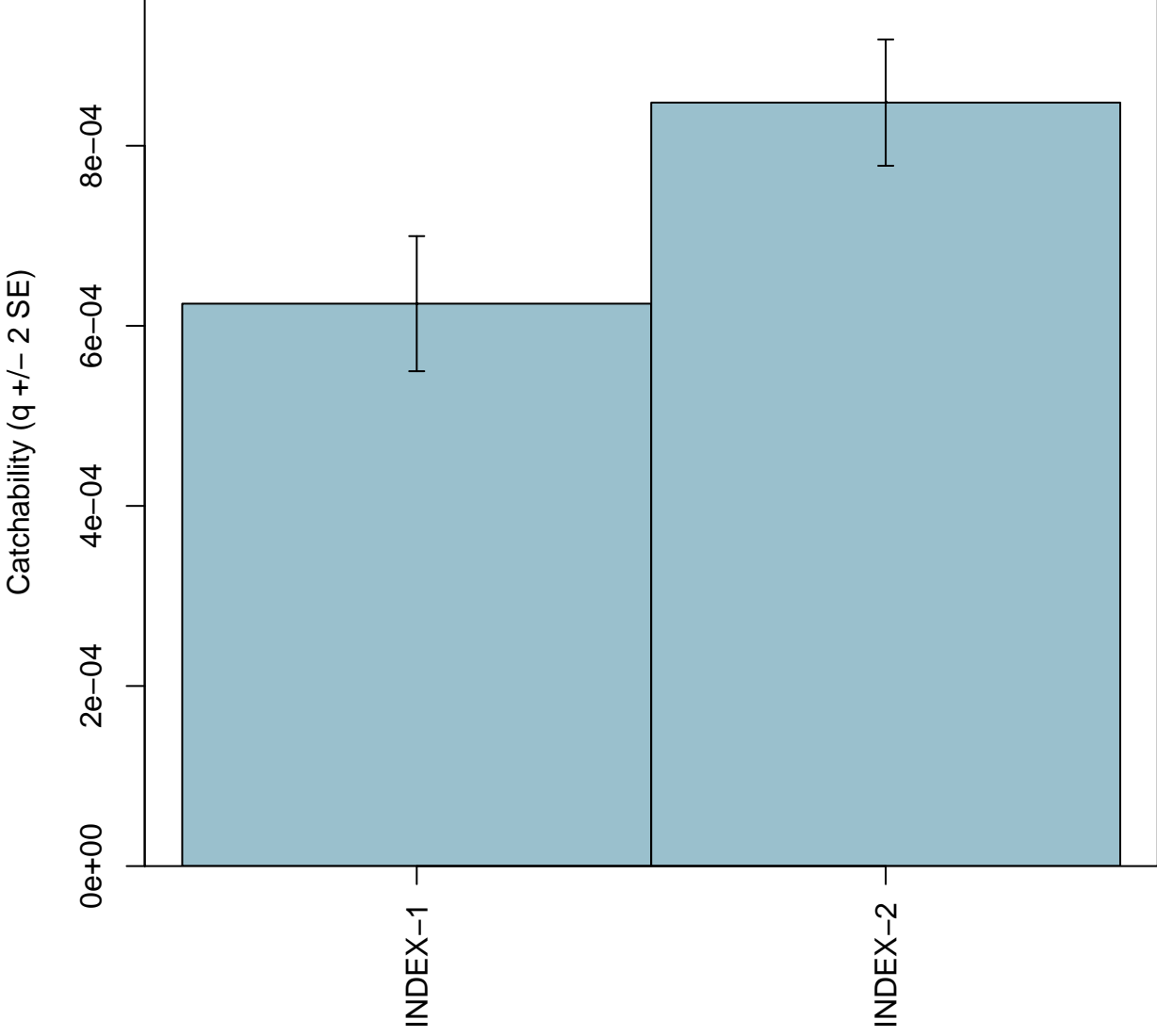


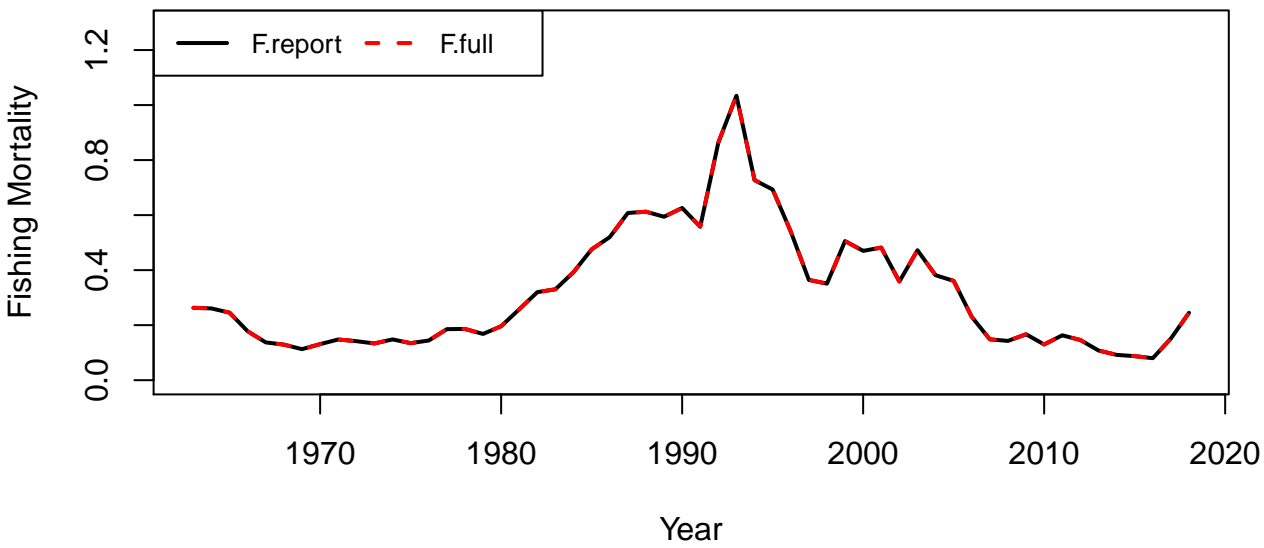
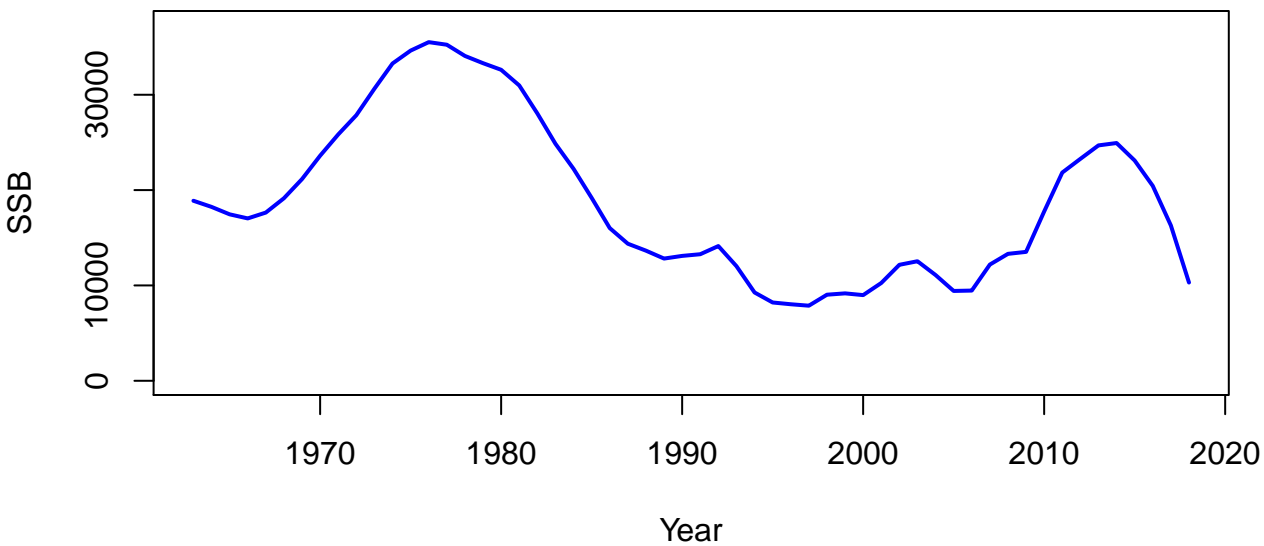
Index 2 (INDEX-2) Observed



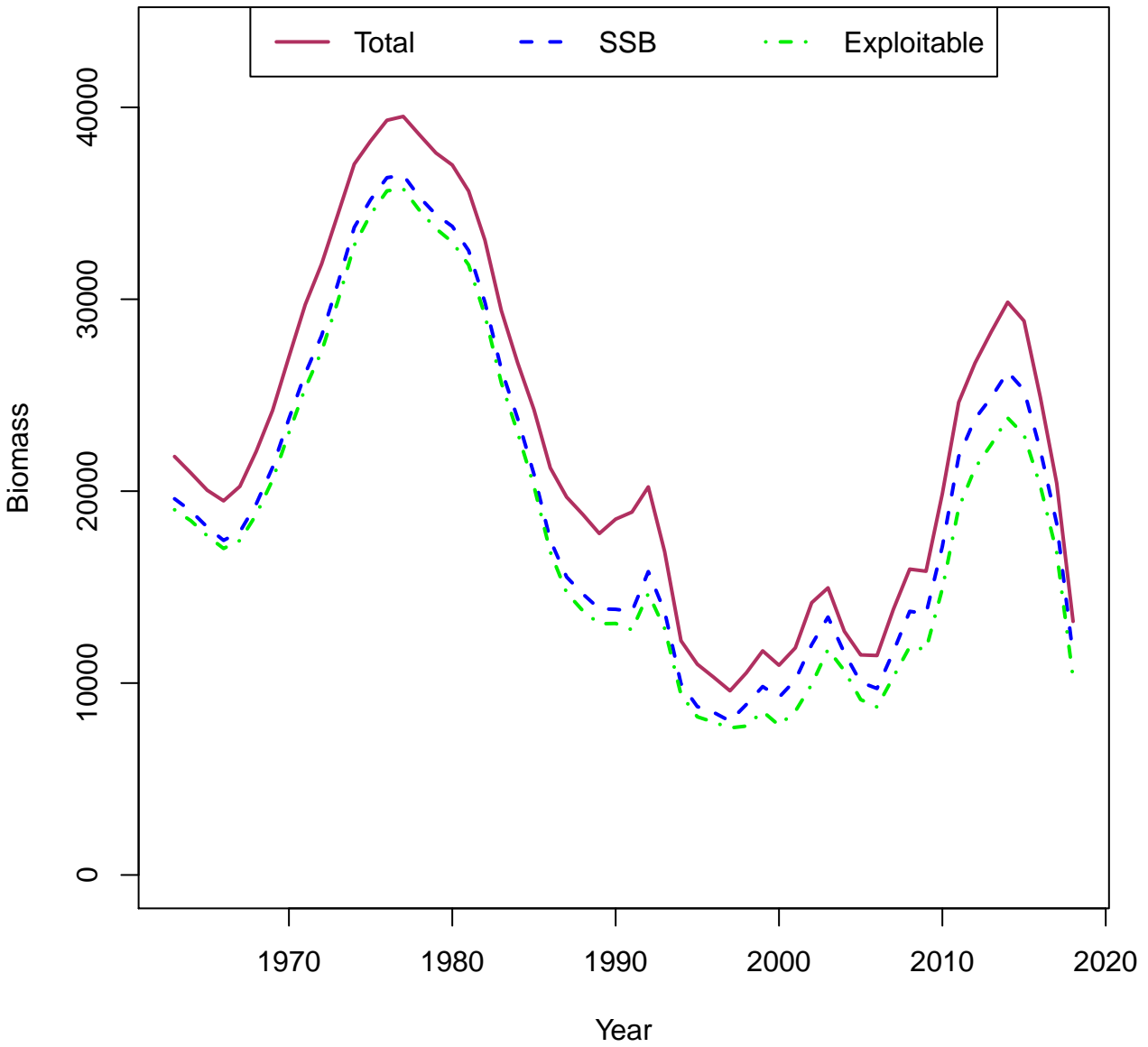
Index 2 (INDEX-2) Predicted

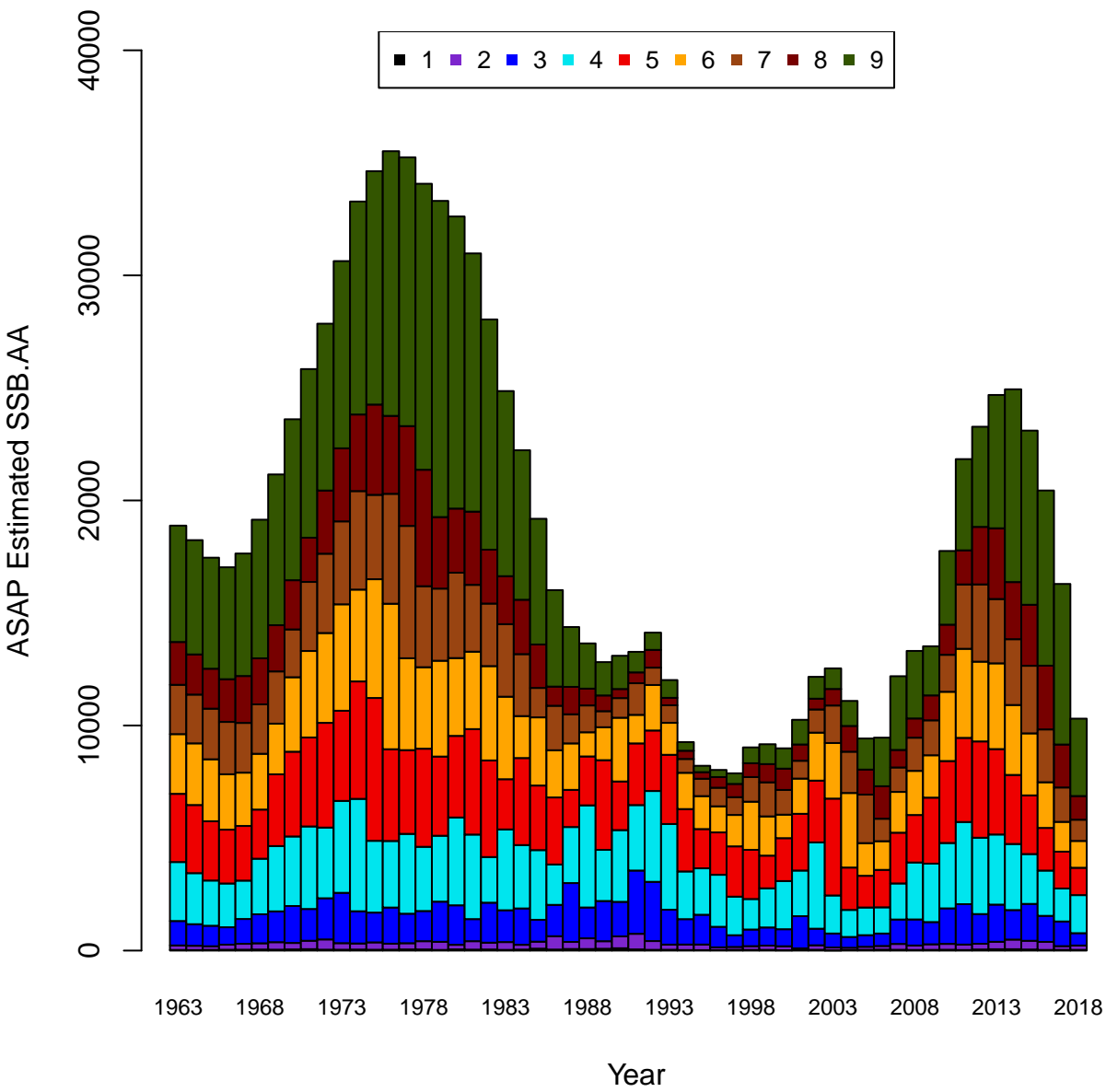


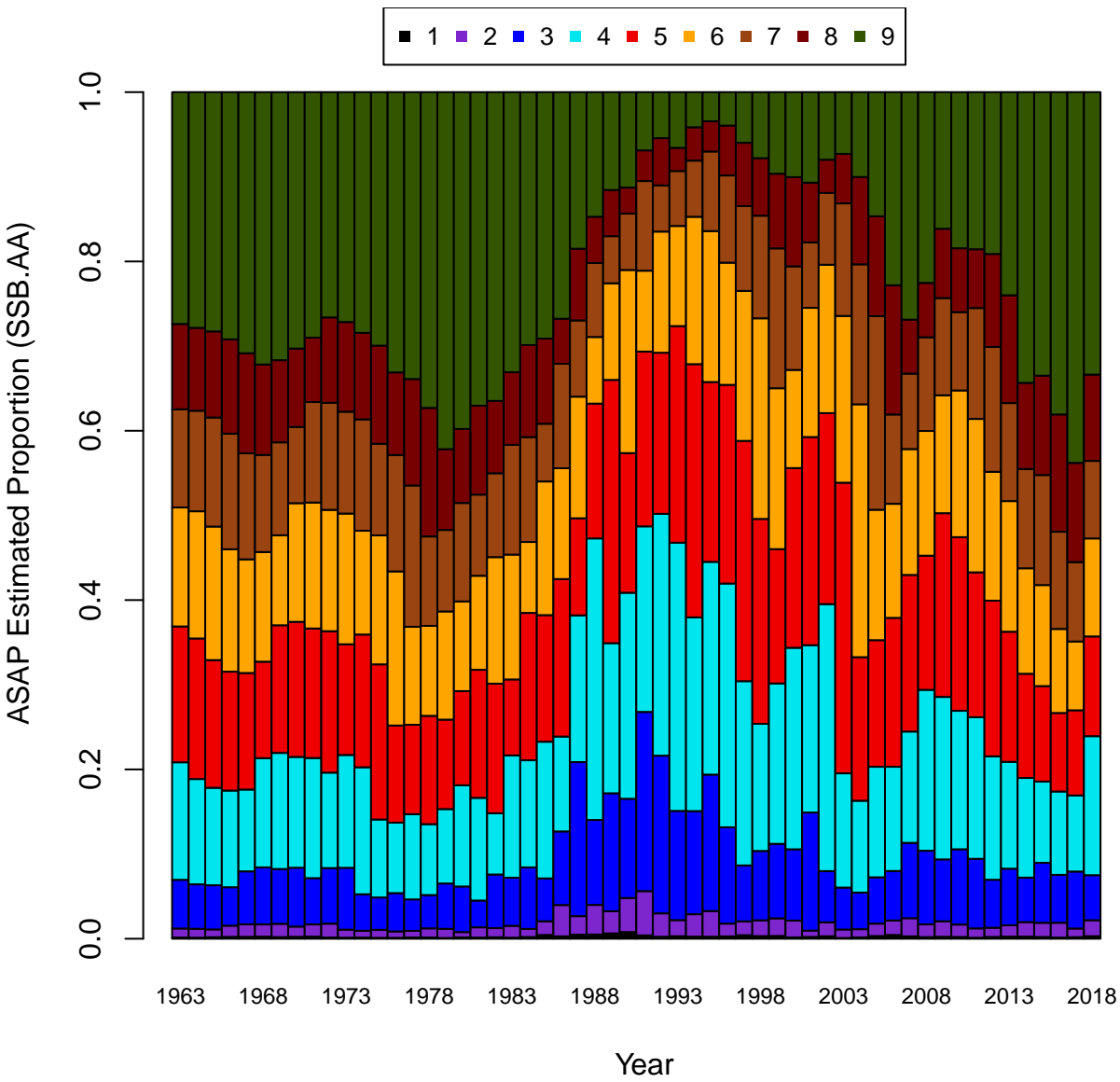


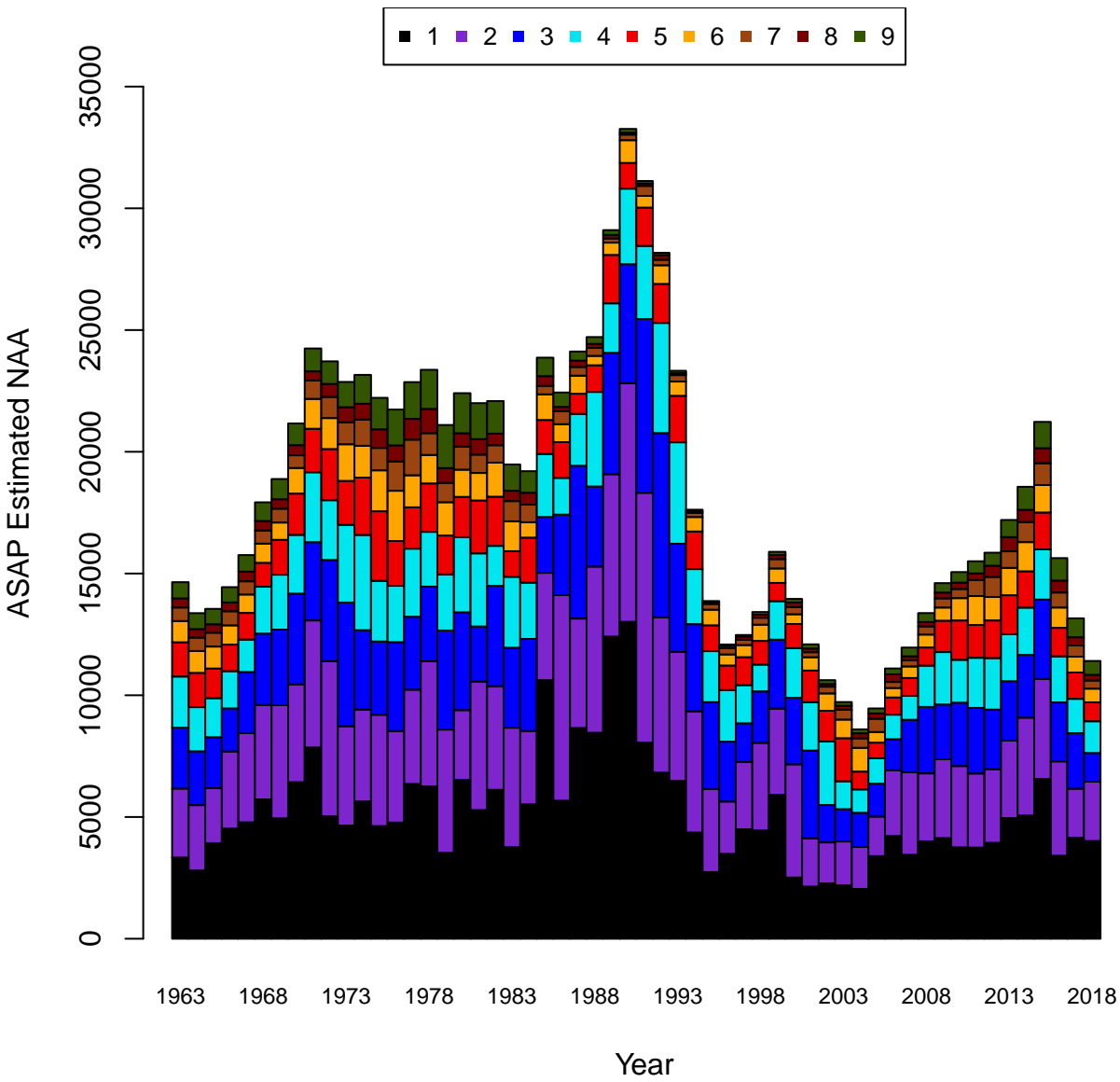


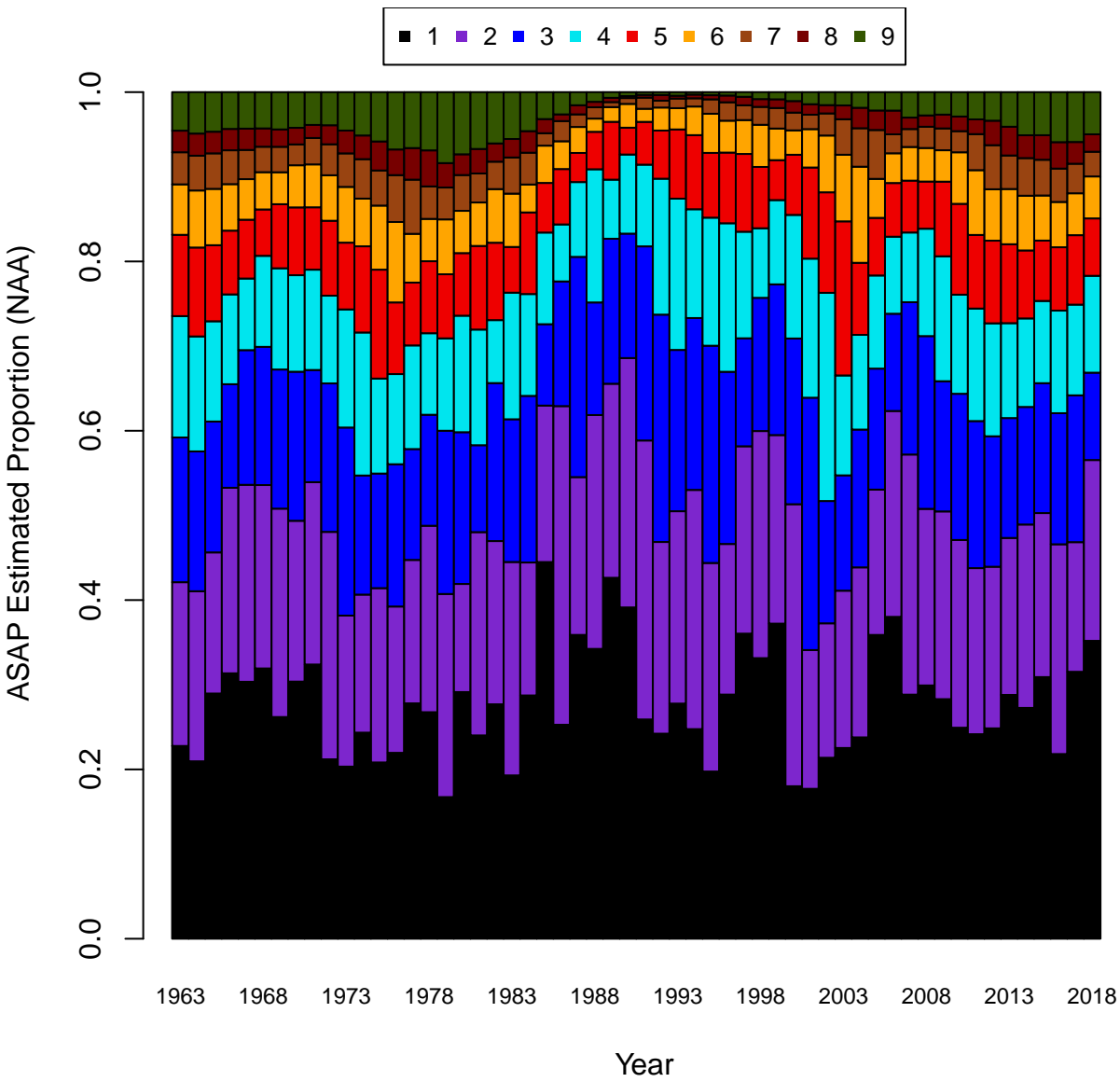
Comparison of January 1 Biomass

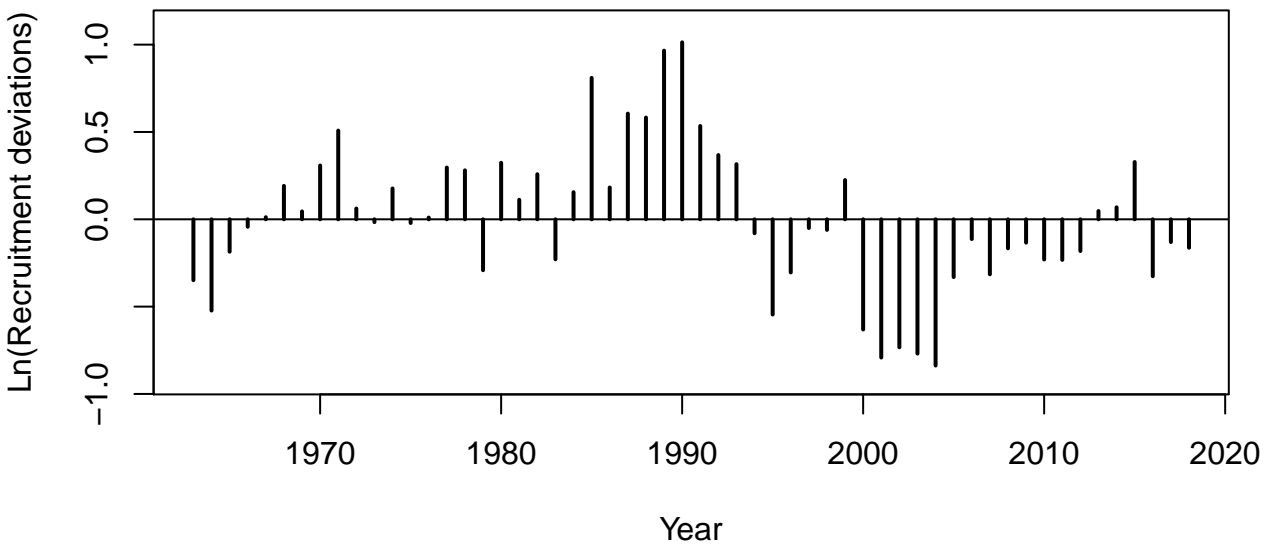
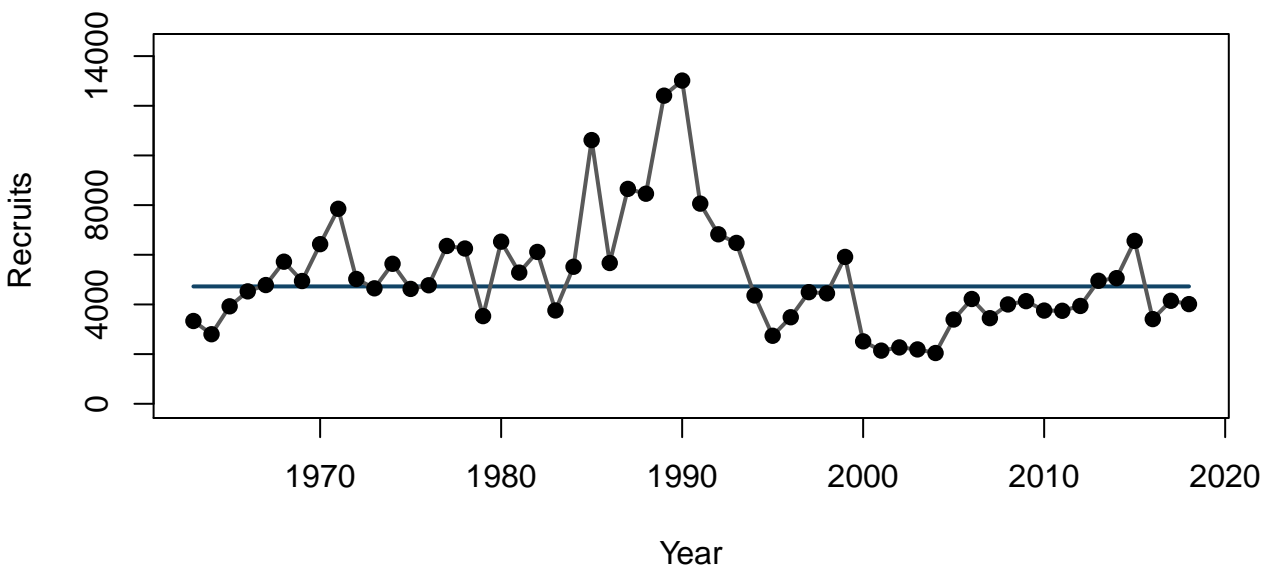


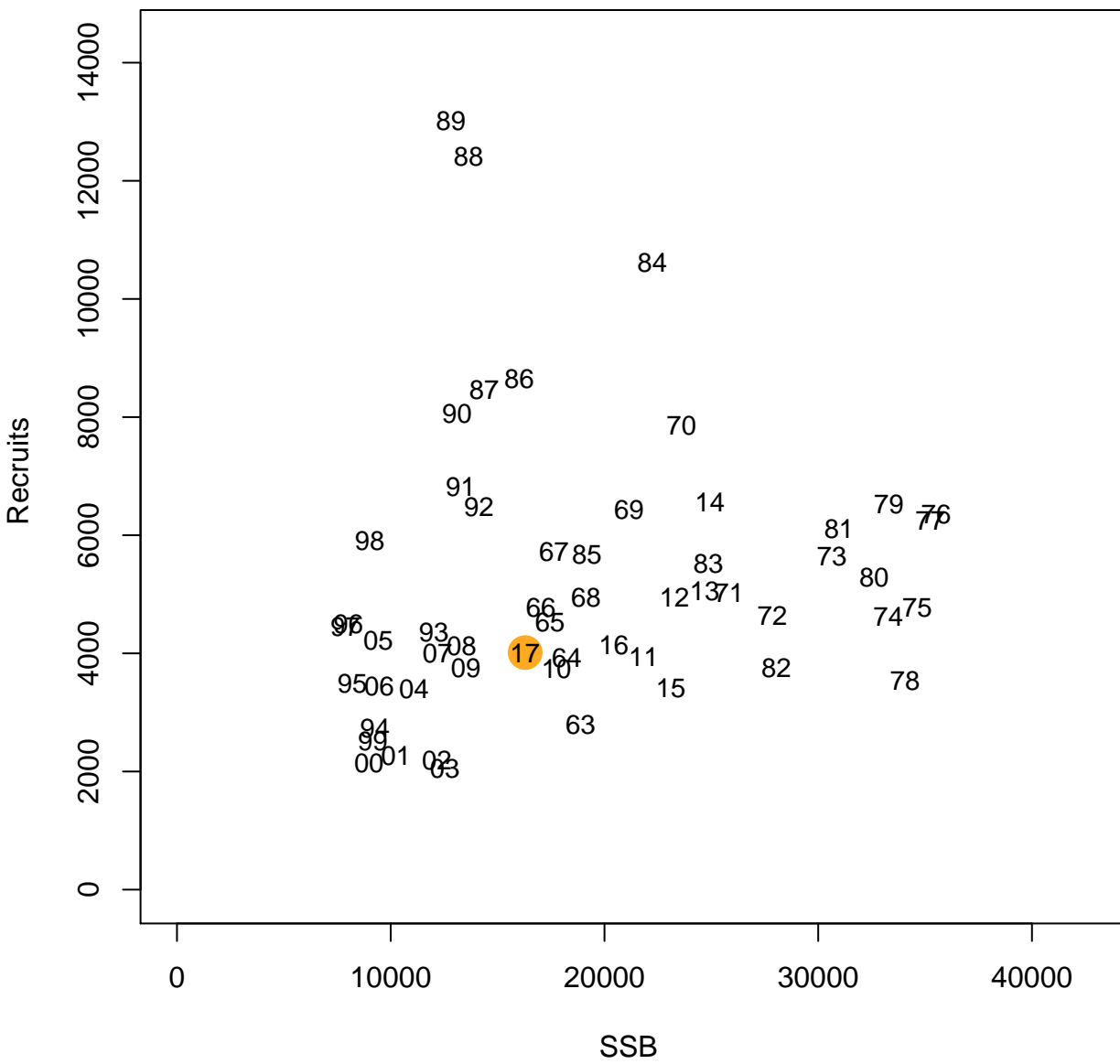


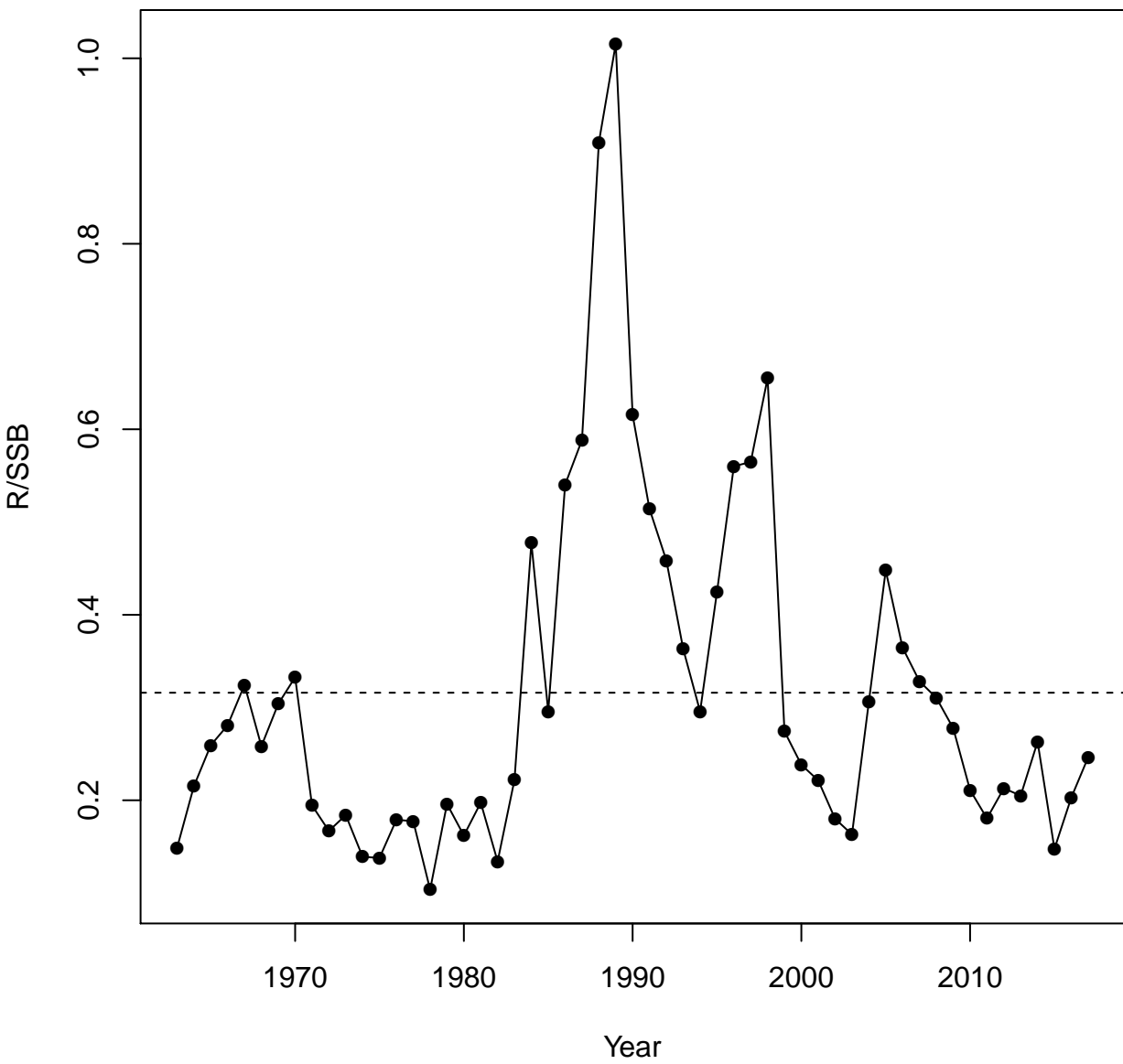


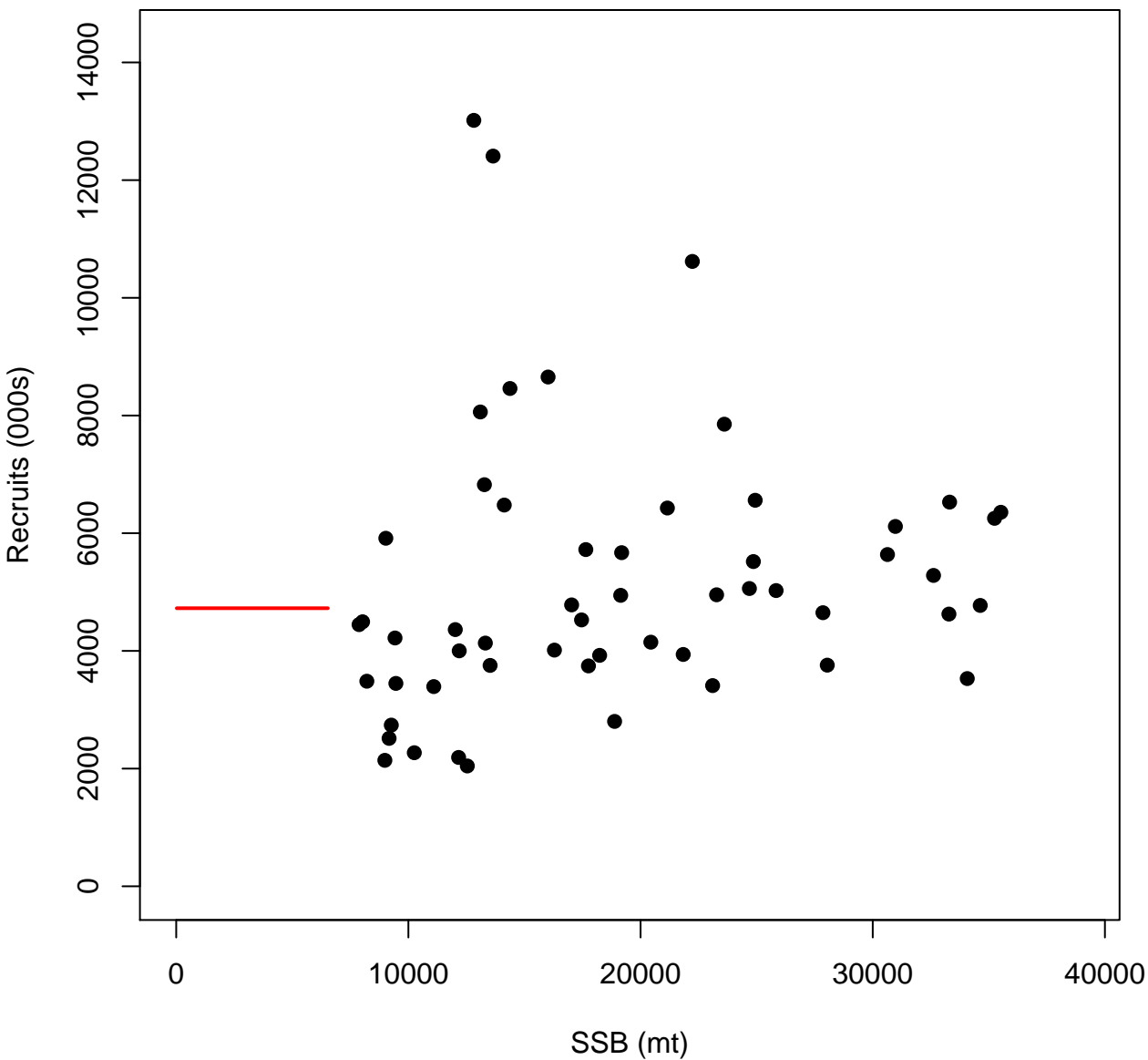


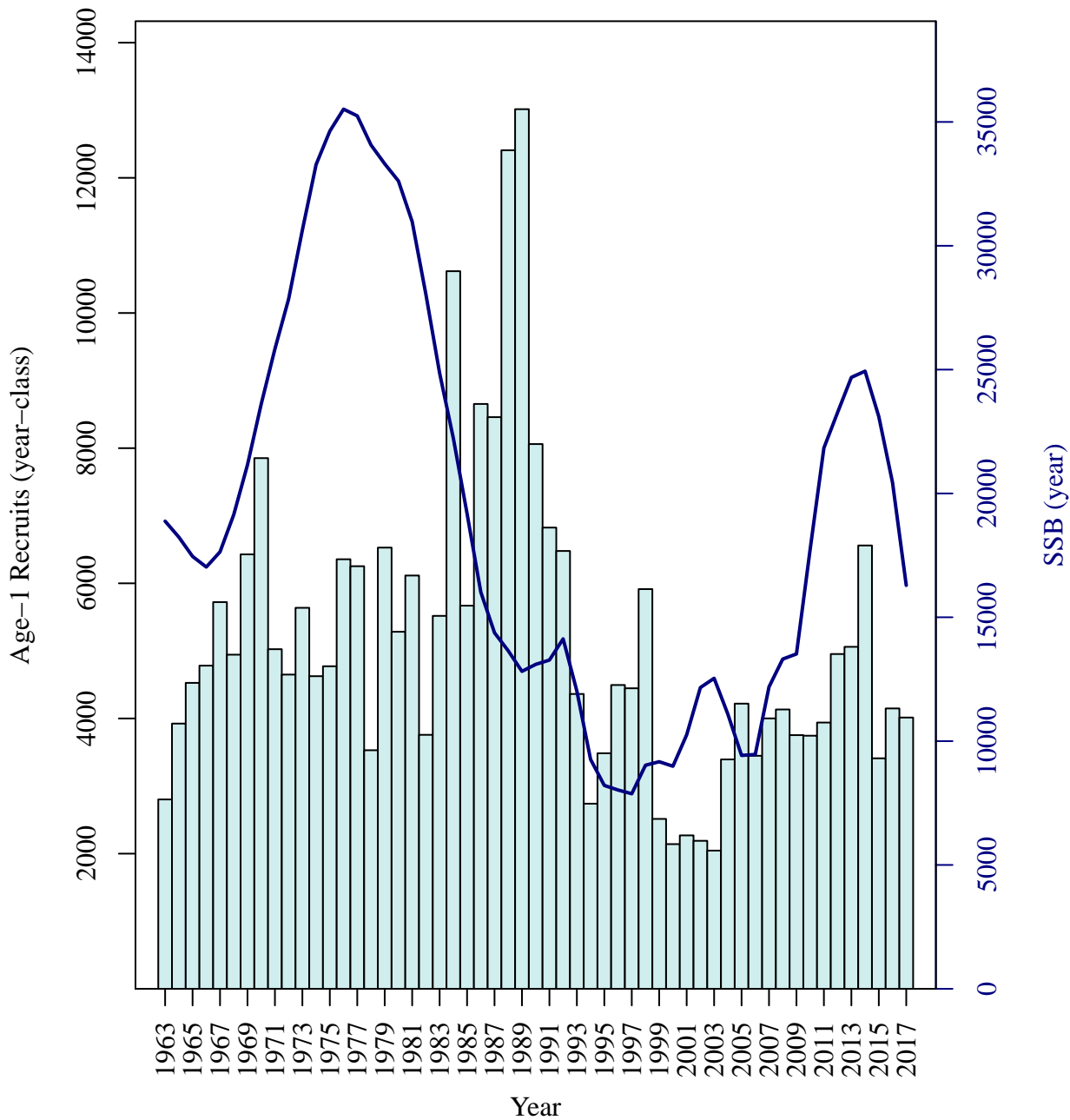


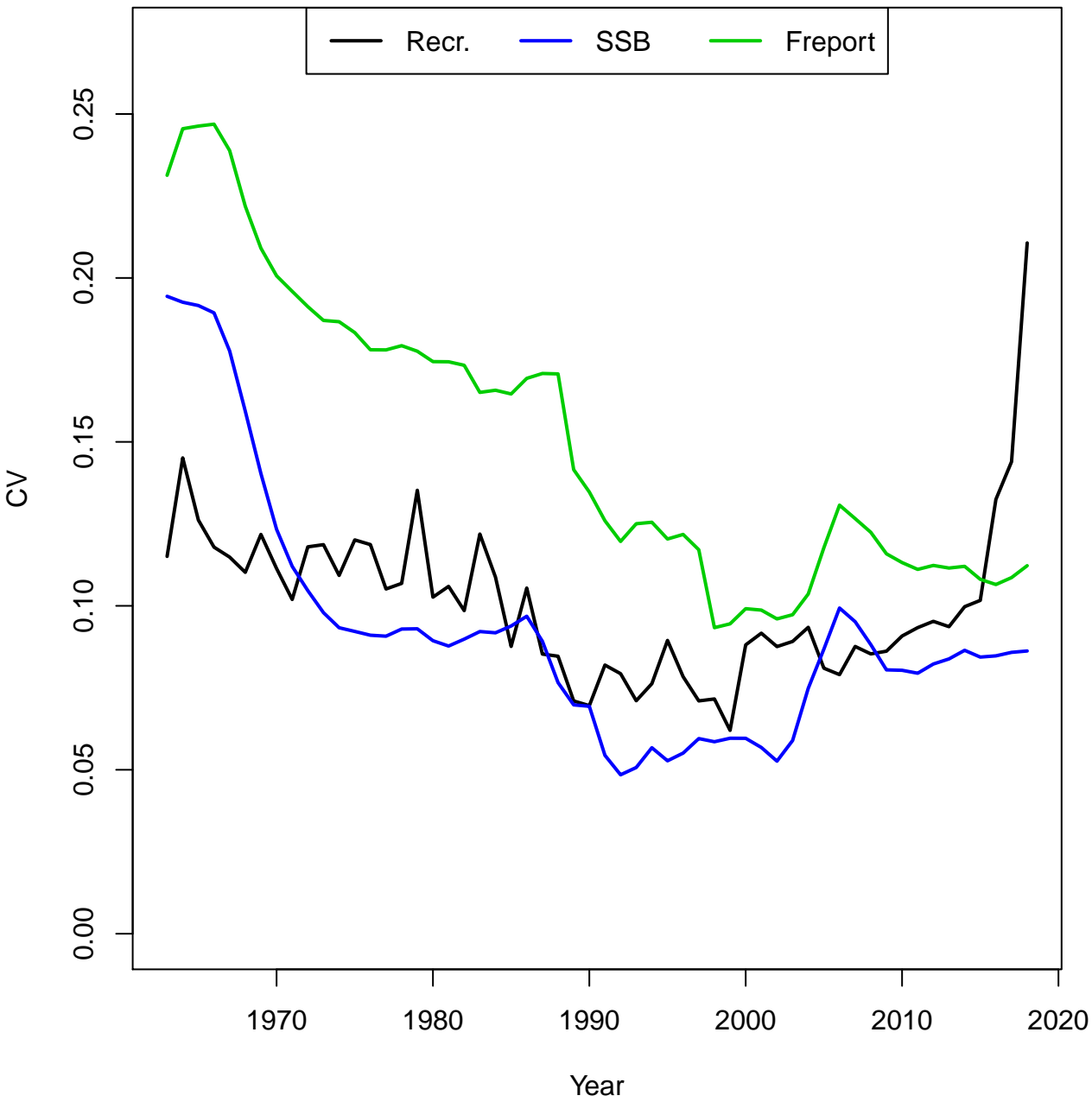




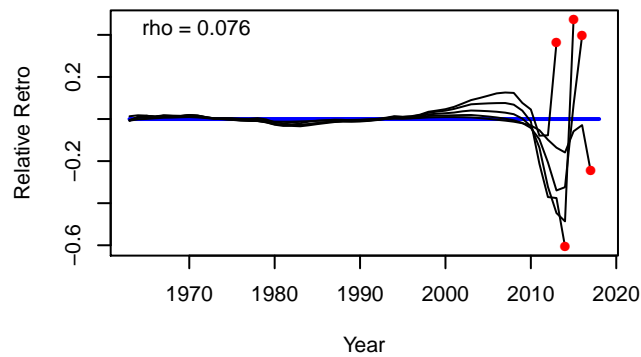
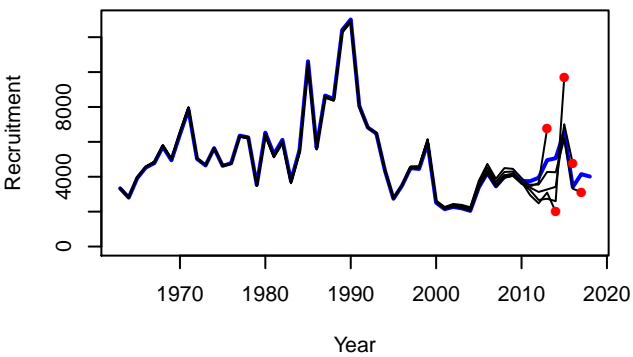
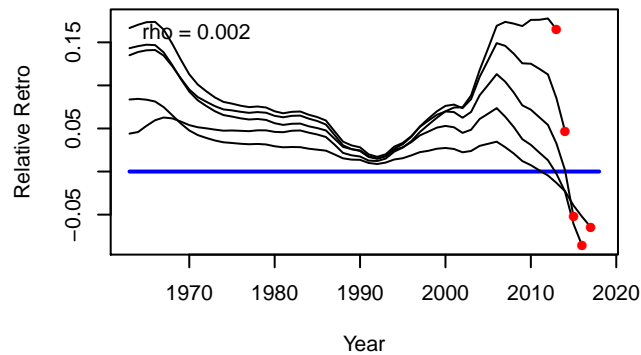
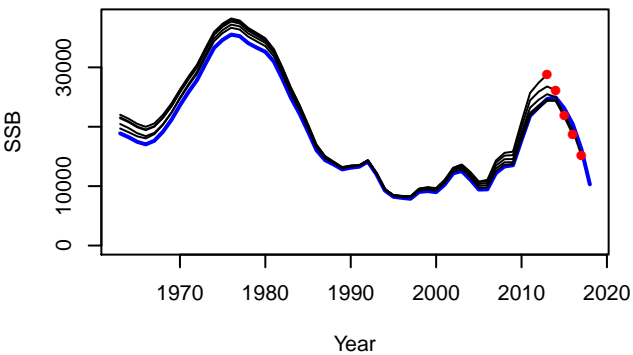
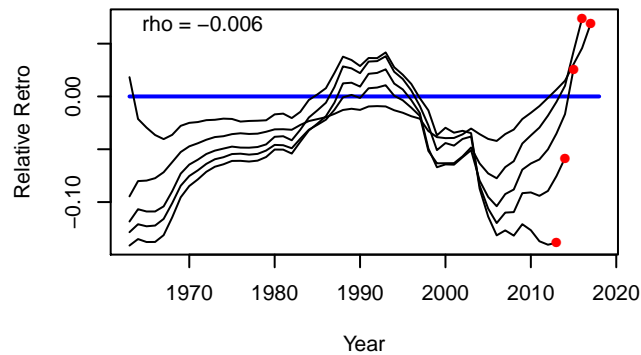
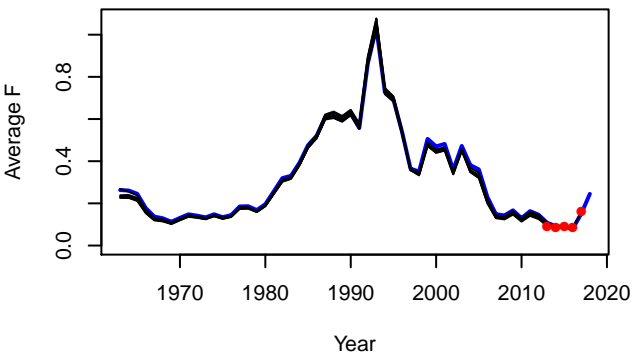






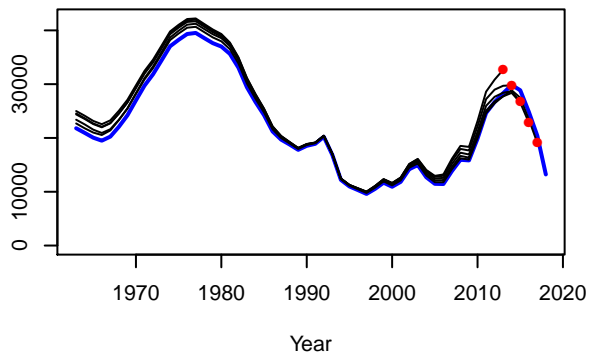


F, SSB, R

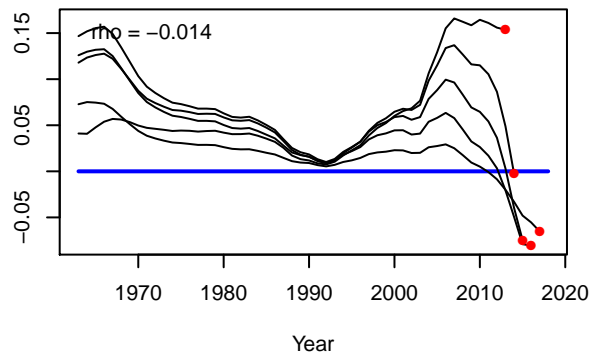


Jan-1 B, Exploitable B, Total Stock N

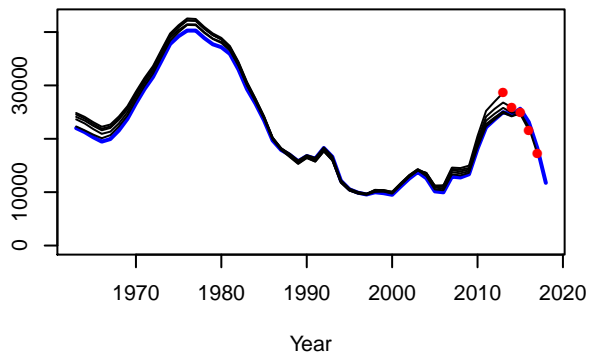
Jan-1 B



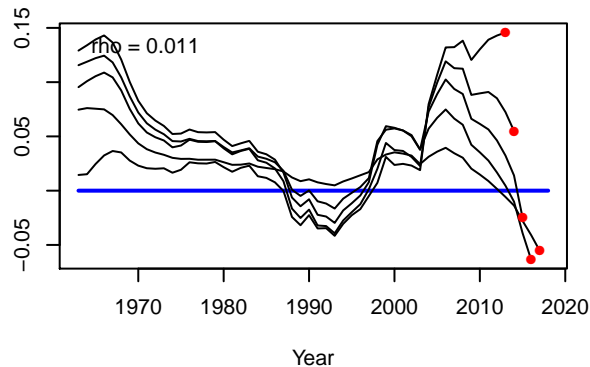
Relative Retro



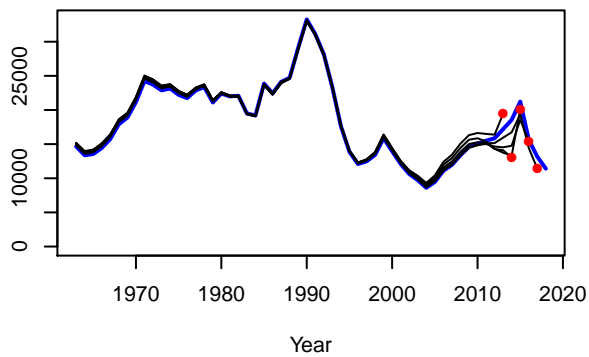
Exploitable B



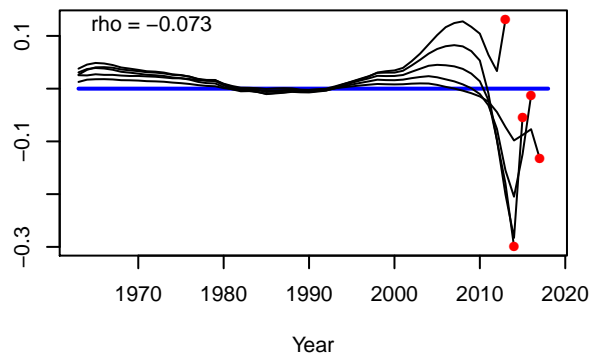
Relative Retro



Total Stock N

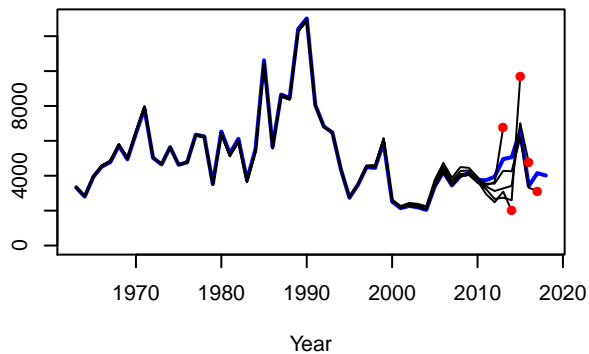


Relative Retro

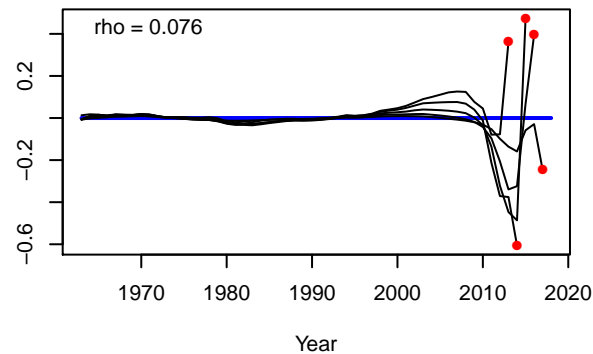


Stock Numbers at Age

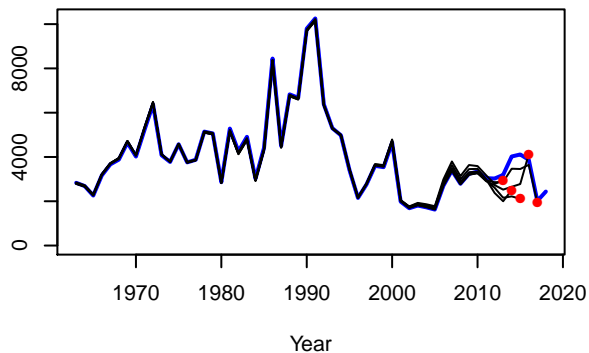
N at Age 1



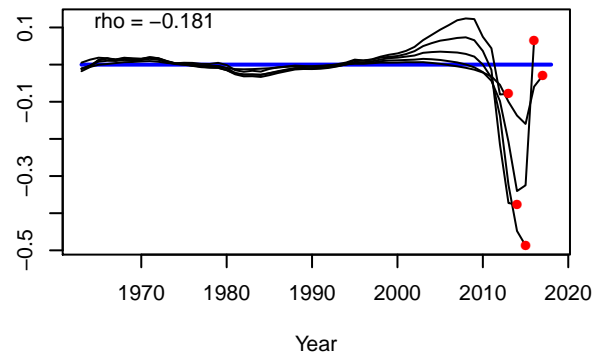
Relative Retro



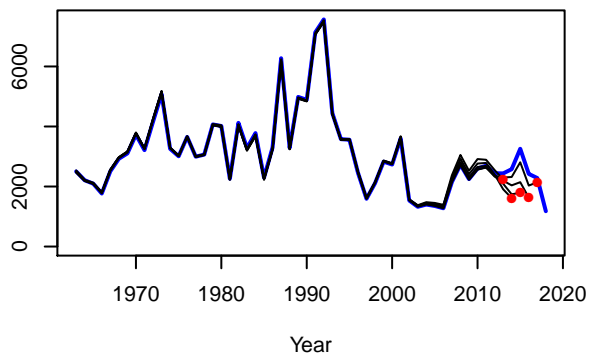
N at Age 2



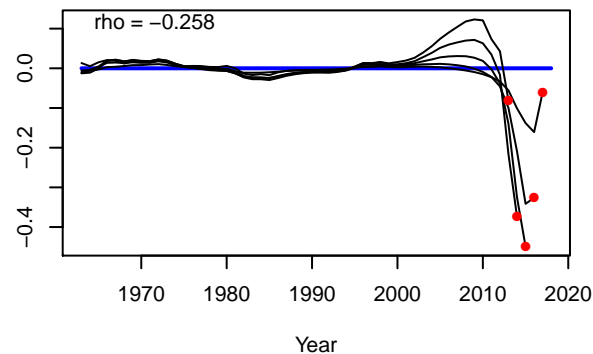
Relative Retro



N at Age 3

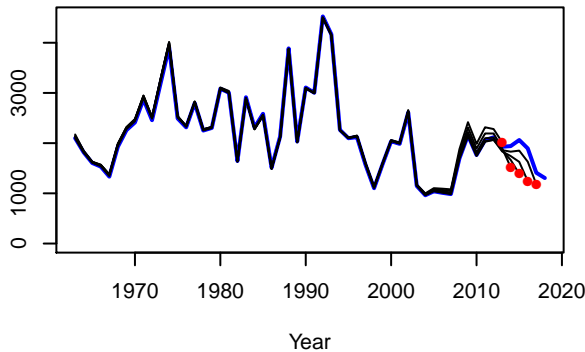


Relative Retro

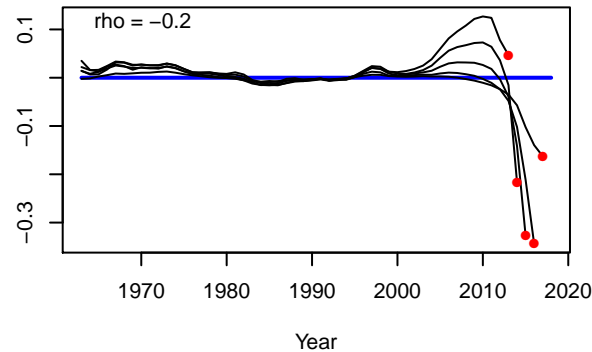


Stock Numbers at Age

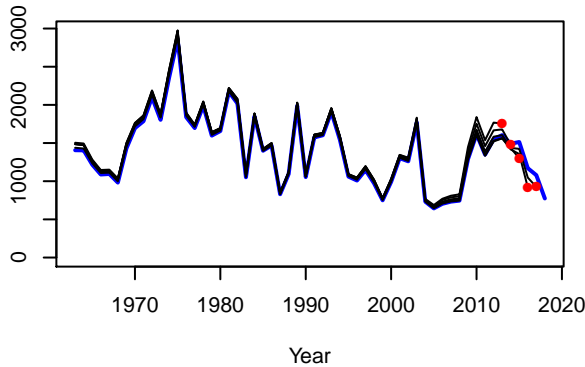
N at Age 4



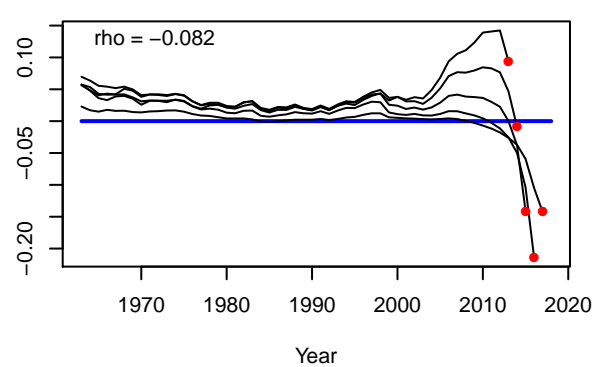
Relative Retro



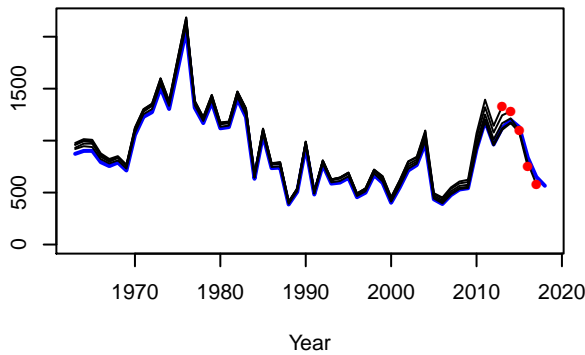
N at Age 5



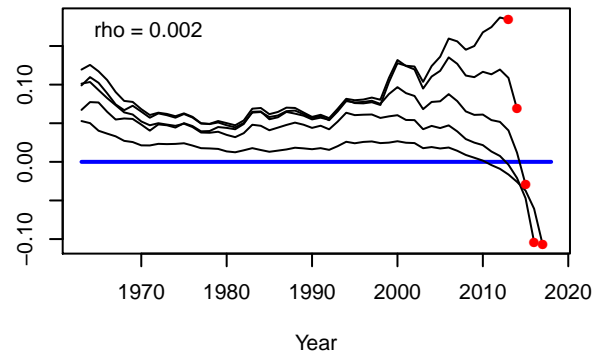
Relative Retro



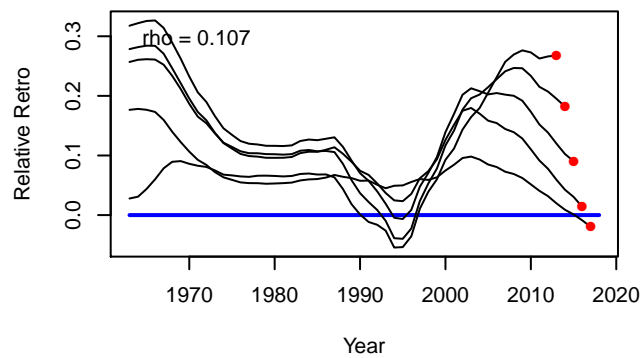
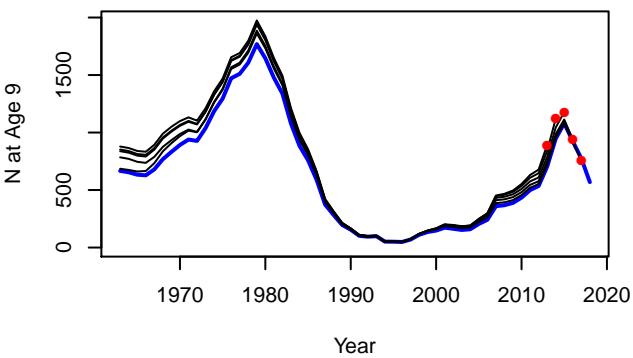
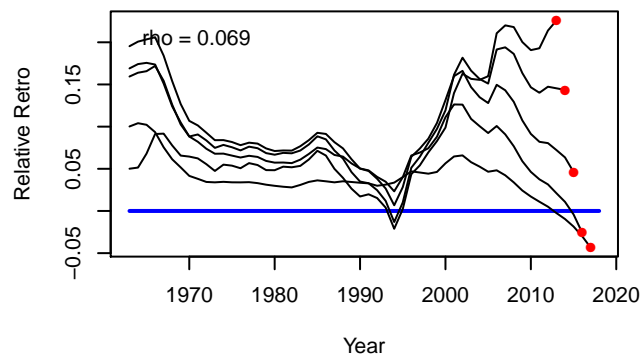
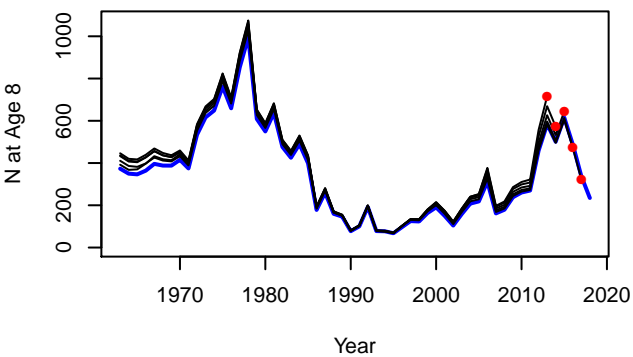
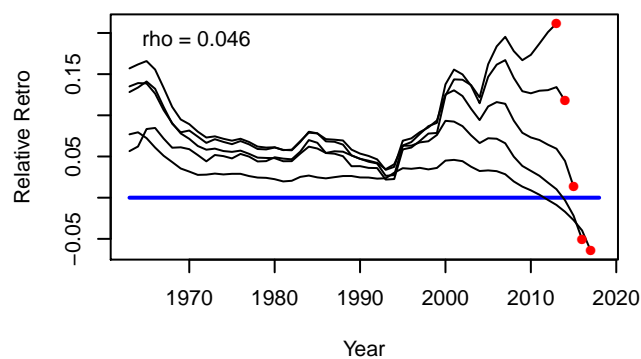
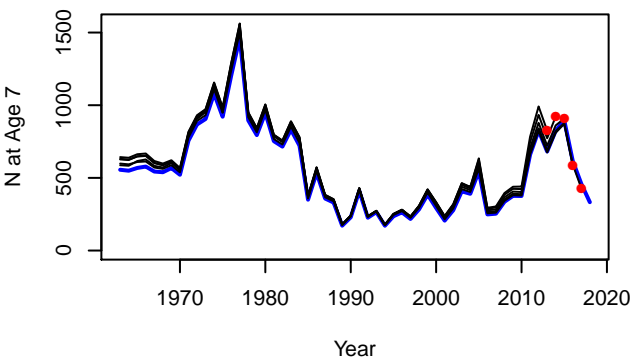
N at Age 6



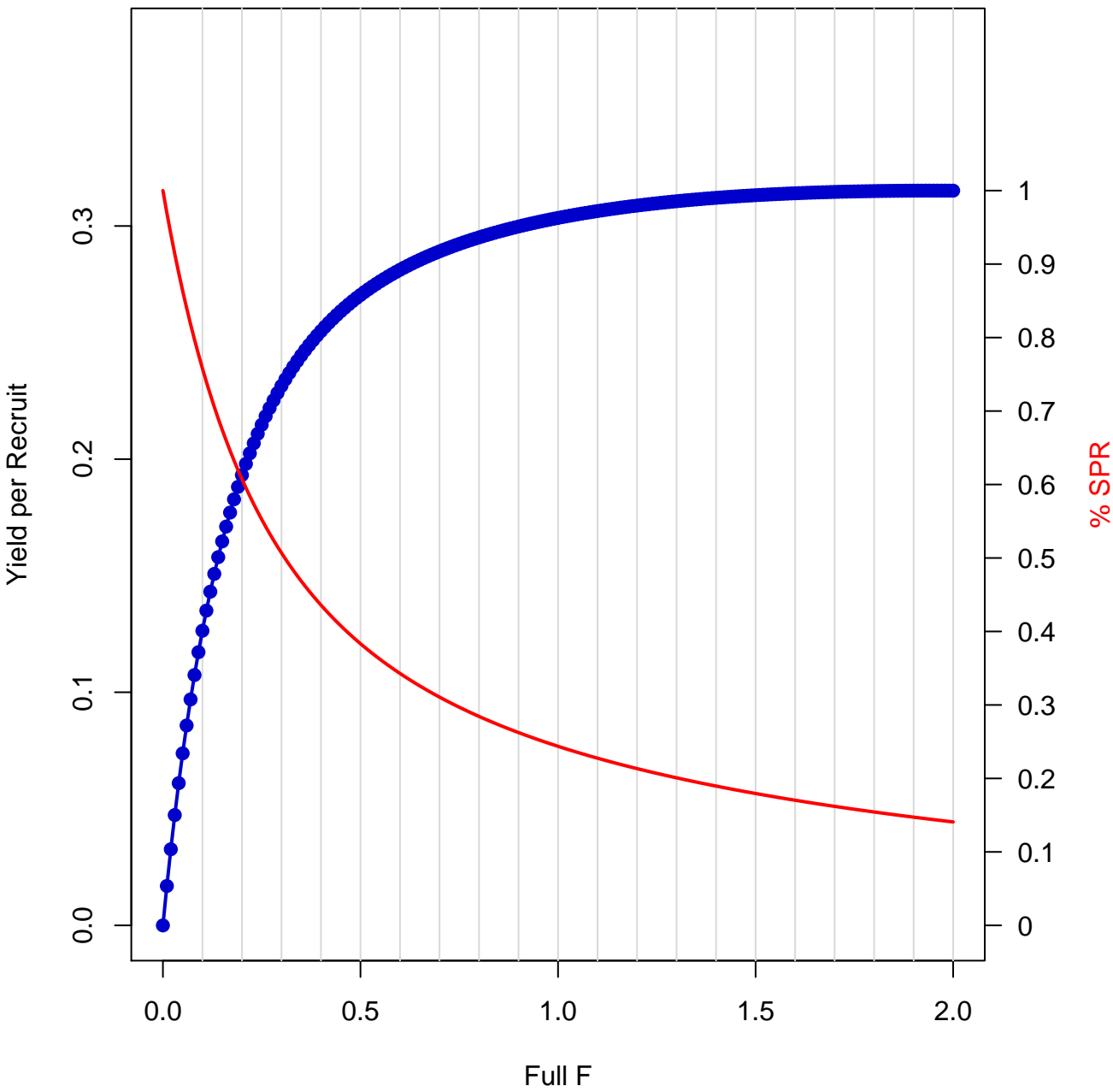
Relative Retro



Stock Numbers at Age



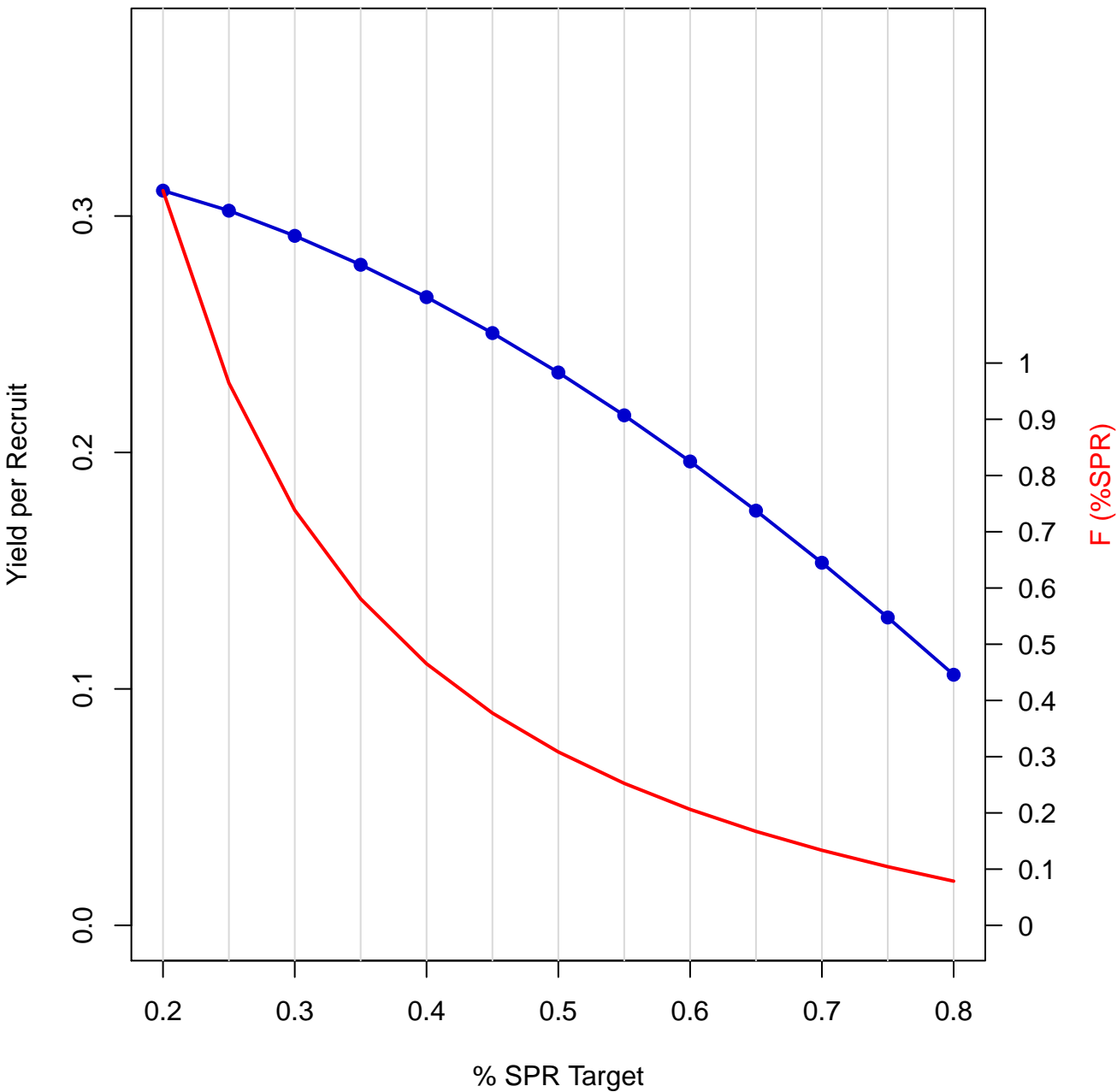
YPR-SPR Reference Points (Years Avg = 5)



YPR–SPR Reference Points (Years Avg = 5)

F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.2445	0.4686	0.7	0.2891	0.3107
0.01	0.0169	0.9697	0.36	0.2467	0.4616	0.71	0.2898	0.3078
0.02	0.0327	0.941	0.37	0.2489	0.4549	0.72	0.2904	0.305
0.03	0.0473	0.9138	0.38	0.251	0.4484	0.73	0.2911	0.3023
0.04	0.061	0.8881	0.39	0.253	0.4421	0.74	0.2917	0.2996
0.05	0.0738	0.8636	0.4	0.2549	0.4359	0.75	0.2923	0.2969
0.06	0.0858	0.8403	0.41	0.2568	0.43	0.76	0.2929	0.2943
0.07	0.0969	0.8182	0.42	0.2585	0.4242	0.77	0.2935	0.2918
0.08	0.1074	0.7972	0.43	0.2602	0.4186	0.78	0.294	0.2893
0.09	0.1172	0.7771	0.44	0.2618	0.4131	0.79	0.2946	0.2868
0.1	0.1264	0.758	0.45	0.2634	0.4078	0.8	0.2951	0.2844
0.11	0.135	0.7398	0.46	0.2649	0.4027	0.81	0.2956	0.282
0.12	0.1431	0.7224	0.47	0.2664	0.3976	0.82	0.2961	0.2797
0.13	0.1508	0.7057	0.48	0.2678	0.3927	0.83	0.2966	0.2774
0.14	0.1579	0.6898	0.49	0.2691	0.388	0.84	0.2971	0.2752
0.15	0.1647	0.6746	0.5	0.2704	0.3834	0.85	0.2976	0.2729
0.16	0.1711	0.66	0.51	0.2717	0.3788	0.86	0.298	0.2708
0.17	0.1771	0.646	0.52	0.2729	0.3744	0.87	0.2985	0.2686
0.18	0.1828	0.6327	0.53	0.274	0.3702	0.88	0.2989	0.2665
0.19	0.1881	0.6198	0.54	0.2752	0.366	0.89	0.2994	0.2645
0.2	0.1932	0.6075	0.55	0.2763	0.3619	0.9	0.2998	0.2624
0.21	0.198	0.5956	0.56	0.2773	0.3579	0.91	0.3002	0.2604
0.22	0.2025	0.5842	0.57	0.2783	0.354	0.92	0.3006	0.2584
0.23	0.2068	0.5732	0.58	0.2793	0.3502	0.93	0.301	0.2565
0.24	0.2109	0.5627	0.59	0.2803	0.3465	0.94	0.3014	0.2546
0.25	0.2147	0.5525	0.6	0.2812	0.3429	0.95	0.3017	0.2527
0.26	0.2184	0.5427	0.61	0.2821	0.3393	0.96	0.3021	0.2508
0.27	0.2219	0.5333	0.62	0.283	0.3359	0.97	0.3025	0.249
0.28	0.2252	0.5242	0.63	0.2838	0.3325	0.98	0.3028	0.2472
0.29	0.2284	0.5154	0.64	0.2847	0.3292	0.99	0.3031	0.2454
0.3	0.2314	0.5069	0.65	0.2855	0.3259	1	0.3035	0.2437
0.31	0.2343	0.4988	0.66	0.2862	0.3228	1.01	0.3038	0.242
0.32	0.237	0.4908	0.67	0.287	0.3196	1.02	0.3041	0.2403
0.33	0.2396	0.4832	0.68	0.2877	0.3166	1.03	0.3044	0.2386
0.34	0.2421	0.4758	0.69	0.2884	0.3136	1.04	0.3047	0.237

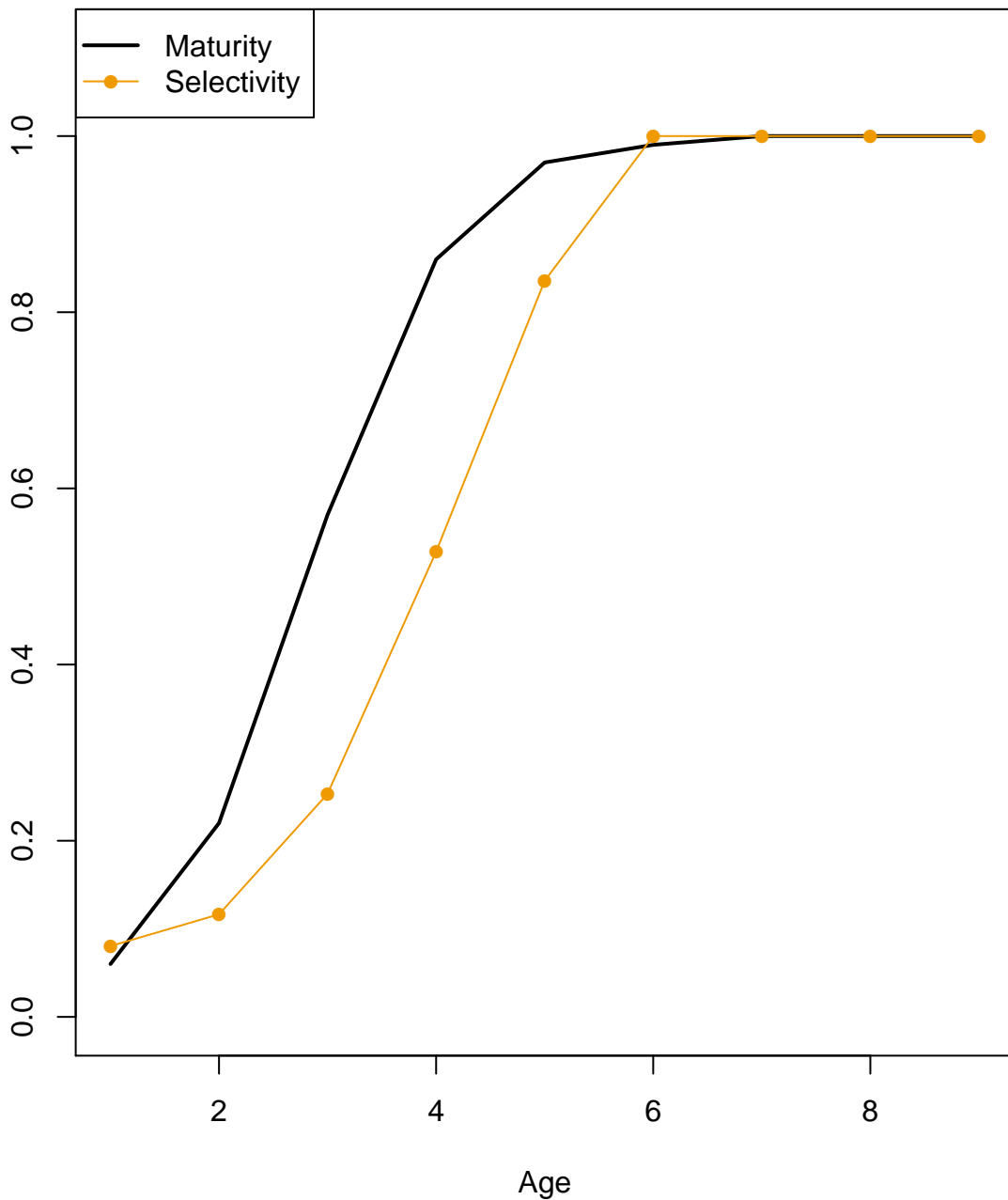
SPR Target Reference Points (Years Avg = 5)



SPR Target Reference Points (Years Avg = 5)

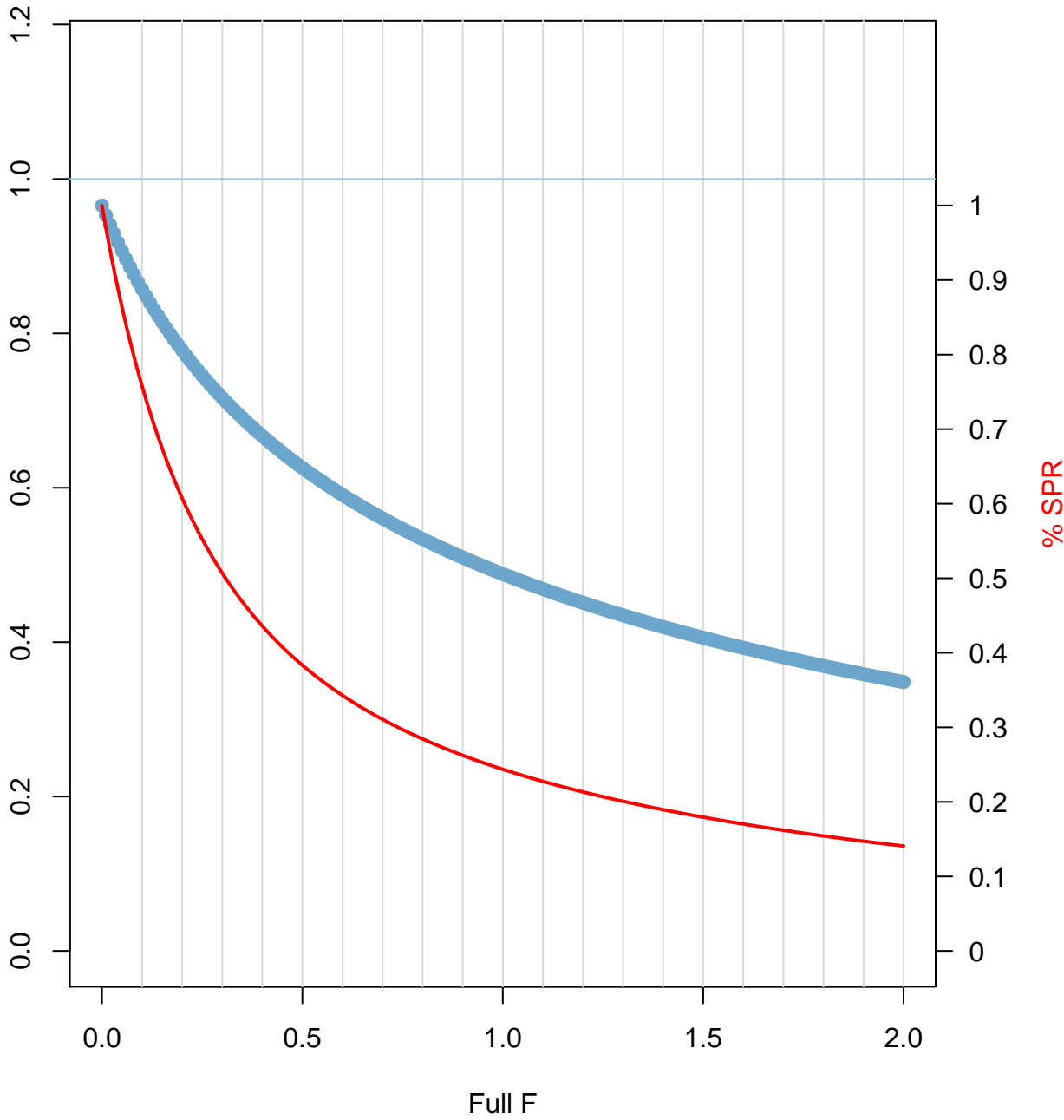
% SPR	F(%SPR)	YPR
0.2	1.3067	0.3107
0.25	0.9646	0.3023
0.3	0.7384	0.2916
0.35	0.5806	0.2794
0.4	0.4653	0.2657
0.45	0.3775	0.2505
0.5	0.3085	0.2338
0.55	0.2526	0.2157
0.6	0.2062	0.1962
0.65	0.1671	0.1754
0.7	0.1336	0.1534
0.75	0.1043	0.1302
0.8	0.0786	0.106

Selectivity or Maturity at age



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

Expected Spawns



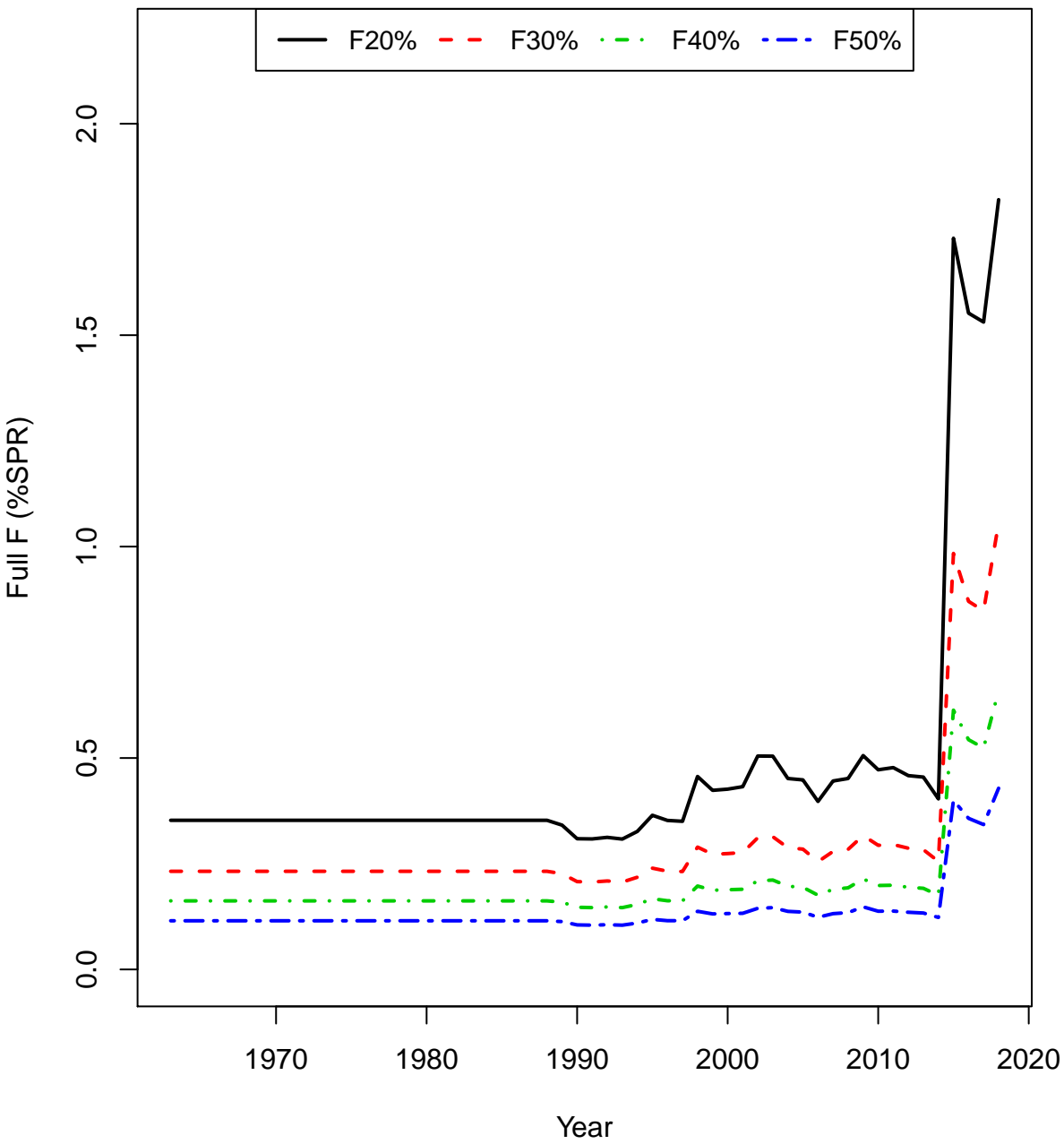
Full F

% SPR

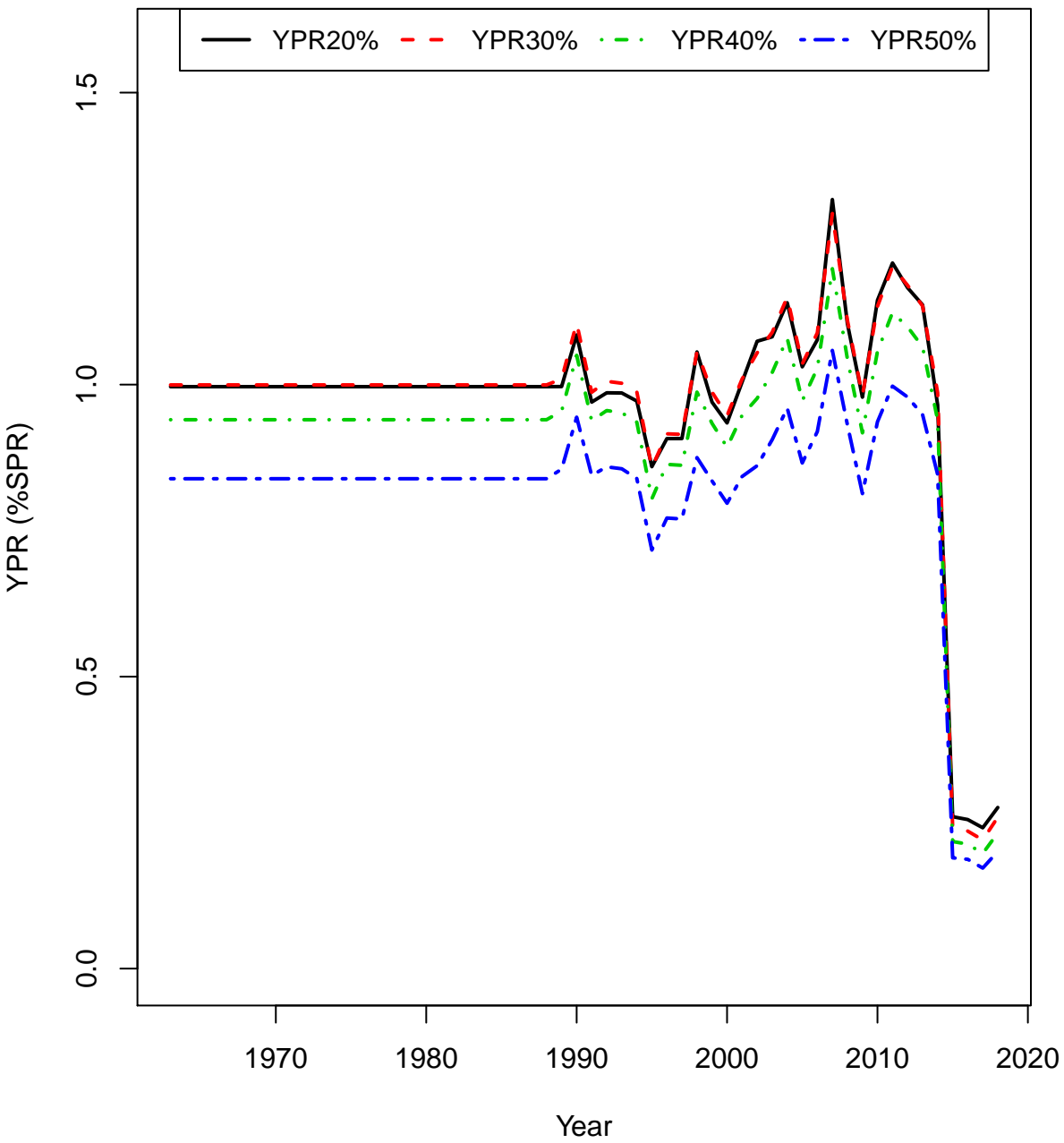
Expected Spawnings & SPR Reference Points (Years Avg = 5)

F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	0.9656	1	0.35	0.6906	0.4686	0.7	0.5604	0.3107
0.01	0.953	0.9697	0.36	0.6857	0.4616	0.71	0.5575	0.3078
0.02	0.9408	0.941	0.37	0.6809	0.4549	0.72	0.5547	0.305
0.03	0.929	0.9138	0.38	0.6762	0.4484	0.73	0.552	0.3023
0.04	0.9177	0.8881	0.39	0.6716	0.4421	0.74	0.5493	0.2996
0.05	0.9068	0.8636	0.4	0.6671	0.4359	0.75	0.5466	0.2969
0.06	0.8962	0.8403	0.41	0.6626	0.43	0.76	0.5439	0.2943
0.07	0.886	0.8182	0.42	0.6583	0.4242	0.77	0.5413	0.2918
0.08	0.8761	0.7972	0.43	0.654	0.4186	0.78	0.5387	0.2893
0.09	0.8665	0.7771	0.44	0.6497	0.4131	0.79	0.5361	0.2868
0.1	0.8573	0.758	0.45	0.6456	0.4078	0.8	0.5336	0.2844
0.11	0.8483	0.7398	0.46	0.6415	0.4027	0.81	0.5311	0.282
0.12	0.8395	0.7224	0.47	0.6375	0.3976	0.82	0.5286	0.2797
0.13	0.8311	0.7057	0.48	0.6336	0.3927	0.83	0.5261	0.2774
0.14	0.8229	0.6898	0.49	0.6297	0.388	0.84	0.5237	0.2752
0.15	0.8149	0.6746	0.5	0.6259	0.3834	0.85	0.5213	0.2729
0.16	0.8071	0.66	0.51	0.6221	0.3788	0.86	0.519	0.2708
0.17	0.7995	0.646	0.52	0.6184	0.3744	0.87	0.5166	0.2686
0.18	0.7922	0.6327	0.53	0.6148	0.3702	0.88	0.5143	0.2665
0.19	0.785	0.6198	0.54	0.6112	0.366	0.89	0.512	0.2645
0.2	0.778	0.6075	0.55	0.6077	0.3619	0.9	0.5097	0.2624
0.21	0.7712	0.5956	0.56	0.6042	0.3579	0.91	0.5075	0.2604
0.22	0.7645	0.5842	0.57	0.6008	0.354	0.92	0.5053	0.2584
0.23	0.7581	0.5732	0.58	0.5974	0.3502	0.93	0.5031	0.2565
0.24	0.7517	0.5627	0.59	0.5941	0.3465	0.94	0.5009	0.2546
0.25	0.7455	0.5525	0.6	0.5908	0.3429	0.95	0.4987	0.2527
0.26	0.7395	0.5427	0.61	0.5876	0.3393	0.96	0.4966	0.2508
0.27	0.7336	0.5333	0.62	0.5844	0.3359	0.97	0.4945	0.249
0.28	0.7278	0.5242	0.63	0.5812	0.3325	0.98	0.4924	0.2472
0.29	0.7221	0.5154	0.64	0.5781	0.3292	0.99	0.4903	0.2454
0.3	0.7166	0.5069	0.65	0.5751	0.3259	1	0.4883	0.2437
0.31	0.7112	0.4988	0.66	0.572	0.3228	1.01	0.4862	0.242
0.32	0.7059	0.4908	0.67	0.5691	0.3196	1.02	0.4842	0.2403
0.33	0.7007	0.4832	0.68	0.5661	0.3166	1.03	0.4822	0.2386
0.34	0.6956	0.4758	0.69	0.5632	0.3136	1.04	0.4803	0.237

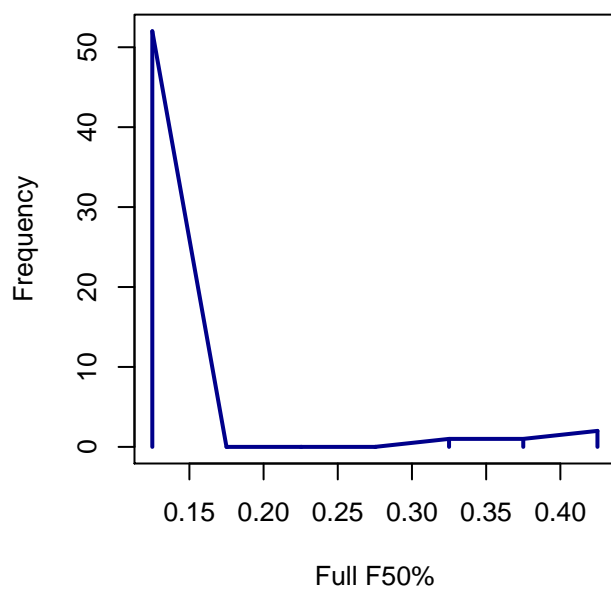
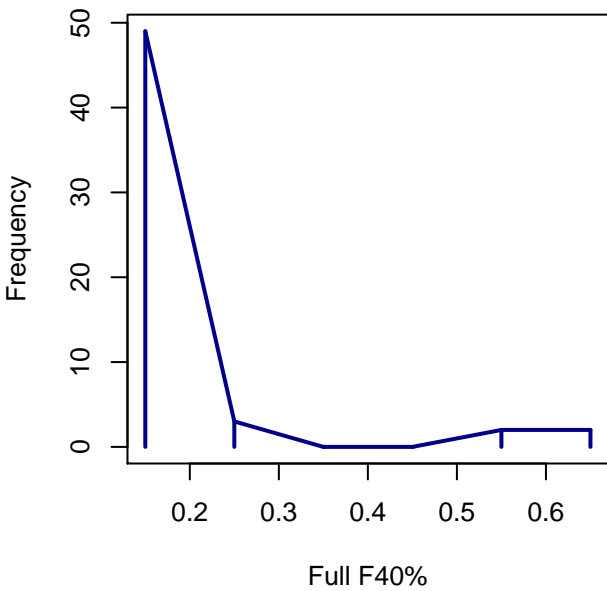
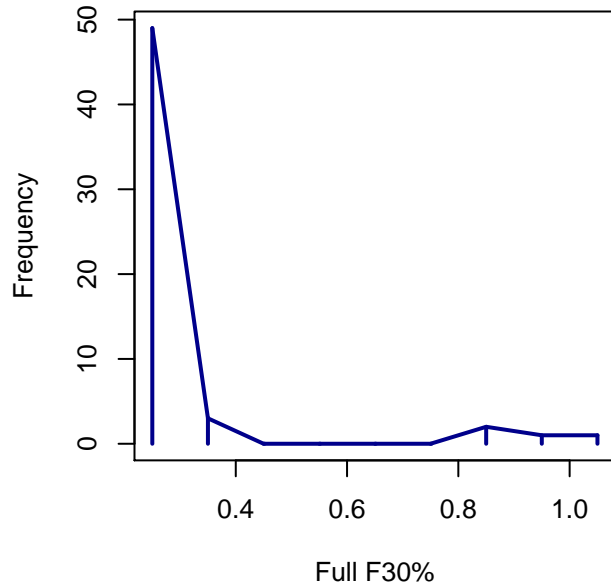
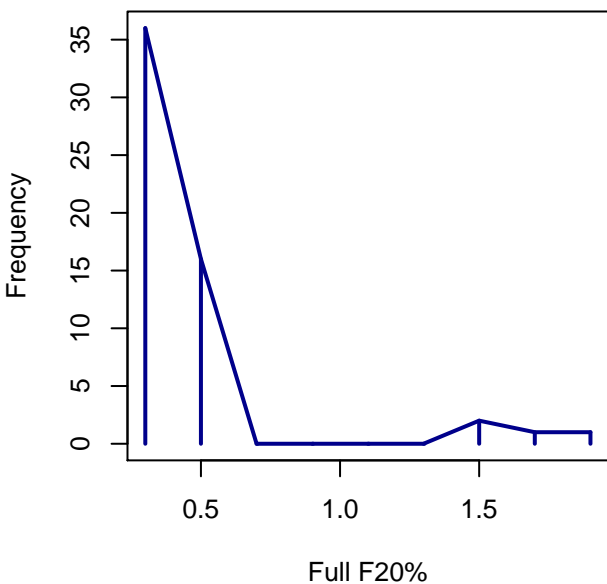
Annual F(%SPR) Reference Points



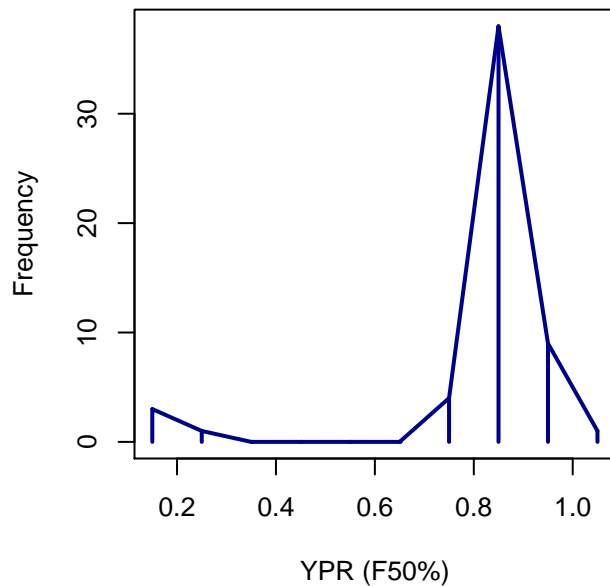
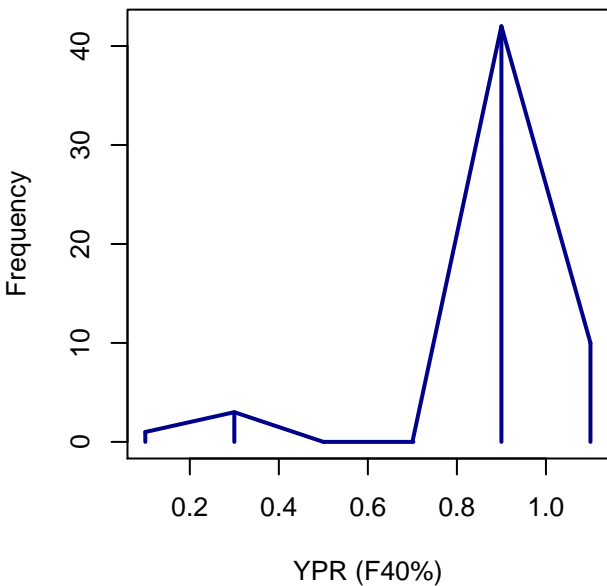
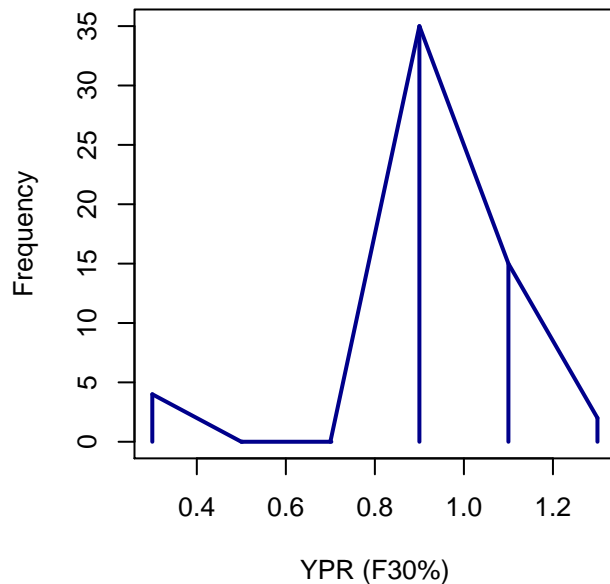
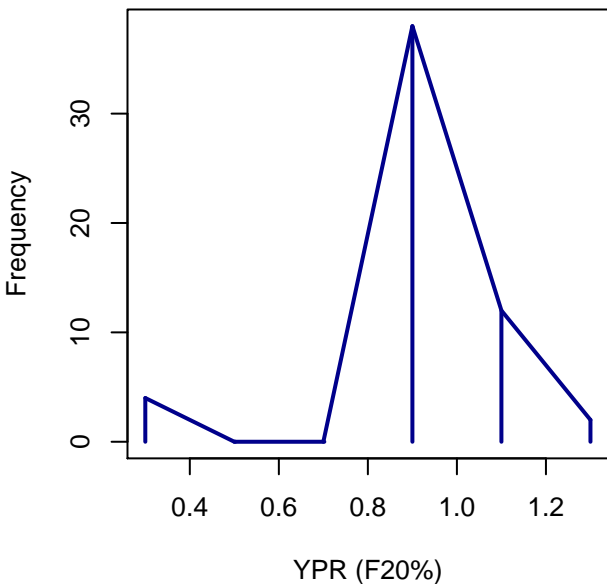
Annual YPR(%SPR) Reference Points



Annual F (%SPR) Reference Points

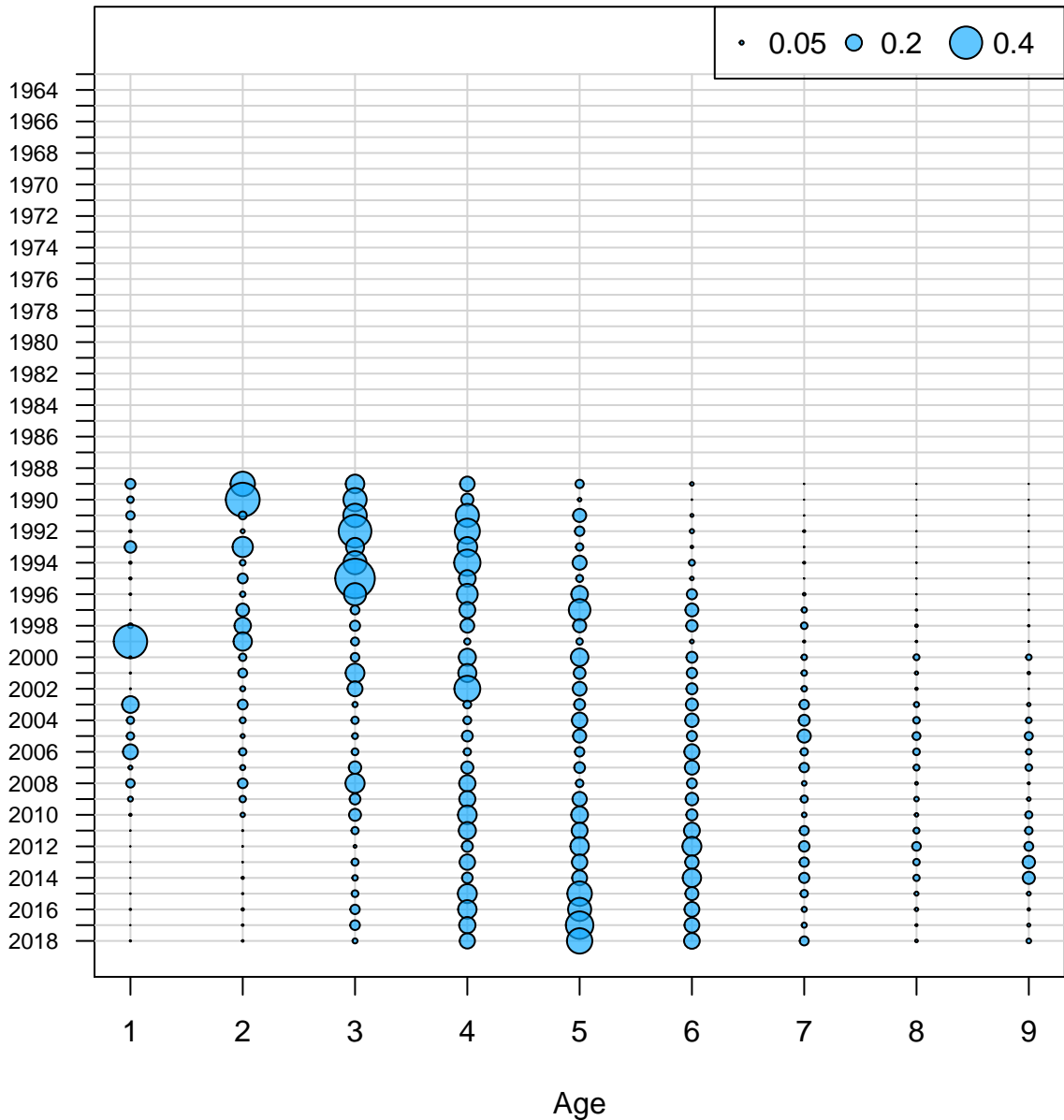


Annual YPR (%SPR) Reference Points





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)



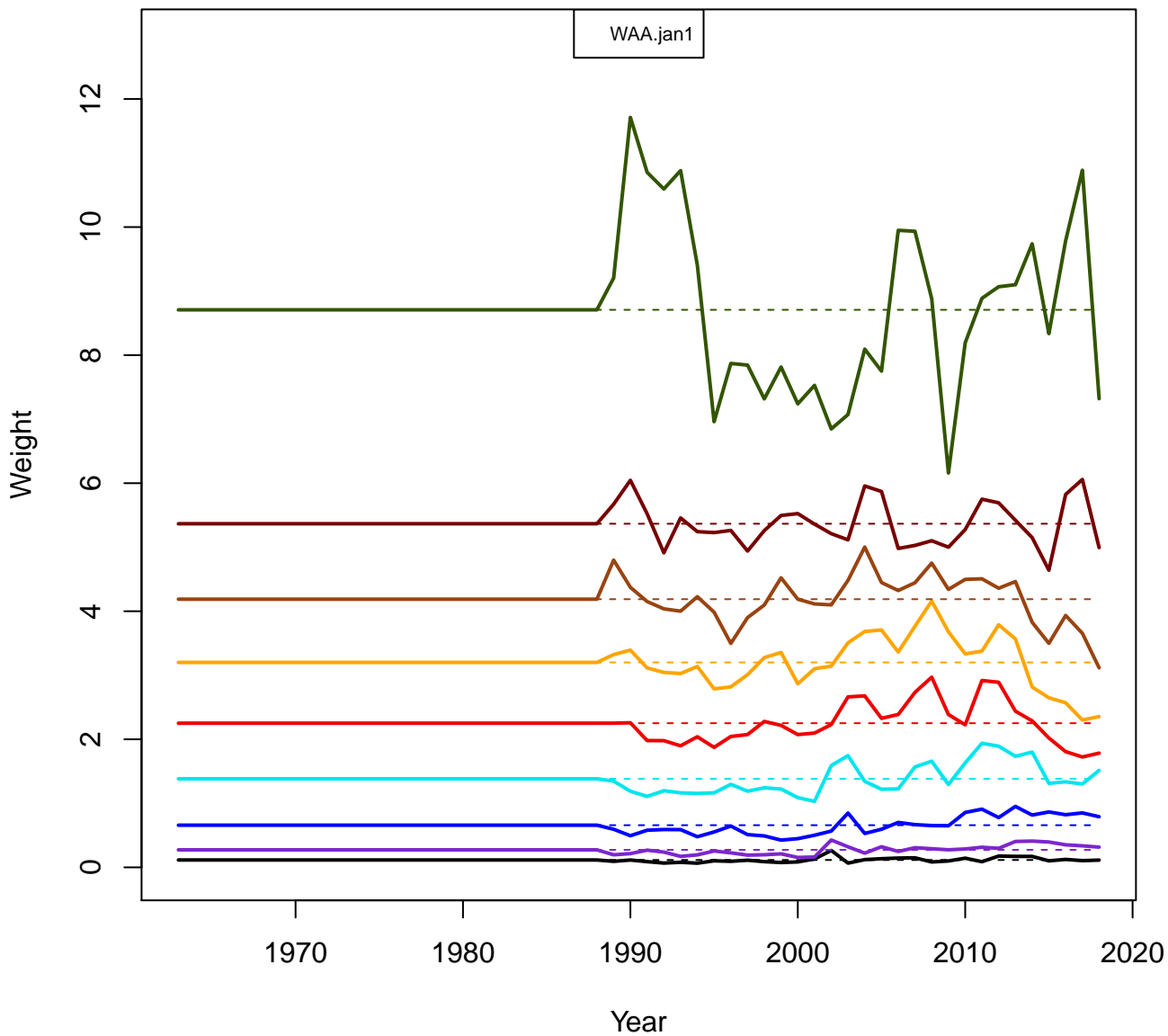
WAA matrix 1



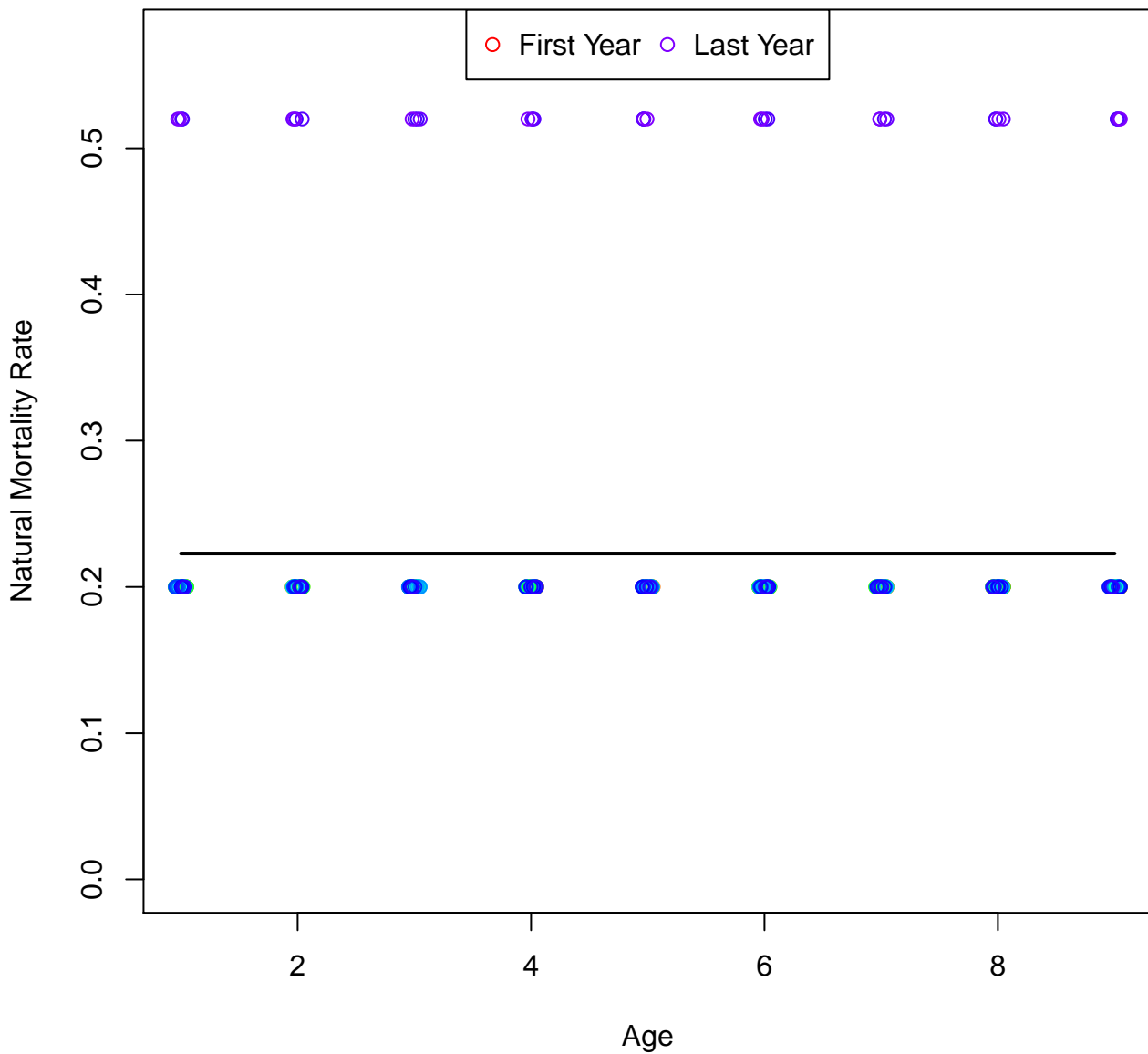
WAA matrix 2



WAA matrix 3



M



Maturity

