

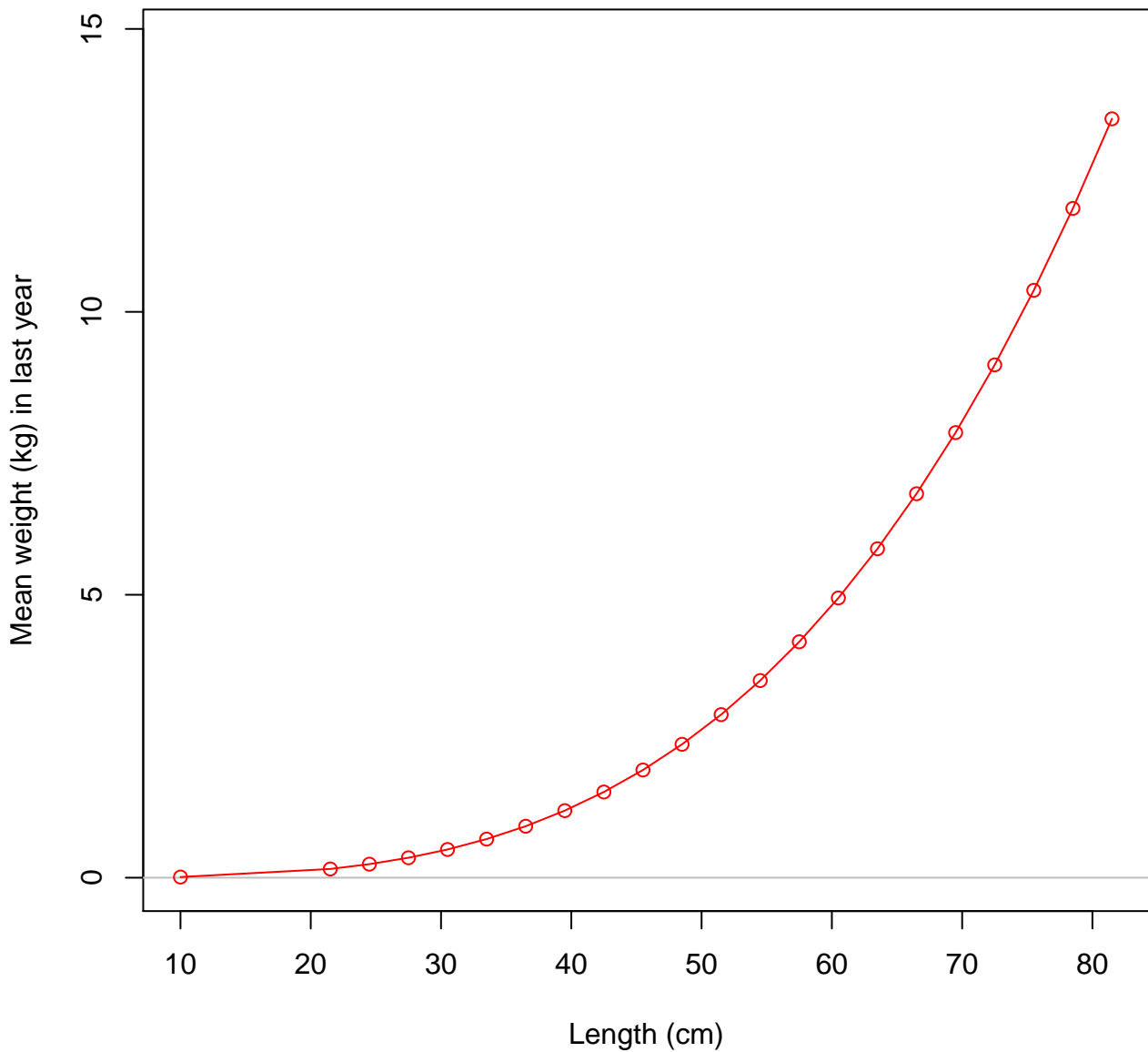
Plots created using the 'r4ss' package in R

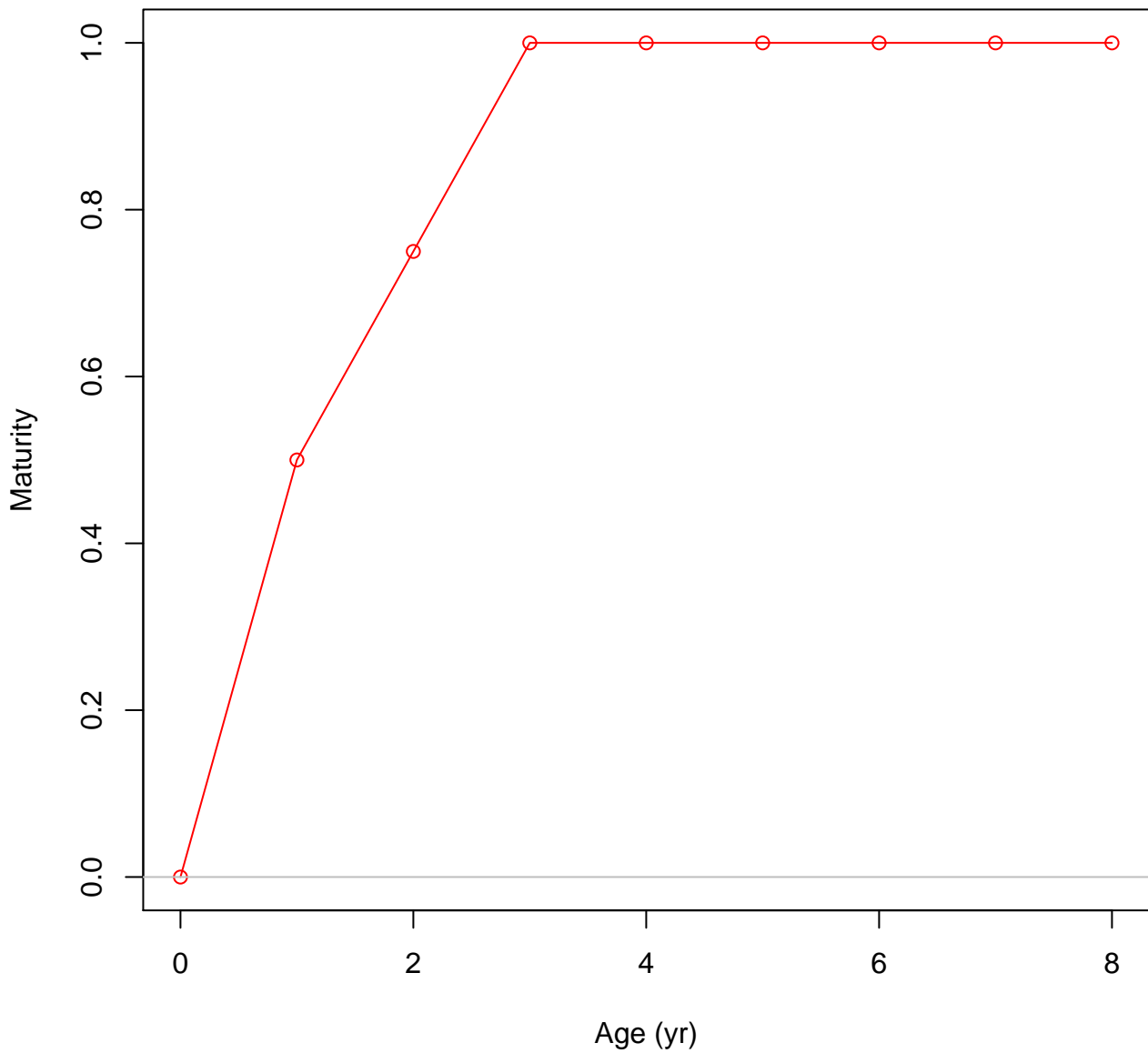
Stock Synthesis version: SS–V3.23b

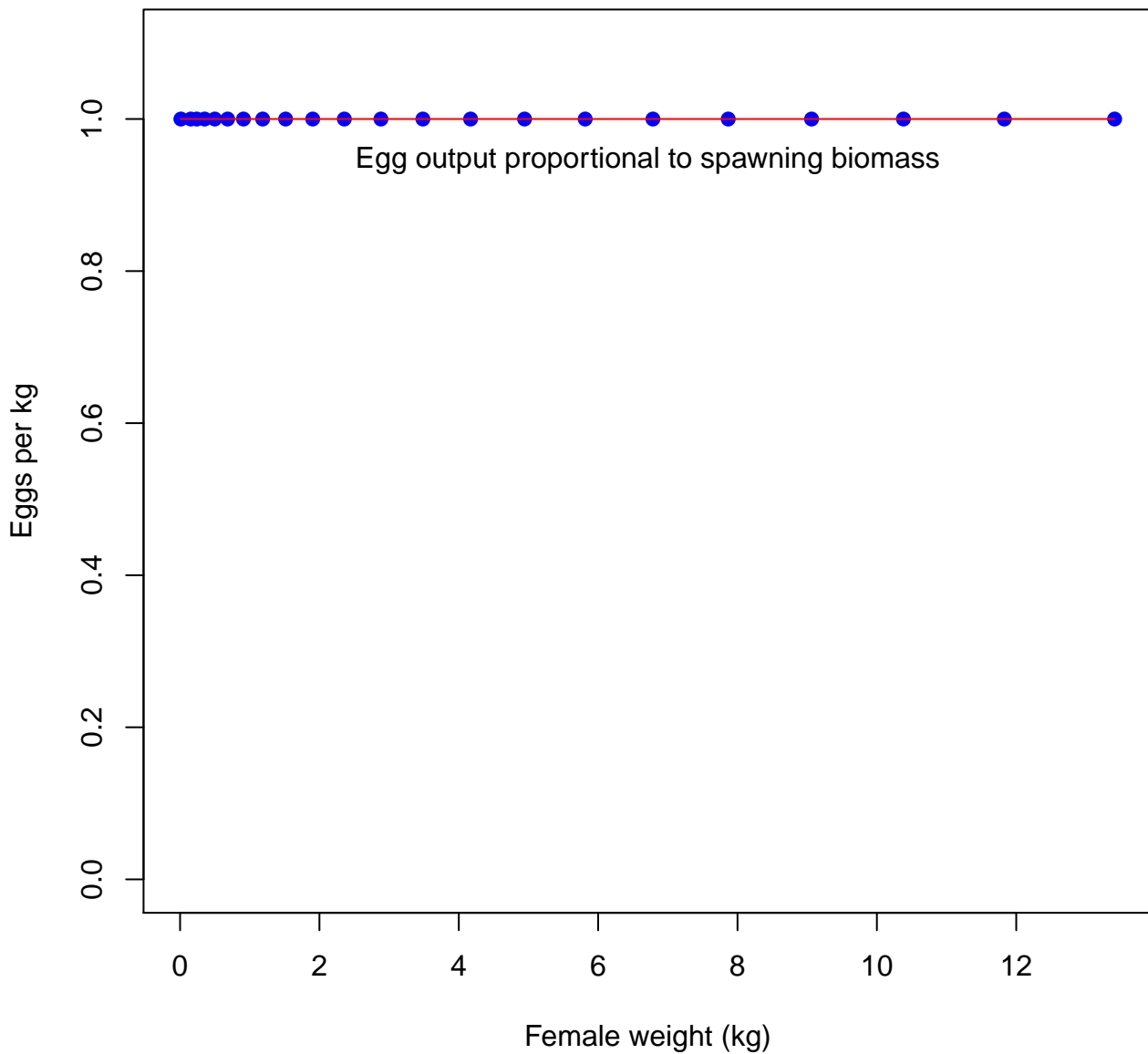
StartTime: Wed Oct 03 09:31:57 2012

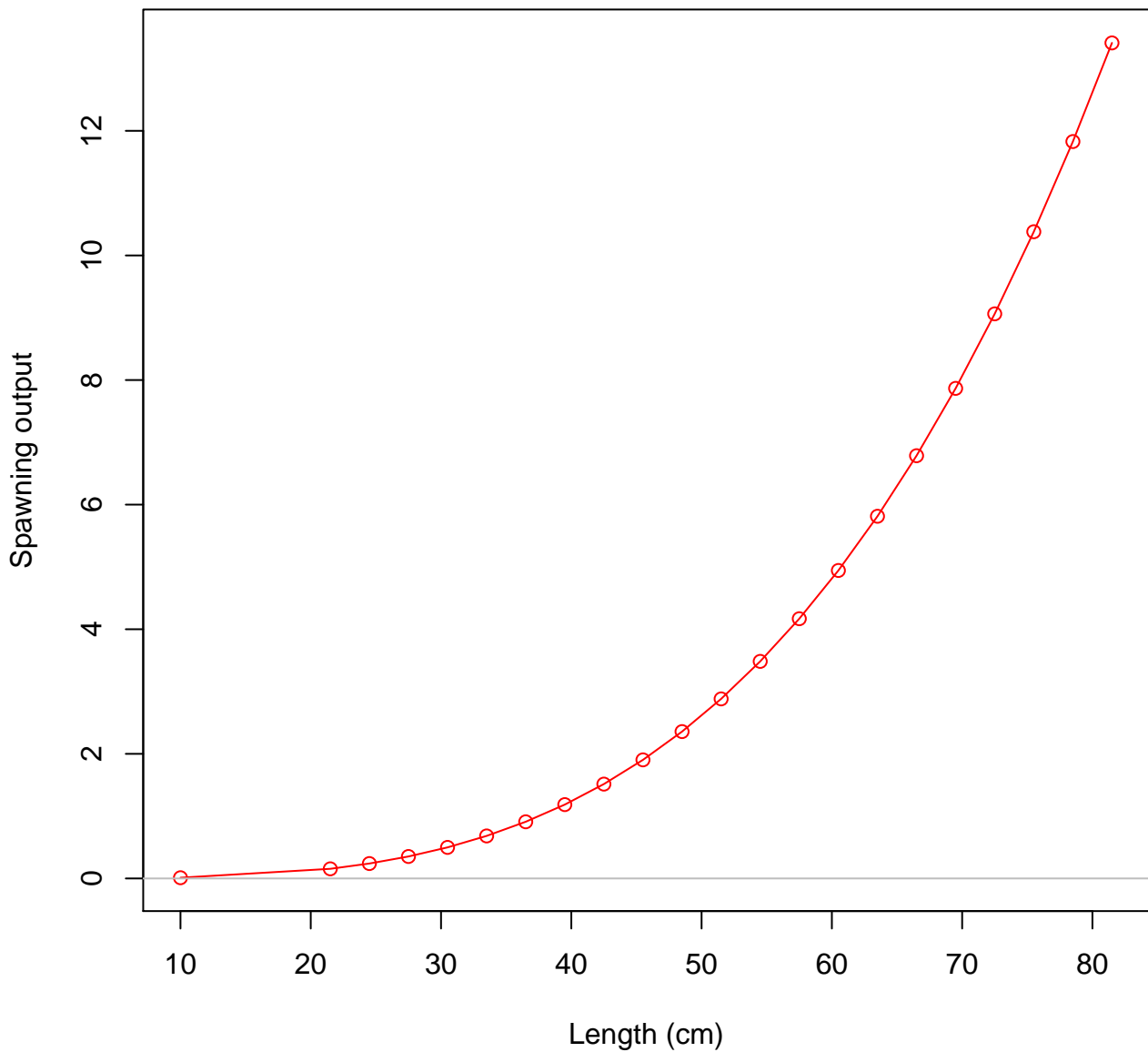
Data_File: DATA.SS

Control_File: CONTROL.SS

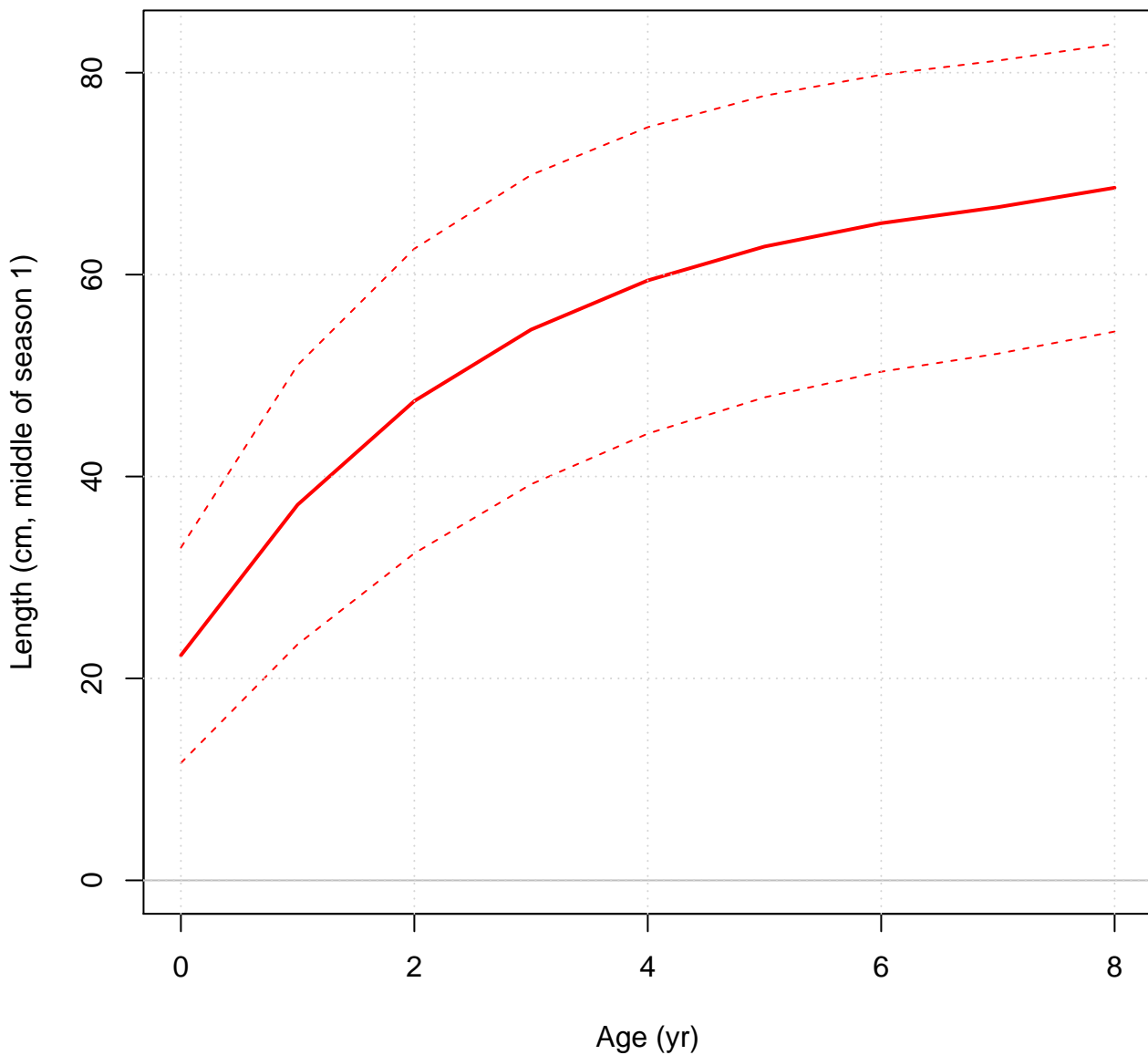


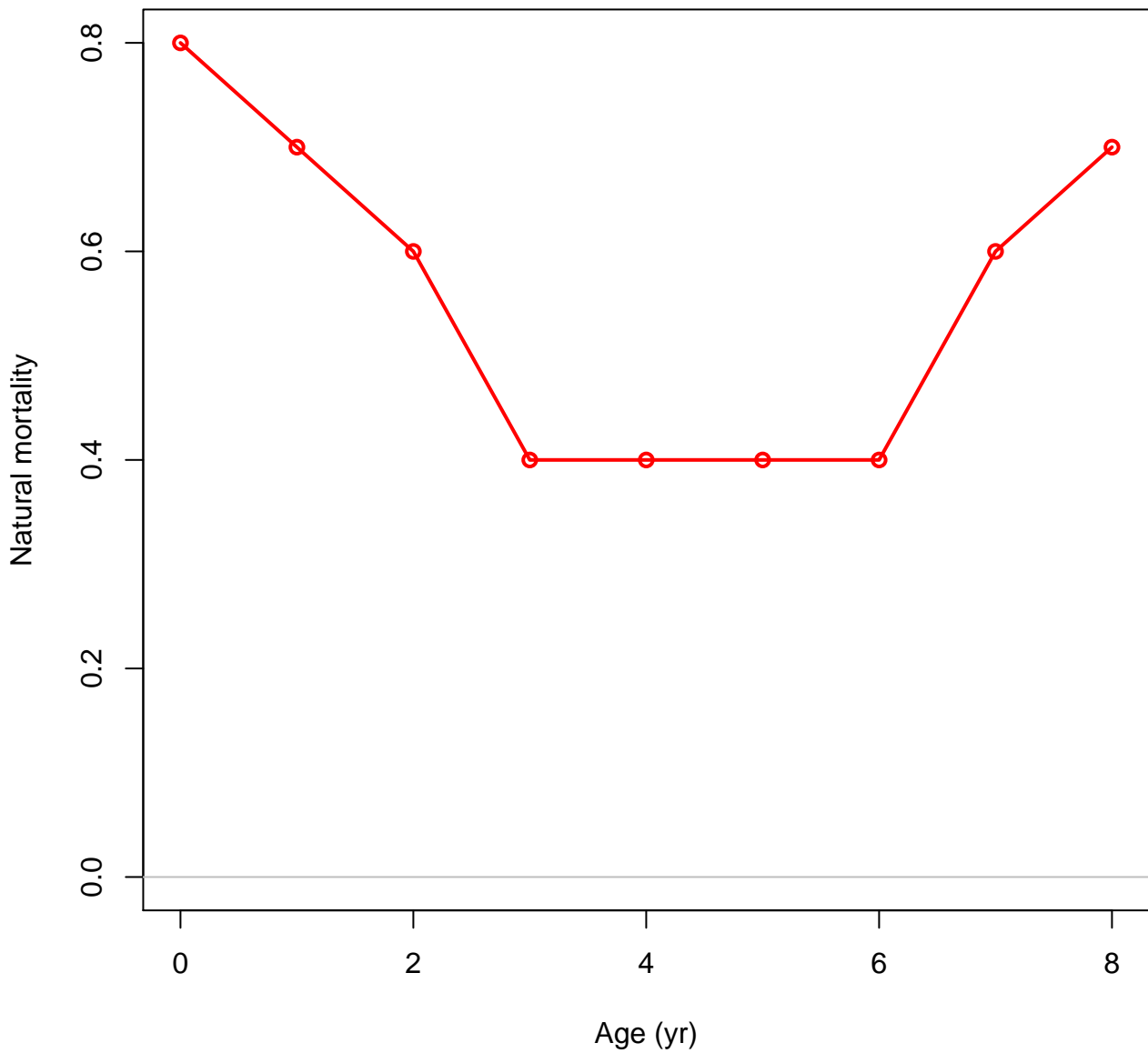




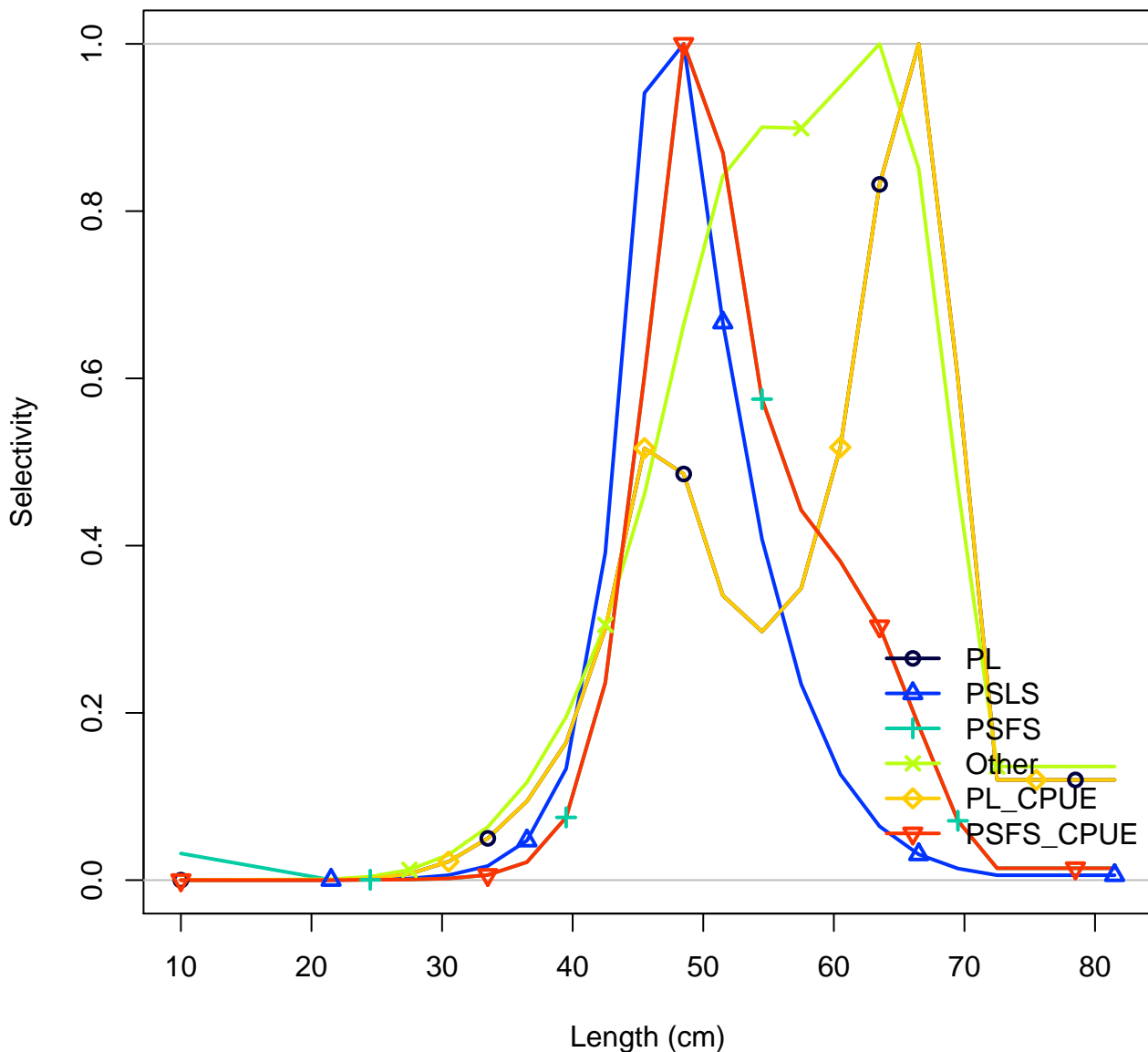


Ending year expected growth

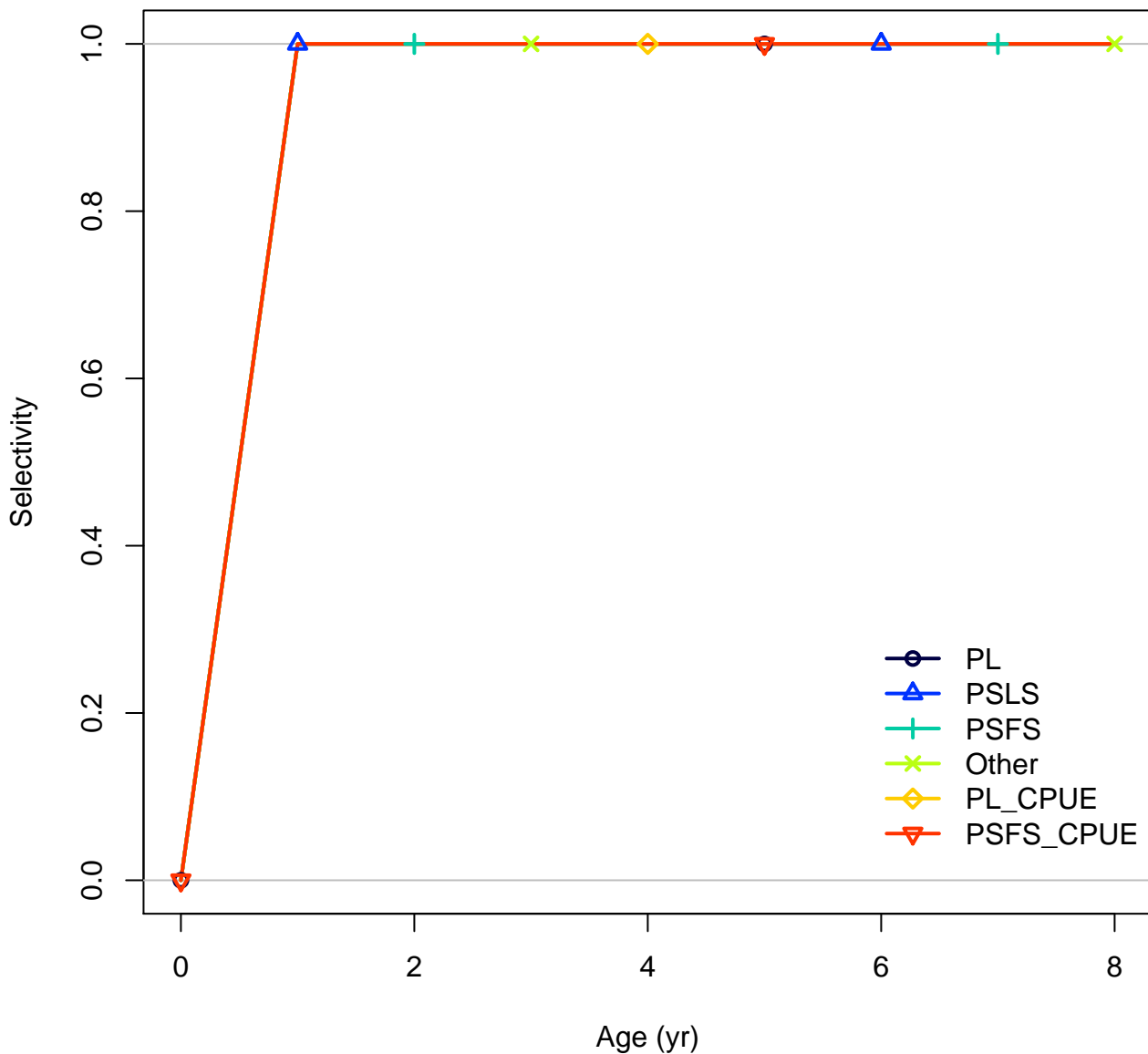




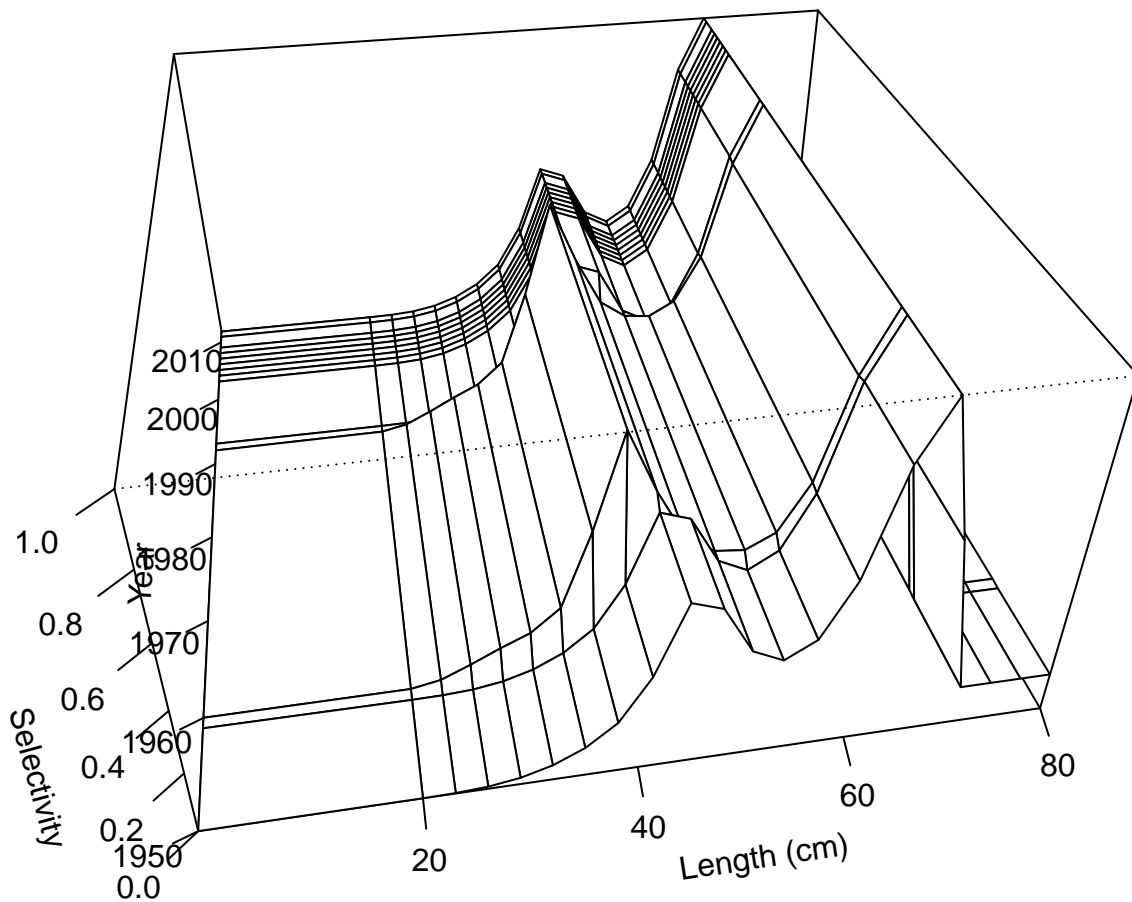
Length-based selectivity by fleet in 2011



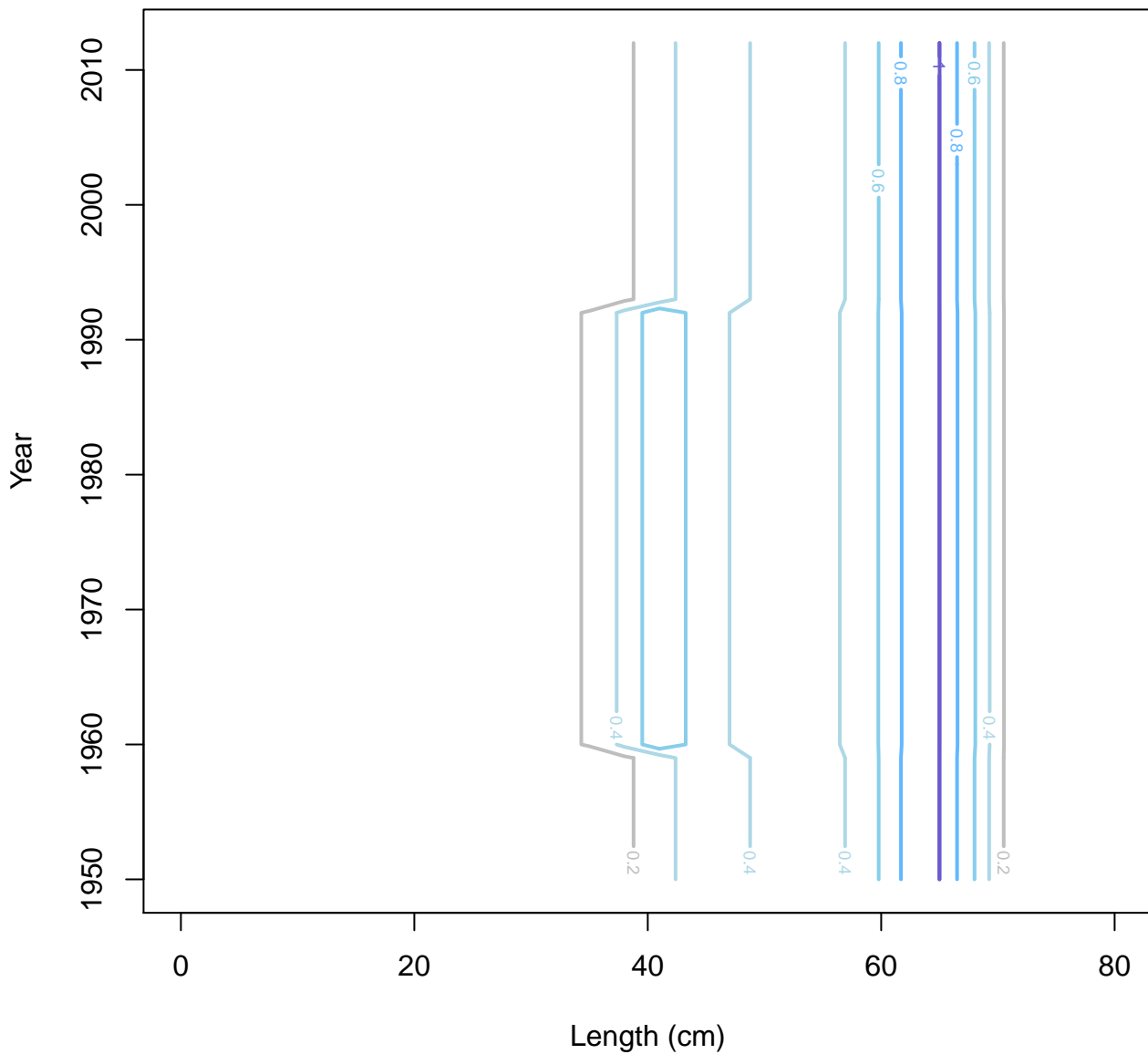
Age-based selectivity by fleet in 2011



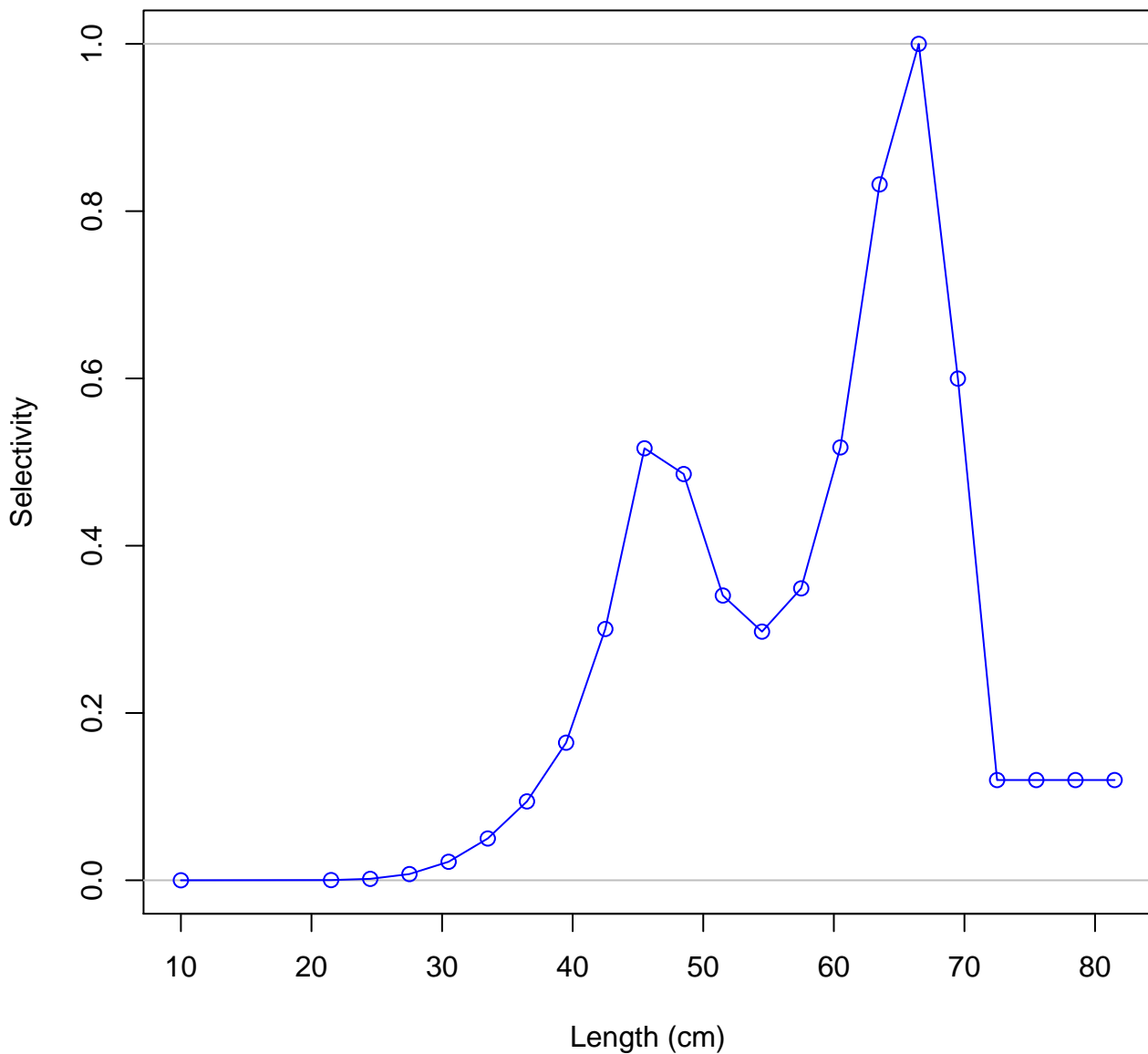
Time-varying selectivity for PL



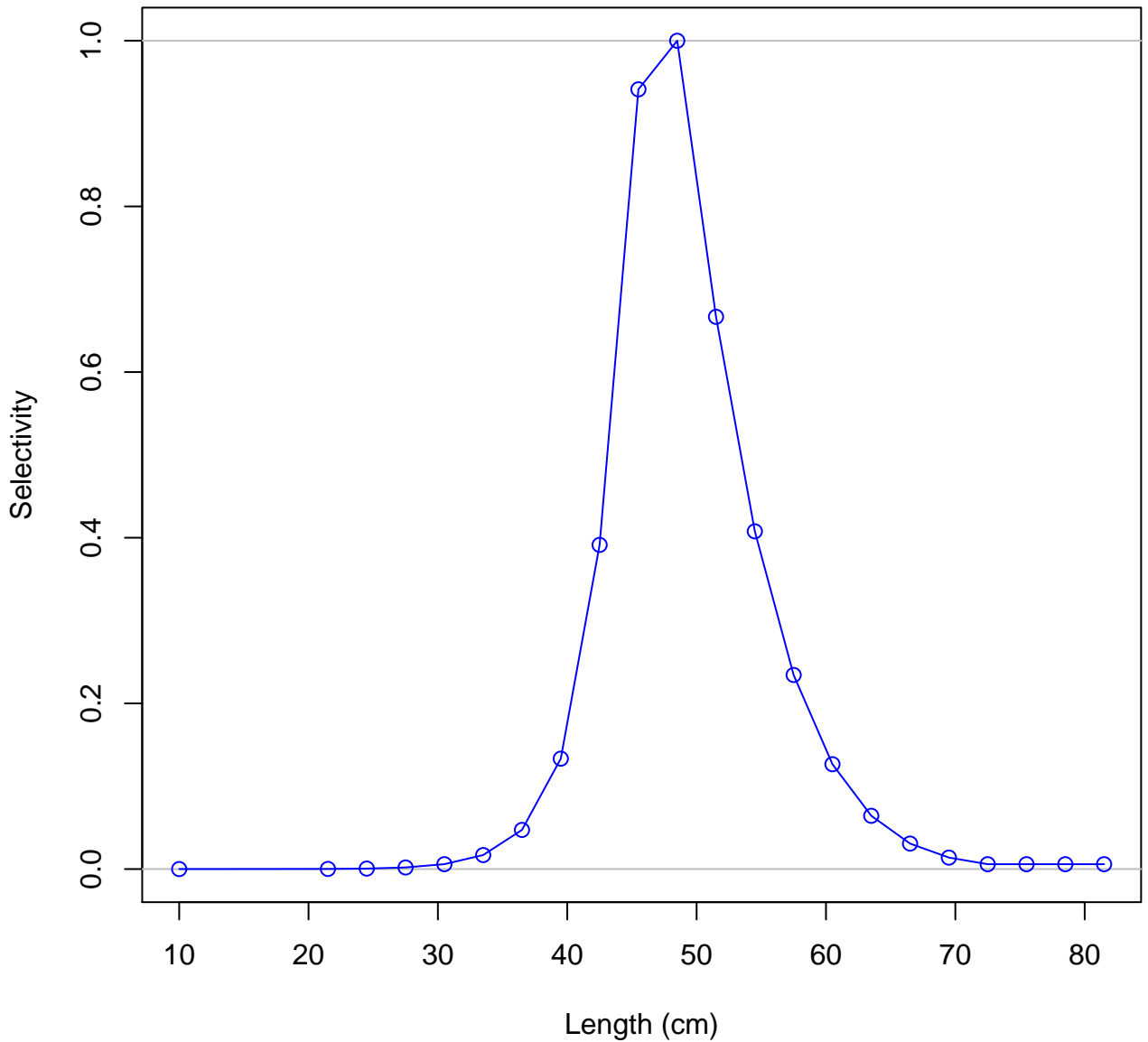
Time-varying selectivity for PL



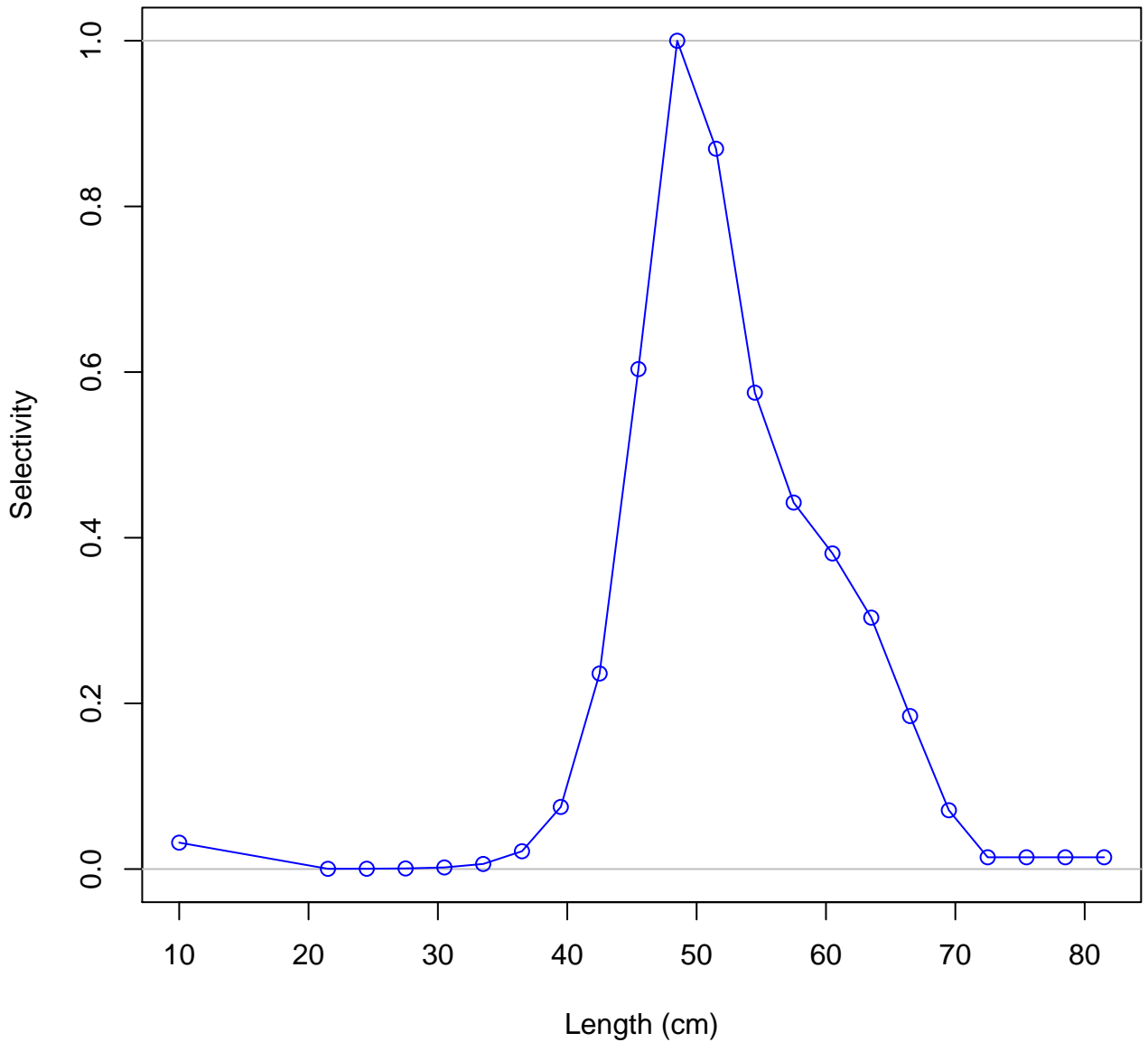
Ending year selectivity for PL



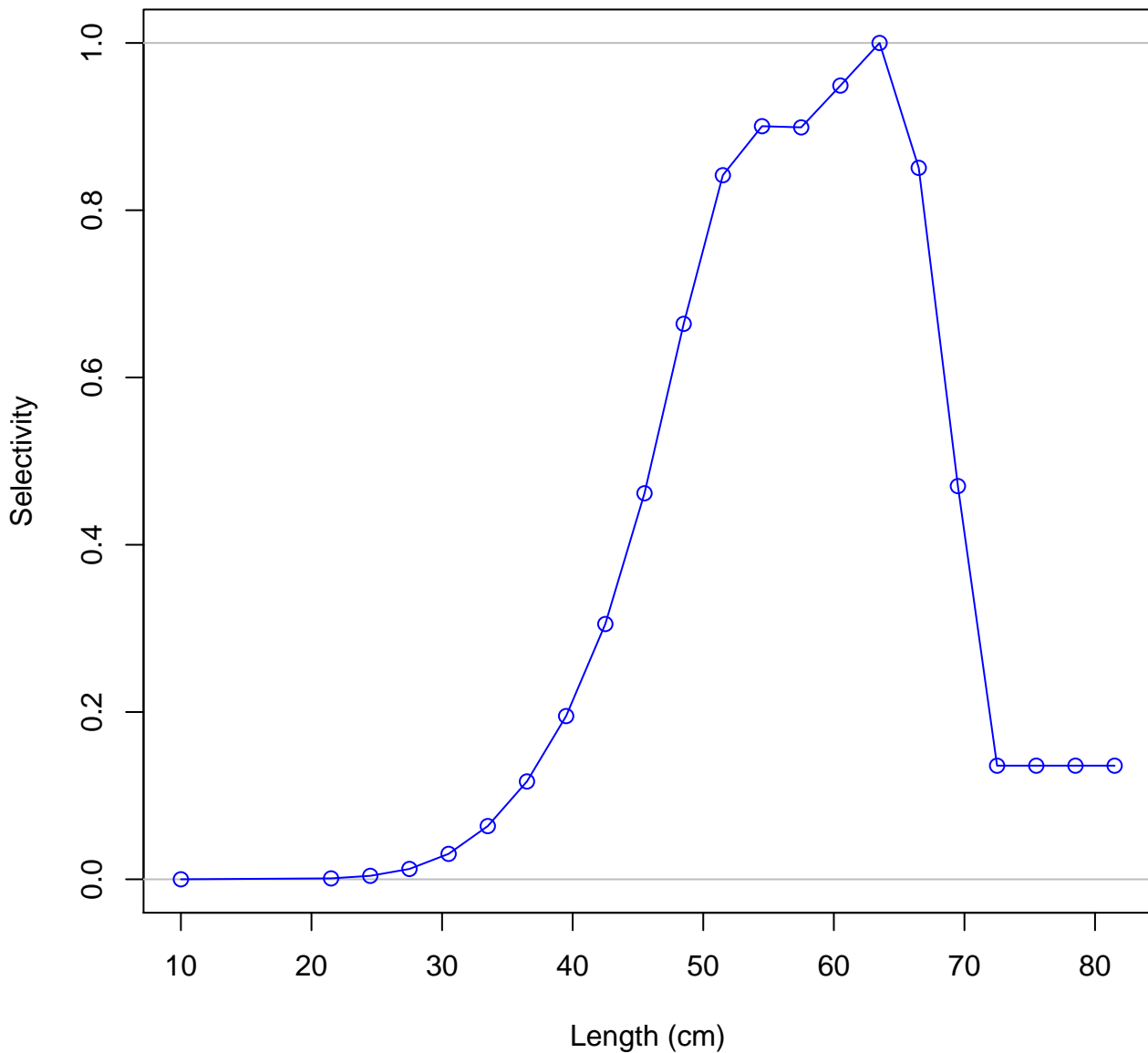
Ending year selectivity for PSLS



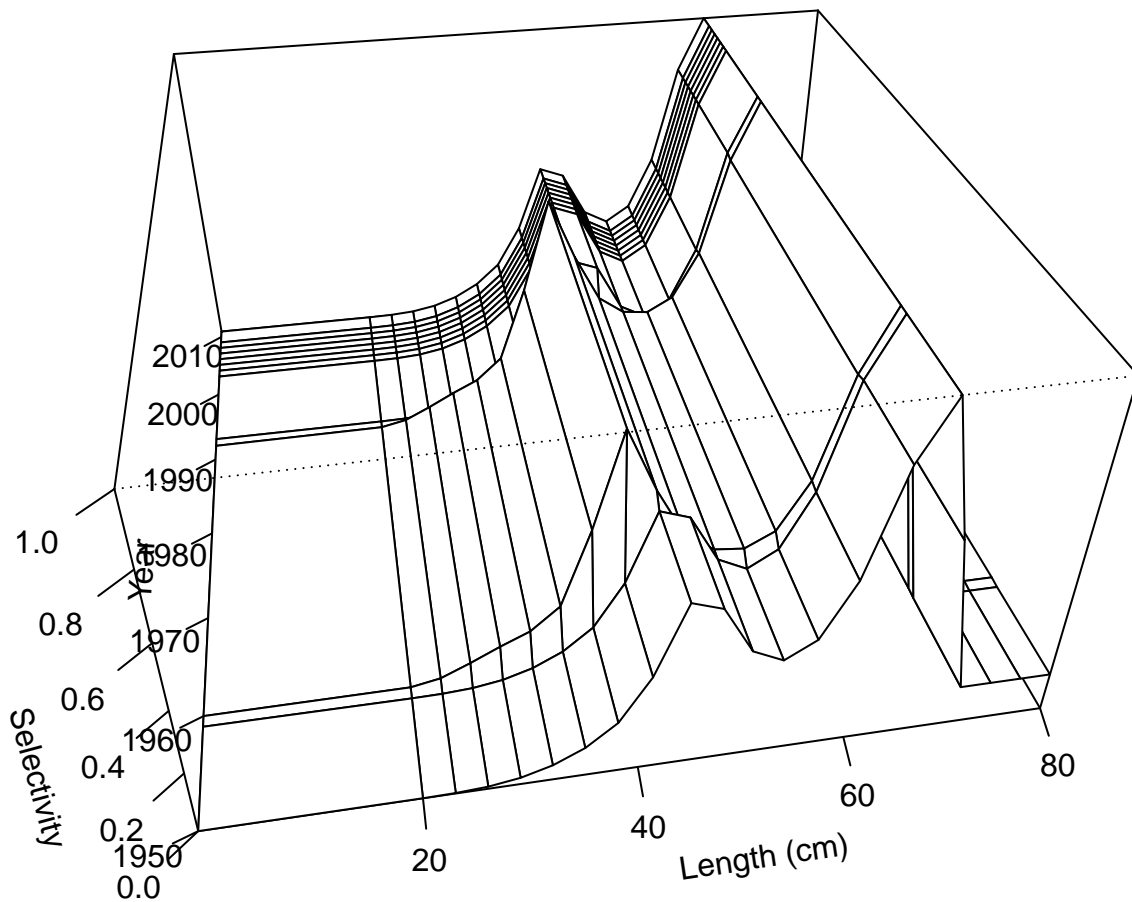
Ending year selectivity for PSFS



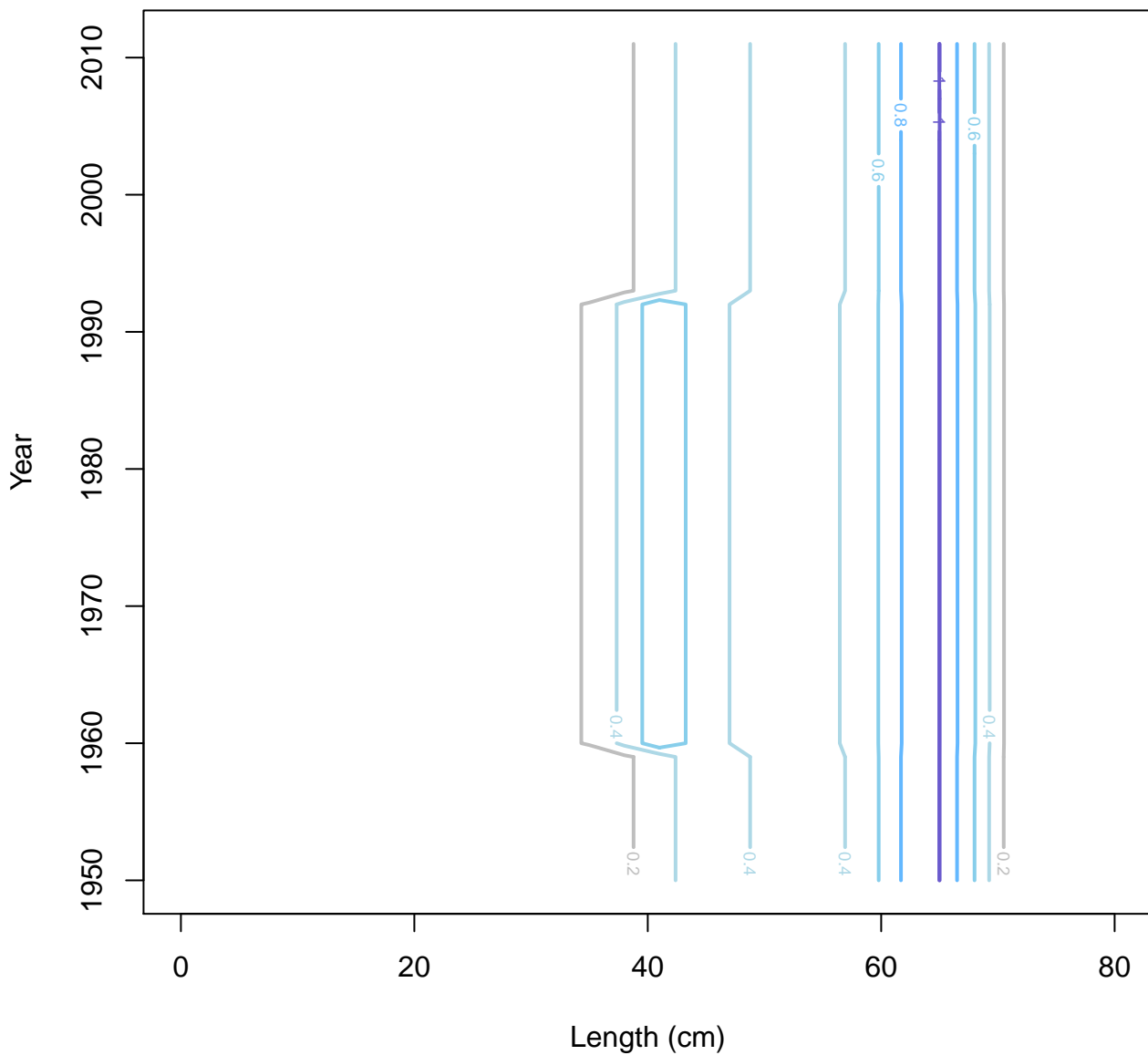
Ending year selectivity for Other



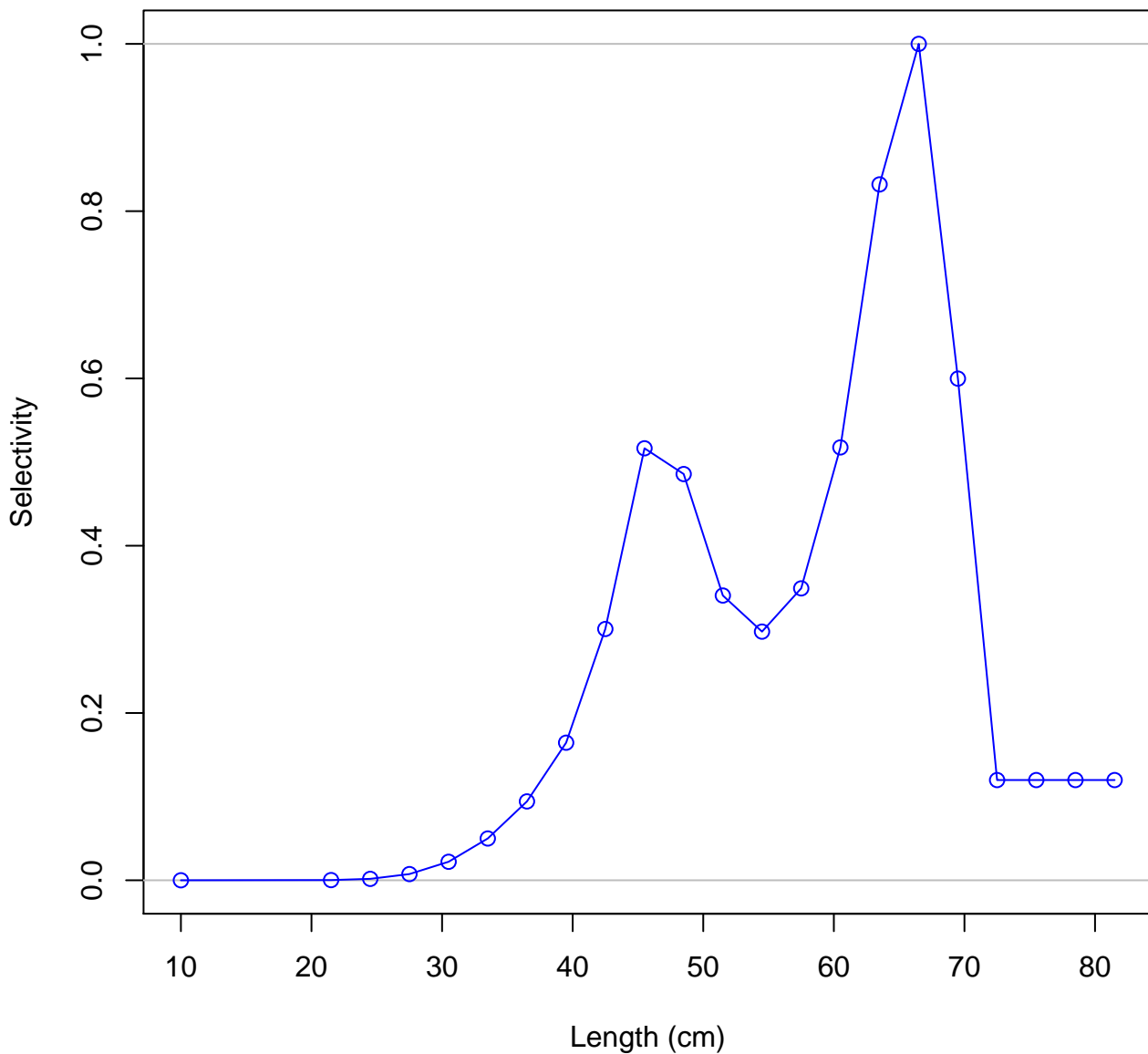
Time-varying selectivity for PL_CPUE



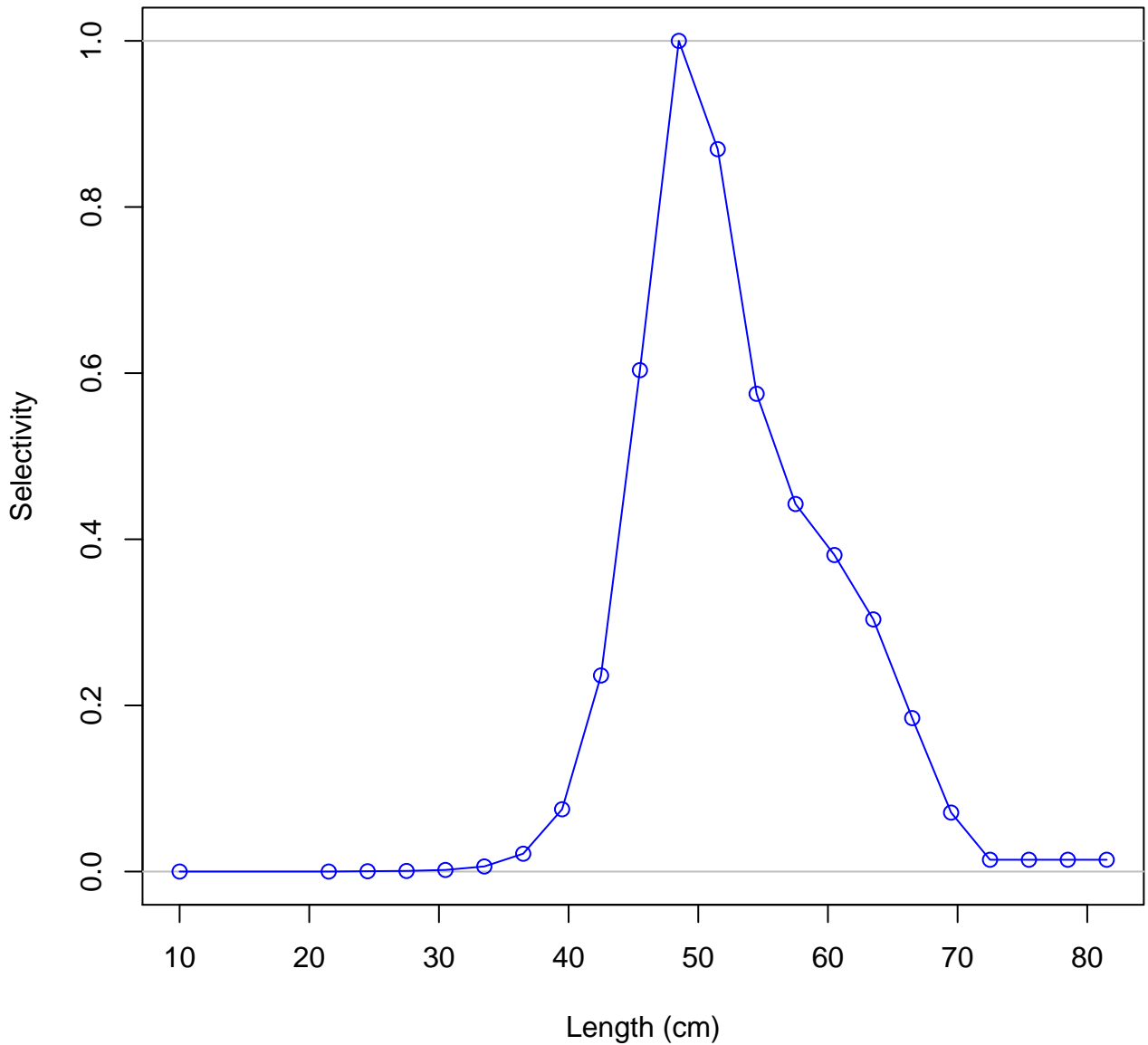
Time-varying selectivity for PL_CPUE



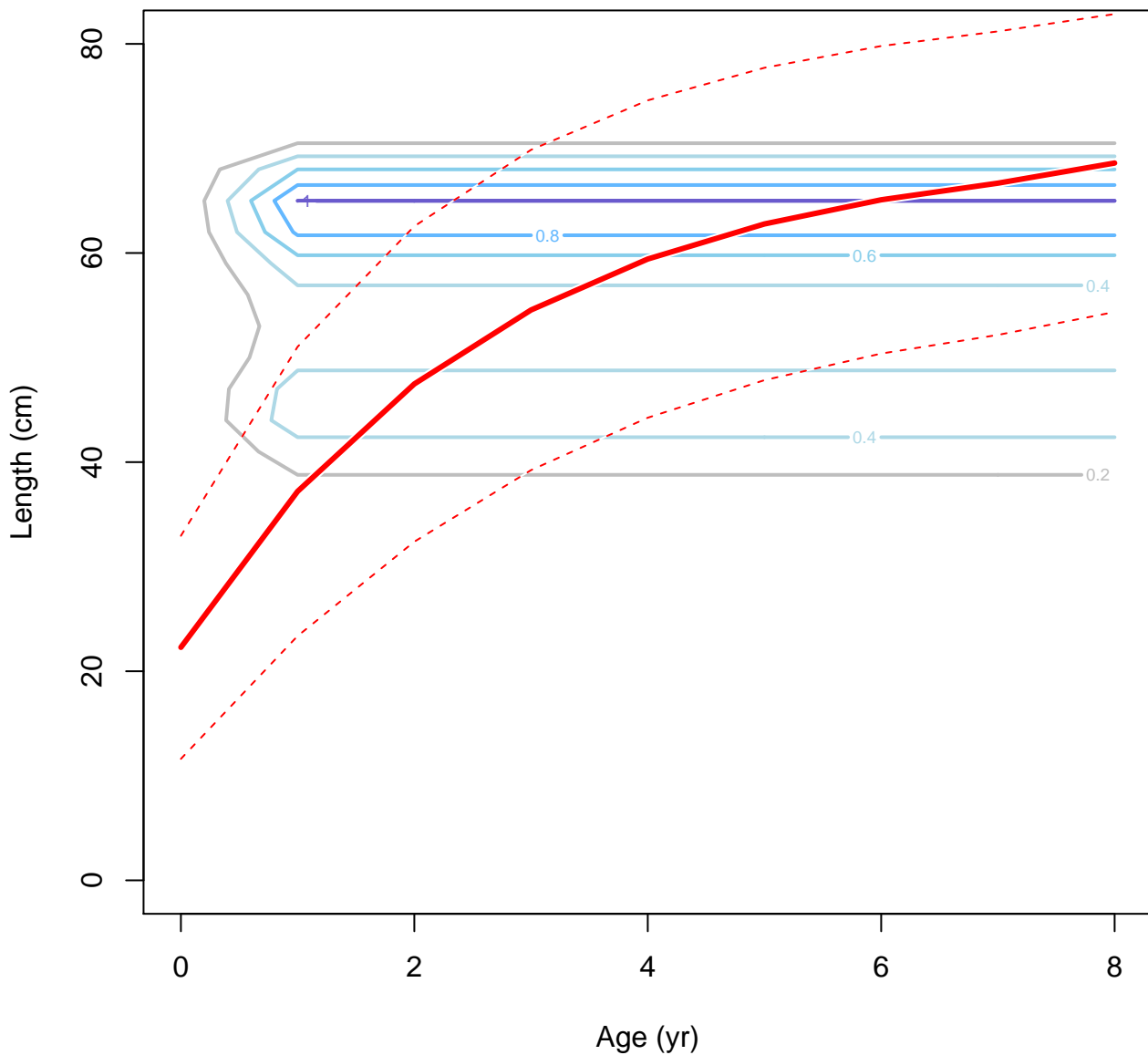
Ending year selectivity for PL_CPUE



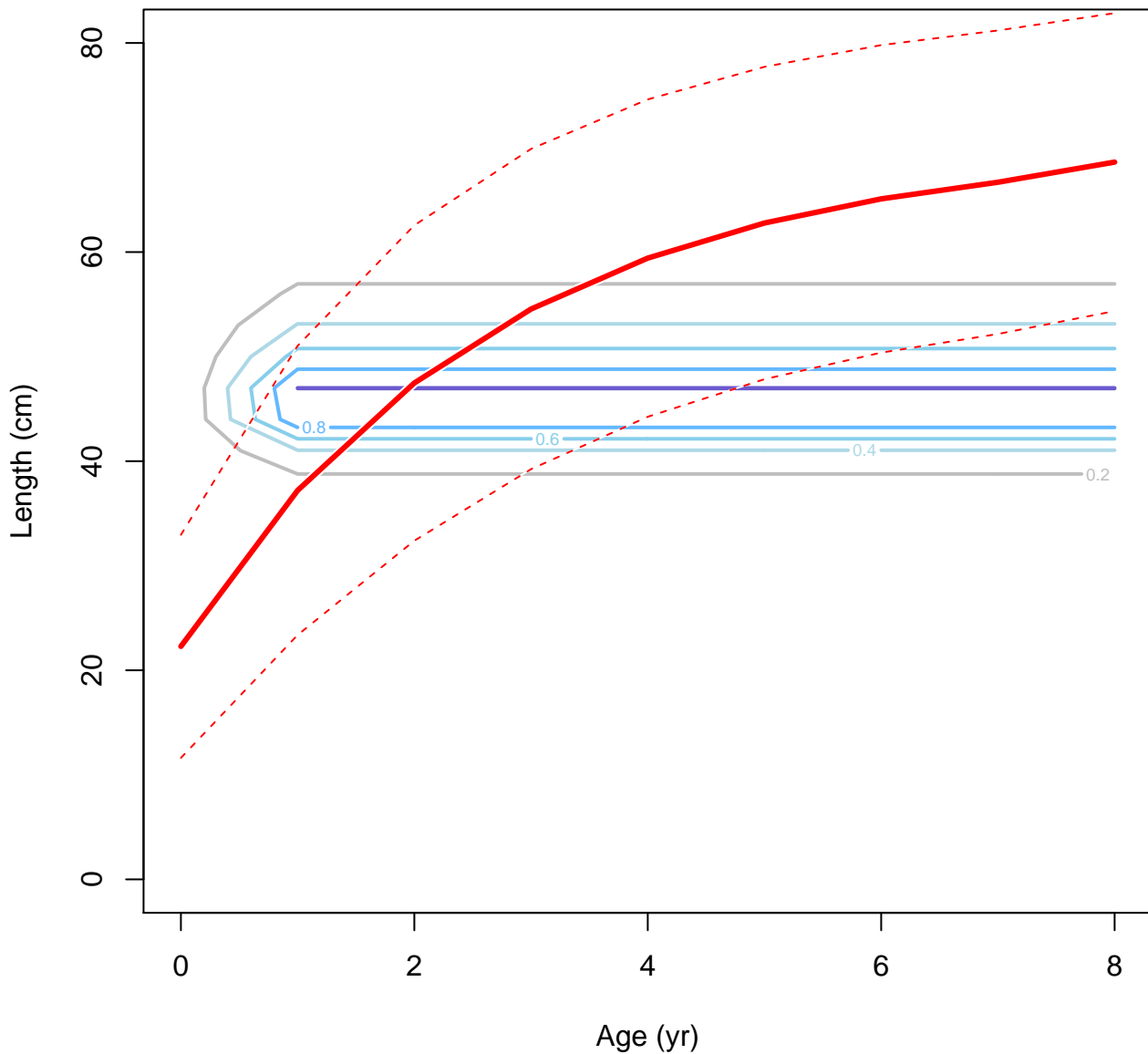
Ending year selectivity for PSFS_CPUE



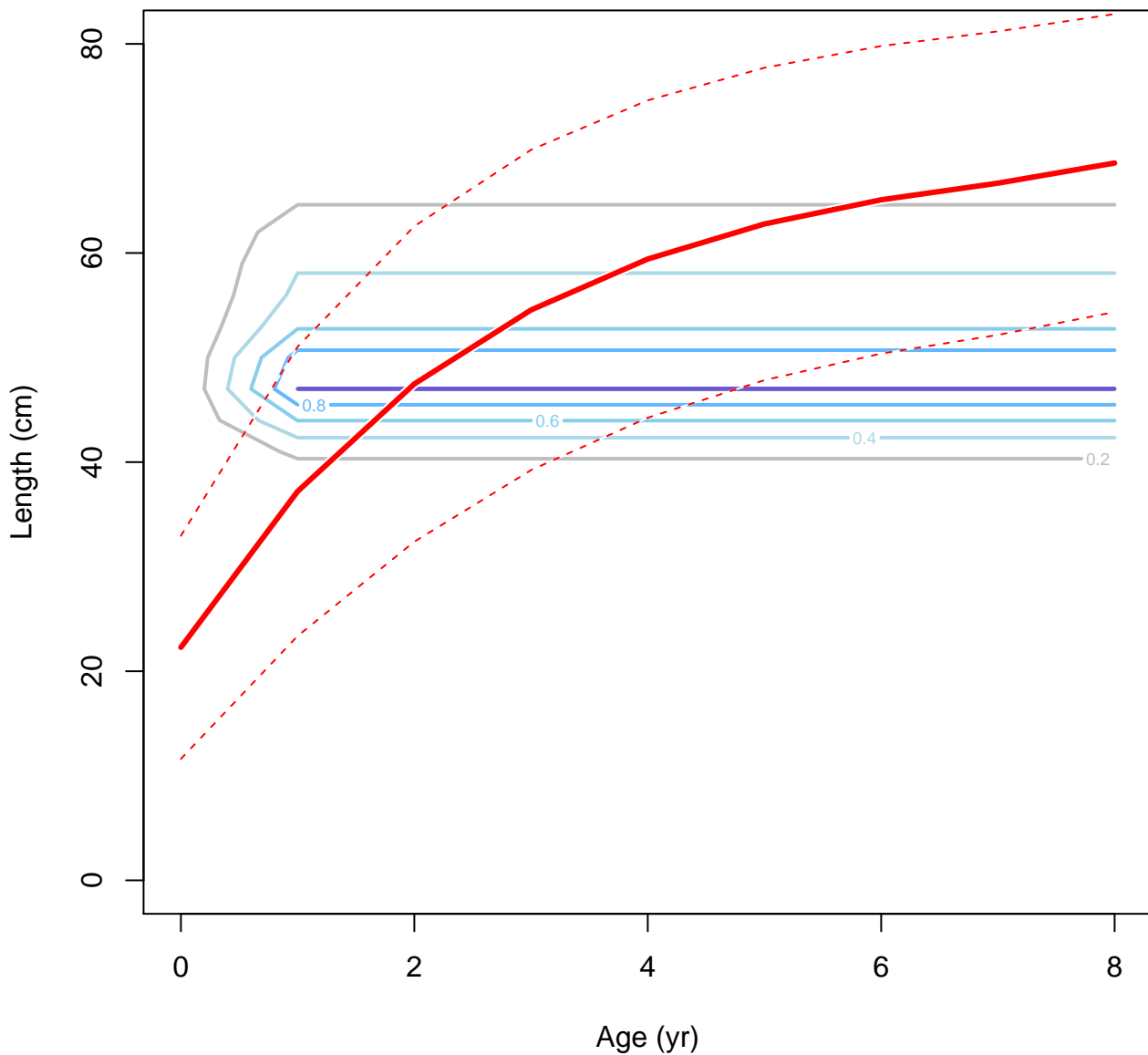
Ending year selectivity and growth for PL



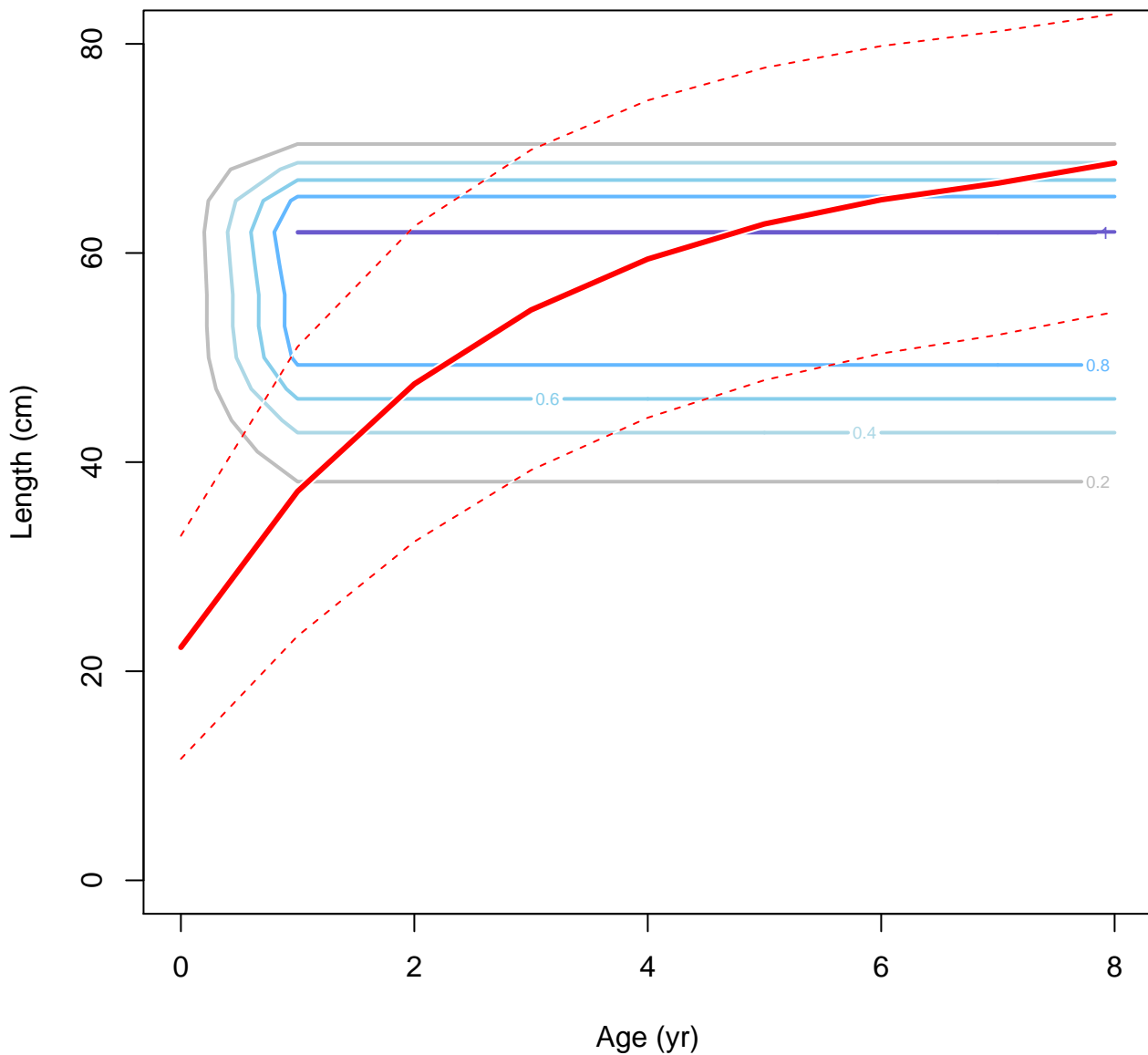
Ending year selectivity and growth for PSLS



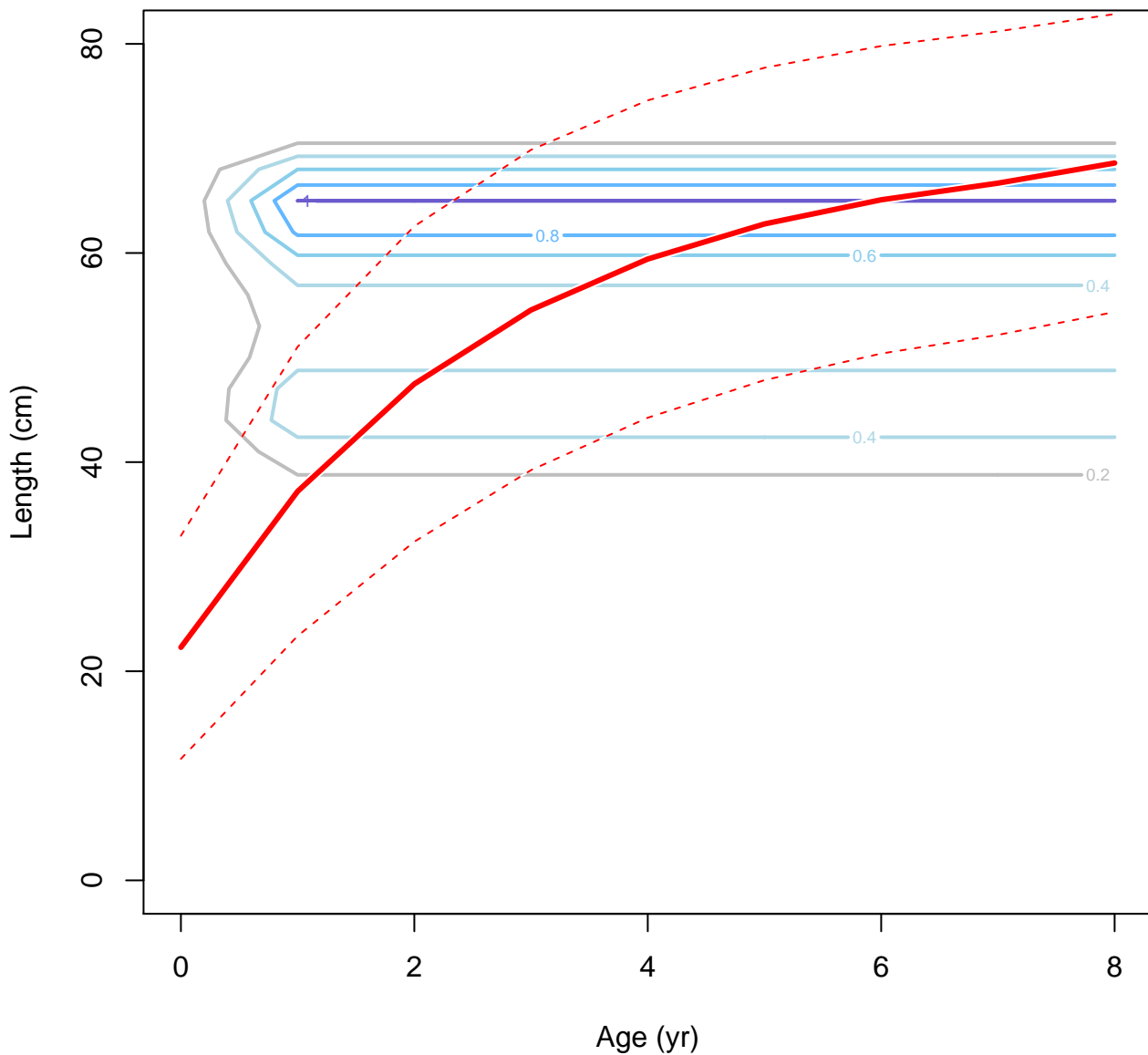
Ending year selectivity and growth for PSFS



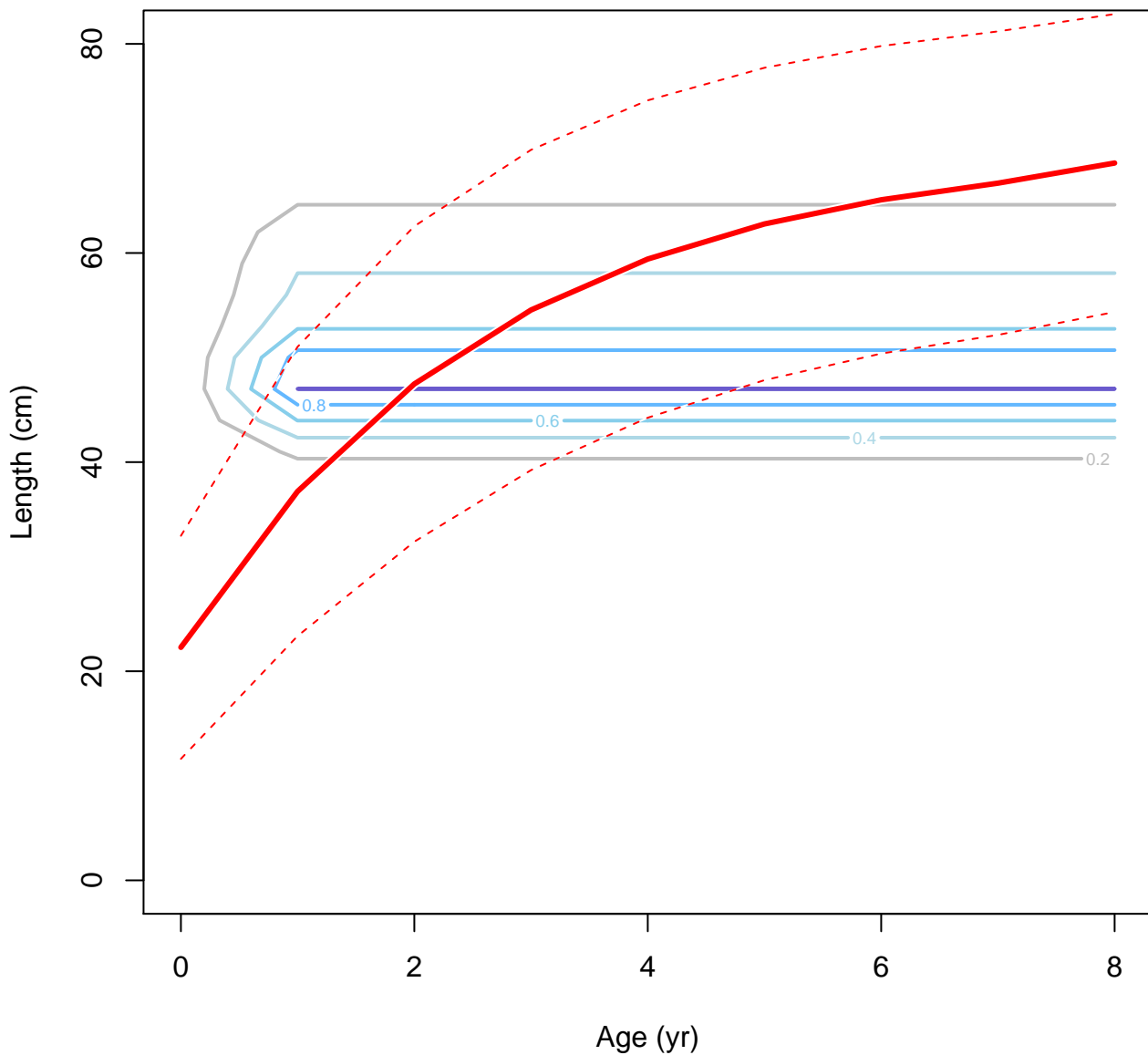
Ending year selectivity and growth for Other



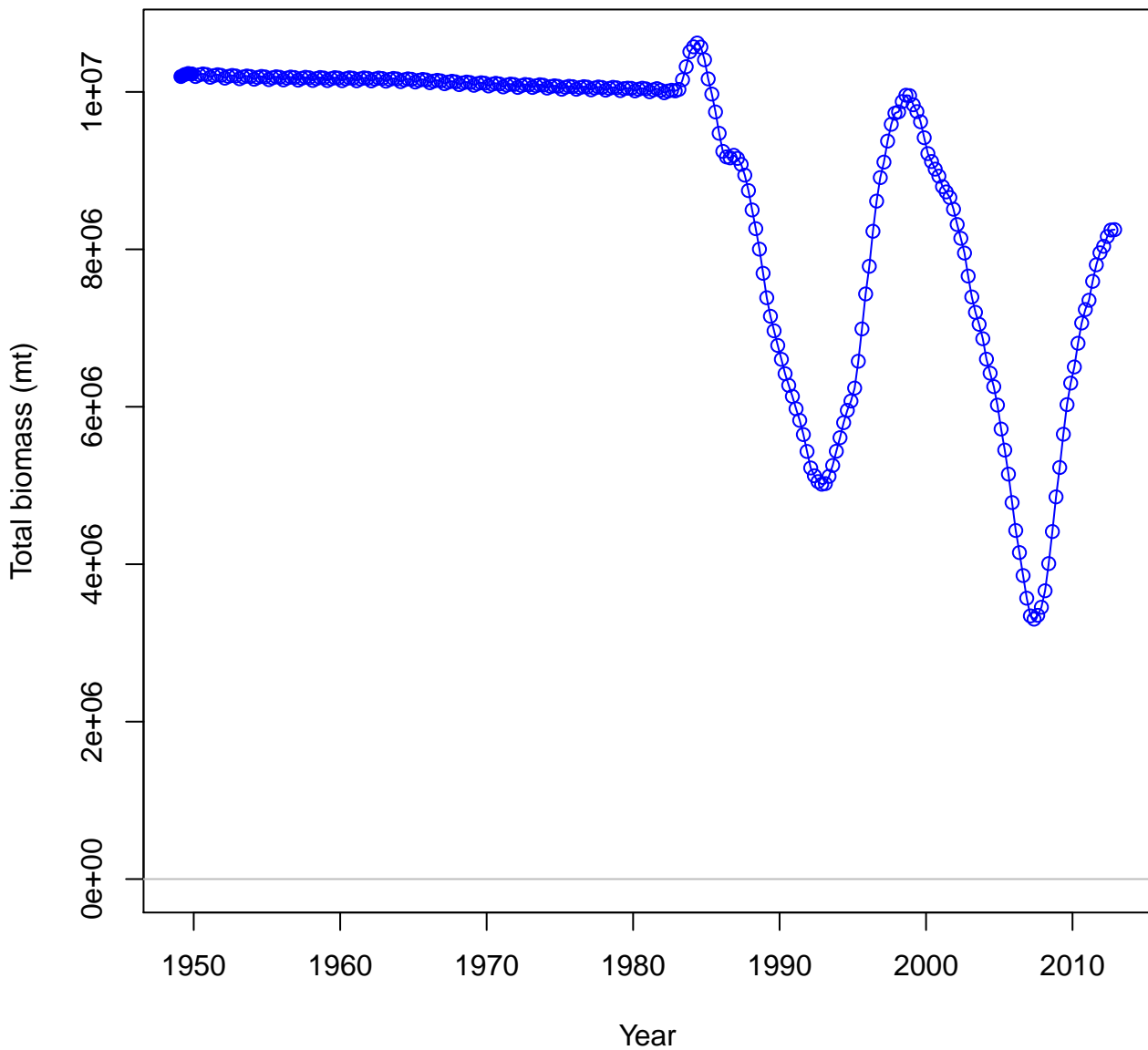
Ending year selectivity and growth for PL_CPUE



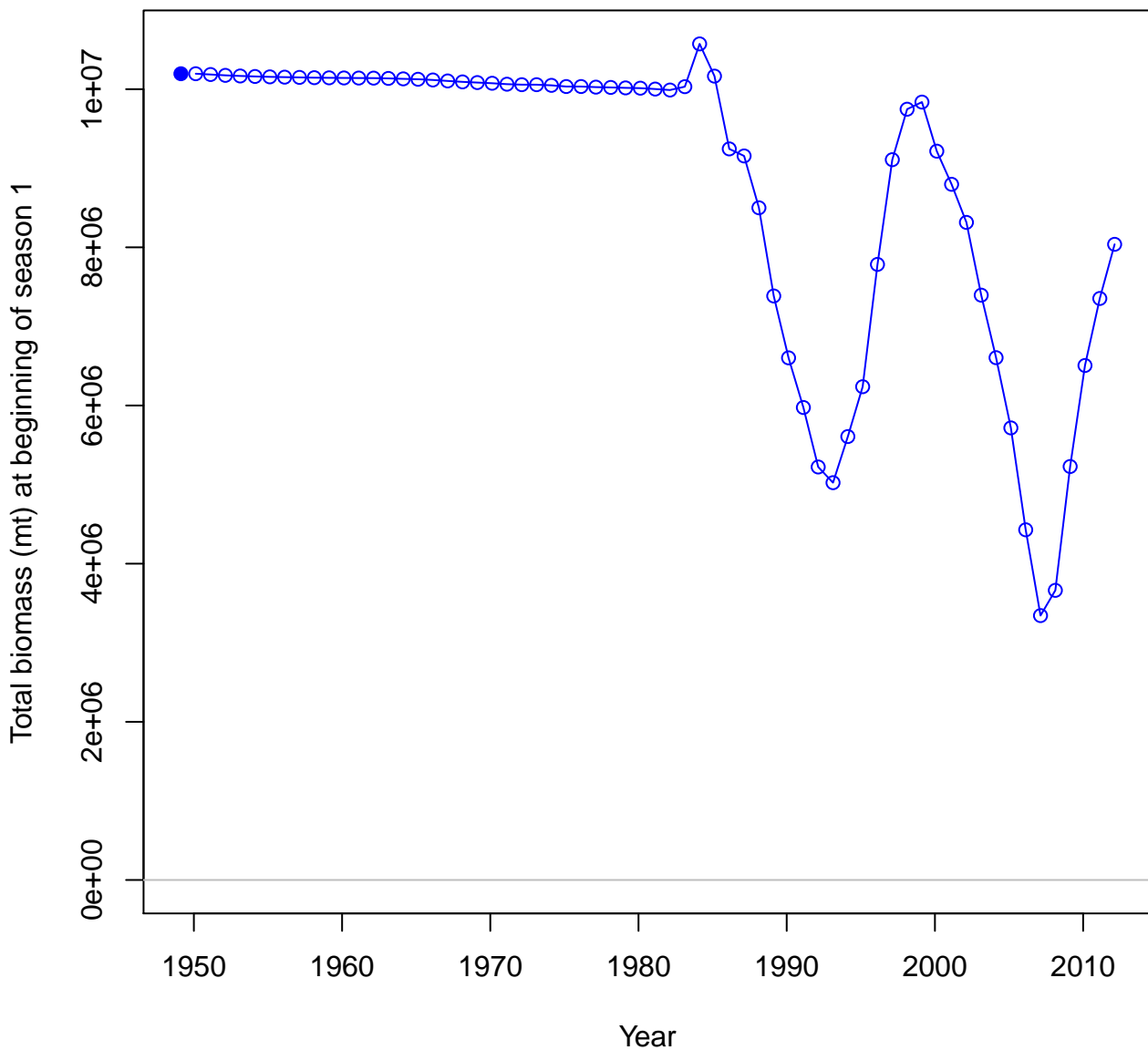
Ending year selectivity and growth for PSFS_CPUE



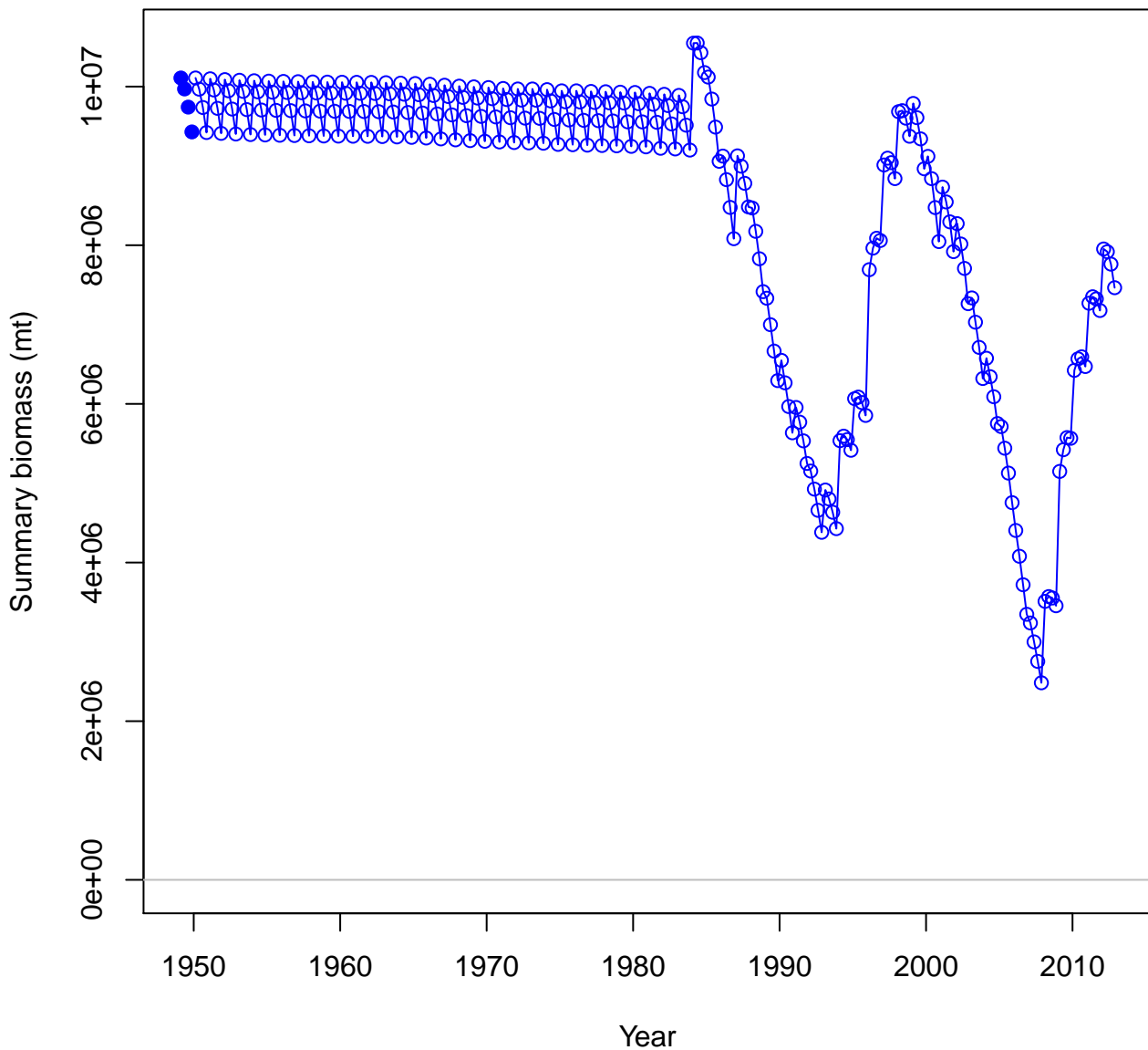
Total biomass (mt)



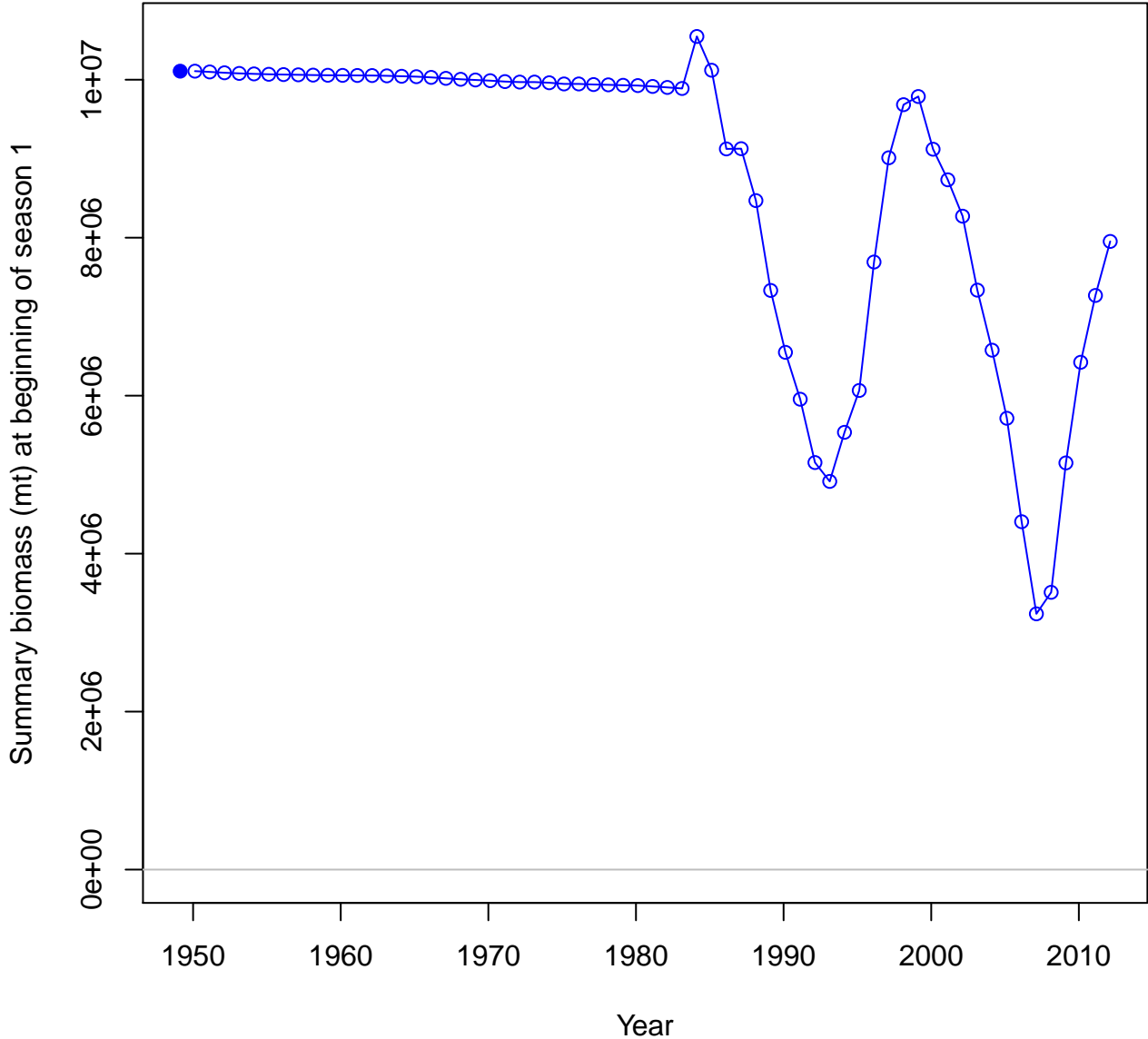
Total biomass (mt) at beginning of season 1



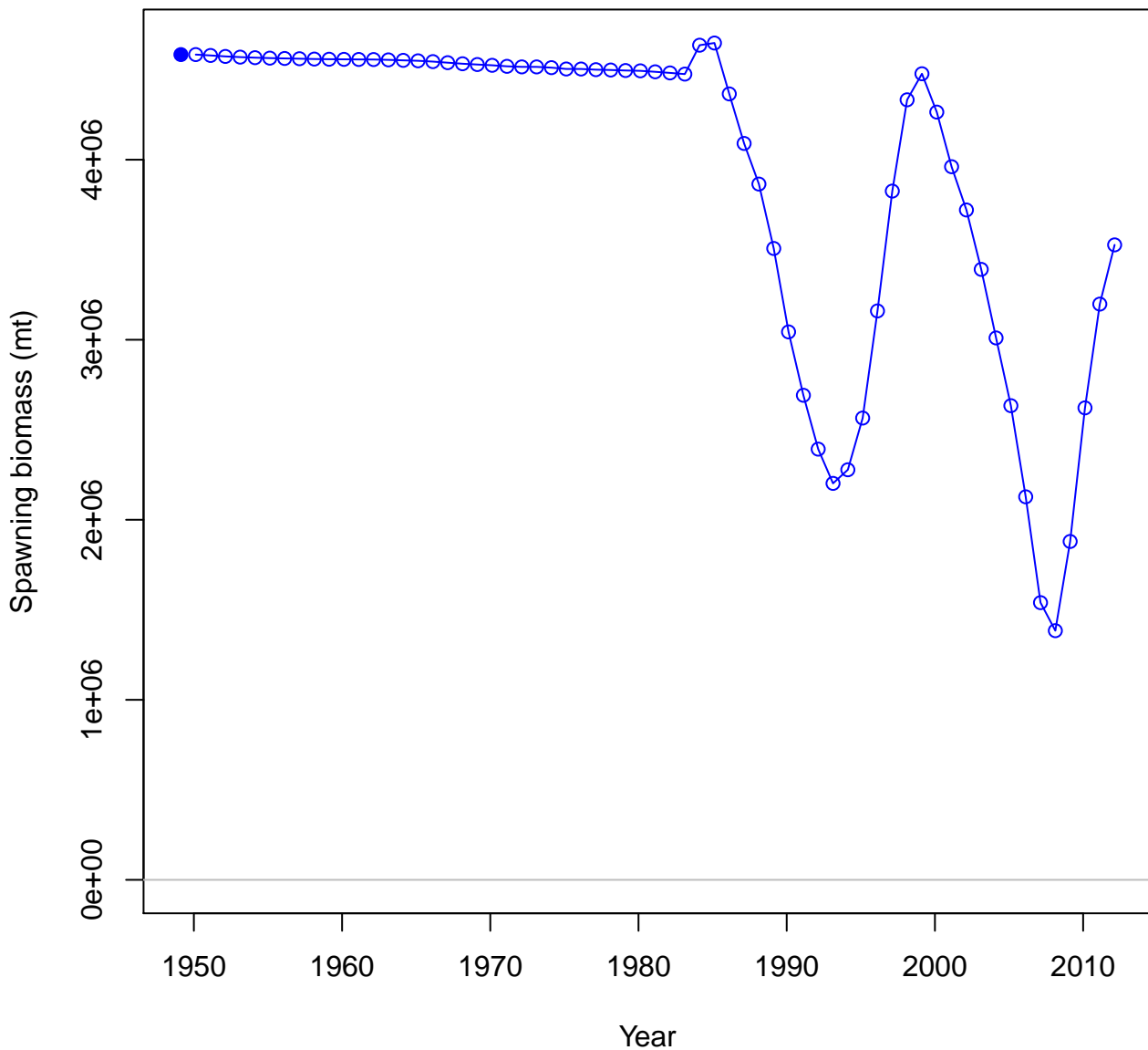
Summary biomass (mt)



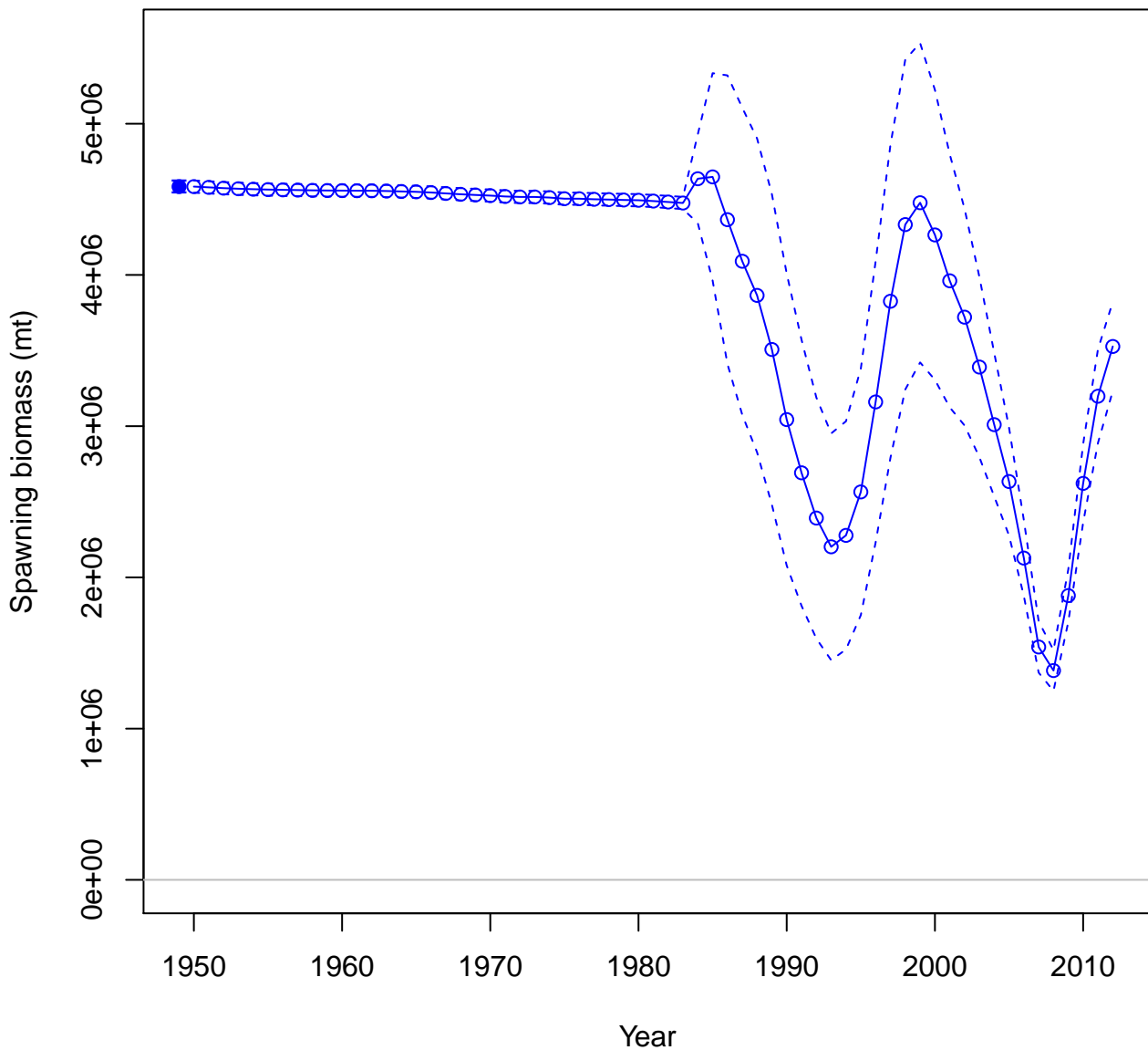
Summary biomass (mt) at beginning of season 1



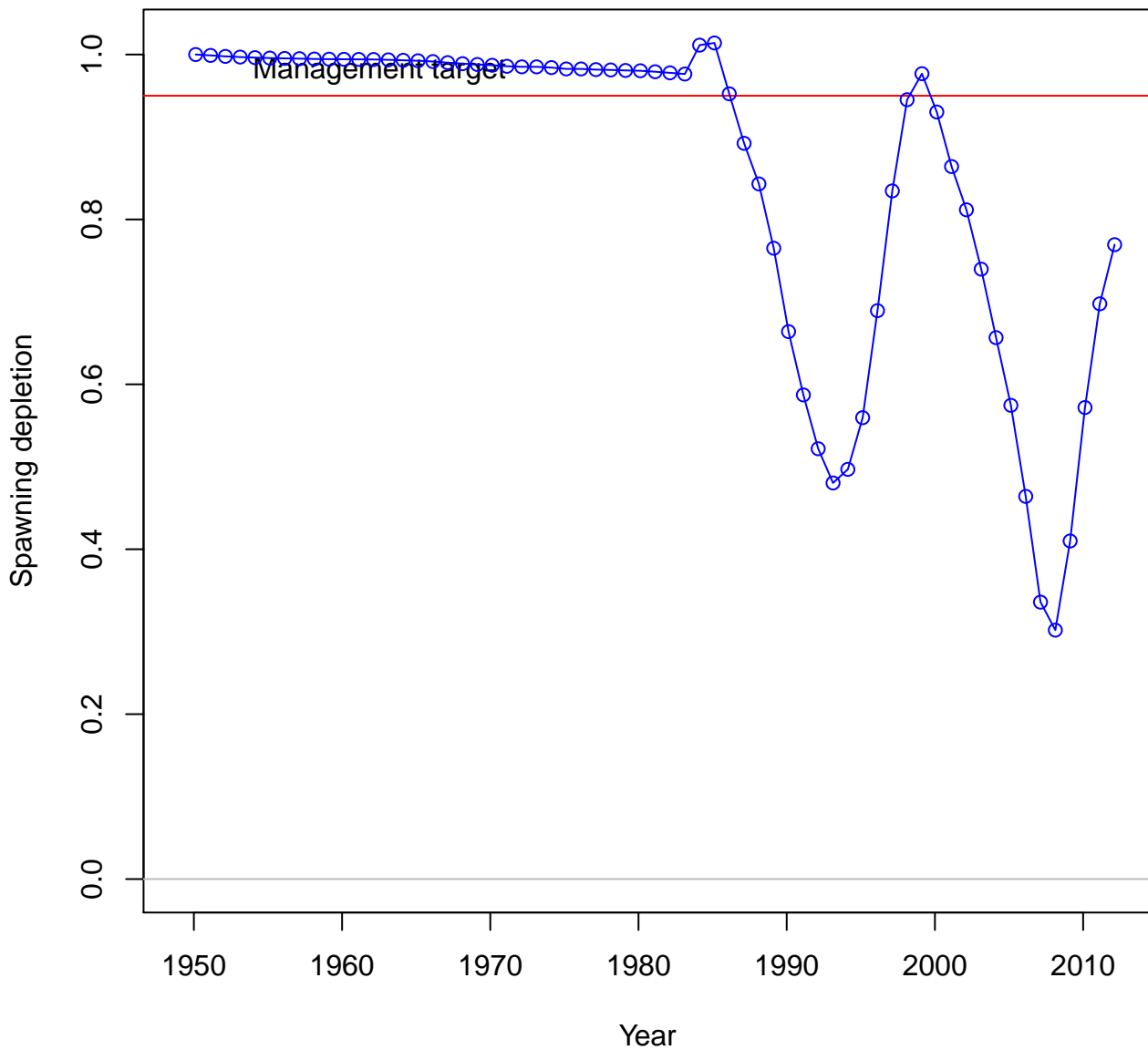
Spawning biomass (mt)



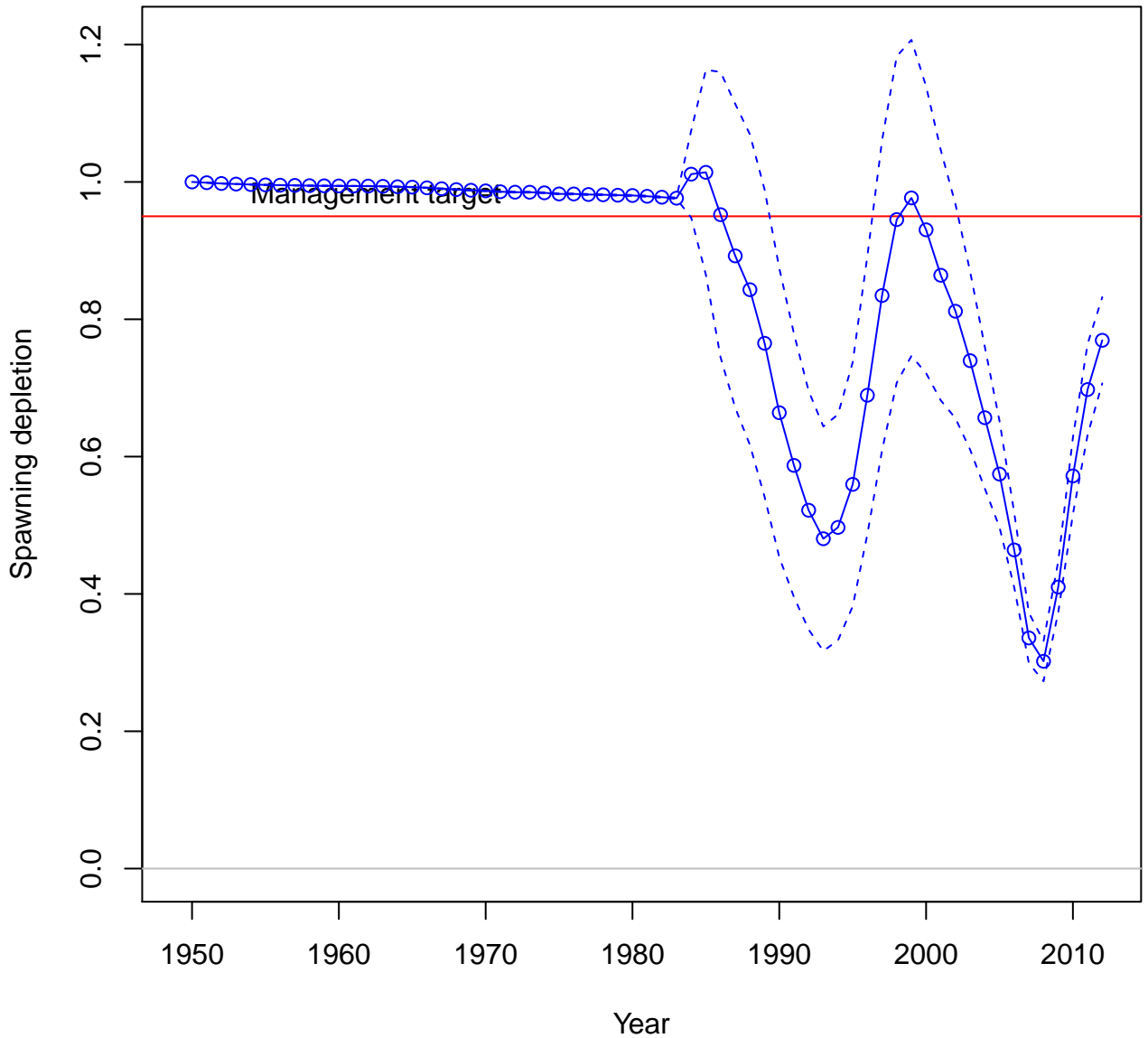
Spawning biomass (mt) with ~95% asymptotic intervals



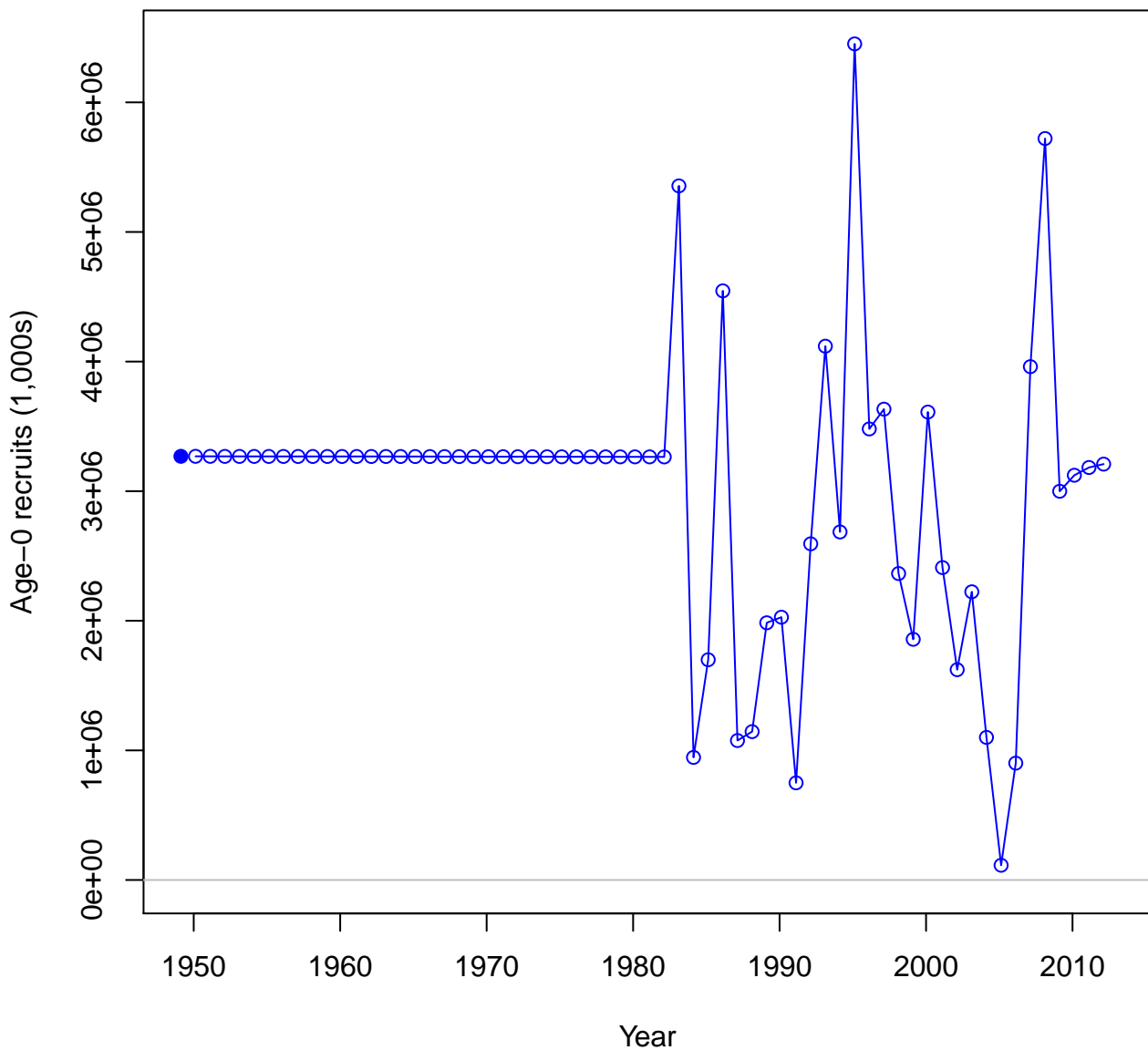
Spawning depletion



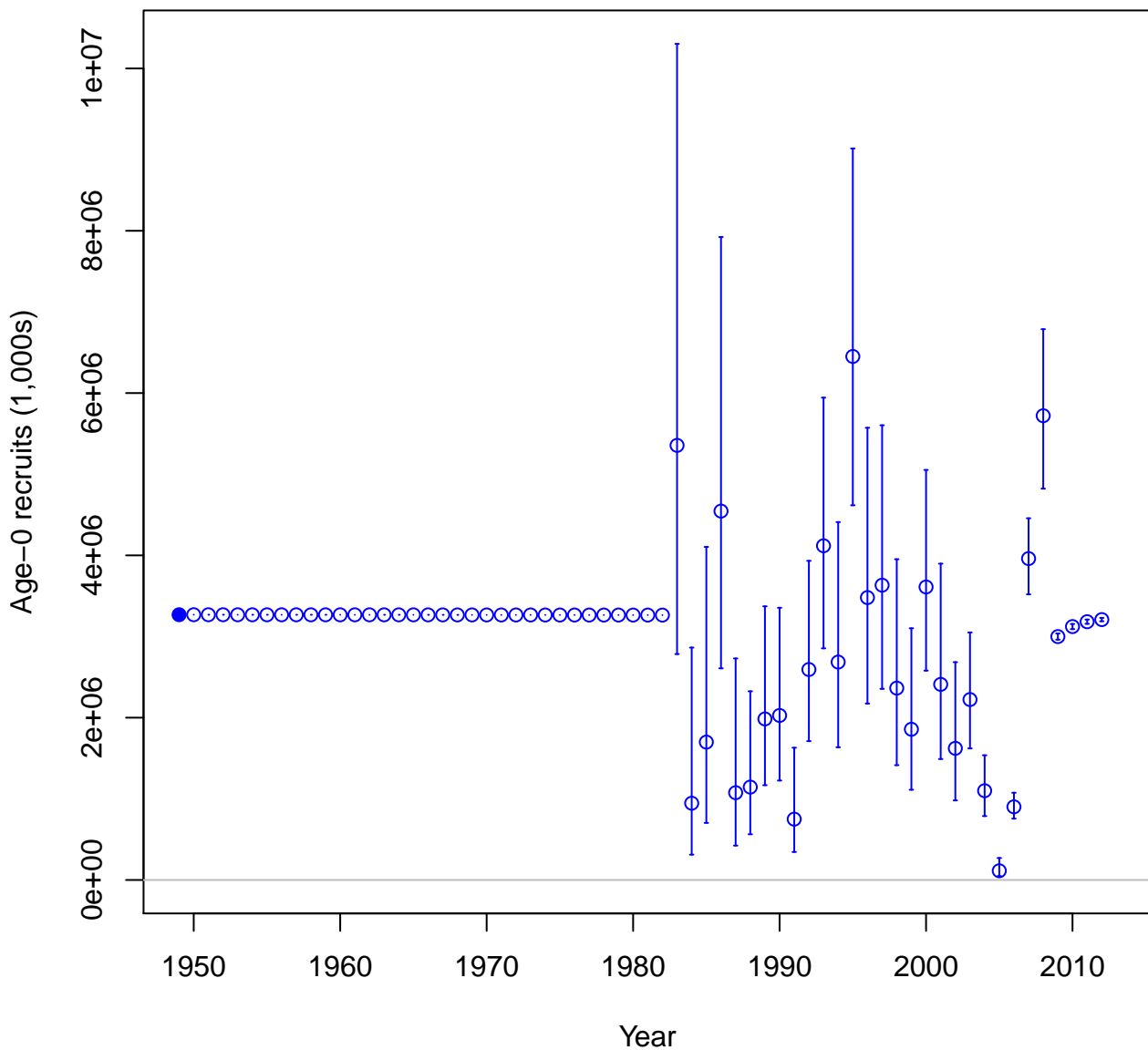
Spawning depletion with ~95% asymptotic intervals



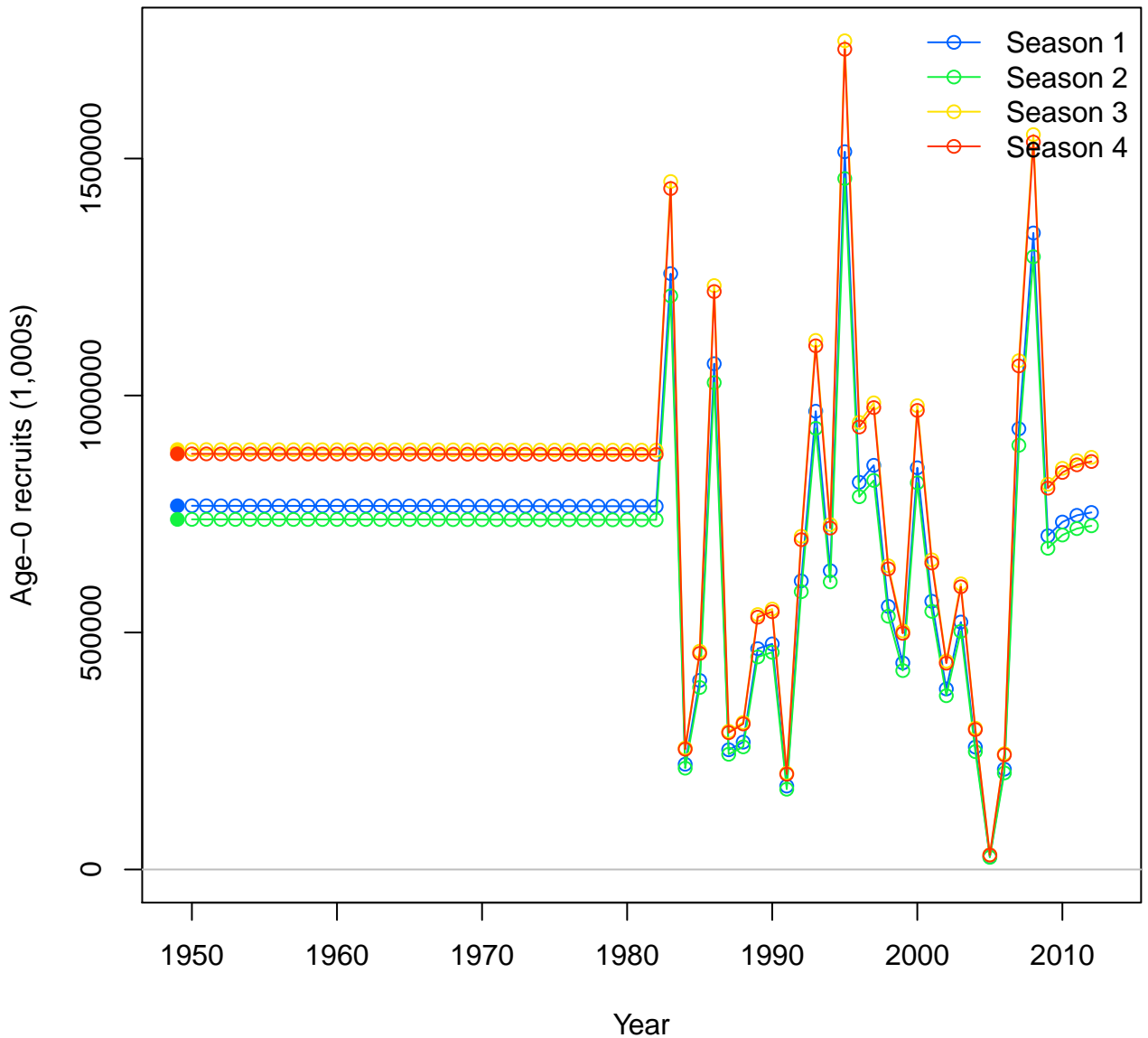
Age-0 recruits (1,000s)



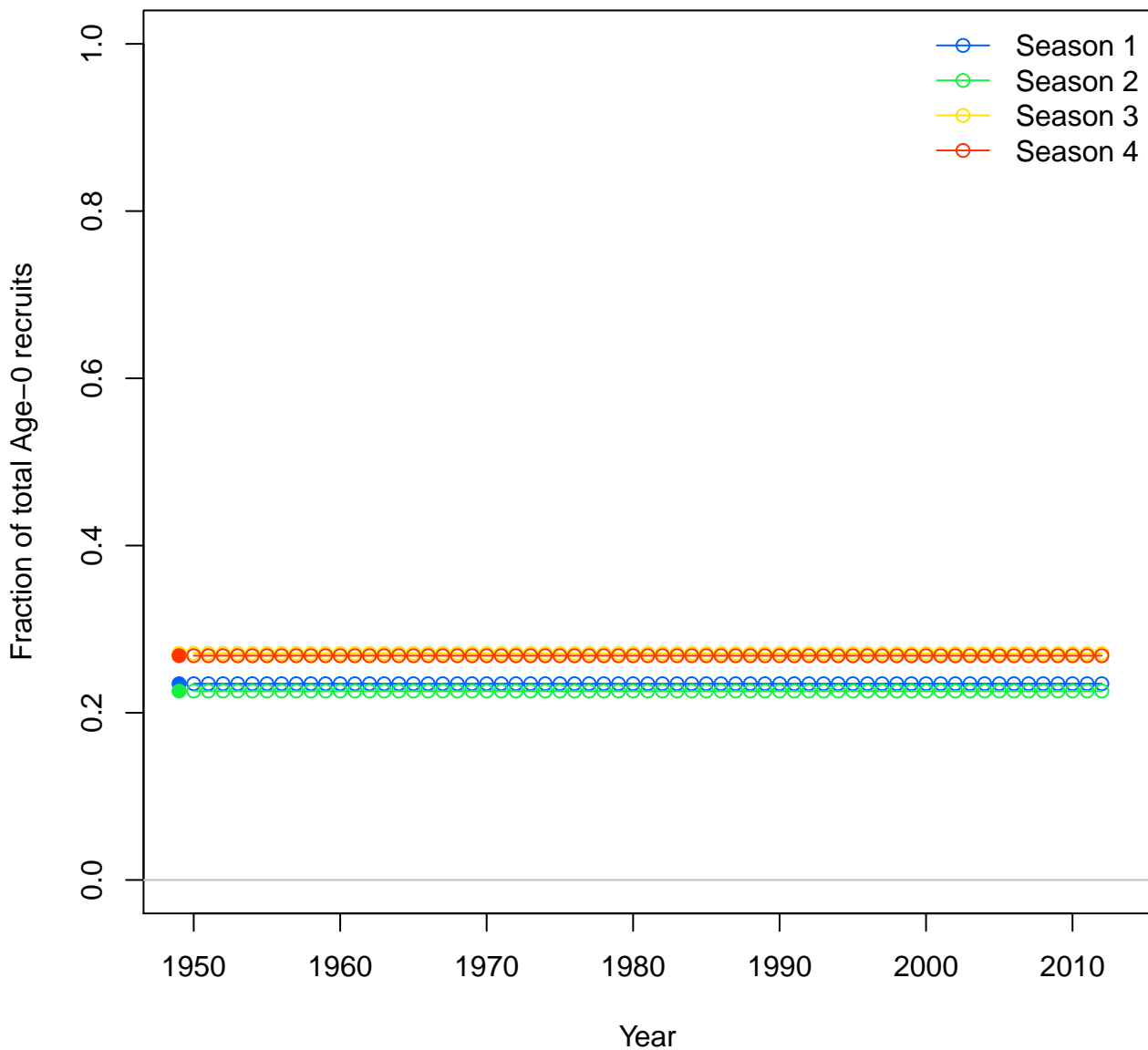
Age-0 recruits (1,000s) with ~95% asymptotic intervals

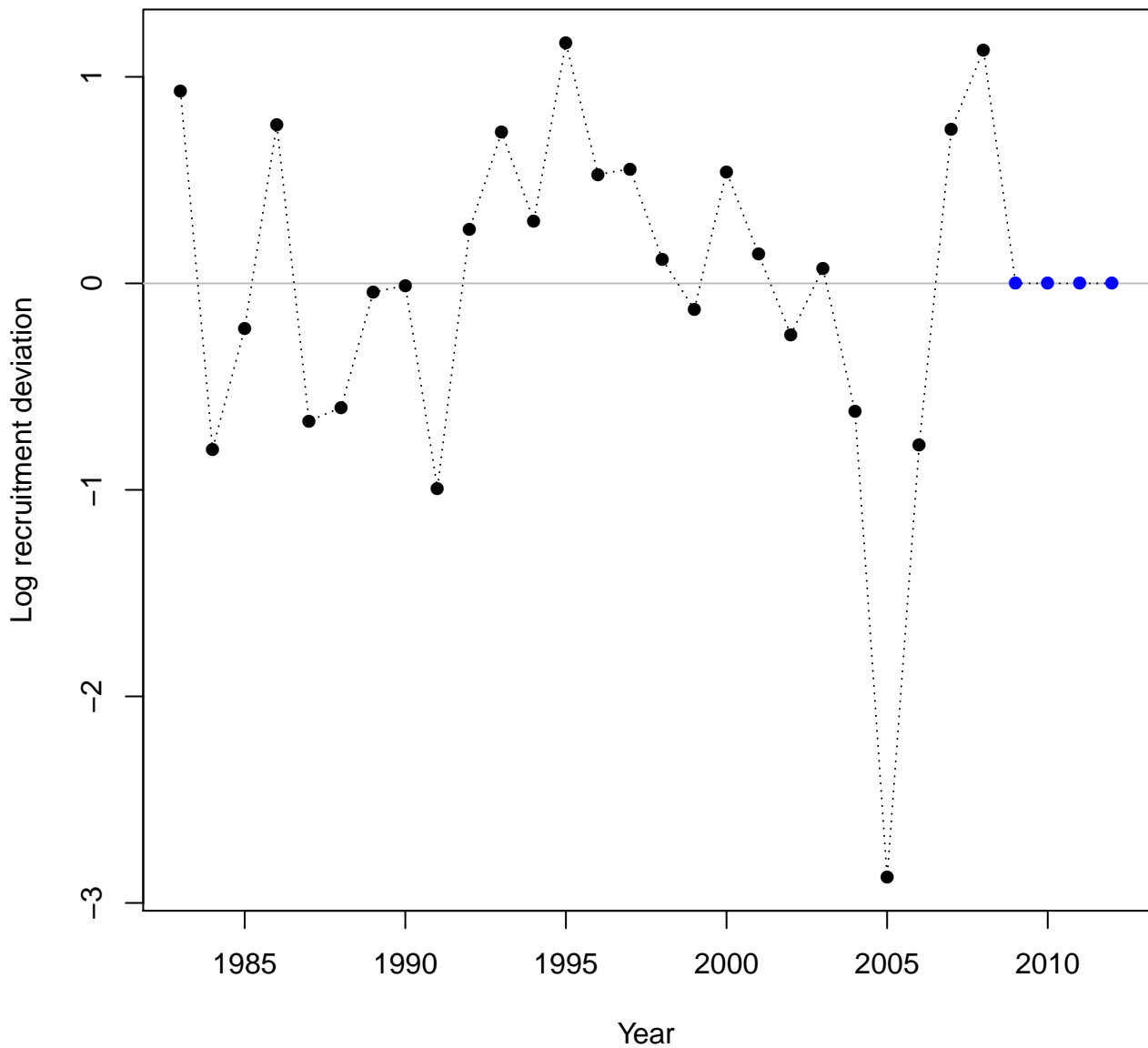


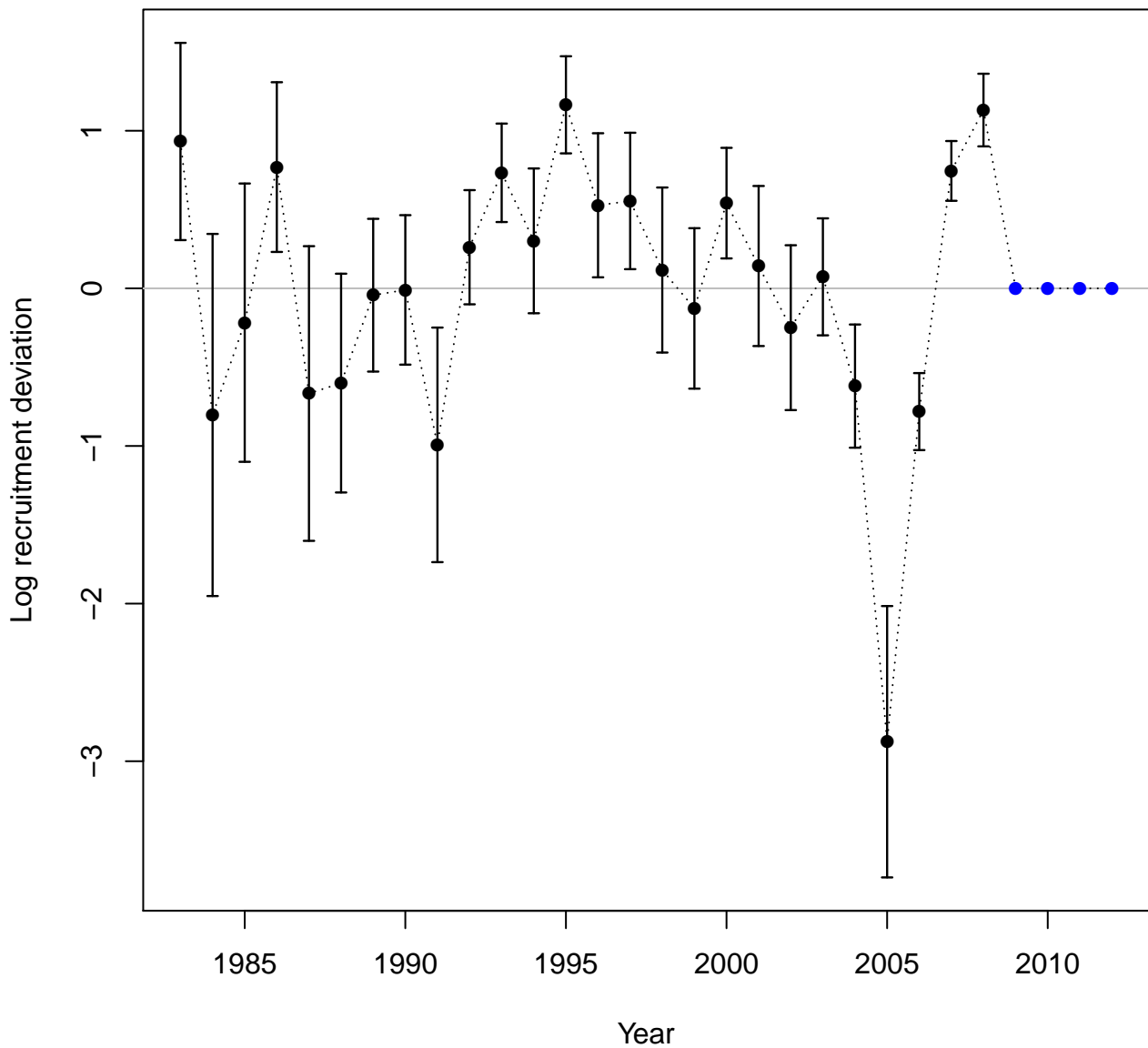
Age-0 recruits (1,000s) by birth season



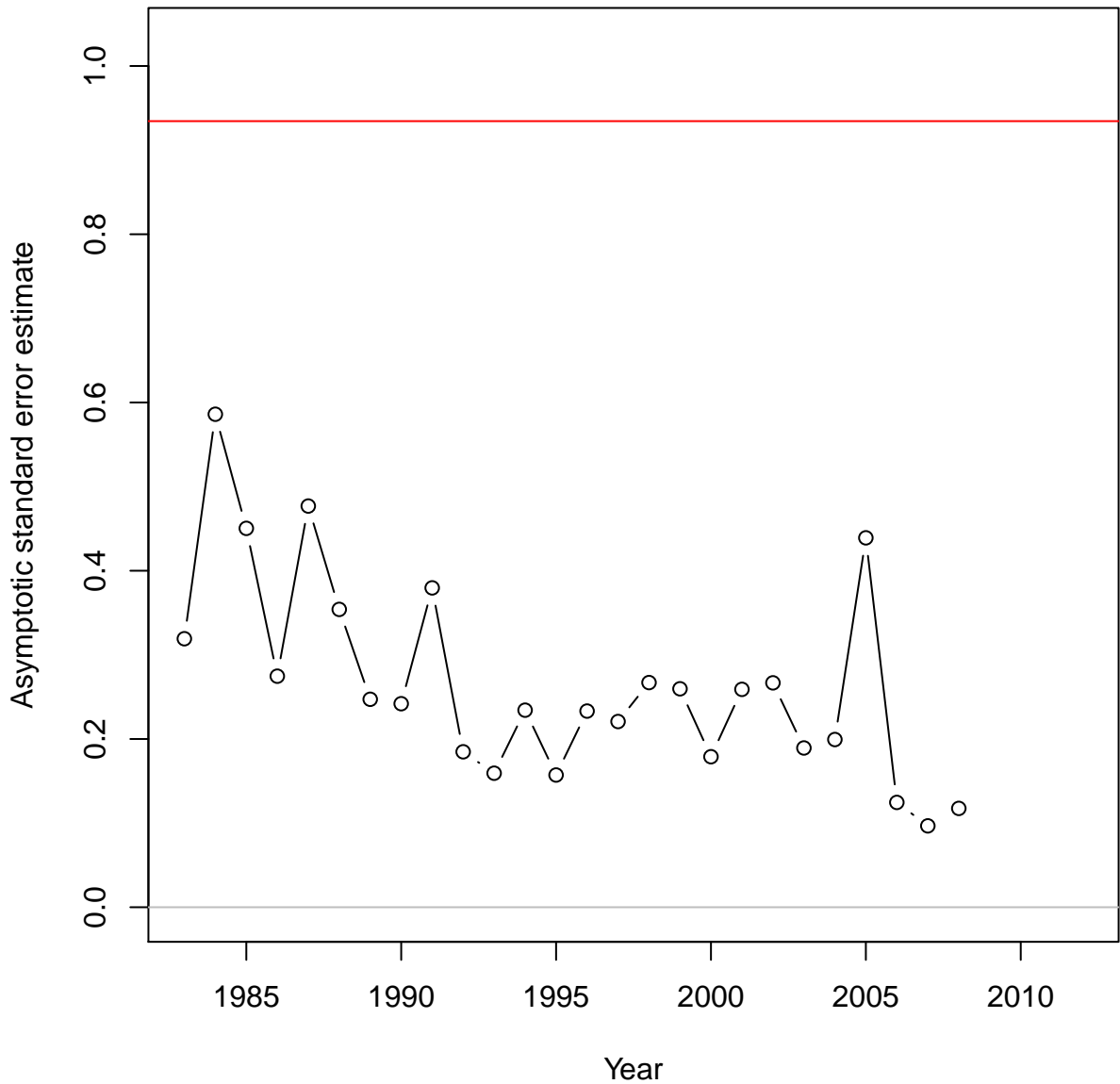
Fraction of total Age-0 recruits by birth season

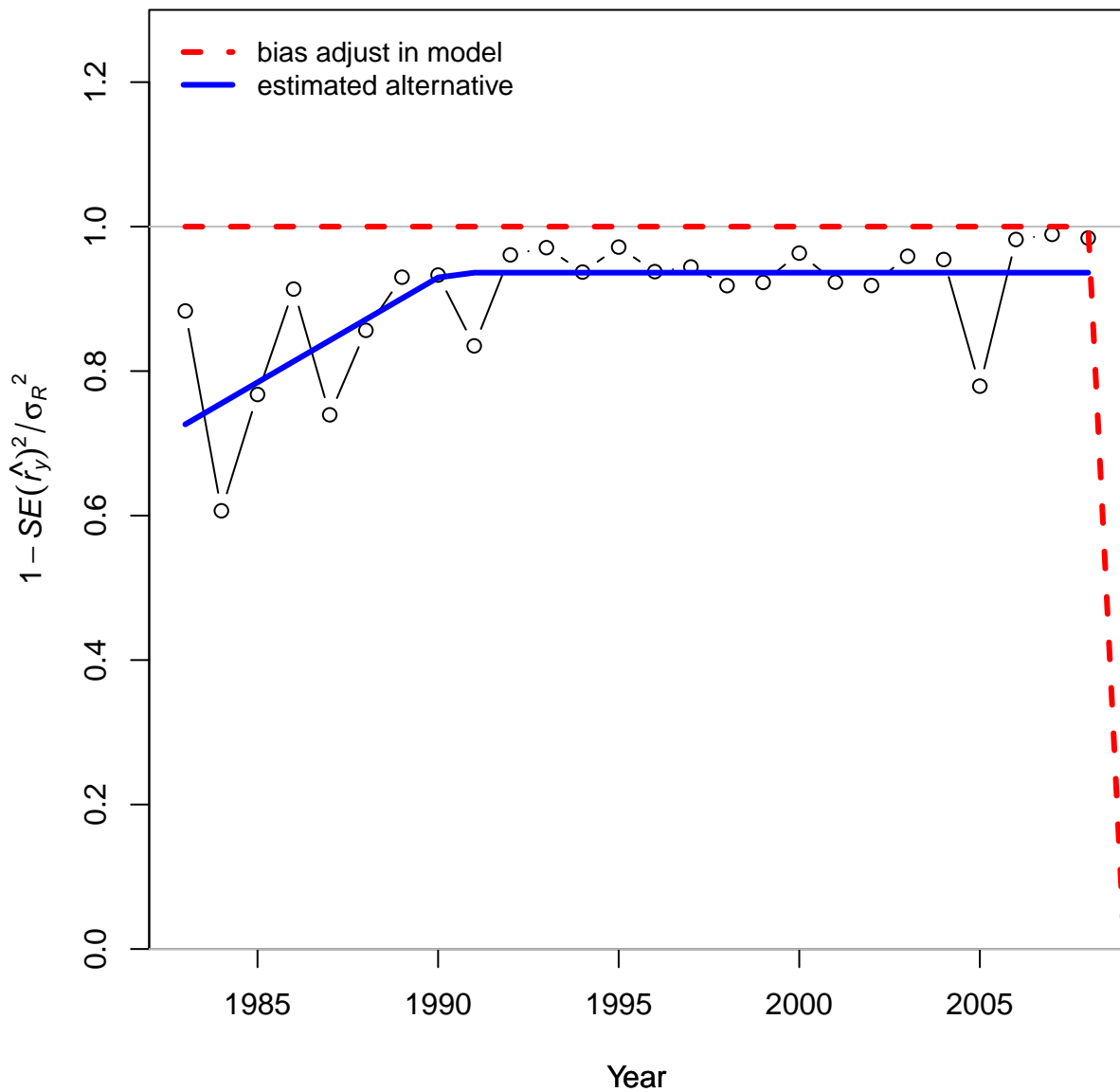


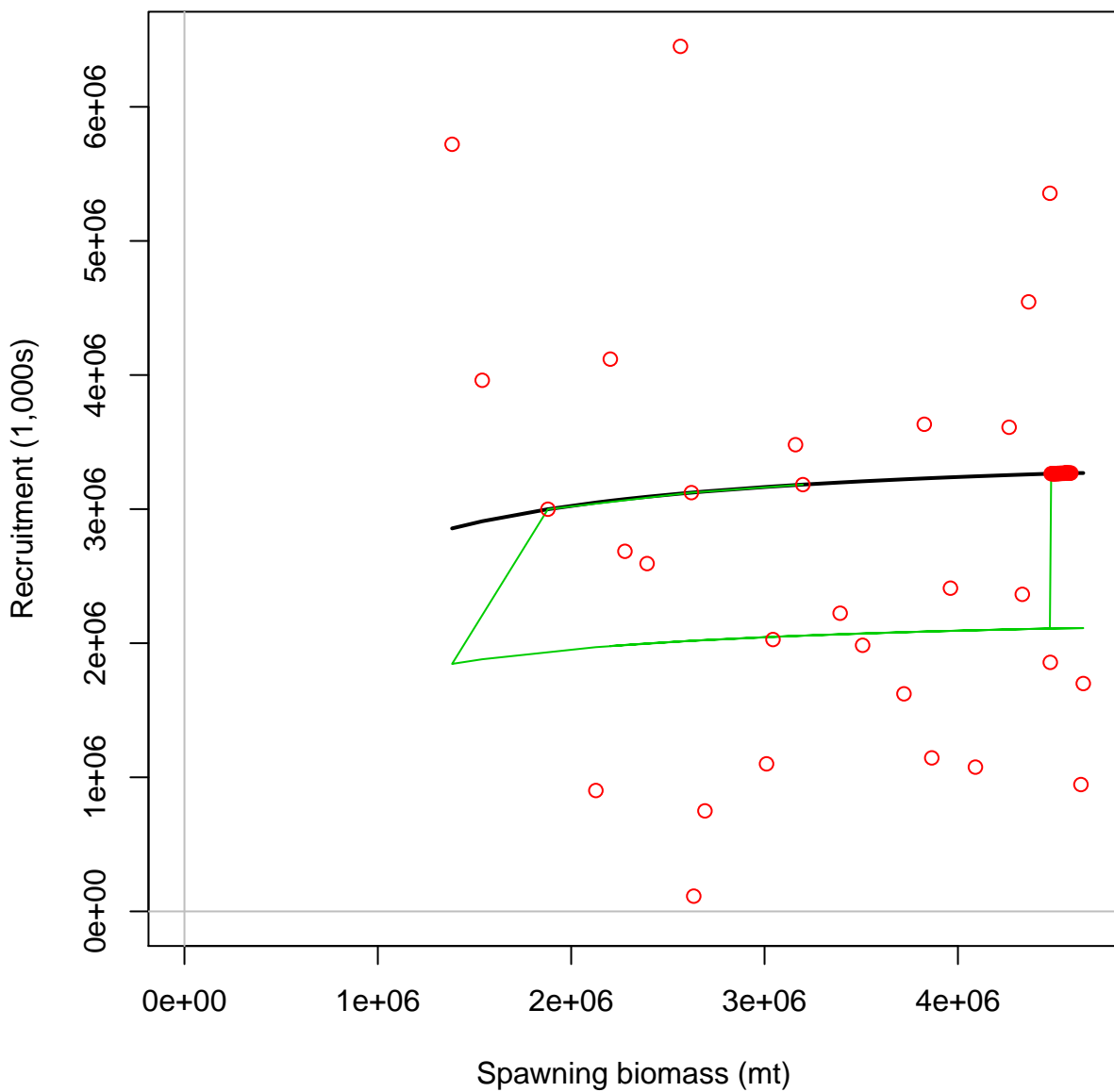


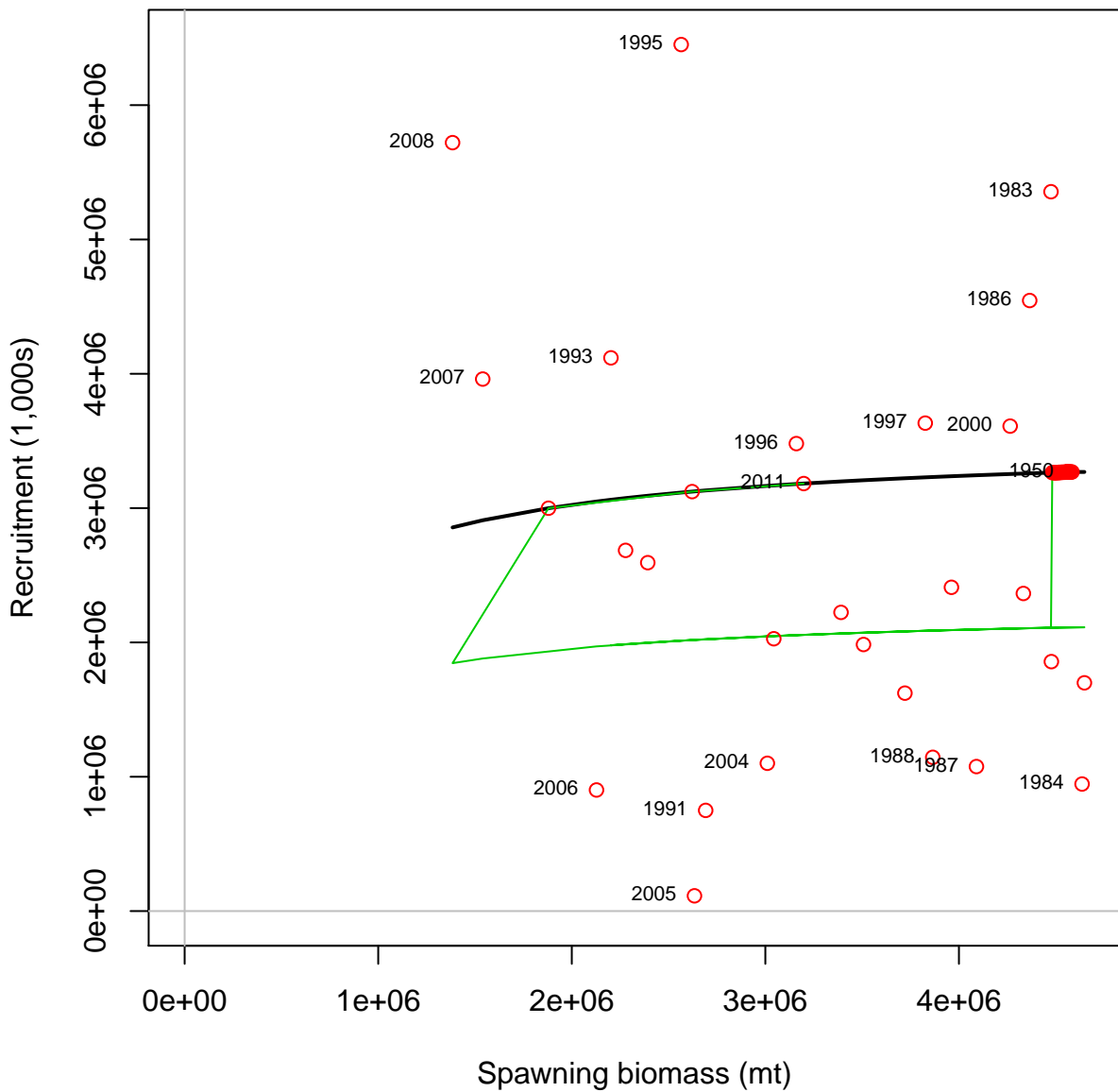


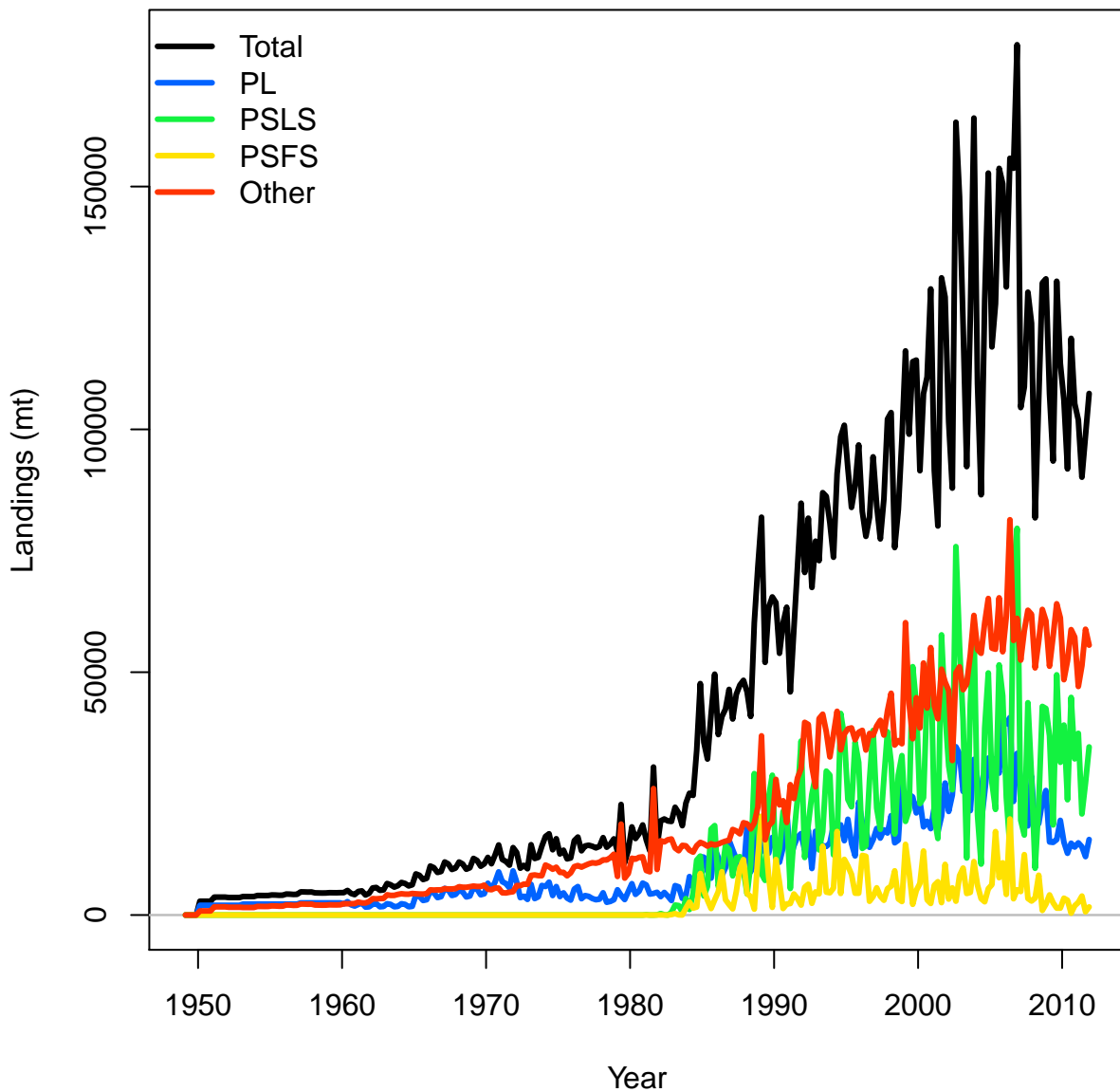
Recruitment deviation variance check

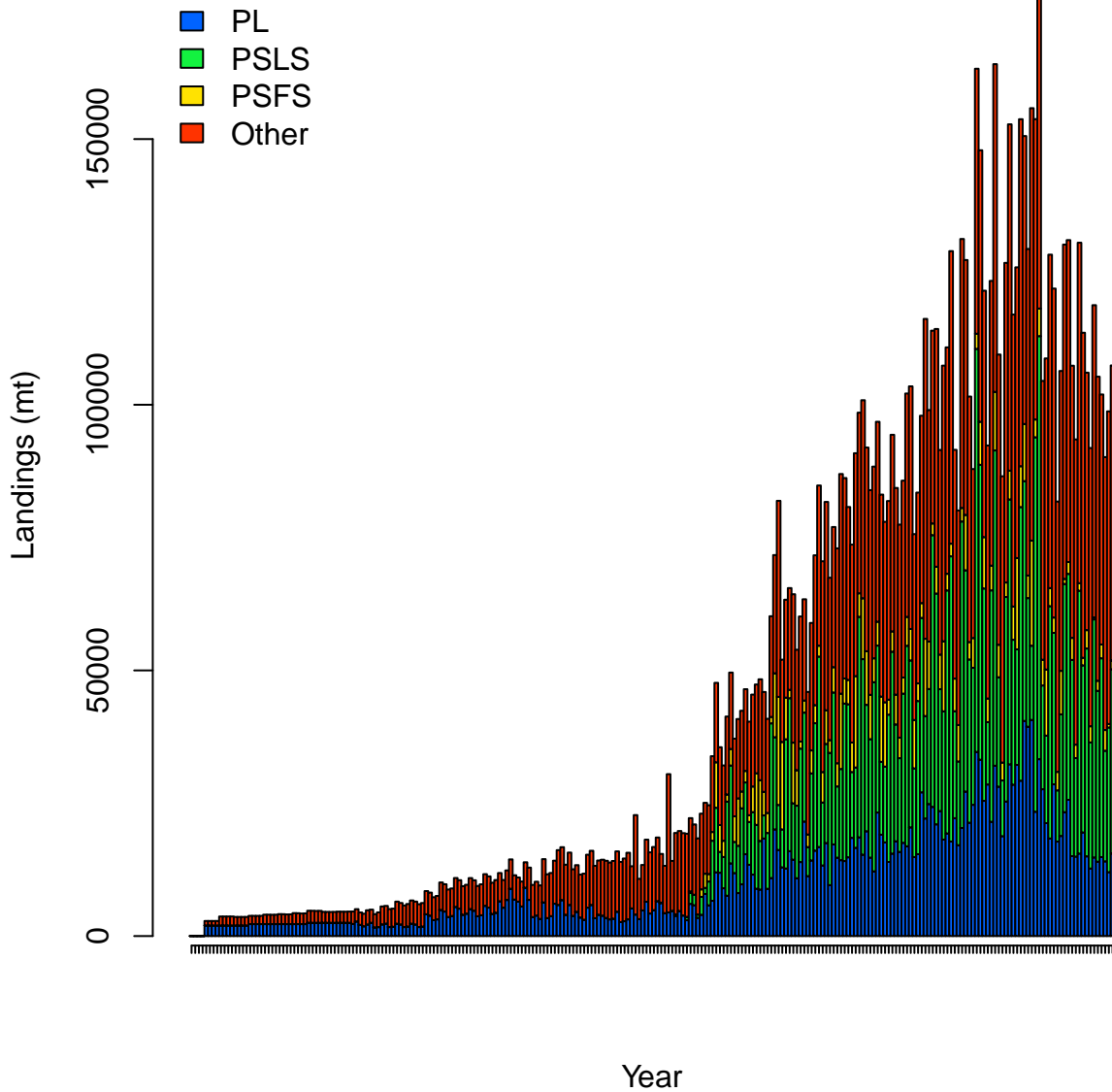


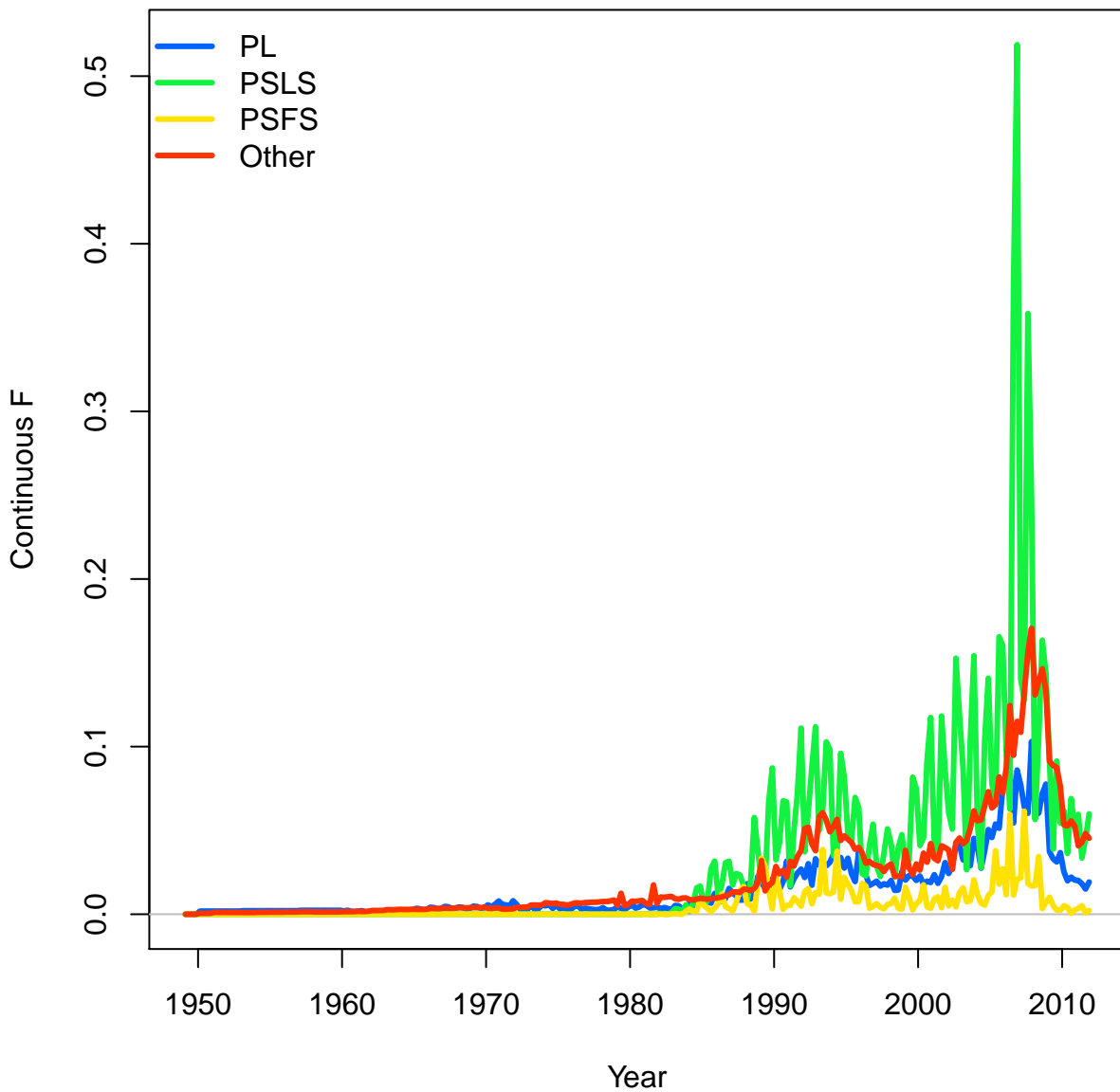




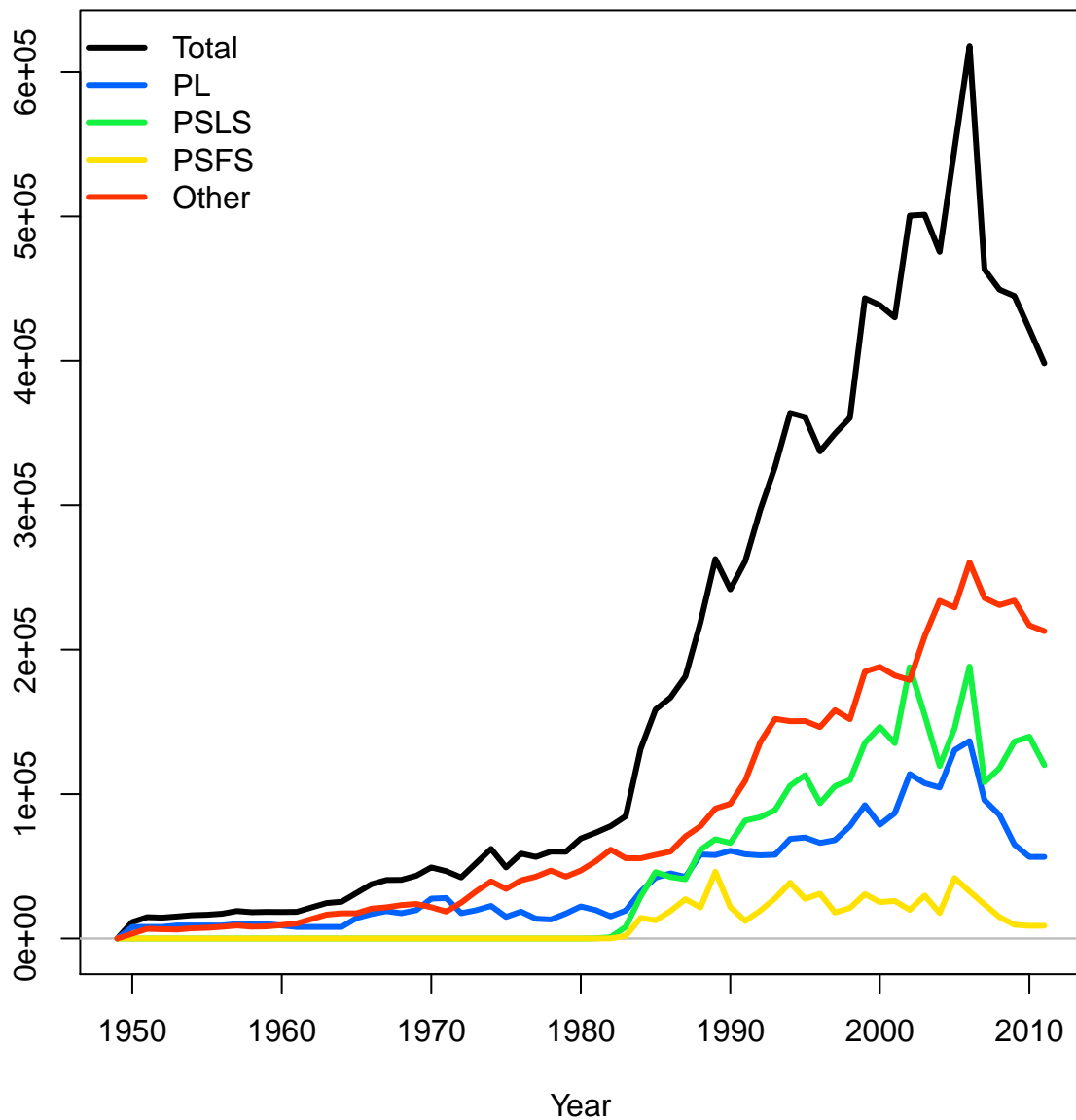


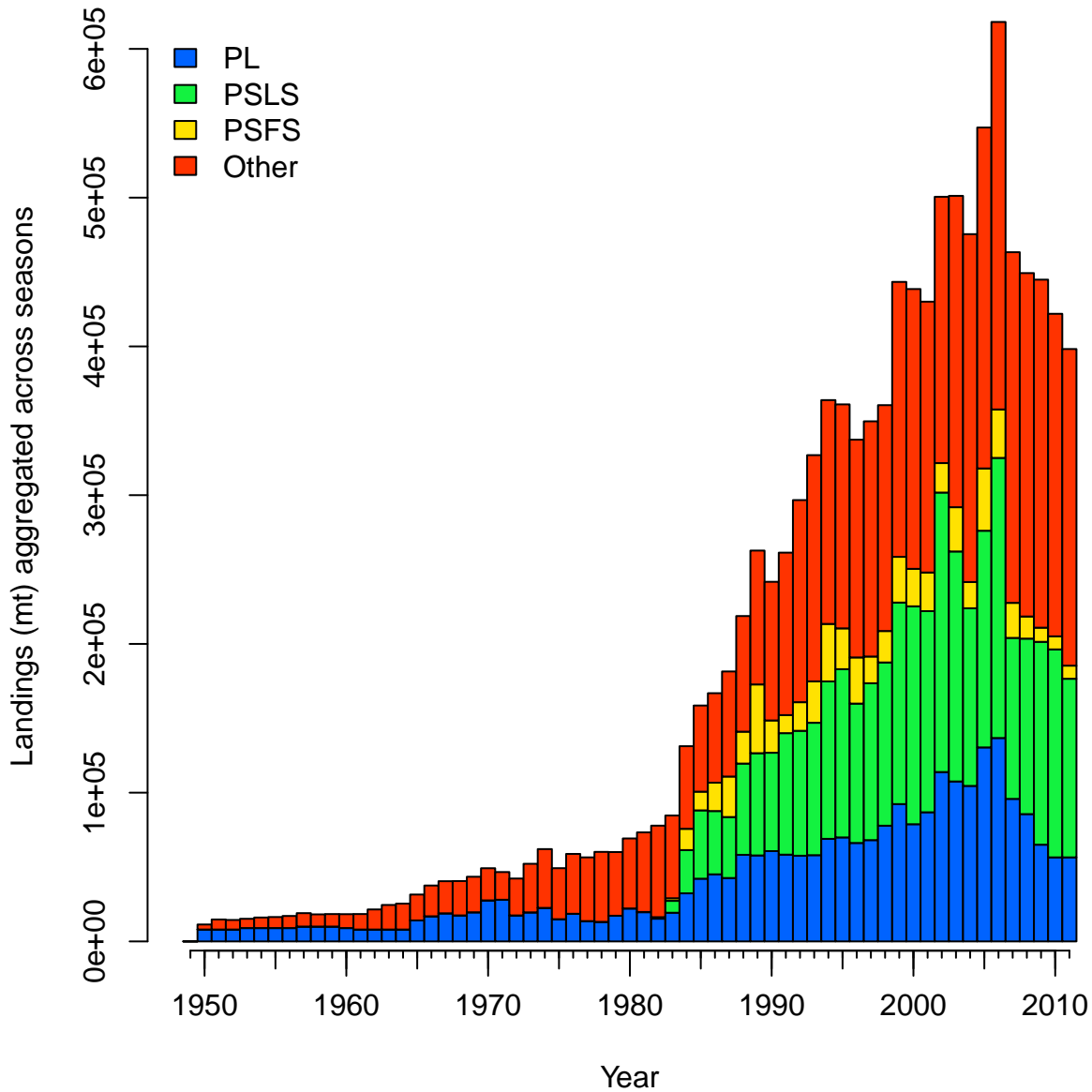


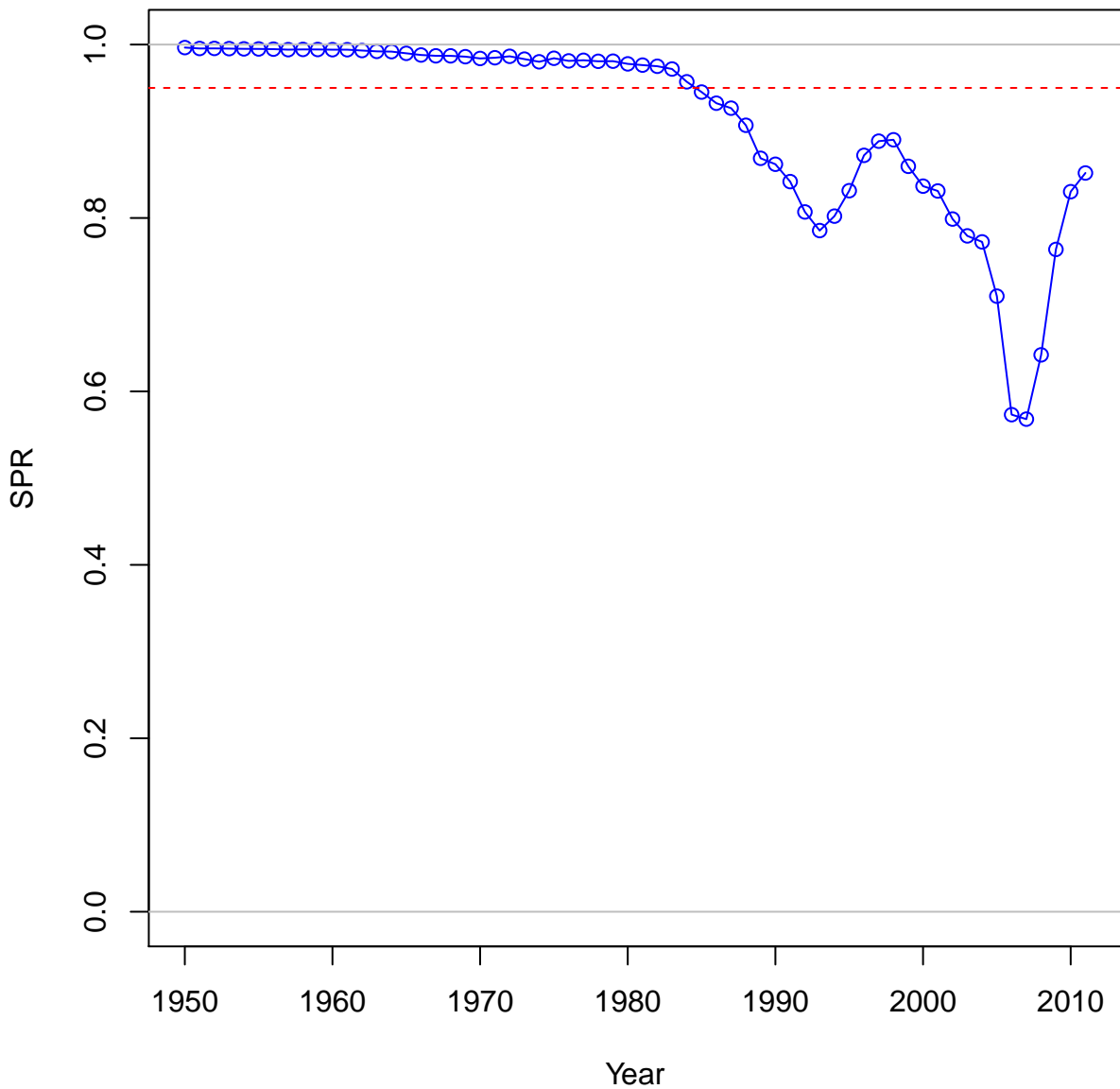




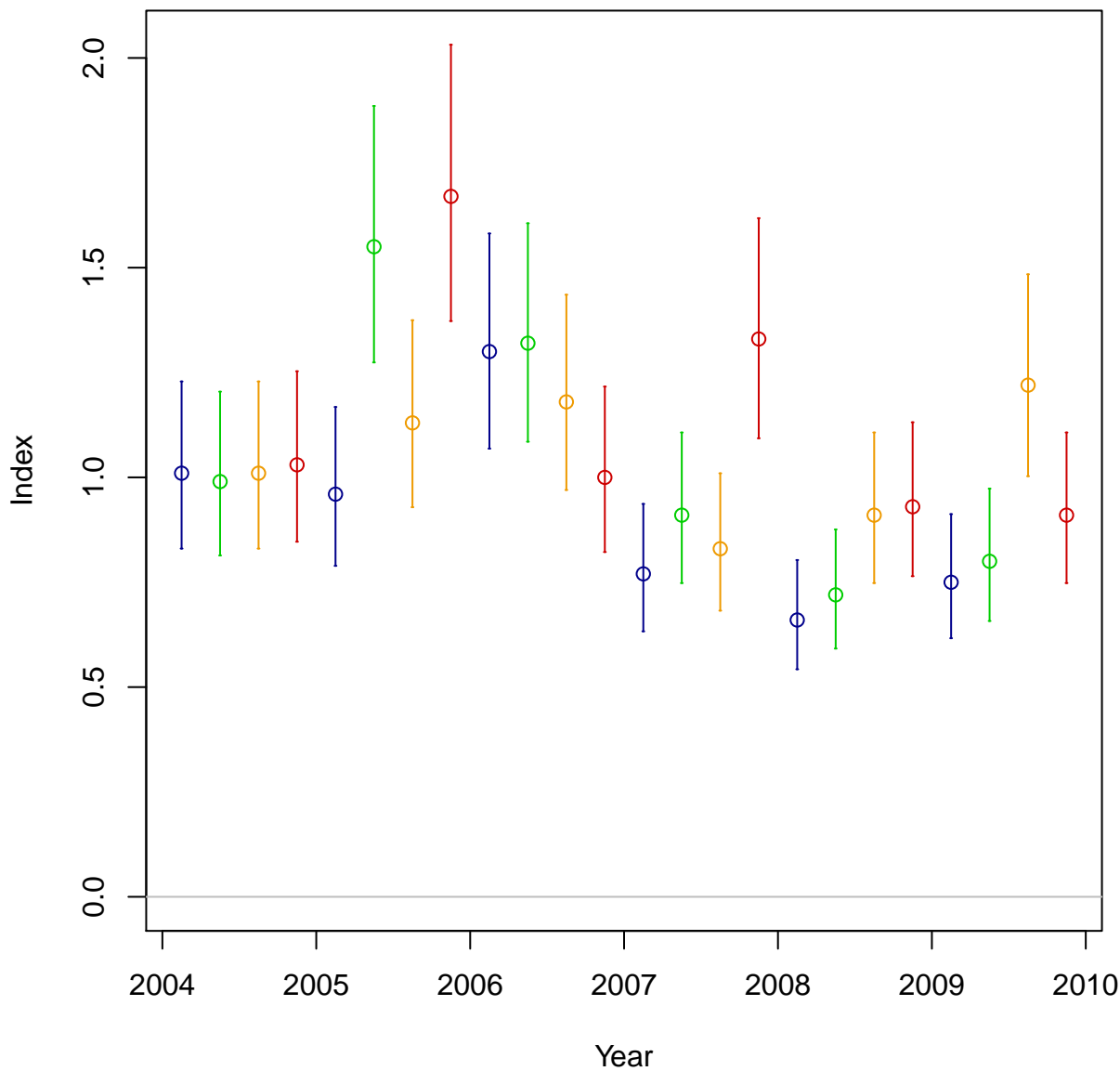
Landings (mt) aggregated across seasons



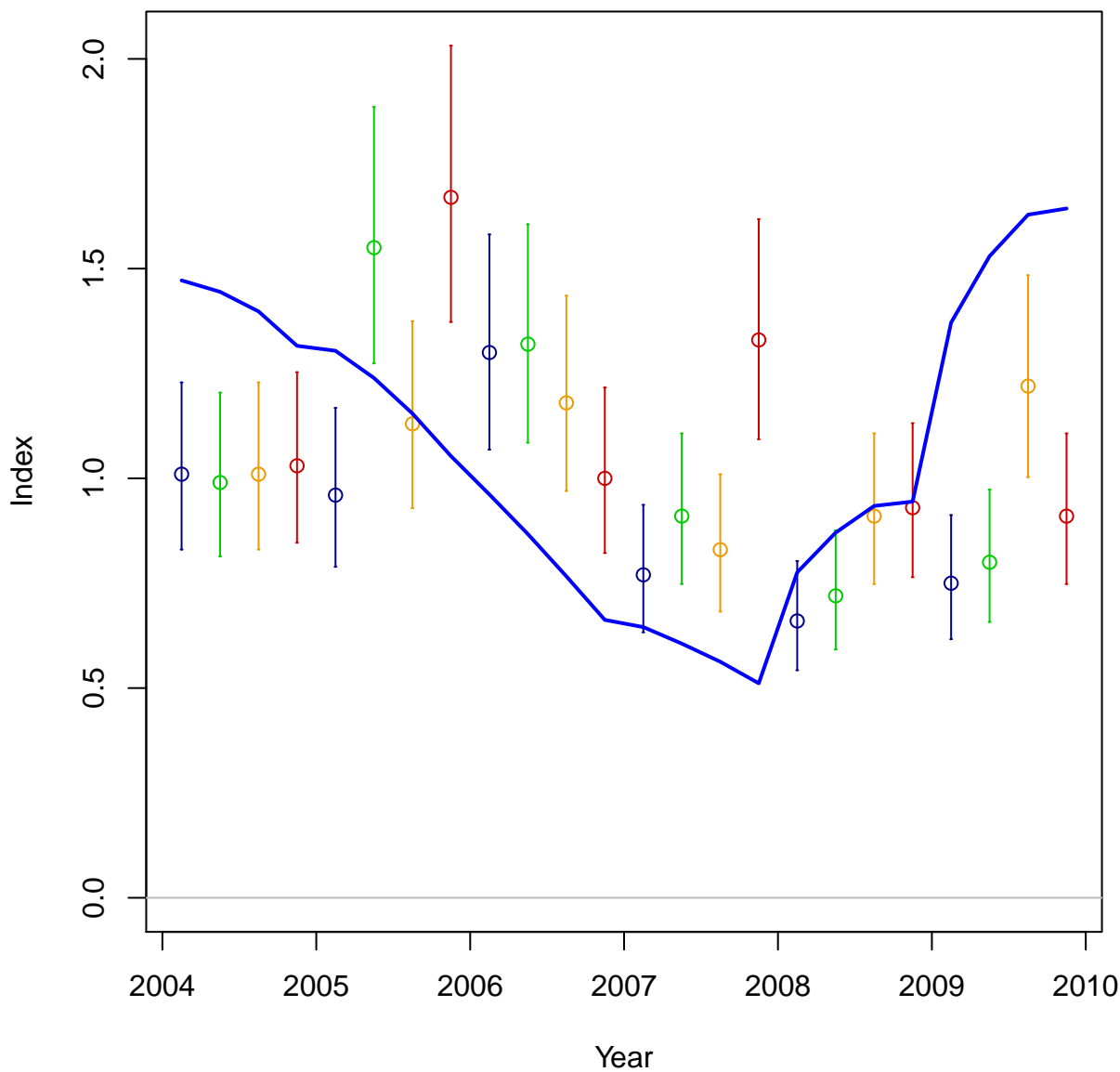




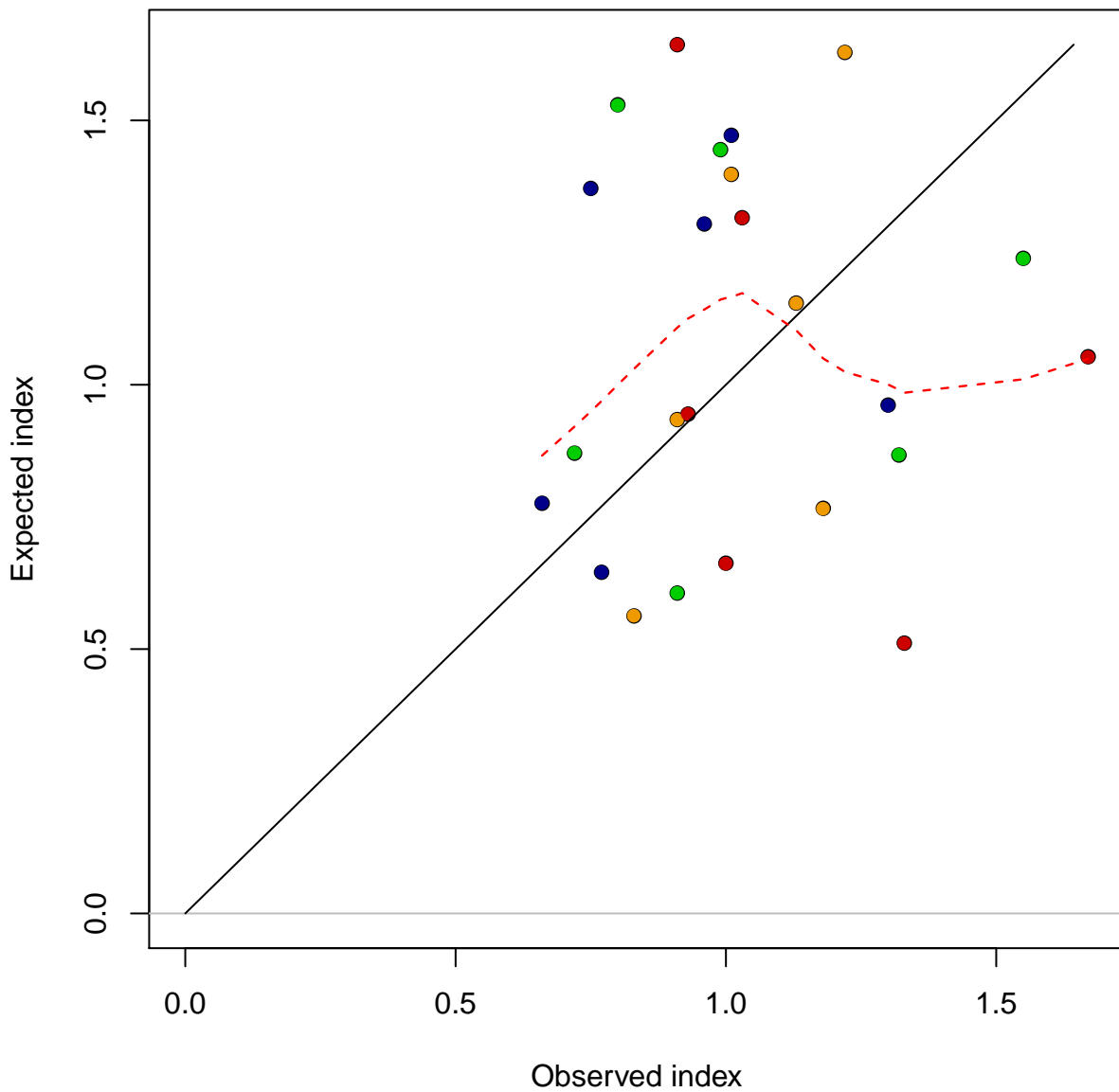
Index PL_CPUE



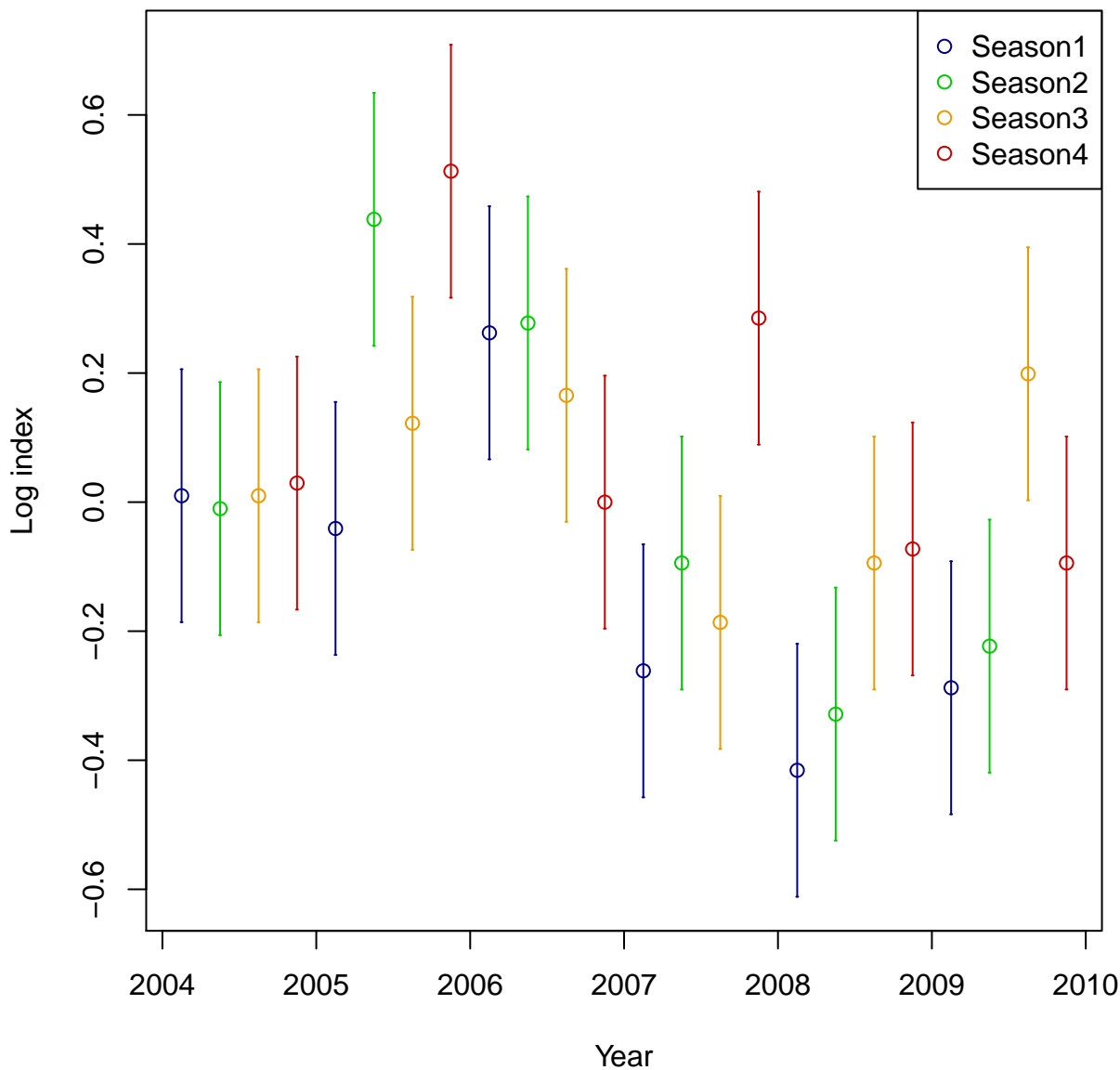
Index PL_CPUE



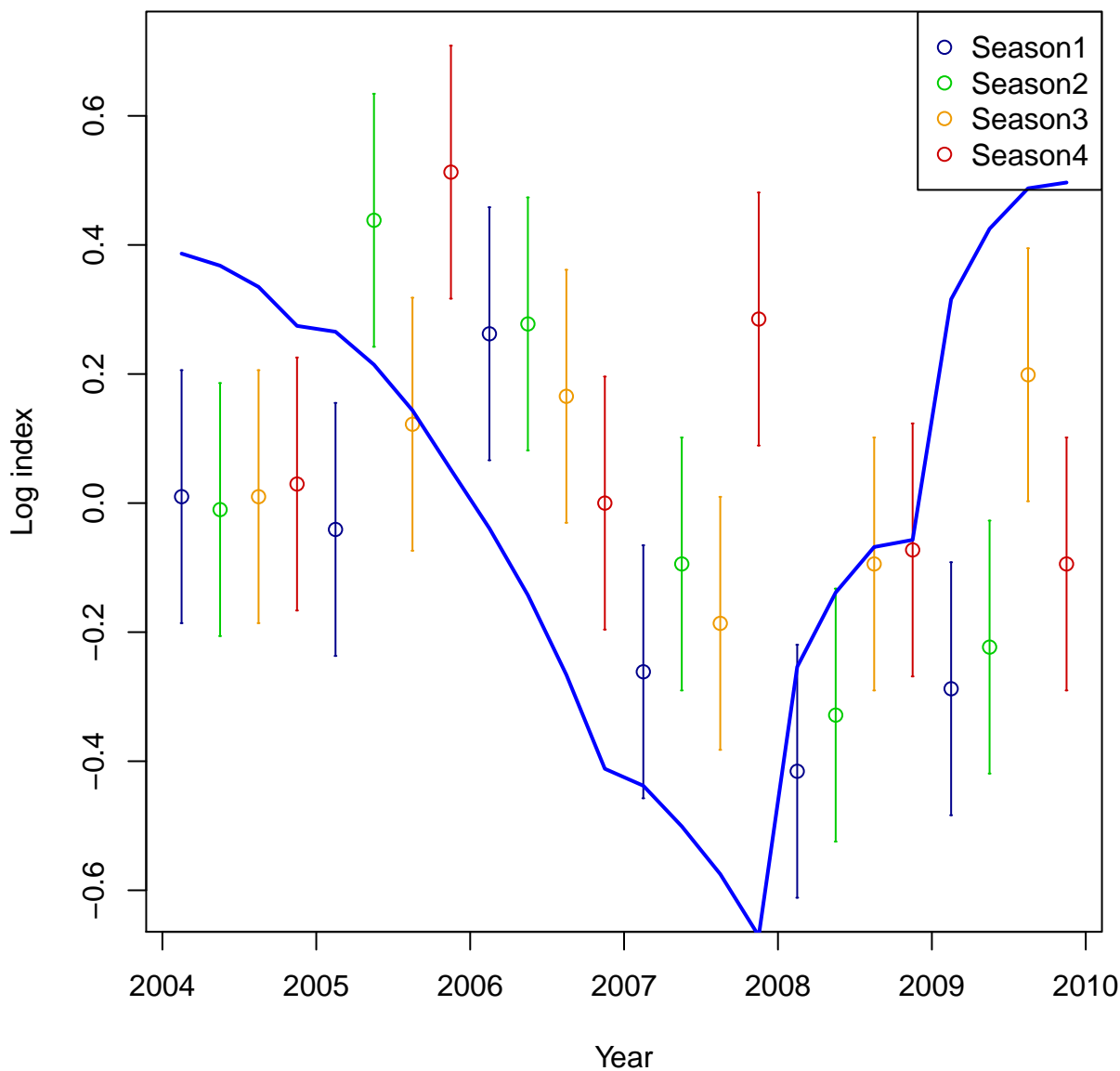
Index PL_CPUE



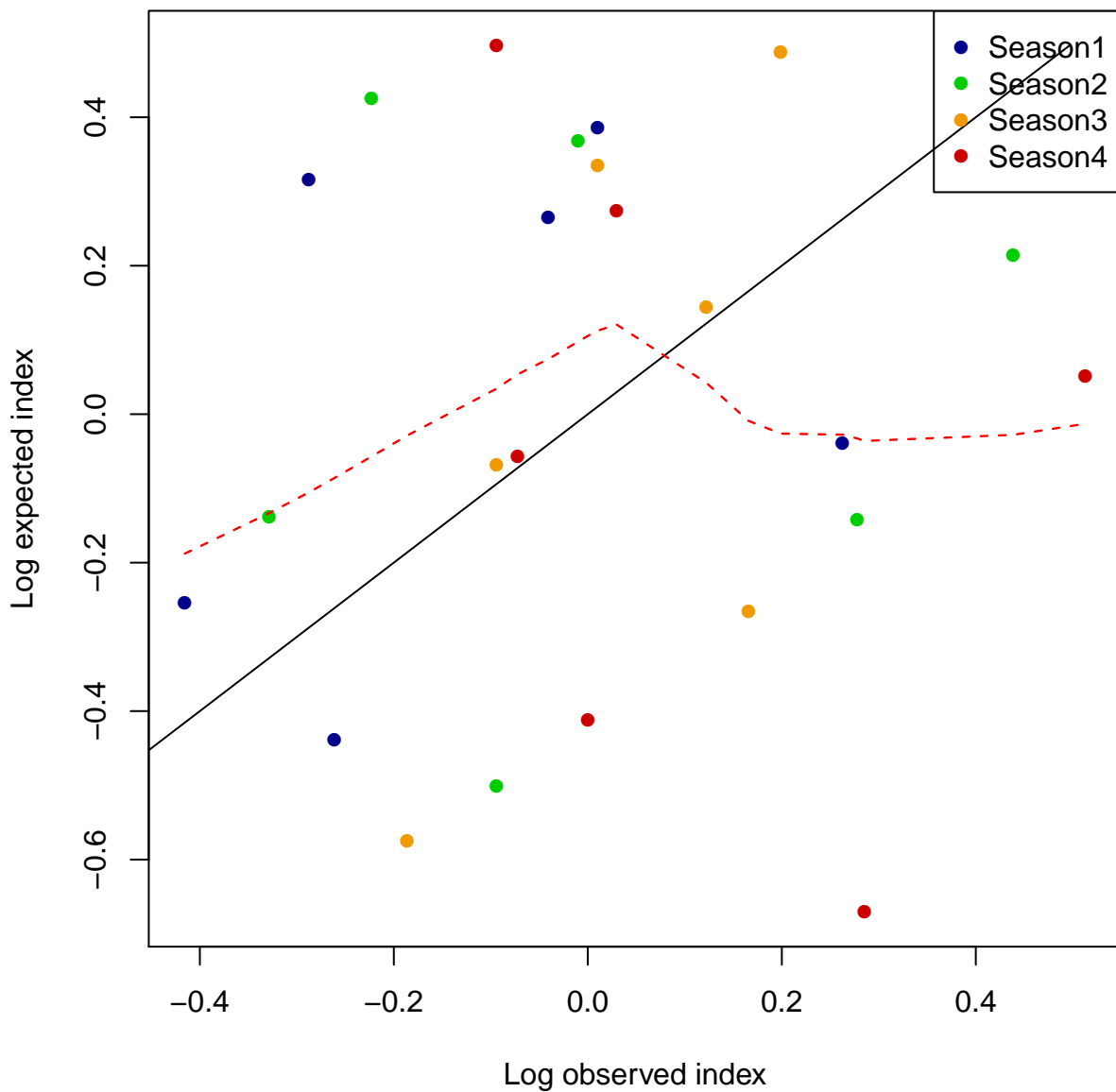
Log index PL_CPUE



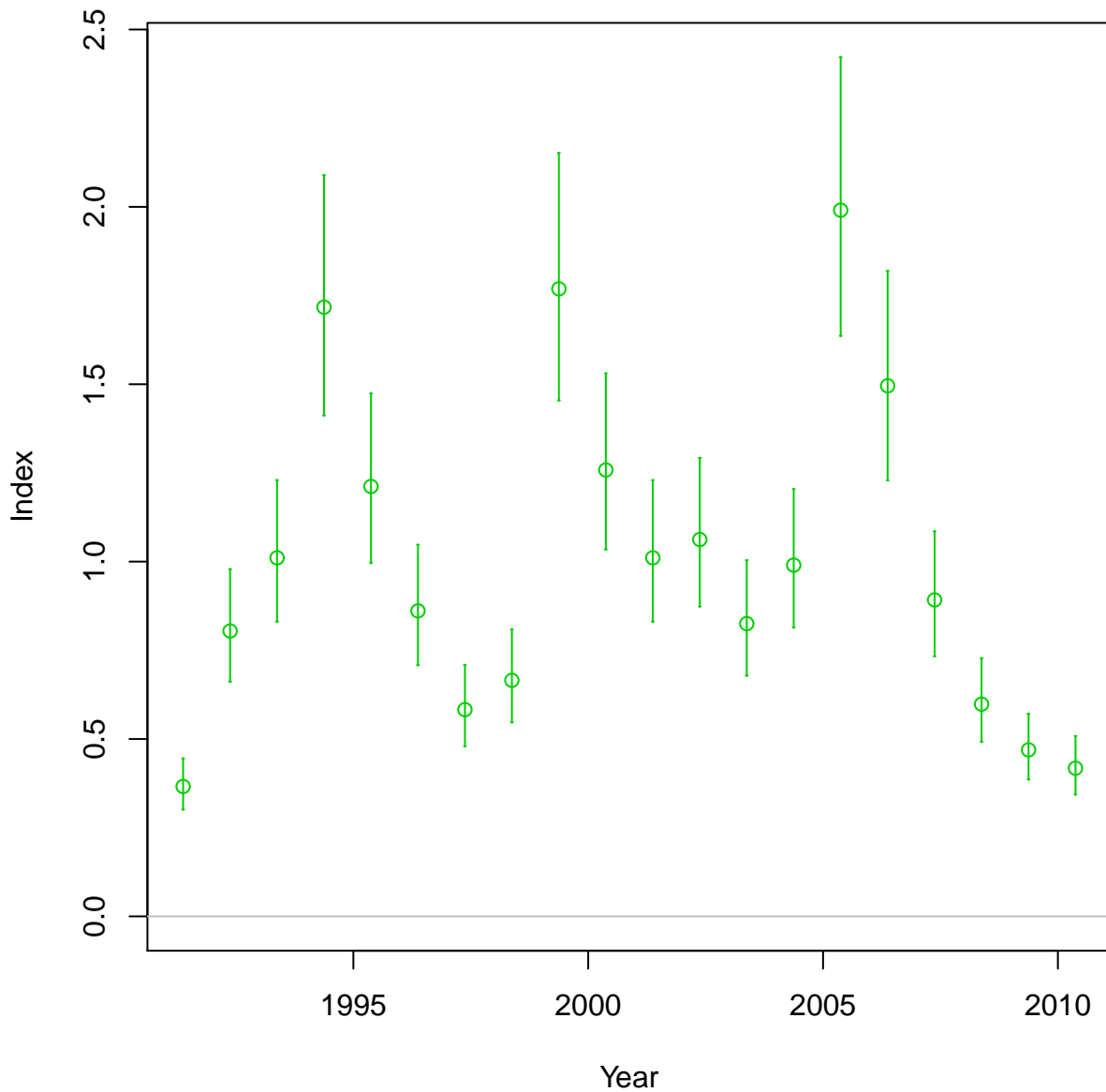
Log index PL_CPUE



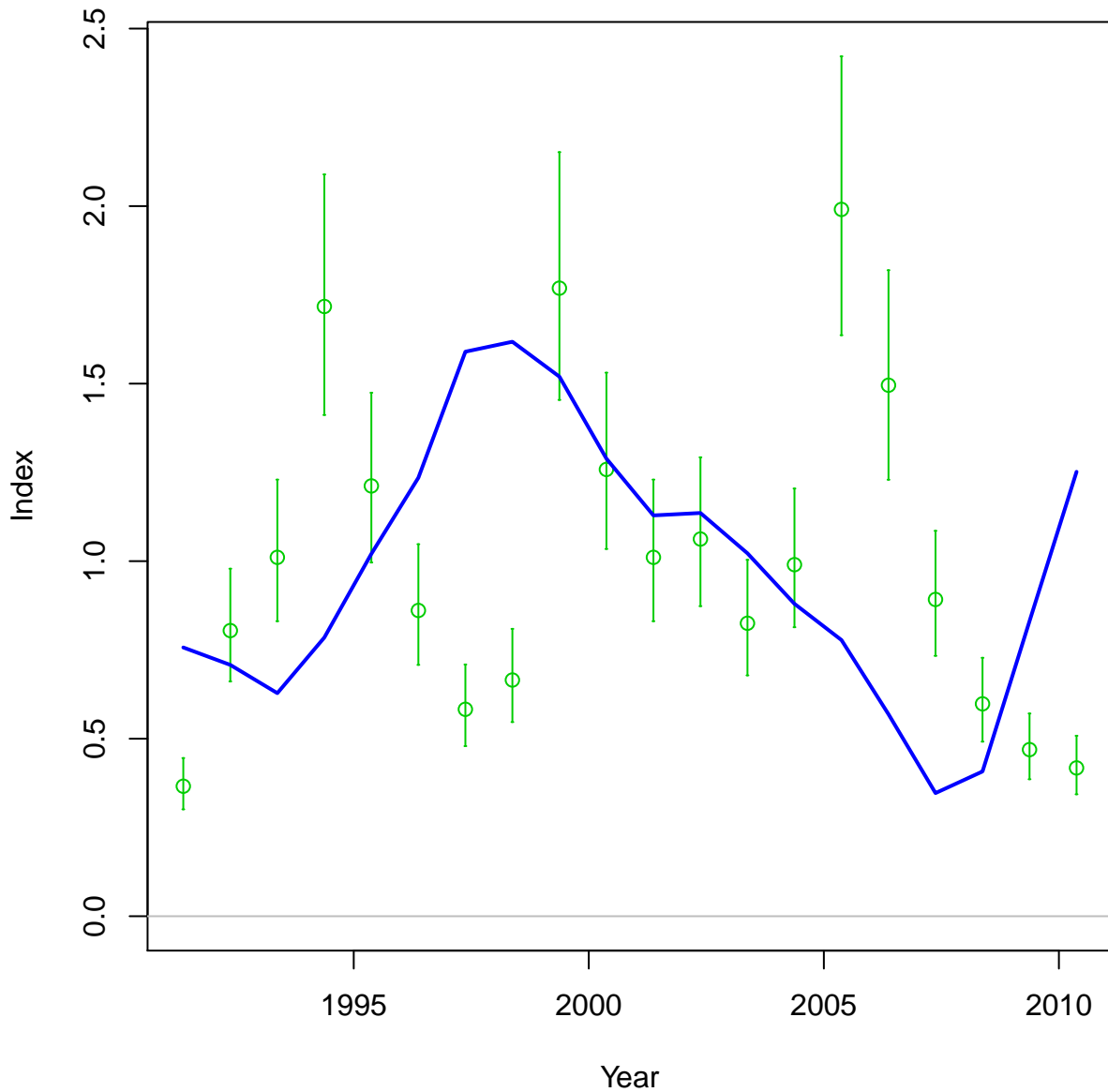
Log index PL_CPUE



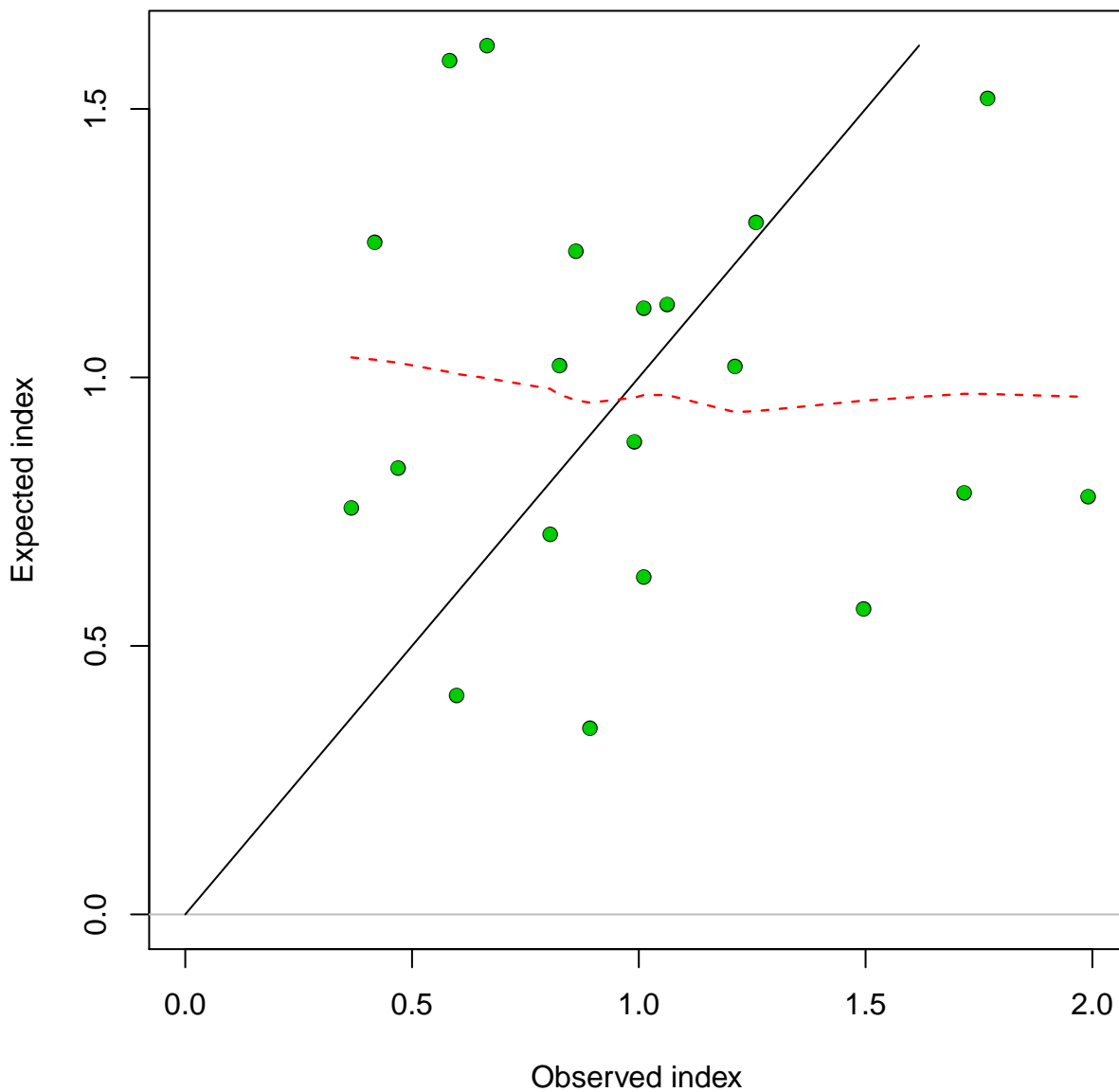
Index PSFS_CPUE



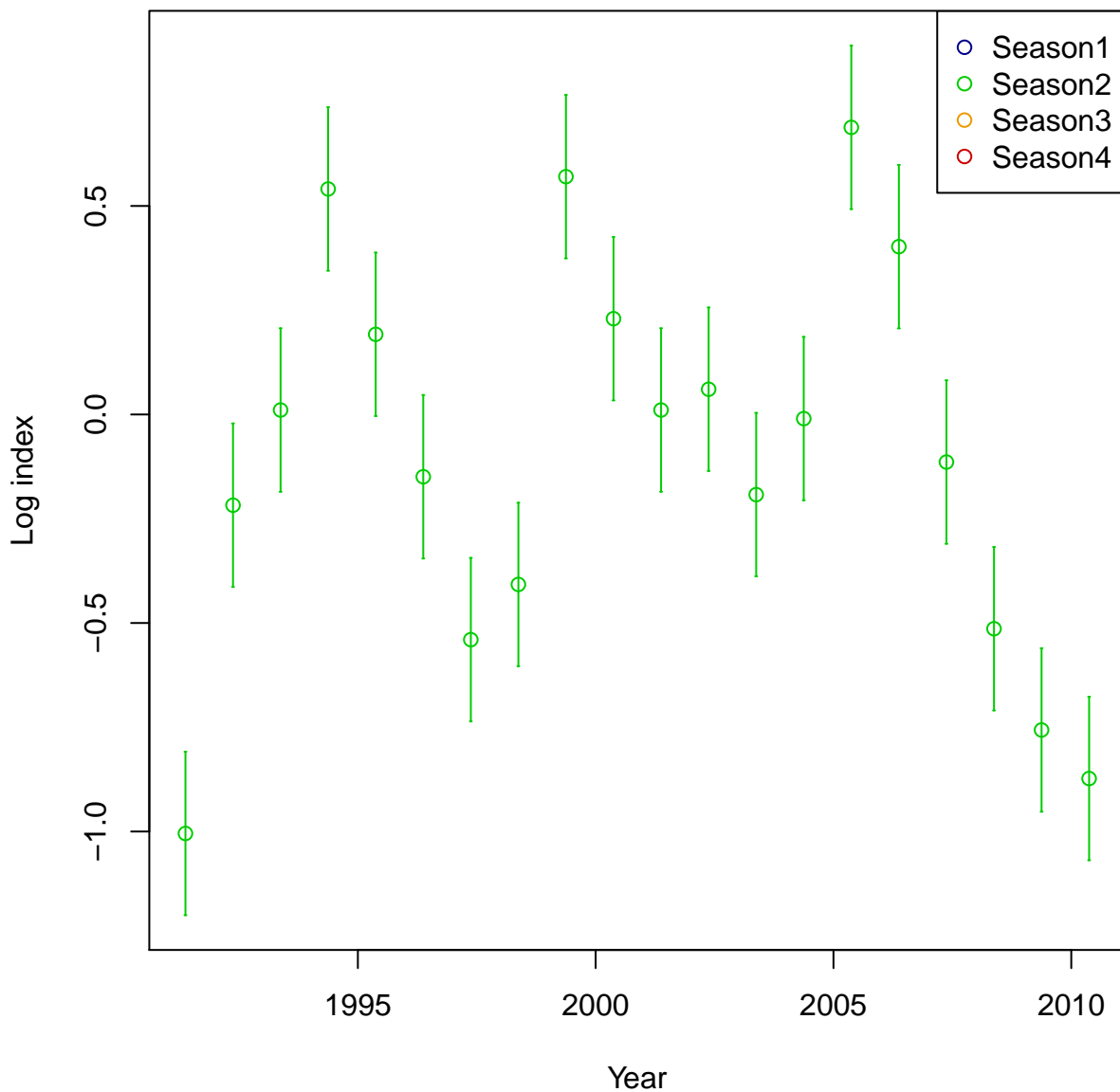
Index PSFS_CPUE



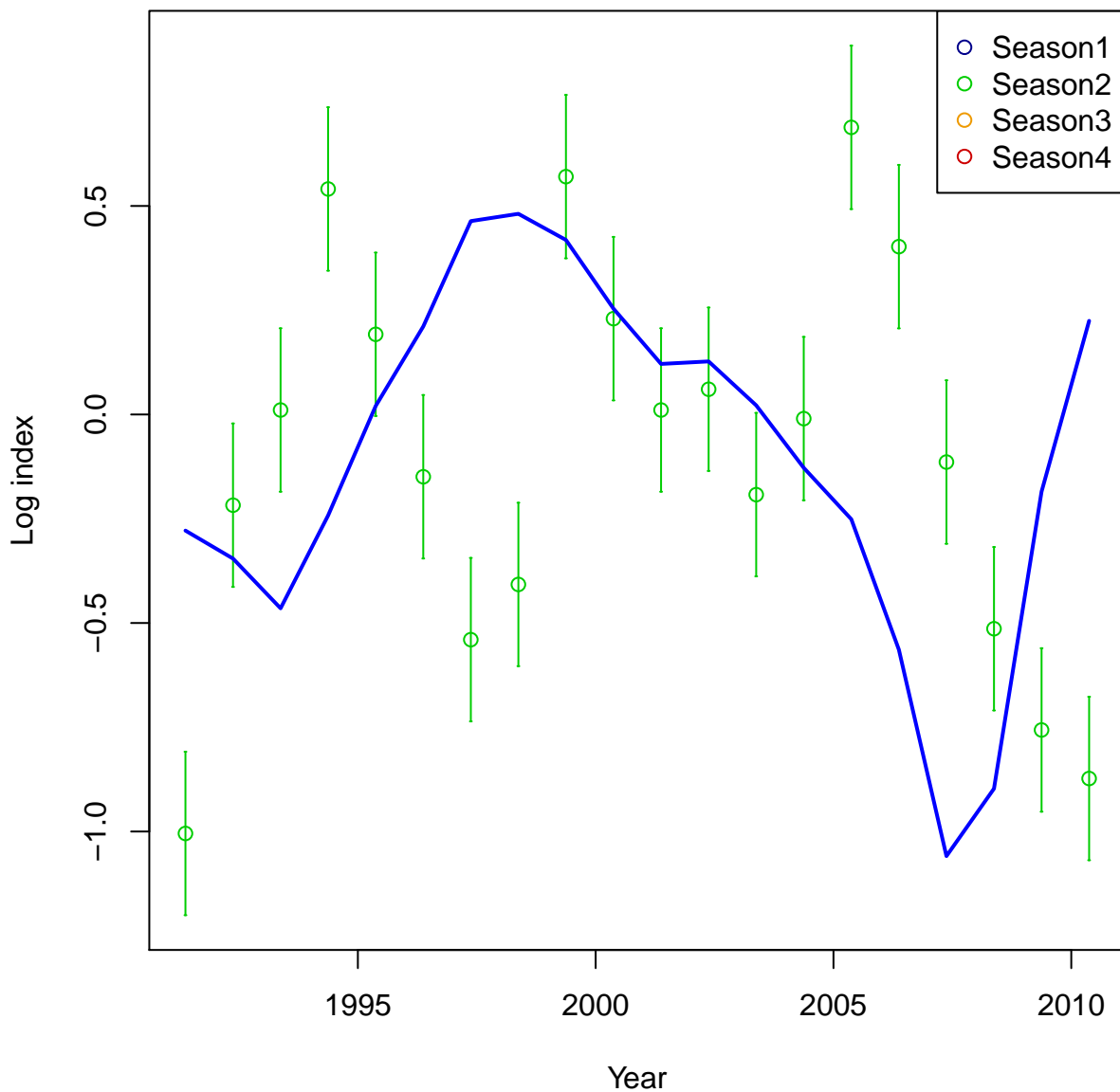
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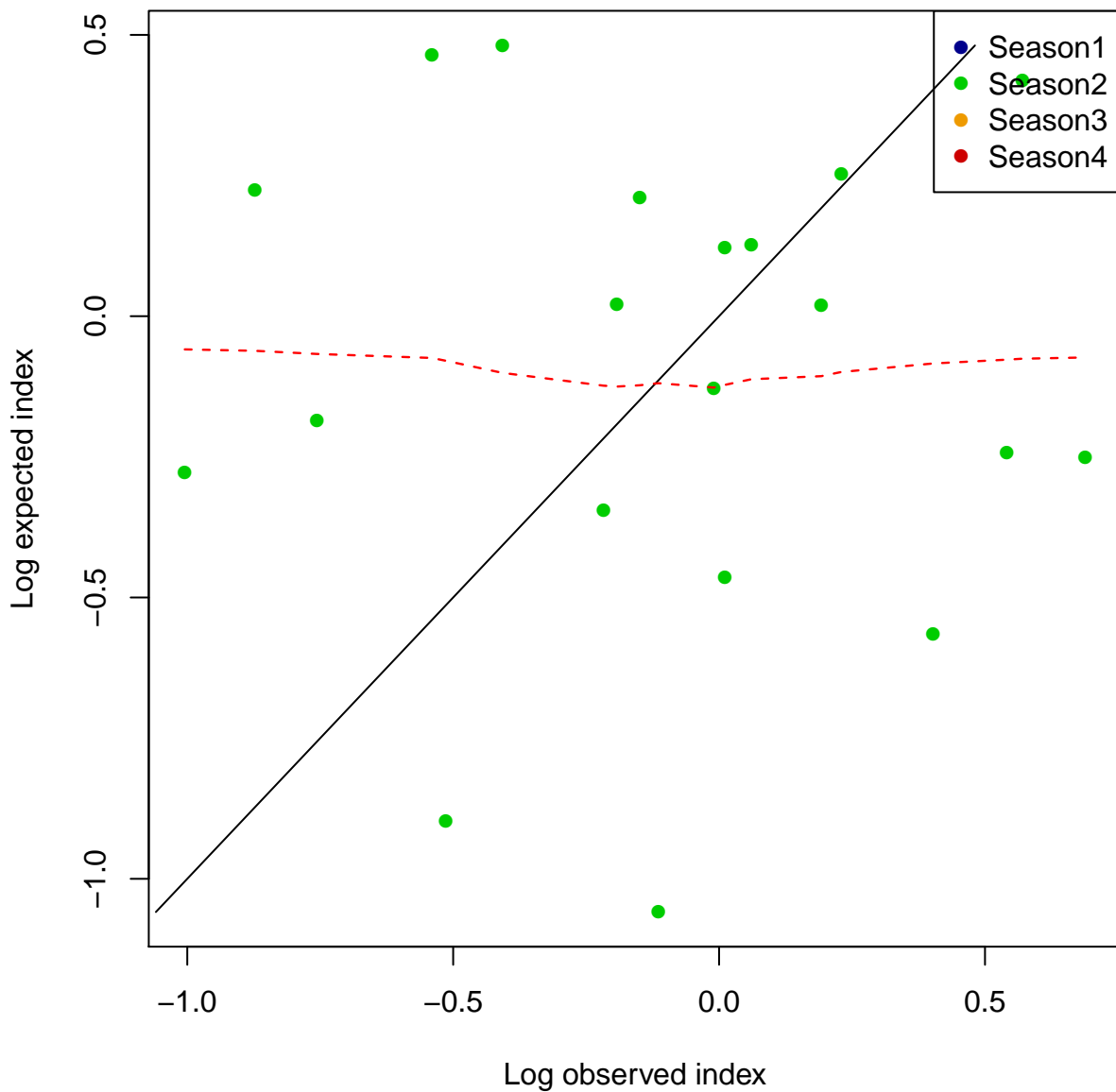
Log index PSFS_CPUE



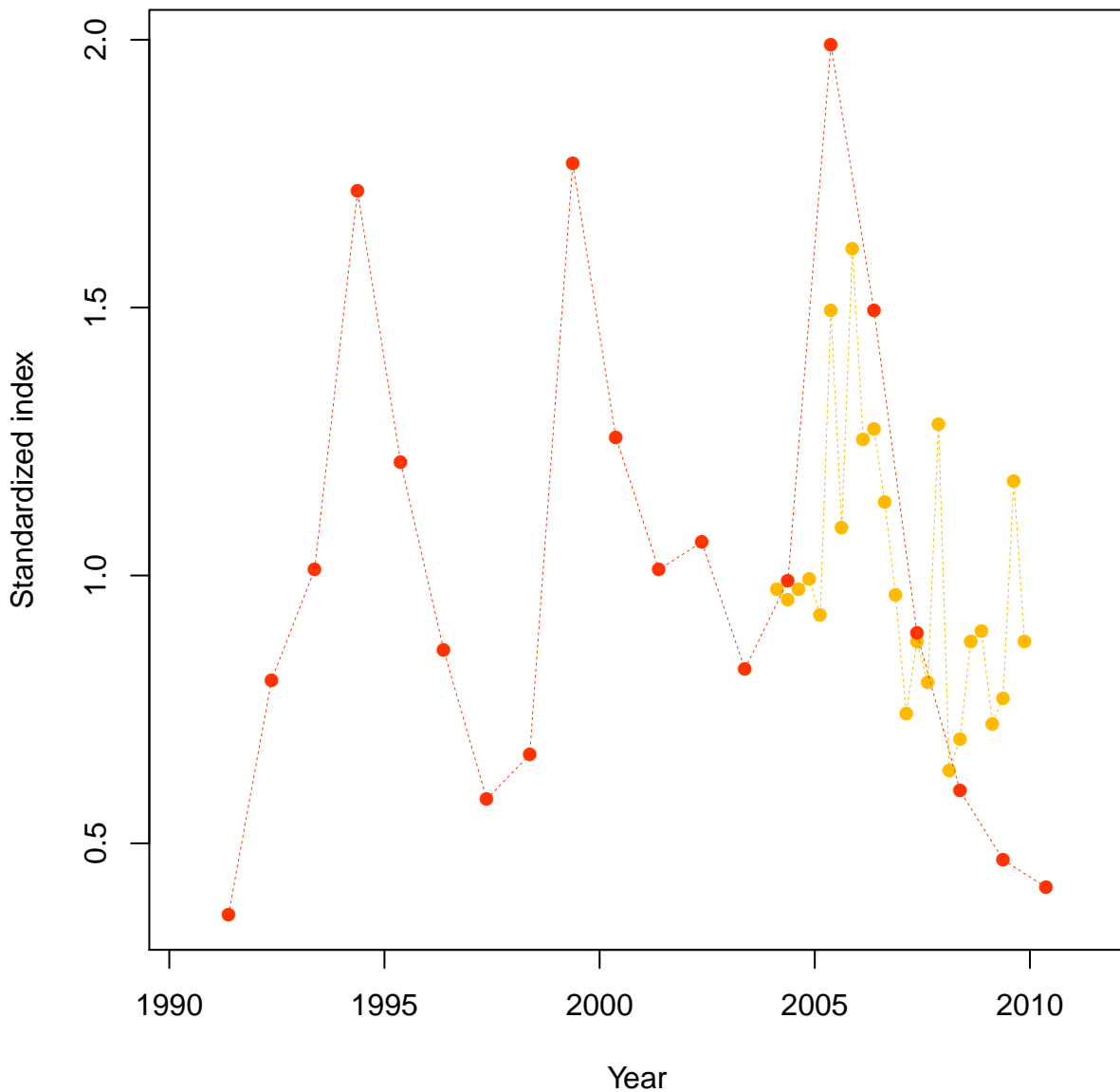
Log index PSFS_CPUE



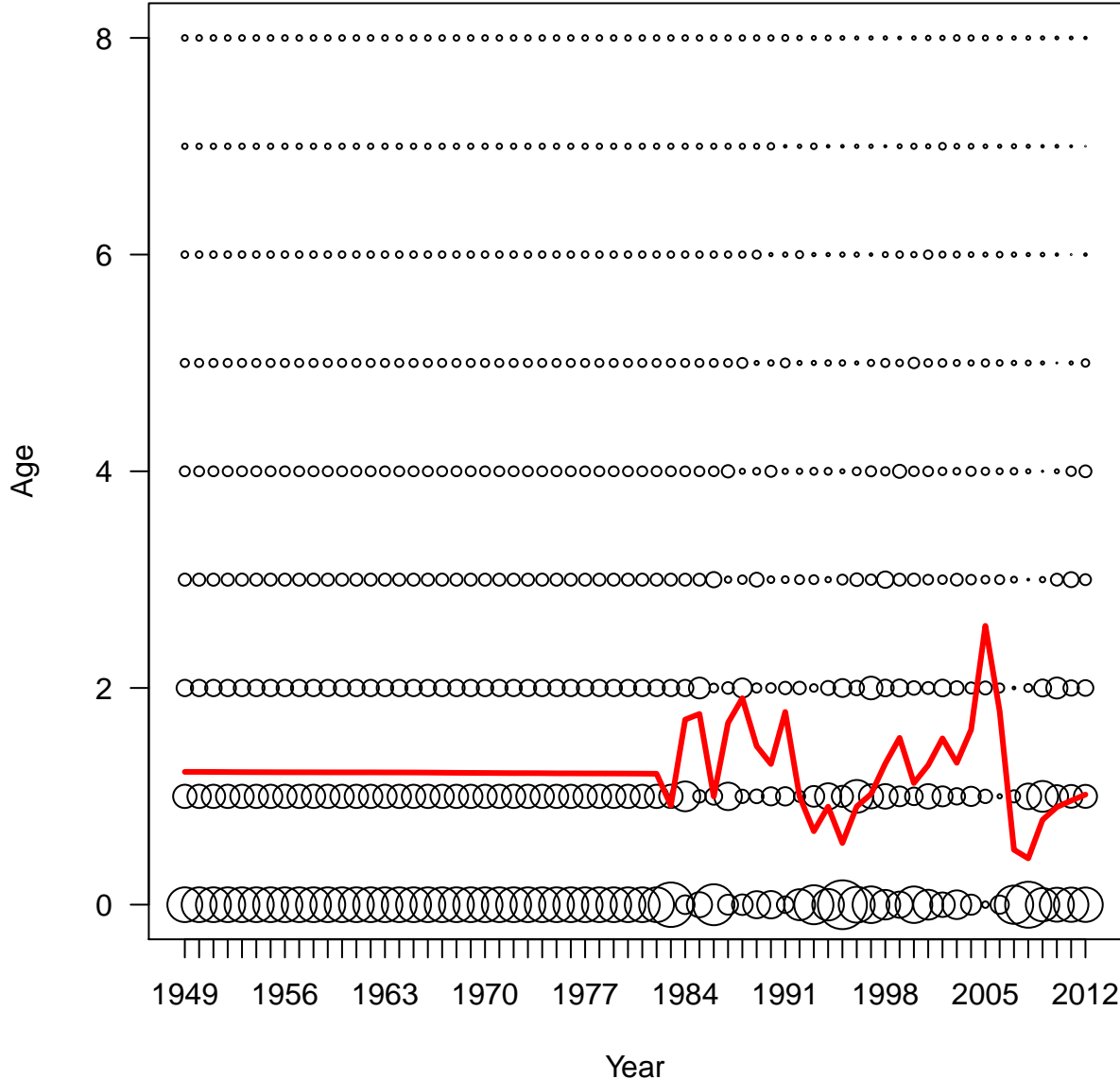
Log index PSFS_CPUE



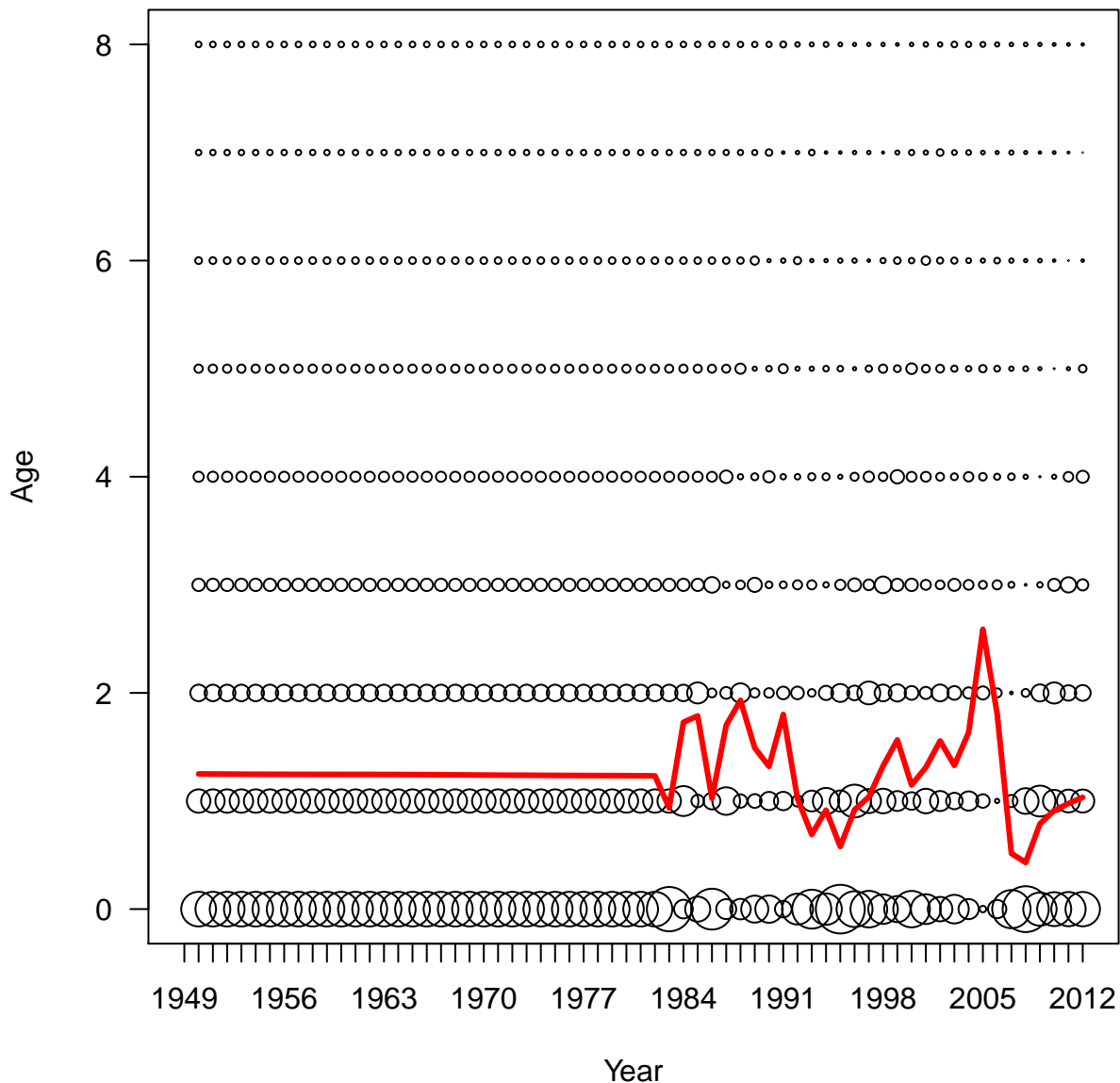
All cpue plot



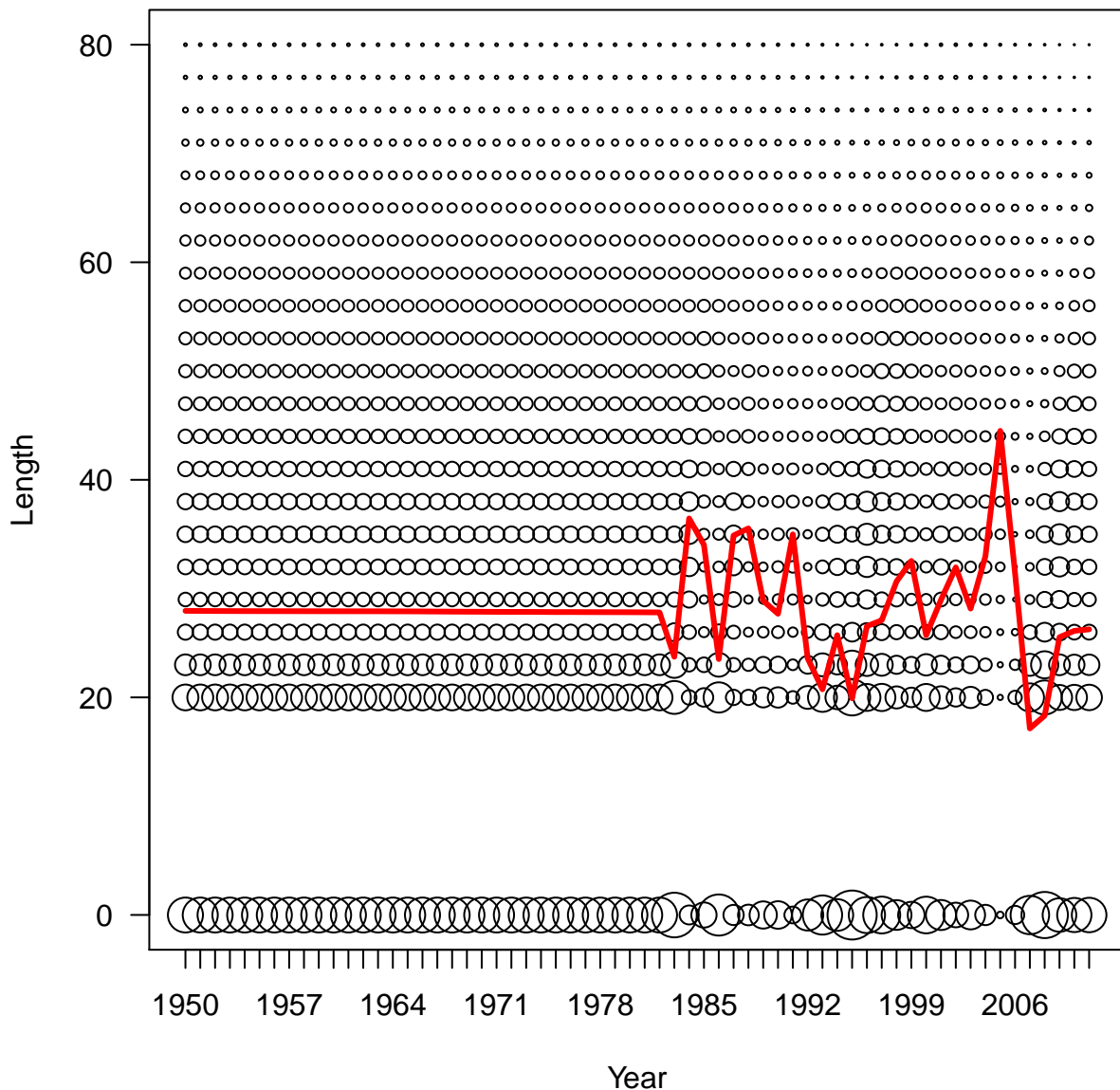
Beginning of year expected numbers at age in thousands (max=1514440)



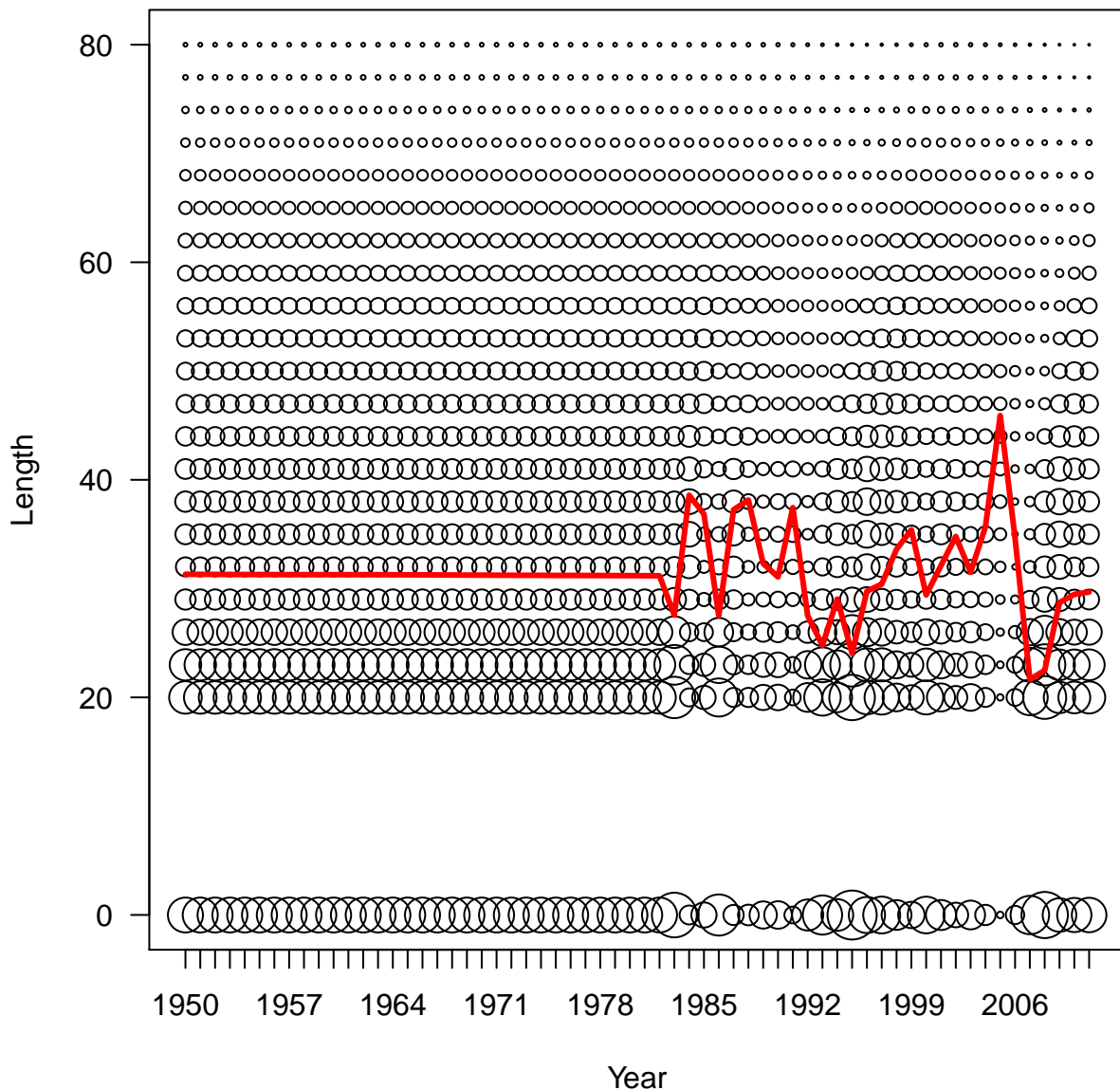
Middle of year expected numbers at age in thousands (max=1370320)



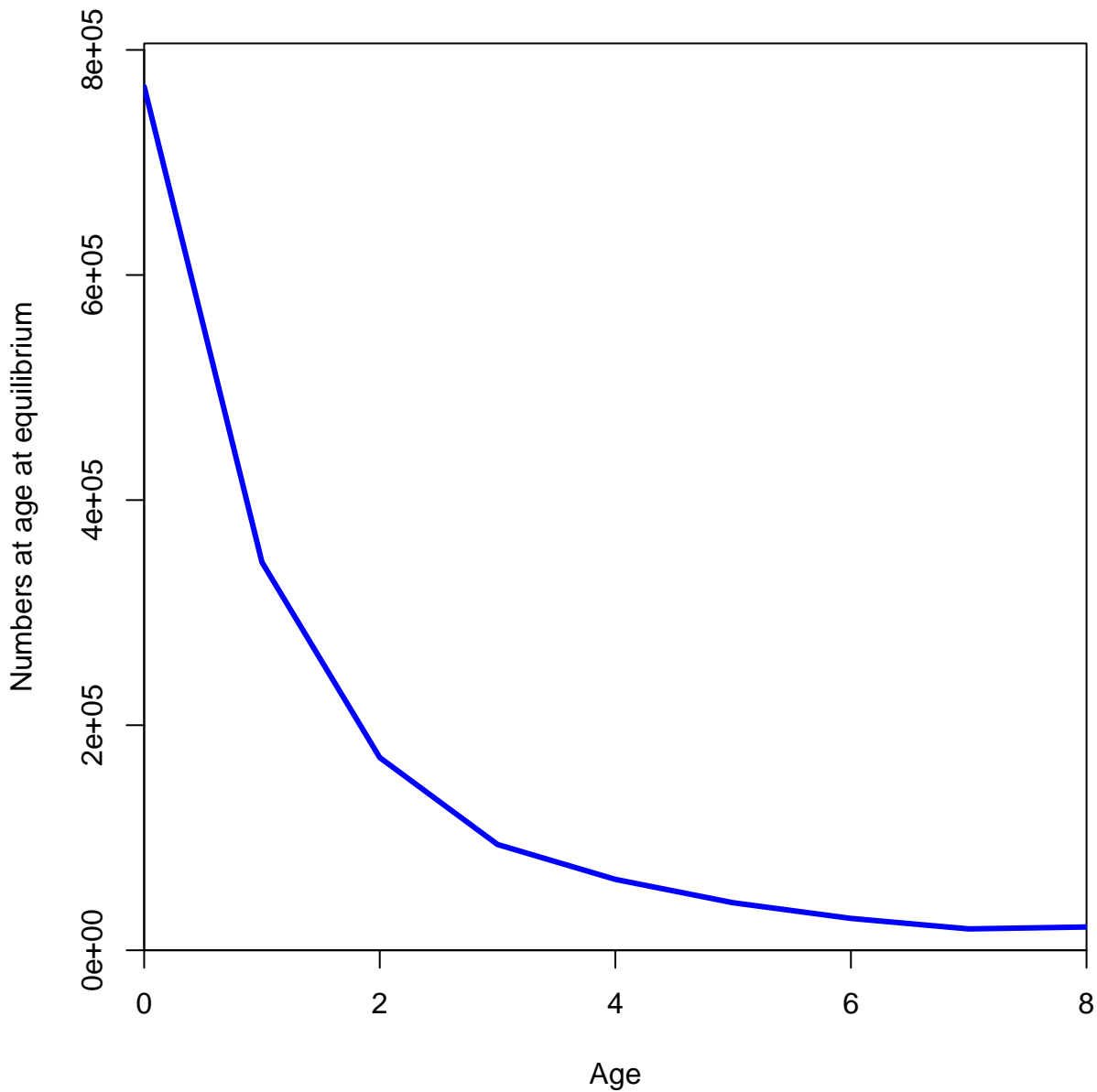
Beginning of year expected numbers at length in thousands (max=758743)



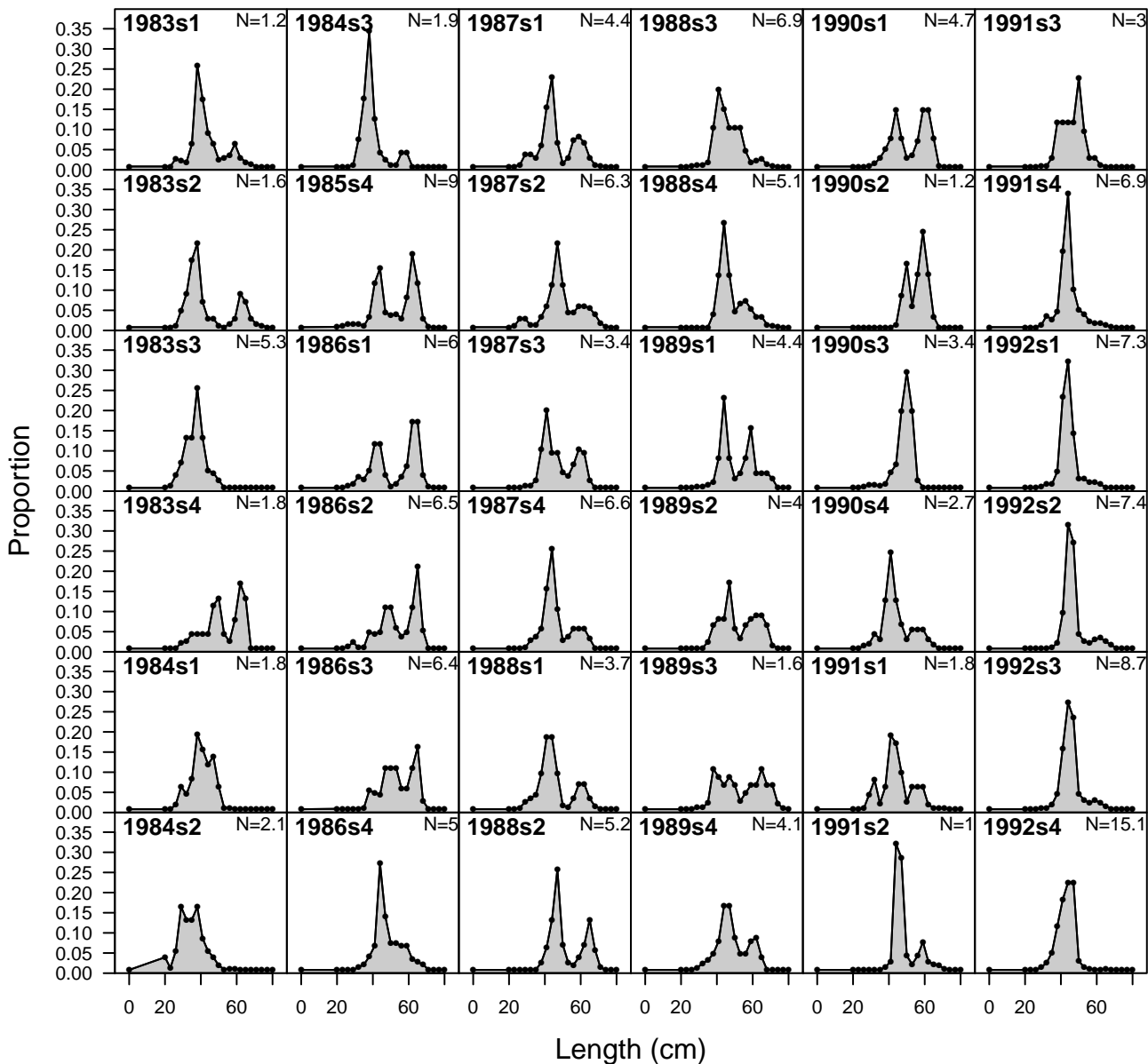
Middle of year expected numbers at length in thousands (max=417247)



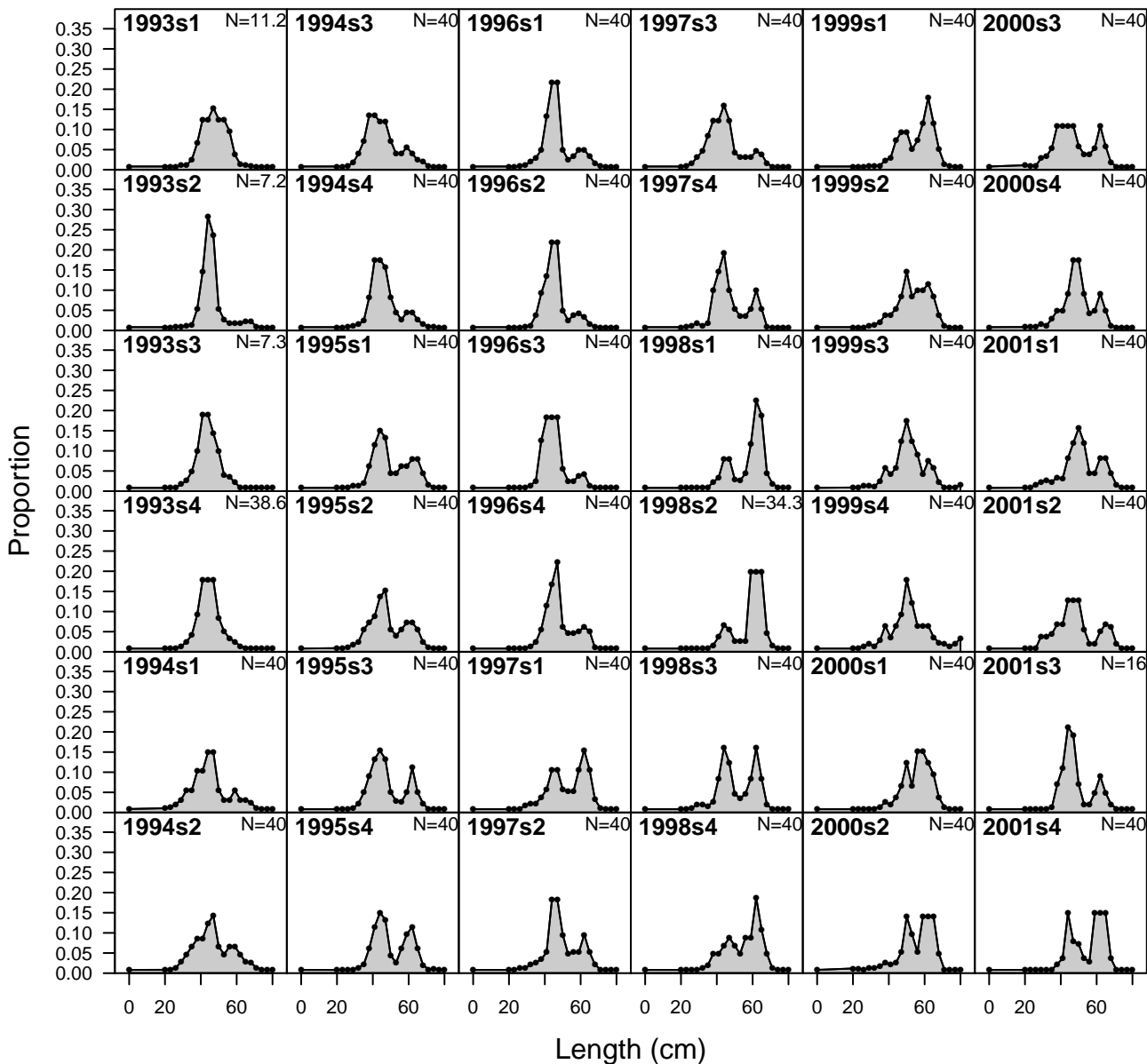
Equilibrium age distribution



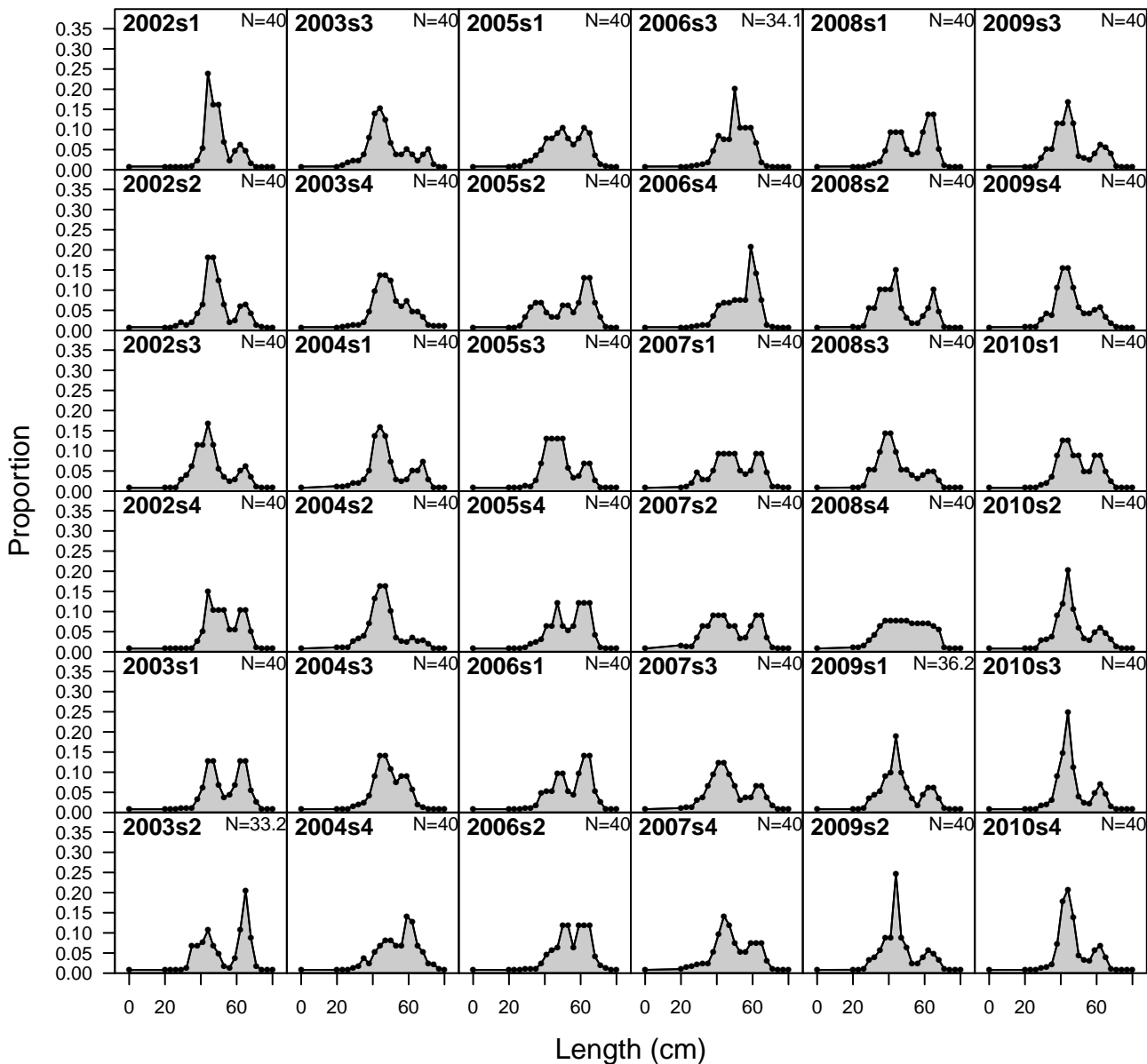
length comp data, sexes combined, whole catch, PL



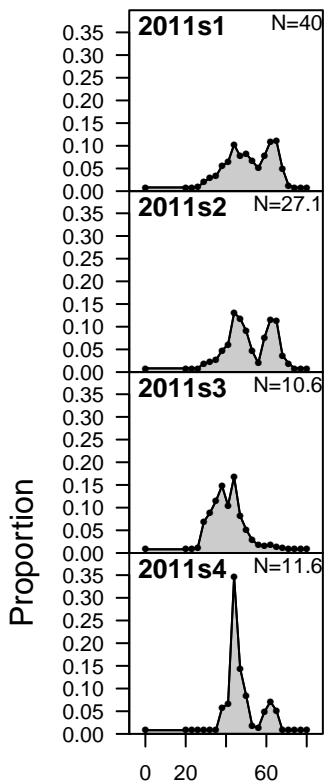
length comp data, sexes combined, whole catch, PL



length comp data, sexes combined, whole catch, PL

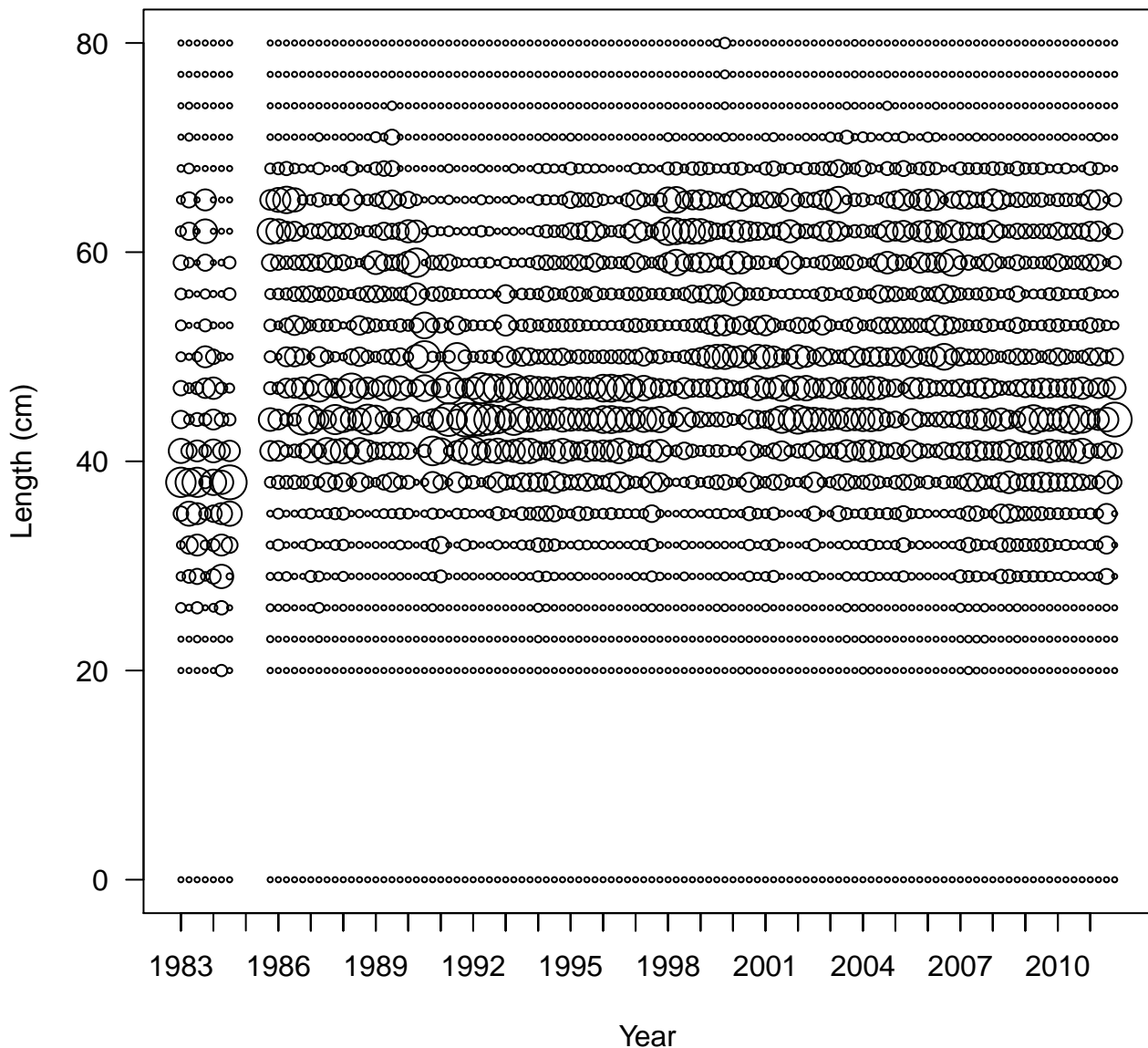


length comp data, sexes combined, whole catch, PL

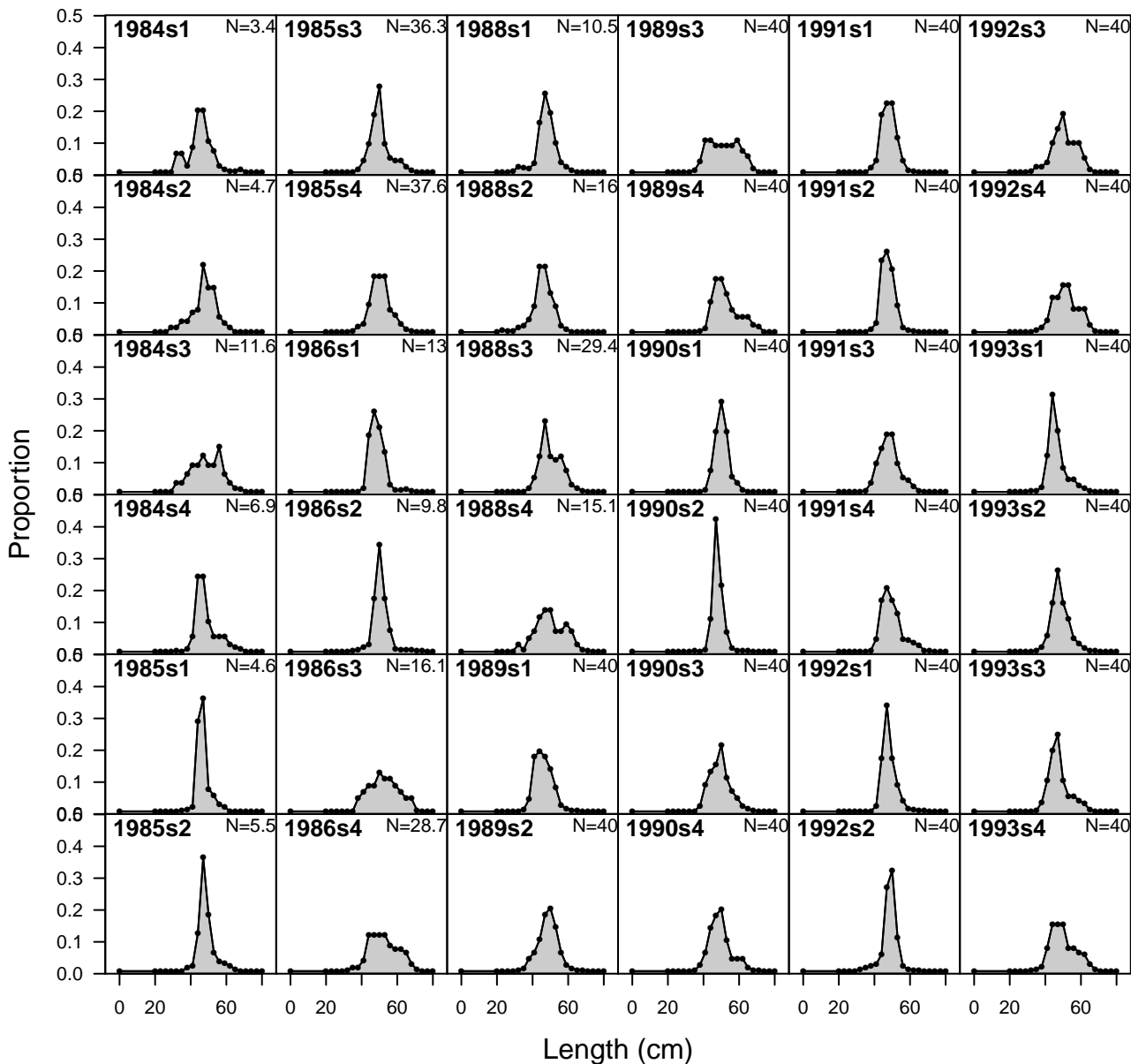


Length (cm)

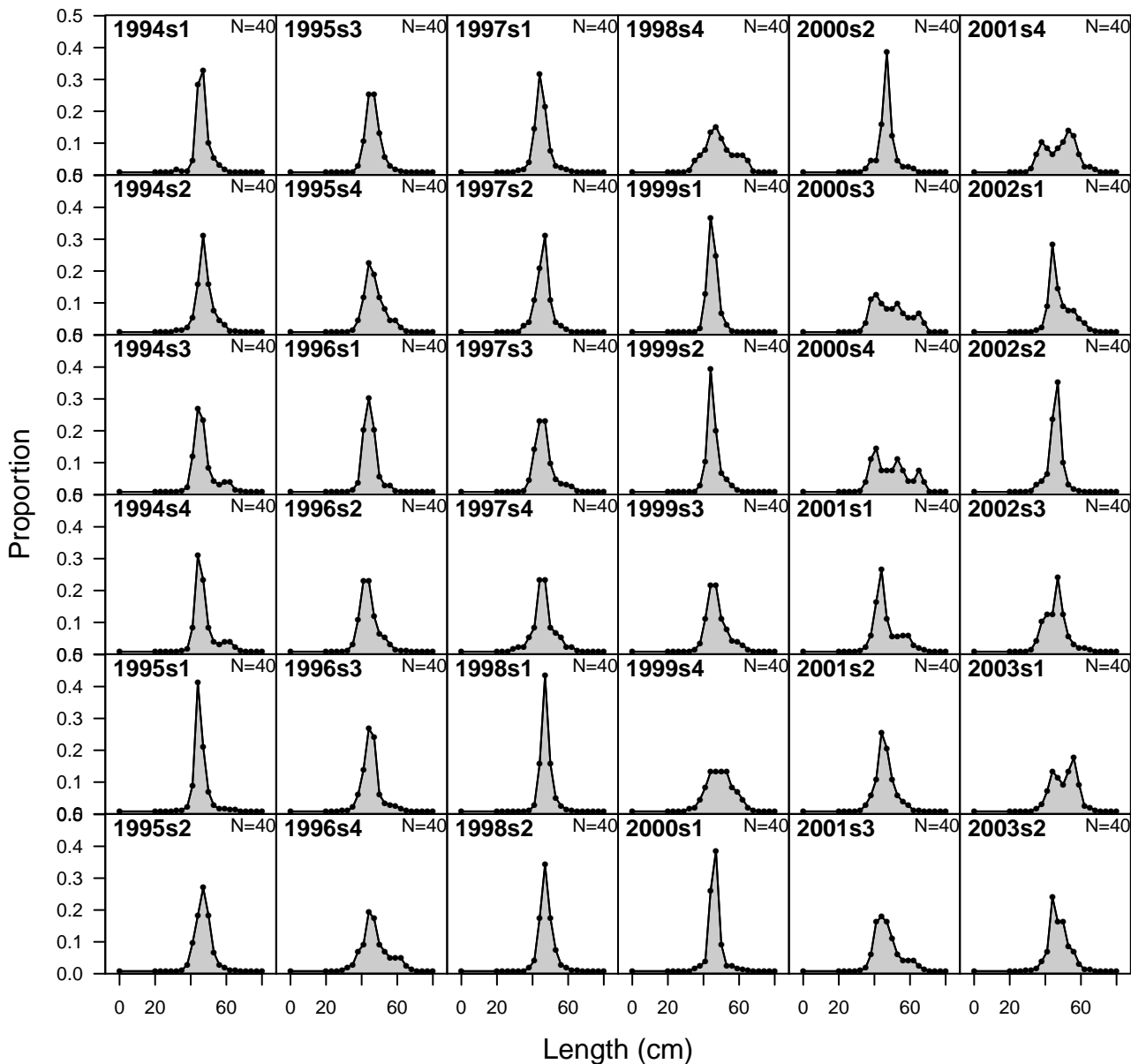
length comp data, sexes combined, whole catch, PL (max=0.35)



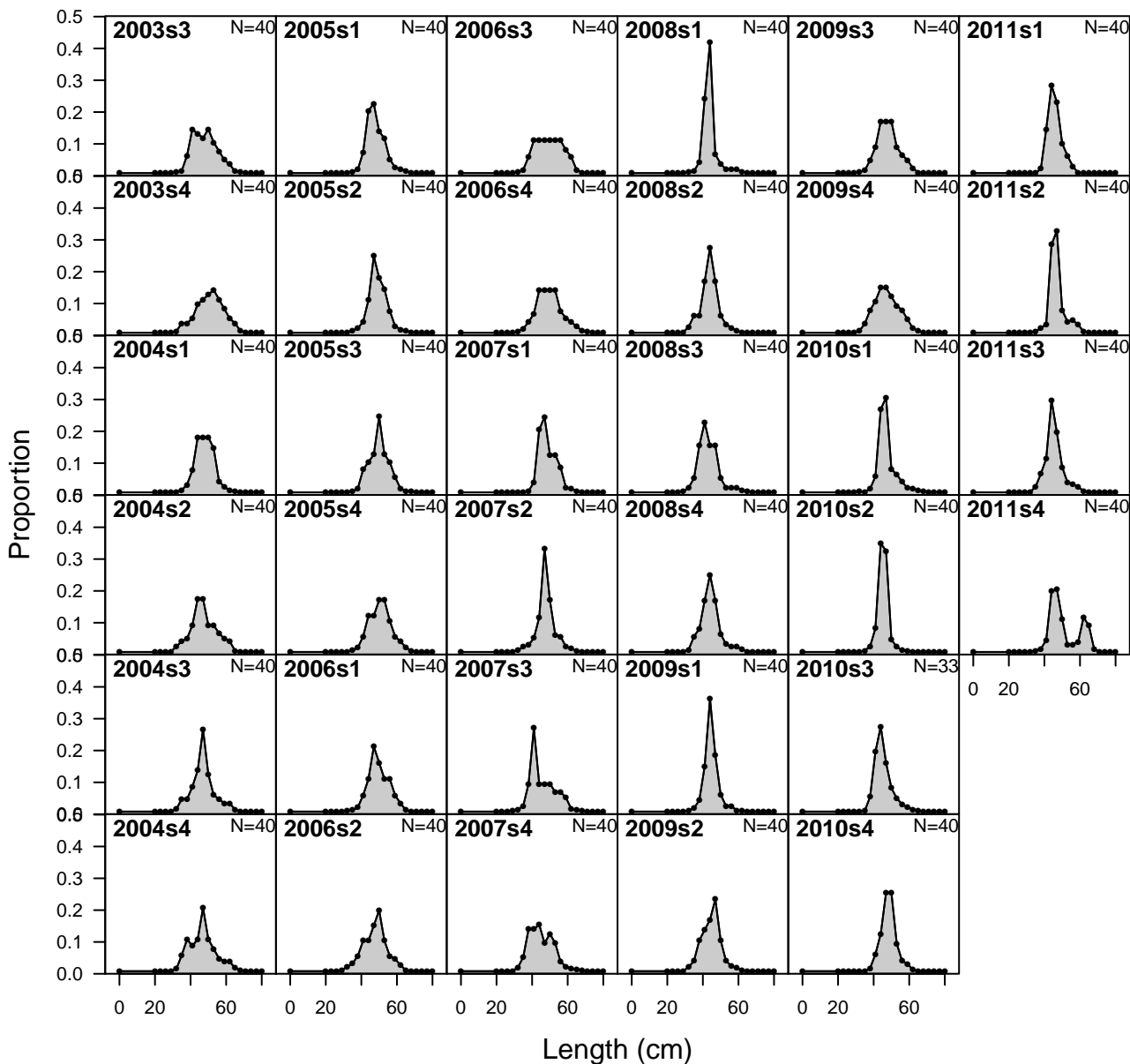
length comp data, sexes combined, whole catch, PSLS



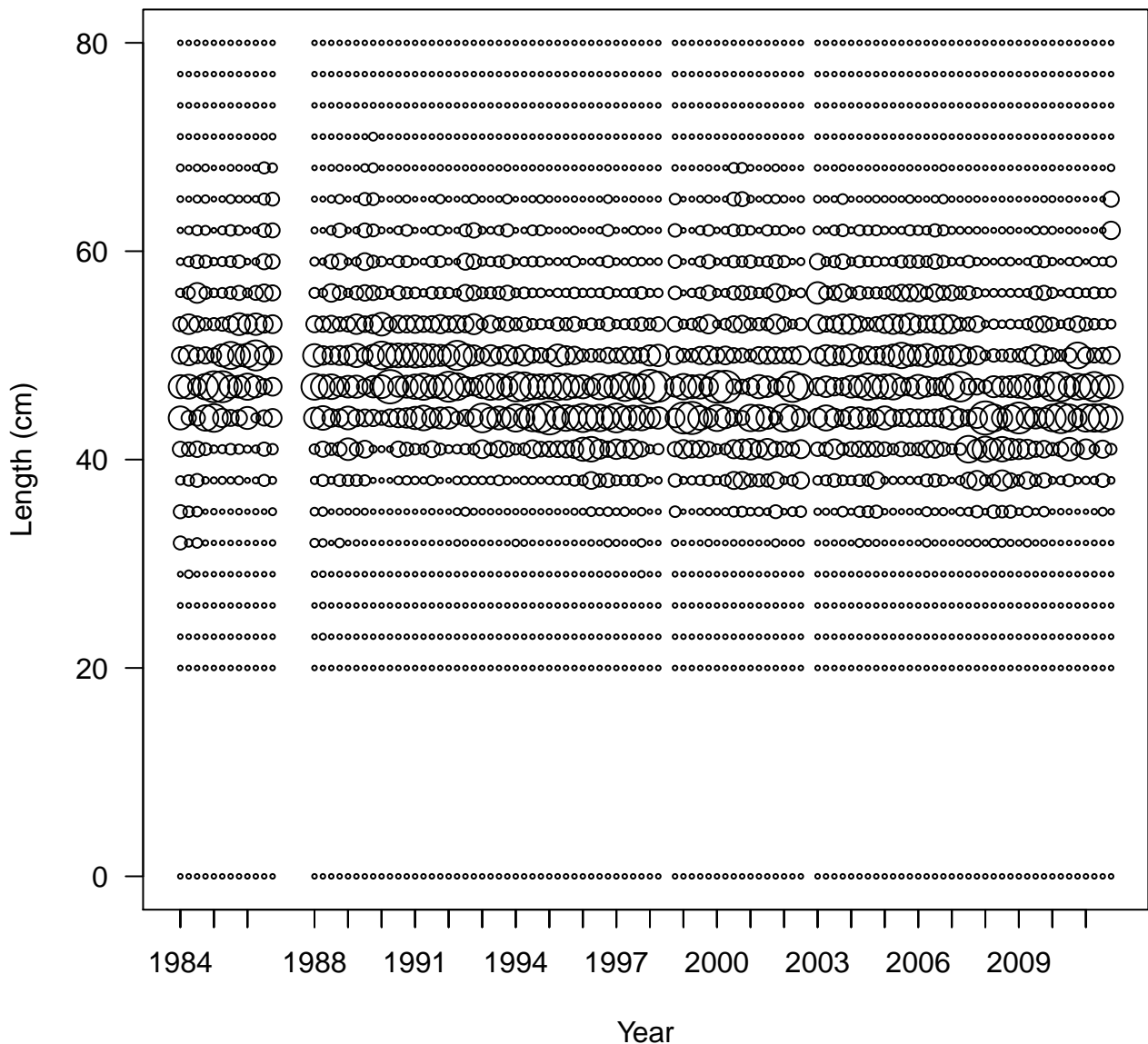
length comp data, sexes combined, whole catch, PSLS



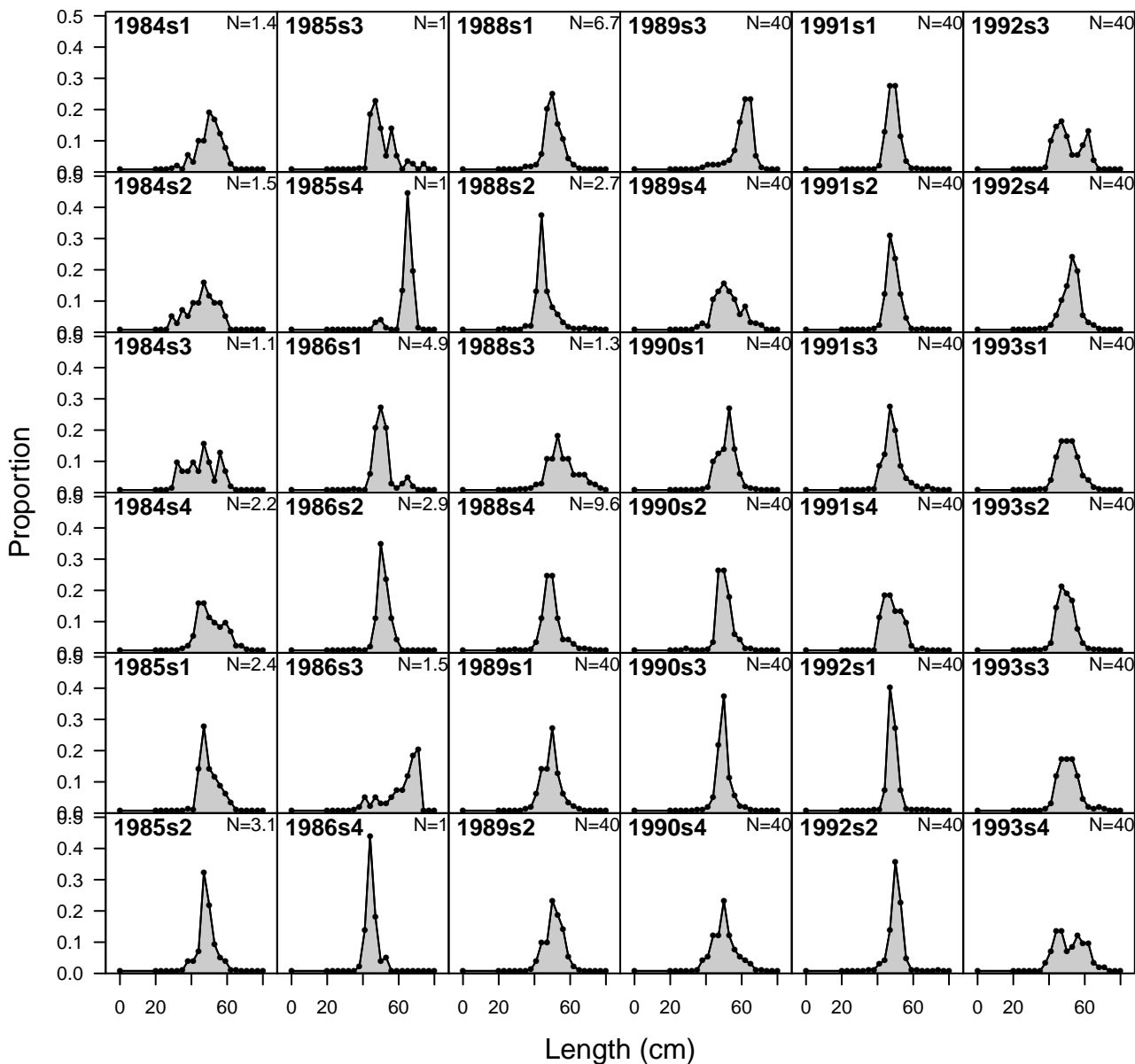
length comp data, sexes combined, whole catch, PSLS



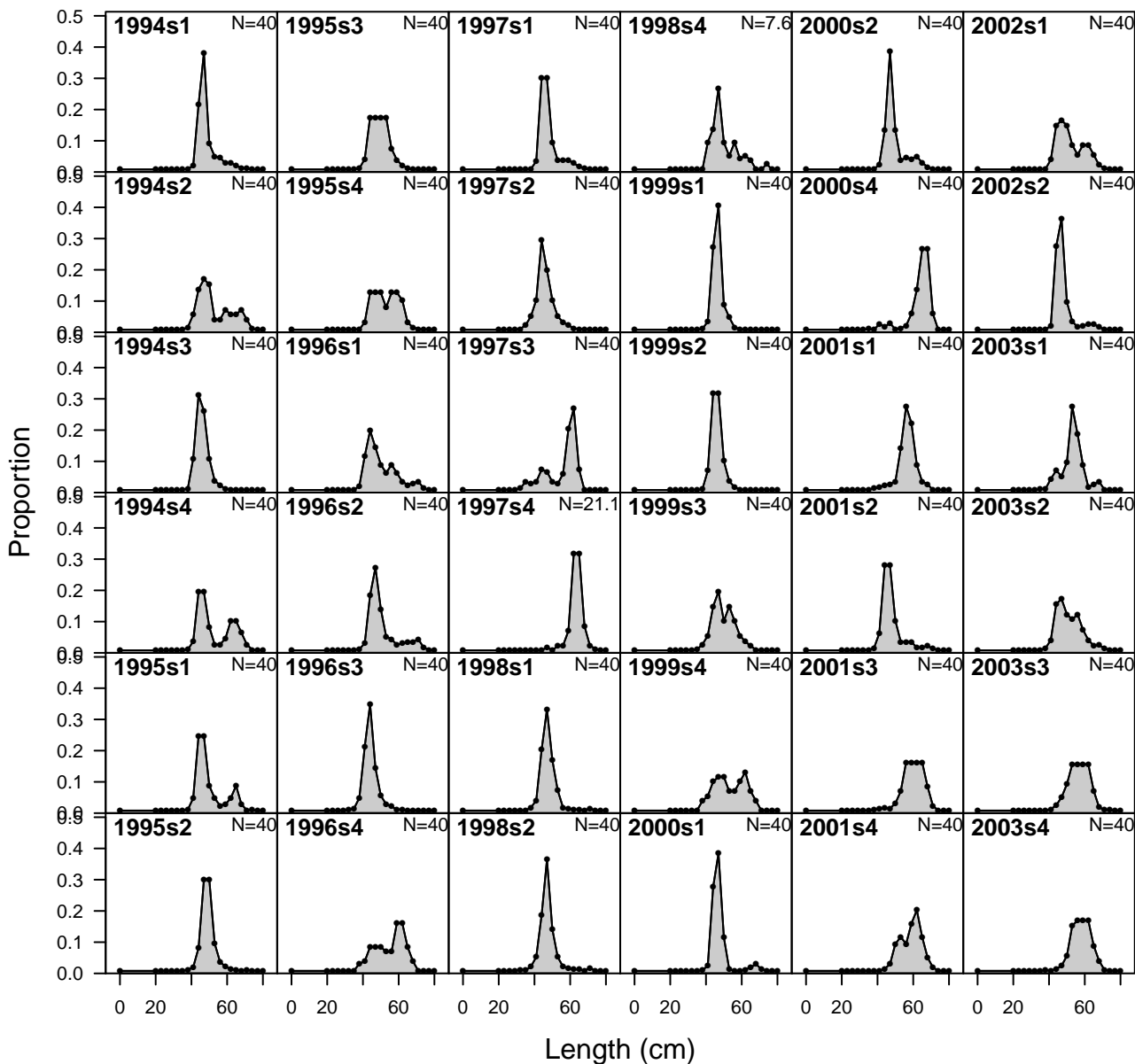
length comp data, sexes combined, whole catch, PSLS (max=0.44)



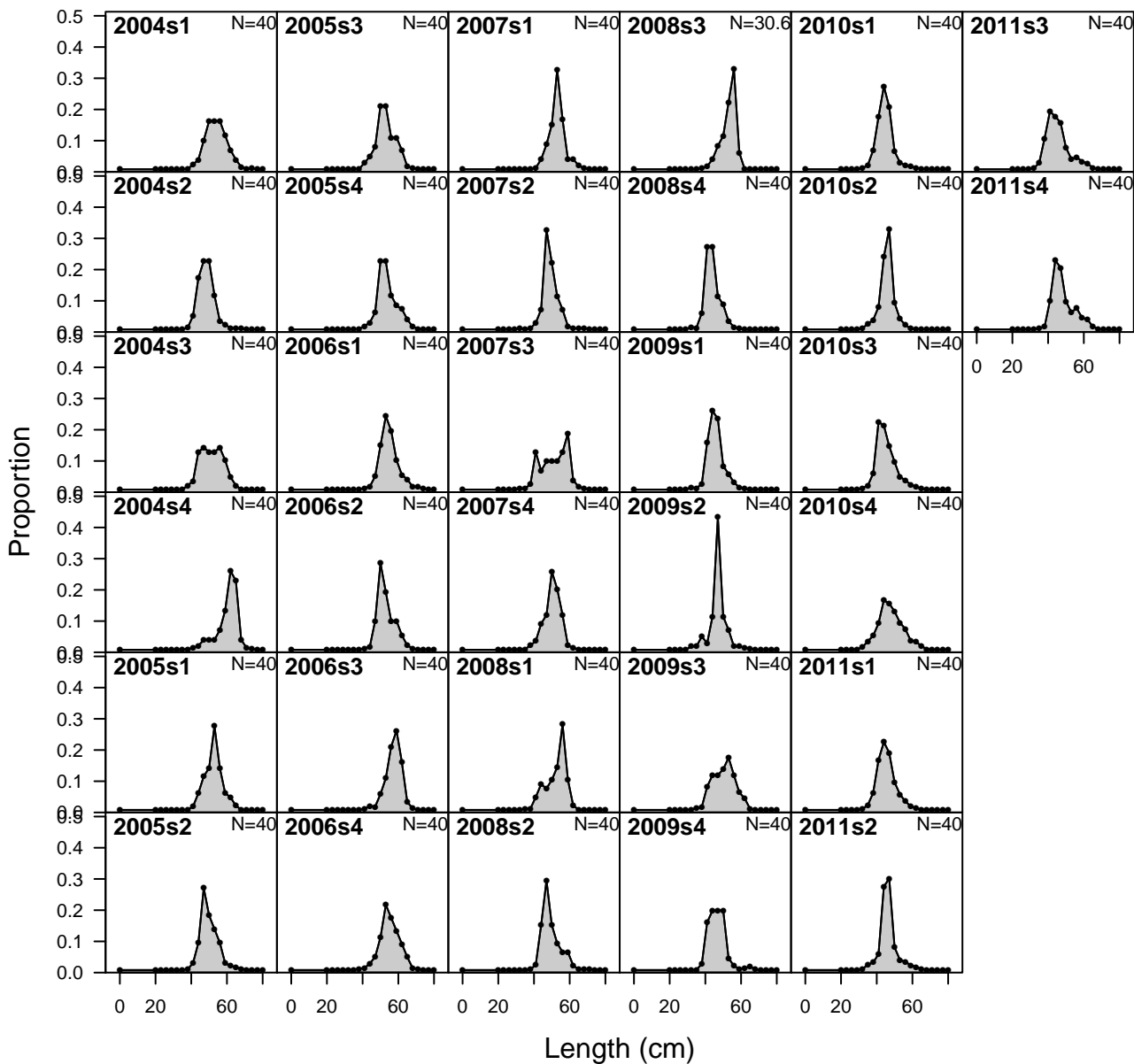
length comp data, sexes combined, whole catch, PSFS



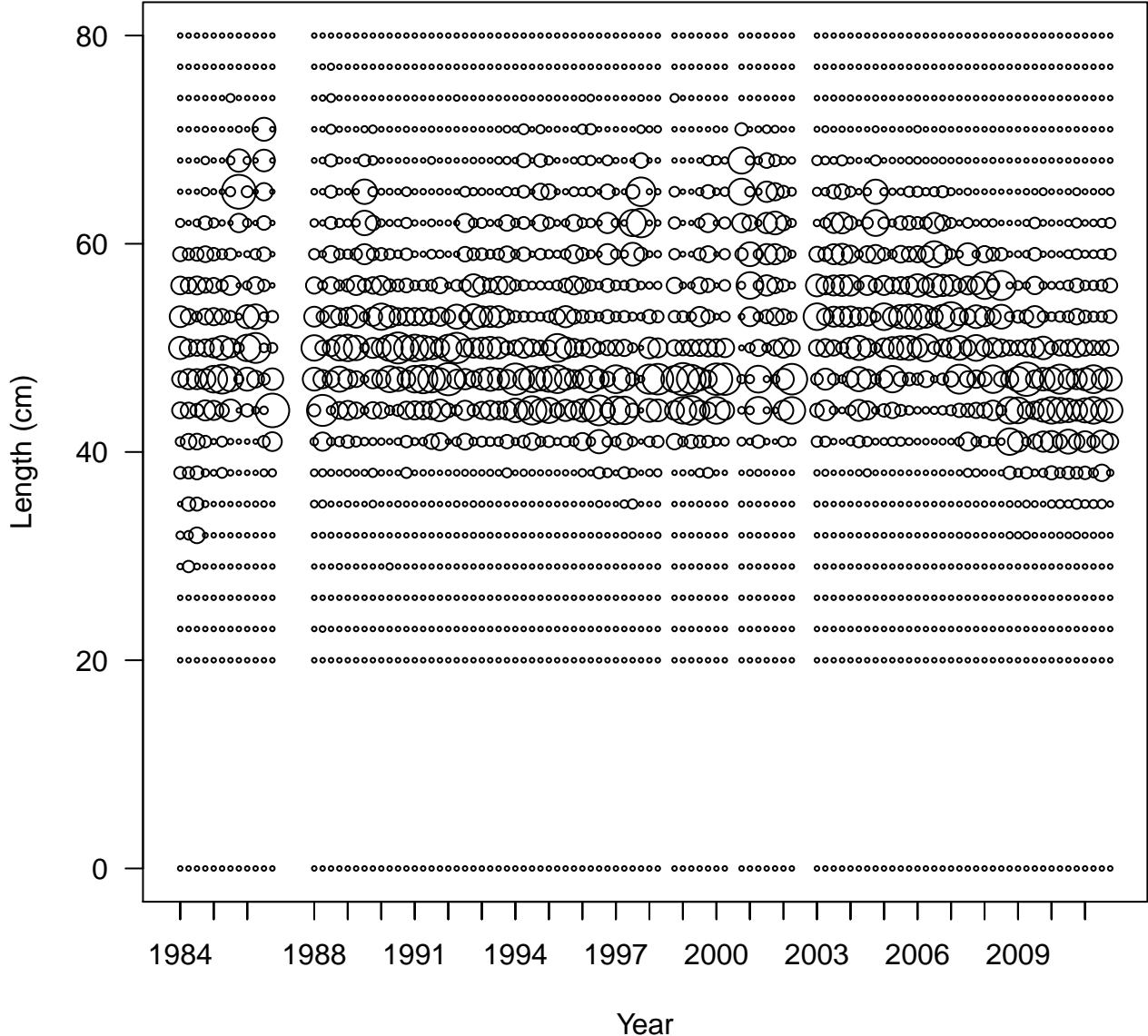
length comp data, sexes combined, whole catch, PSFS



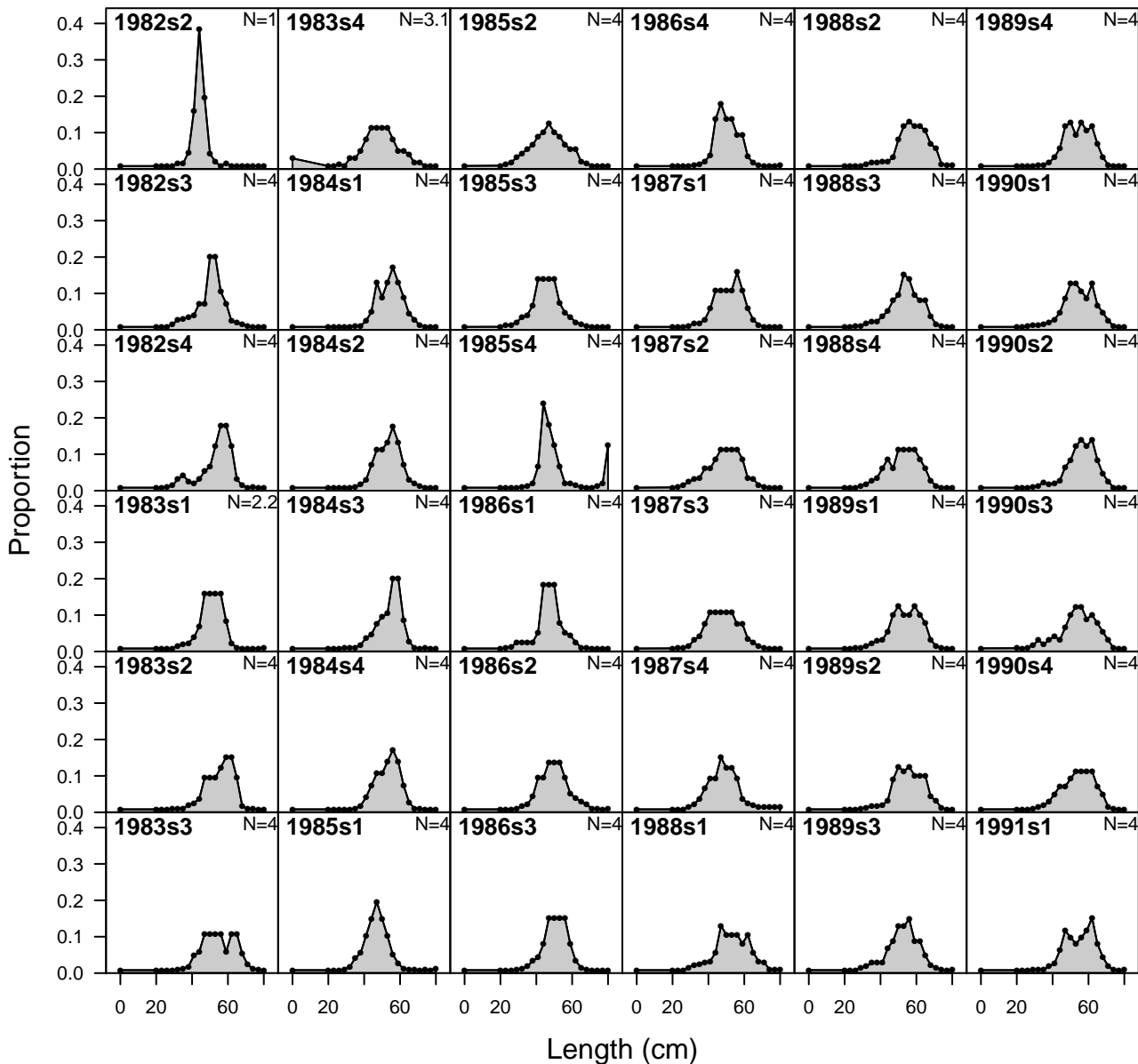
length comp data, sexes combined, whole catch, PSFS



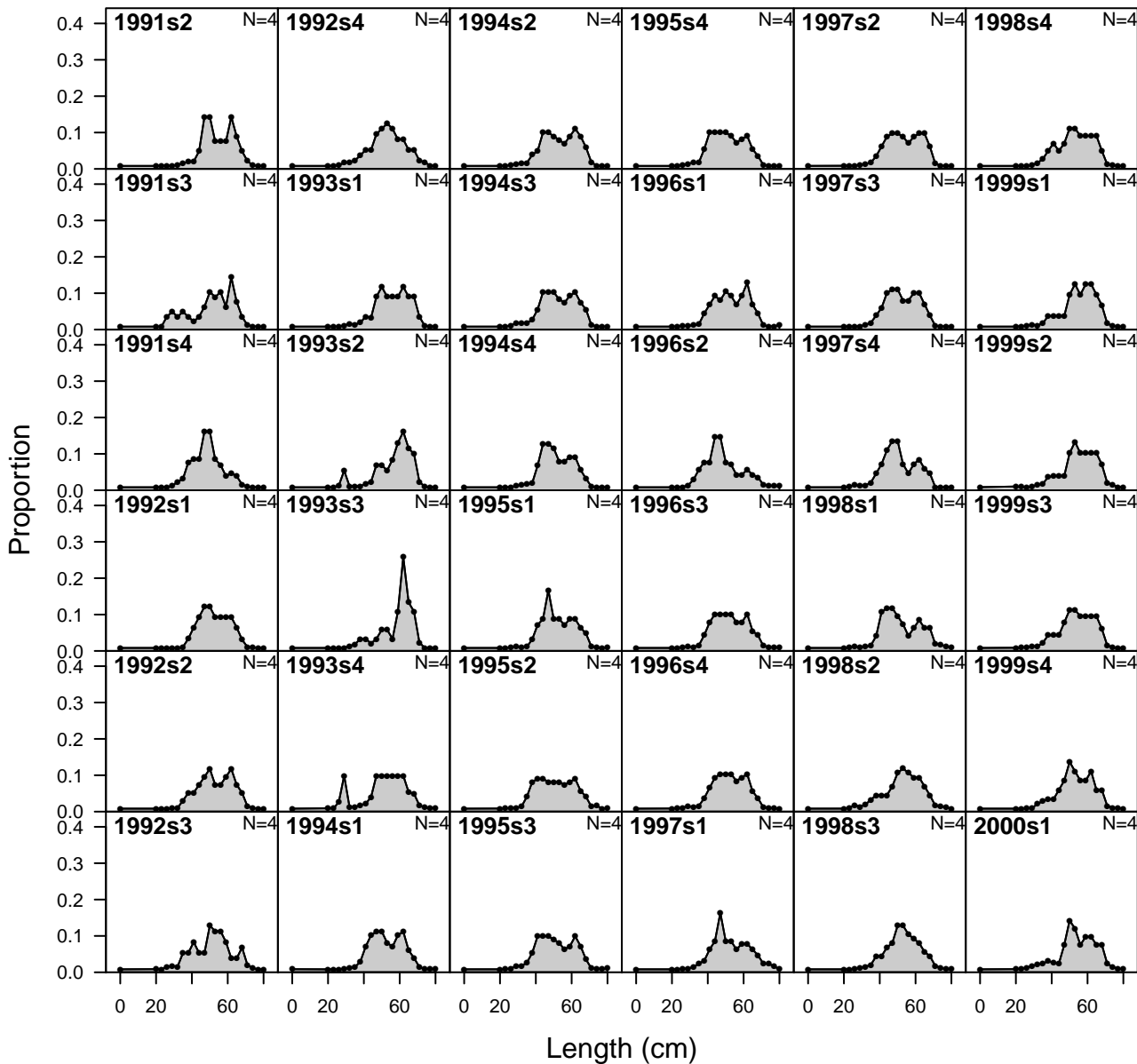
length comp data, sexes combined, whole catch, PSFS (max=0.45)



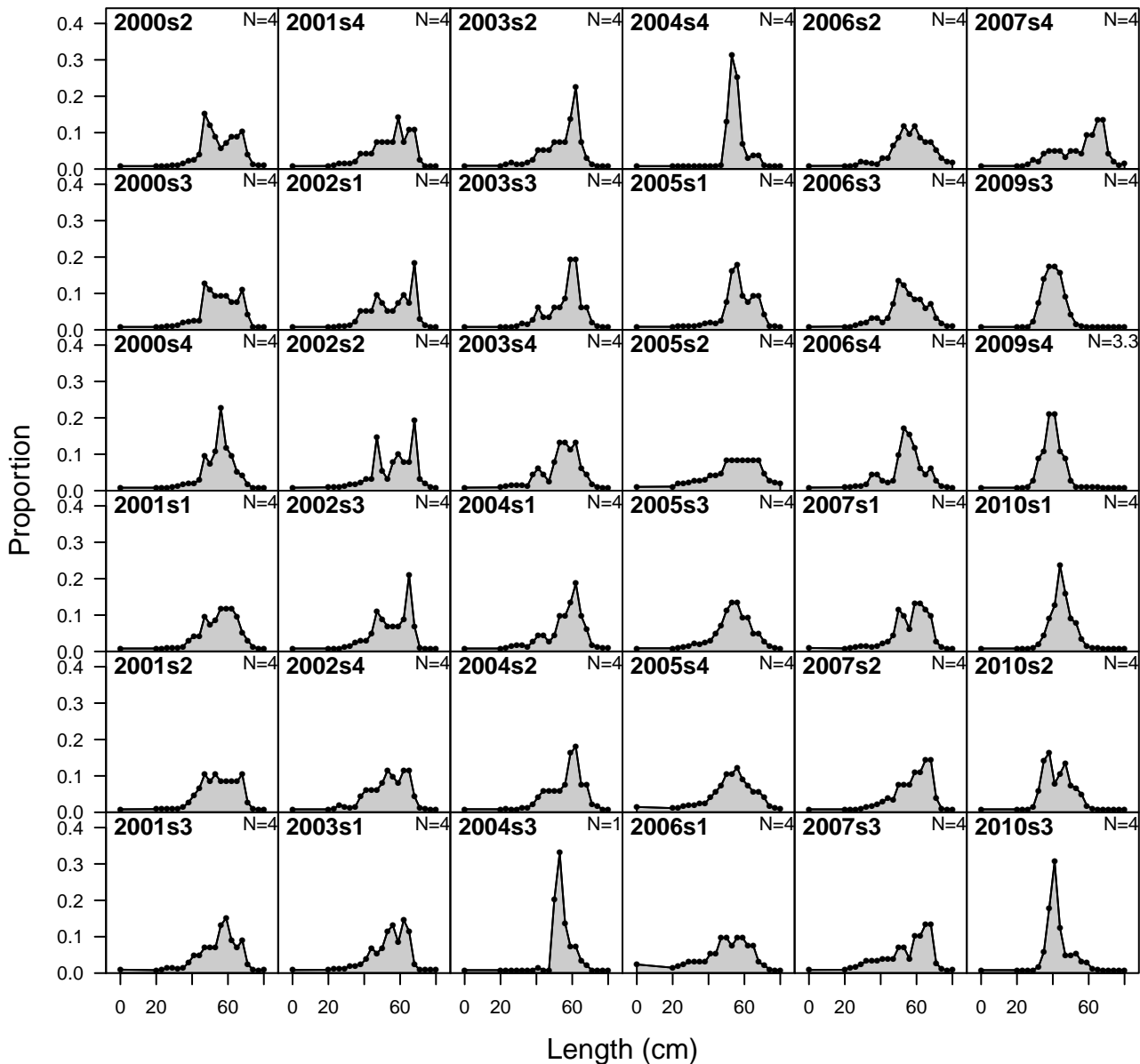
length comp data, sexes combined, whole catch, Other



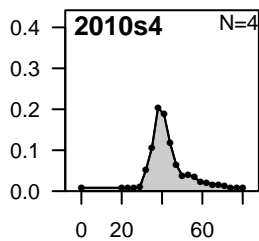
length comp data, sexes combined, whole catch, Other



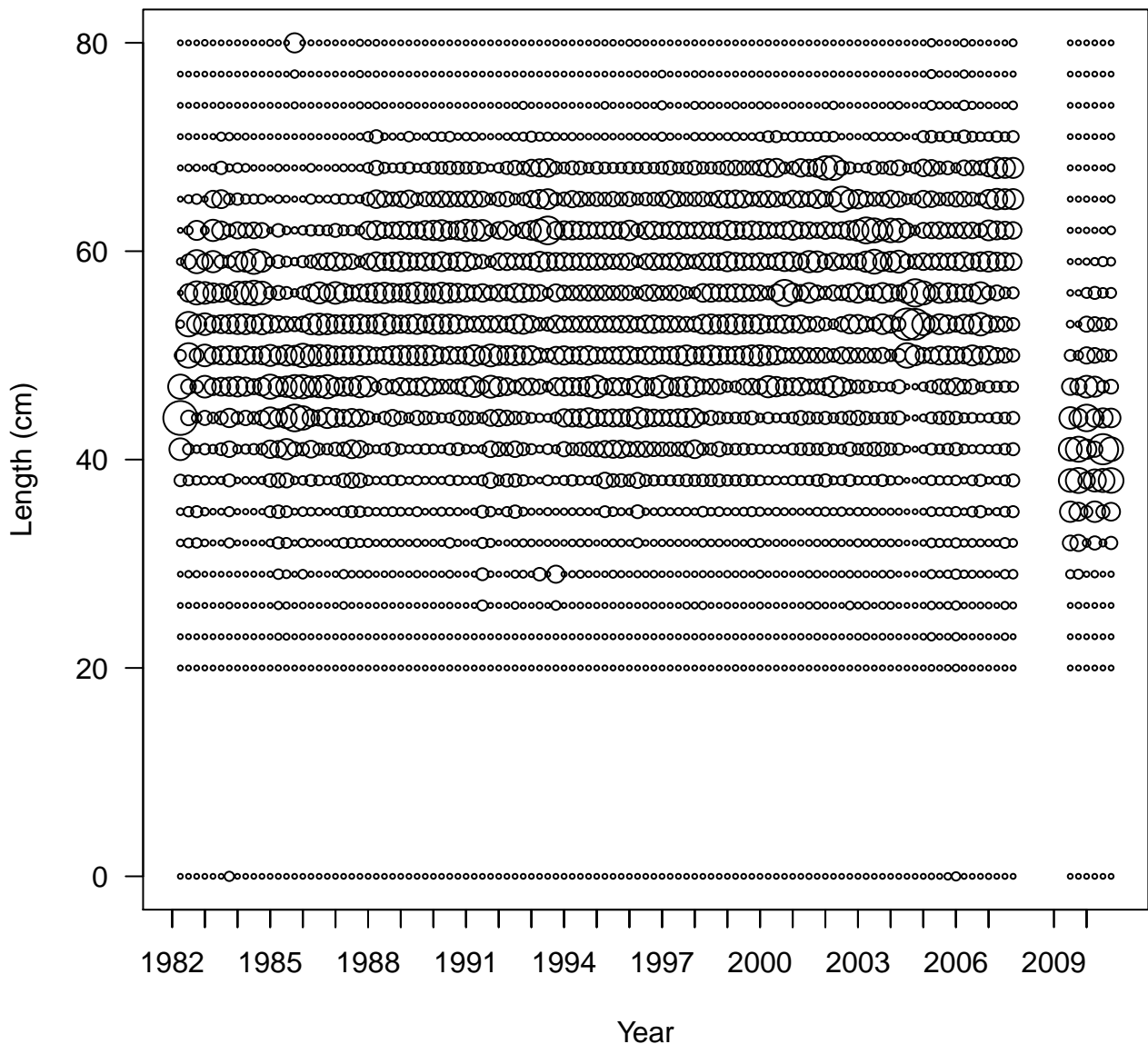
length comp data, sexes combined, whole catch, Other



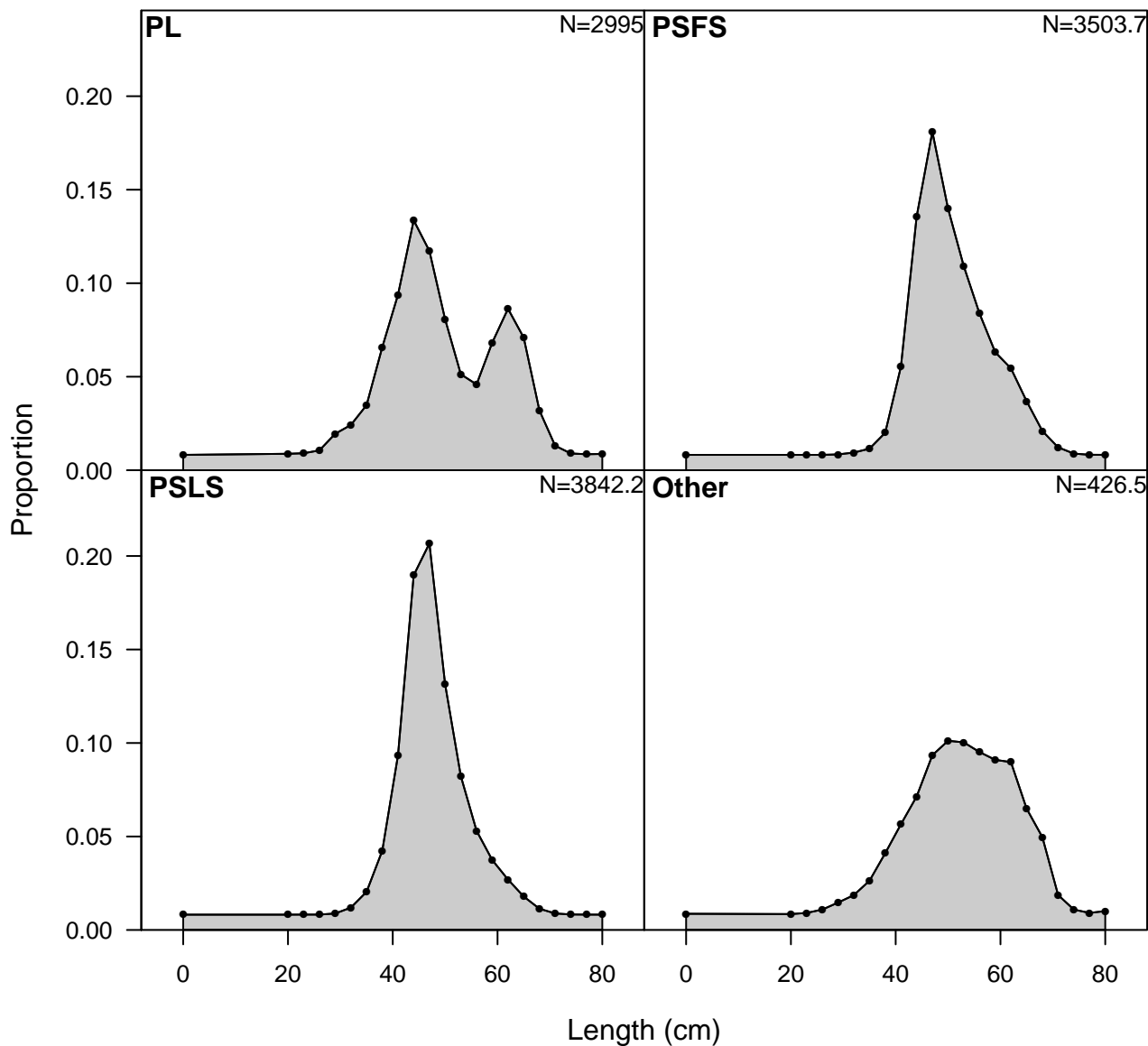
length comp data, sexes combined, whole catch, Other



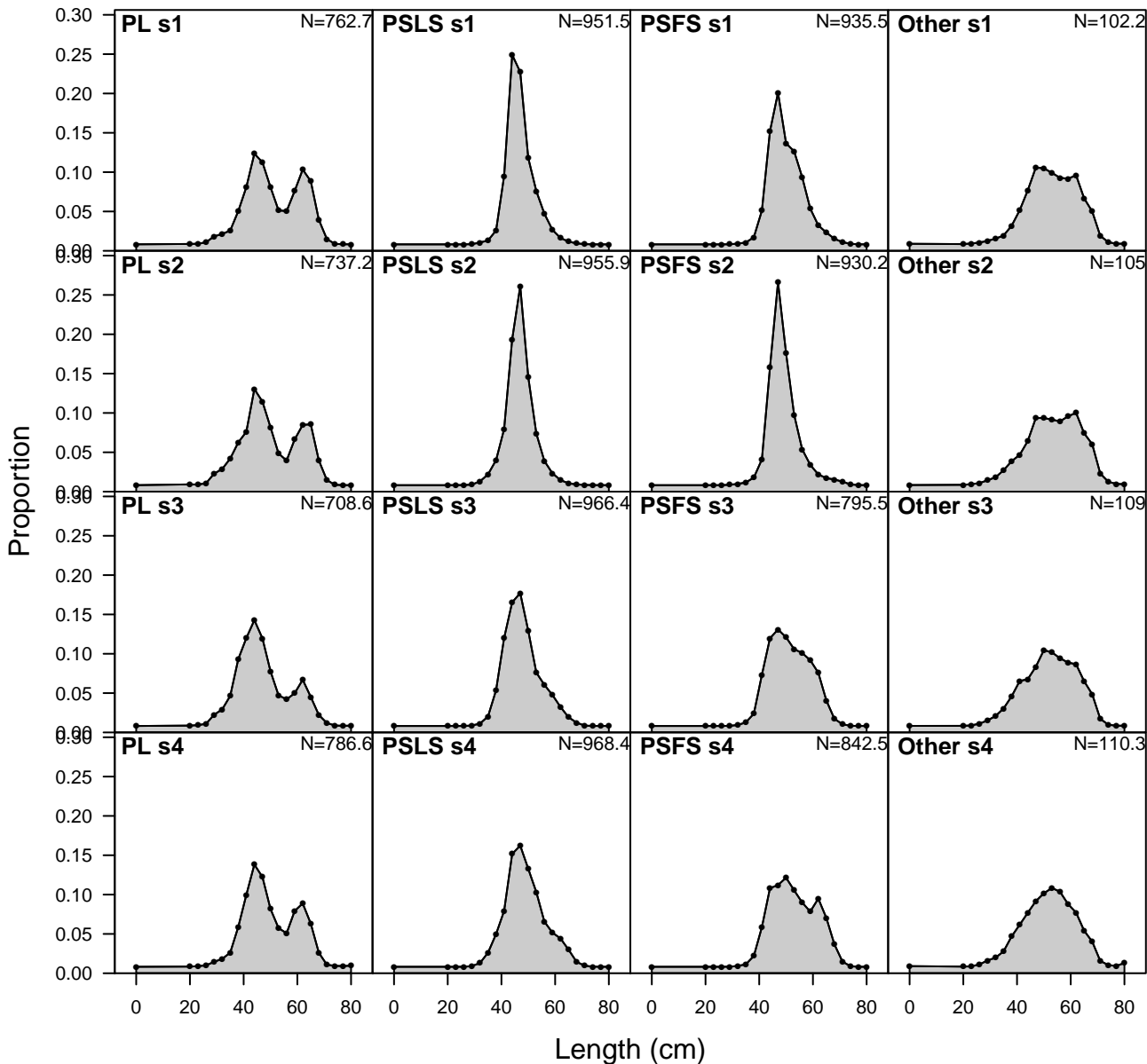
length comp data, sexes combined, whole catch, Other (max=0.38)



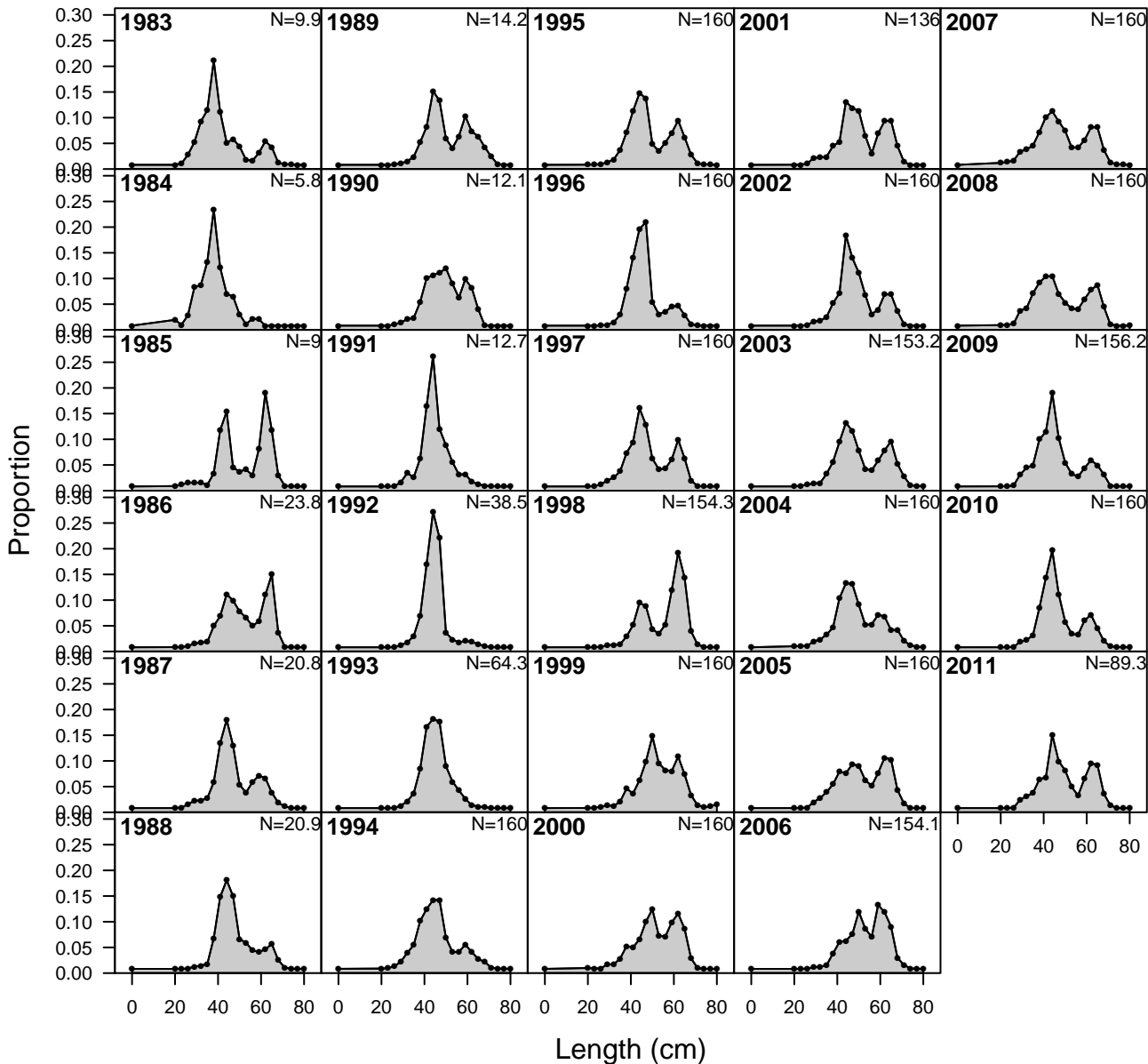
length comp data, sexes combined, whole catch, aggregated across time by fleet



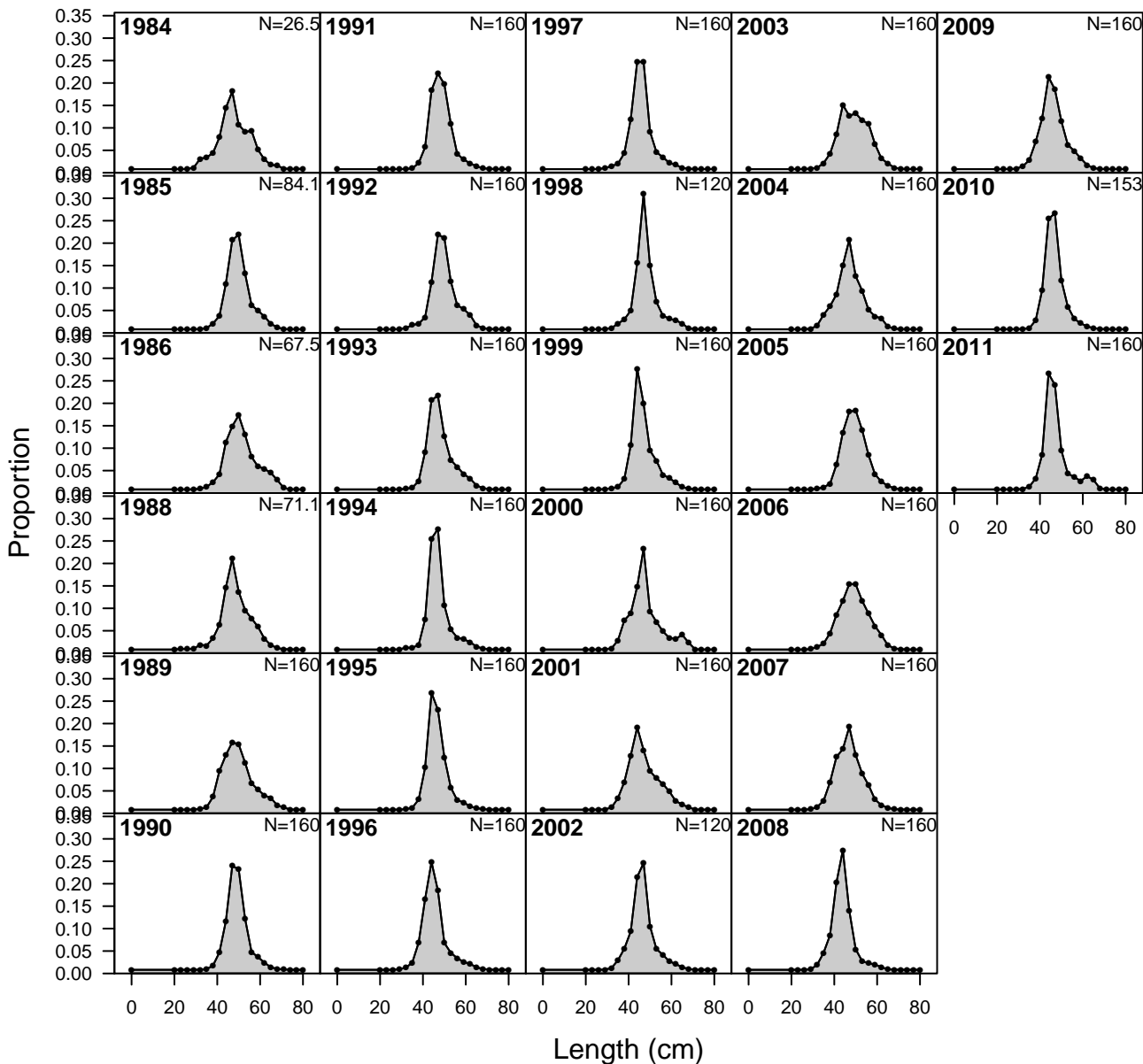
length comp data, sexes combined, whole catch,
aggregated within season by fleet



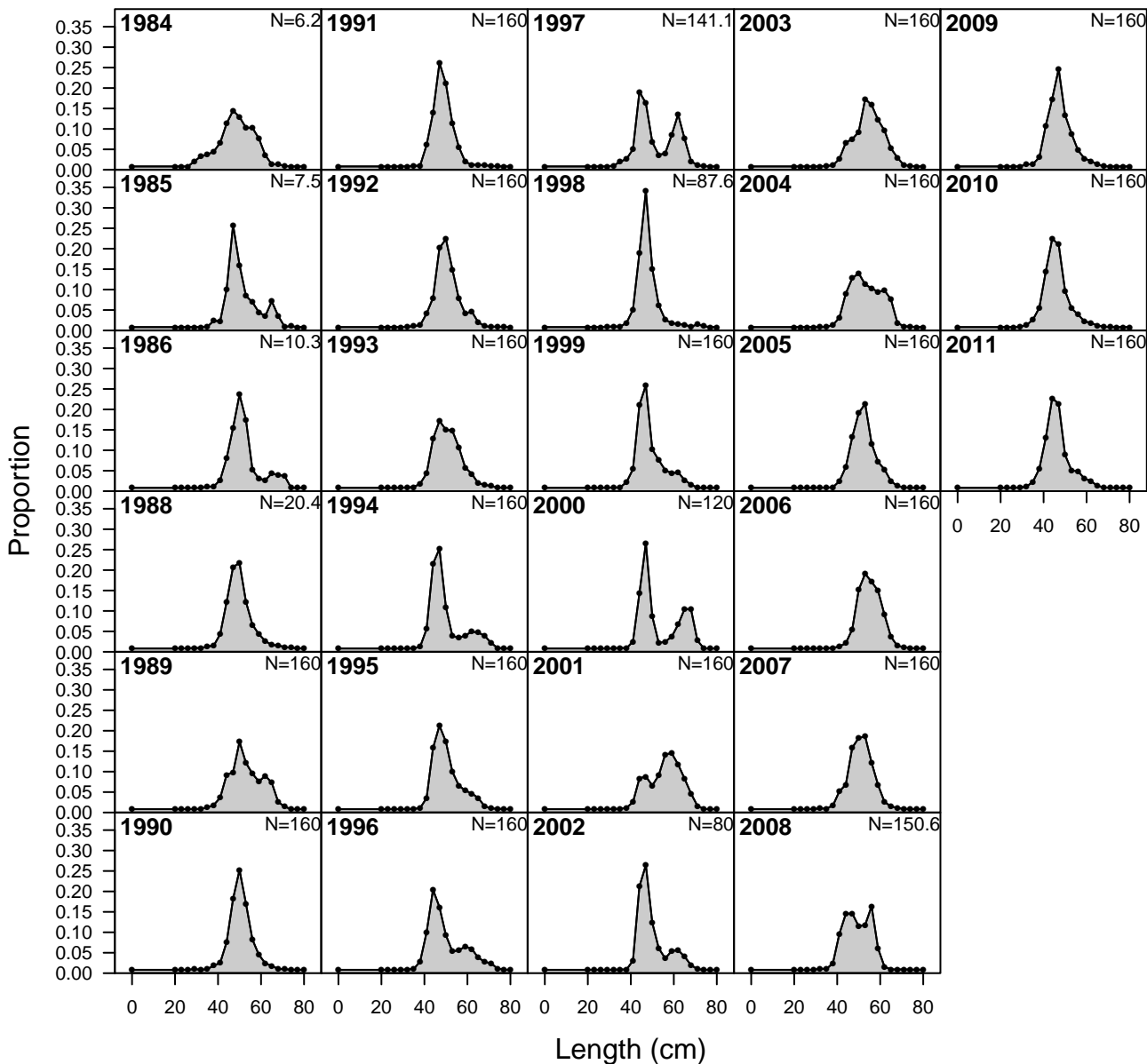
length comp data, sexes combined, whole catch, PL
aggregated across seasons within year



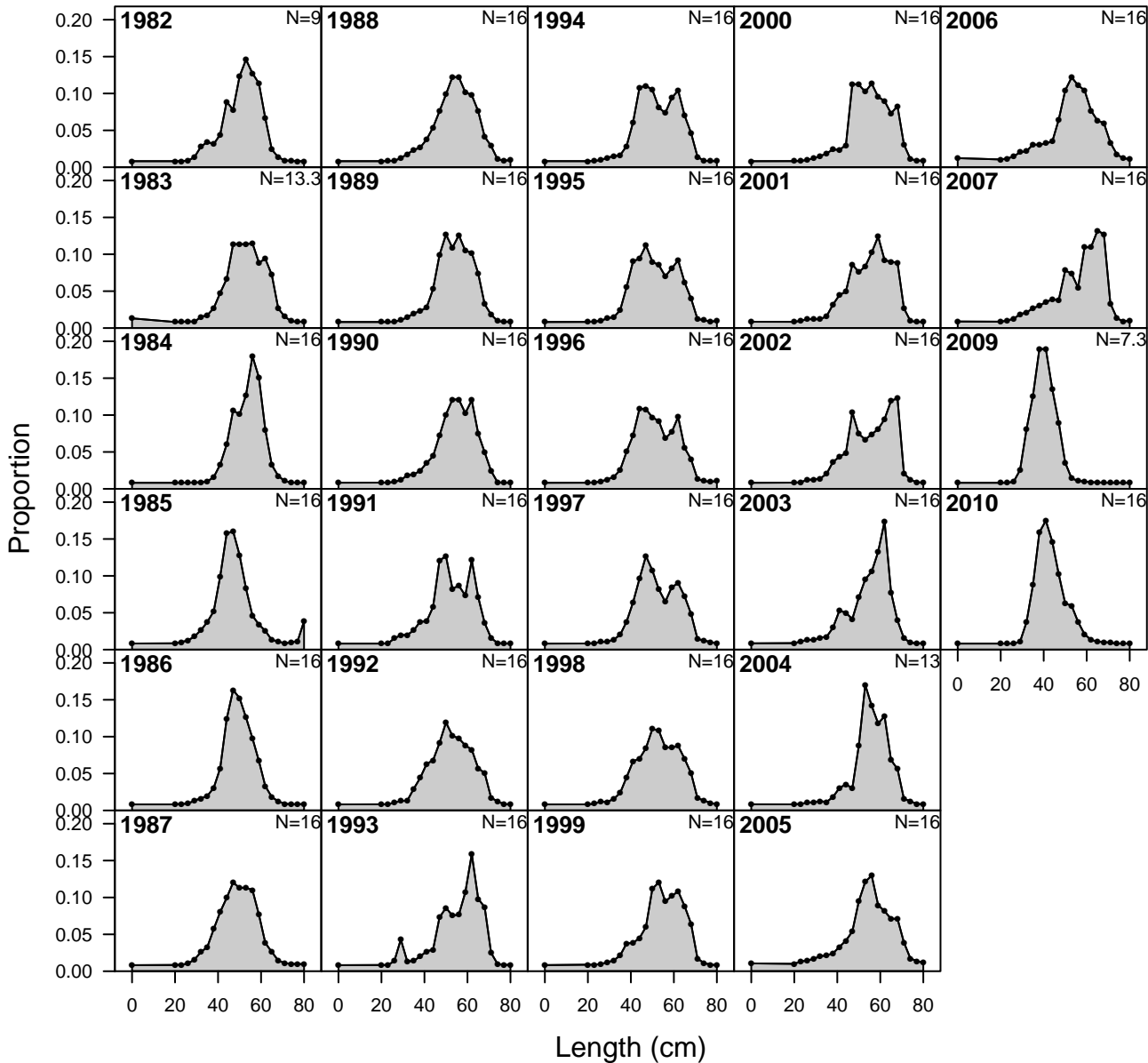
length comp data, sexes combined, whole catch, PSLS aggregated across seasons within year



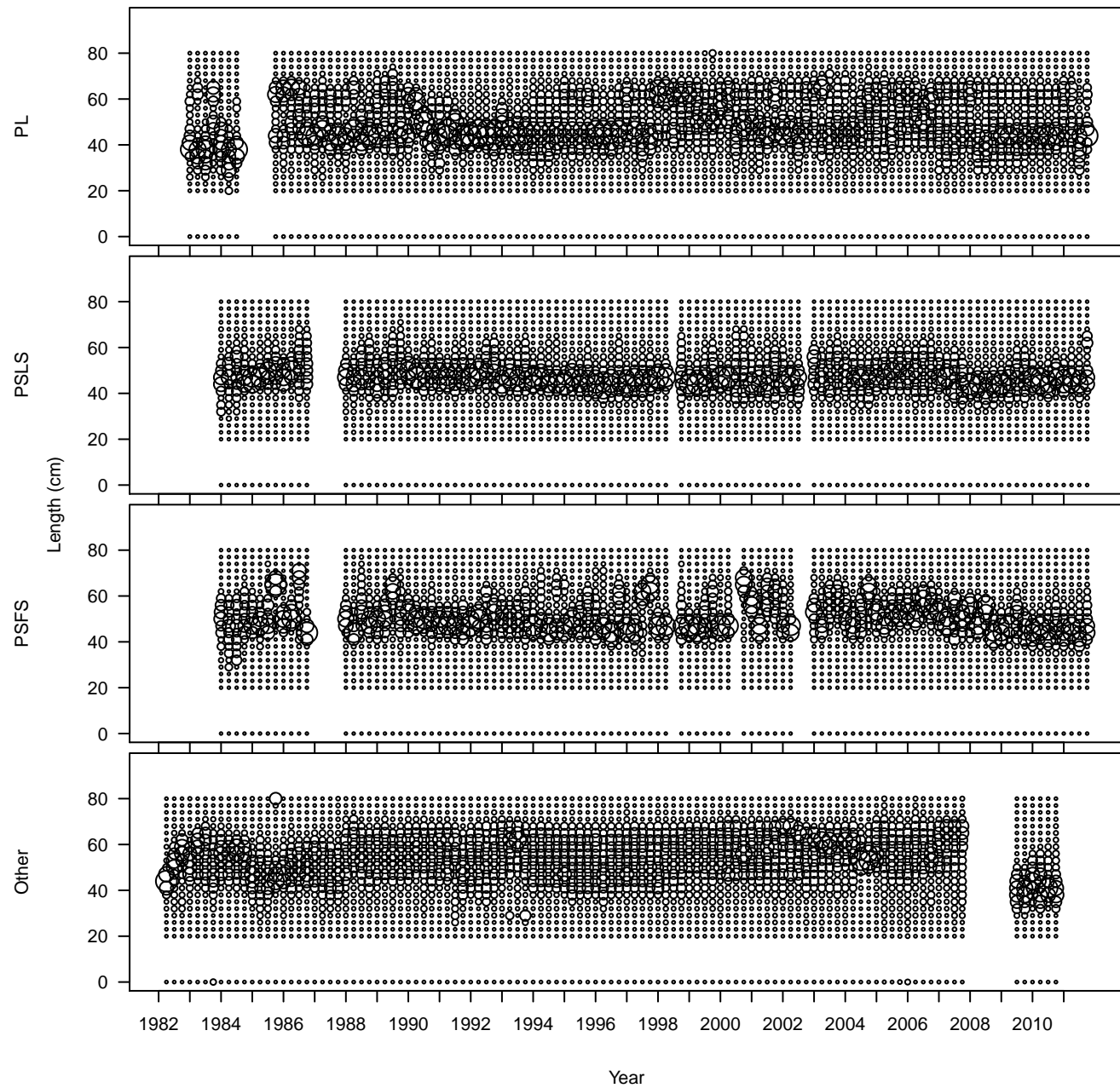
length comp data, sexes combined, whole catch, PSFS aggregated across seasons within year



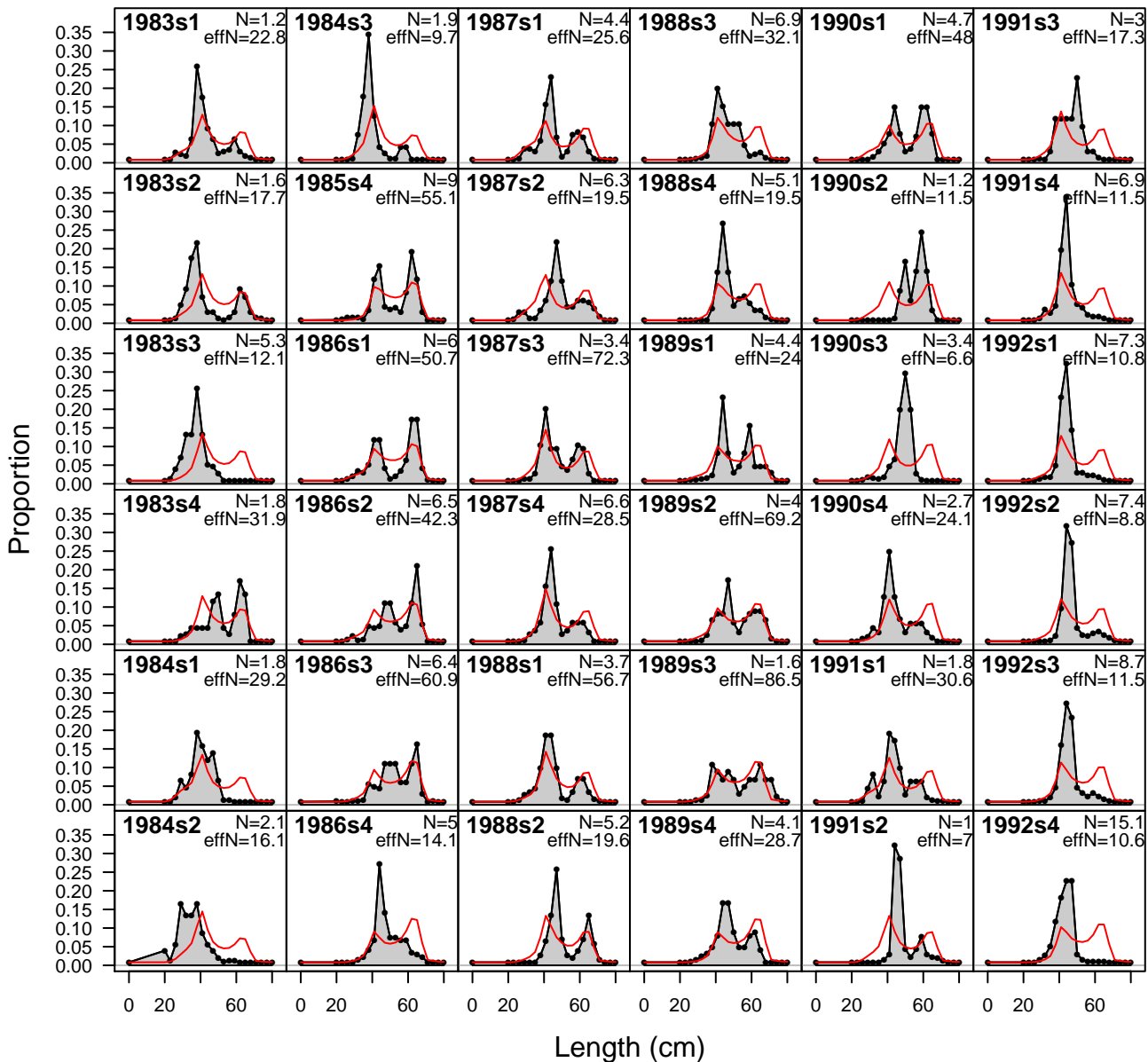
length comp data, sexes combined, whole catch, Other aggregated across seasons within year



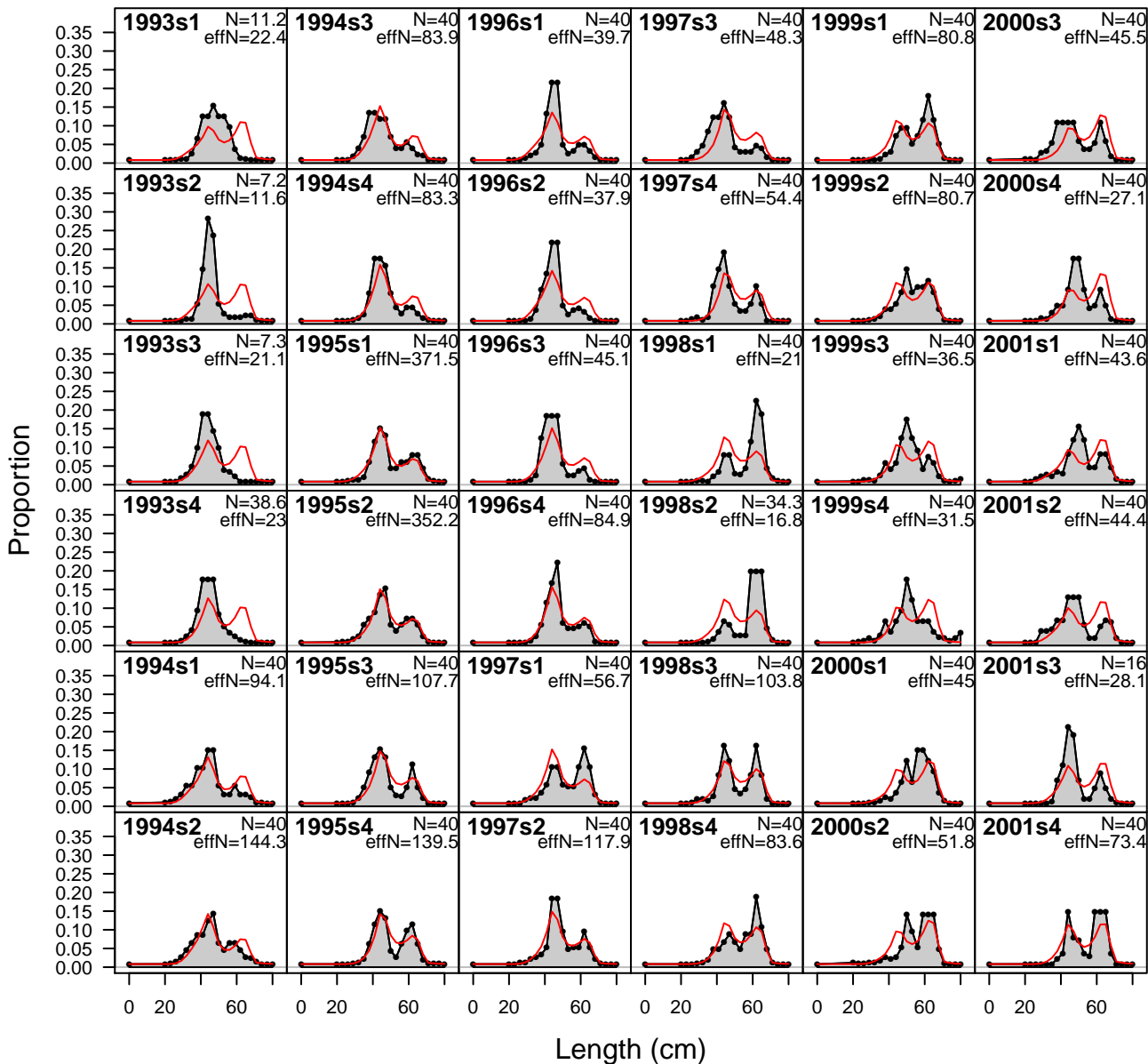
length comp data, sexes combined, whole catch, comparing across fleets



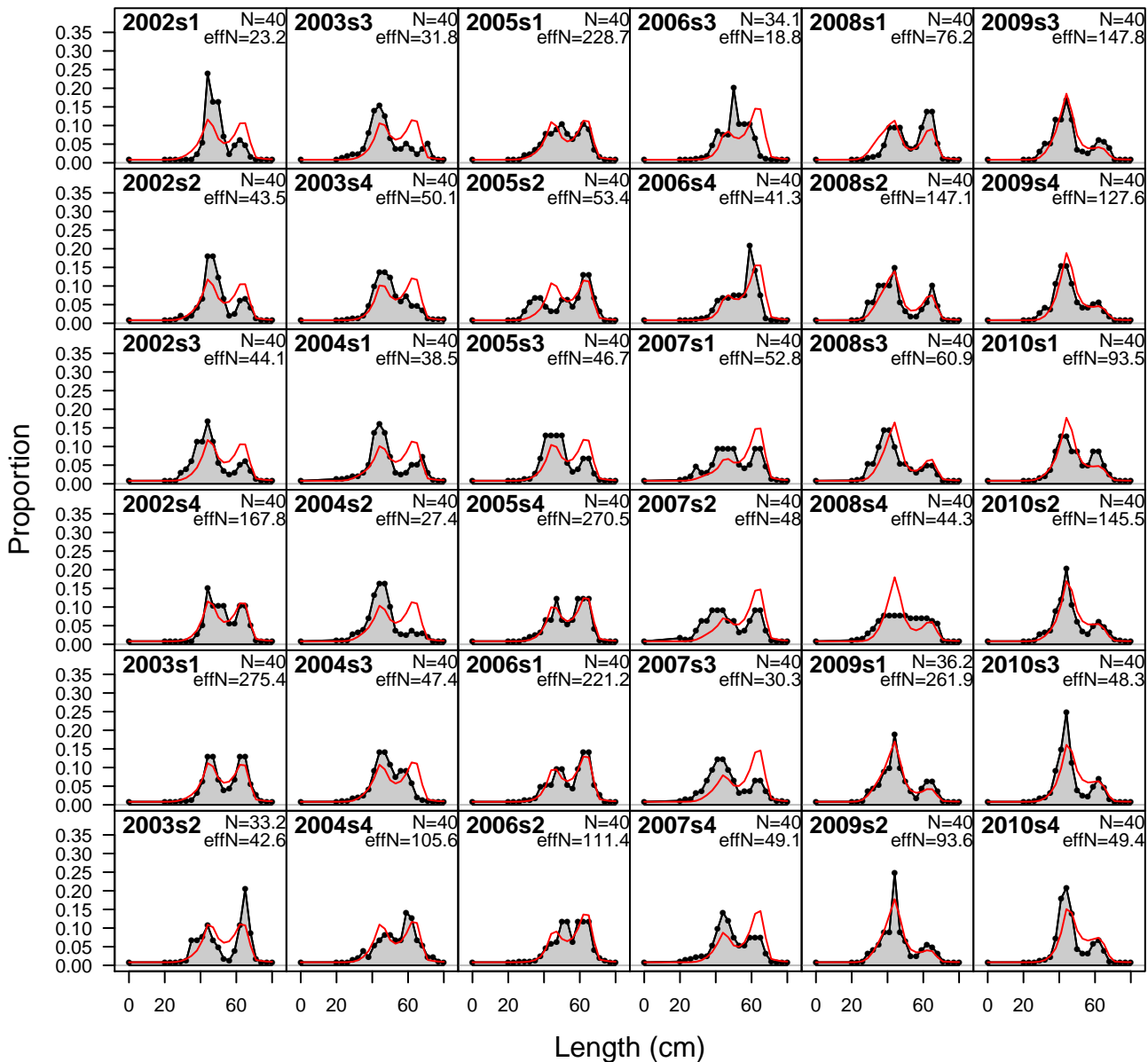
length comps, sexes combined, whole catch, PL



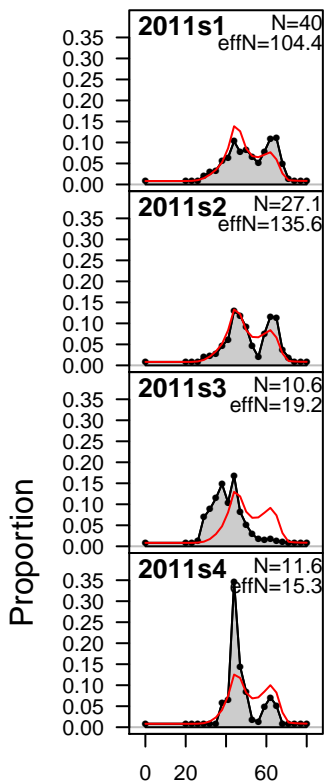
length comps, sexes combined, whole catch, PL



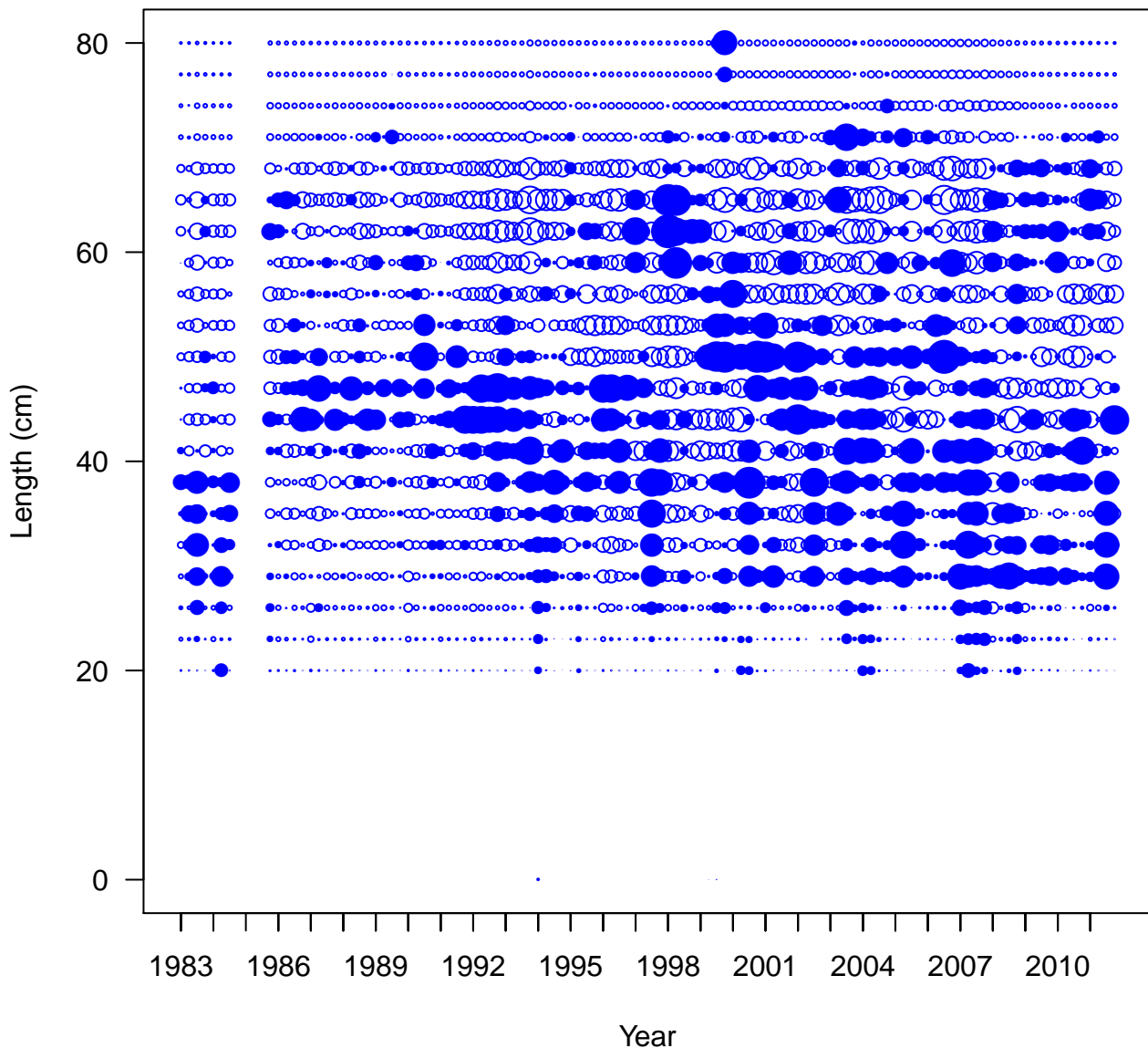
length comps, sexes combined, whole catch, PL



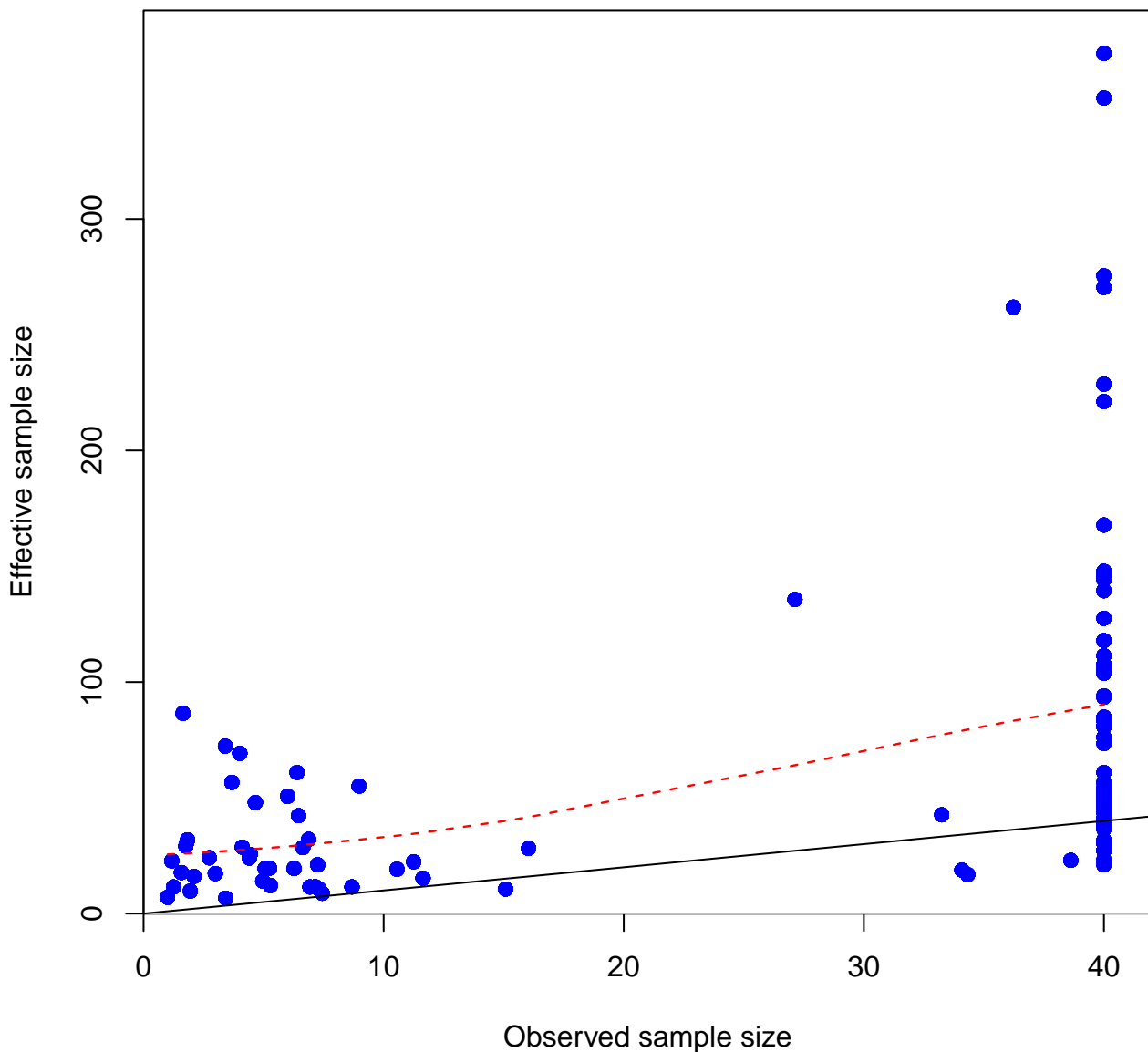
length comps, sexes combined, whole catch, PL



Pearson residuals, sexes combined, whole catch, PL (max=3.03)

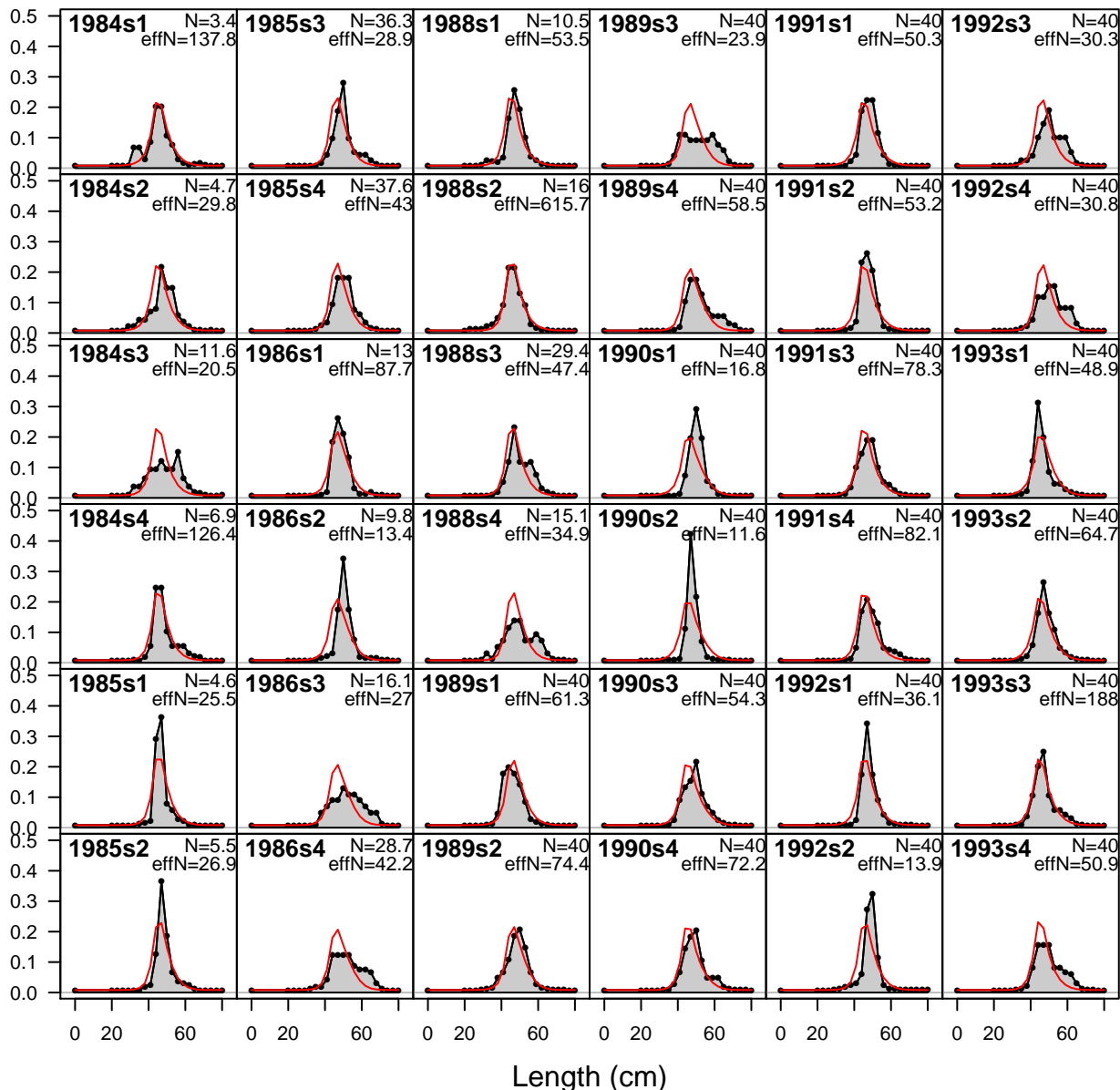


N-EffN comparison, length comps, sexes combined, whole catch, PL

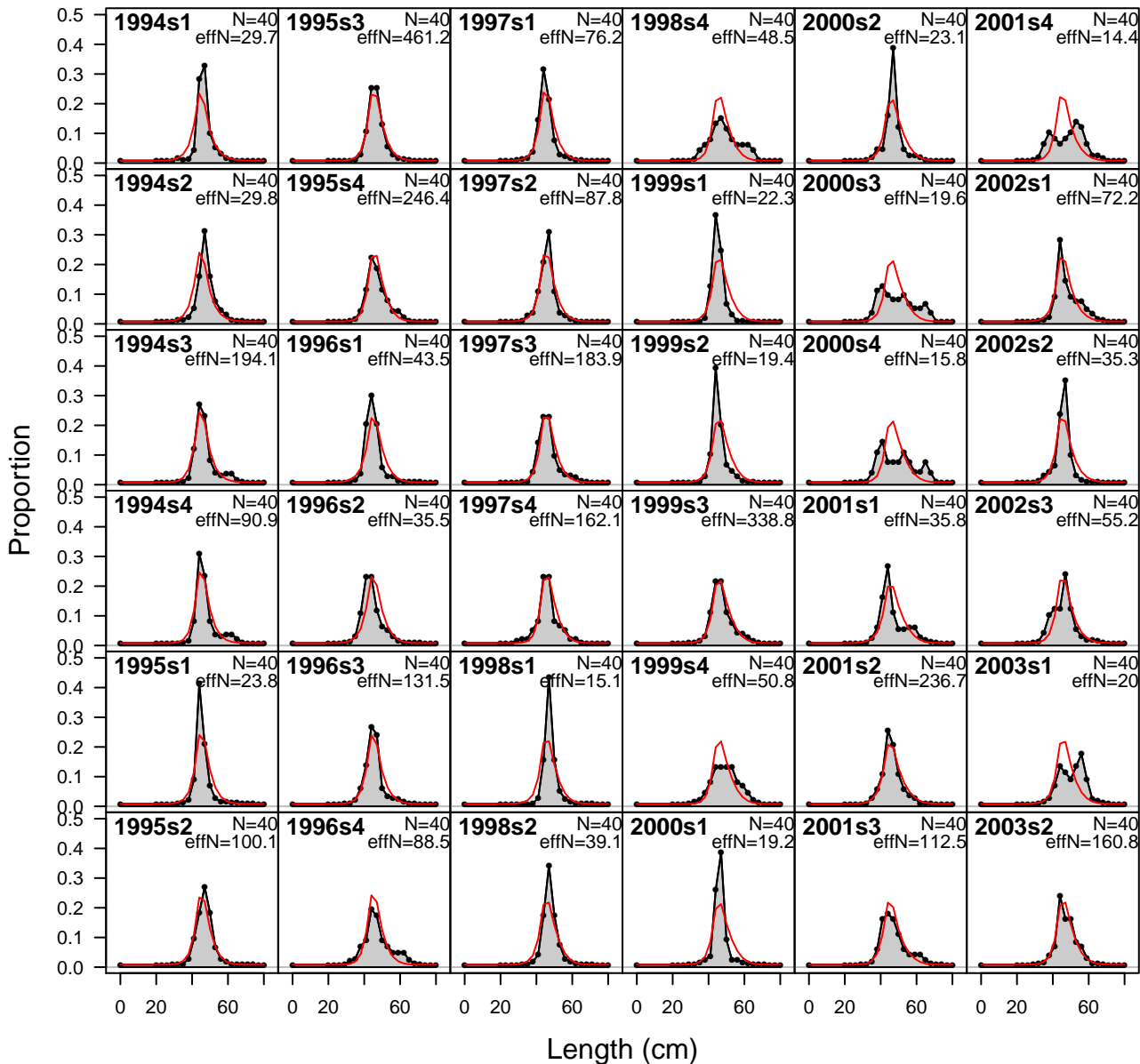


length comps, sexes combined, whole catch, PSLS

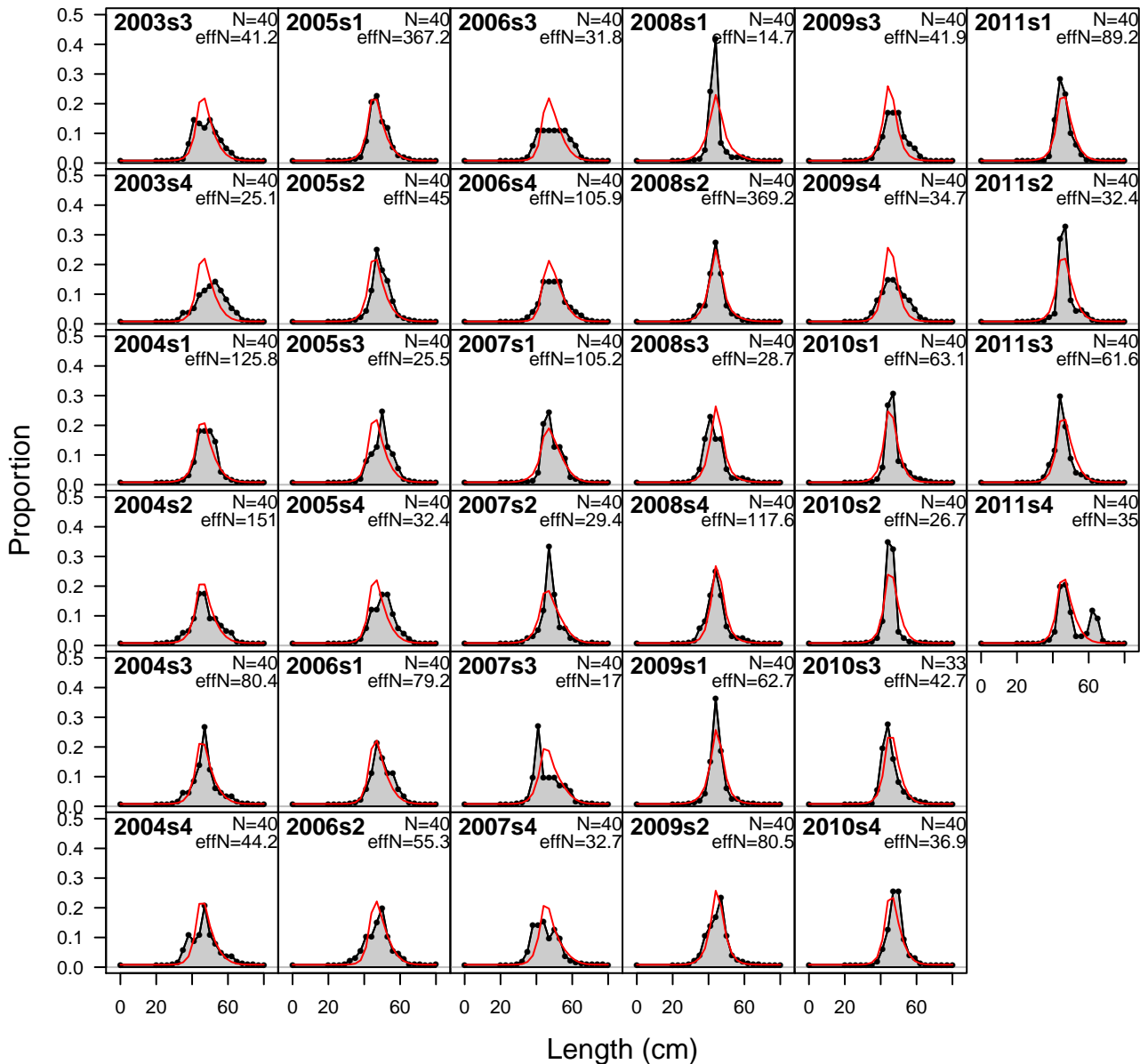
Proportion



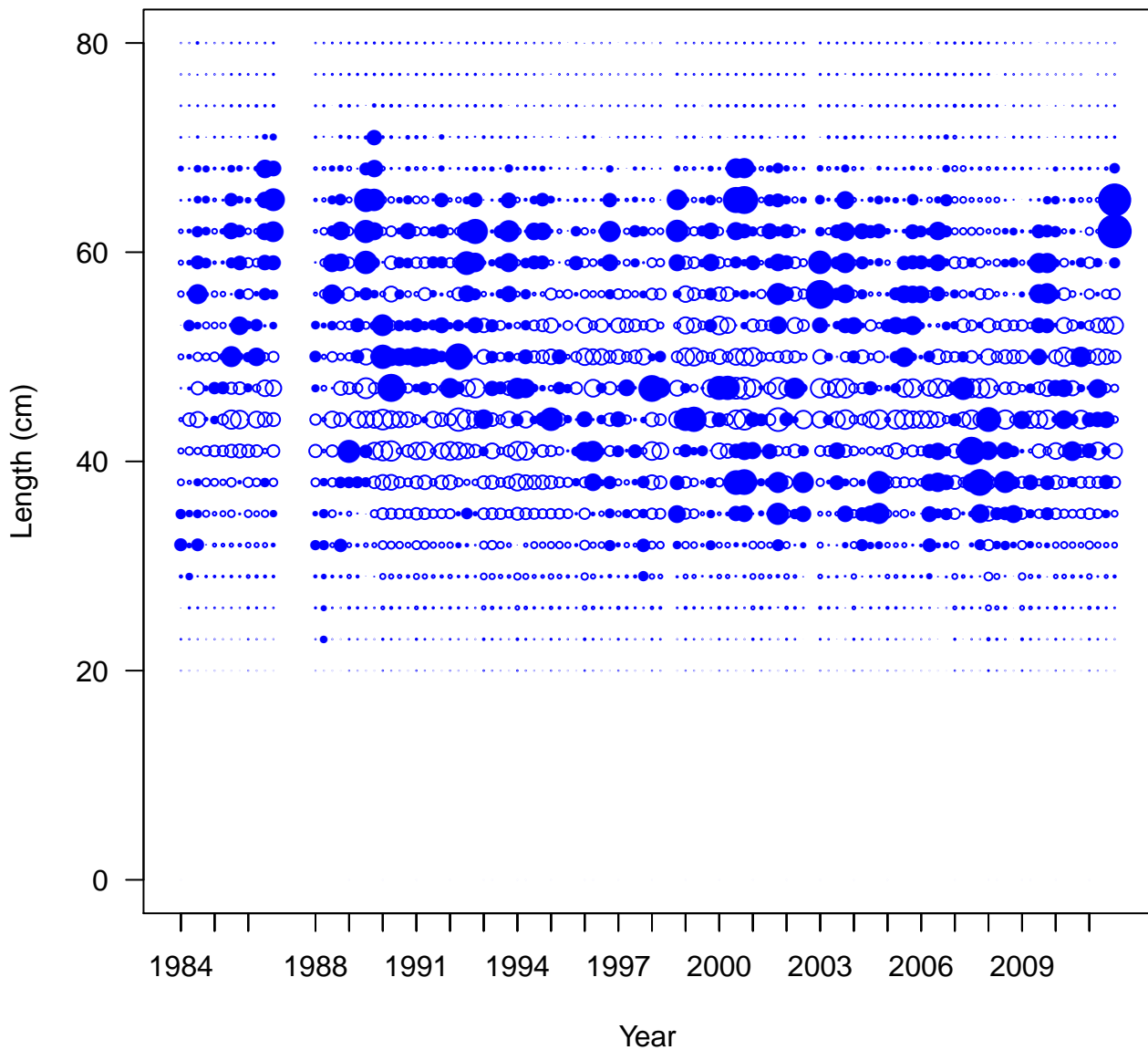
length comps, sexes combined, whole catch, PSLS



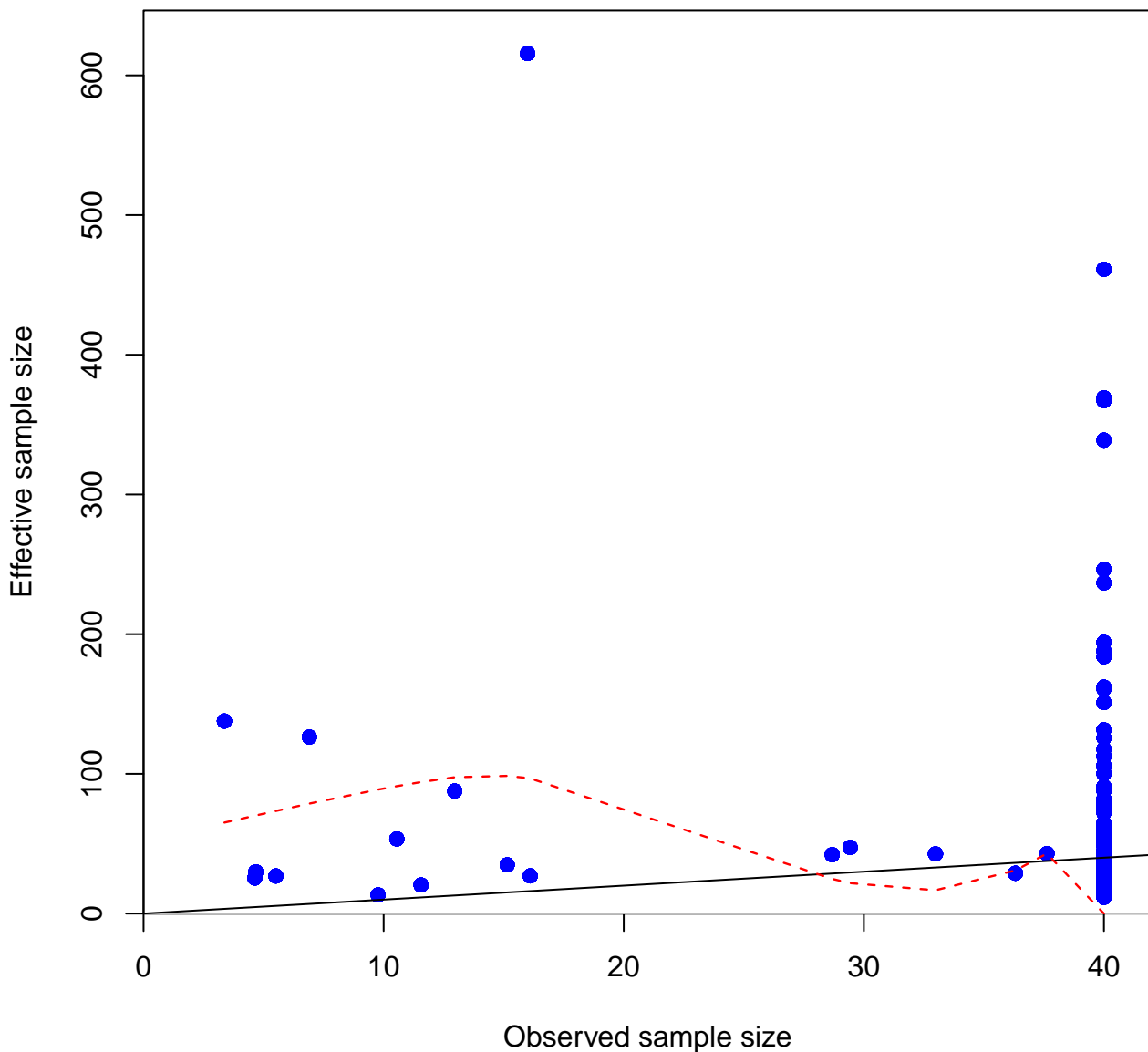
length comps, sexes combined, whole catch, PSLS



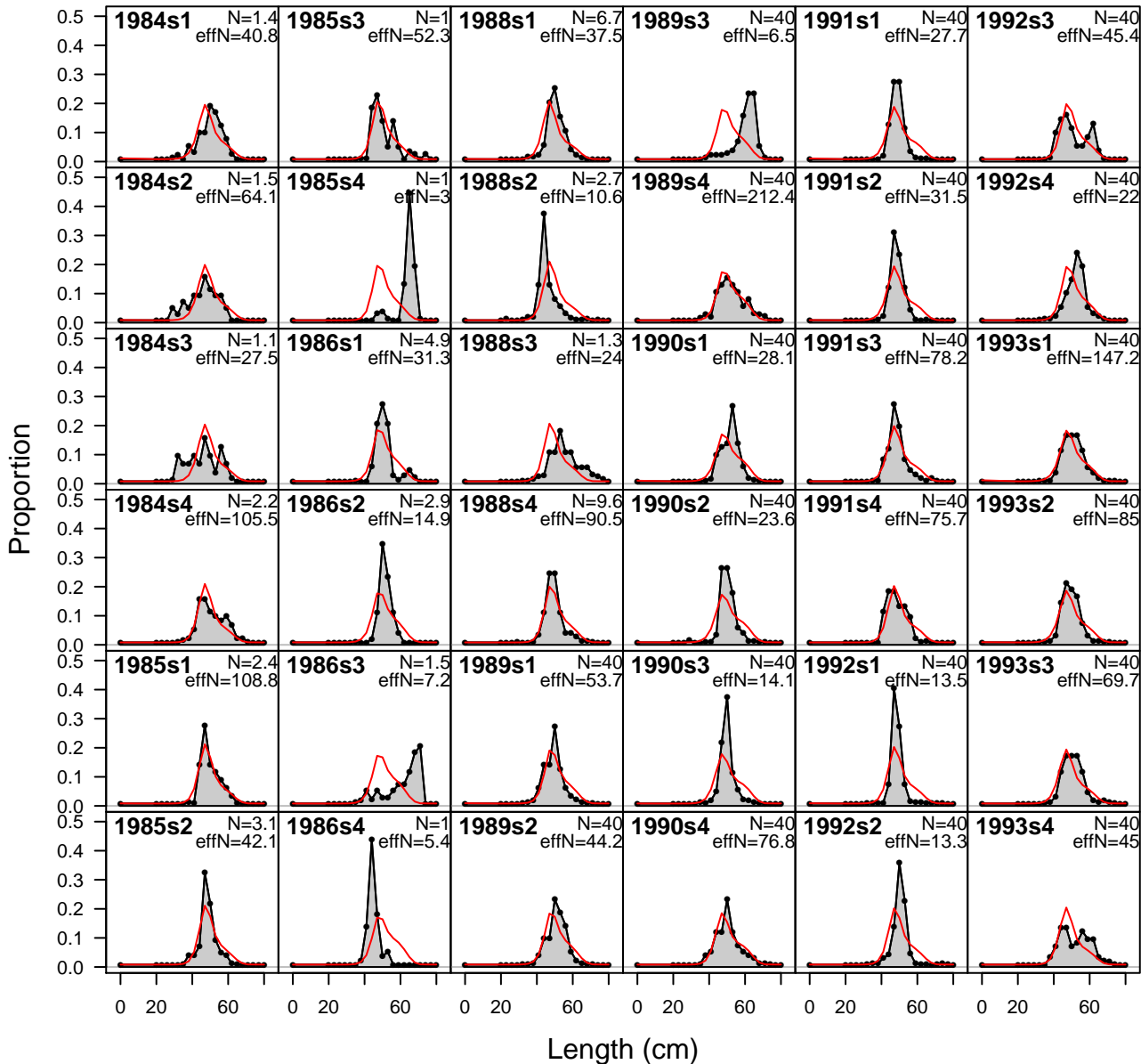
Pearson residuals, sexes combined, whole catch, PSLS (max=5.31)



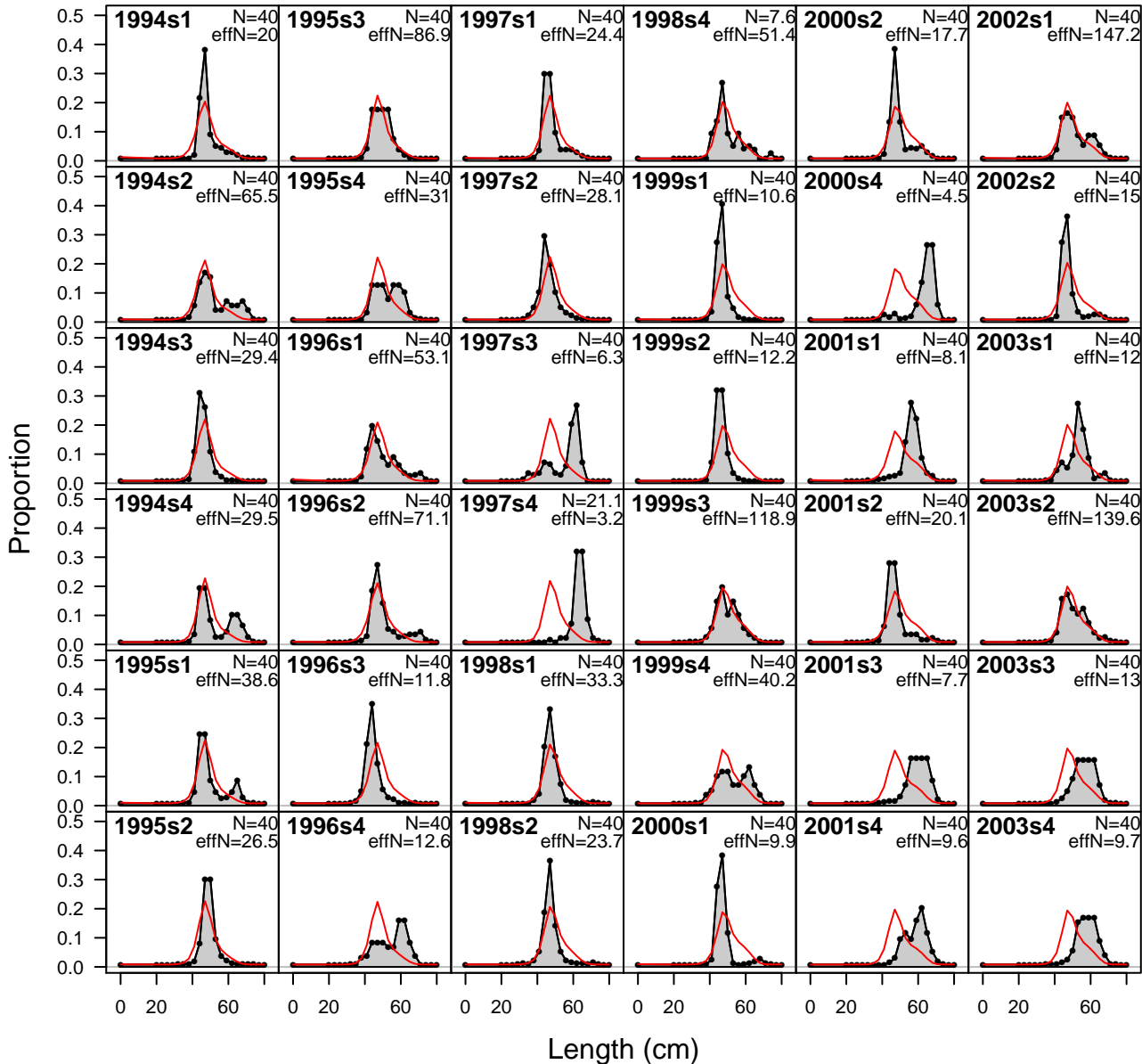
N-EffN comparison, length comps, sexes combined, whole catch, PSLS



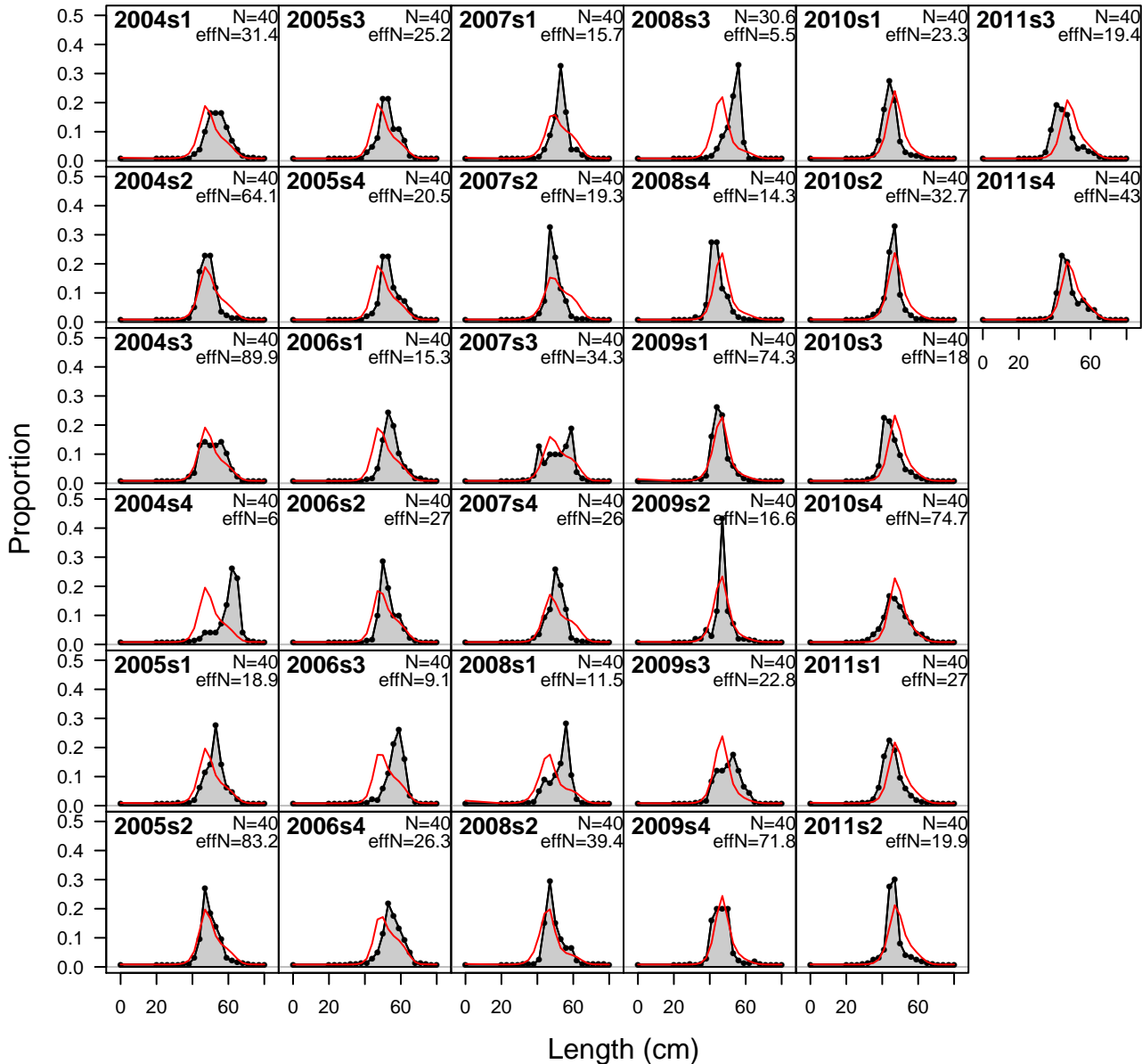
length comps, sexes combined, whole catch, PSFS



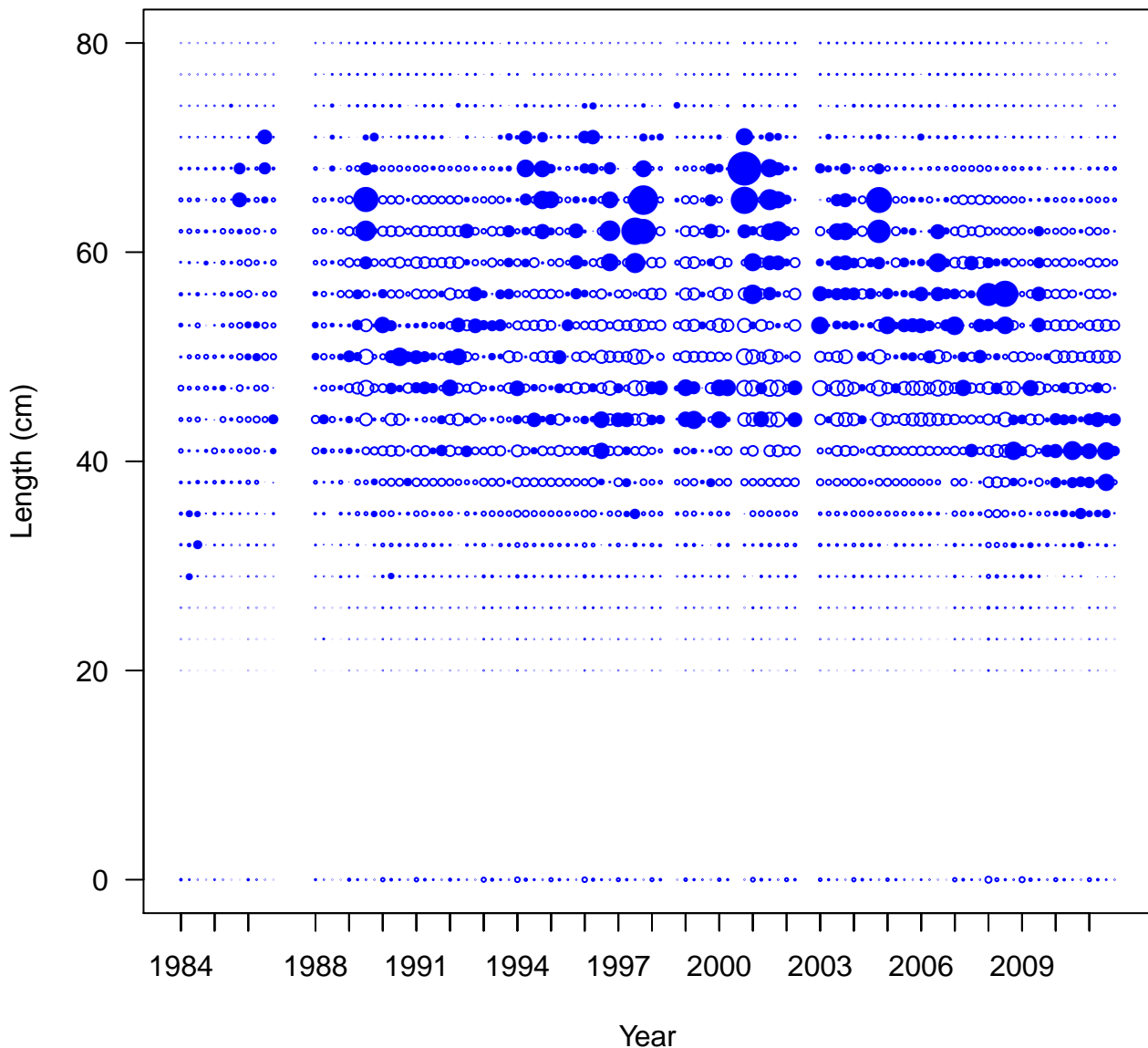
length comps, sexes combined, whole catch, PSFS



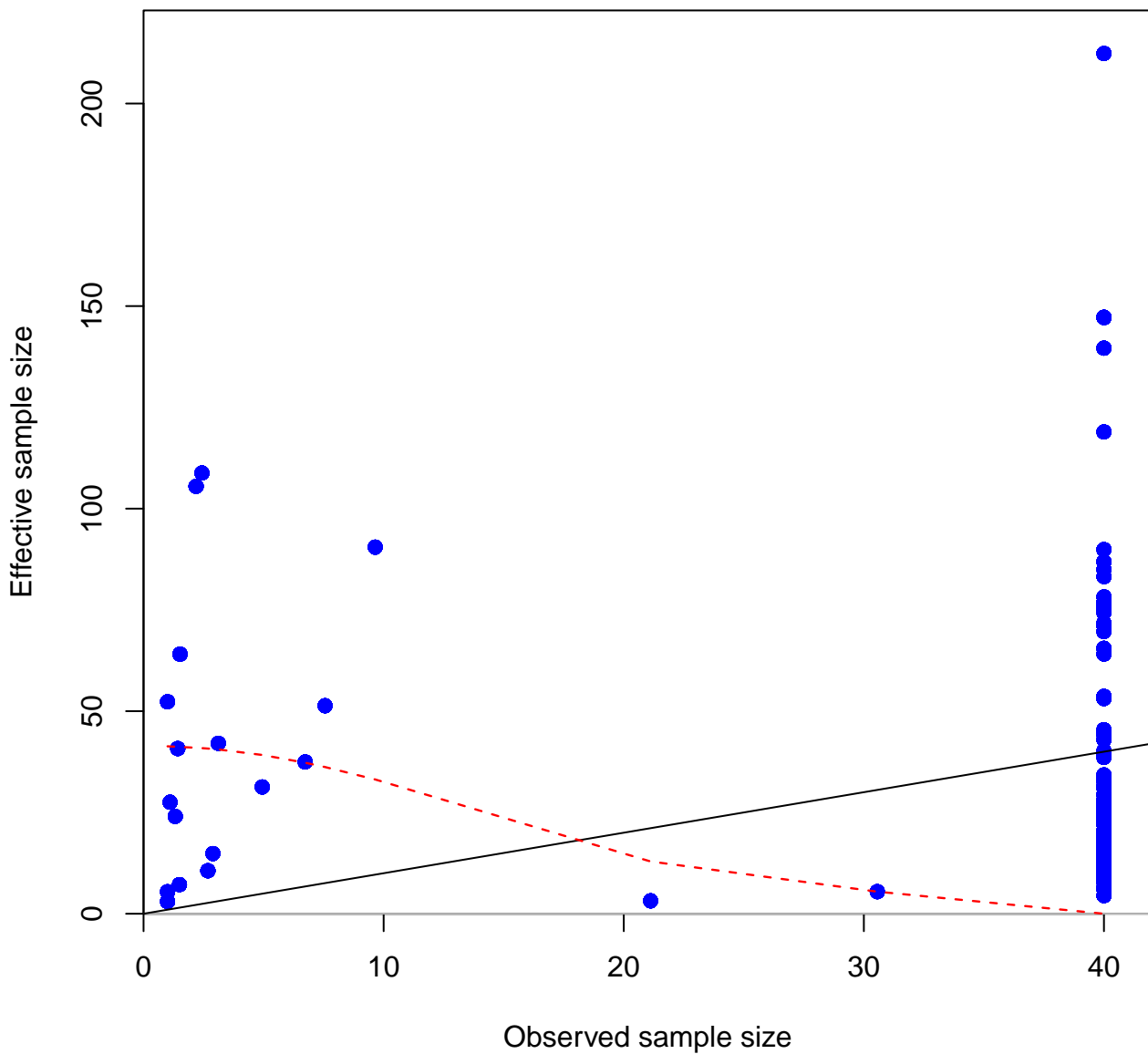
length comps, sexes combined, whole catch, PSFS



Pearson residuals, sexes combined, whole catch, PSFS (max=13.21)

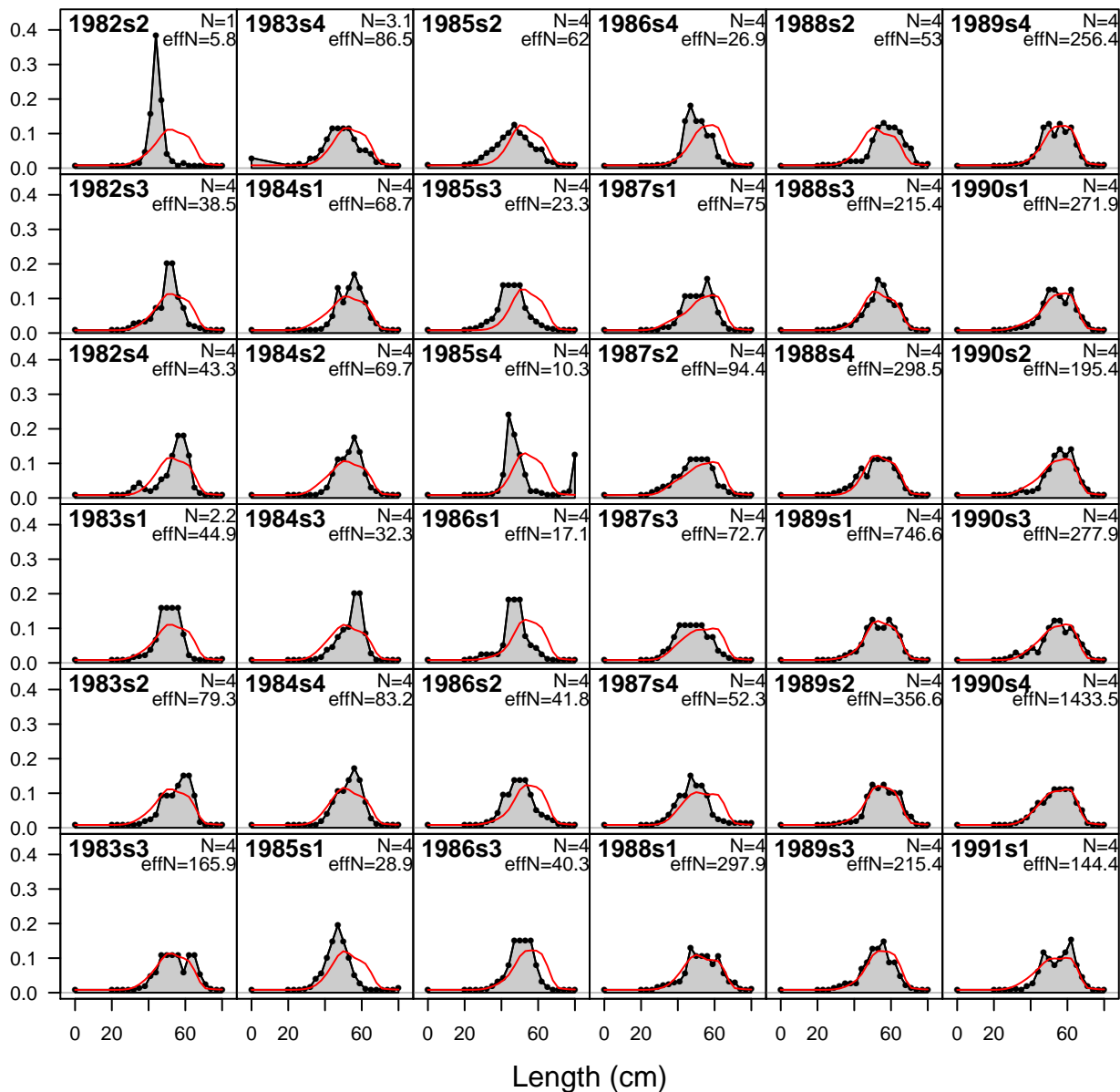


N-EffN comparison, length comps, sexes combined, whole catch, PSFS



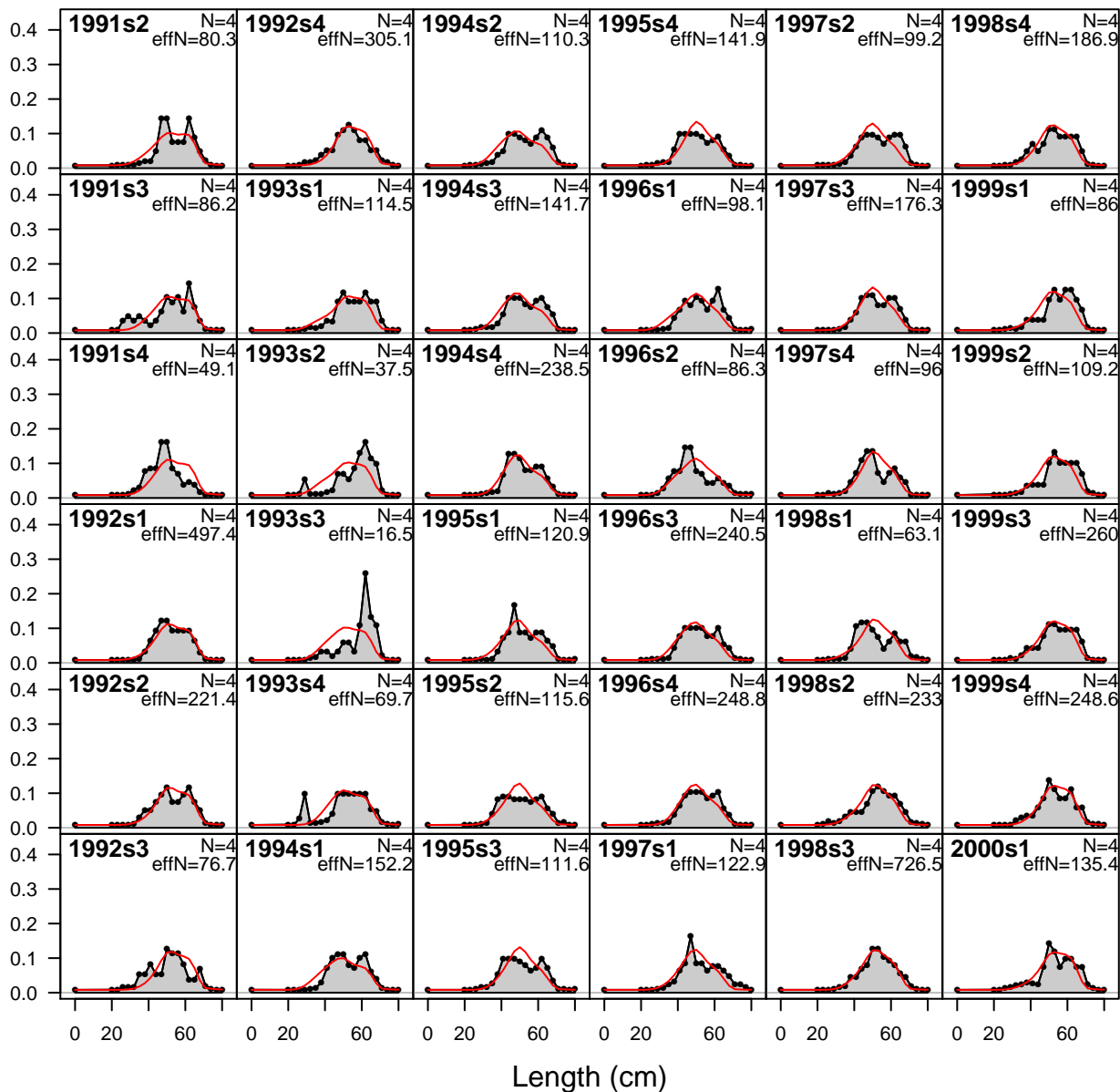
length comps, sexes combined, whole catch, Other

Proportion



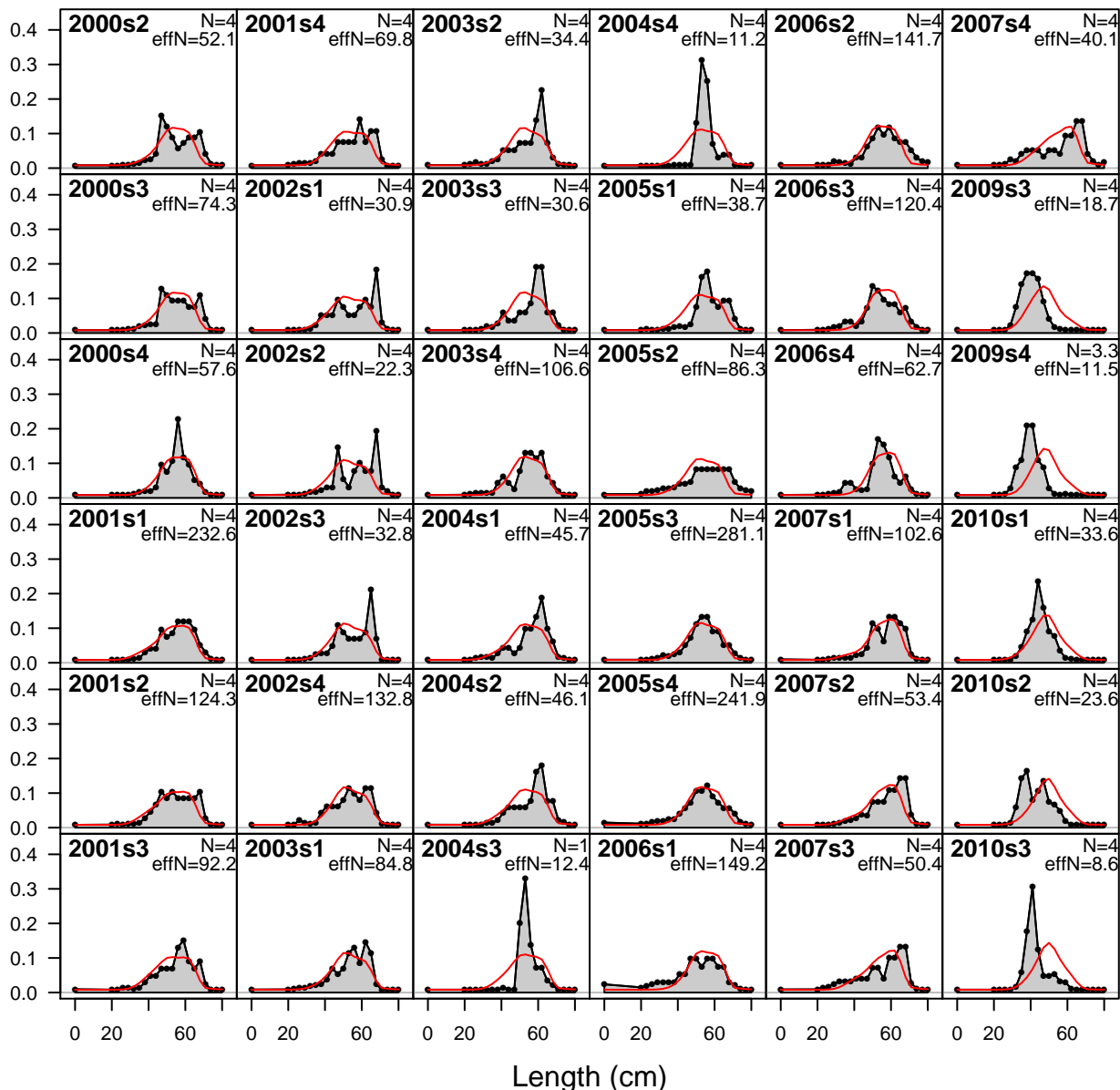
length comps, sexes combined, whole catch, Other

Proportion

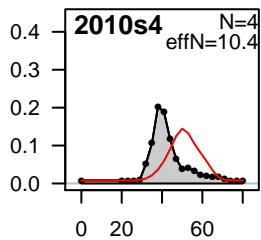


length comps, sexes combined, whole catch, Other

Proportion



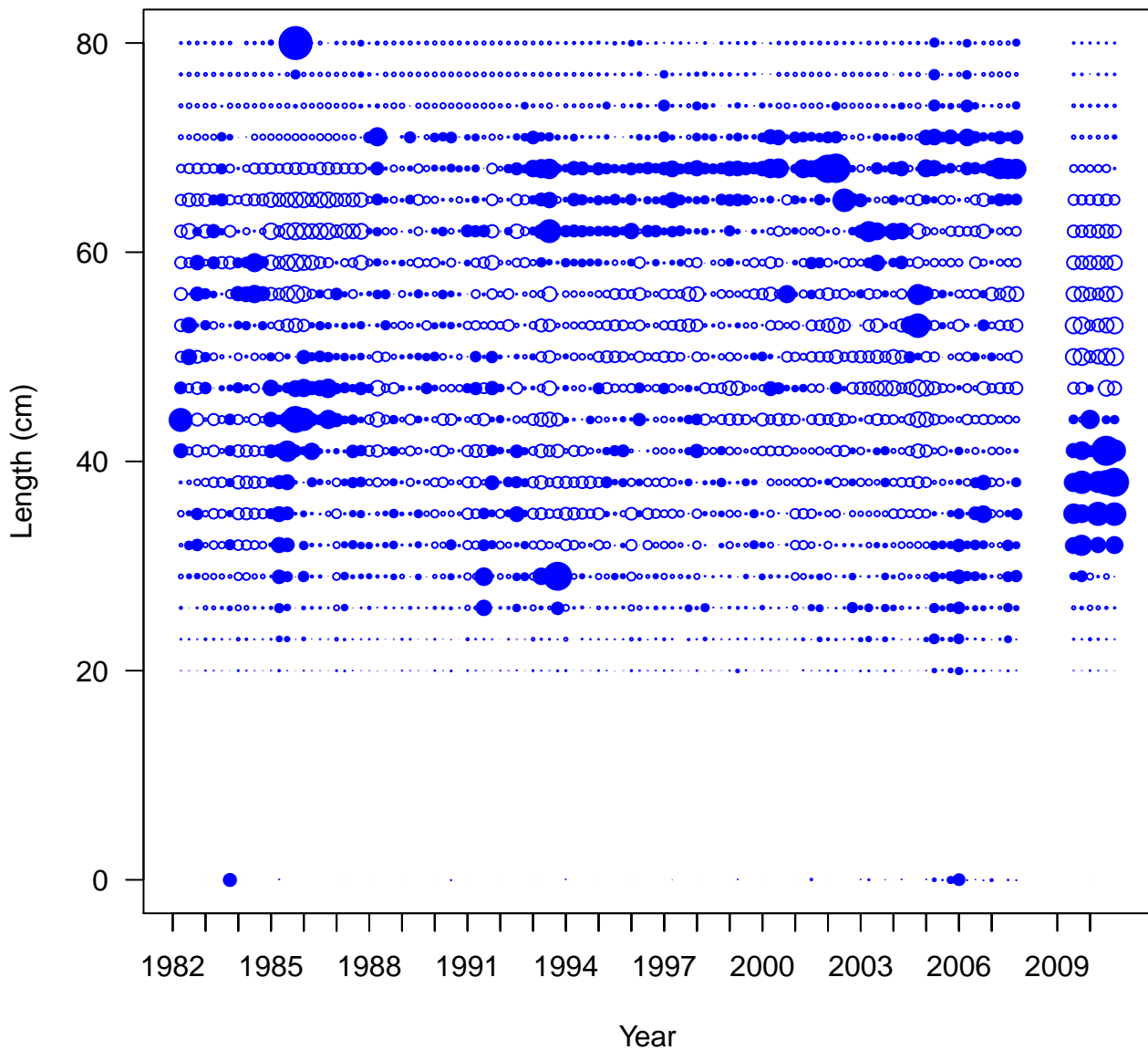
length comps, sexes combined, whole catch, Other



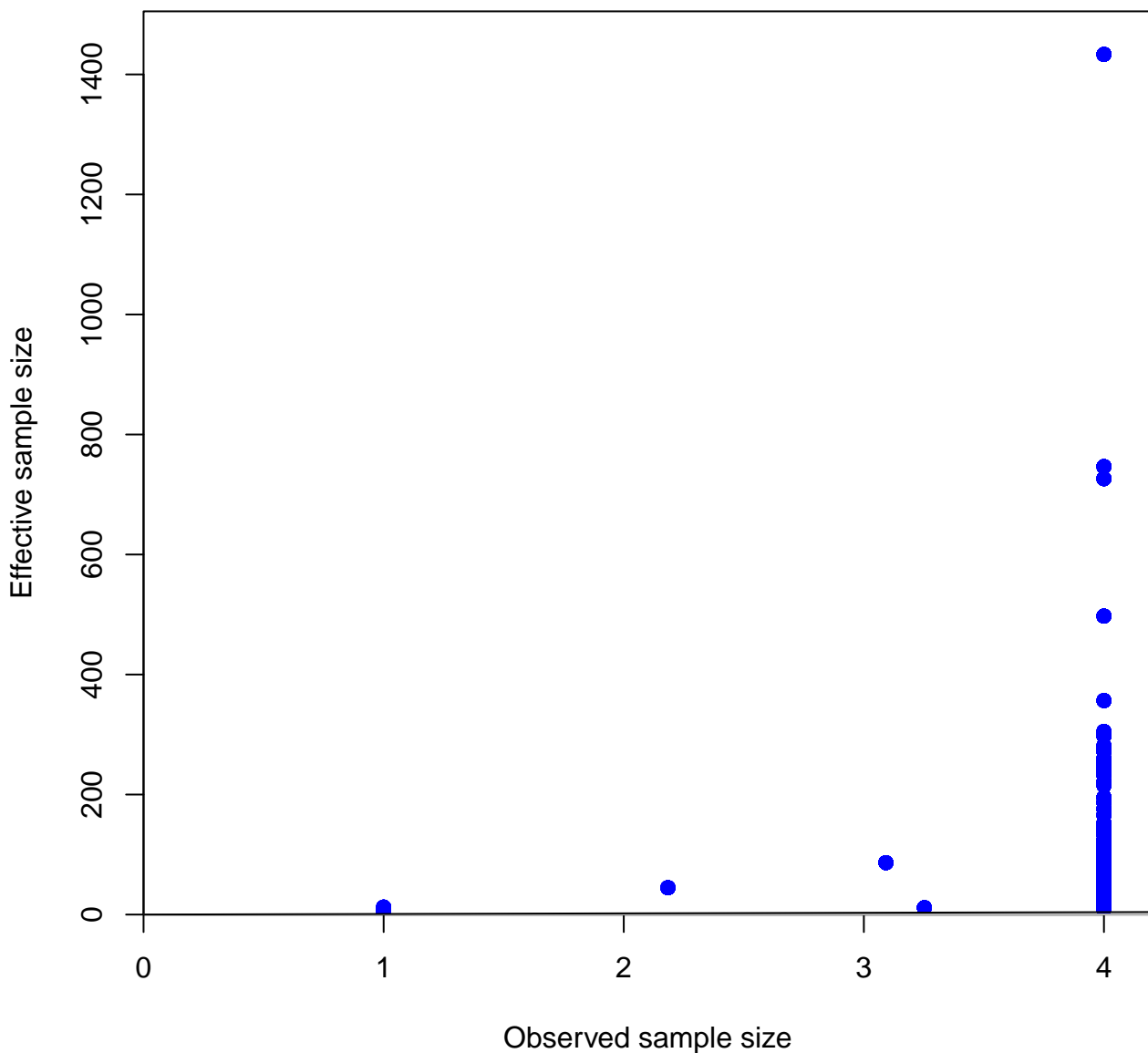
Proportion

Length (cm)

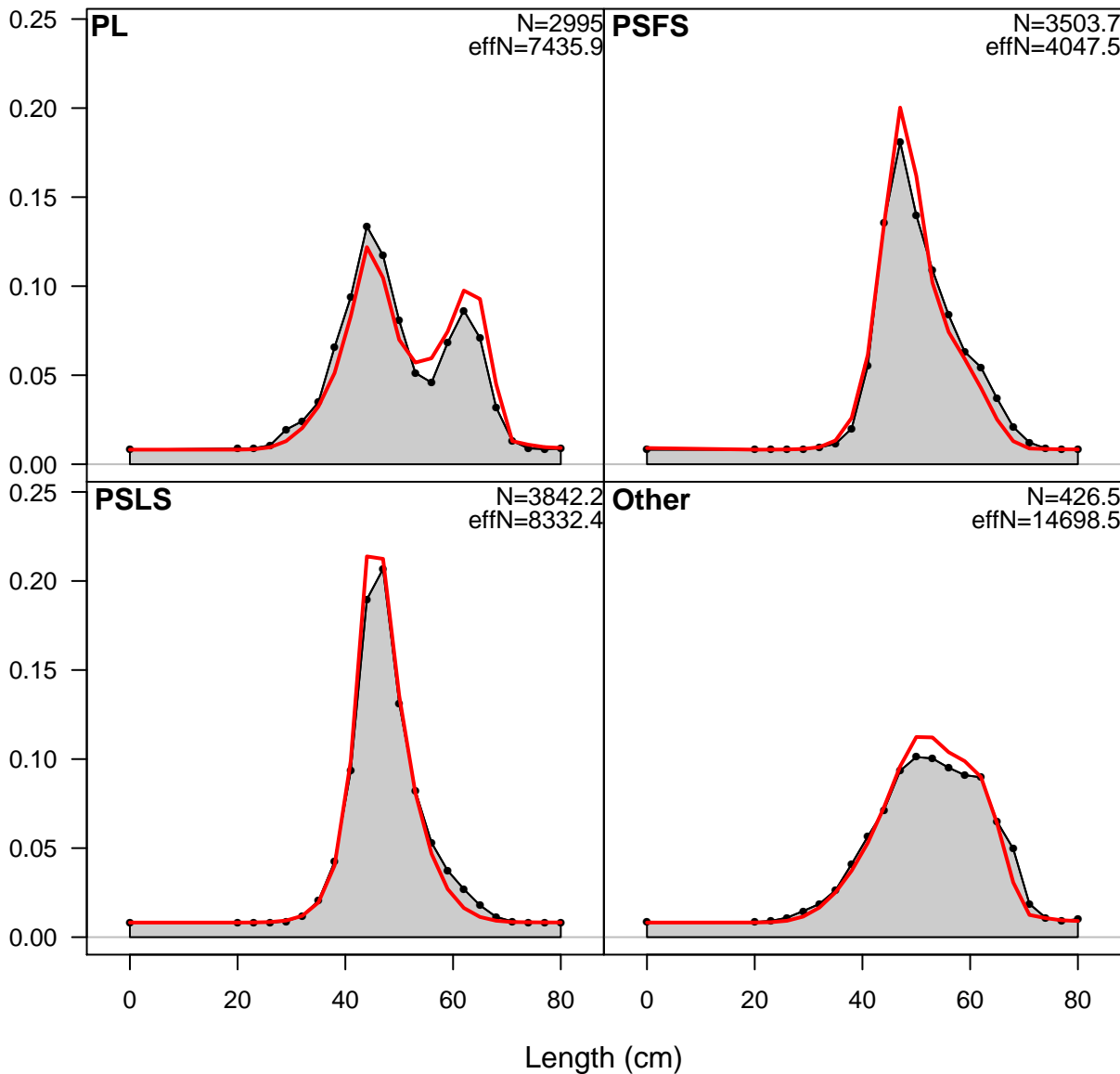
Pearson residuals, sexes combined, whole catch, Other (max=2.43)



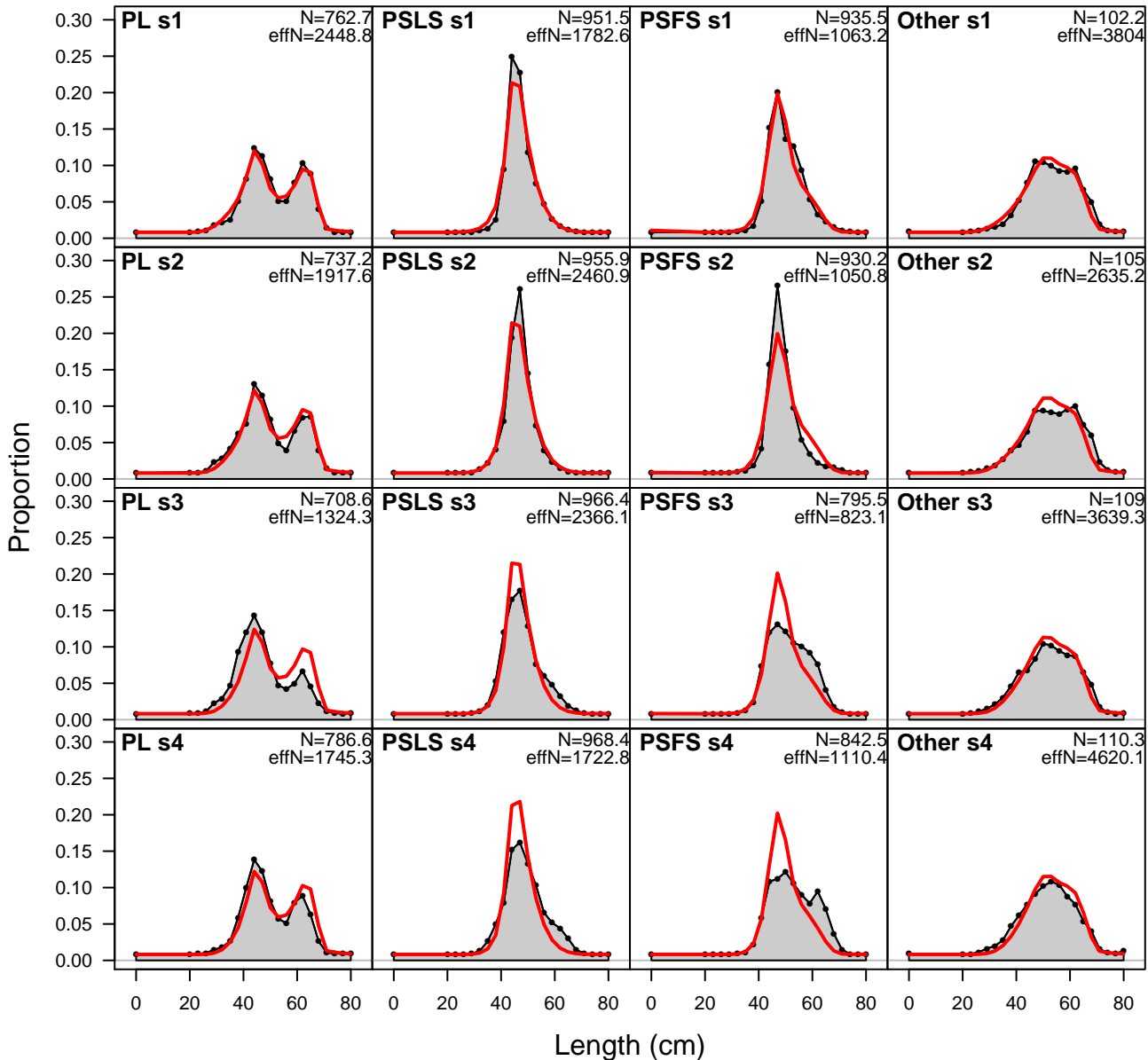
N-EffN comparison, length comps, sexes combined, whole catch, Other



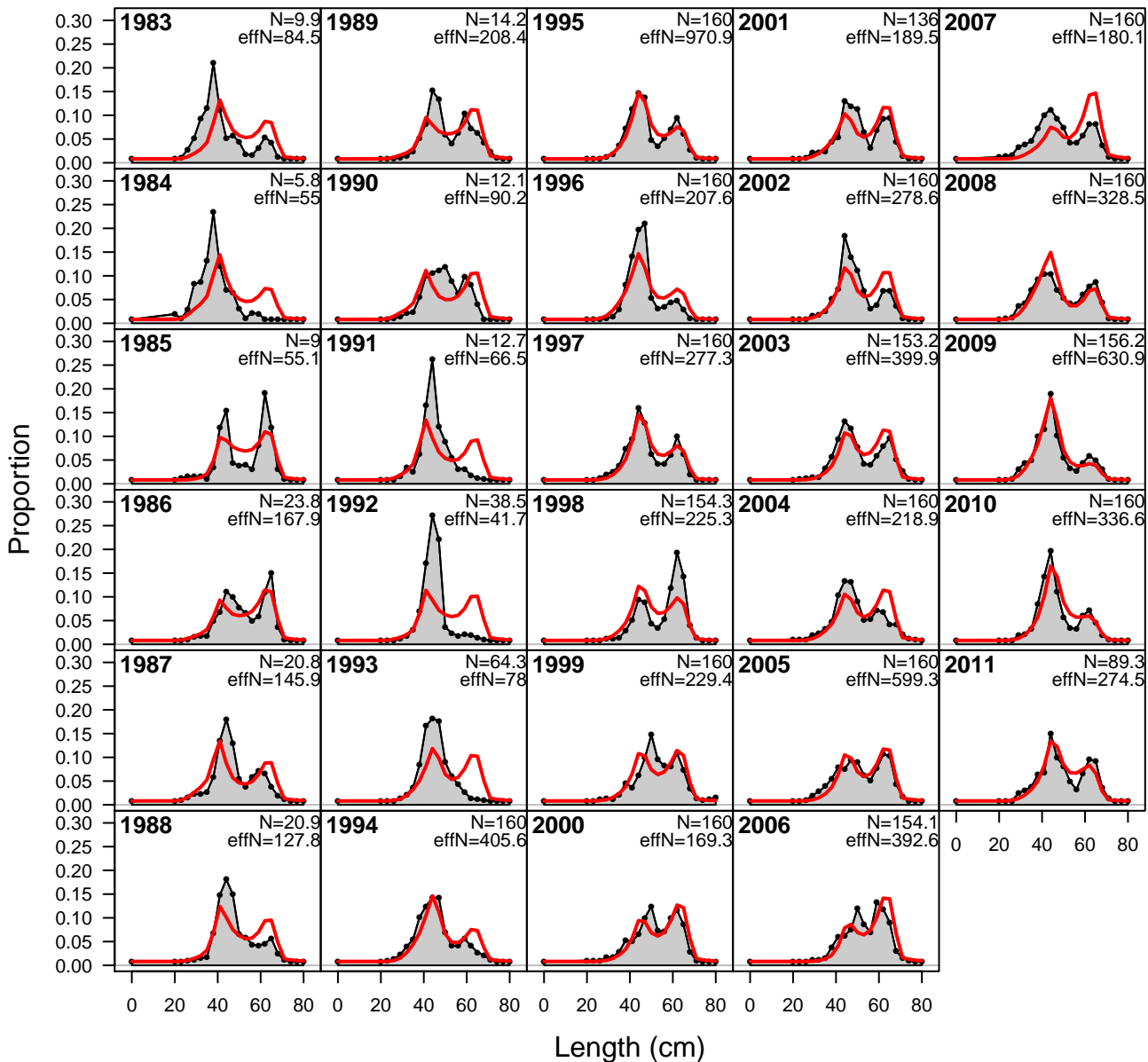
length comps, sexes combined, whole catch, aggregated across time by fleet



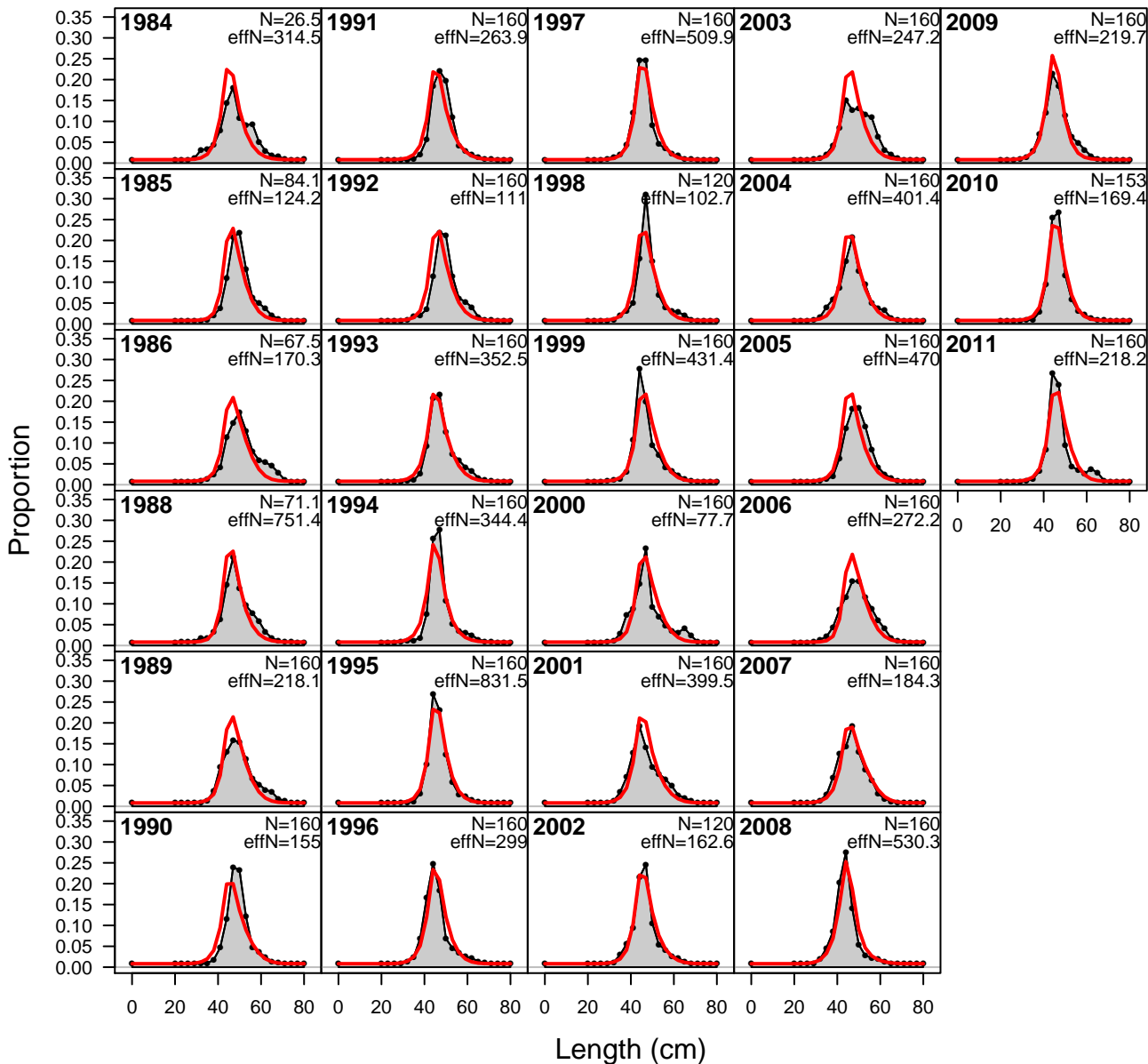
length comps, sexes combined, whole catch,
aggregated within season by fleet



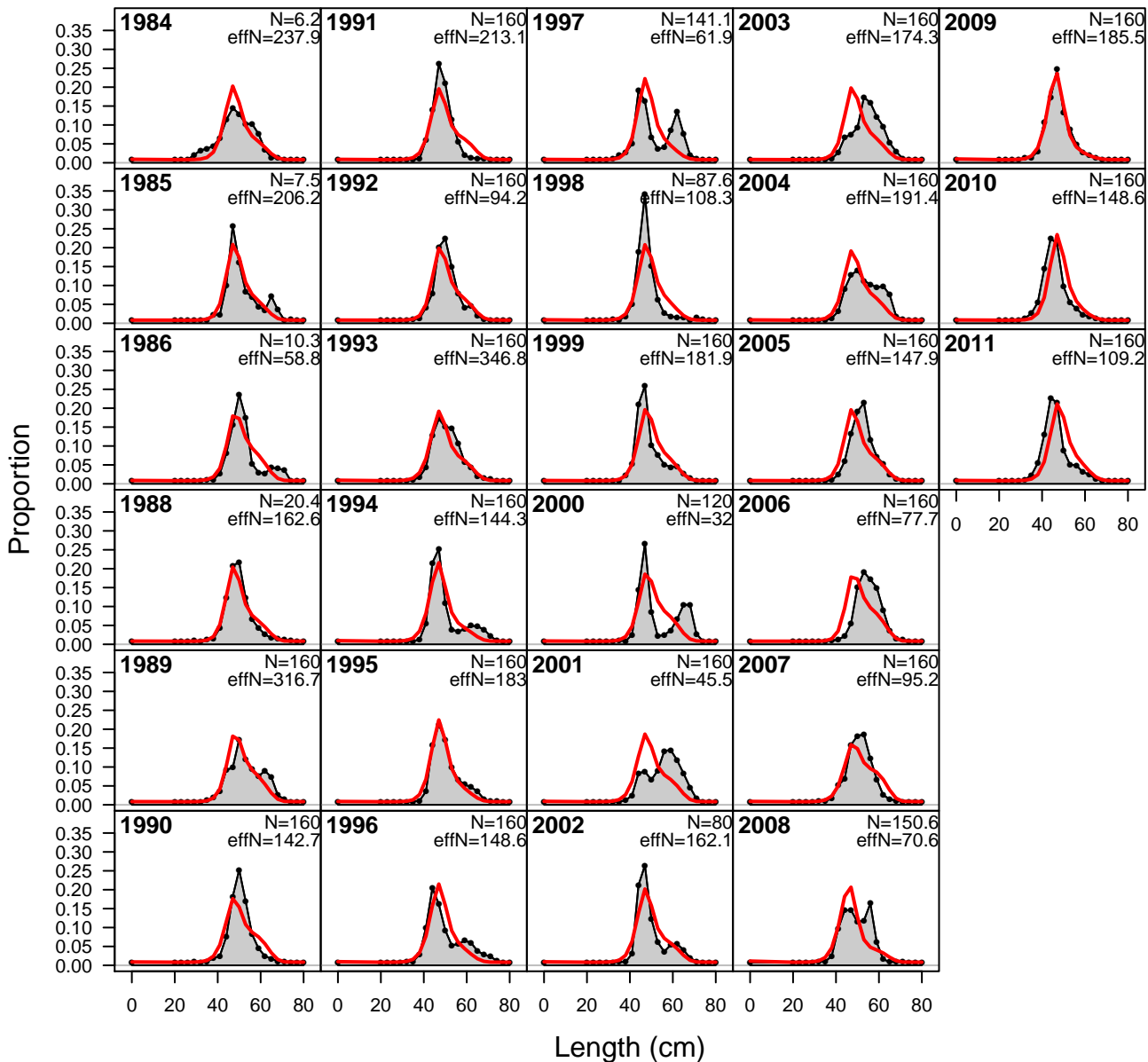
length comps, sexes combined, whole catch, PL
aggregated across seasons within year



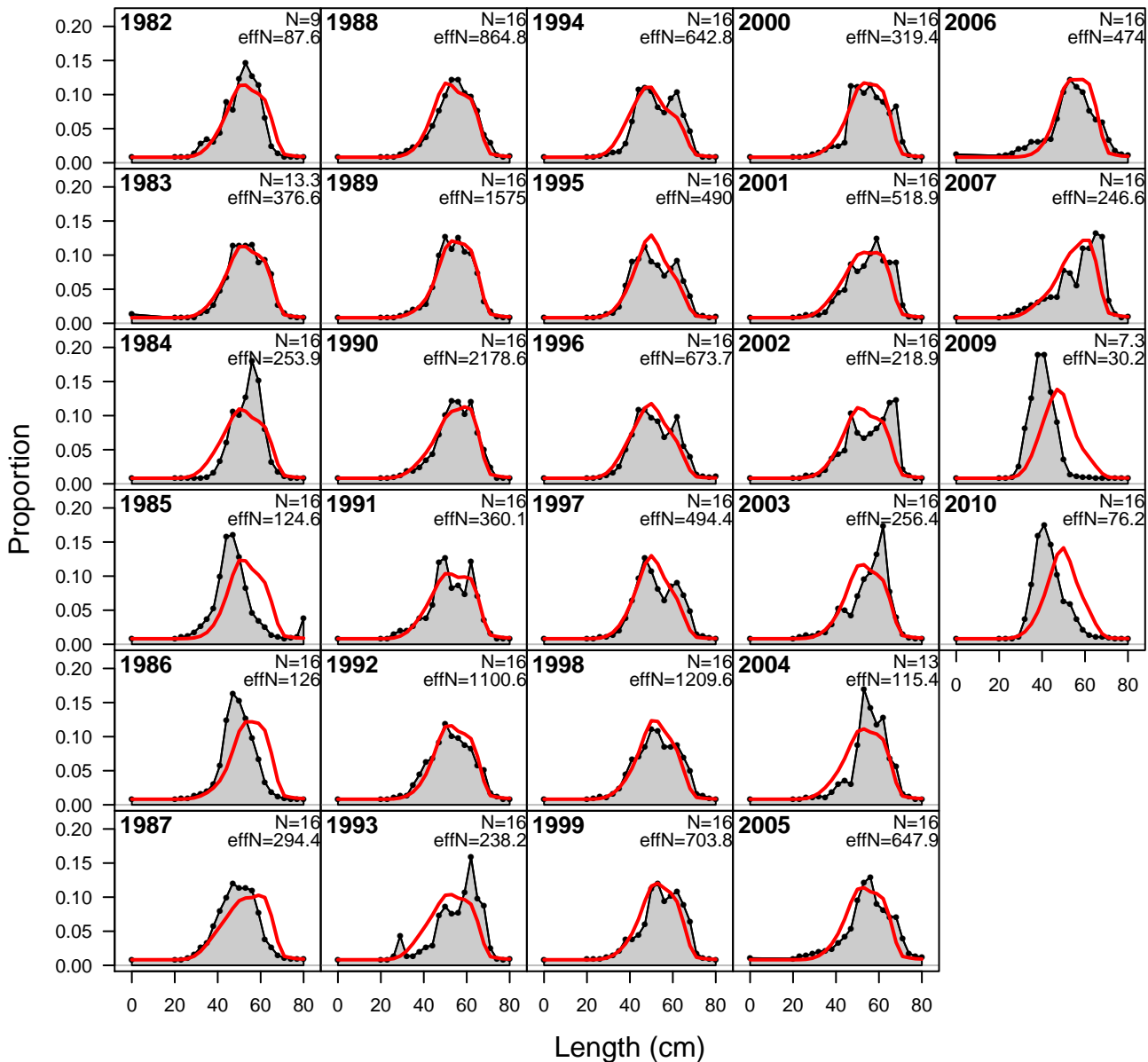
length comps, sexes combined, whole catch, PSLS
aggregated across seasons within year



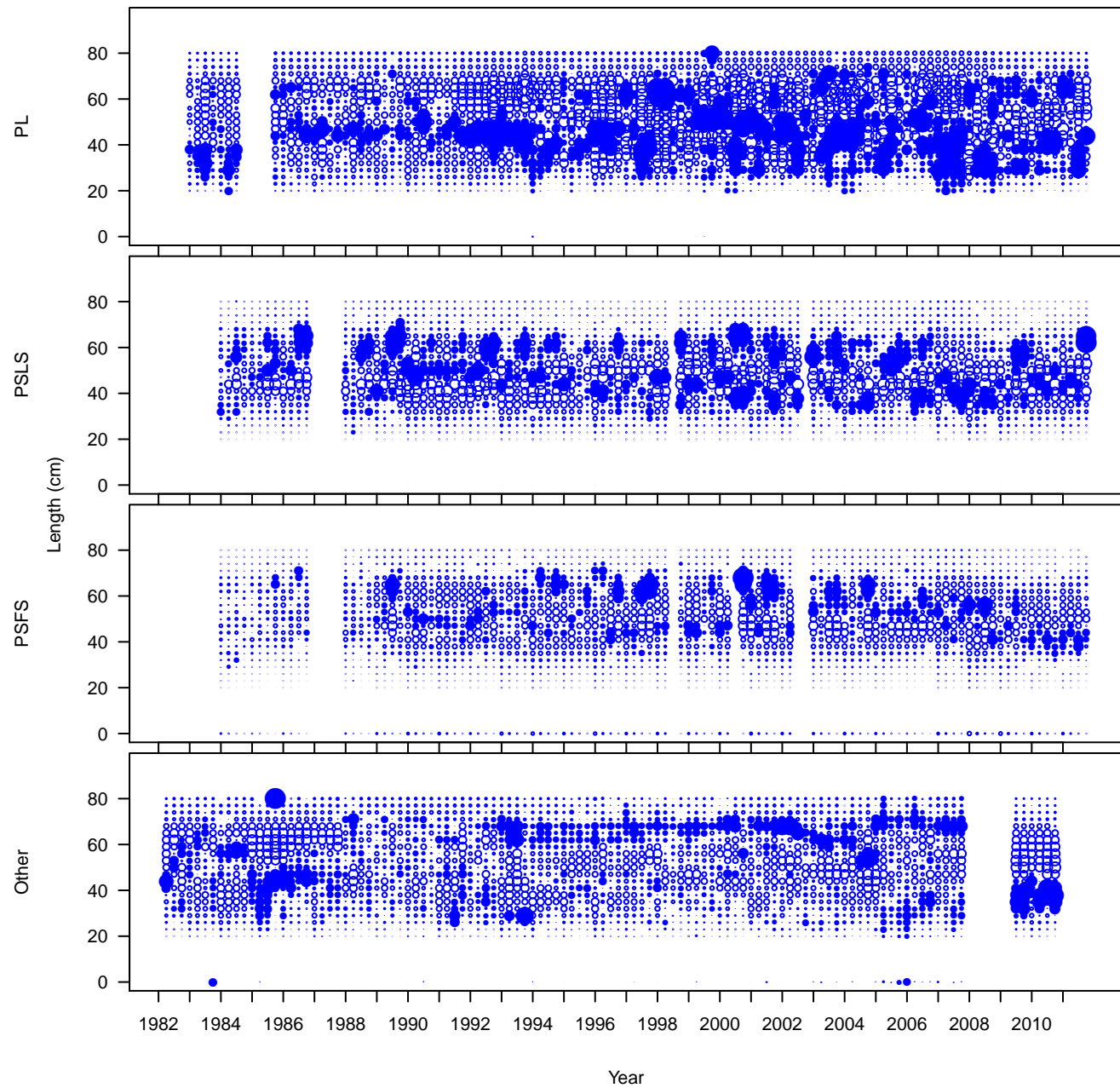
length comps, sexes combined, whole catch, PSFS
aggregated across seasons within year



length comps, sexes combined, whole catch, Other
aggregated across seasons within year

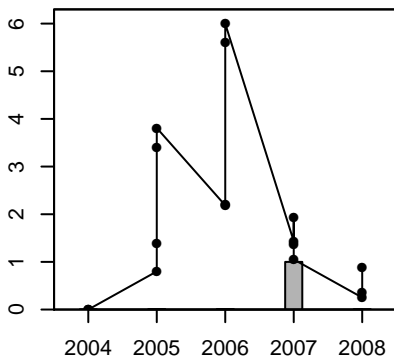


Pearson residuals, sexes combined, whole catch, comparing across fleets

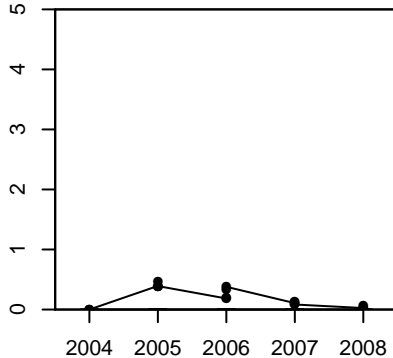


Fit to tag recaptures by tag group

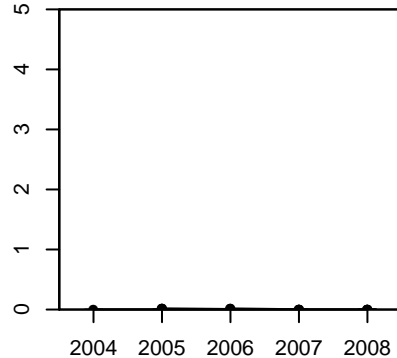
TG 1



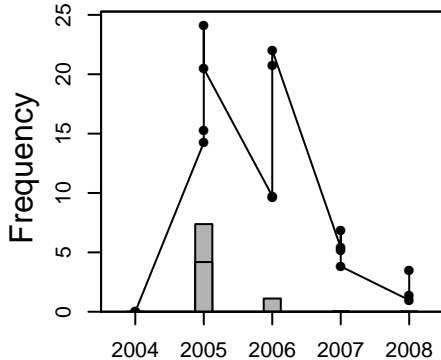
TG 4



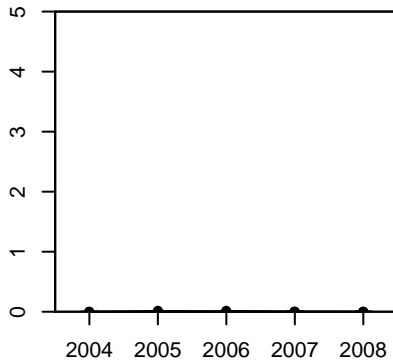
TG 7



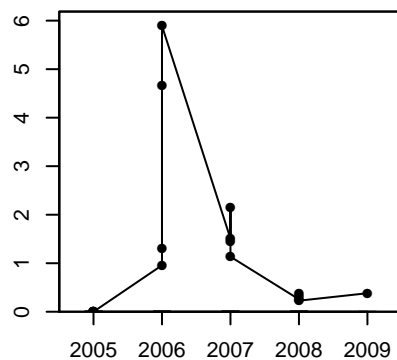
TG 2



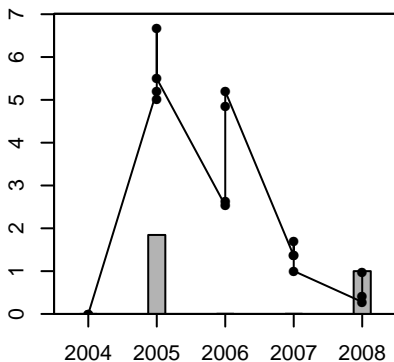
TG 5



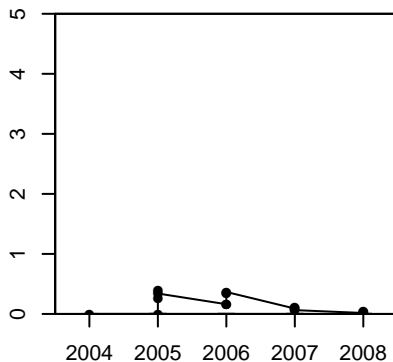
TG 8



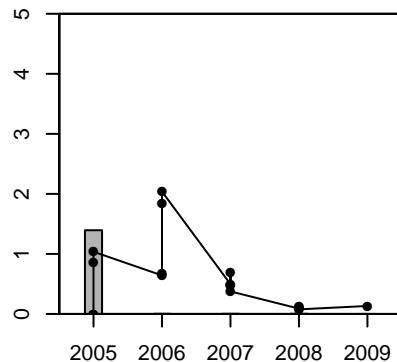
TG 3



TG 6



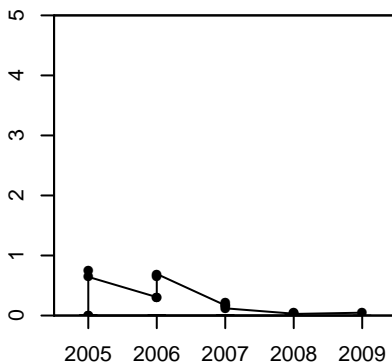
TG 9



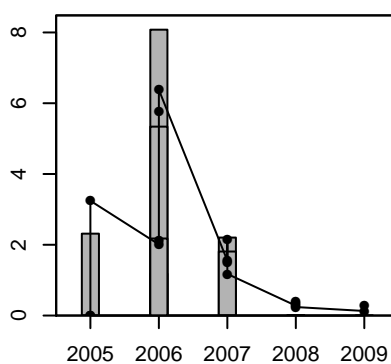
Year

Fit to tag recaptures by tag group

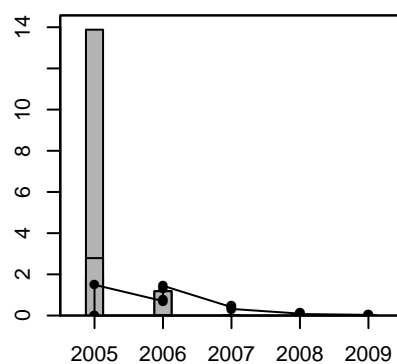
TG 10



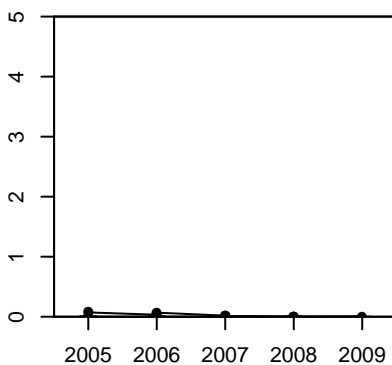
TG 13



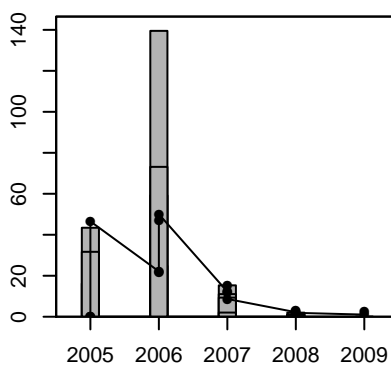
TG 16



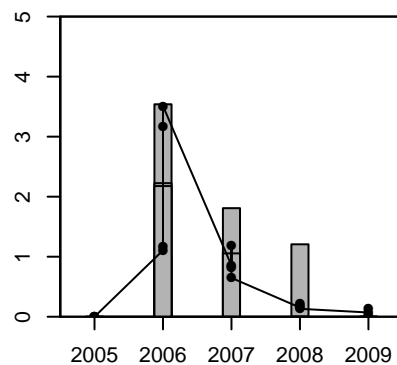
TG 11



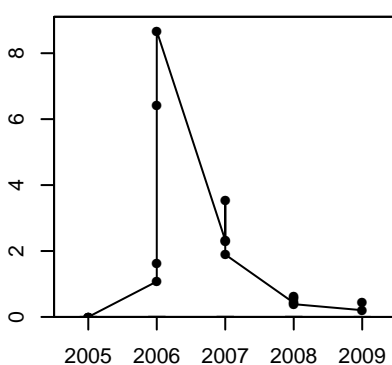
TG 14



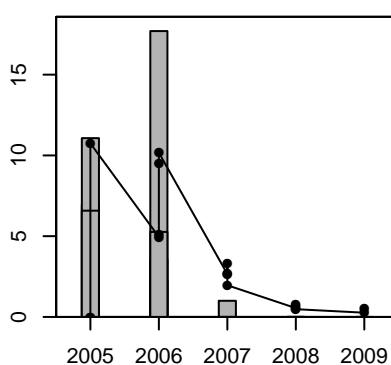
TG 17



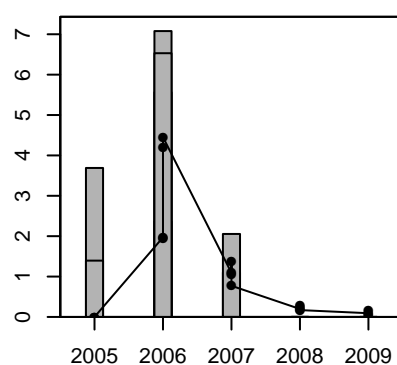
TG 12



TG 15



TG 18

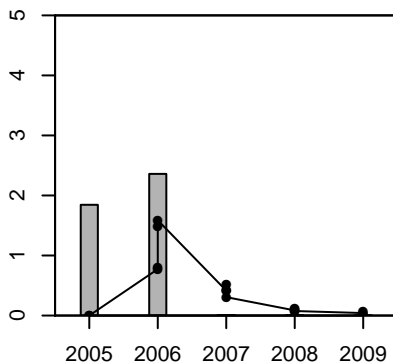


Frequency

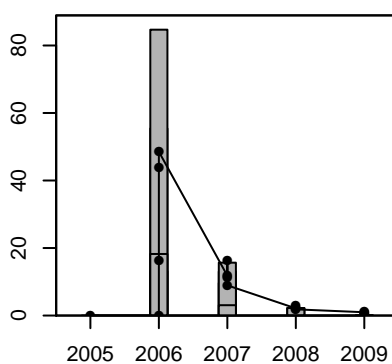
Year

Fit to tag recaptures by tag group

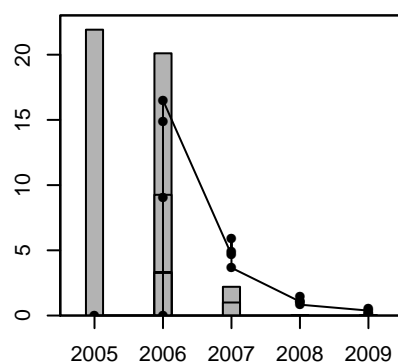
TG 19



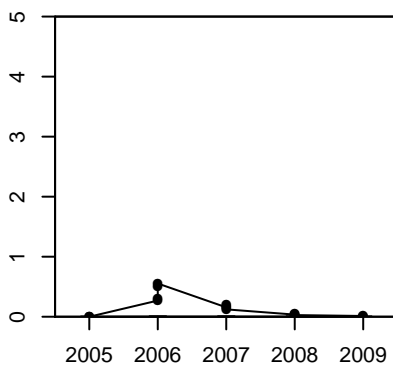
TG 22



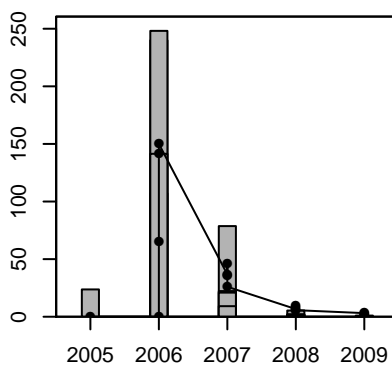
TG 25



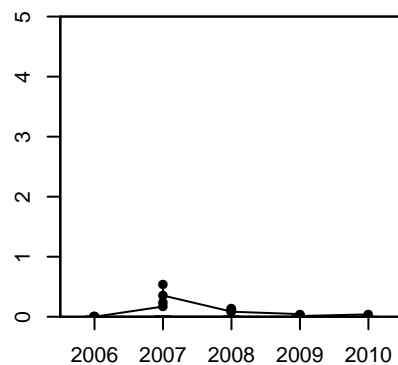
TG 20



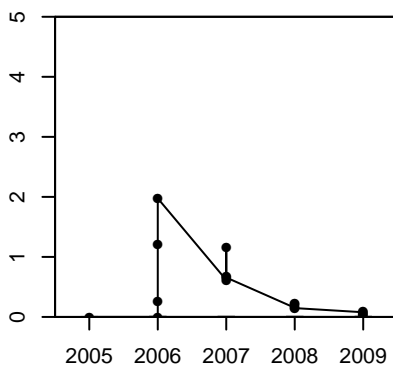
TG 23



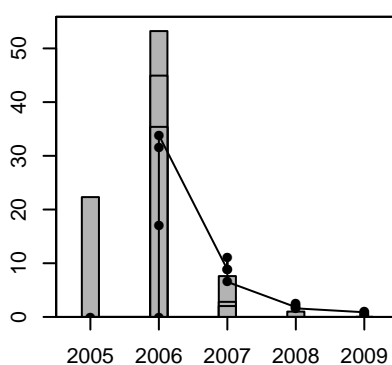
TG 26



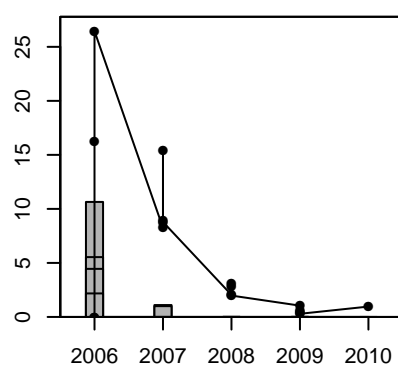
TG 21



TG 24



TG 27

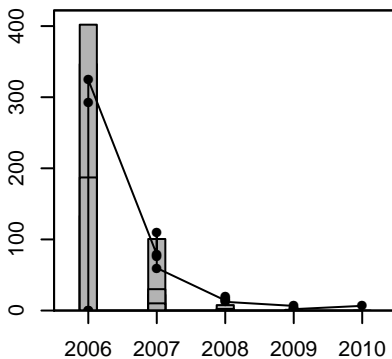


Frequency

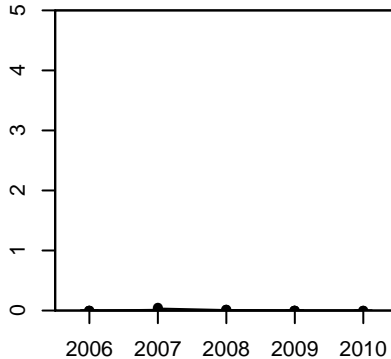
Year

Fit to tag recaptures by tag group

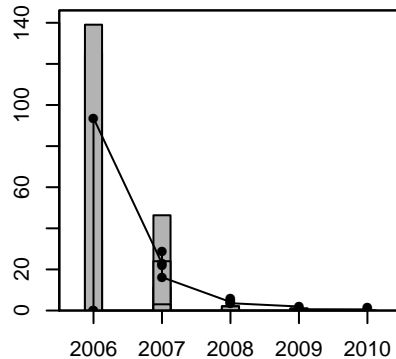
TG 28



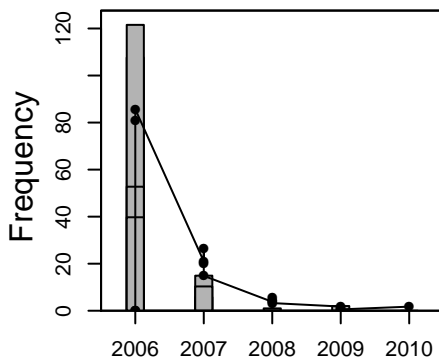
TG 31



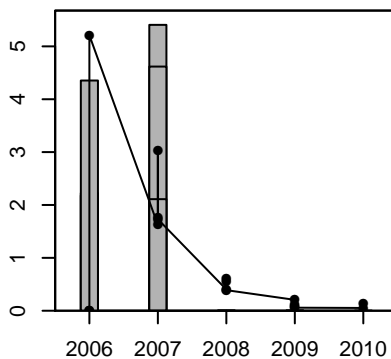
TG 34



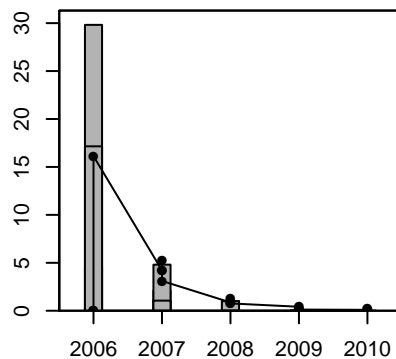
TG 29



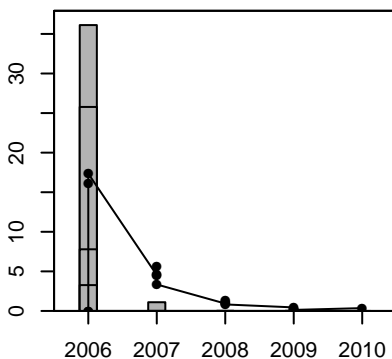
TG 32



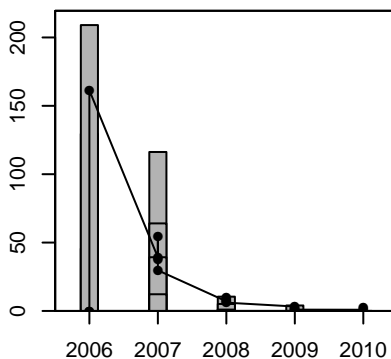
TG 35



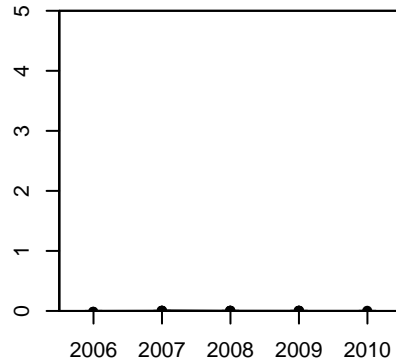
TG 30



TG 33

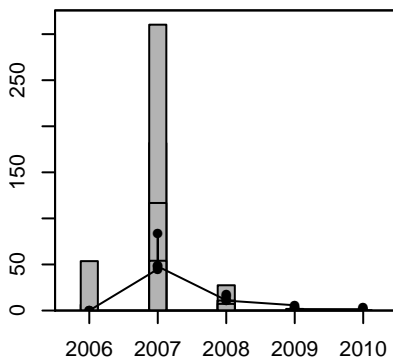


TG 36

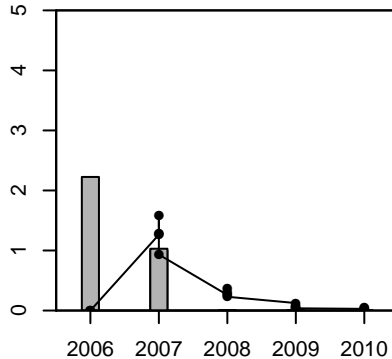


Fit to tag recaptures by tag group

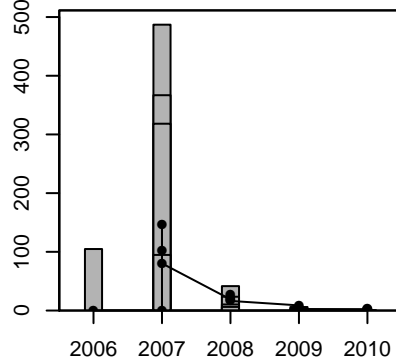
TG 37



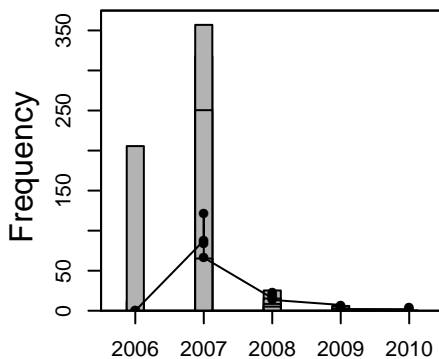
TG 40



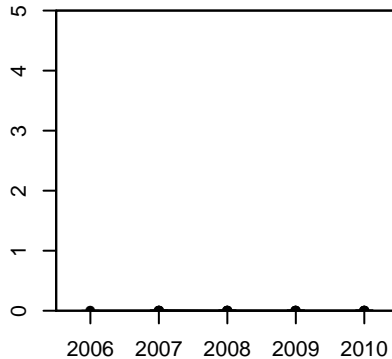
TG 43



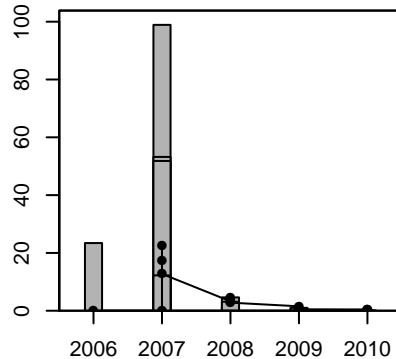
TG 38



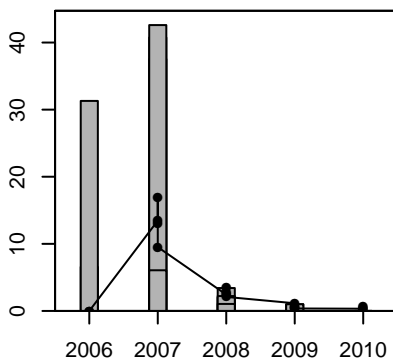
TG 41



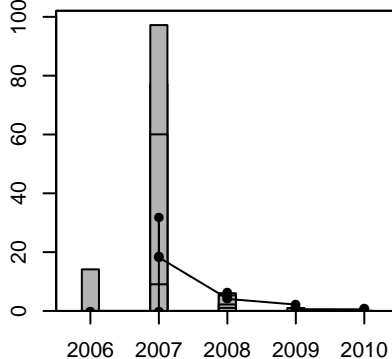
TG 44



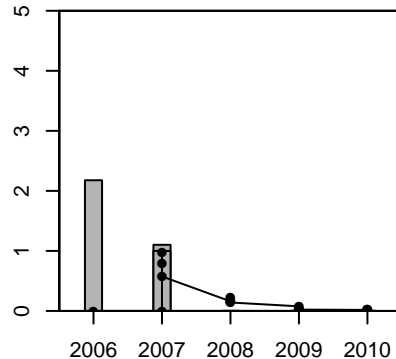
TG 39



TG 42



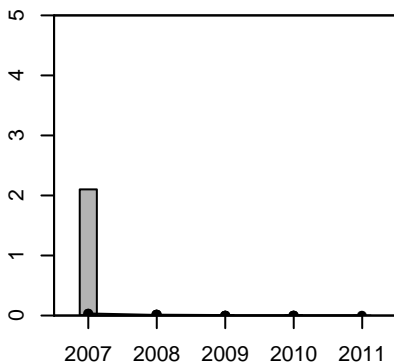
TG 45



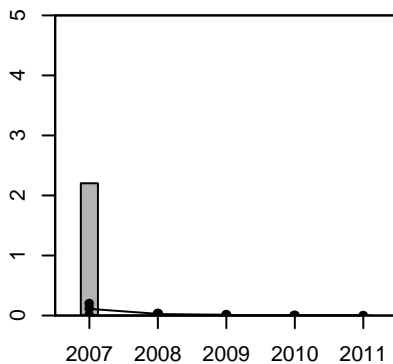
Year

Fit to tag recaptures by tag group

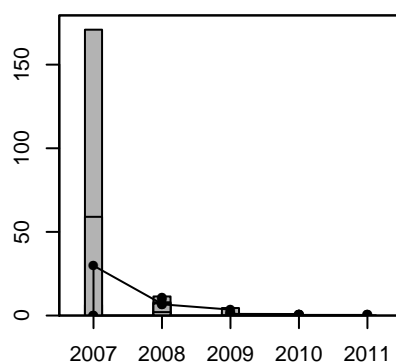
TG 46



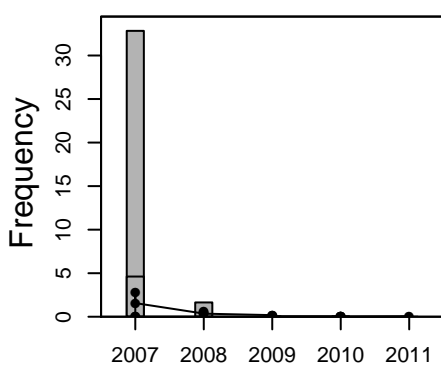
TG 49



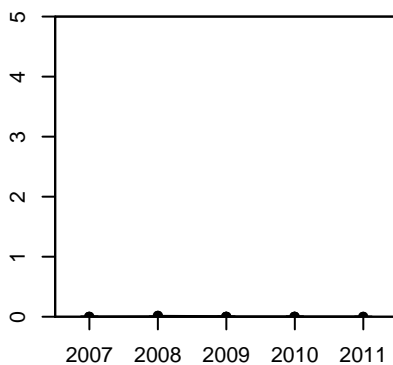
TG 52



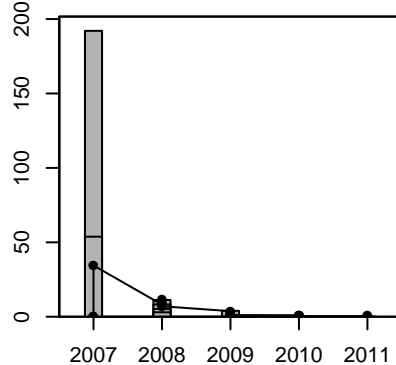
TG 47



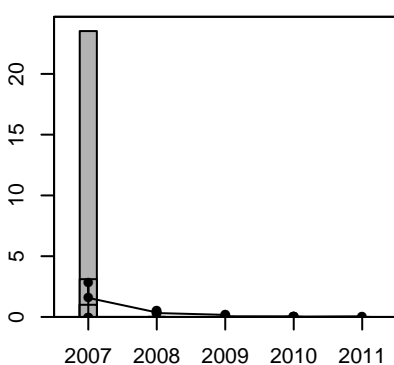
TG 50



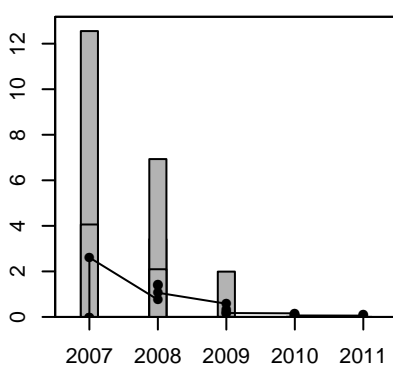
TG 53



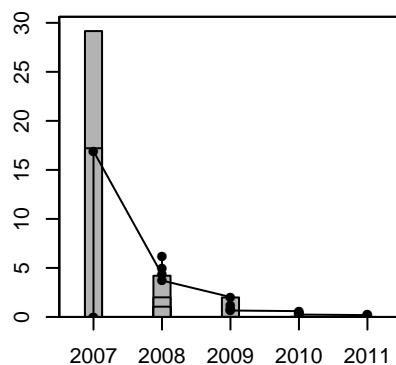
TG 48



TG 51



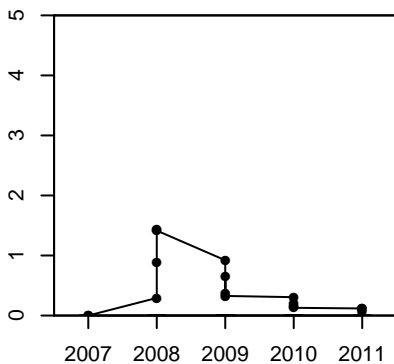
TG 54



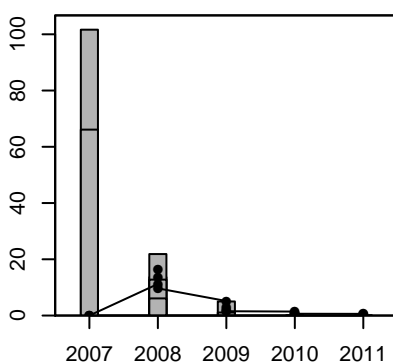
Year

Fit to tag recaptures by tag group

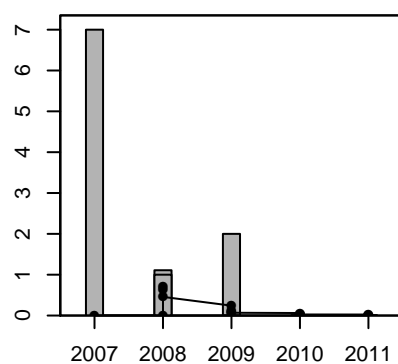
TG 55



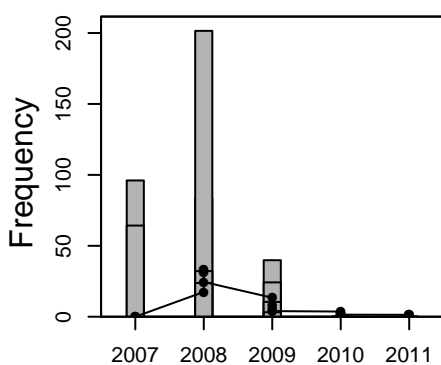
TG 58



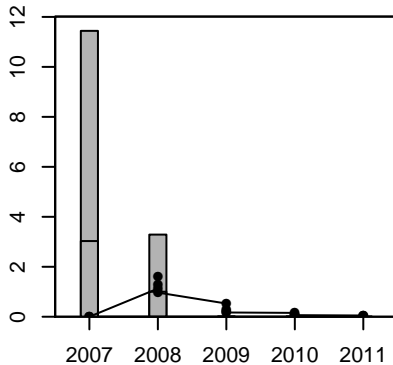
TG 61



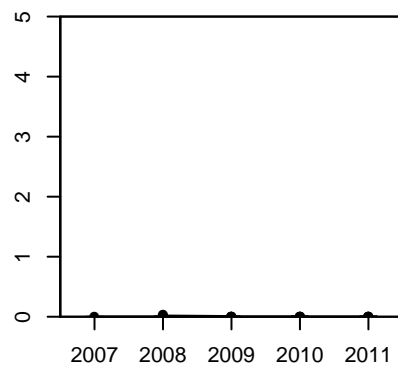
TG 56



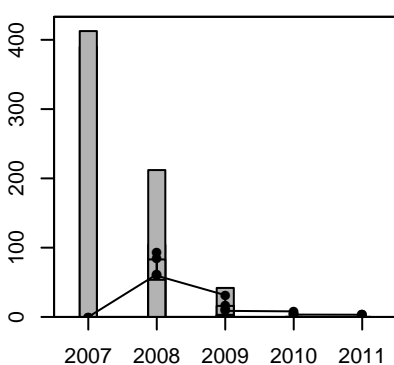
TG 59



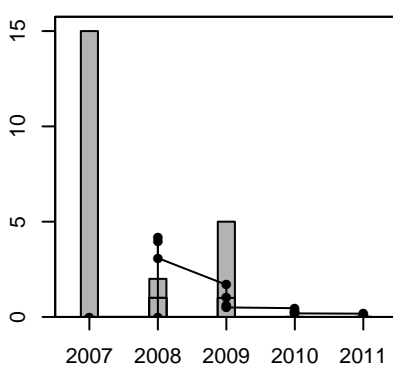
TG 62



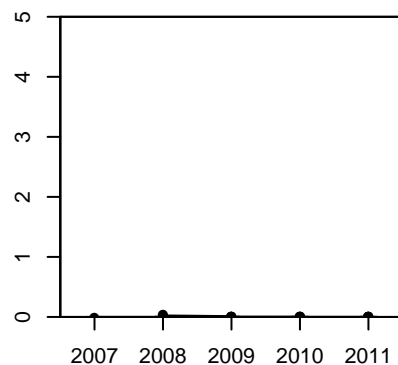
TG 57



TG 60



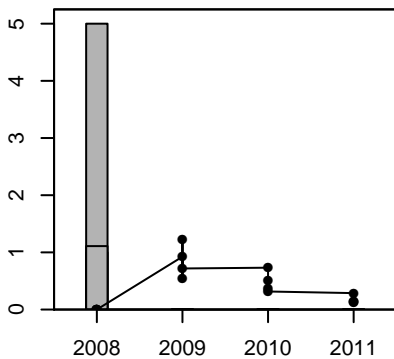
TG 63



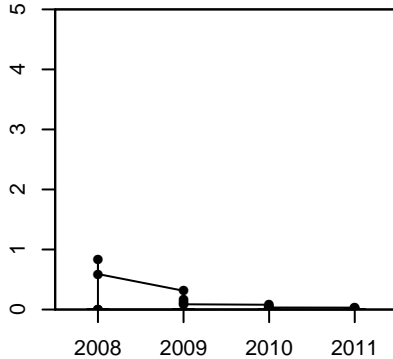
Year

Fit to tag recaptures by tag group

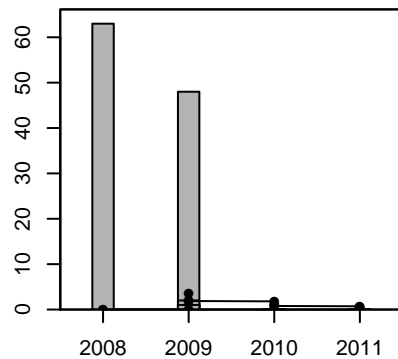
TG 64



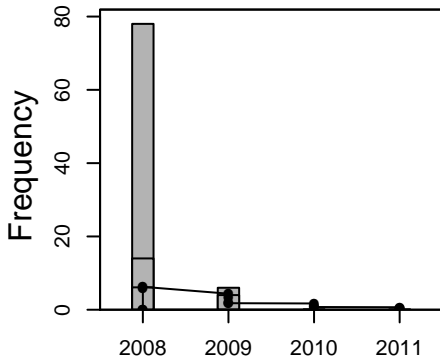
TG 67



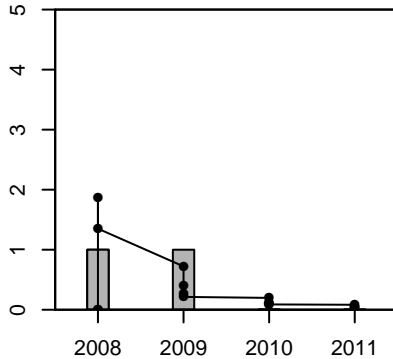
TG 70



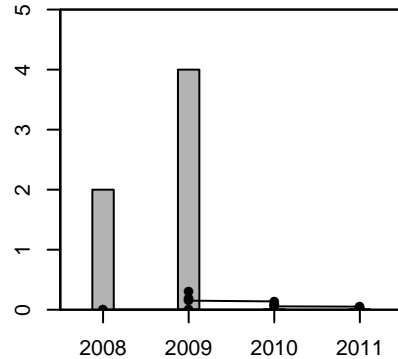
TG 65



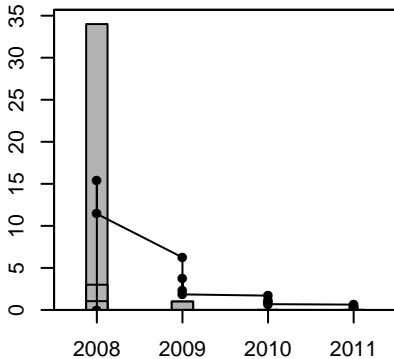
TG 68



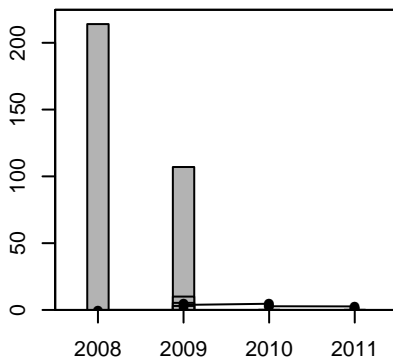
TG 71



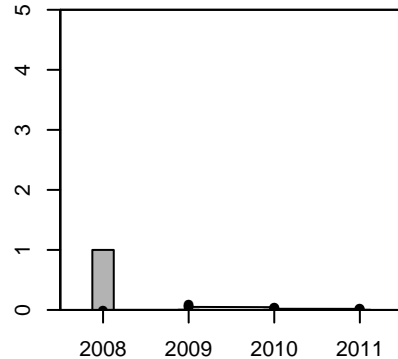
TG 66



TG 69



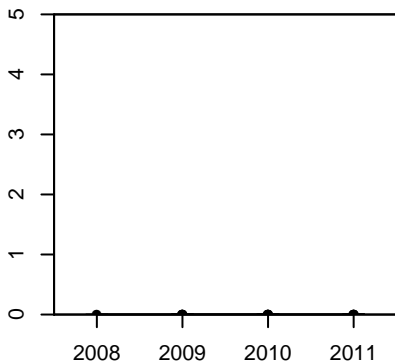
TG 72



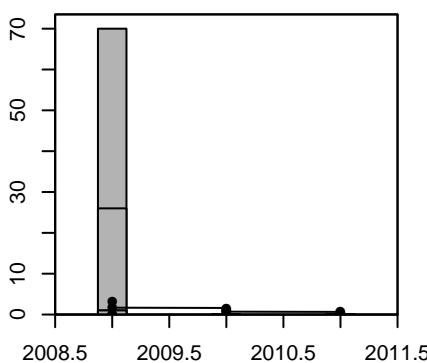
Year

Fit to tag recaptures by tag group

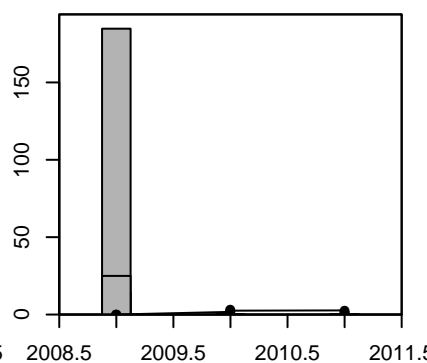
TG 73



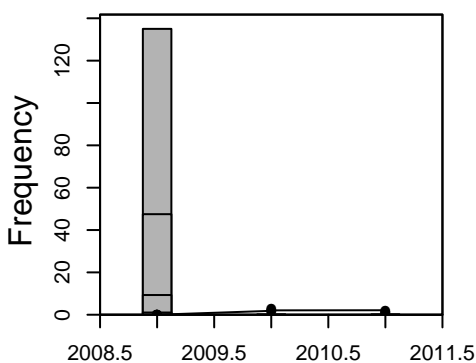
TG 76



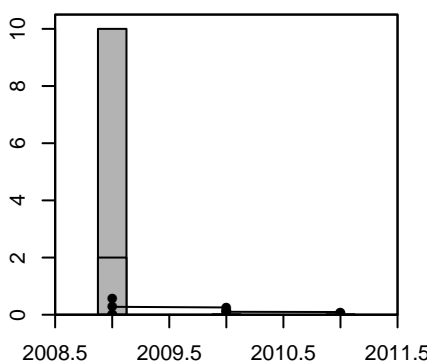
TG 79



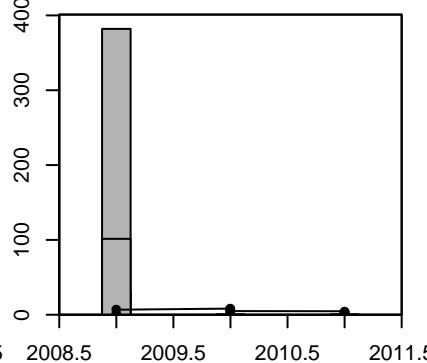
TG 74



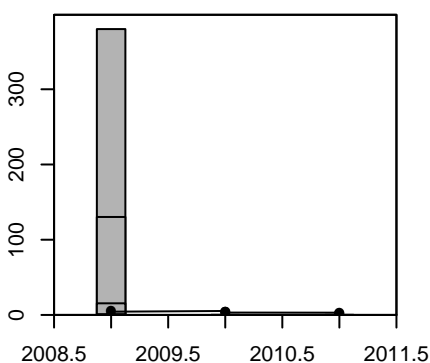
TG 77



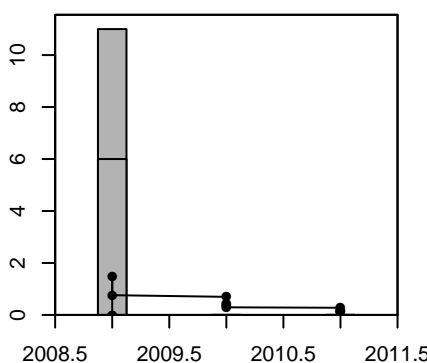
TG 80



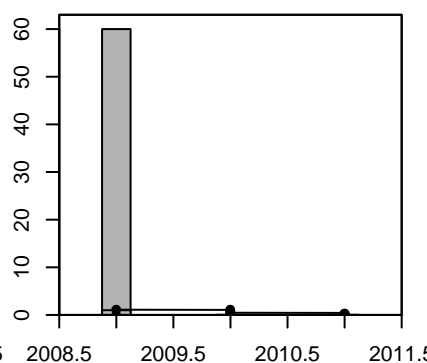
TG 75



TG 78



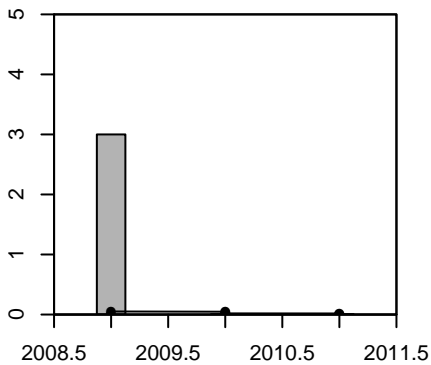
TG 81



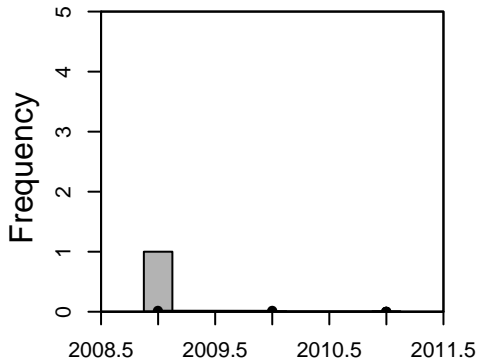
Year

Fit to tag recaptures by tag group

TG 82

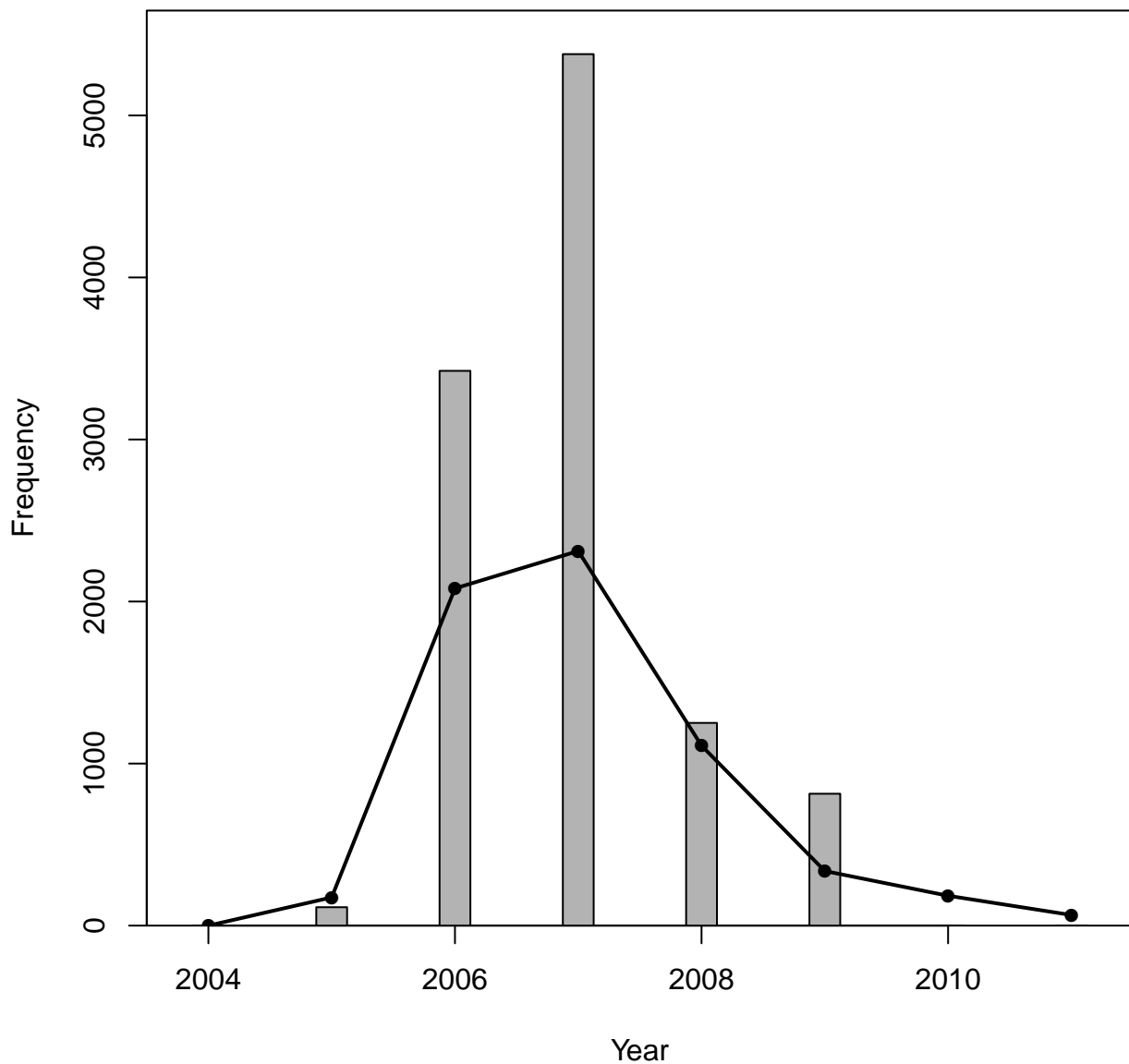


TG 83

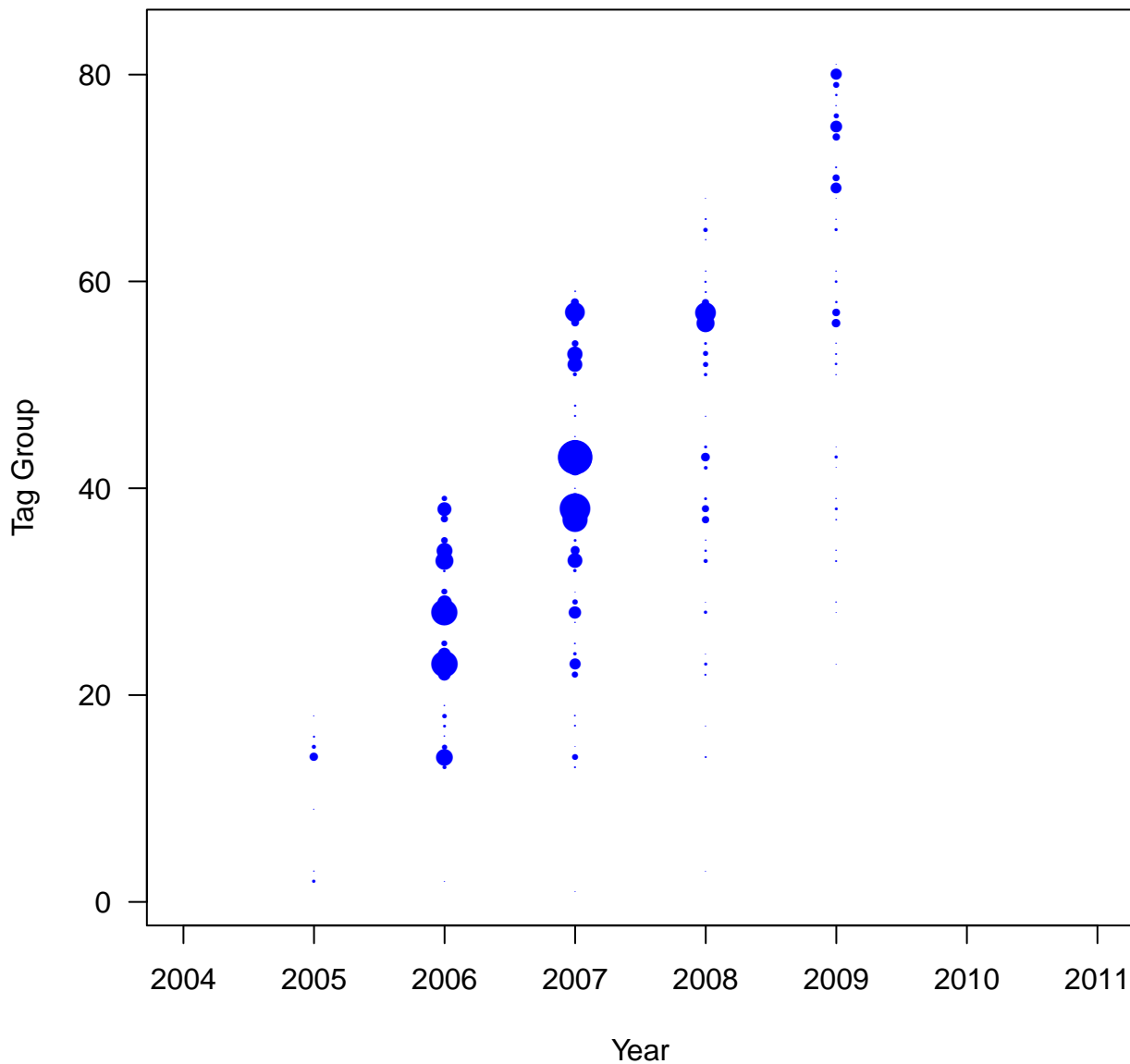


Year

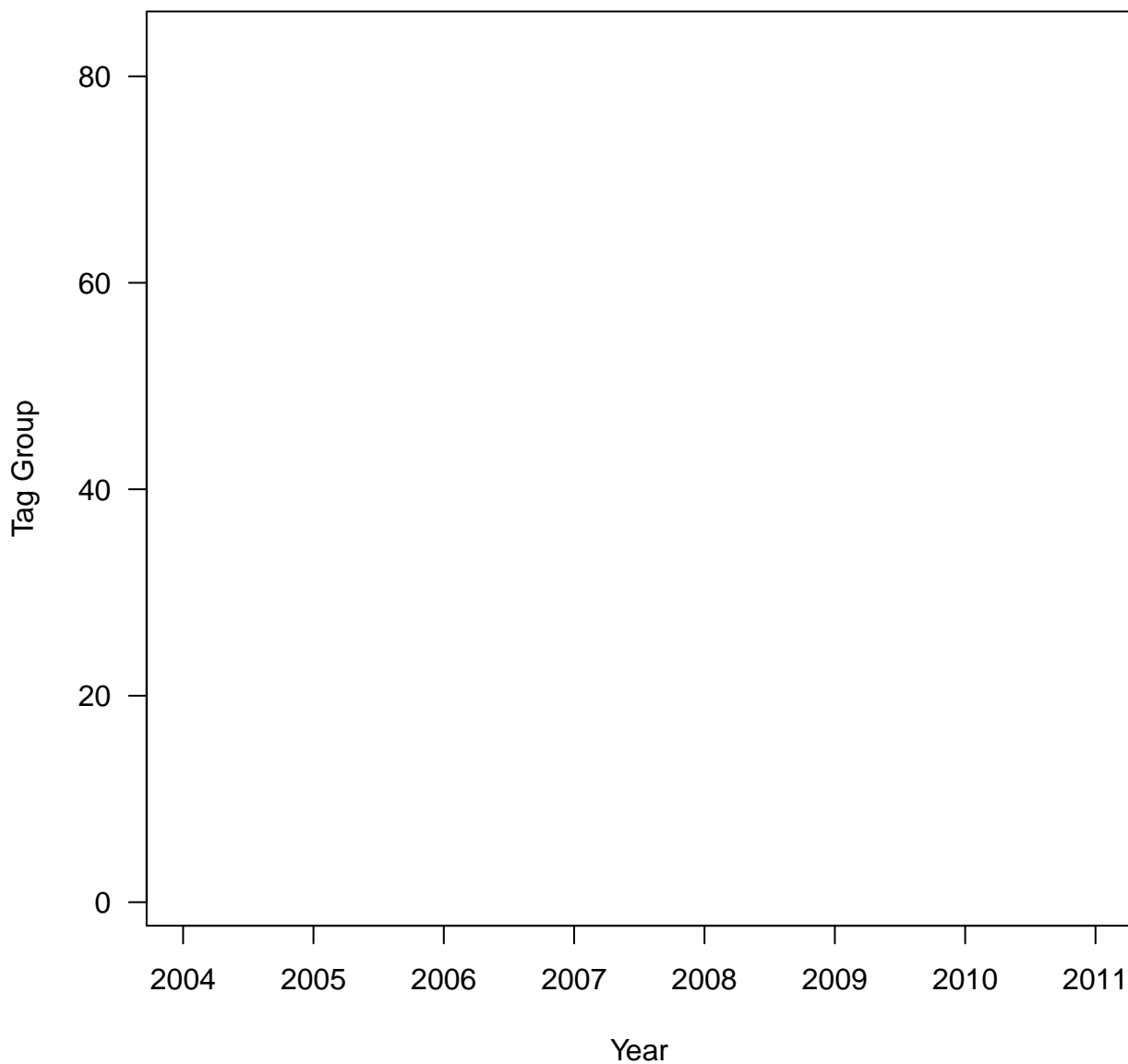
Tag recaptures aggregated across tag groups



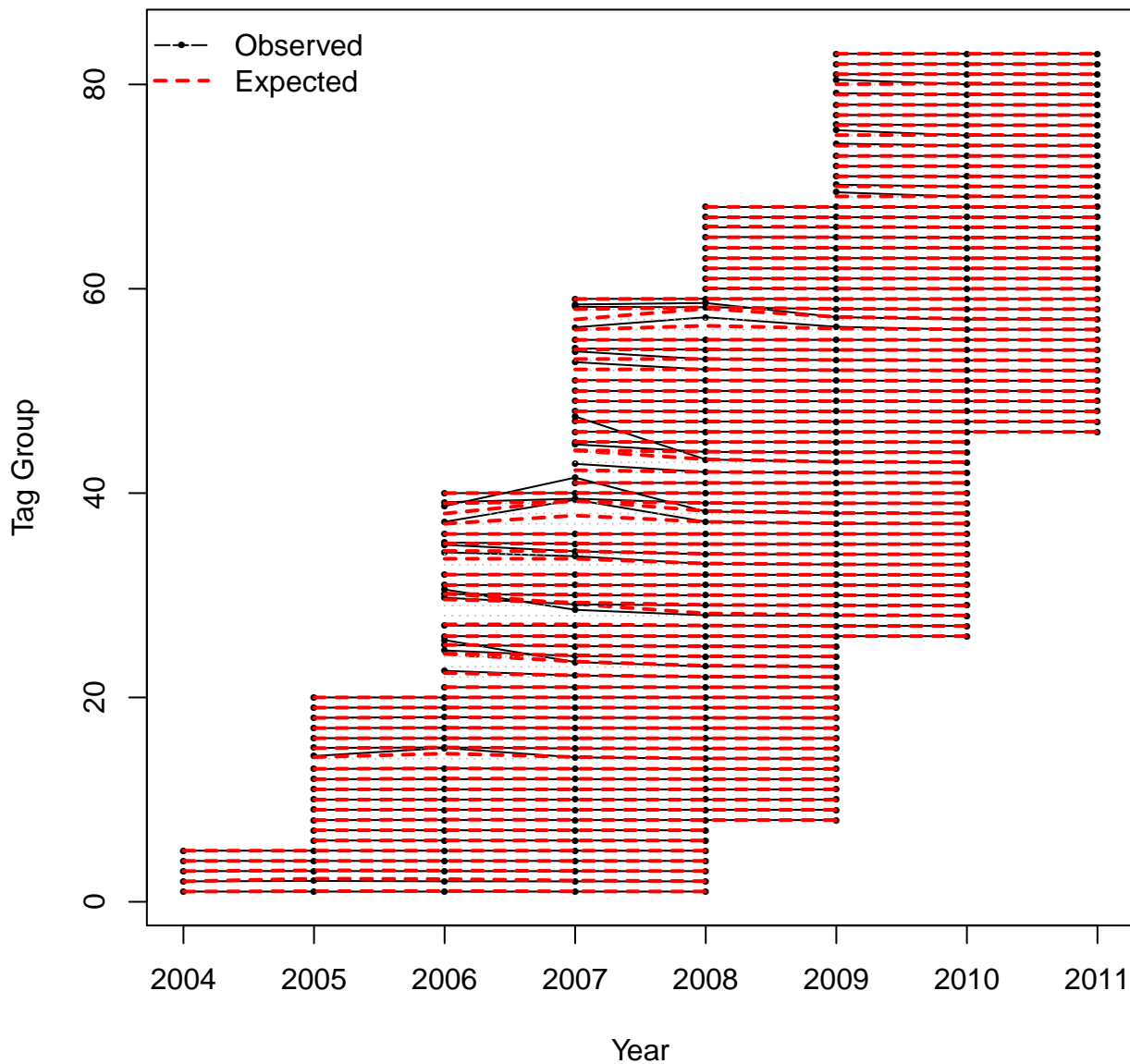
Observed tag recaptures by year and tag group



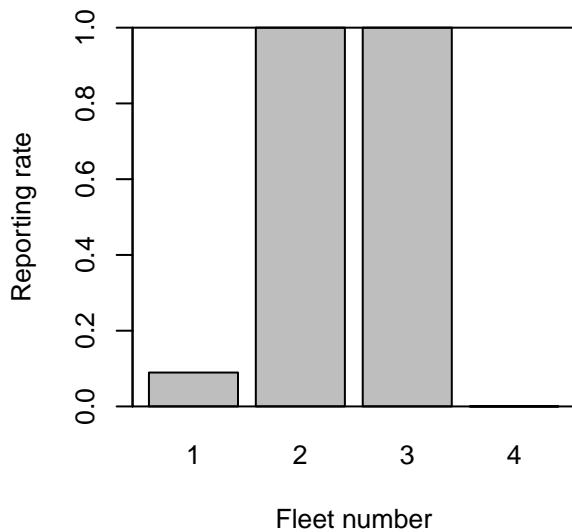
Residuals for tag recaptures: $(\text{obs} - \text{exp})/\text{sqrt}(\text{exp})$



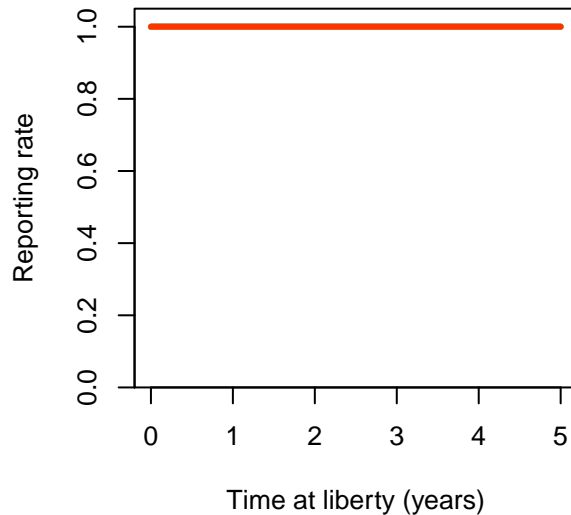
Observed and expected tag recaptures by year and tag group



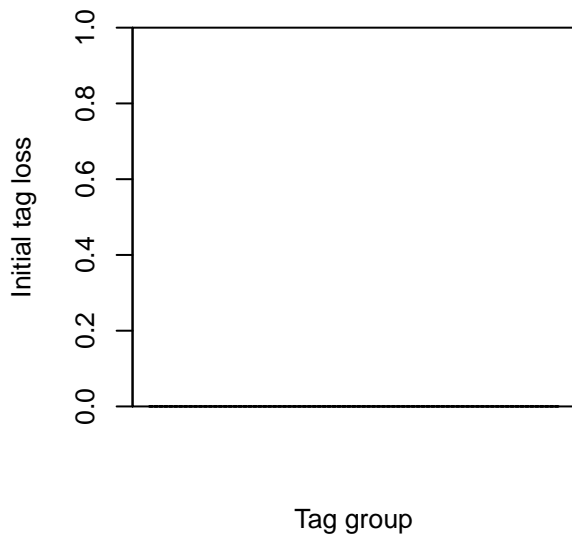
Initial reporting rate



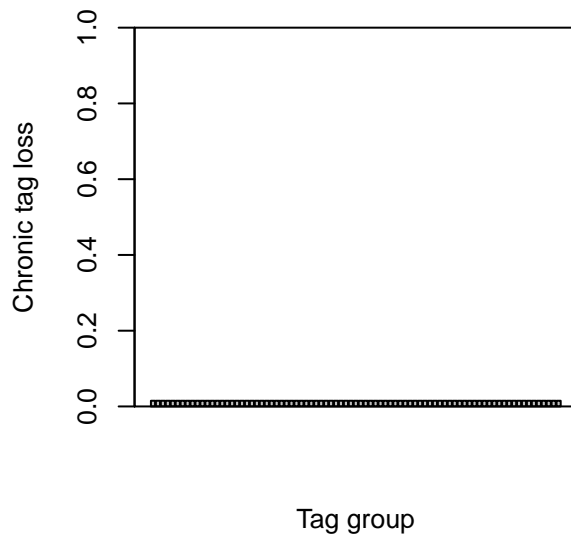
Reporting rate decay



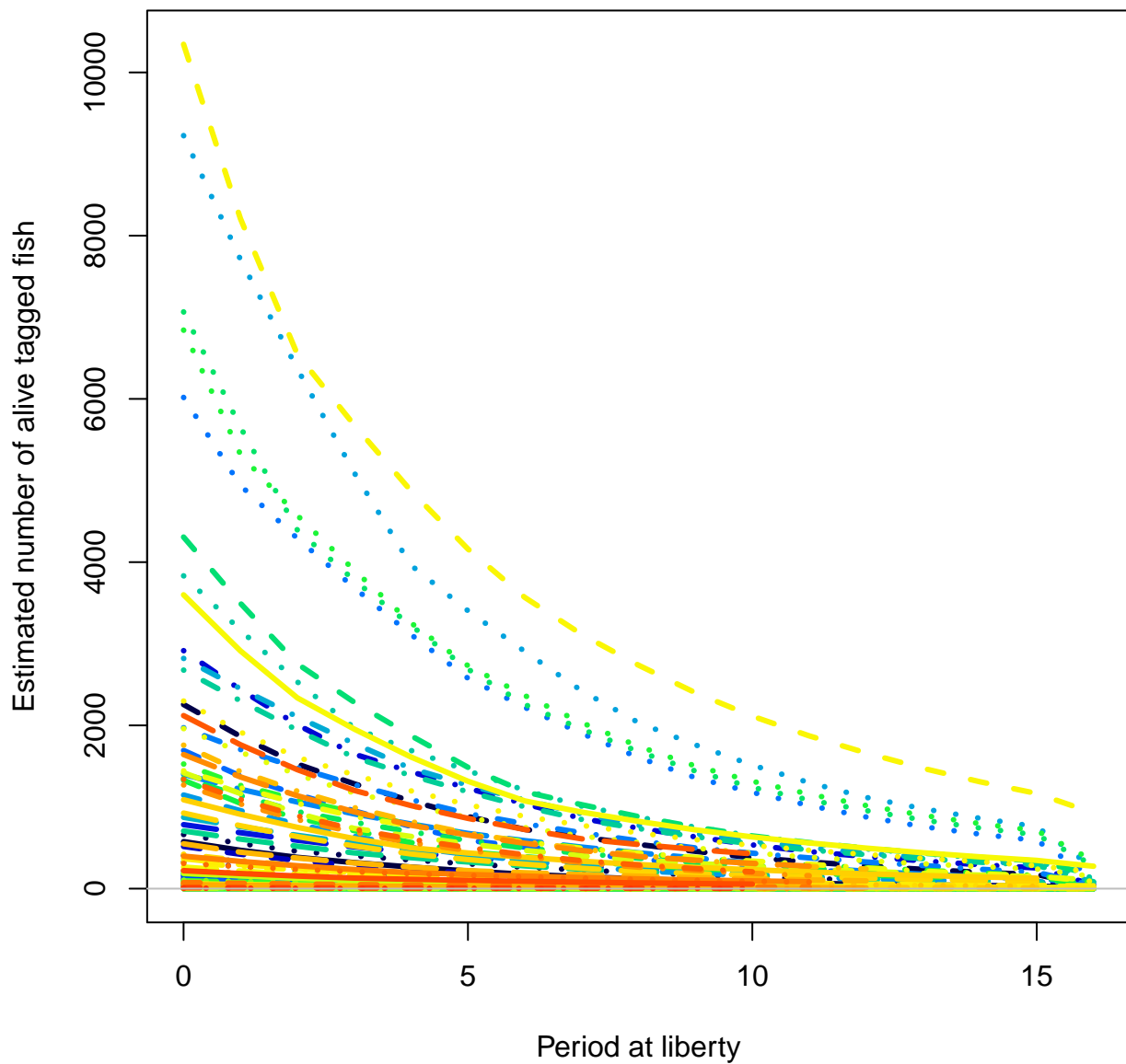
Initial tag loss
(fraction of tags lost at time of tagging)



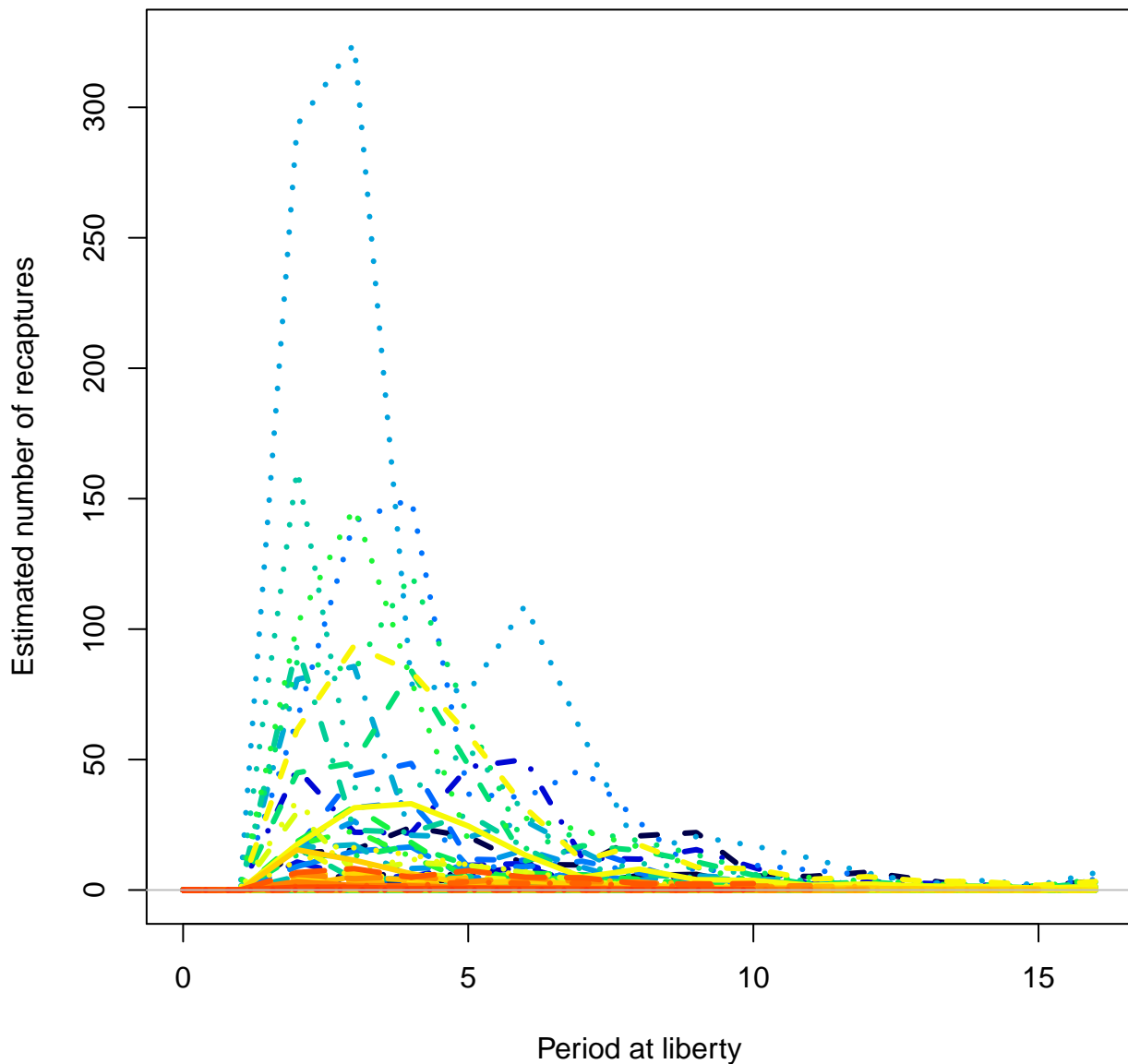
Chronic tag loss
(fraction of tags lost per year)

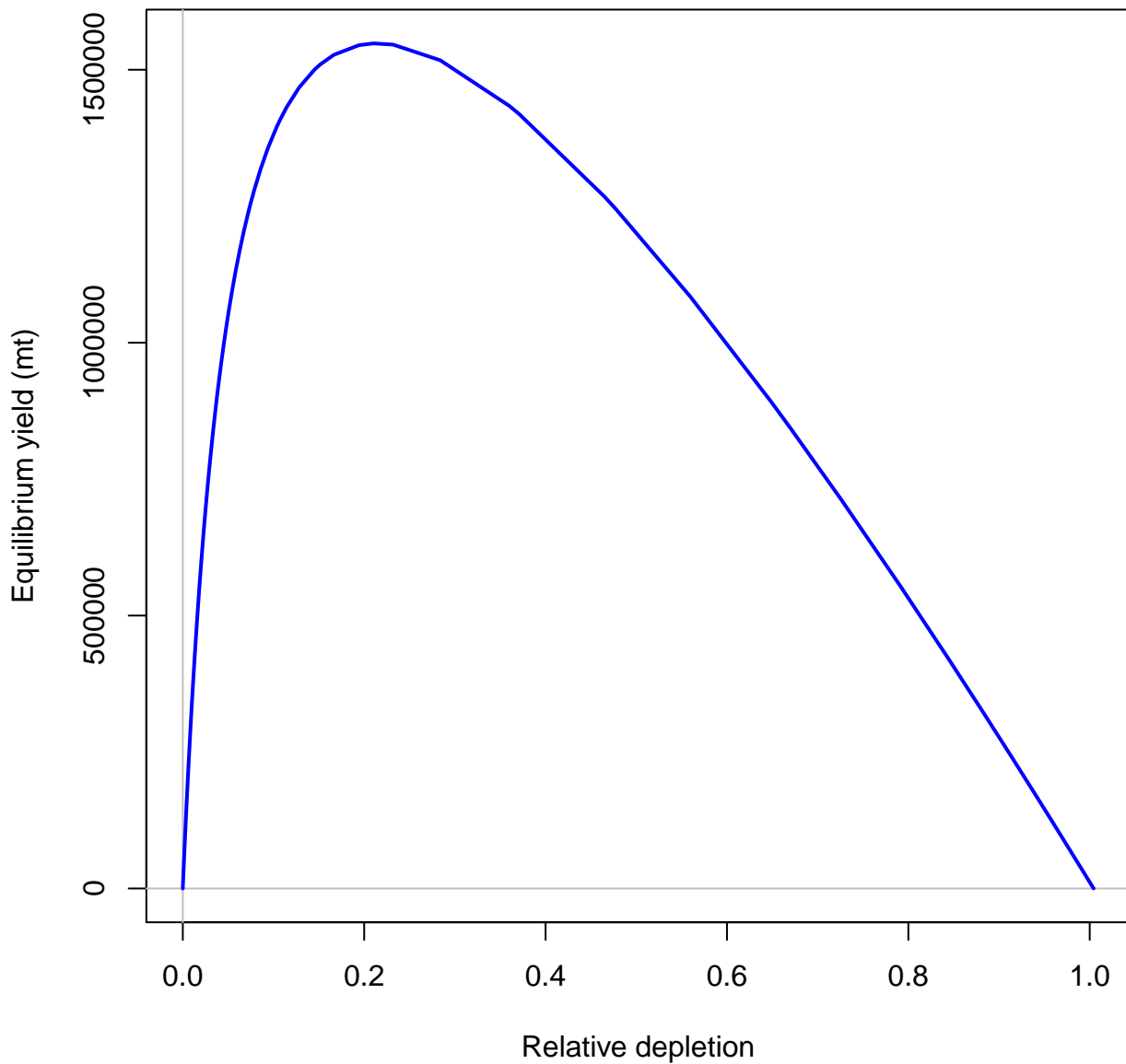


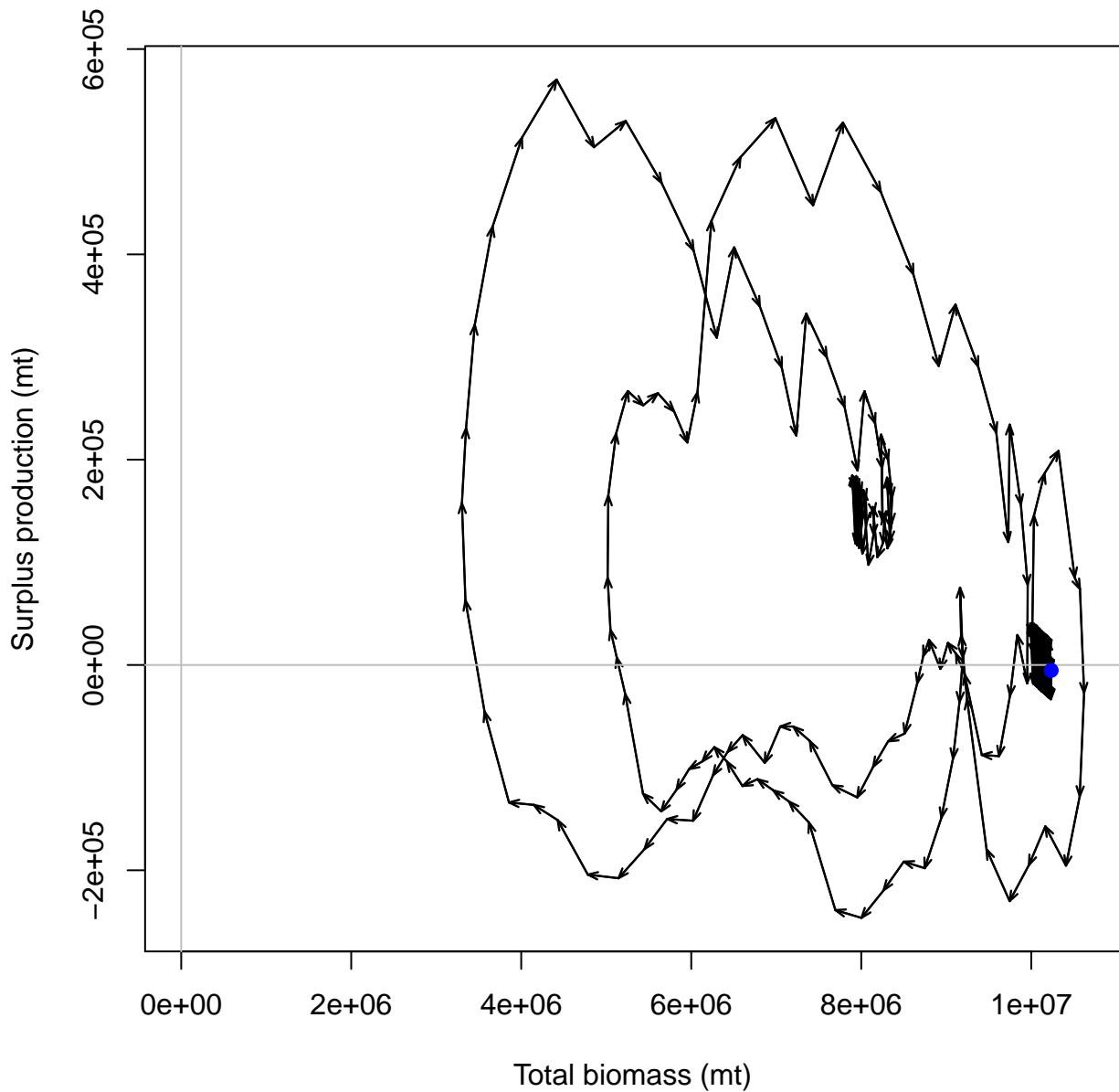
'Tags alive' by tag group



'Total recaptures' by tag group







Data by type and year

