

# Appendix C3: Model 2 Results

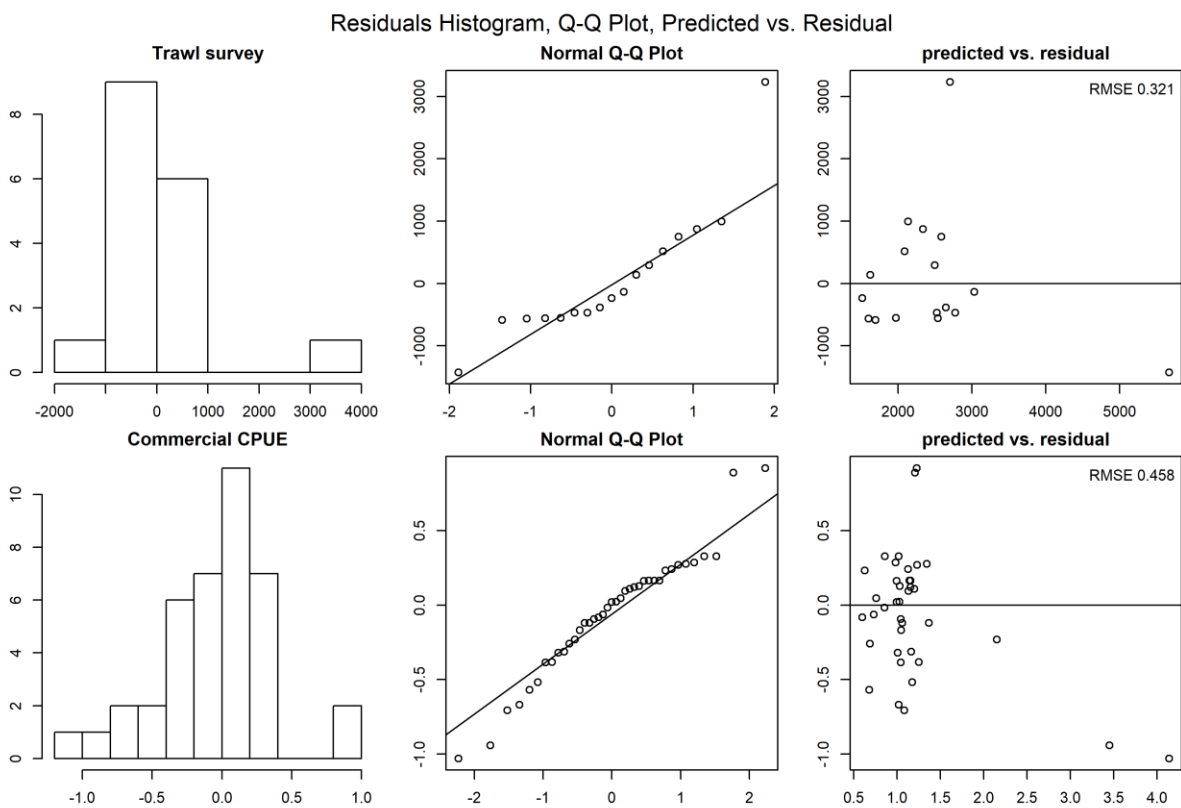


Figure C3-1. QQ Plot of Trawl survey and Commercial CPUE.

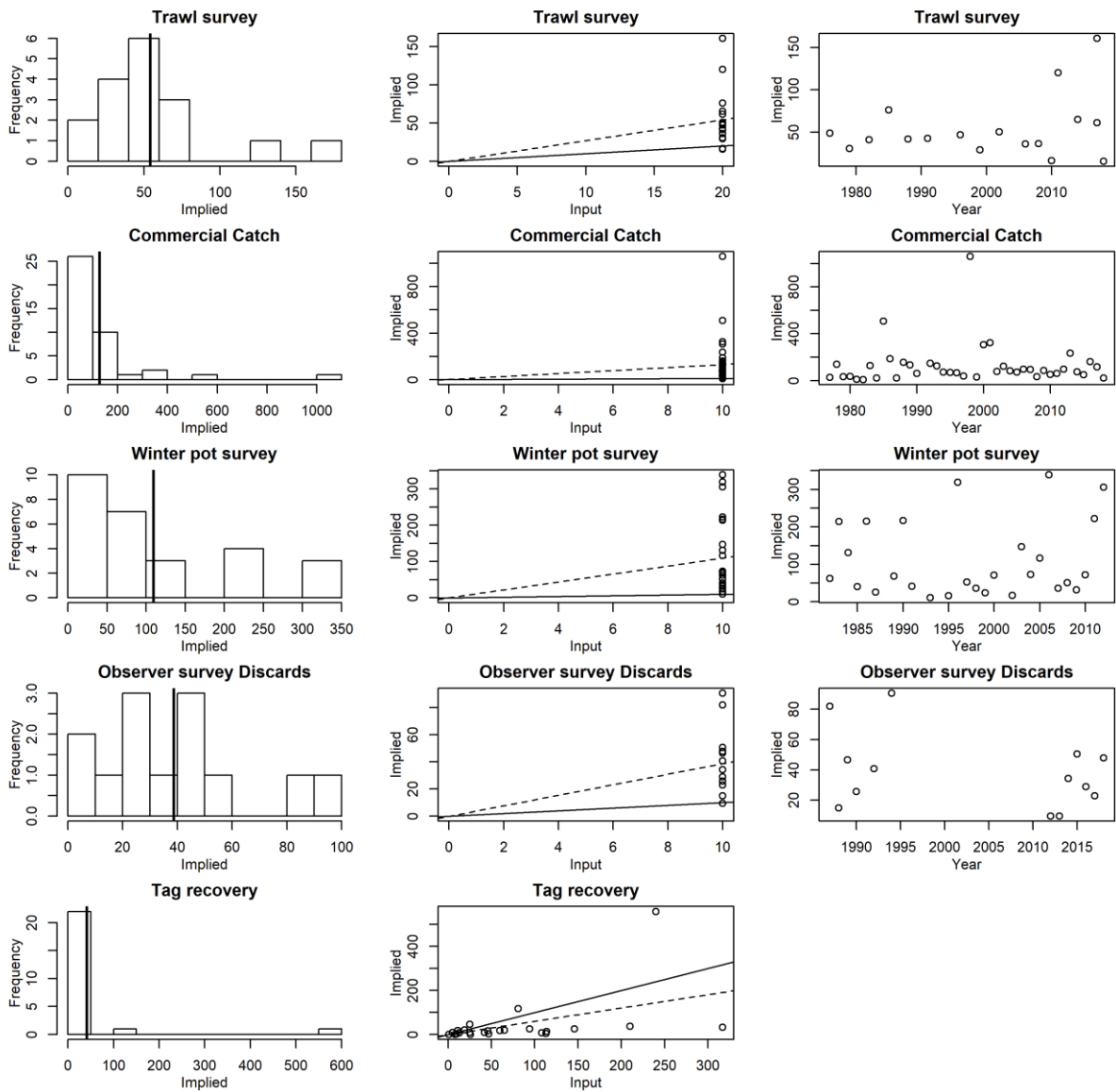


Figure C3-2: Implied effective samples. Figures in the first column show implied effective sample size (x-axis) vs. frequency (y-axis). Vertical solid line is the mean implied effective sample size. The second column show input sample size (x-axis) vs. implied effective sample size (y-axis). Dashed line indicates linear regression slope, and solid line is 1:1 line. The third column show year (x-axis) vs. implied effective sample size (y-axis).

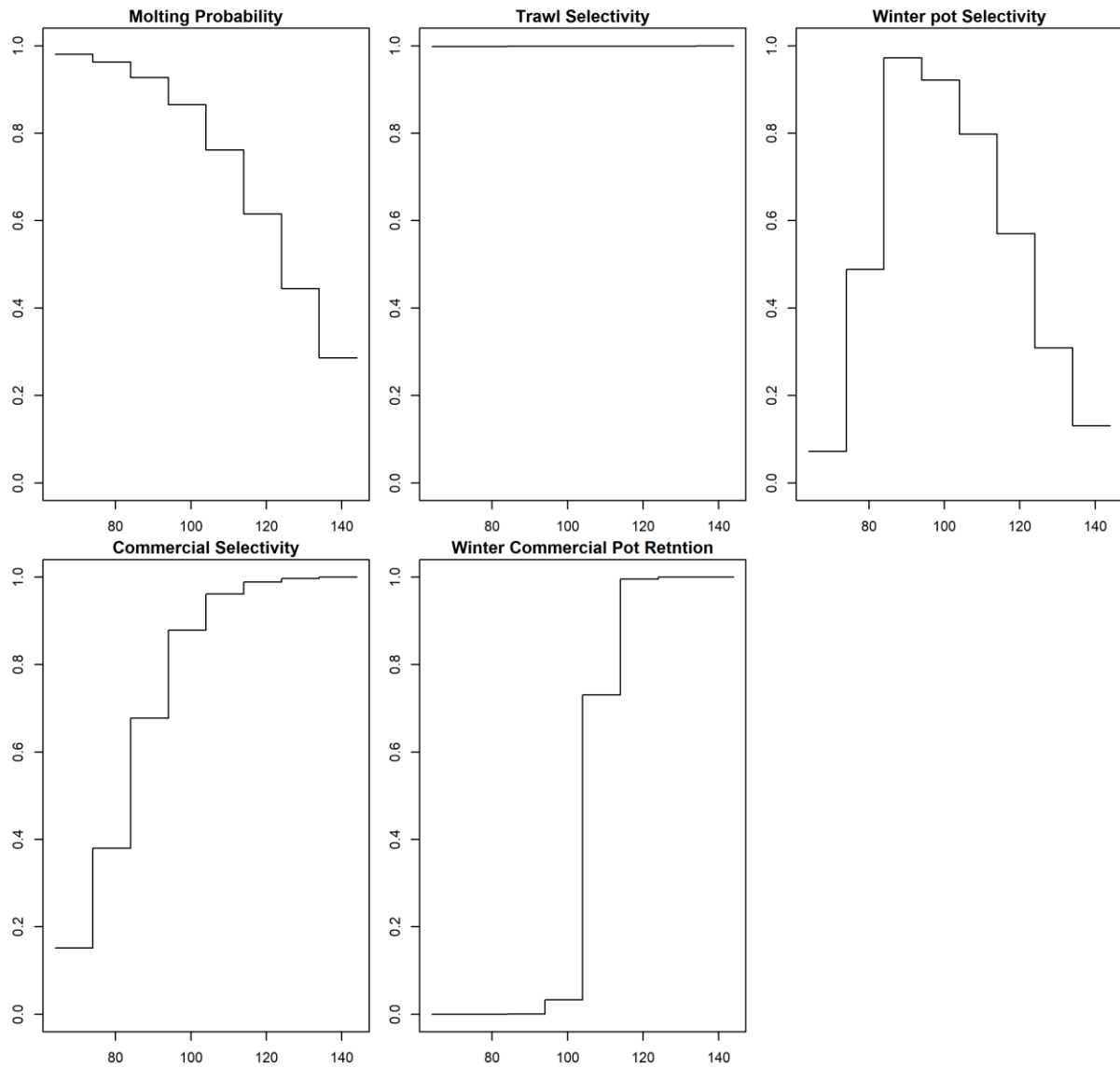


Figure C3-3. Molting probability and trawl/pot selectivity. X-axis is carapace length.

### Trawl survey crab abundance

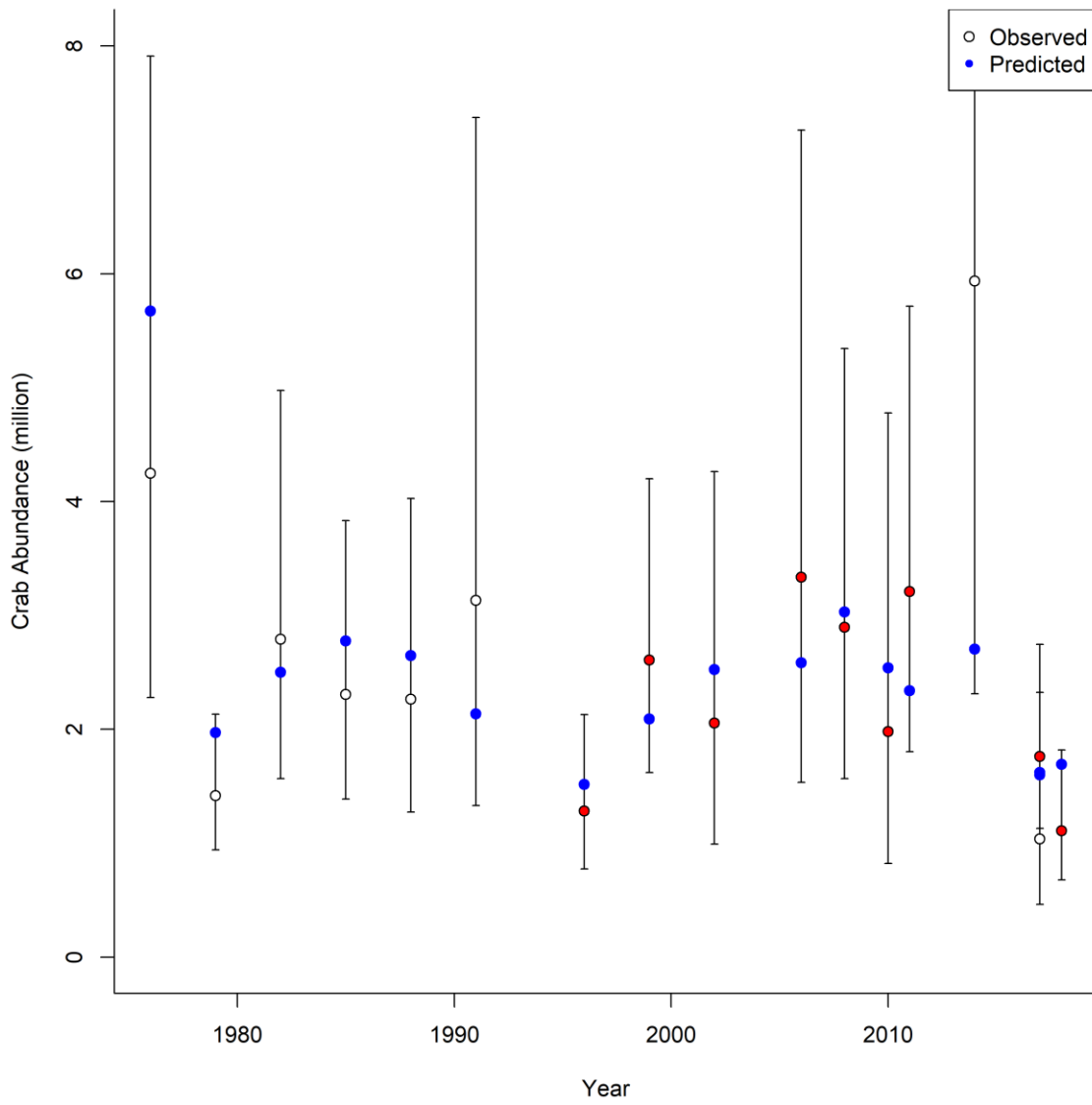


Figure C3-4. Estimated trawl survey male abundance (crab  $\geq 64$  mm CL). Observed: White: NOAA Trawl Survey, Red: ADG&G Trawl Survey

### Modeled crab abundance Feb 01

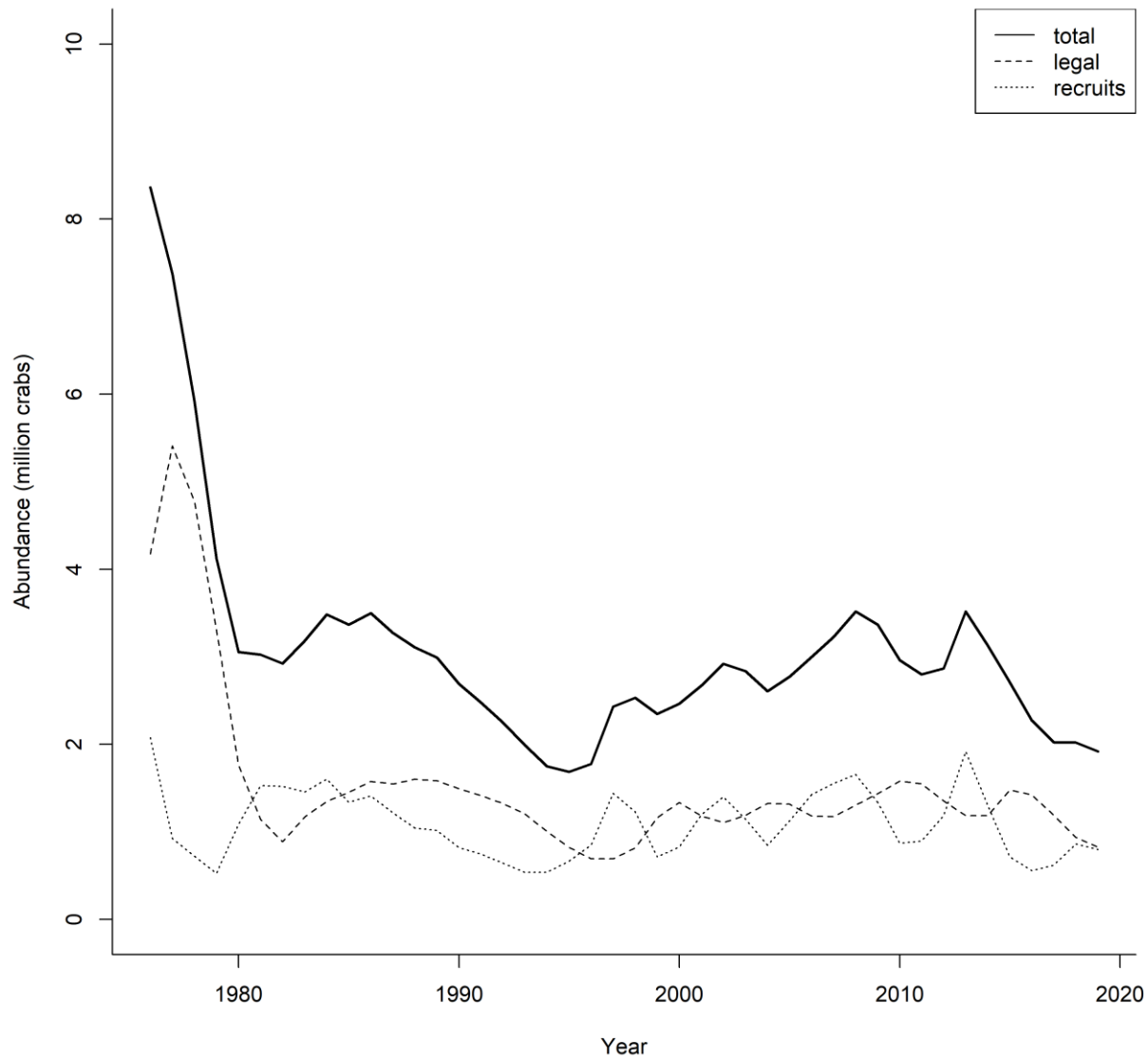


Figure C3-5. Estimated abundance of legal males from 1976-2015.

### MMB Feb 01

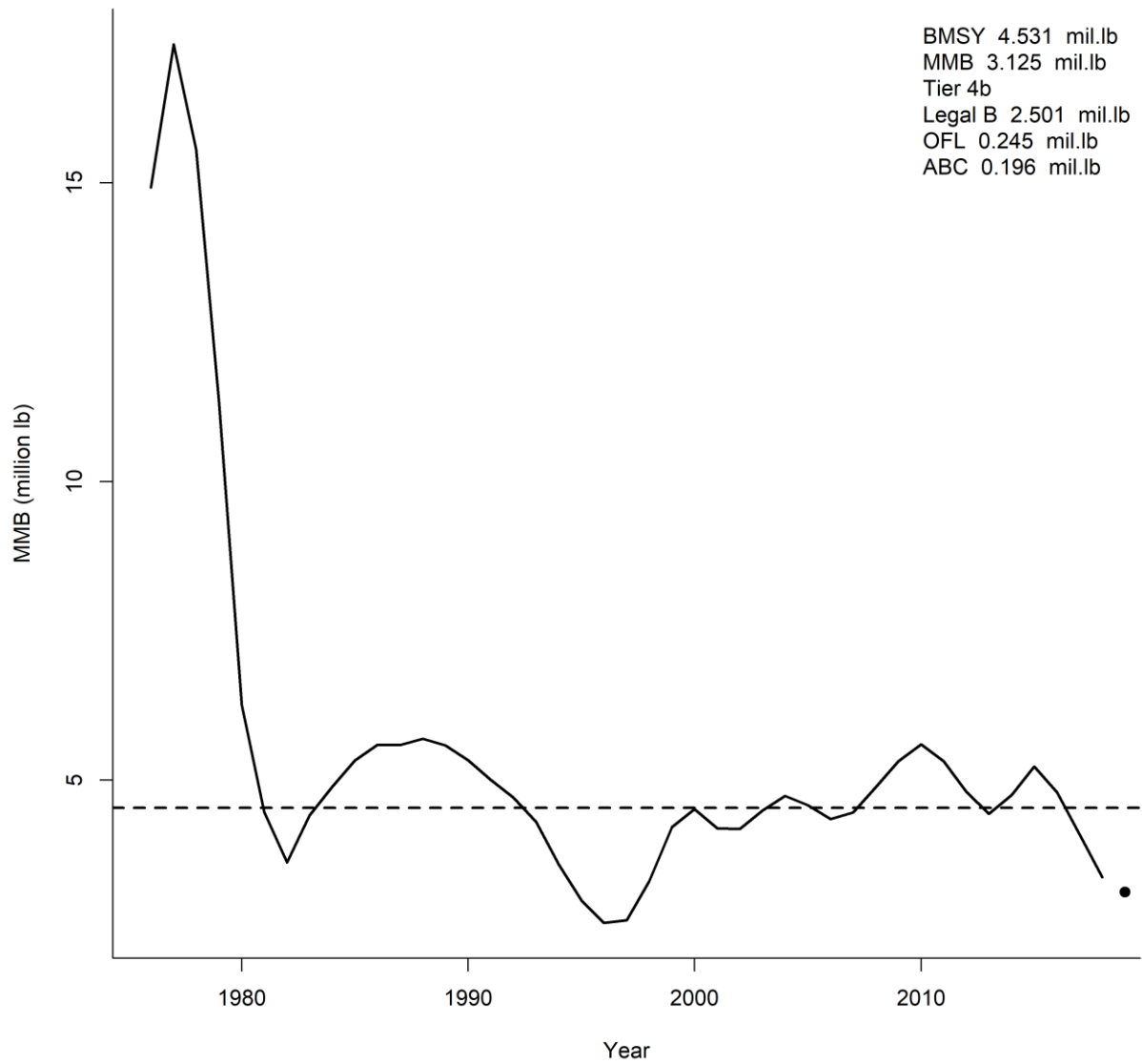


Figure C3-6. Estimated abundance of Mature Male Biomass from 1976-2019. Dash line shows Bmsy (Average MMB of 1980-2019).

### Summer commercial standardized cpue

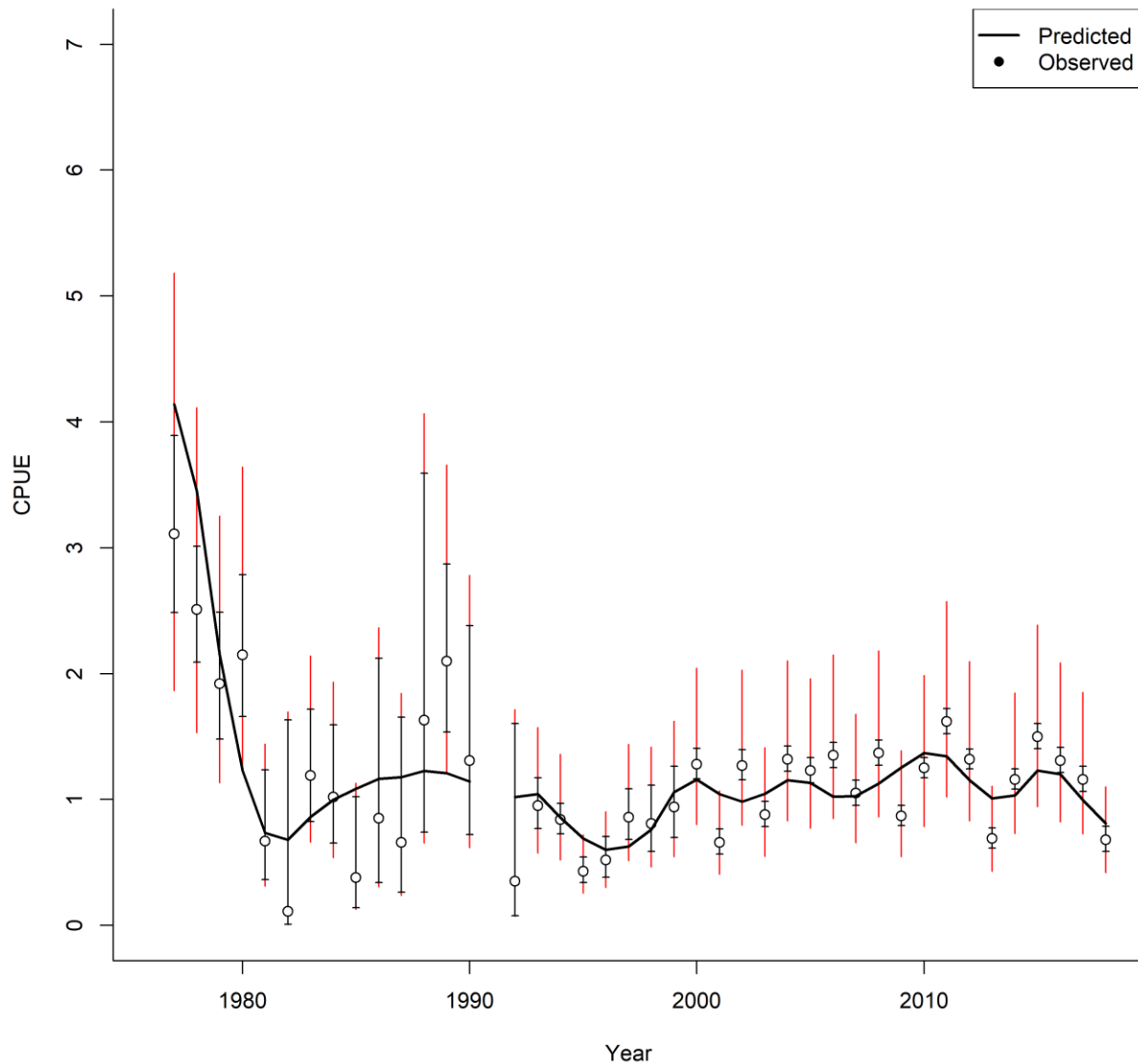


Figure C3-7. Summer commercial standardized cpue 1977-2018.

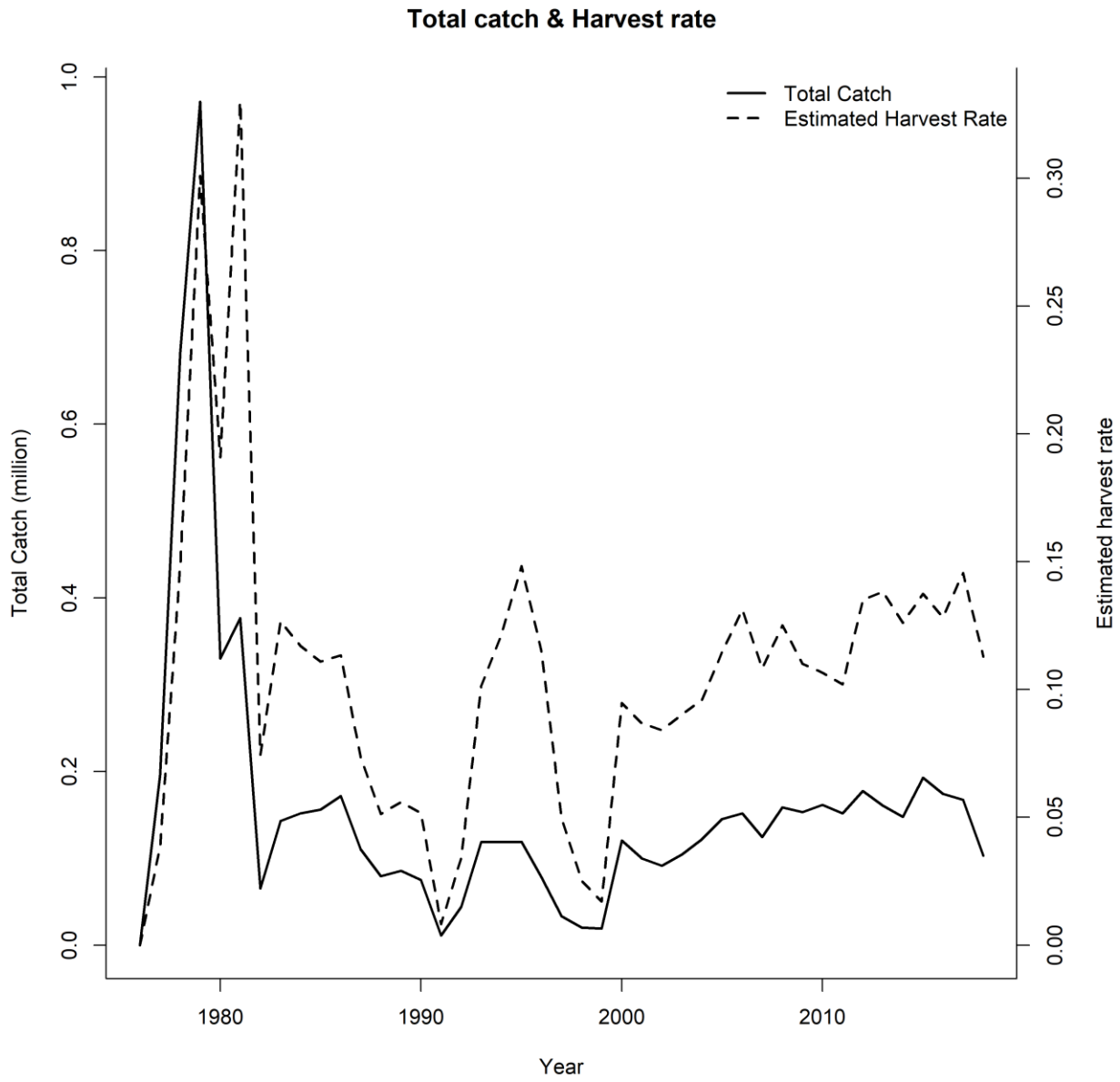


Figure C3-8. Total catch and estimated harvest rate 1976-2018.



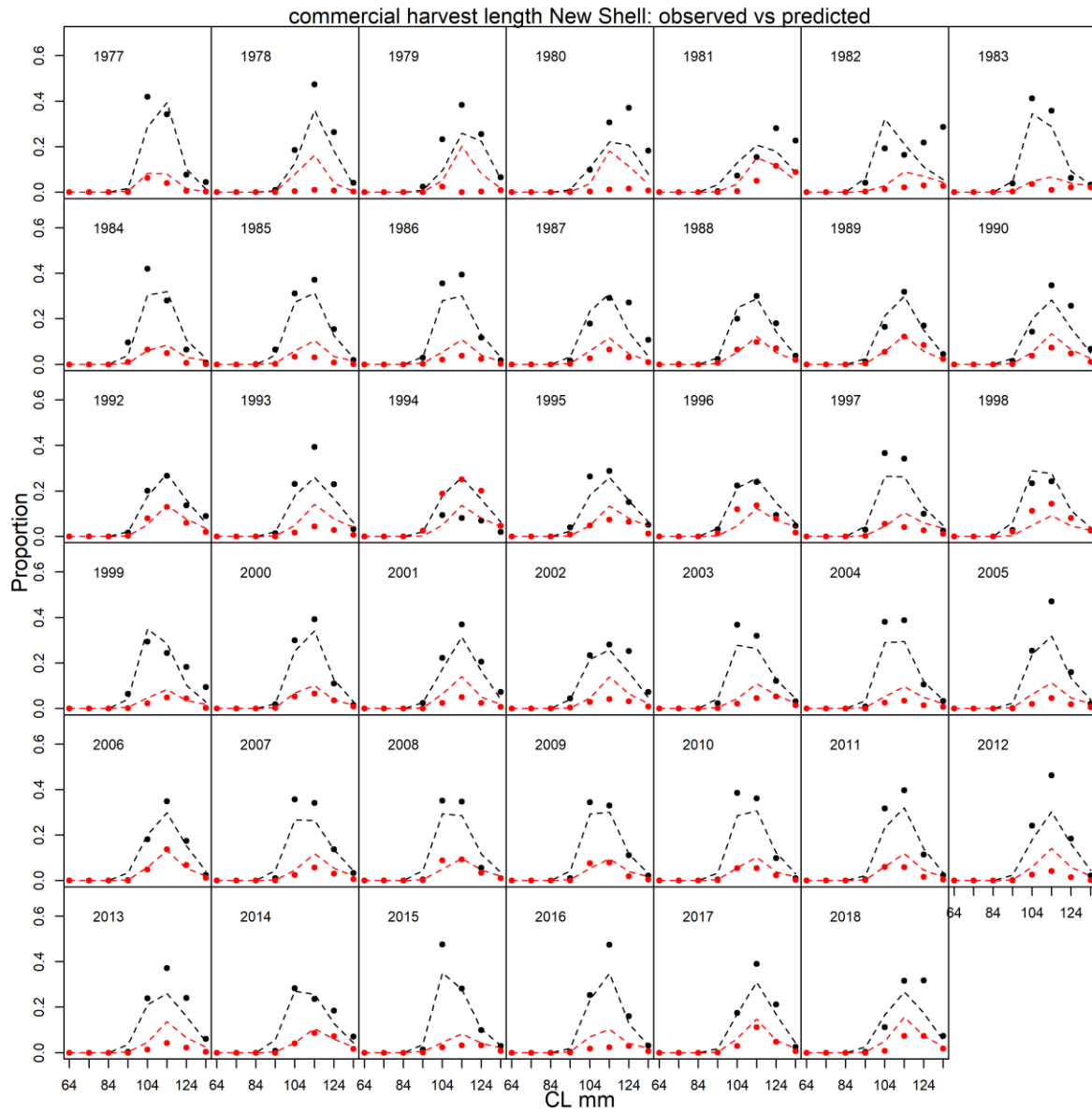


Figure C3-9. Predicted (dashed line) vs. observed (dots) length class proportions for commercial catch. Black: New Shell, Red: Old Shell

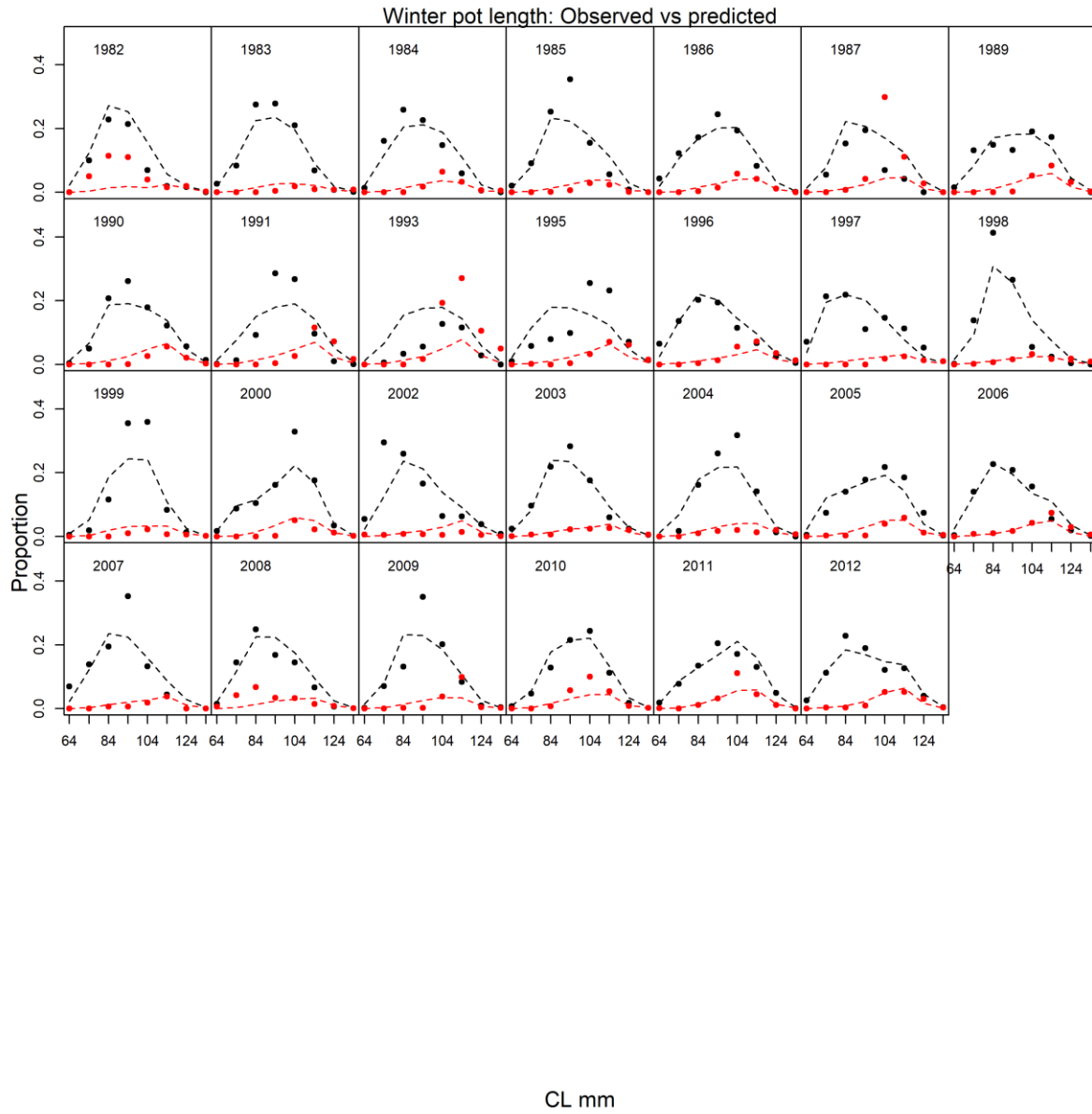
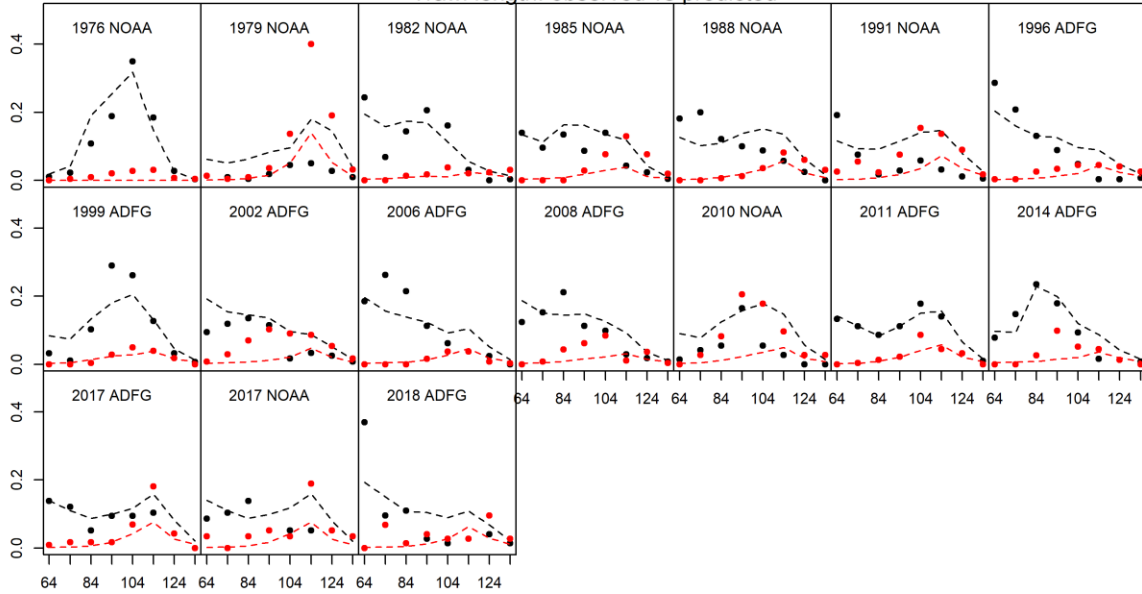
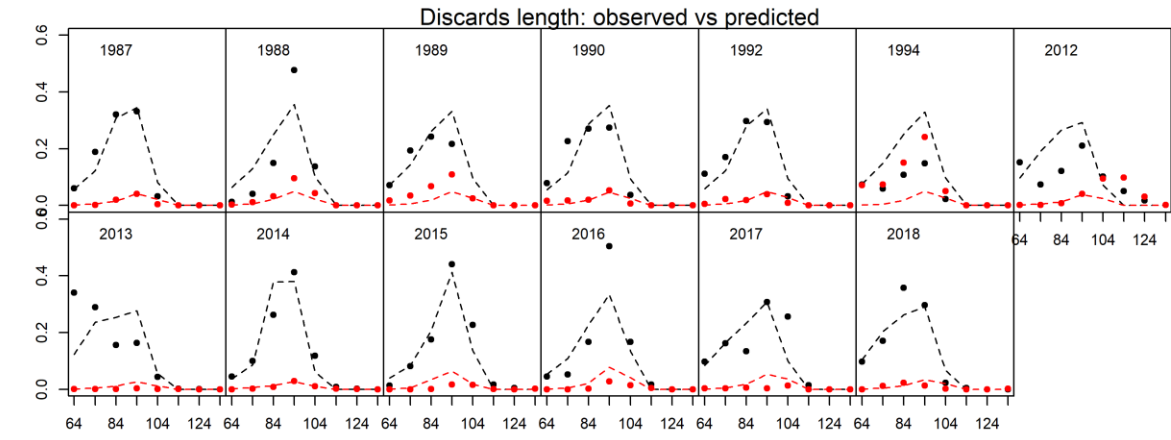


Figure C3-10. Predicted (dashed line) vs. observed (black dots) length class proportions for the winter and spring pot survey.

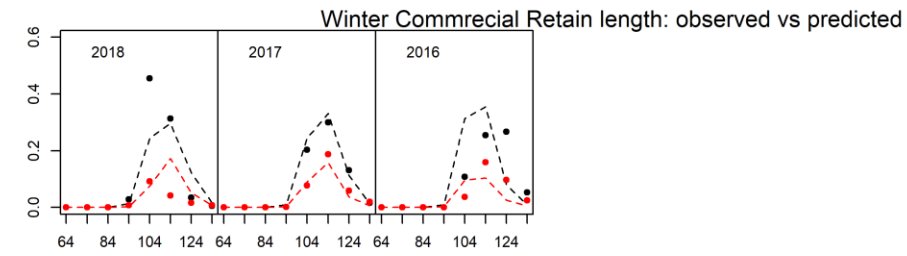
Trawl length: observed vs predicted





Proportion

CL mm



Proportion

CL mm

Figure C3-12. Predicted (dashed) vs. observed (dots) length class proportions for the observer survey.

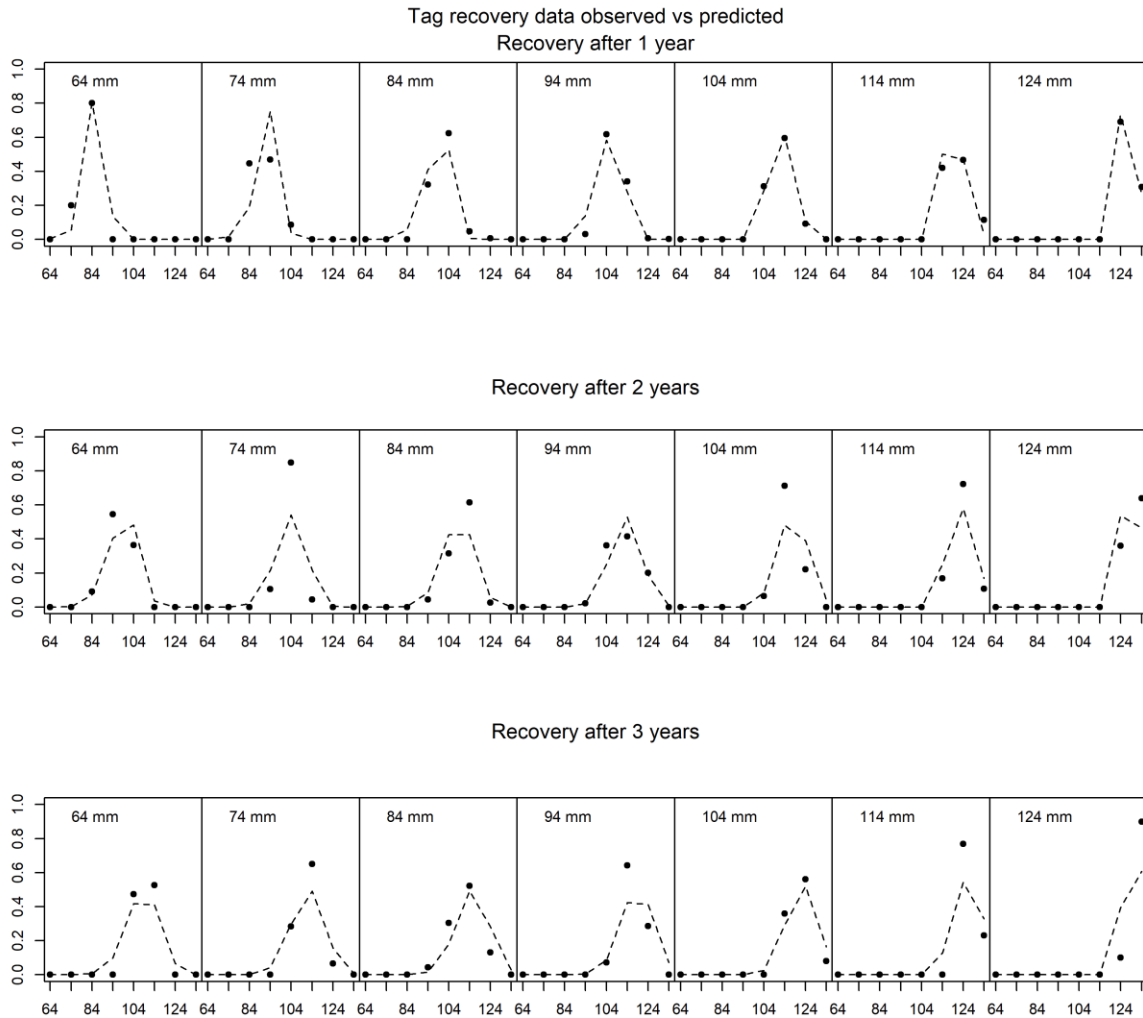


Figure C3-13. Predicted vs. observed length class proportions for tag recovery data.

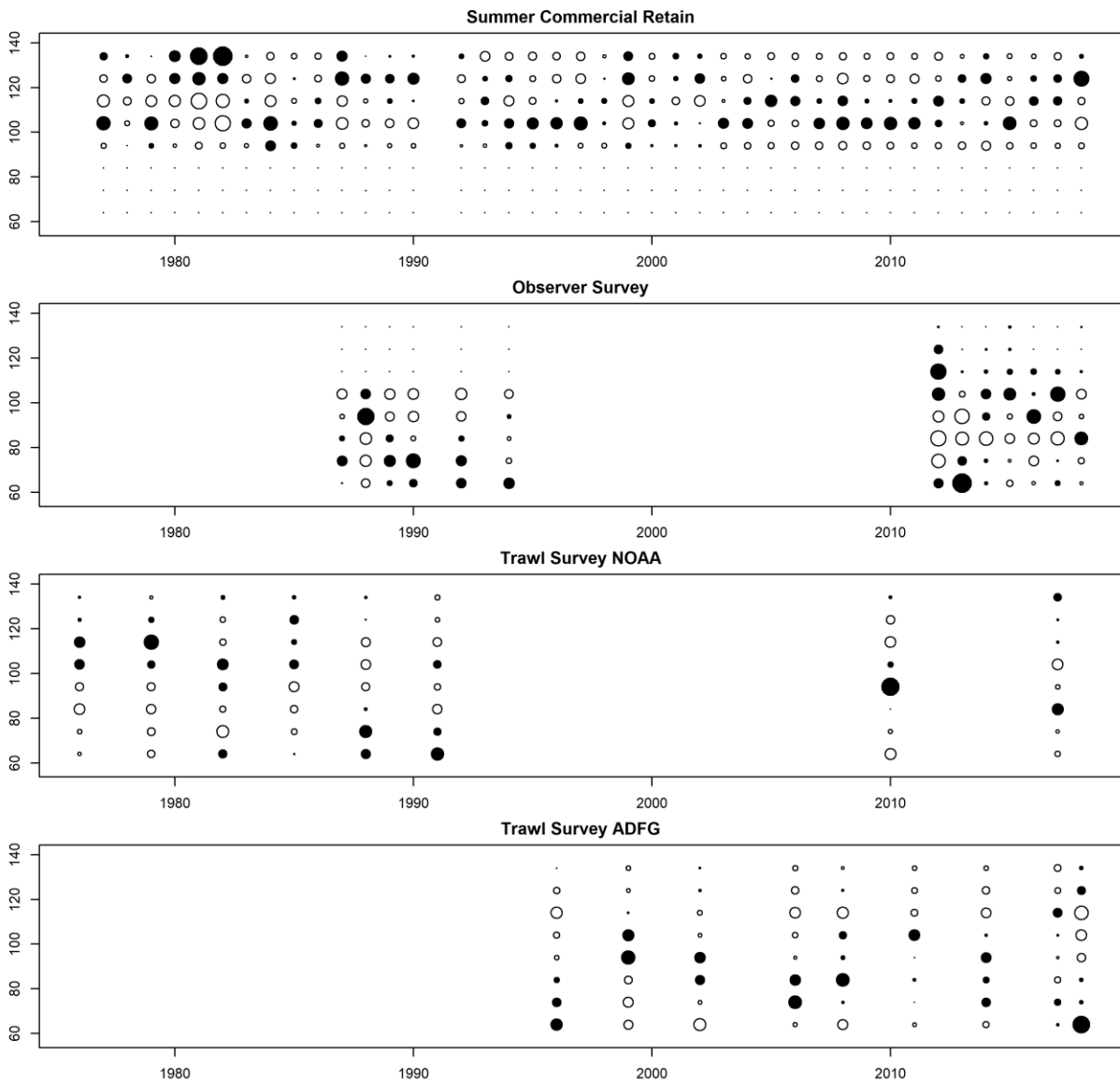


Figure C3-13. Bubble plots of predicted and observed length proportions. Black circle indicates model estimates lower than observed, white circle indicates model estimates higher than observed. Size of circle indicates degree of deviance (larger circle = larger deviance).

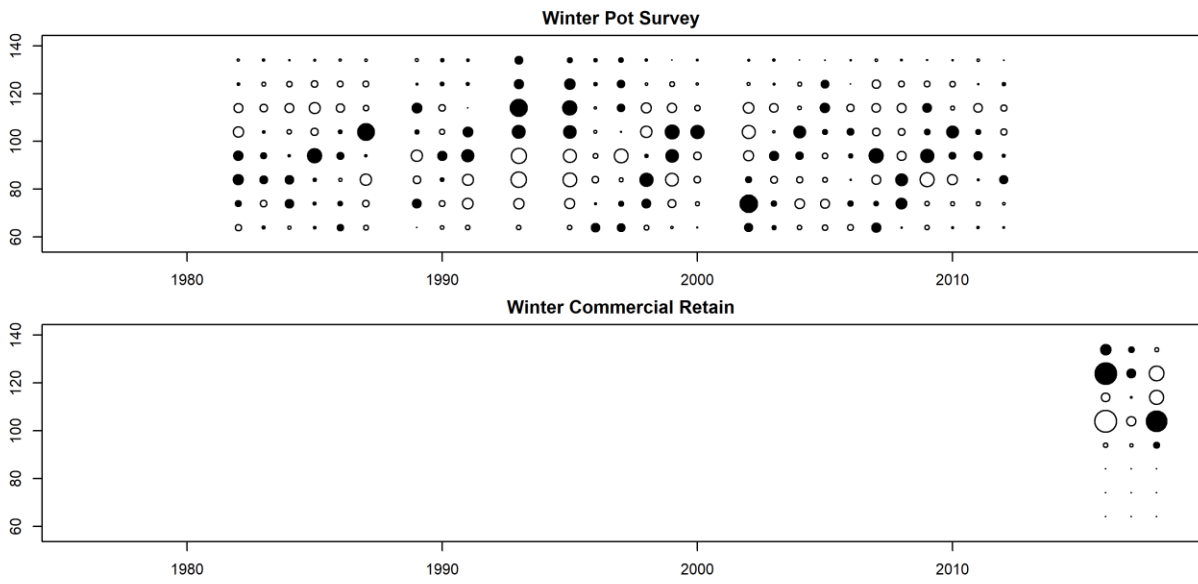


Figure C3-14. Bubble plots of predicted and observed length proportions. Black circle indicates model estimates lower than observed, white circle indicates model estimates higher than observed. Size of circle indicates degree of deviance (larger circle = larger deviance).



Table C3 . Summary of parameter estimates for a length-based stock synthesis population model of Norton Sound red king crab.

name	Estimate	std.dev
log_q1	-6.967	0.168
log_q2	-6.810	0.109
log_N76	9.031	0.130
R0	6.441	0.081
log_R76	0.005	0.415
log_R77	-0.542	0.369
log_R78	-0.726	0.353
log_R79	0.371	0.316
log_R80	0.501	0.283
log_R81	0.403	0.263
log_R82	0.369	0.314
log_R83	0.540	0.275
log_R84	0.146	0.291
log_R85	0.442	0.277
log_R86	0.061	0.285
log_R87	0.019	0.246
log_R88	0.022	0.258
log_R89	-0.332	0.279
log_R90	-0.278	0.253
log_R91	-0.530	0.286
log_R92	-0.676	0.302
log_R93	-0.583	0.289
log_R94	-0.297	0.257
log_R95	-0.066	0.225
log_R96	0.569	0.218
log_R97	-0.018	0.293
log_R98	-0.629	0.320
log_R99	-0.015	0.310
log_R00	0.306	0.263
log_R01	0.383	0.241
log_R02	-0.011	0.314
log_R03	-0.285	0.330
log_R04	0.296	0.241
log_R05	0.424	0.222
log_R06	0.475	0.243

name	Estimate	std.dev
log_R07	0.539	0.232
log_R08	0.136	0.288
log_R09	-0.364	0.294
log_R10	0.003	0.253
log_R11	0.281	0.273
log_R12	0.839	0.187
log_R13	-0.232	0.282
log_R14	-0.503	0.288
log_R15	-0.651	0.263
log_R16	-0.378	0.226
log_R17	-0.014	0.275
a1	1.482	4.554
a2	2.267	4.238
a3	3.788	4.040
a4	4.077	4.025
a5	4.302	4.016
a6	3.528	4.046
a7	2.095	4.313
r1	10.000	0.890
r2	9.680	0.907
log_a	-2.670	0.089
log_b	4.831	0.015
log_φst1	-5.000	0.104
log_φwa	-2.219	0.311
log_φwb	4.797	0.033
Sw1	0.072	0.035
Sw2	0.488	0.124
log_φl	5.462	4490.400
log_awr	-0.827	0.603
log_bwr	4.666	0.033
w <sup>2</sup> <sub>t</sub>	0.053	0.017
q	0.766	0.131
σ	3.917	0.214
β <sub>1</sub>	12.441	0.700
β <sub>2</sub>	7.656	0.173
ms78	3.186	0.272

