Appendix C8

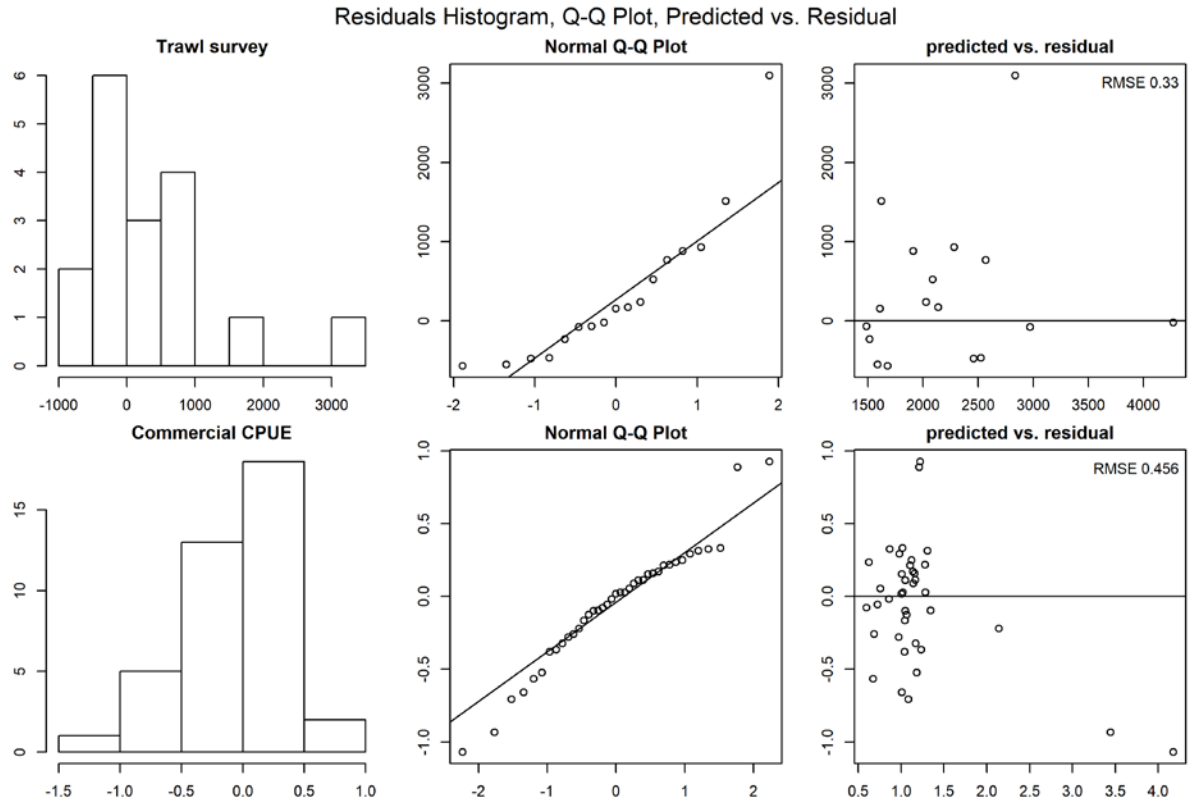


Figure C8-1. QQ Plot of Trawl survey and Commercial CPUE.

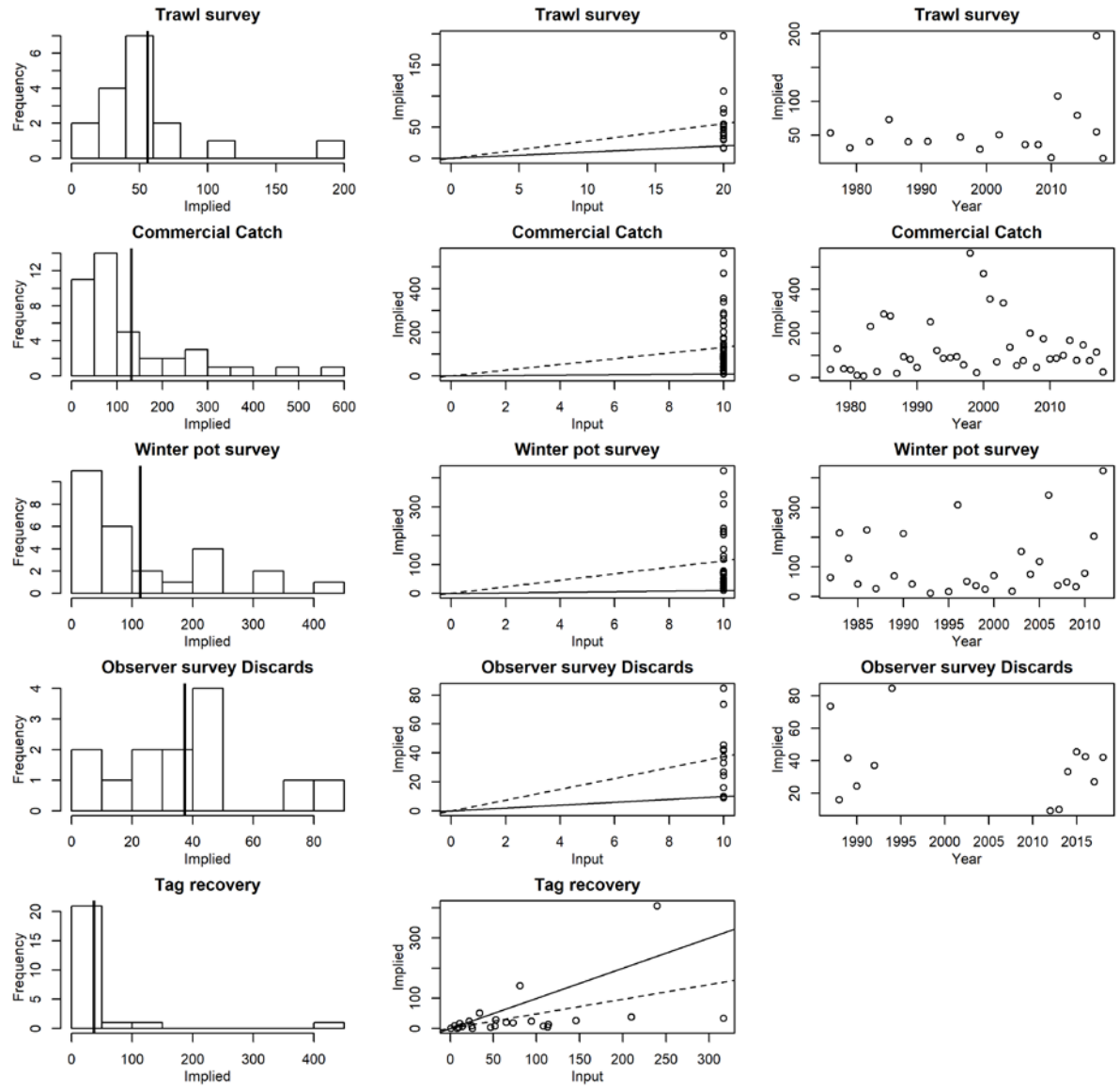


Figure C8-2: Implied effective samples. Figures in the first column show implied effective sample size (x-axis) vs. frequency (y-axis).
Vertical solid line is the mean implied effective sample size.
The second column show input sample size (x-axis) vs. implied effective sample size (y-axis). Dashed line 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).

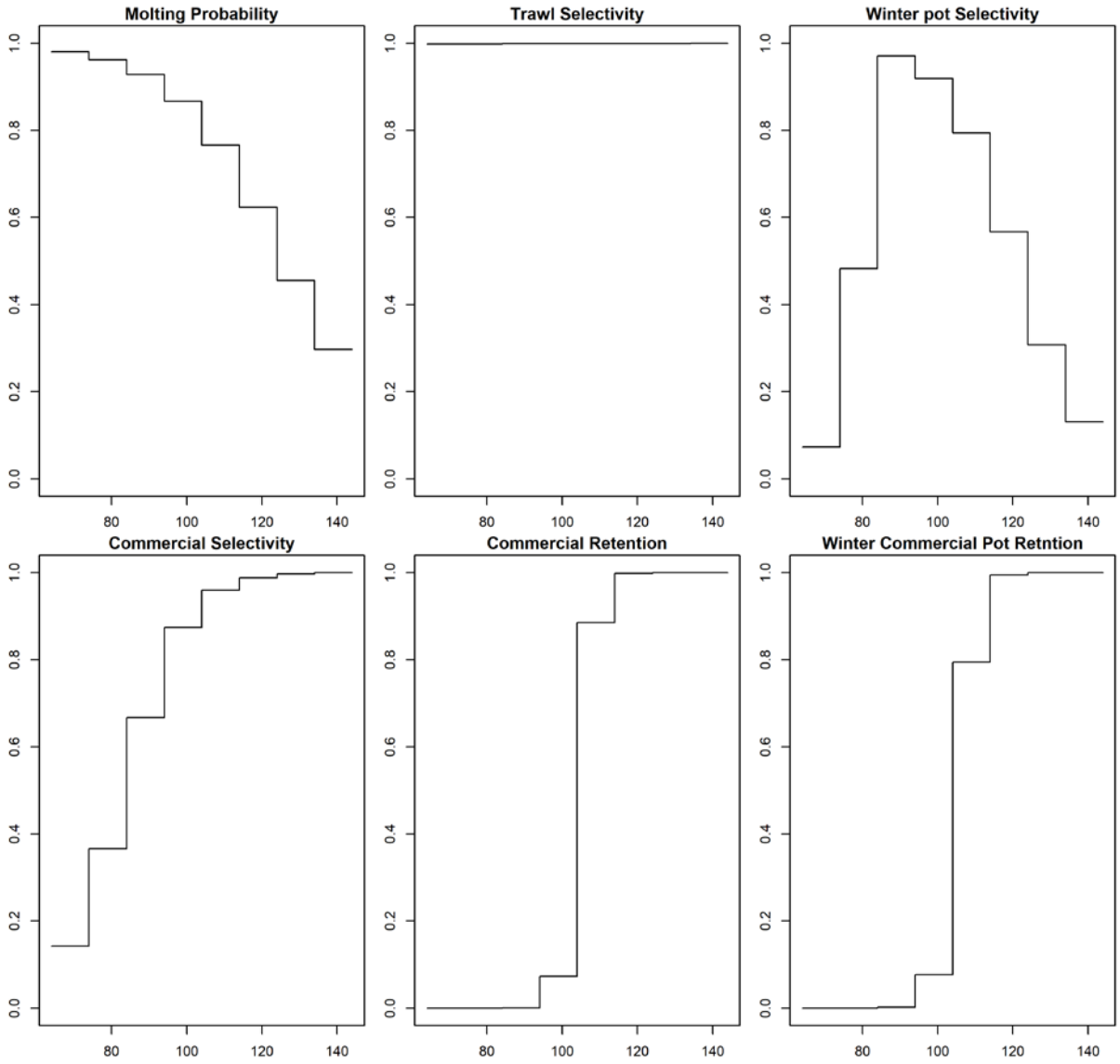


Figure C8-3. Molting probability and trawl/pot selectivity. X-axis is carapace length.

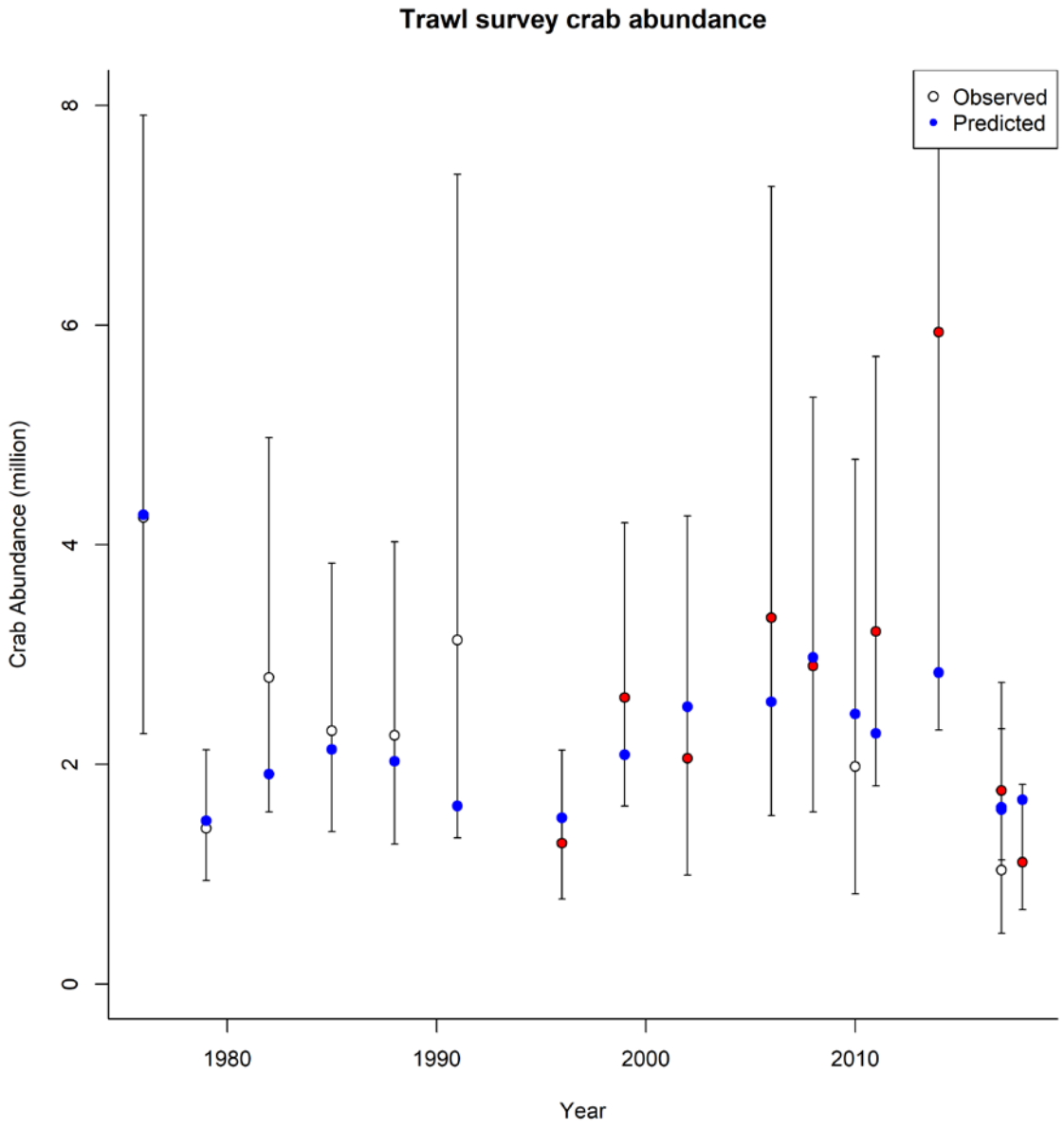


Figure C8-4. Estimated trawl survey male abundance (crab >= 64 mm CL). Observed: White: NOAA Trawl Survey, Red: ADG&G Trawl Survey

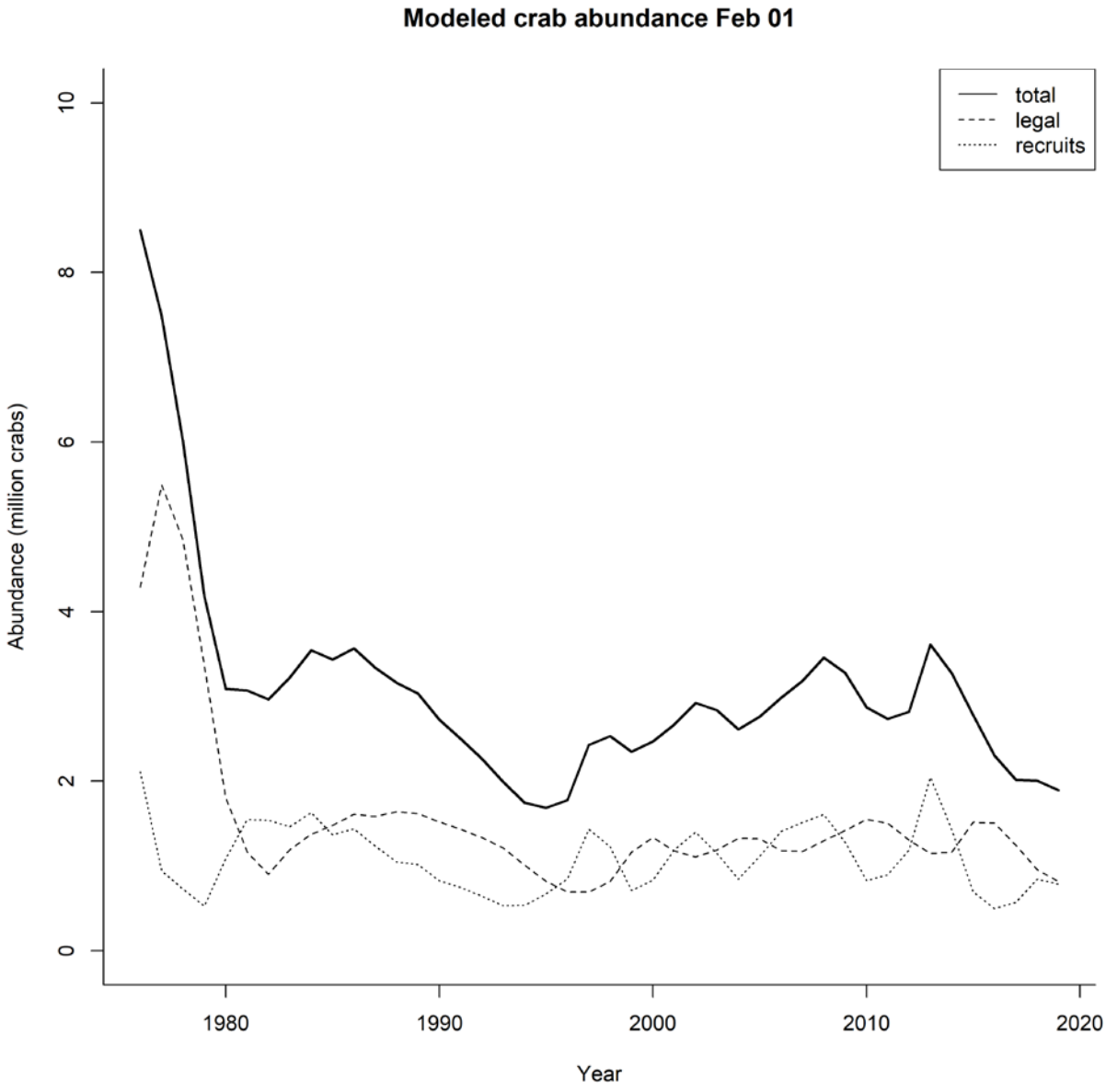


Figure C8-5. Estimated abundance of legal males from 1976-2015.

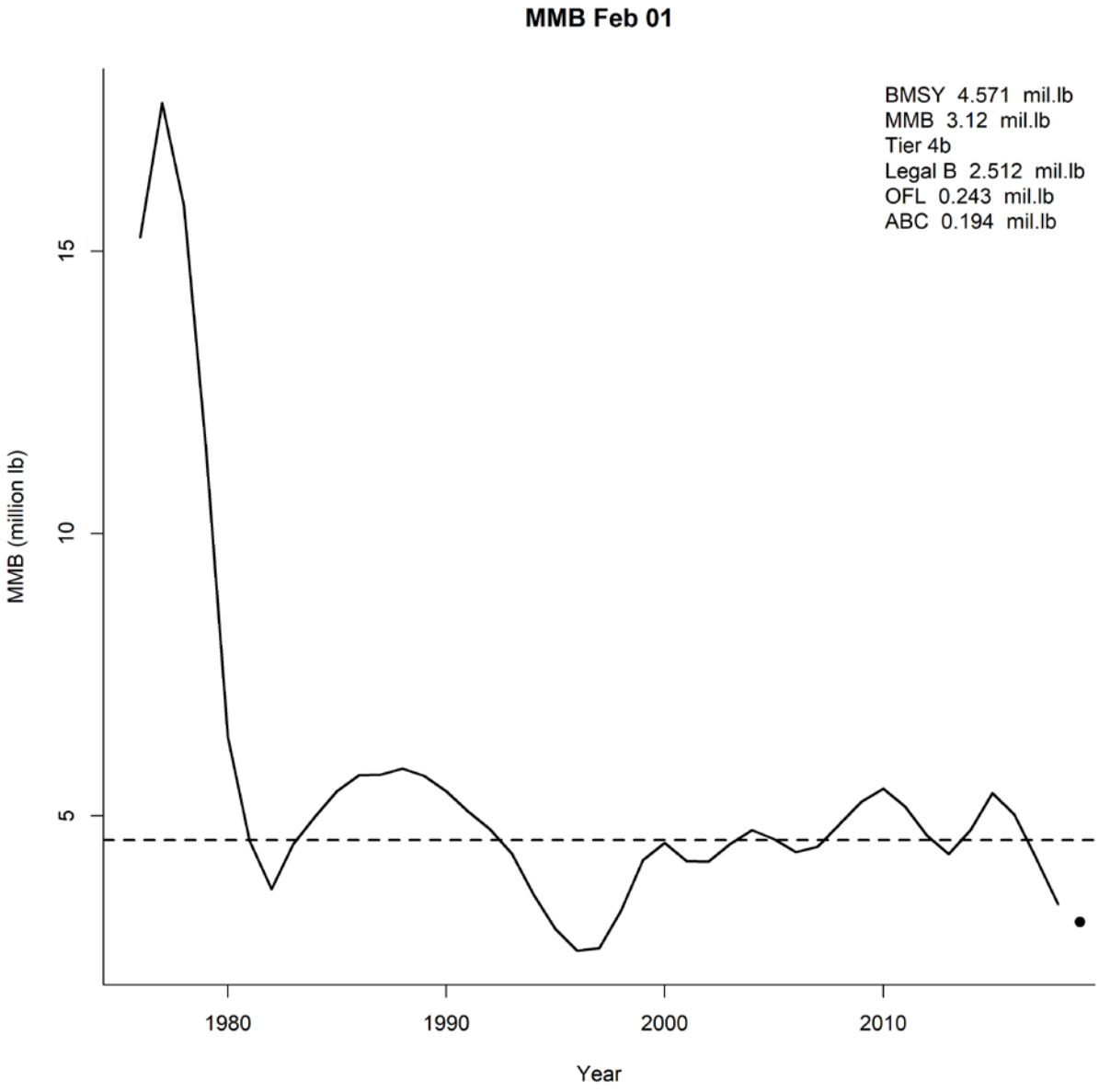


Figure C8-6. Estimated abundance of Mature Male Biomass from 1976-2019. Dash line shows Bmsy (Average MMB of 1980-2019).

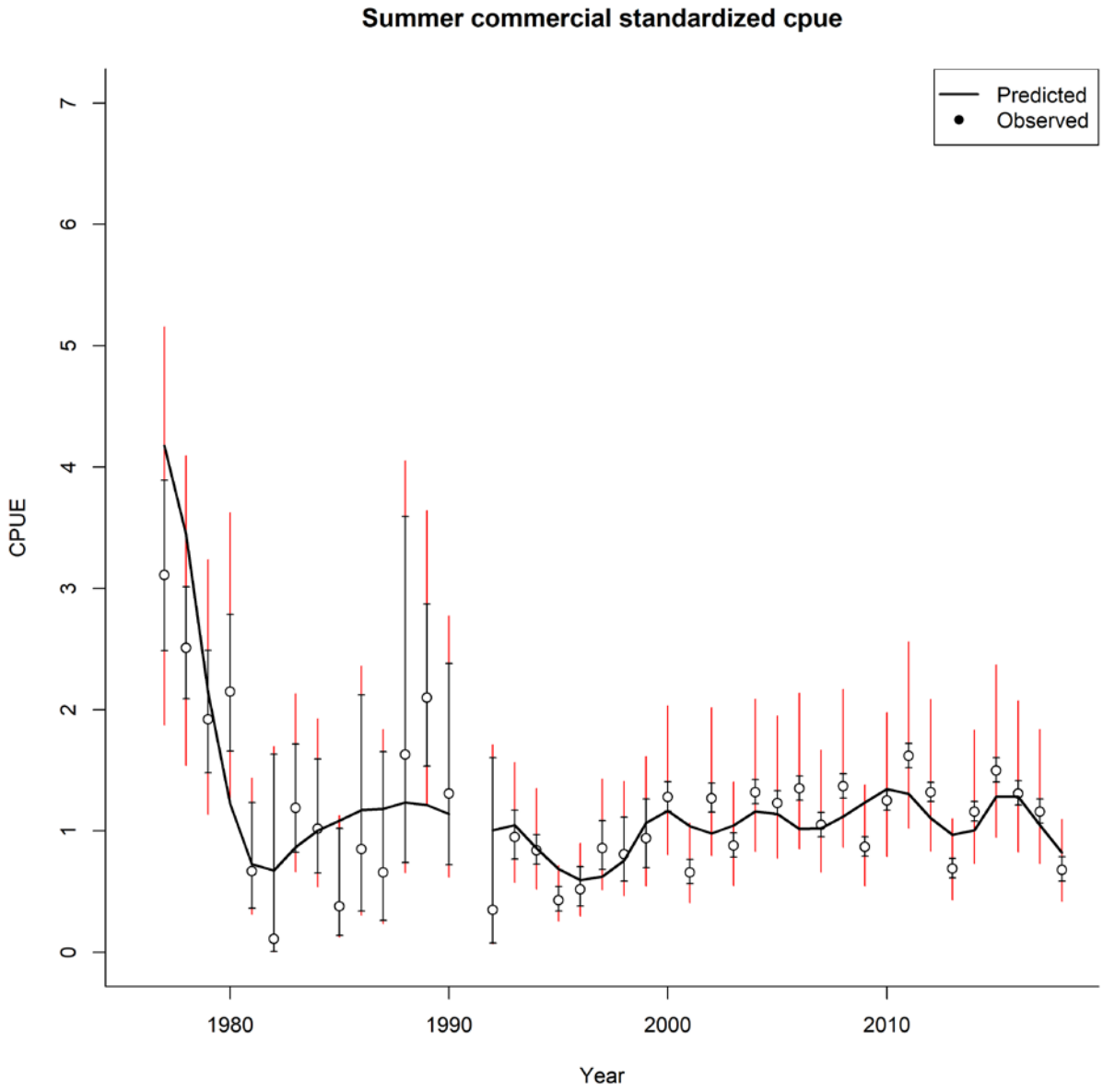


Figure C8-7. Summer commercial standardized cpue 1977-2018.

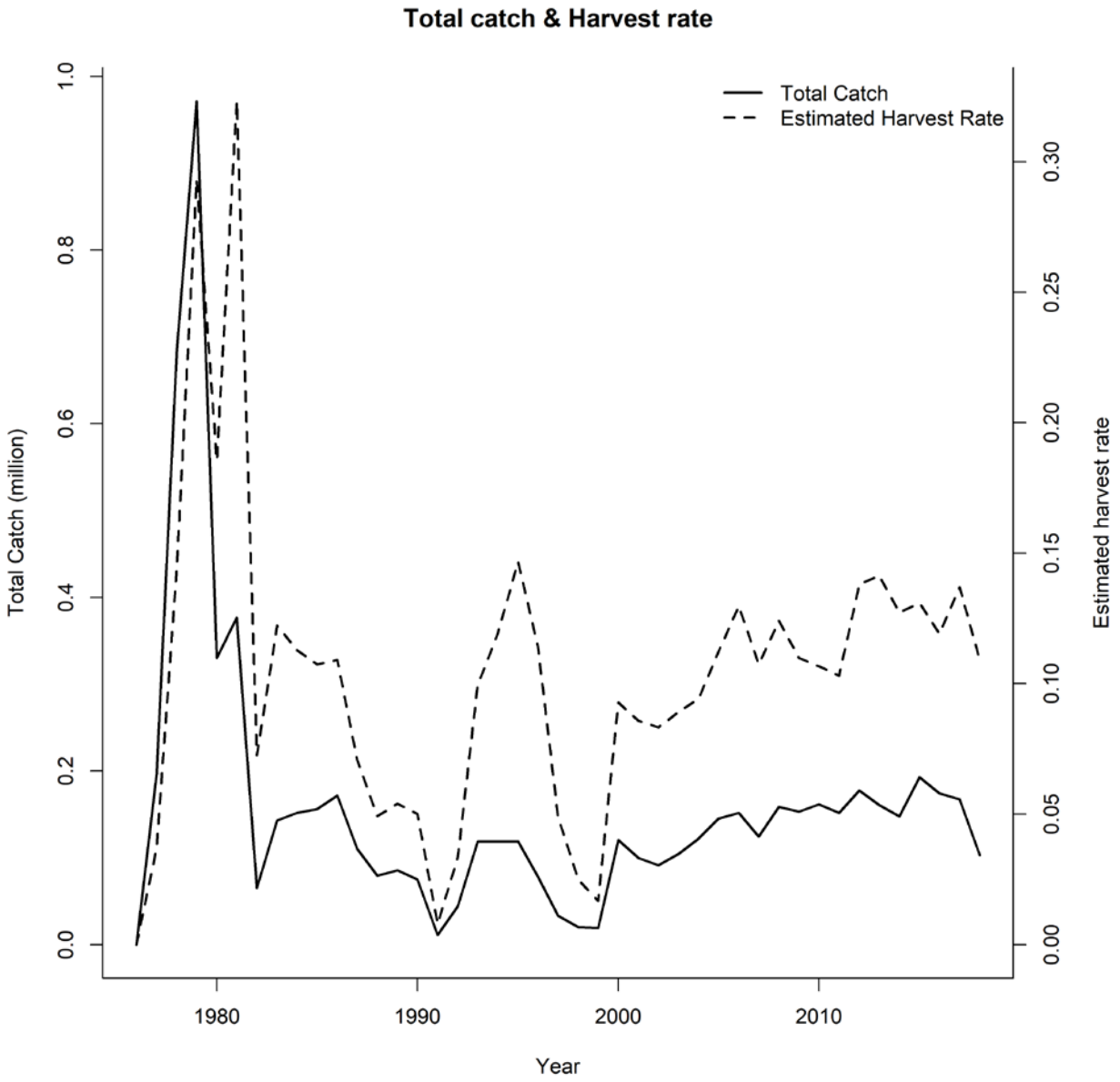


Figure C8-8. Total catch and estimated harvest rate 1976-2018.

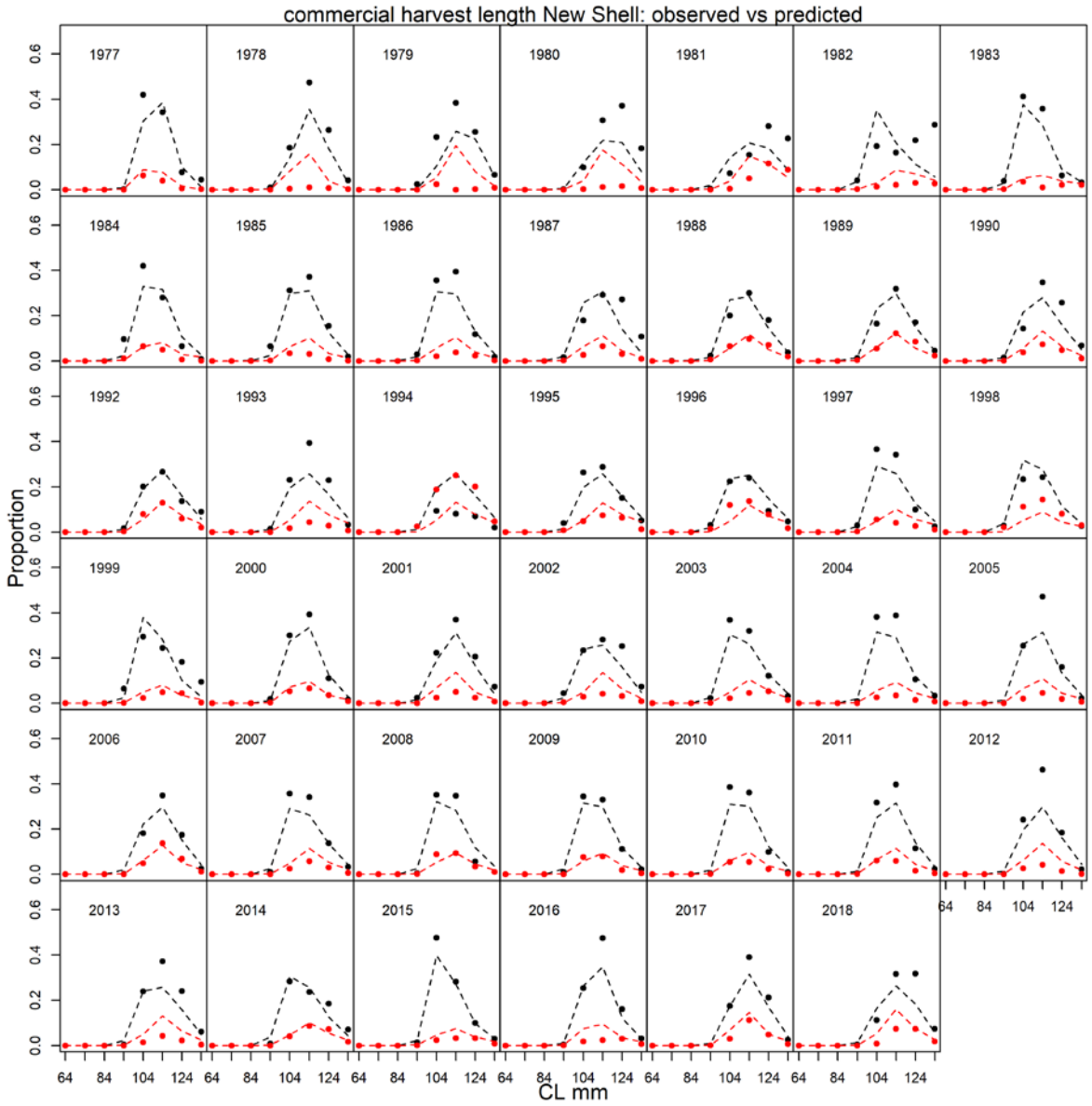


Figure C8-9. Predicted (dashed line) vs. observed (dots) length class proportions for commercial catch. Bladk: New Shell, Red: Old Shell

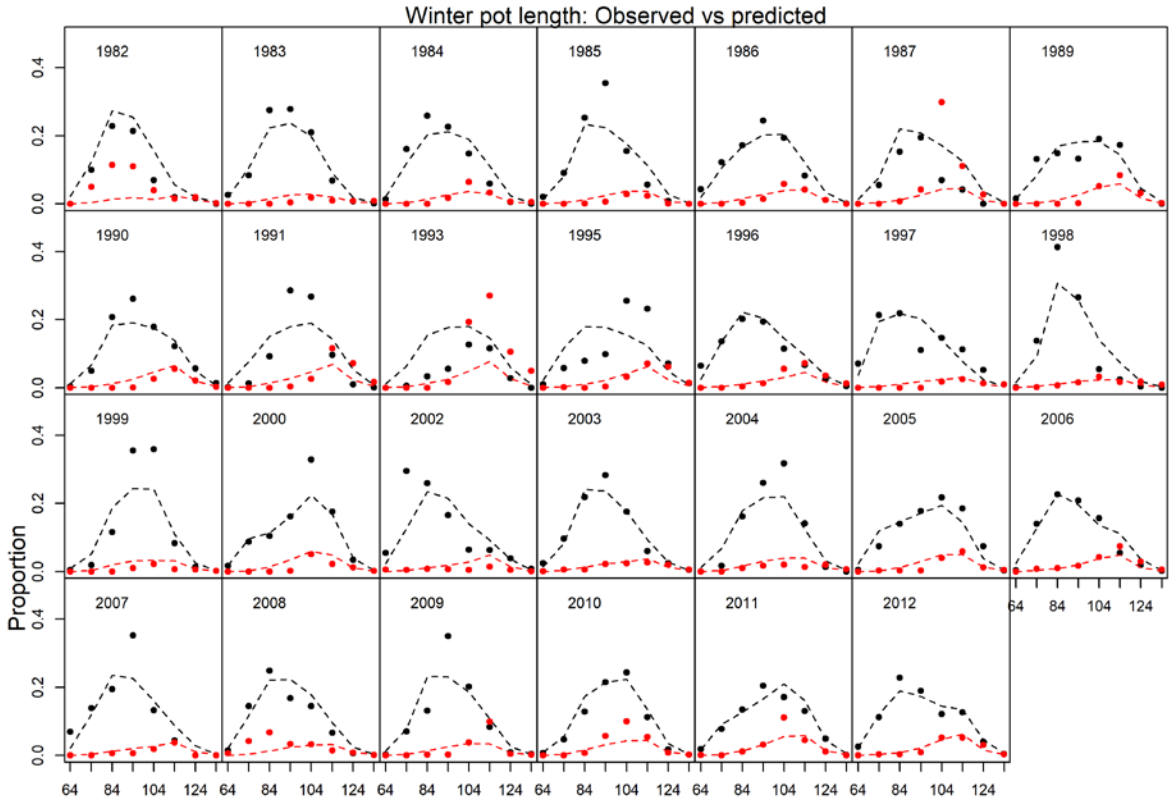


Figure C8-10. Predicted (dashed line) vs. observed (black dots) length class proportions for the winter and spring pot survey.

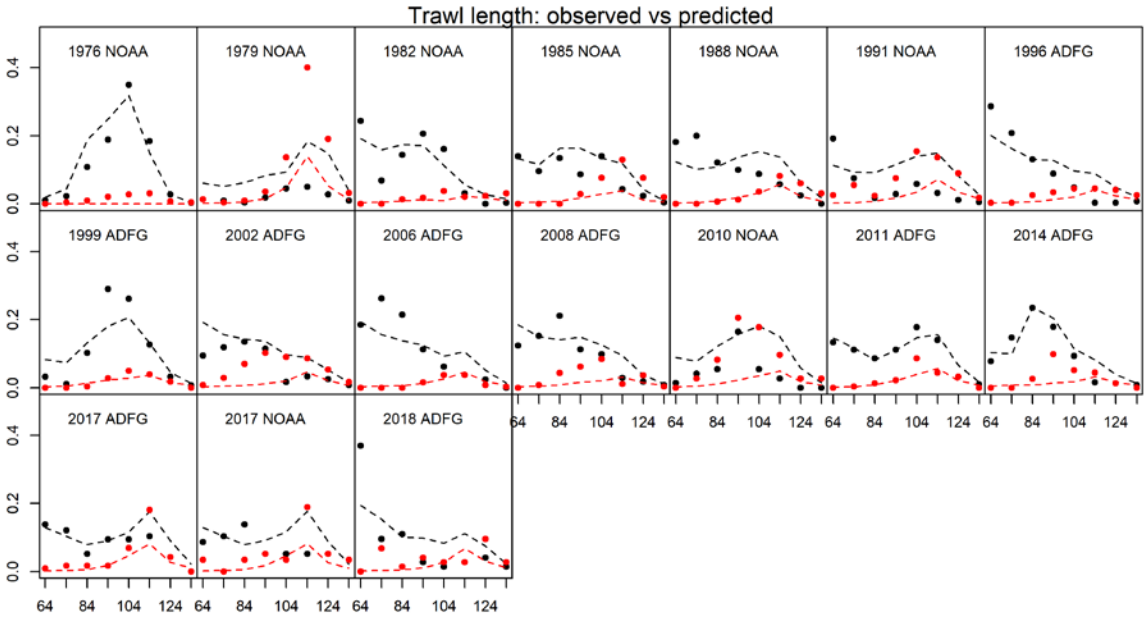


Figure C8-11. Predicted (dashed) vs. observed (dots) length class proportions for trawl survey.

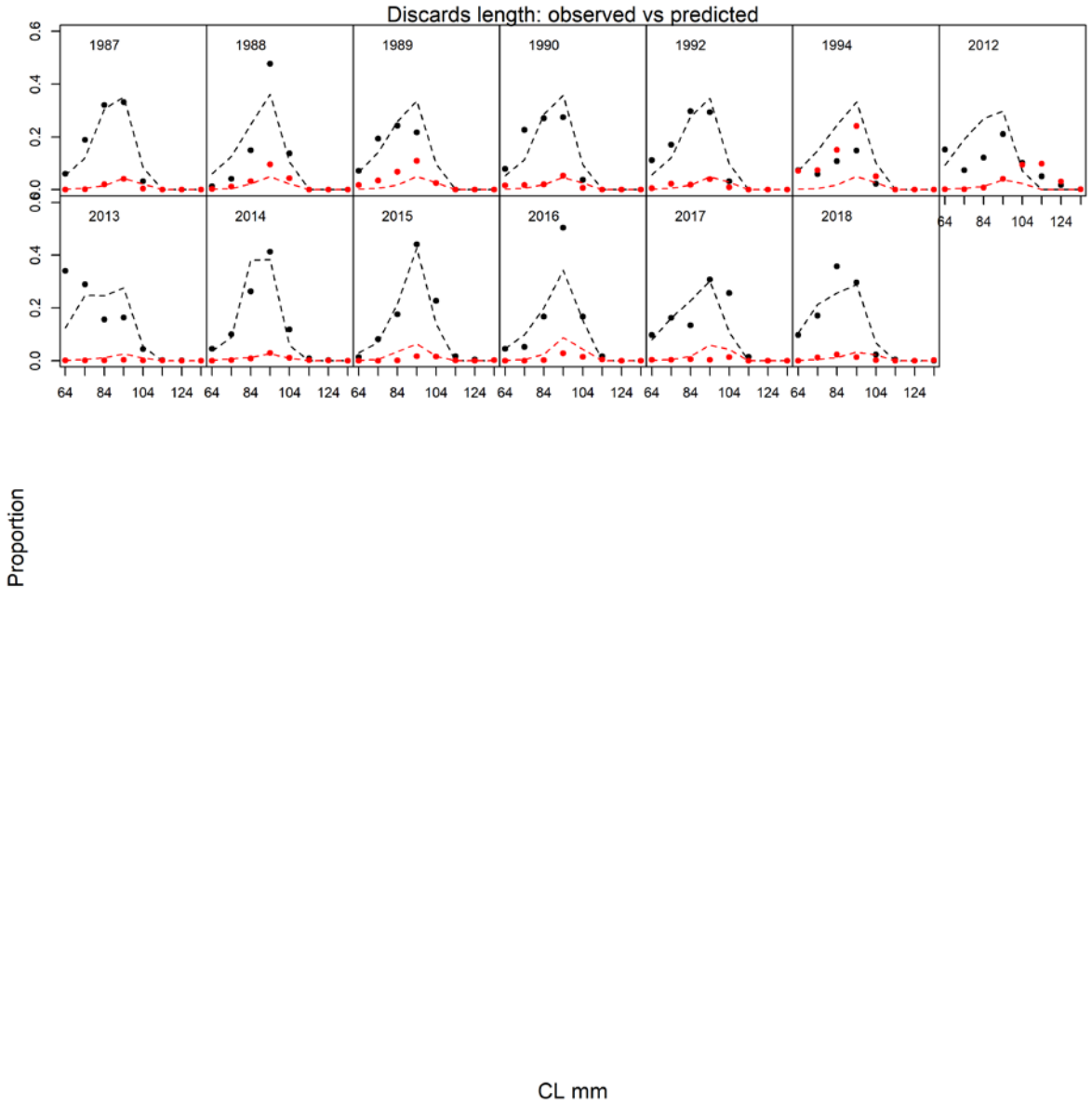


Figure C8-12. Predicted (dashed) vs. observed (dots) length class proportions for the observer survey.

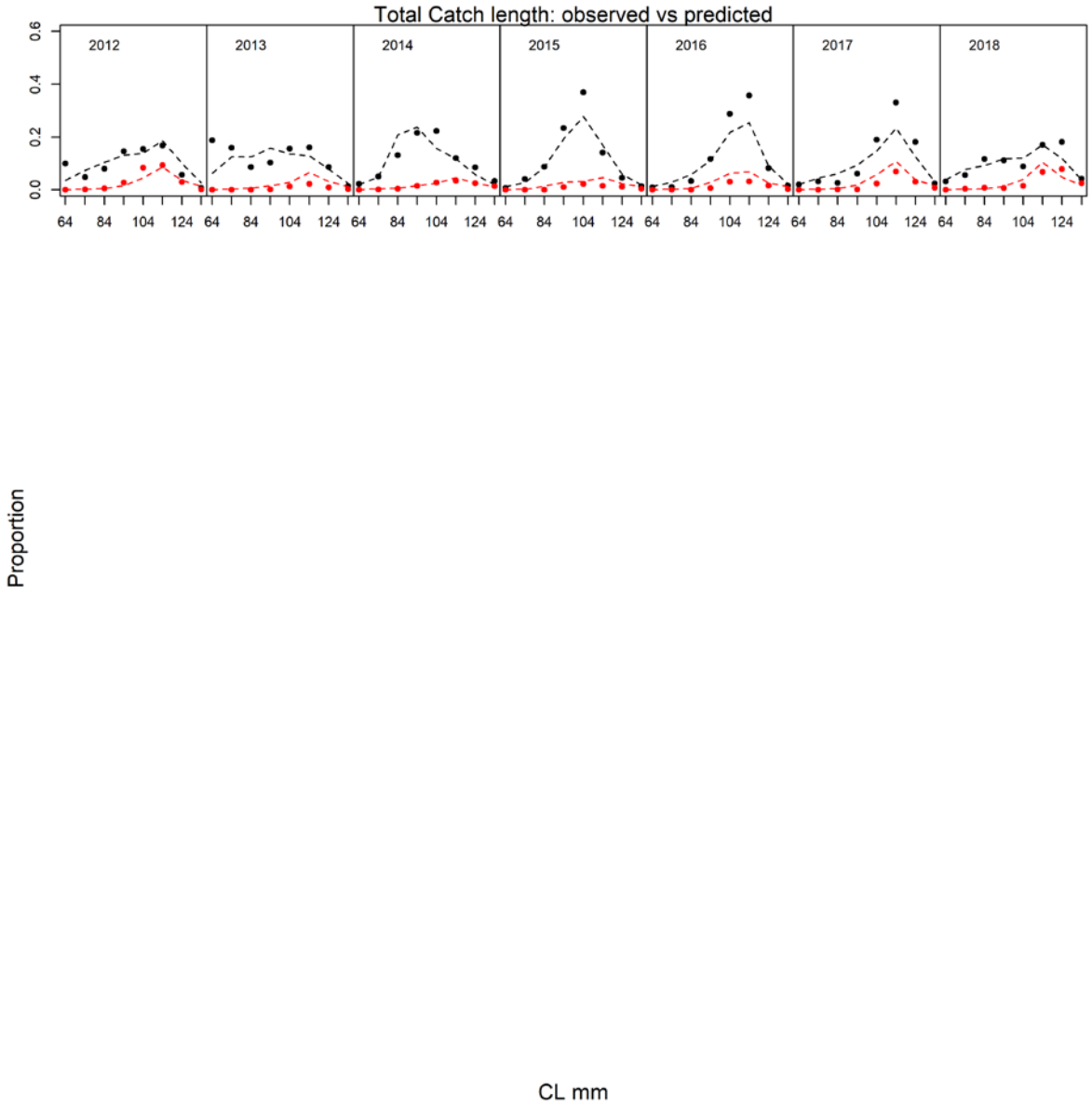
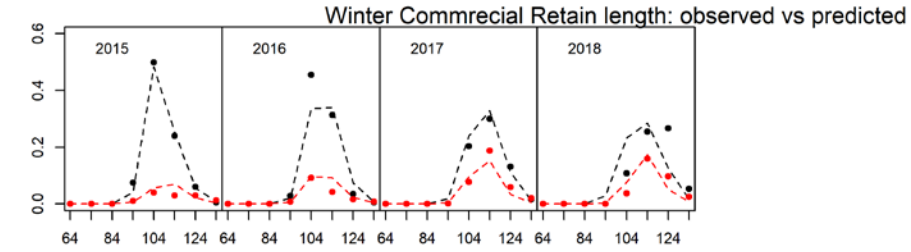


Figure C8-13. Predicted (dashed) vs. observed (dots) length class proportions for the observer survey.



Proportion

CL mm

Figure C8-14. Predicted (dashed) vs. observed (dots) length class proportions for the Winter Commercial.

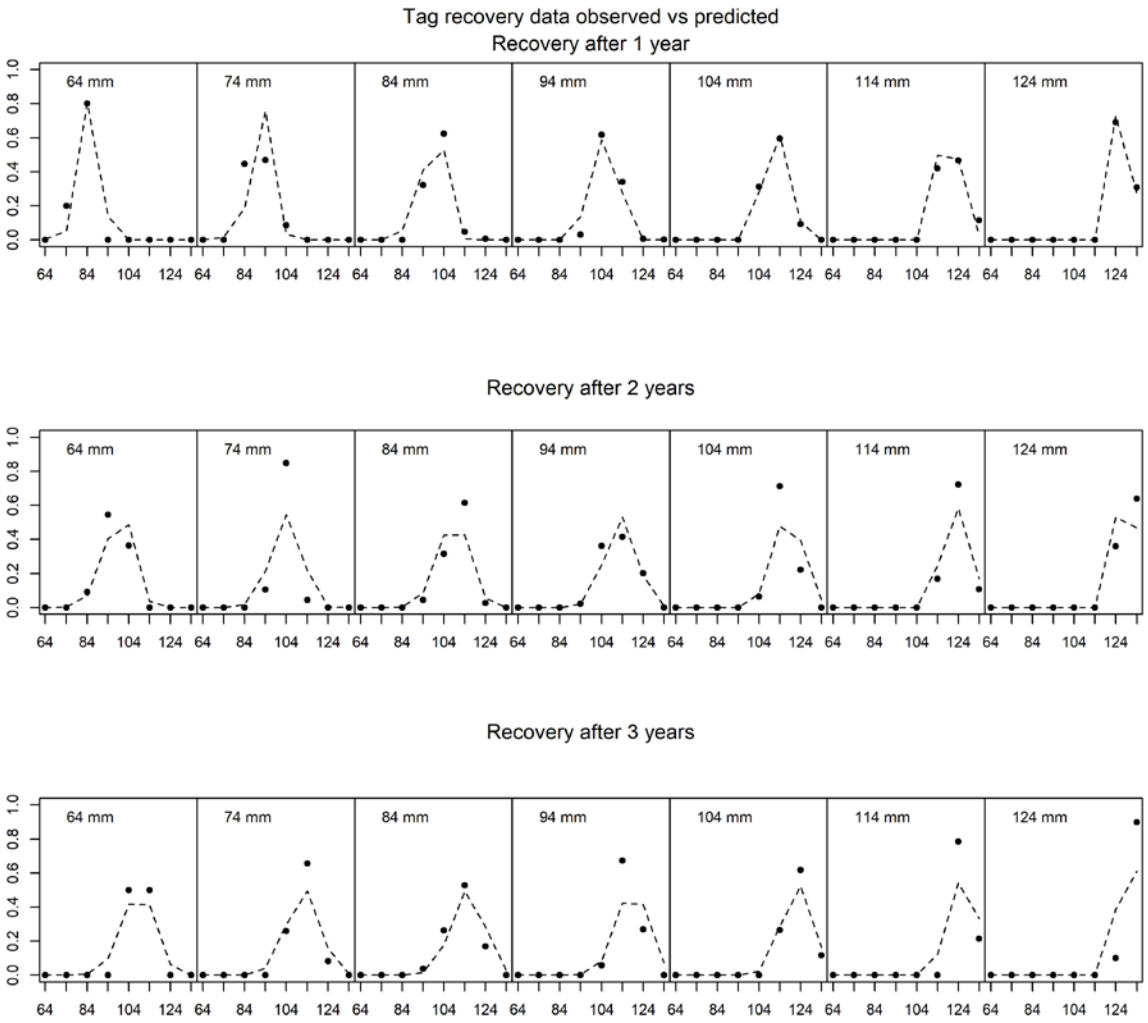
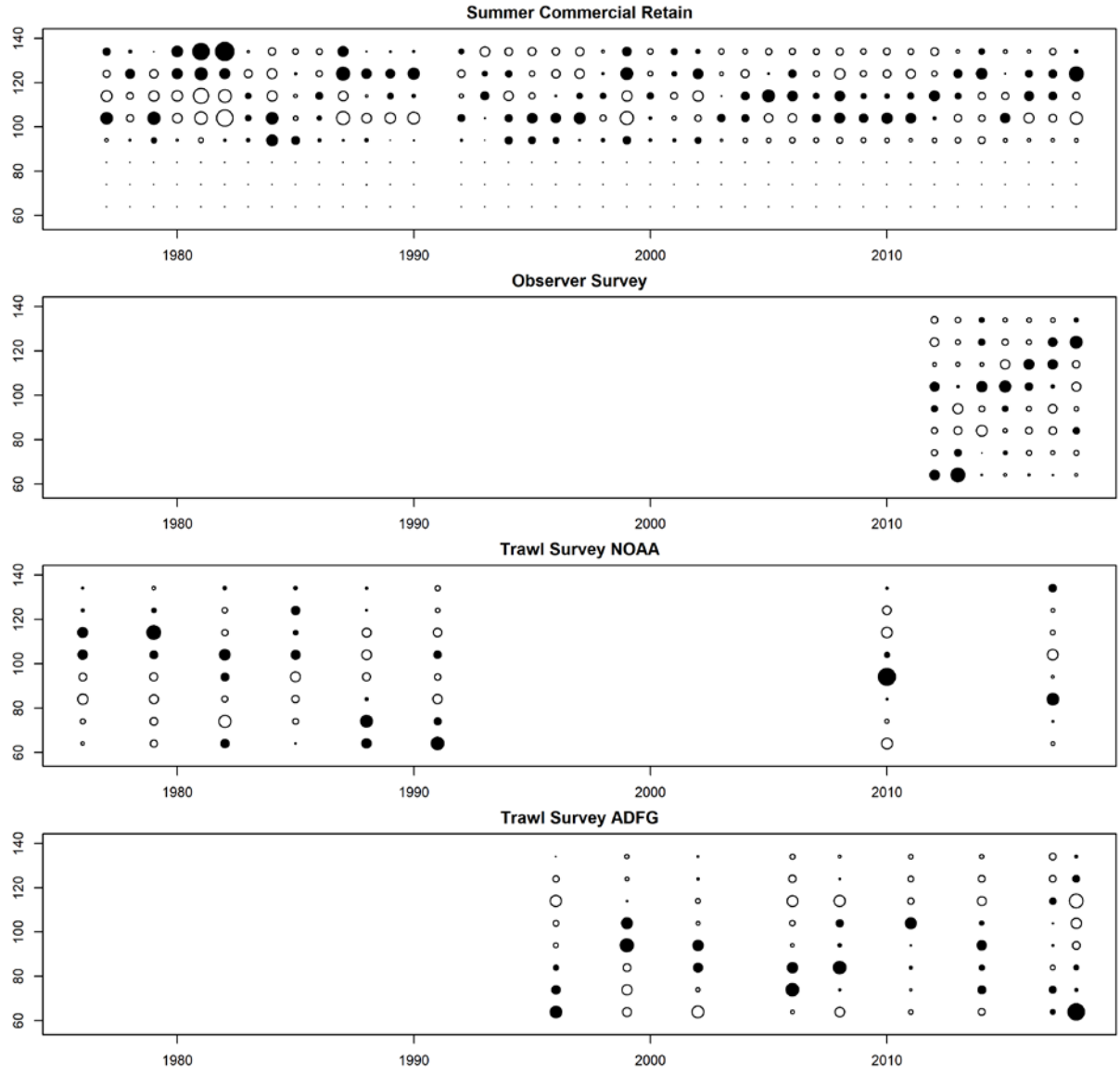


Figure C8-15. Predicted vs. observed length class proportions for tag recovery data.


Summer Commercial Retain
Observer Survey
Trawl Survey NOAA
Trawl Survey ADFG
60
80
100
120
140
1980
1990
2000
2010

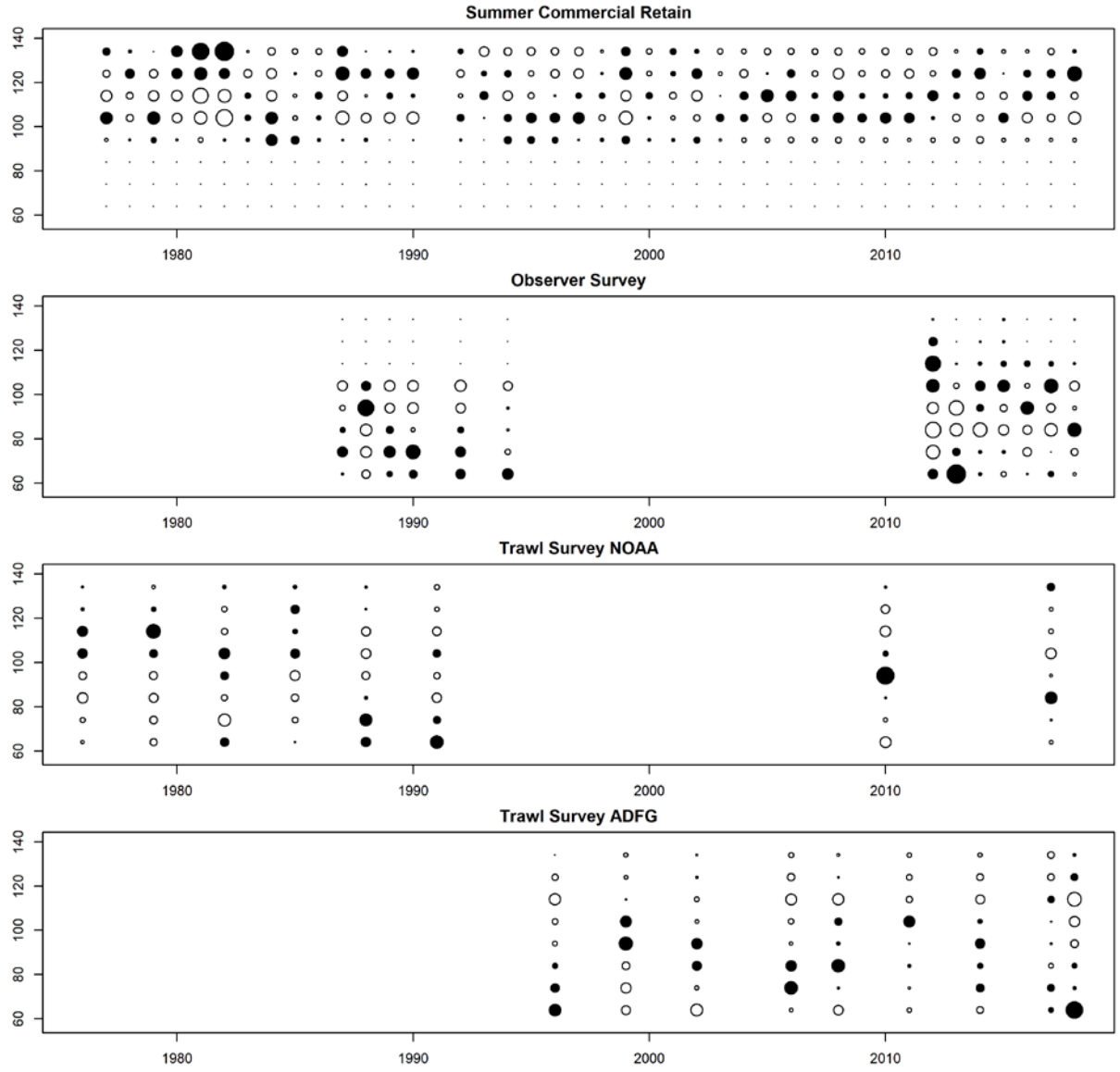


Figure C8-16. Bubble plots of predicted and observed length proportions.
Black circle indicates model estimates lower than observed, white circle indicates model estimates higher than observed. Size of circle indicates degree of deviance (larger circle = larger deviance).

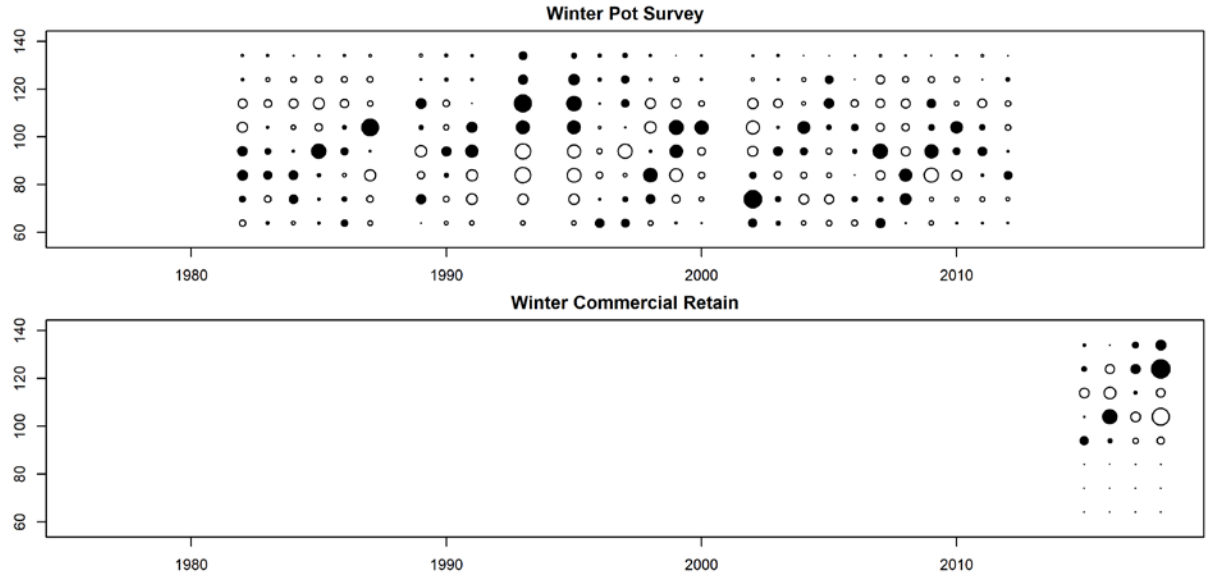


Figure C8-17. Bubble plots of predicted and observed length proportions.
Black circle indicates model estimates lower than observed, white circle indicates model estimates higher than observed. Size of circle indicates degree of deviance (larger circle = larger deviance).

Table C8. Summary of parameter estimates for a length-based stock synthesis population model of Norton Sound red king crab.

name	Estimate	std.dev
log_q_1	-7.002	0.171
log_q_2	-6.826	0.112
log_N_{76}	9.048	0.131
R_0	6.439	0.081
log_R_{76}	0.021	0.418
log_R_{77}	-0.533	0.370
log_R_{78}	-0.719	0.354
log_R_{79}	0.375	0.318
log_R_{80}	0.526	0.282
log_R_{81}	0.416	0.263
log_R_{82}	0.380	0.316
log_R_{83}	0.568	0.275
log_R_{84}	0.175	0.292
log_R_{85}	0.461	0.280
log_R_{86}	0.076	0.287
log_R_{87}	0.026	0.248
log_R_{88}	0.028	0.259
log_R_{89}	-0.317	0.279
log_R_{90}	-0.282	0.255
log_R_{91}	-0.520	0.284
log_R_{92}	-0.699	0.305
log_R_{93}	-0.576	0.289
log_R_{94}	-0.288	0.256
log_R_{95}	-0.065	0.225
log_R_{96}	0.569	0.218
log_R_{97}	-0.011	0.292
log_R_{98}	-0.631	0.319
log_R_{99}	-0.002	0.308
log_R_{00}	0.299	0.263
log_R_{01}	0.394	0.239
log_R_{02}	-0.007	0.313
log_R_{03}	-0.283	0.329
log_R_{04}	0.286	0.240
log_R_{05}	0.417	0.220
log_R_{06}	0.446	0.241
log_R_{07}	0.518	0.228
log_R_{08}	0.083	0.284

name	Estimate	std.dev
log_R_{09}	-0.397	0.289
log_R_{10}	0.020	0.244
log_R_{11}	0.288	0.275
log_R_{12}	0.926	0.182
log_R_{13}	-0.111	0.288
log_R_{14}	-0.653	0.310
log_R_{15}	-0.745	0.276
log_R_{16}	-0.452	0.239
log_R_{17}	-0.006	0.282
a_1	1.476	4.534
a_2	2.291	4.214
a_3	3.740	4.021
a_4	4.025	4.006
a_5	4.273	3.997
a_6	3.515	4.027
a_7	2.083	4.300
r1	10.000	0.798
r2	9.704	0.818
log_a	-2.685	0.091
log_b	4.835	0.016
log_ϕ_{st1}	-5.000	0.082
log_ϕ_{wa}	-2.224	0.308
log_ϕ_{wb}	4.796	0.033
Sw1	0.073	0.035
Sw2	0.483	0.123
log_ϕ_1	-2.085	0.056
log_acr	-0.781	0.129
log_bcr	4.645	0.008
log_awr	-0.781	0.129
log_bwr	4.645	0.008
w^2_t	0.051	0.016
q	0.754	0.130
σ	3.891	0.208
β_1	12.496	0.695
β_2	7.636	0.170
ms78	3.206	0.265