Appendix C2: Results Model 1

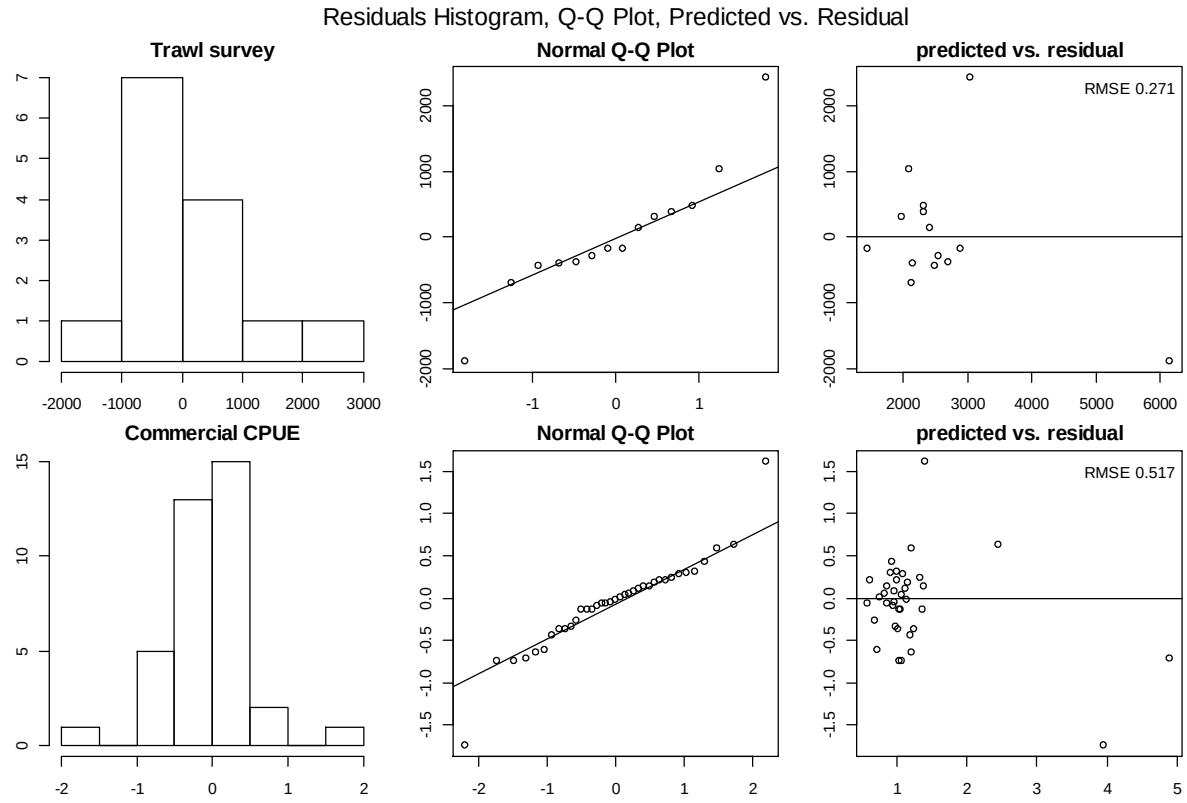

Figure C2-1. QQ plots of trawl survey abundance and commercial CPUE residuals.

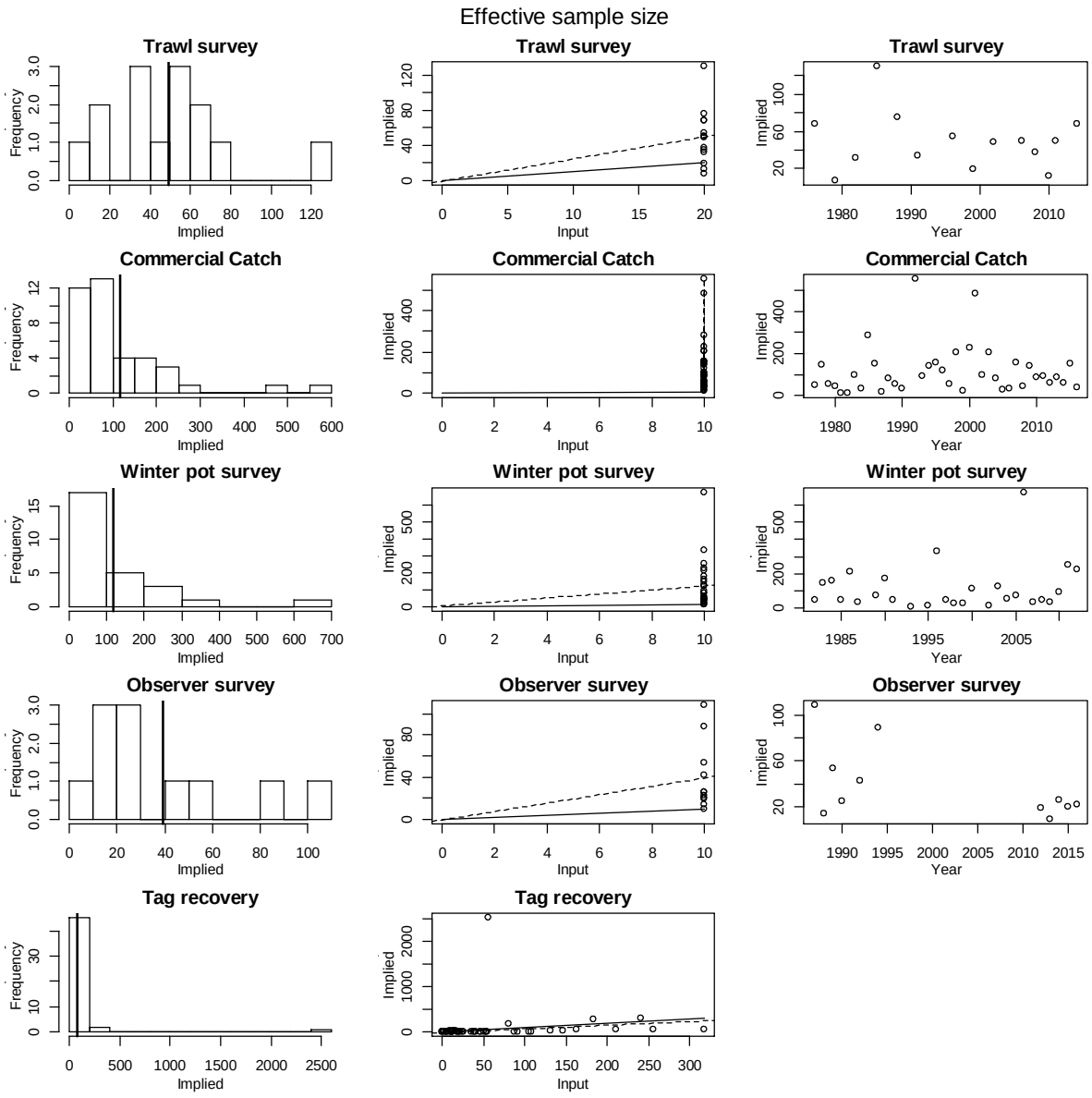

Figure C2-2: Implied effective sample sizes. Figures in the first column show implied effective sample size (x-axis) vs. frequency (y-axis). Vertical solid line is the mean implied effective sample size. The second column shows input sample sizes (x-axis) vs. implied effective sample sizes (y-axis). Dashed line indicates the linear regression slope, and solid line is 1:1 line. The third column shows years (x-axis) vs. implied effective sample sizes (y-axis).

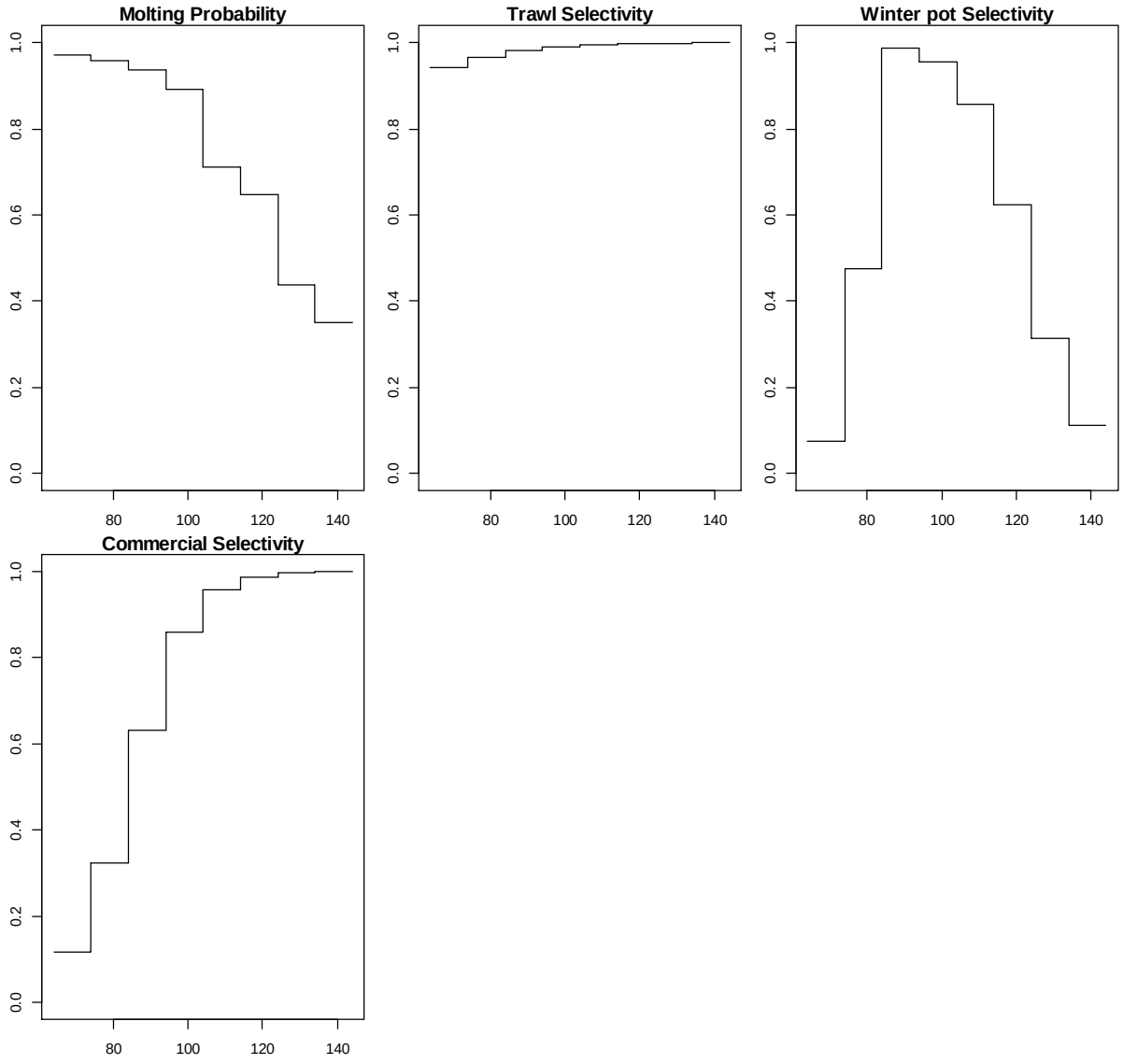

Figure C2-3. Model estimated annual molting probability, trawl survey selectivity, winter pot survey selectivity, and summer commercial fishery selectivity. X-axis is carapace length (mm).

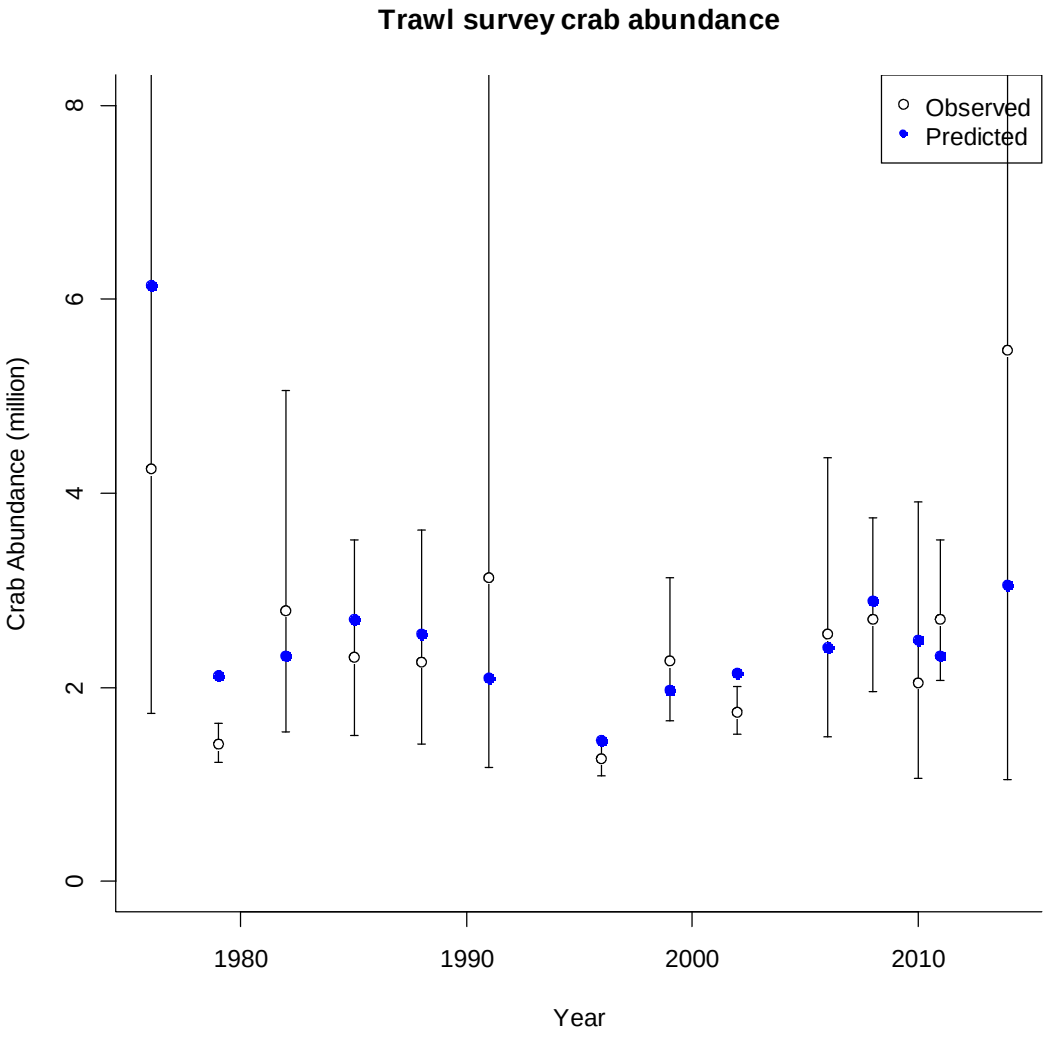

Figure C2-4. Observed and model estimated trawl survey male abundances over time with 95% confidence intervals (crab ≥ 74 mm CL).

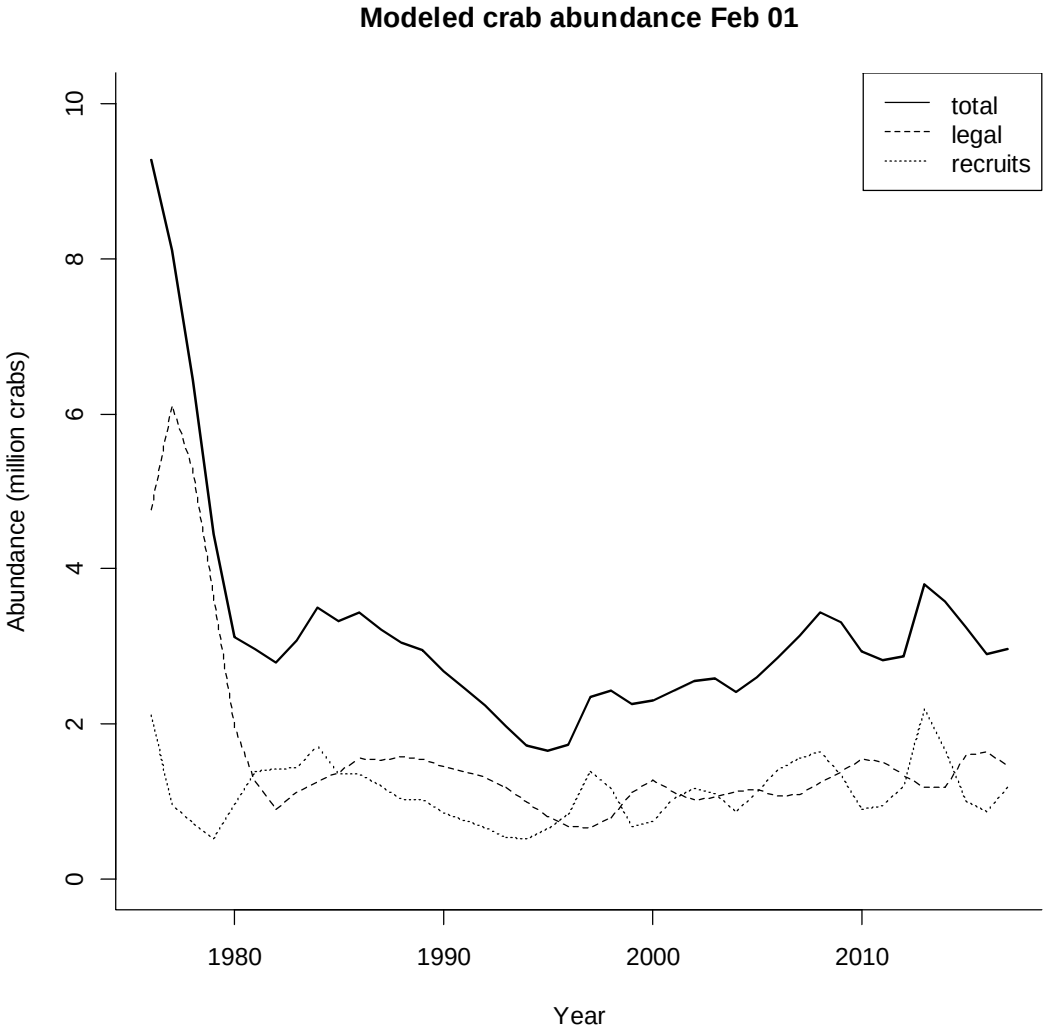

Figure C2-5. Estimated abundance of total, legal, and recruits males from 1976-2016.

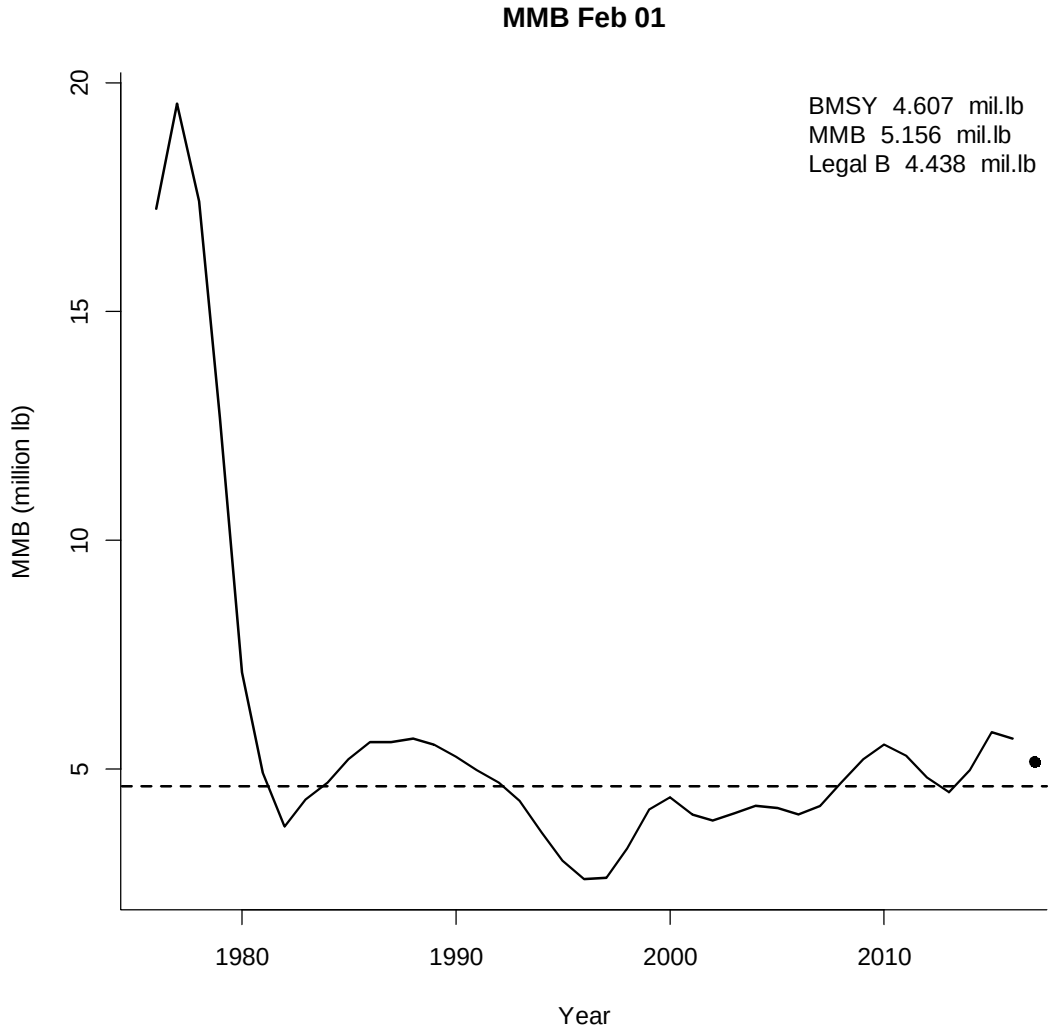

Figure C2-6. Estimated abundance of leg recruits from 1976-2016. Dash line shows B_{msy} (Average MMB of 1980-2016).

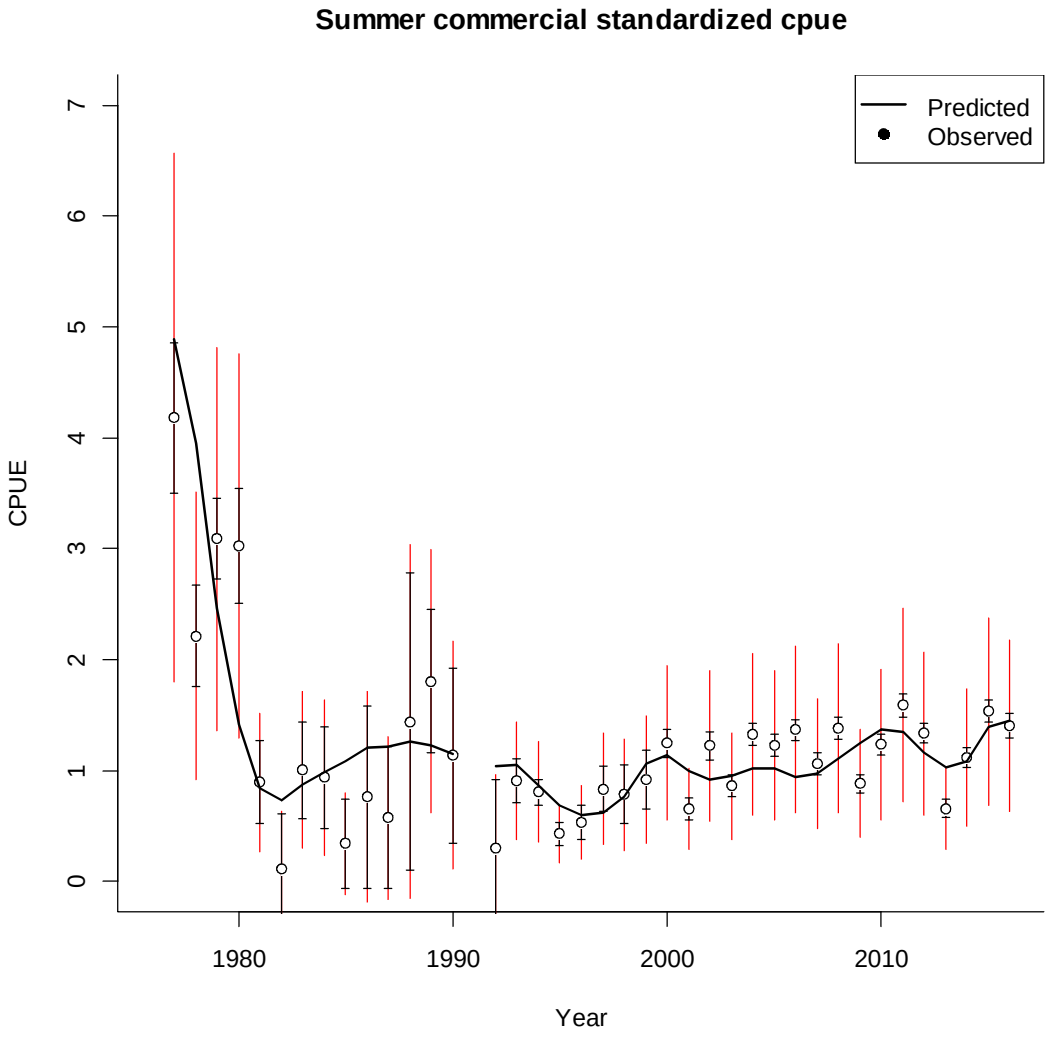

Figure C2-7. Su Summer commercial fishery standardized cpue during 1977-2016.

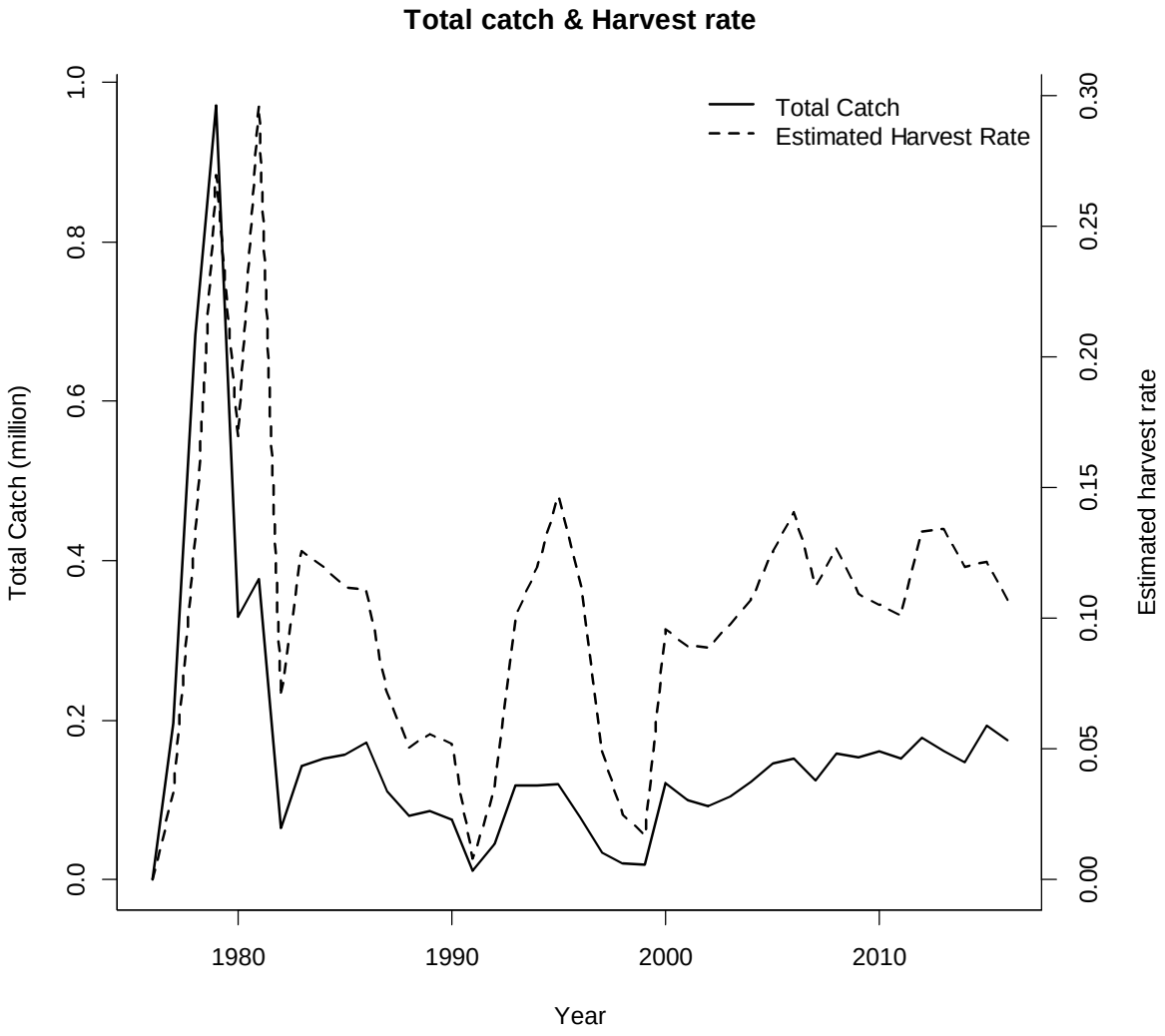

Figure C2-8. Total catch and estimated harvest rates during1976-2016.

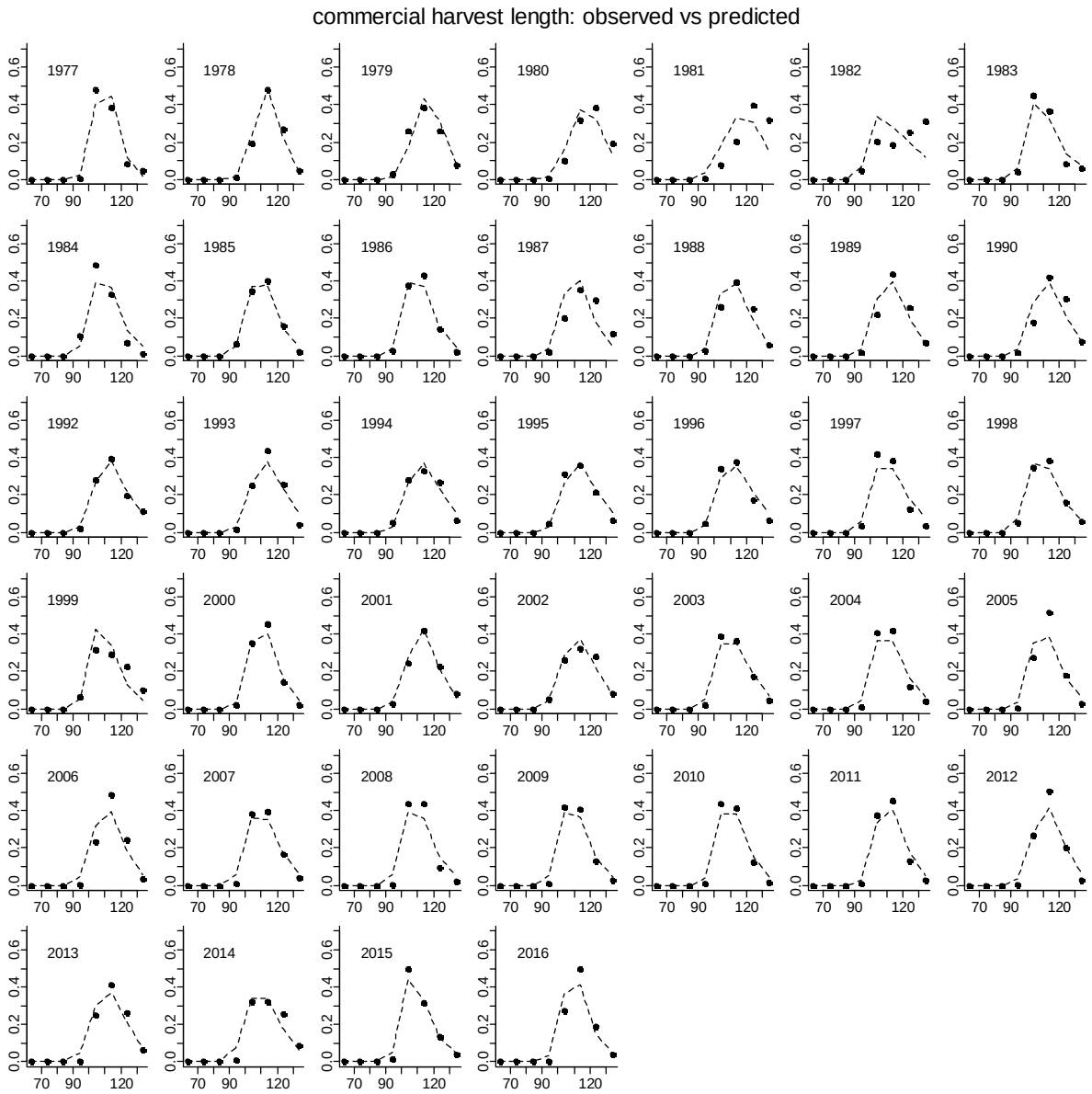

Figure C2-9. Predicted (dashed line) vs. observed (black dots) length class proportions for the summer commercial catch.

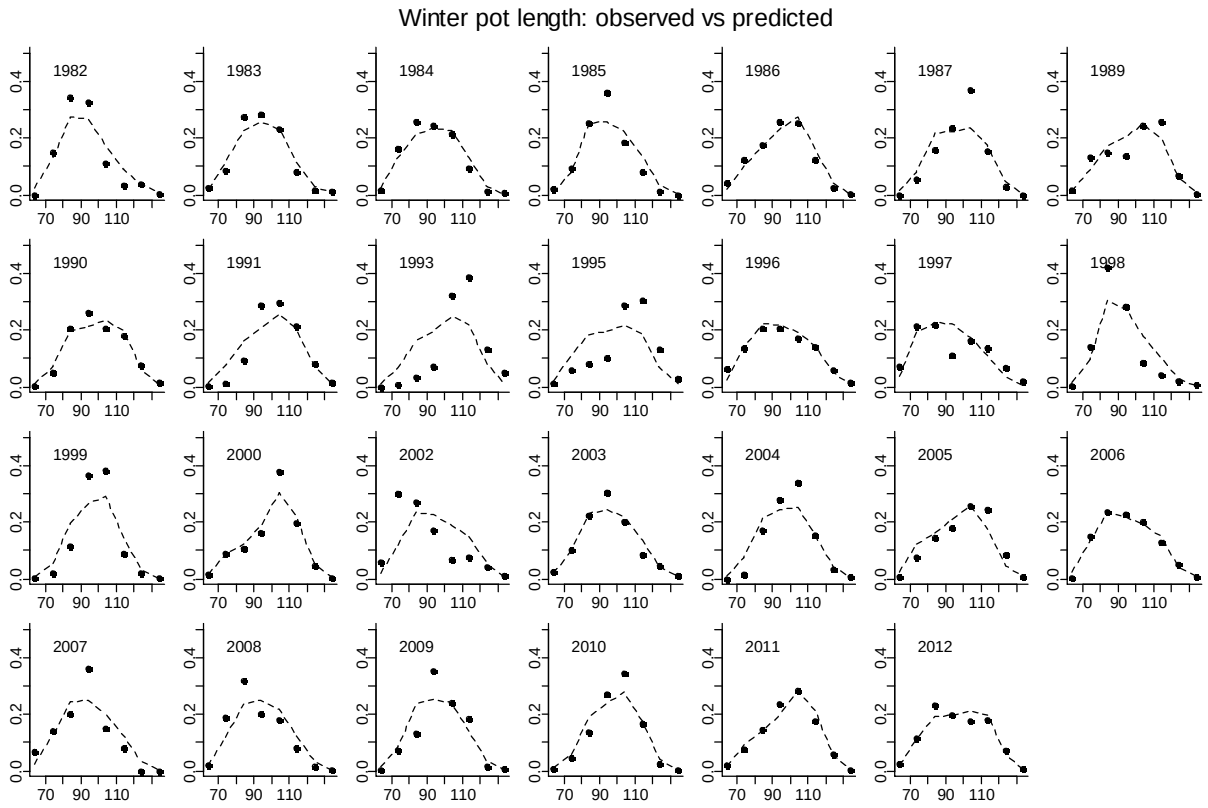

Figure C2-10. Predicted (dashed line) vs. observed (black dots) length class proportions for the winter pot survey.

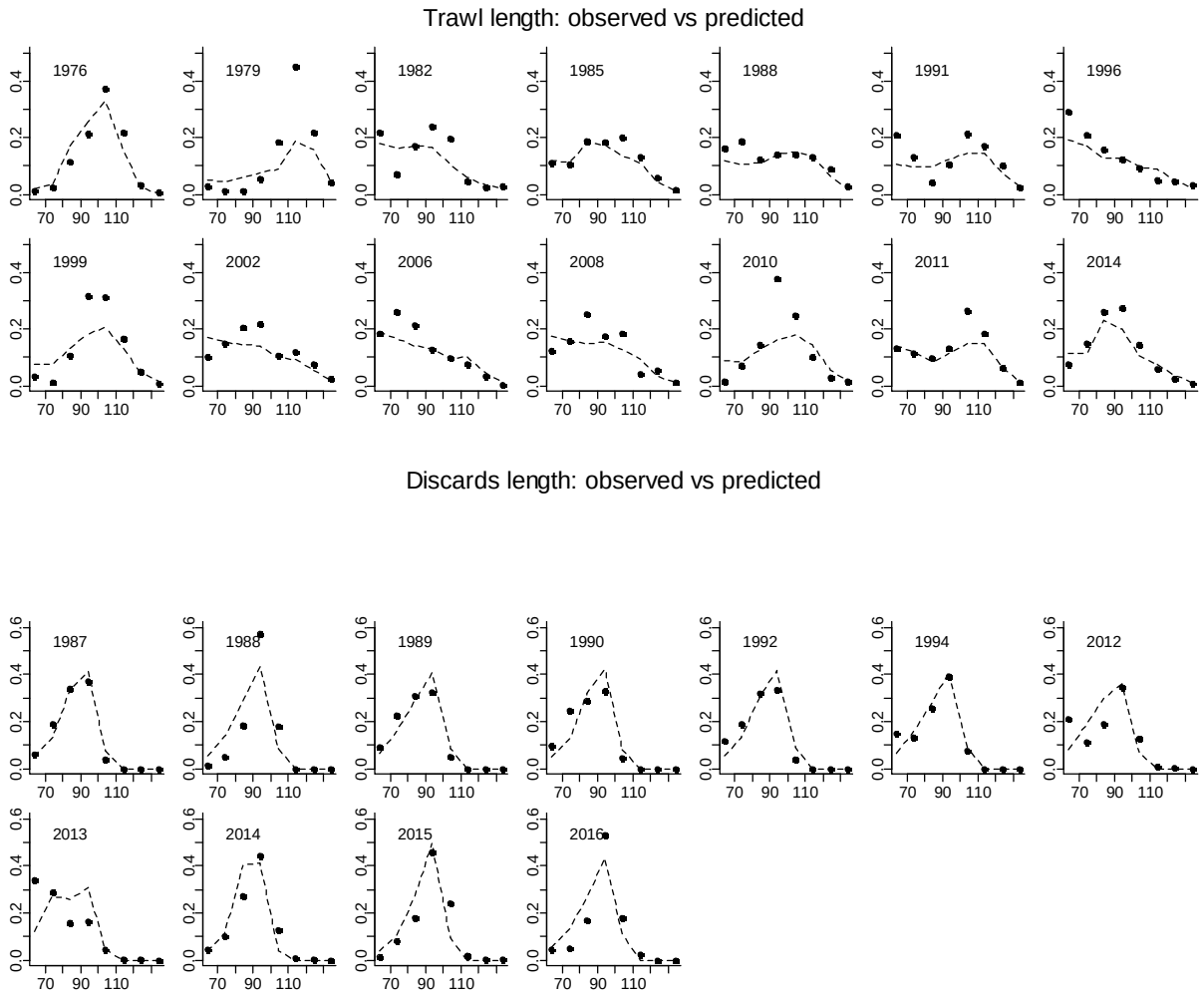

Figure C2-11. Predicted (dashed line) vs. observed (black dots) length class proportions for the trawl survey and observer survey.

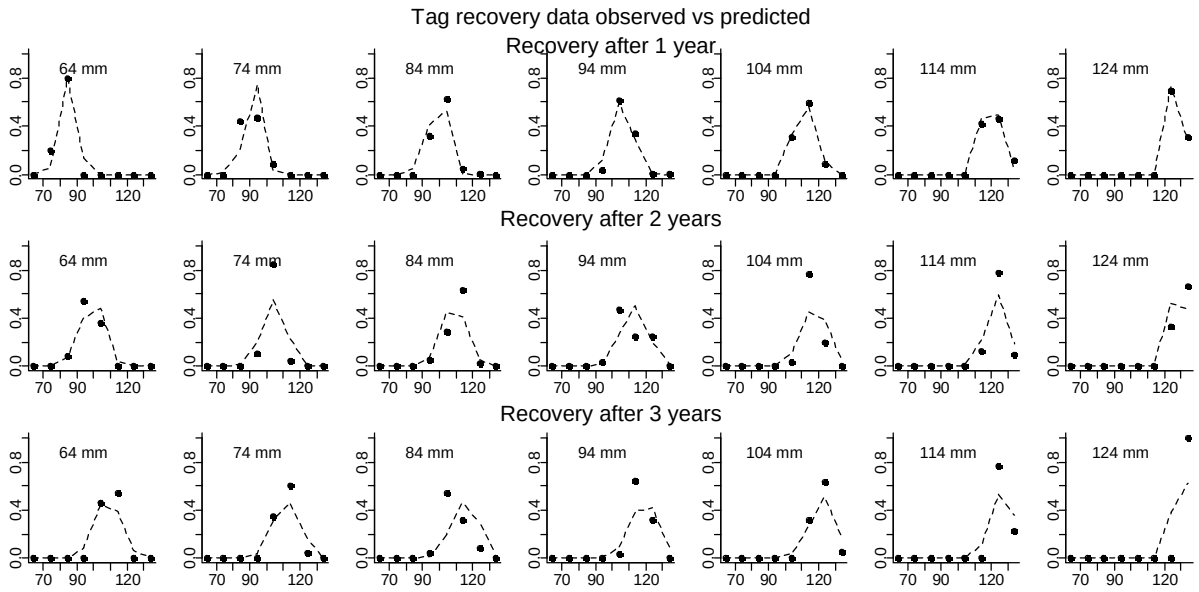

Figure C2-12. Predicted (dashed line) vs. observed (black dots) length class proportions for tag recovery data.

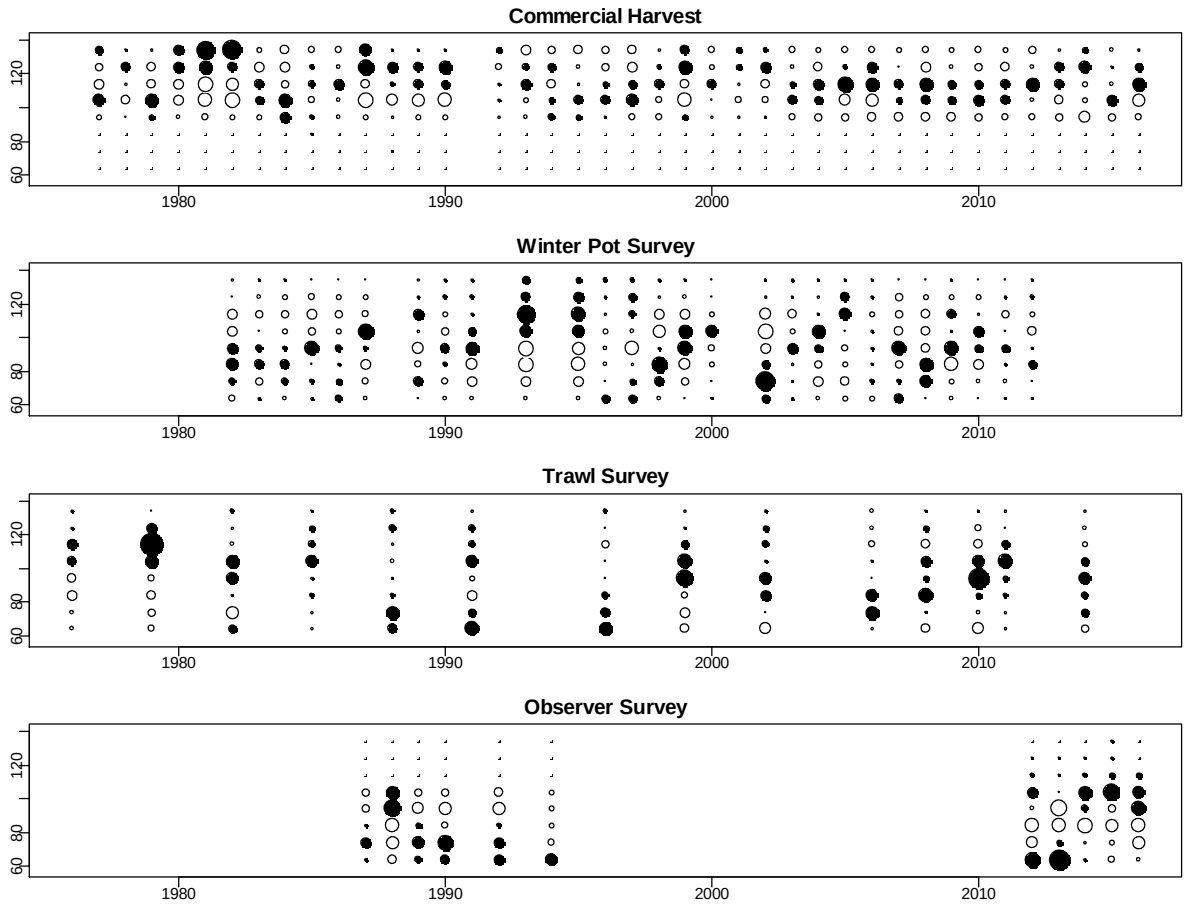

Figure C2-13. Bubble plots of predicted and observed length proportions. Black circle indicates model estimates lower than observed, white circle indicates model estimates higher than observed. Size of circle indicates degree of deviance (larger circle = larger deviance).

Table C2-1 . Summary of parameter estimates for a length-based stock synthesis population model of Norton Sound red king crab.

name	Estimate	std.dev
$\log\_q_1$	-6.954	0.188
$\log\_q_2$	-6.816	0.116
$\log\_N_{76}$	9.135	0.151
R_0	6.470	0.096
$\log\_R_{76}$	0.005	0.421
$\log\_R_{77}$	-0.572	0.368
$\log\_R_{78}$	-0.762	0.353
$\log\_R_{79}$	0.196	0.323
$\log\_R_{80}$	0.400	0.282
$\log\_R_{81}$	0.307	0.269
$\log\_R_{82}$	0.359	0.314
$\log\_R_{83}$	0.608	0.268
$\log\_R_{84}$	0.052	0.301
$\log\_R_{85}$	0.379	0.283
$\log\_R_{86}$	0.023	0.289
$\log\_R_{87}$	-0.025	0.255
$\log\_R_{88}$	0.028	0.263
$\log\_R_{89}$	-0.313	0.281
$\log\_R_{90}$	-0.305	0.260
$\log\_R_{91}$	-0.519	0.285
$\log\_R_{92}$	-0.732	0.306
$\log\_R_{93}$	-0.626	0.290
$\log\_R_{94}$	-0.357	0.260
$\log\_R_{95}$	-0.097	0.236
$\log\_R_{96}$	0.492	0.221
$\log\_R_{97}$	-0.096	0.294
$\log\_R_{98}$	-0.703	0.316
$\log\_R_{99}$	-0.166	0.305
$\log\_R_{00}$	0.137	0.258
$\log\_R_{01}$	0.155	0.250
$\log\_R_{02}$	0.048	0.303
$\log\_R_{03}$	-0.310	0.332
$\log\_R_{04}$	0.250	0.245
$\log\_R_{05}$	0.387	0.226
$\log\_R_{06}$	0.455	0.246

name	Estimate	std.dev
$\log\_R_{07}$	0.493	0.236
$\log\_R_{08}$	0.131	0.288
$\log\_R_{09}$	-0.349	0.298
$\log\_R_{10}$	0.039	0.246
$\log\_R_{11}$	0.234	0.279
$\log\_R_{12}$	0.991	0.225
$\log\_R_{13}$	0.105	0.329
$\log\_R_{14}$	-0.159	0.407
$\log\_R_{15}$	-0.185	0.438
a_1	1.335	4.121
a_2	1.866	3.864
a_3	3.421	3.623
a_4	3.826	3.602
a_5	4.058	3.592
a_6	3.305	3.628
a_7	1.744	3.955
r1	10.000	0.935
r2	9.757	0.959
mol.1	0.971	0.029
mol.2	0.957	0.021
mol.3	0.936	0.019
mol.4	0.892	0.018
mol.5	0.711	0.024
mol.6	0.647	0.031
mol.7	0.439	0.053
mol.8	0.351	0.130
$\log\_\phi_{st1}$	-2.829	1.134
$\log\_\phi_w$	-2.055	0.051
Sw_7	0.076	0.036
Sw_8	0.474	0.112
$\log\_\phi_1$	-2.061	0.054
w^2_t	0.072	0.022
q	0.756	0.139
ms	3.315	0.313
σ	3.968	0.224

name	Estimate	std.dev
β_1	12.163	0.762
β_2	7.742	0.189