

ASA Results

Parameter estimates

Parameter	Estimate	SE
dummy	0.0000	NA
fsh_sel50	99.0470	NaN
fsh_sel95	45.0085	17.3387
srv_sel50	1.9257	0.1990
srv_sel95	4.4237	0.4653
fsh_logq	-9.9570	0.8562
srv1_logq	-7.8323	0.9580
srv2_logq	-8.6431	0.9123
mr_logq	0.0002	0.0100
log_rbar	13.8691	0.3694
log_rec_devs	0.0691	2.3121
log_rec_devs	0.0964	2.3226
log_rec_devs	0.1333	2.3356
log_rec_devs	0.1775	2.3514
log_rec_devs	0.2260	2.3705
log_rec_devs	0.2776	2.3932
log_rec_devs	0.3275	2.4195
log_rec_devs	0.3686	2.4484
log_rec_devs	0.3929	2.4776
log_rec_devs	0.3931	2.5040
log_rec_devs	0.3665	2.5252
log_rec_devs	0.3184	2.5410
log_rec_devs	0.2613	2.5548
log_rec_devs	0.2138	2.5724
log_rec_devs	0.1941	2.6009
log_rec_devs	0.2214	2.6498
log_rec_devs	0.3195	2.7300
log_rec_devs	0.4091	1.7003
log_rec_devs	0.7090	1.2678
log_rec_devs	0.5147	1.1857
log_rec_devs	0.5071	1.0275
log_rec_devs	0.8609	0.8454
log_rec_devs	0.4317	0.8603
log_rec_devs	0.3807	0.7877
log_rec_devs	0.2771	0.7476
log_rec_devs	0.4903	0.6258
log_rec_devs	0.5254	0.5876
log_rec_devs	0.3567	0.5920
log_rec_devs	0.4770	0.5406
log_rec_devs	0.6092	0.4899
log_rec_devs	0.4979	0.4841
log_rec_devs	0.7001	0.4349
log_rec_devs	0.6340	0.4290
log_rec_devs	0.6738	0.4111
log_rec_devs	0.6720	0.4000

(continued)

Parameter	Estimate	SE
log_rec_devs	0.9742	0.3643
log_rec_devs	1.1027	0.3479
log_rec_devs	1.1887	0.3370
log_rec_devs	1.2508	0.3291
log_rec_devs	0.8742	0.3436
log_rec_devs	0.9464	0.3342
log_rec_devs	0.9009	0.3316
log_rec_devs	0.6795	0.3377
log_rec_devs	0.4935	0.3425
log_rec_devs	0.3492	0.3448
log_rec_devs	0.1846	0.3467
log_rec_devs	0.1150	0.3420
log_rec_devs	-0.0117	0.3407
log_rec_devs	-0.1632	0.3407
log_rec_devs	-0.2094	0.3347
log_rec_devs	-0.0964	0.3214
log_rec_devs	-0.1728	0.3176
log_rec_devs	-0.1266	0.3088
log_rec_devs	-0.0636	0.3001
log_rec_devs	0.2219	0.2885
log_rec_devs	0.1475	0.2877
log_rec_devs	0.4397	0.2814
log_rec_devs	0.3929	0.2826
log_rec_devs	0.2173	0.2870
log_rec_devs	0.1674	0.2897
log_rec_devs	-0.2281	0.2988
log_rec_devs	-0.5661	0.3078
log_rec_devs	-0.7411	0.3155
log_rec_devs	-0.9784	0.3263
log_rec_devs	-0.9983	0.3325
log_rec_devs	-1.1321	0.3434
log_rec_devs	-1.3203	0.3582
log_rec_devs	-1.1651	0.3612
log_rec_devs	-1.1692	0.3715
log_rec_devs	-1.3646	0.3877
log_rec_devs	-1.7942	0.4185
log_rec_devs	-1.9620	0.4423
log_rec_devs	-2.0209	0.4660
log_rec_devs	-1.6376	0.4652
log_rec_devs	-1.3542	0.4778
log_rec_devs	-1.6353	0.5466
log_rec_devs	-2.7264	0.8889
log_Fbar	-3.6487	0.4962
log_F_devs	-2.2709	0.4015
log_F_devs	-3.3278	0.4011
log_F_devs	-2.7960	0.4007
log_F_devs	-2.8851	0.4005
log_F_devs	-2.1788	0.4002
log_F_devs	-0.2740	0.3994
log_F_devs	0.0705	0.3977

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Parameter	Estimate	SE
log_F_devs	0.0667	0.3958
log_F_devs	0.1972	0.3937
log_F_devs	0.1473	0.3916
log_F_devs	0.0868	0.3896
log_F_devs	0.3249	0.3874
log_F_devs	0.4757	0.3848
log_F_devs	0.8498	0.3815
log_F_devs	0.7208	0.3781
log_F_devs	0.7443	0.3750
log_F_devs	0.8291	0.3721
log_F_devs	0.8774	0.3695
log_F_devs	0.9035	0.3675
log_F_devs	0.5078	0.3665
log_F_devs	0.5561	0.3663
log_F_devs	0.2584	0.3666
log_F_devs	0.2423	0.3673
log_F_devs	0.3015	0.3685
log_F_devs	0.4676	0.3703
log_F_devs	0.4634	0.3730
log_F_devs	0.5331	0.3768
log_F_devs	0.3317	0.3812
log_F_devs	0.4138	0.3862
log_F_devs	0.1657	0.3916
log_F_devs	0.1806	0.3971
log_F_devs	0.0749	0.4029
log_F_devs	0.2769	0.4097
log_F_devs	0.3415	0.4183
log_F_devs	0.2119	0.4276
log_F_devs	0.2684	0.4374
log_F_devs	0.1418	0.4478
log_F_devs	0.2958	0.4590

Catchability

Estimates on natural scale

Fishery q: 0

Survey (1-hr soak) q: 0.0004

Survey (3+hr soak) q: 0.0002

Mark-recapture q: 1.0002

Likelihood components

Catchability priors: 4.6488, 0.4274, 1.5057, 0.0003

Catch: 0.008

Abundance indices (fsh, srv1, srv2, mr): 12.2879, 4.746, 7.193, 0.0921

Age comp 2793.3852, 3467.4412

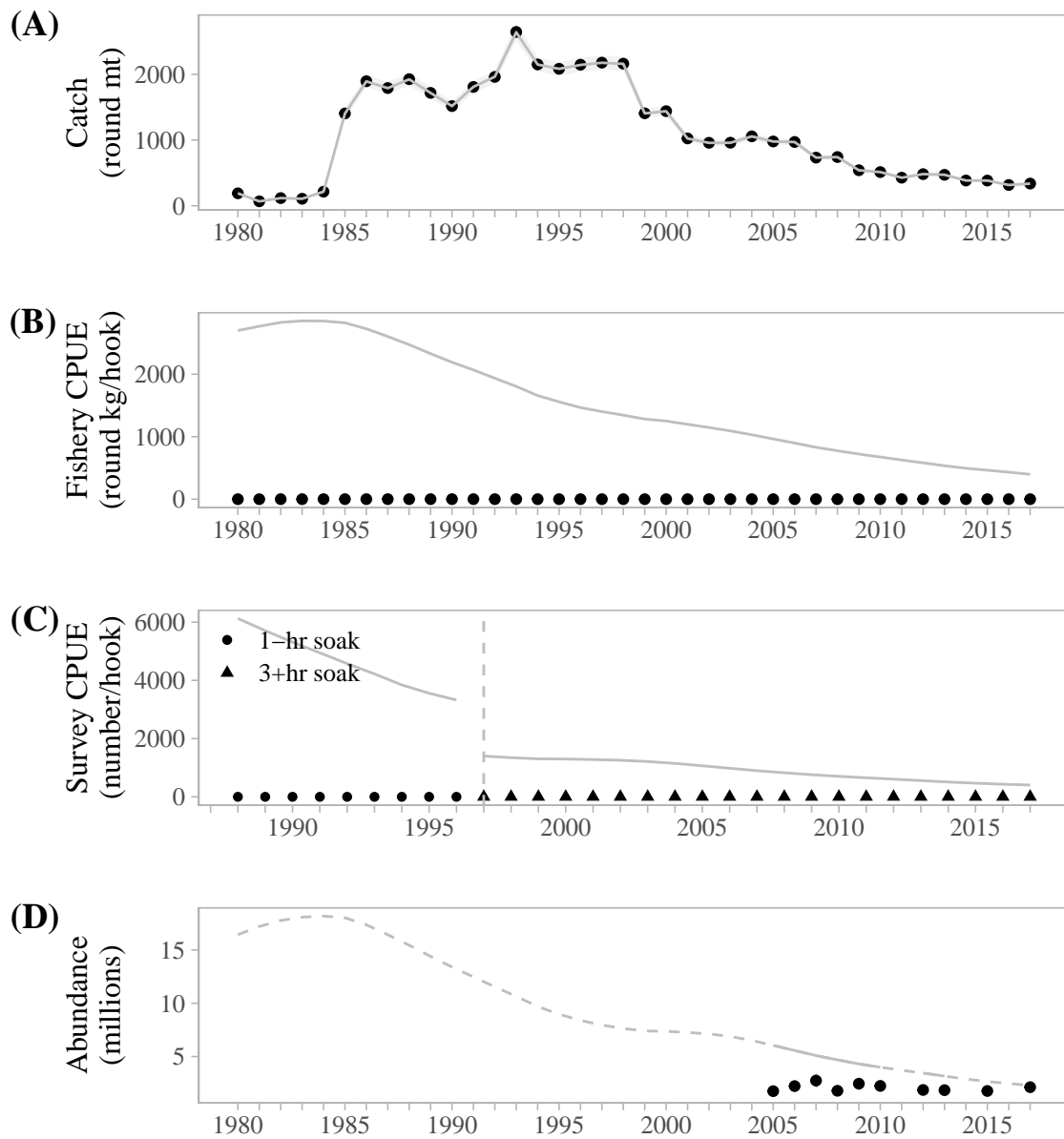
Multinomial offsets 2.8754, 33.992

Penalty on fishing mortality deviations: 4.3939

Penalty on recruitment deviations: 5.2286

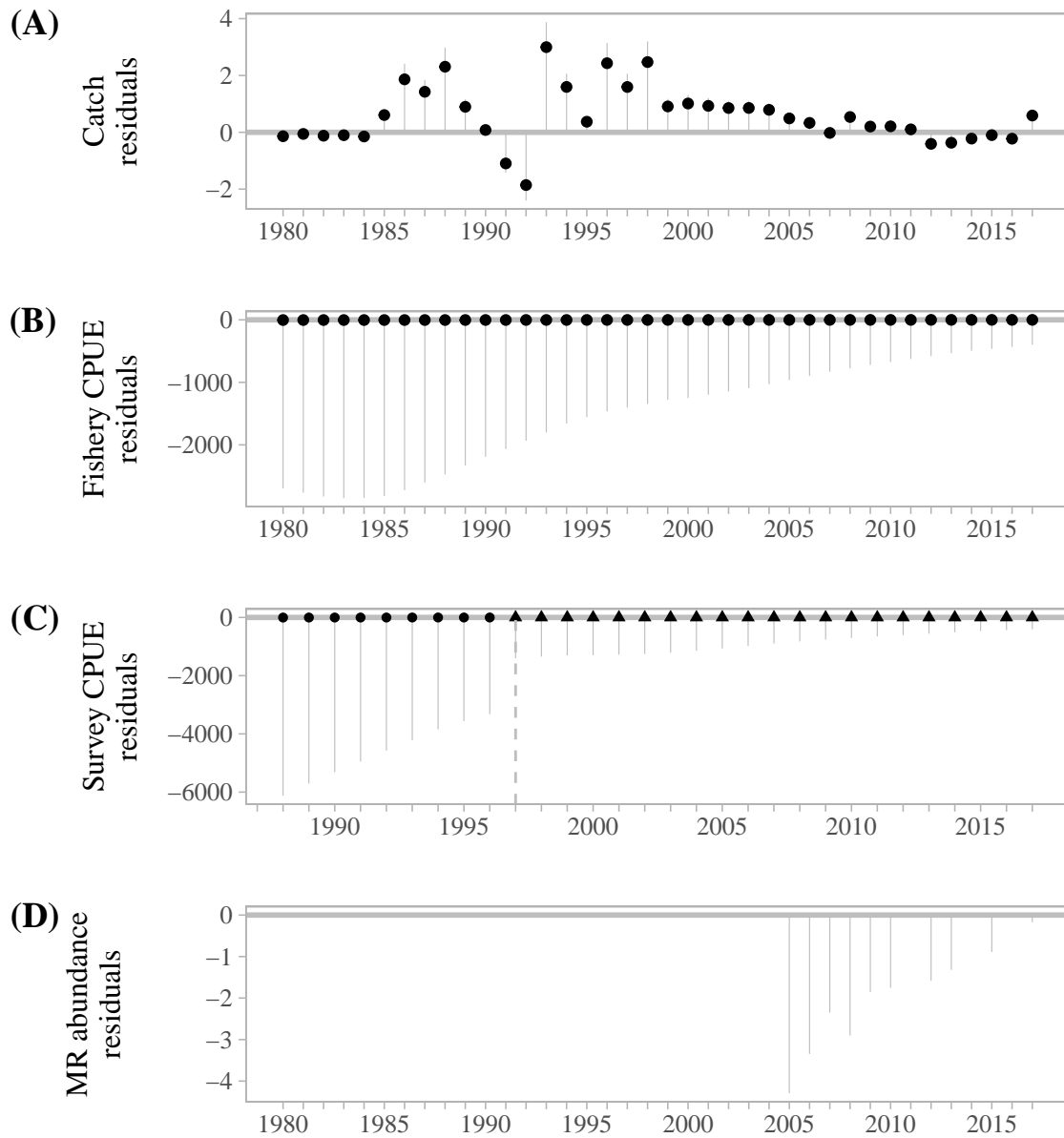
Total likelihood: 6301.358

Time series of catch and abundance indices

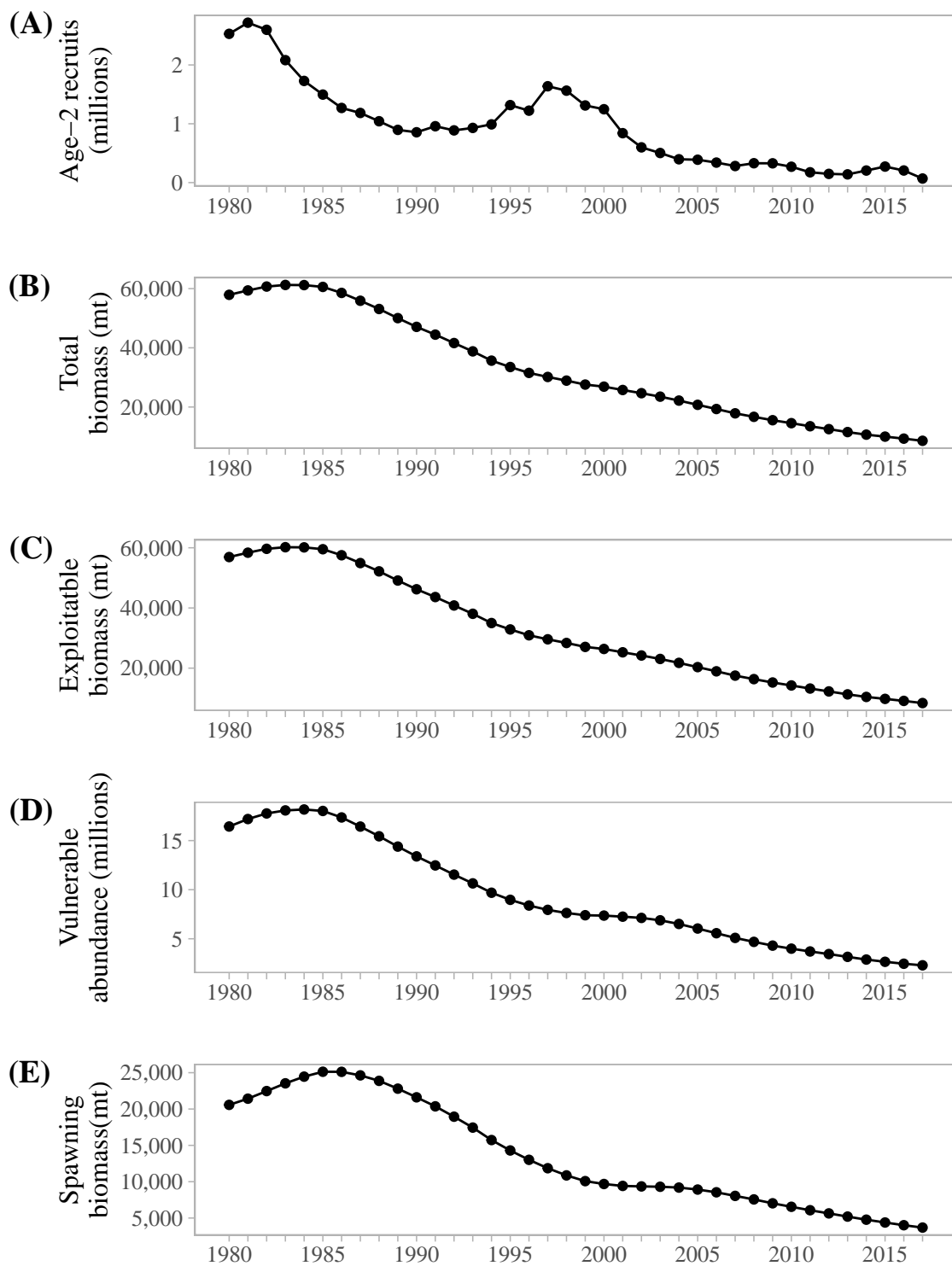


Residuals for time series of catch and abundance indices

Standardized residuals:

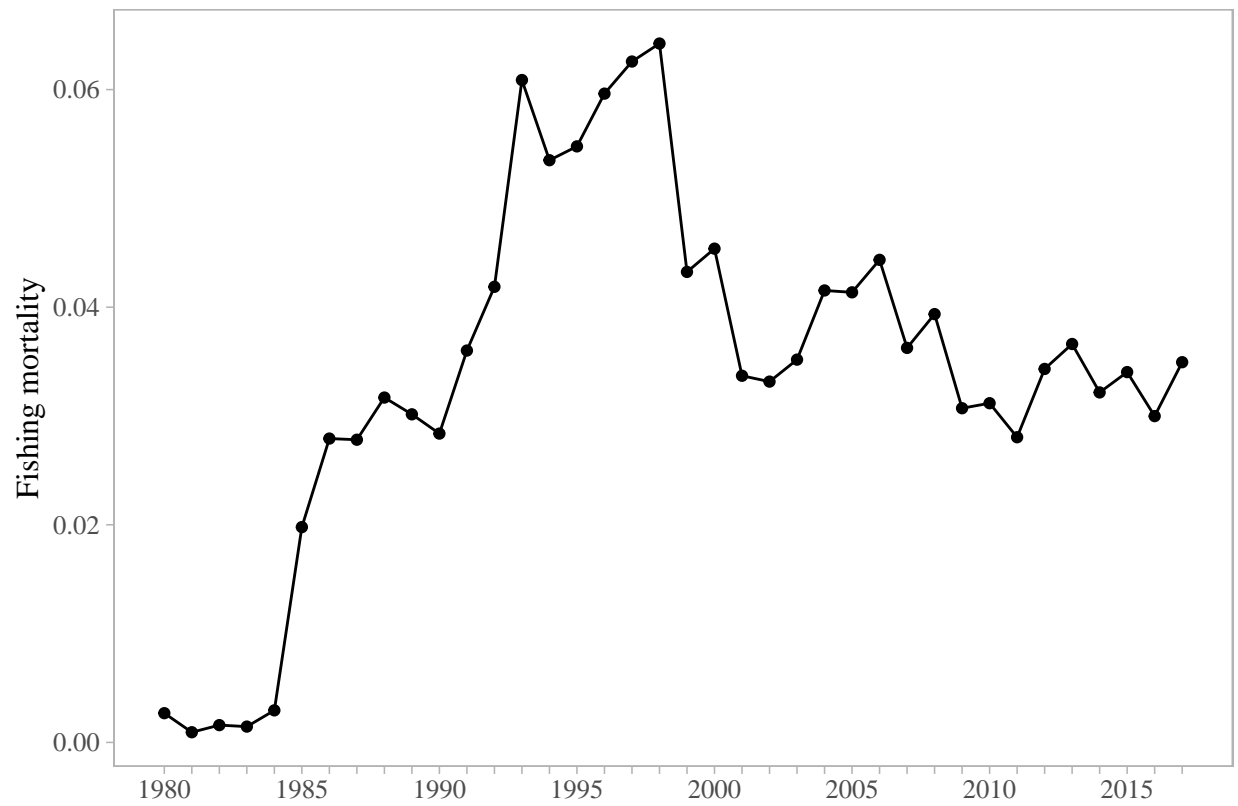


Derived time series of recruitment, abundance, and biomass

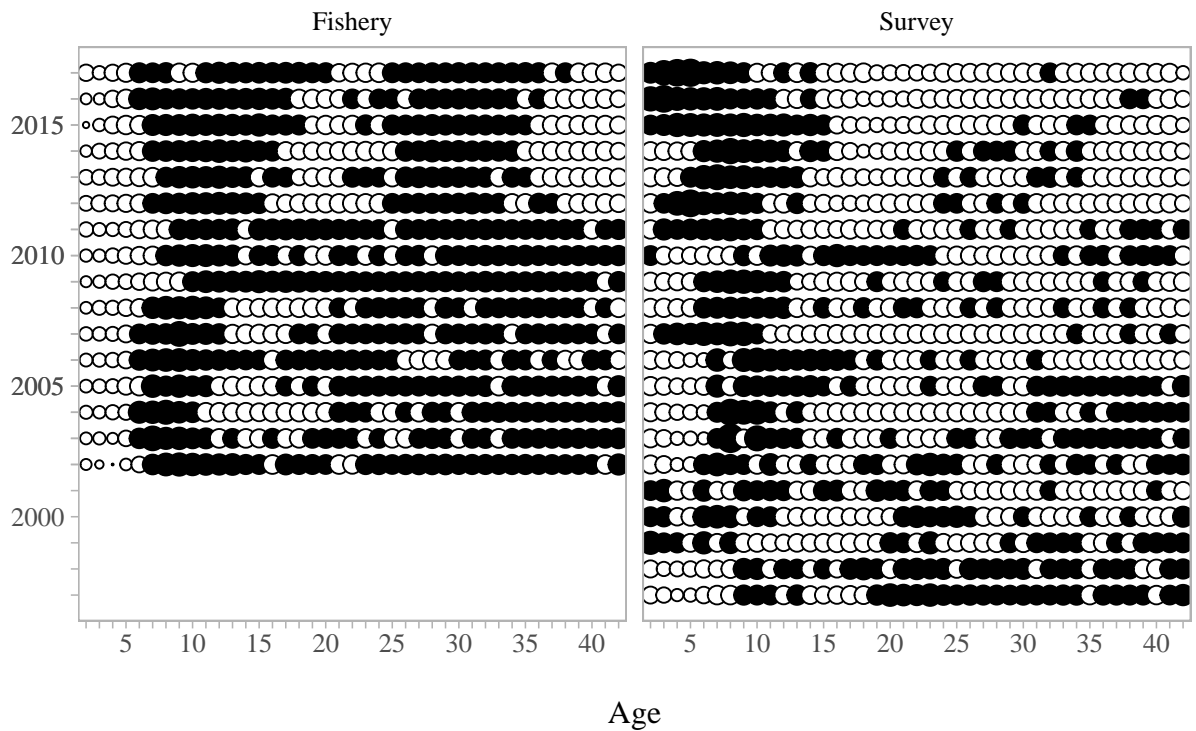


Estimate of fishing mortality

On natural scale

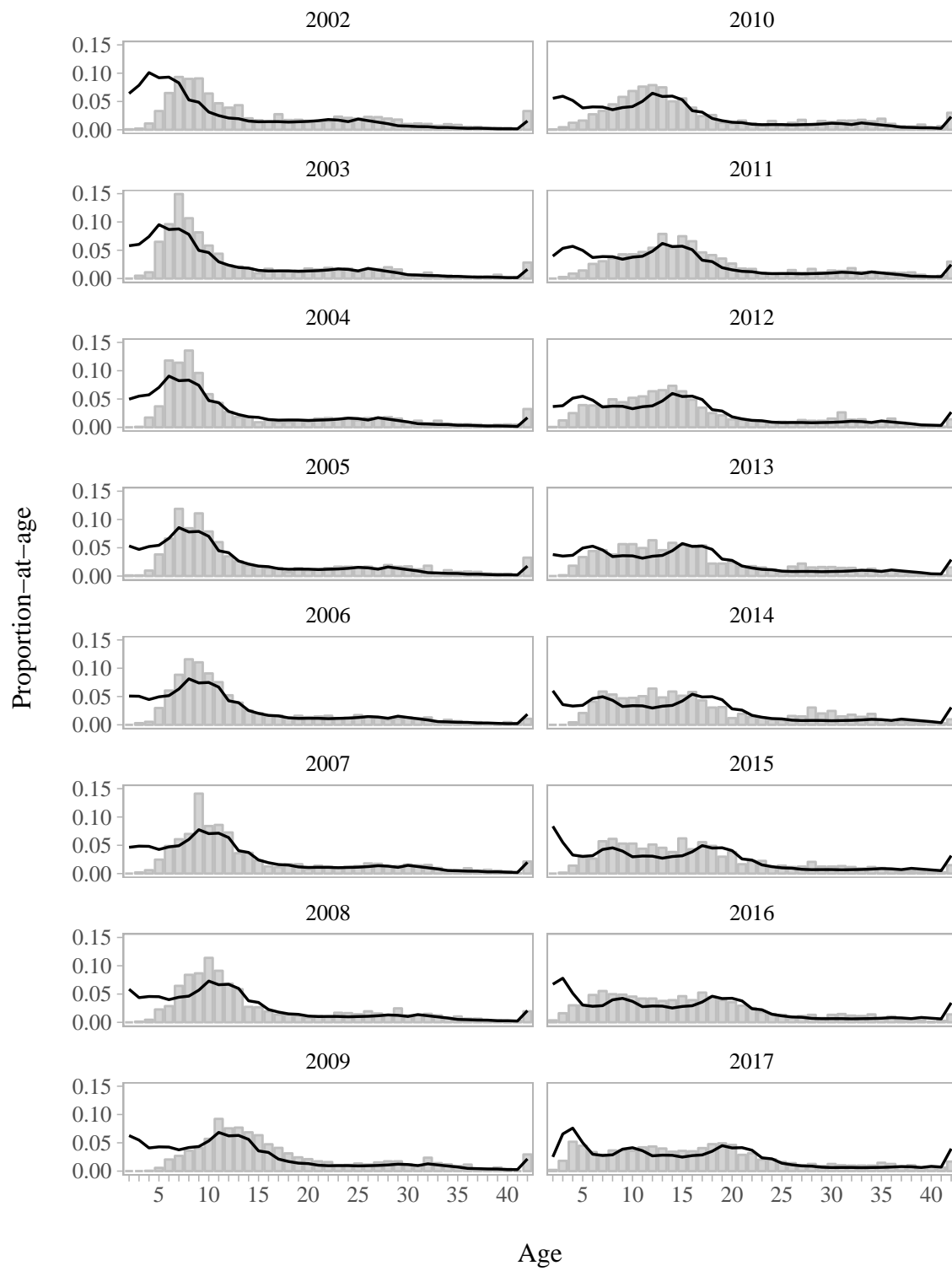


Fits to age comps

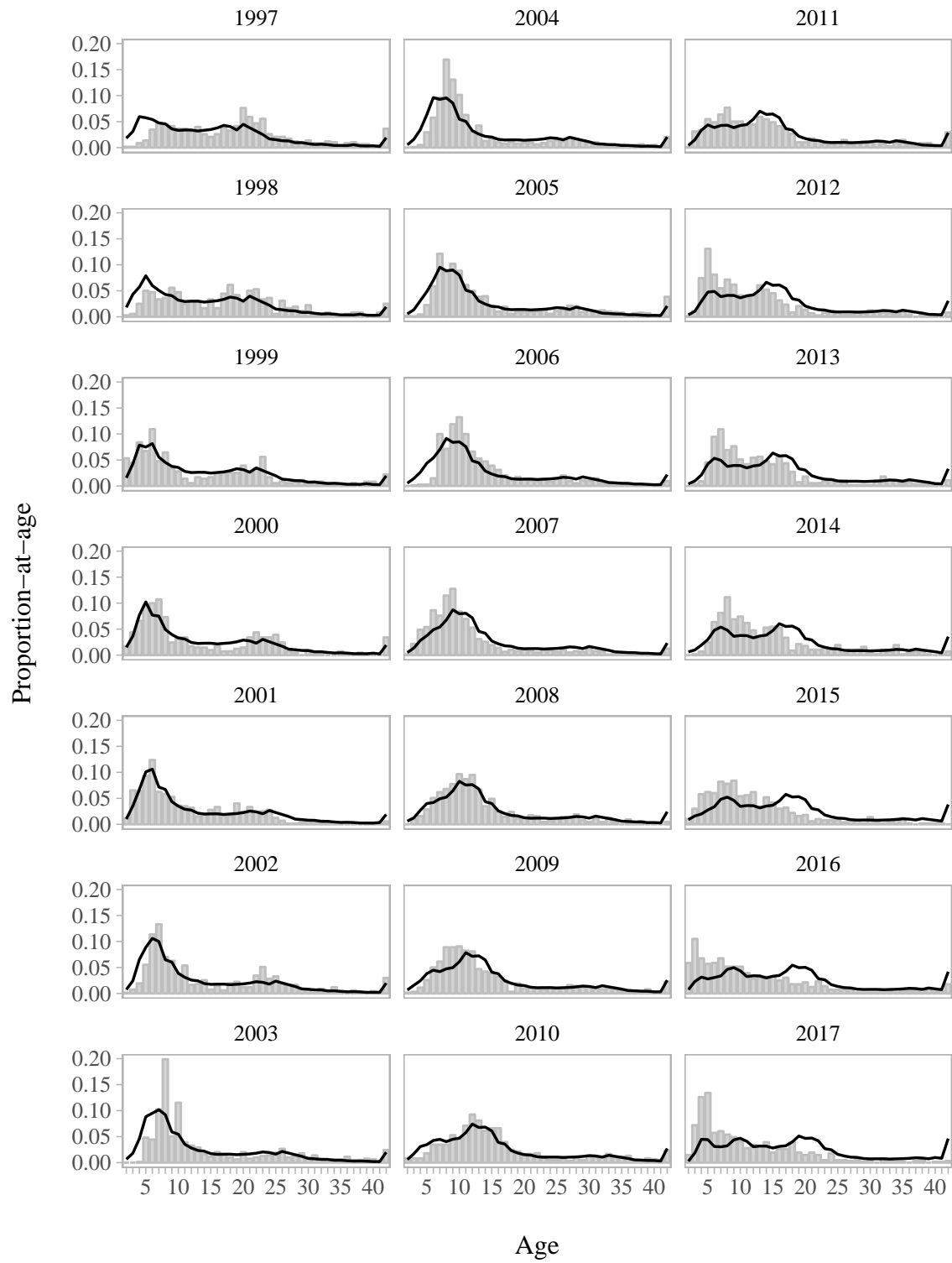


Model performance • Observed greater than estimated ○ Observed less than estimated

Fits to fishery age comps



Fits to survey age comps



Selectivity

