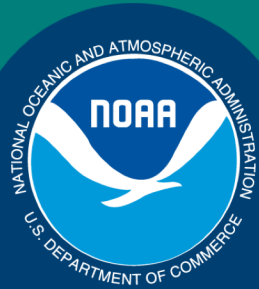


Science, Service, Stewardship



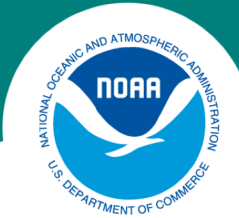
## **Gulf of Mexico Gray Snapper Benchmark Assessment**

### ***Review Workshop: Results***

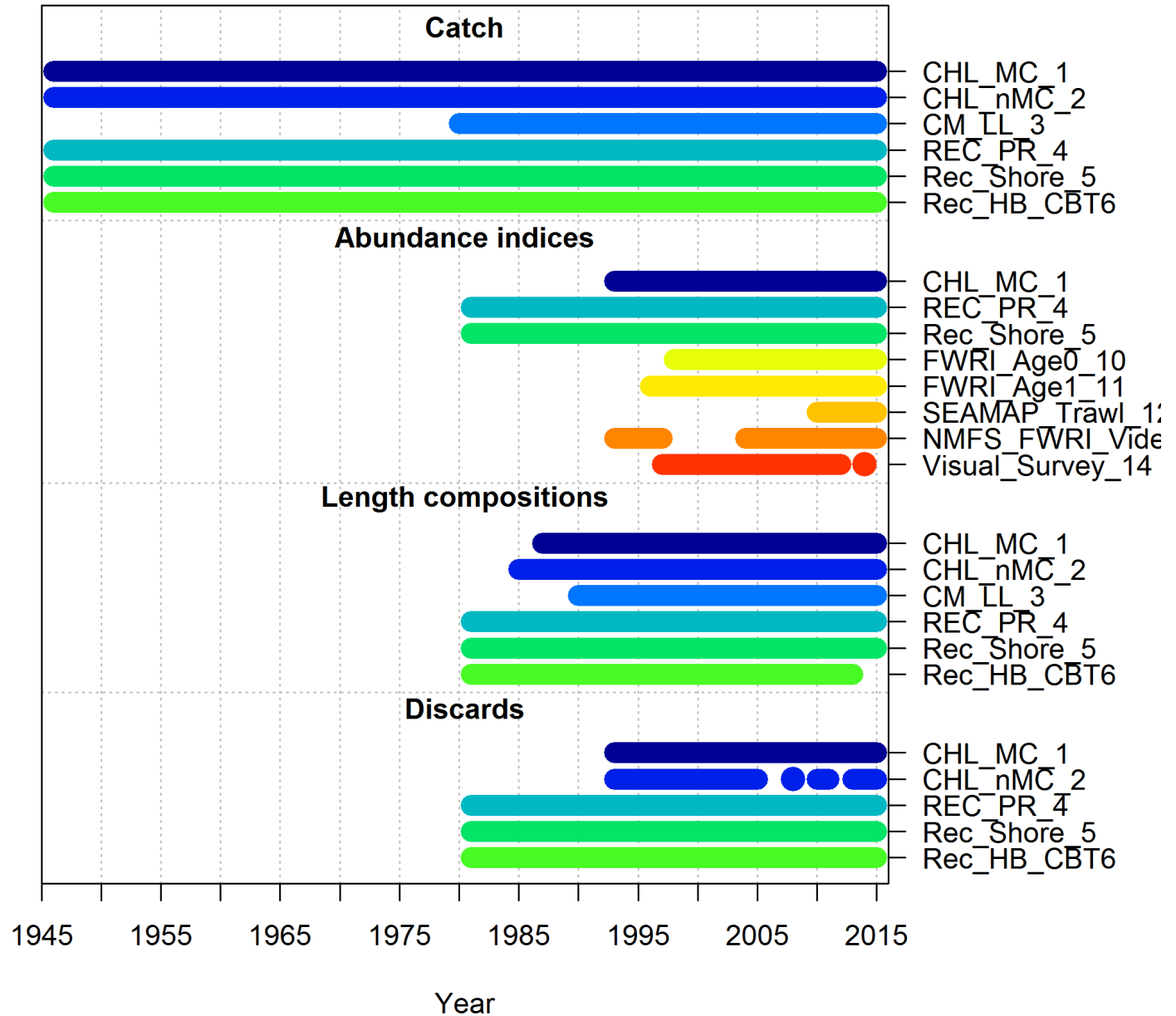
**Jeff Isely  
SEFSC  
Miami**

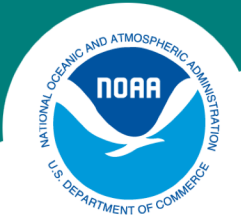


**NOAA  
FISHERIES  
SERVICE**

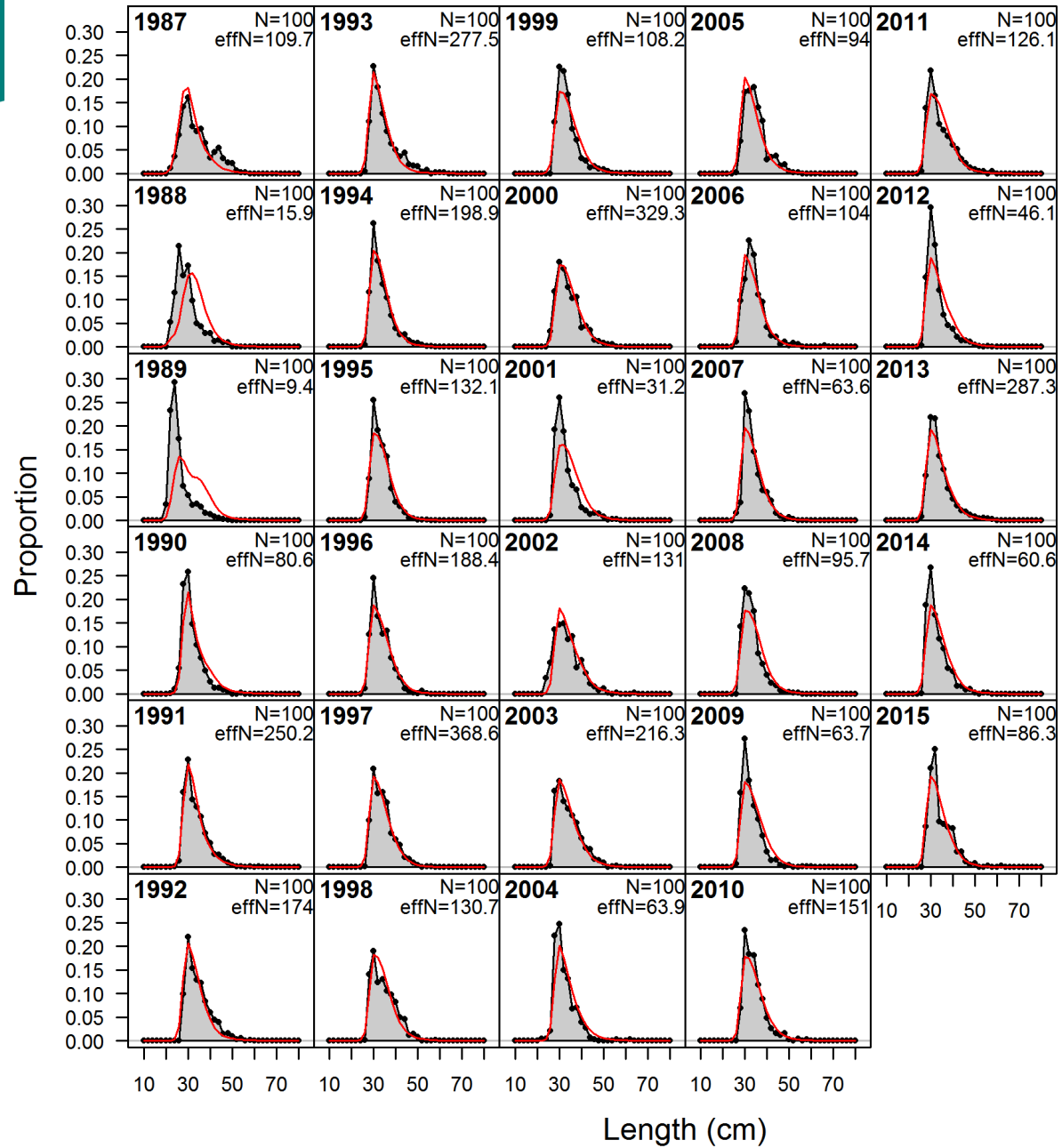


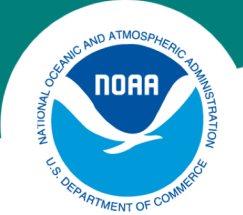
**Data by type and year**



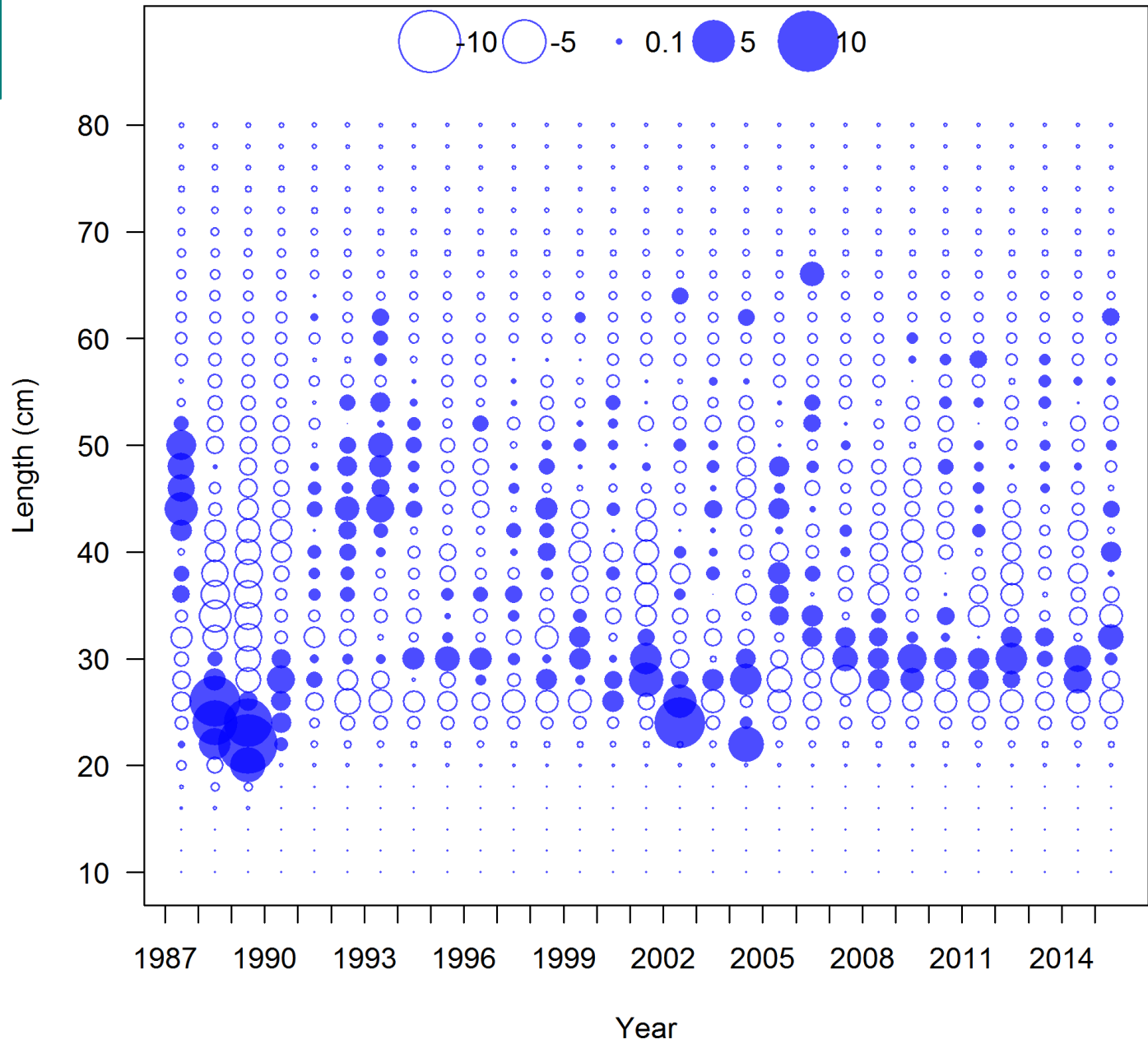


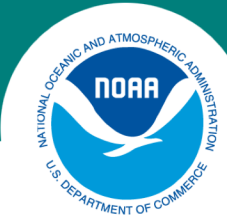
**length comps, sexes combined, retained, CHL\_MC\_1**



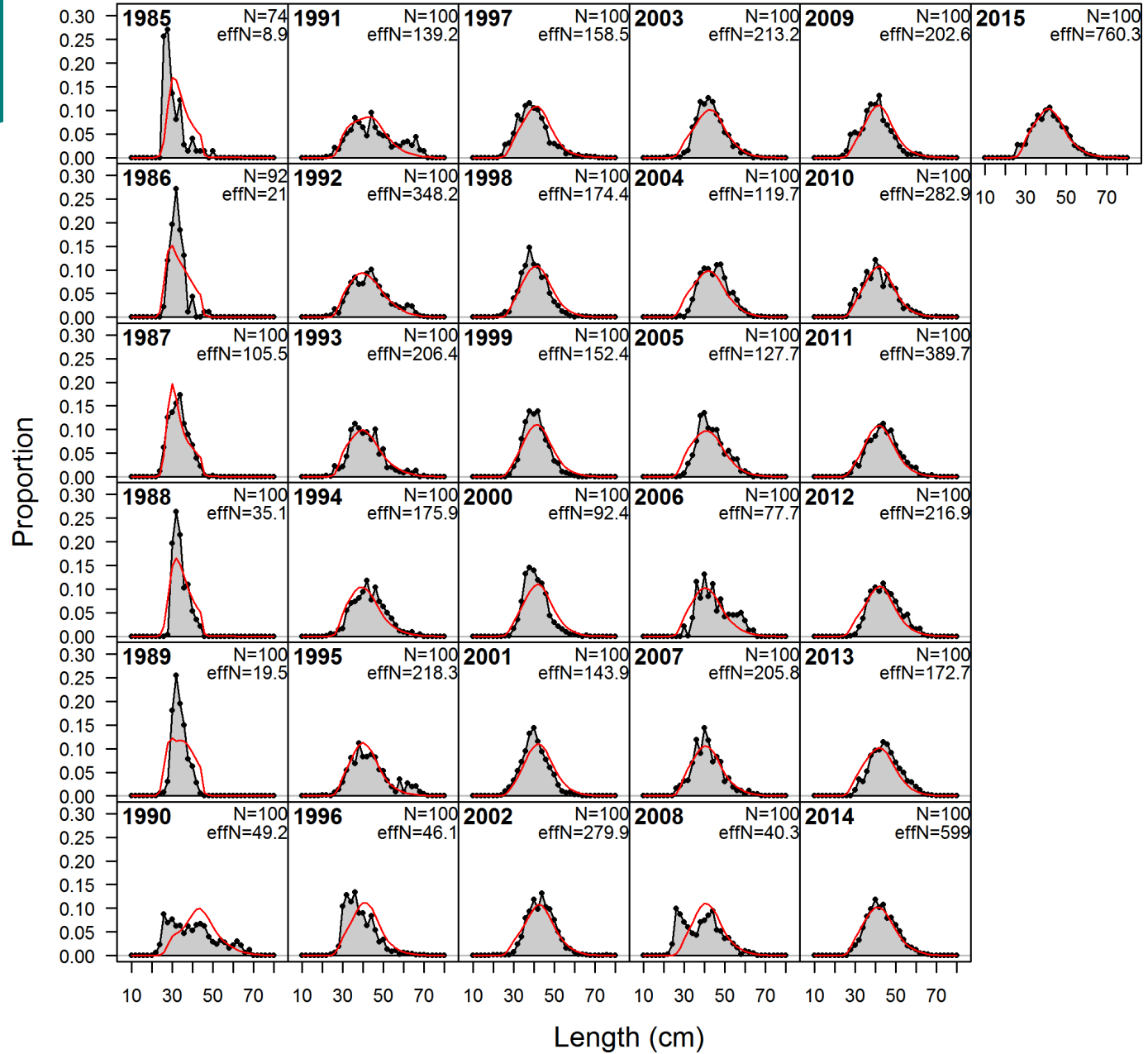


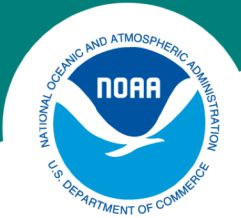
Pearson residuals, sexes combined, retained, CHL\_MC\_1 (max=9.54)



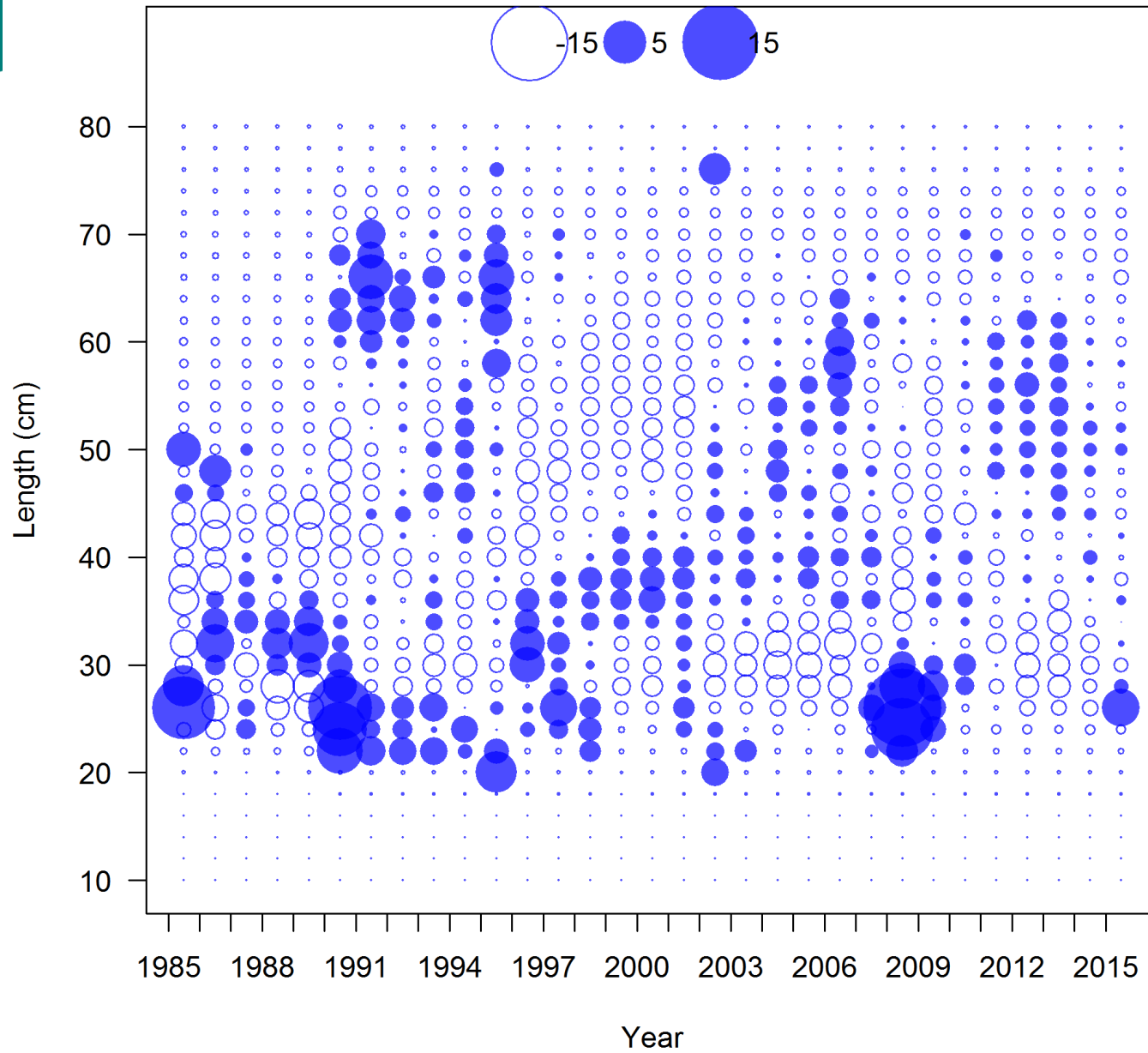


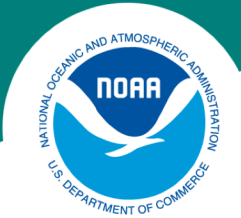
**length comps, sexes combined, retained, CHL\_nMC\_2**



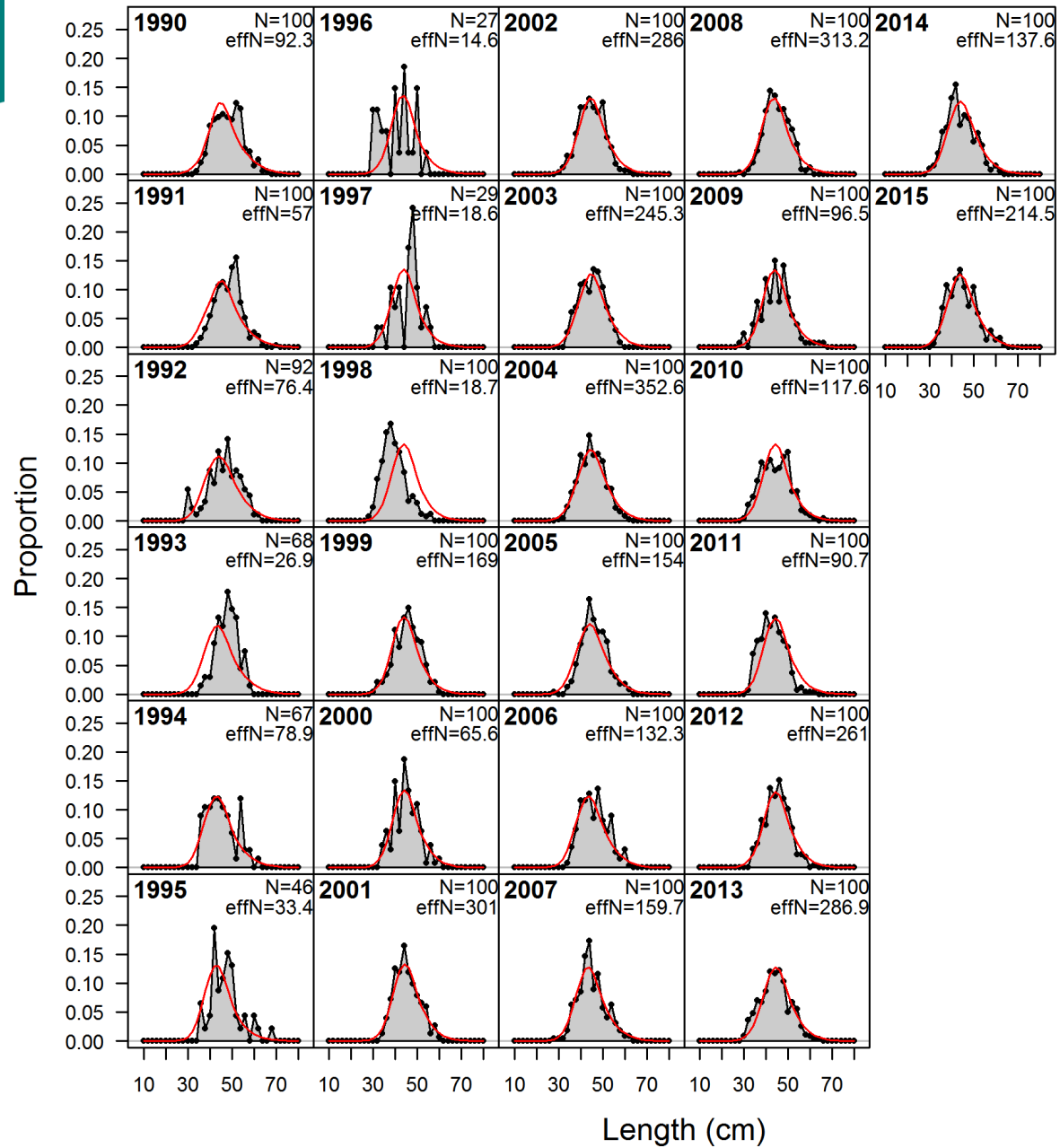


**Pearson residuals, sexes combined, retained, CHL\_nMC\_2 (max=16)**



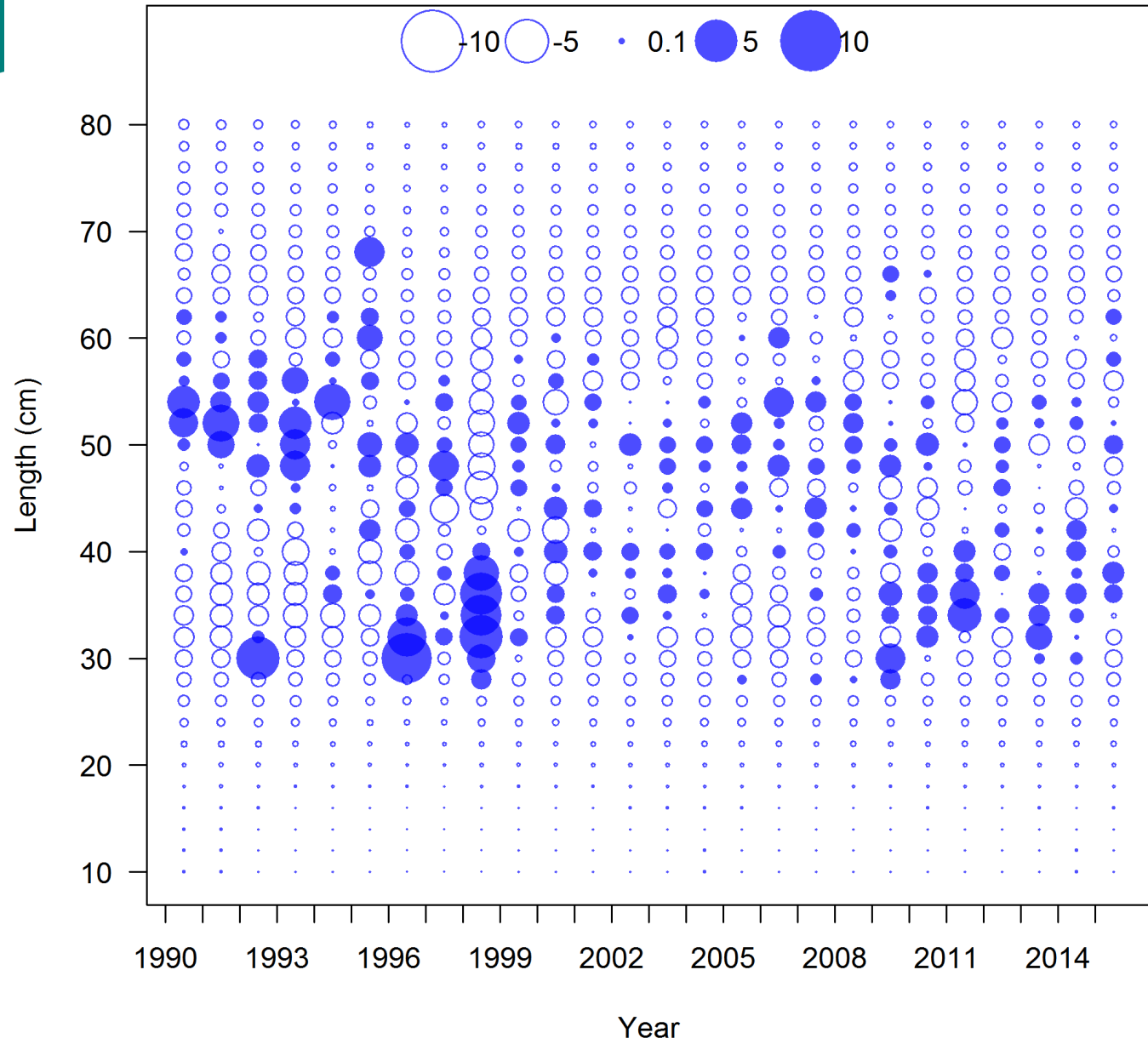


**length comps, sexes combined, retained, CM\_LL\_3**

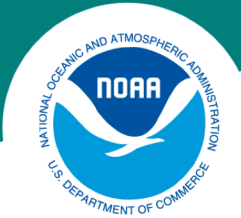




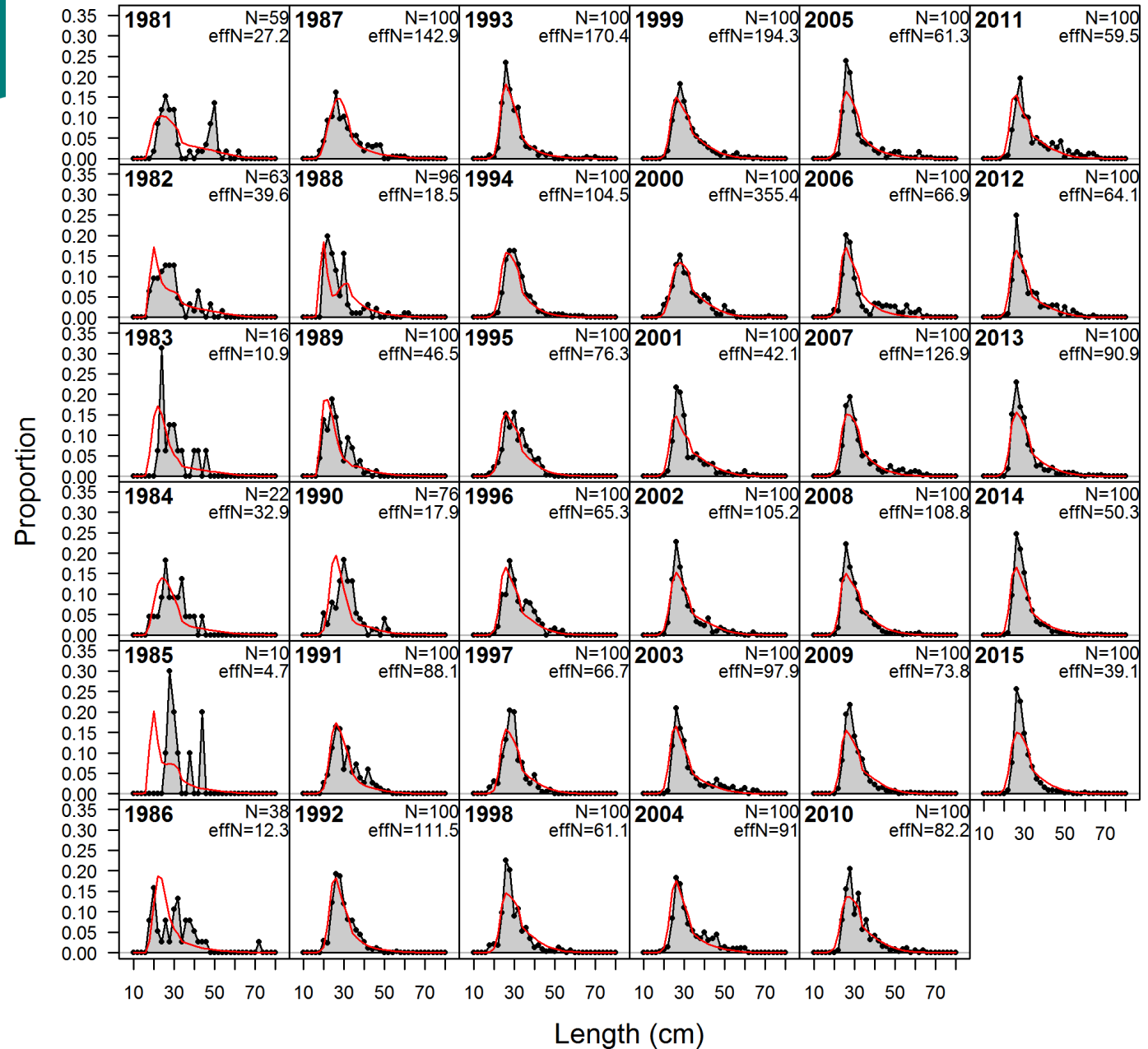
Pearson residuals, sexes combined, retained, CM\_LL\_3 (max=6.79)

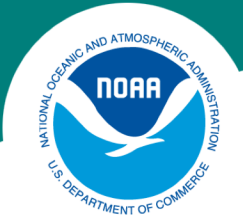




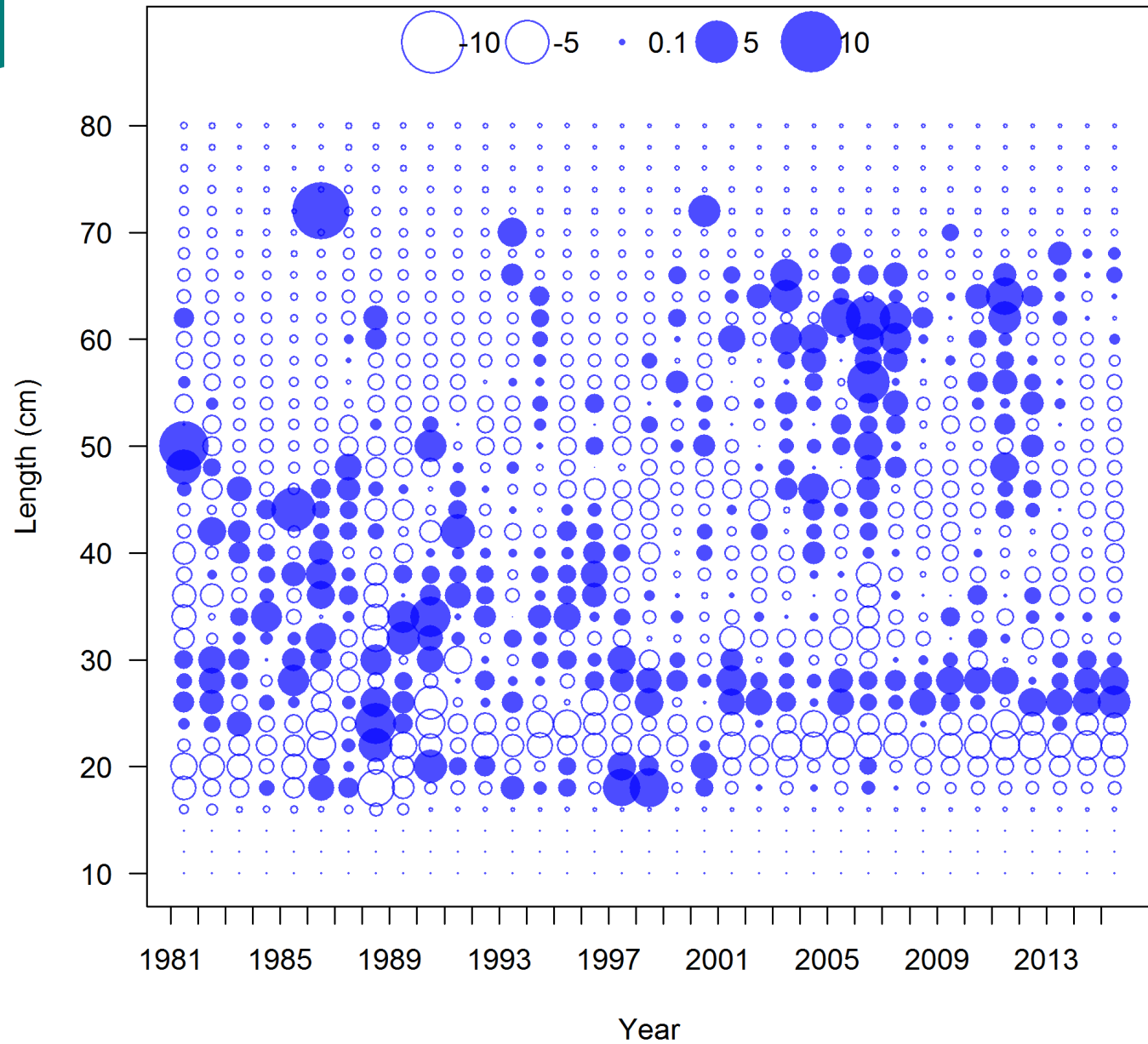


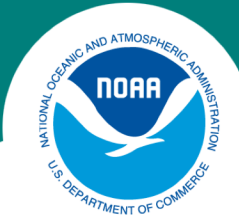
**length comps, sexes combined, retained, REC\_PR\_4**



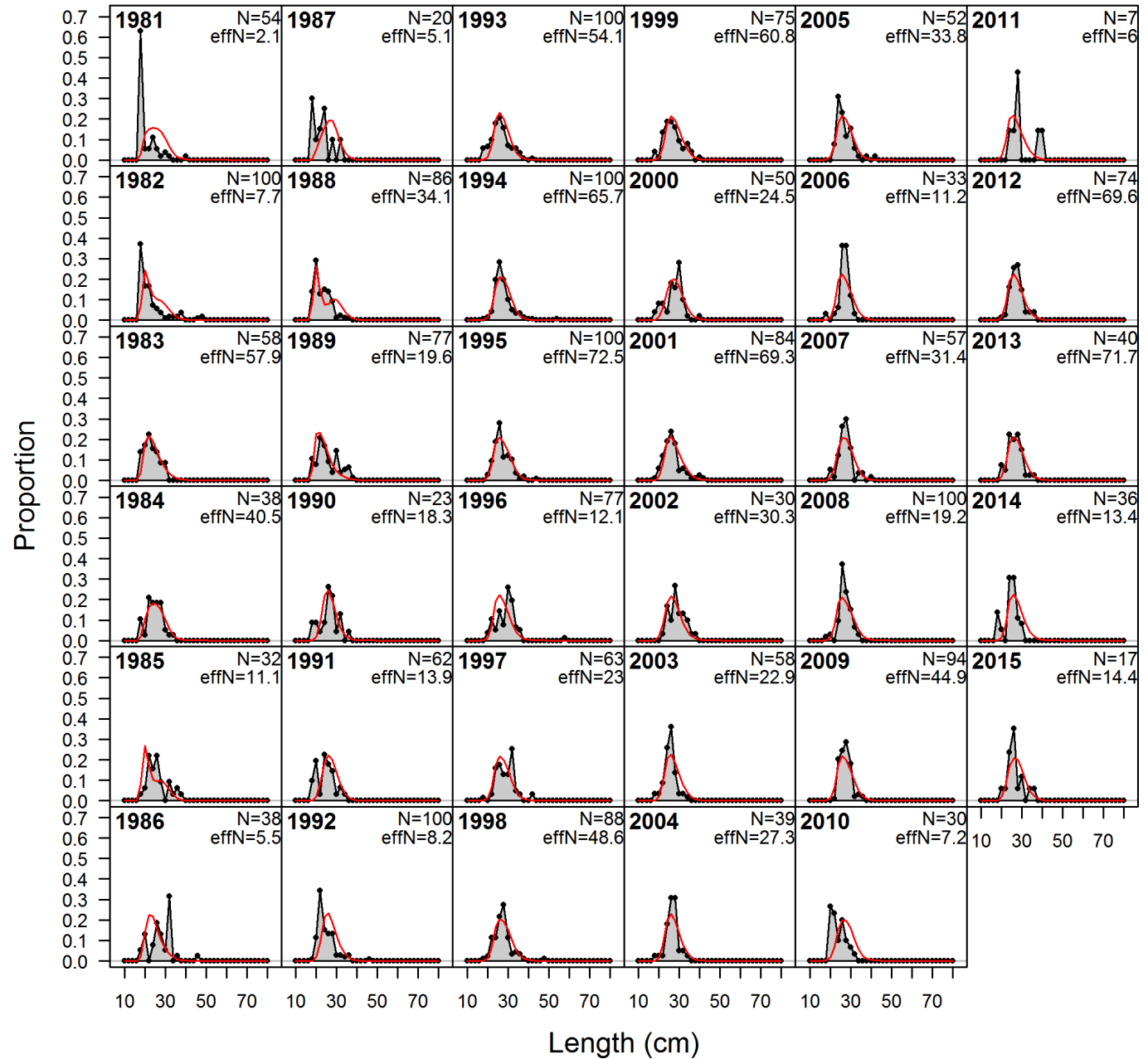


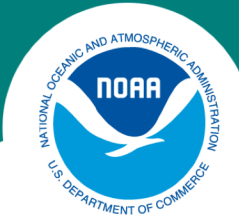
**Pearson residuals, sexes combined, retained, REC\_PR\_4 (max=8.87)**



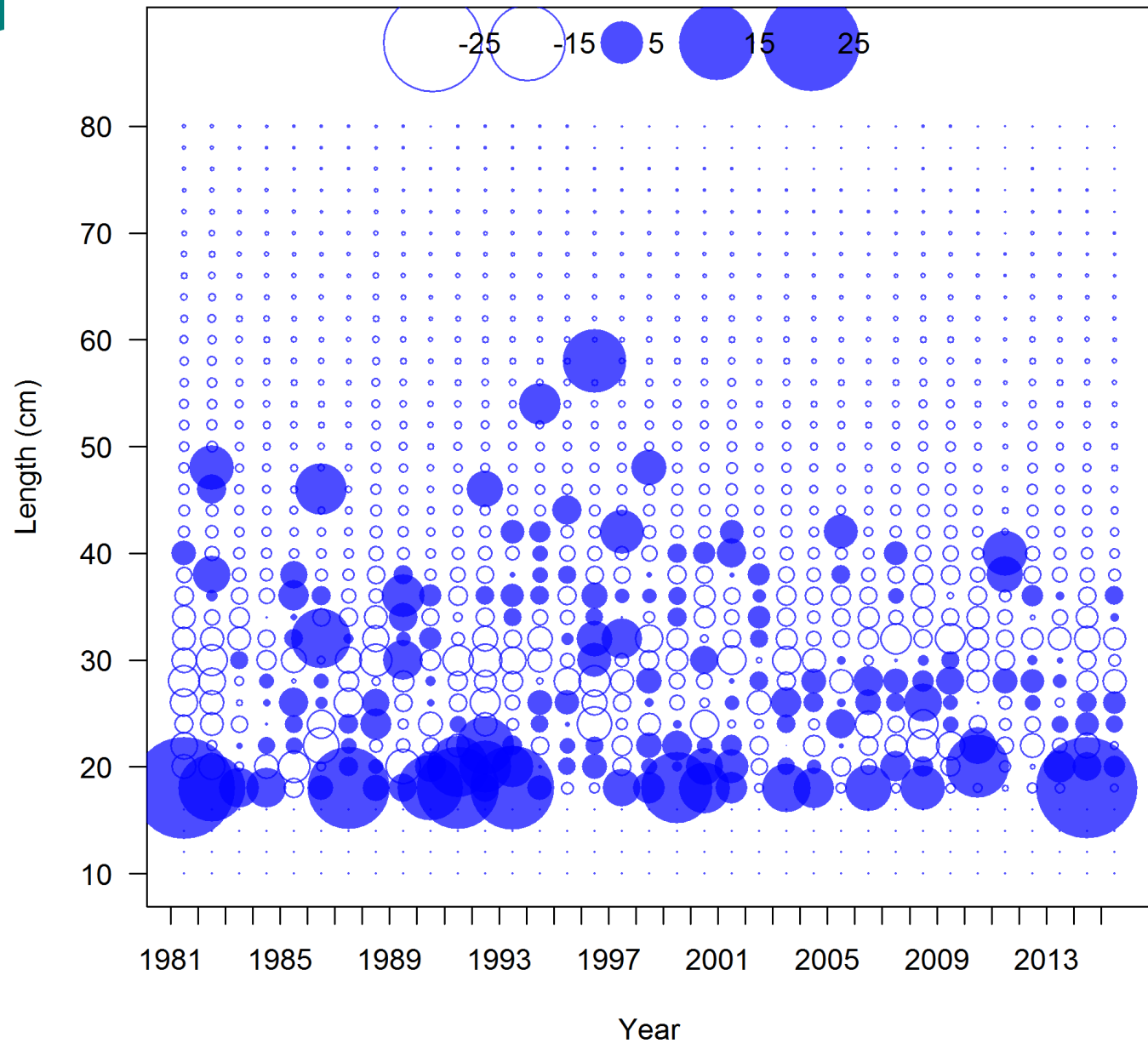


**length comps, sexes combined, retained, Rec\_Shore\_5**



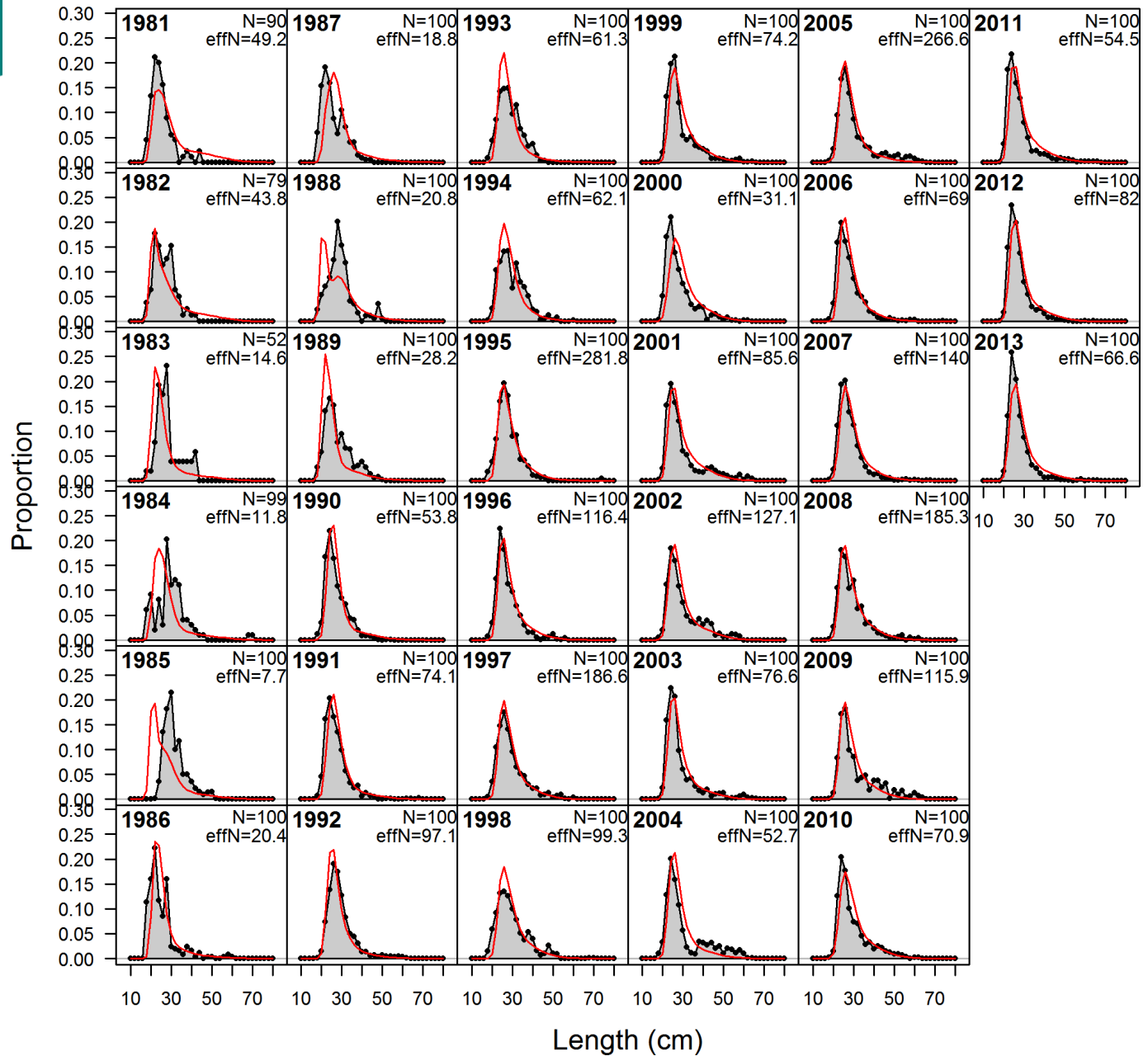


**Pearson residuals, sexes combined, retained, Rec\_Shore\_5 (max=27.52)**



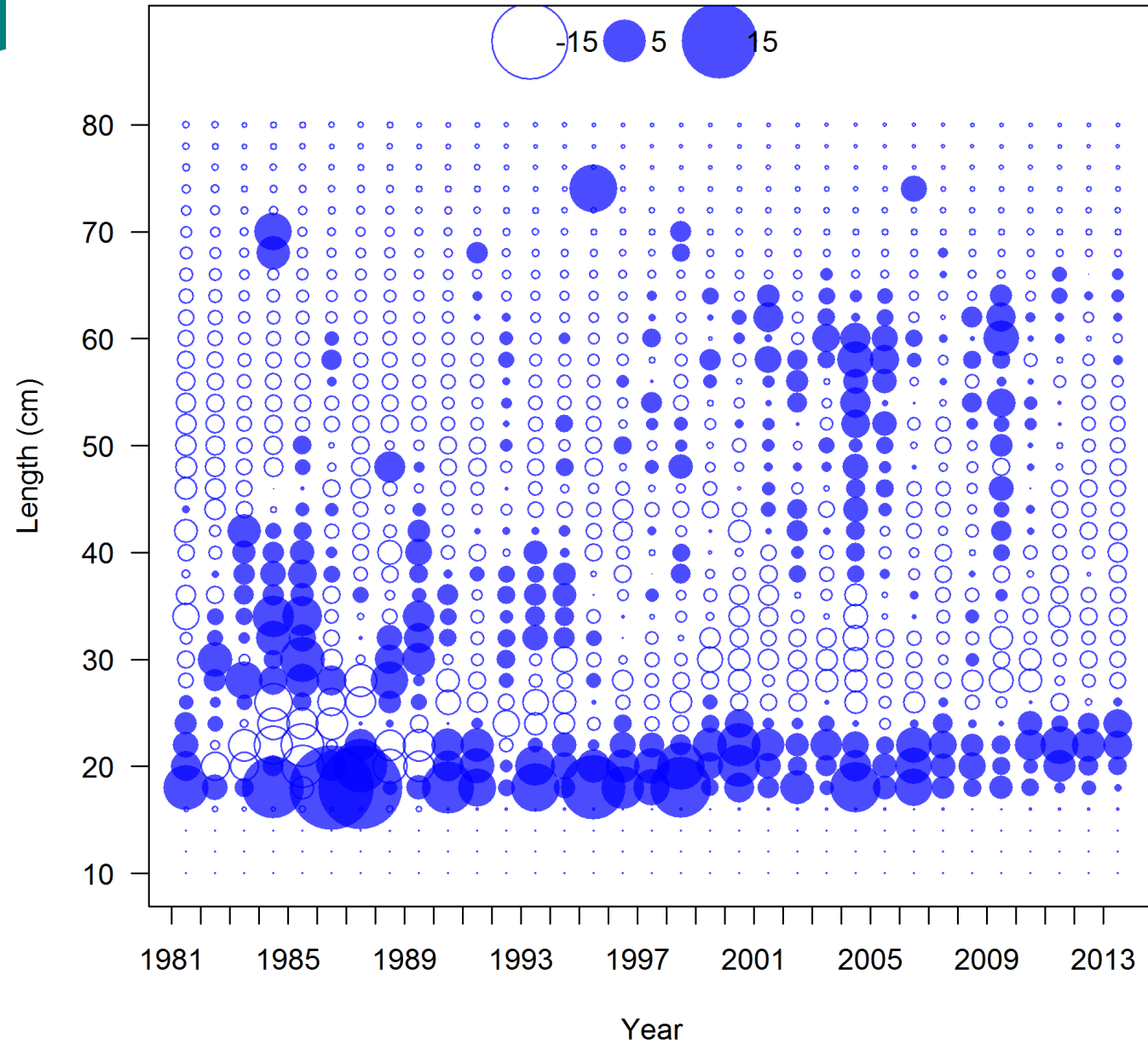


**length comps, sexes combined, retained, Rec\_HB\_CBT6**



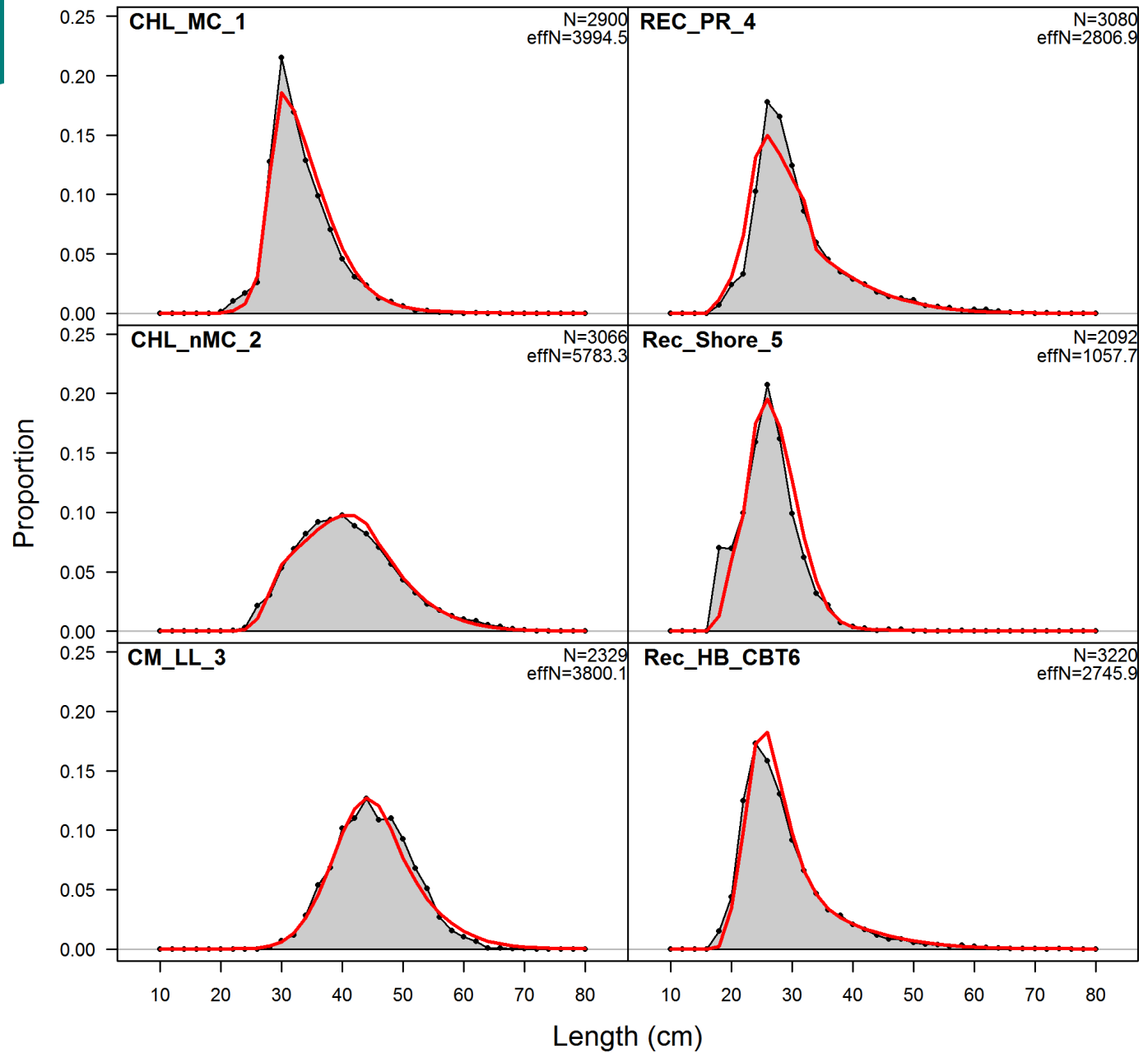


**Pearson residuals, sexes combined, retained, Rec\_HB\_CBT6 (max=18.89)**

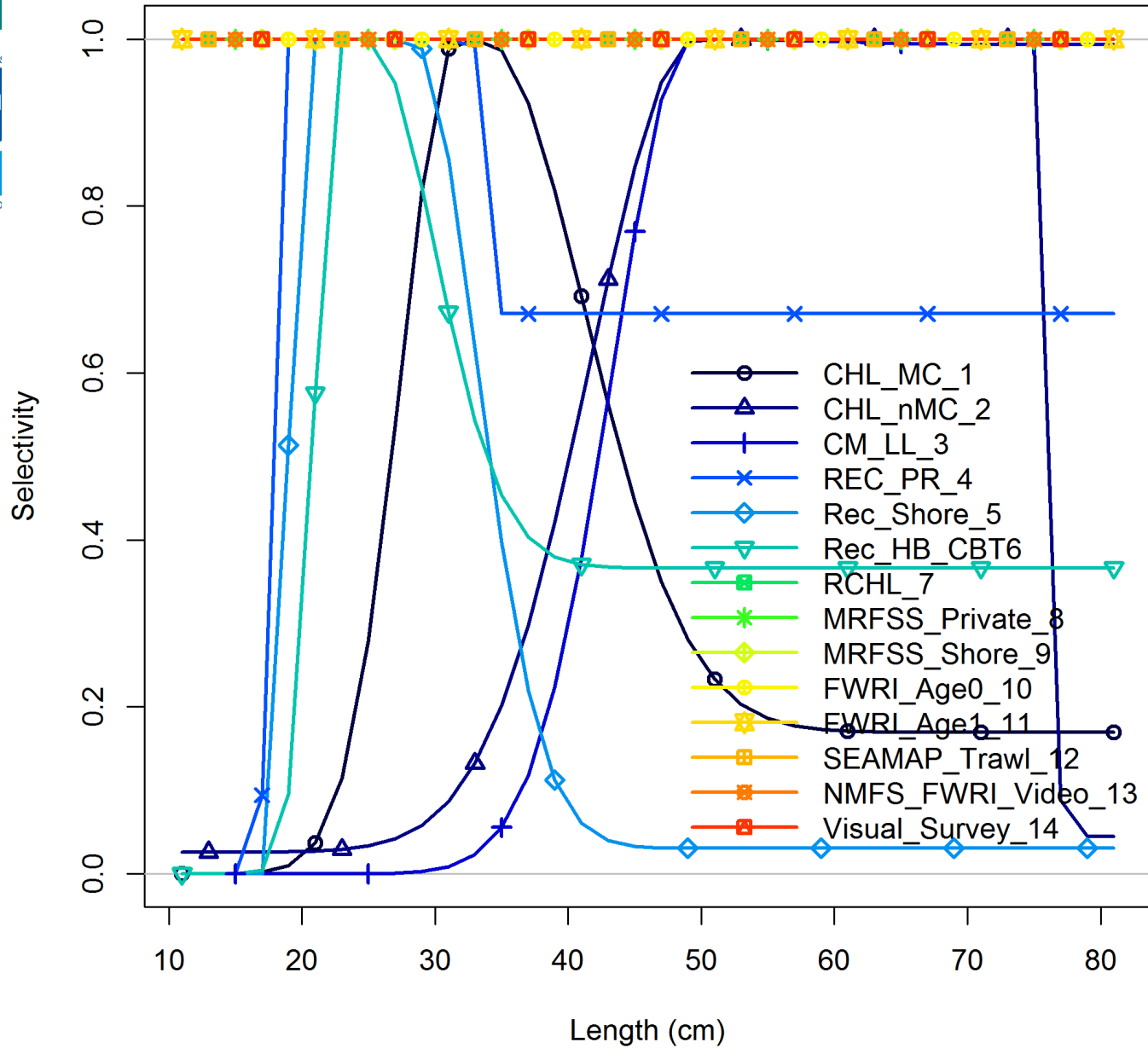




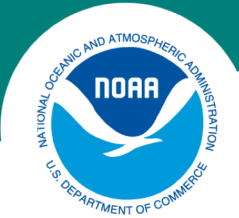
**length comps, sexes combined, retained, aggregated across time by fleet**



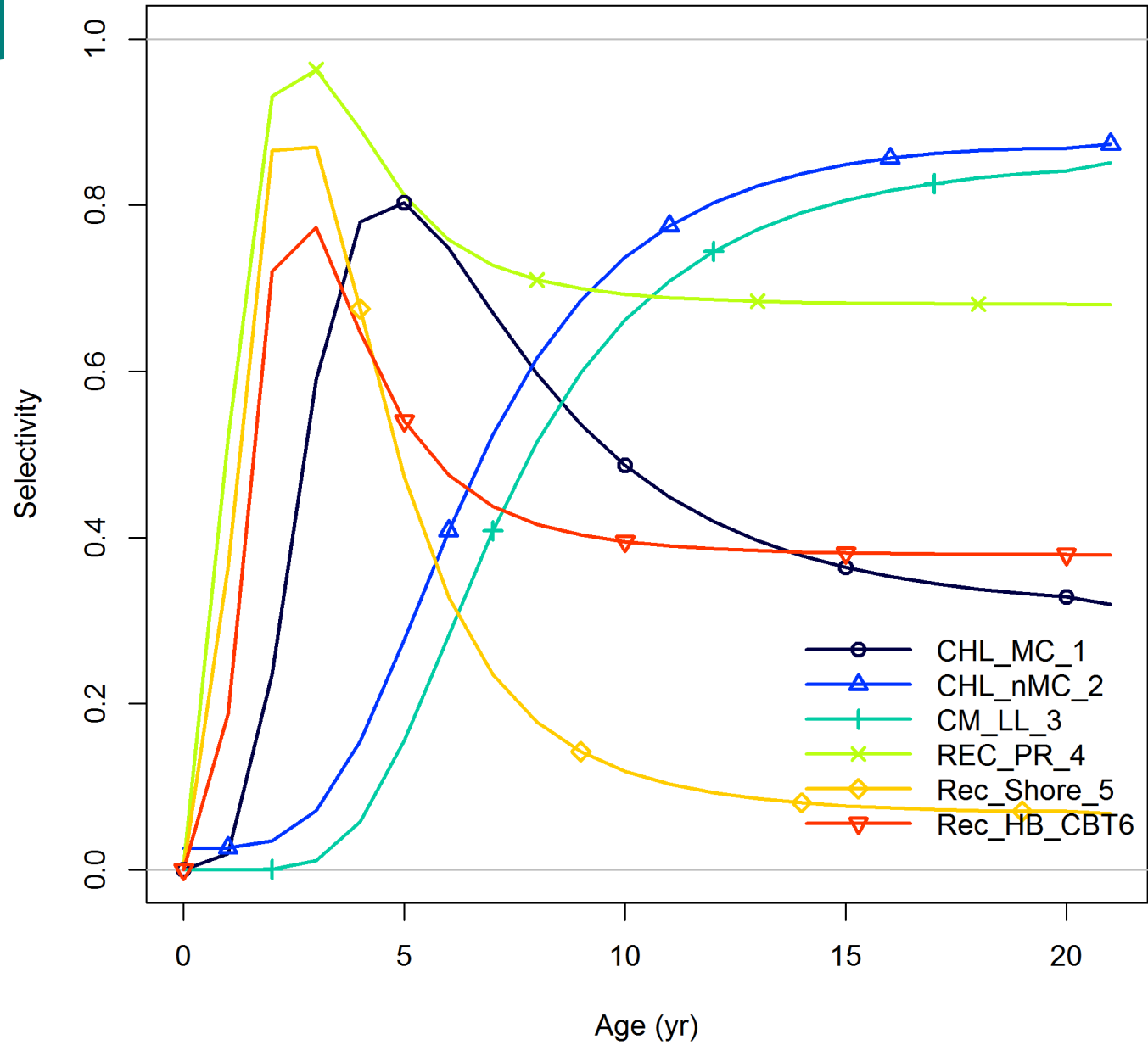
Length-based selectivity by fleet in 2015

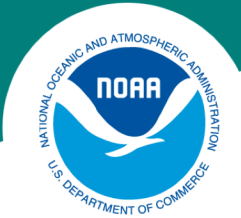




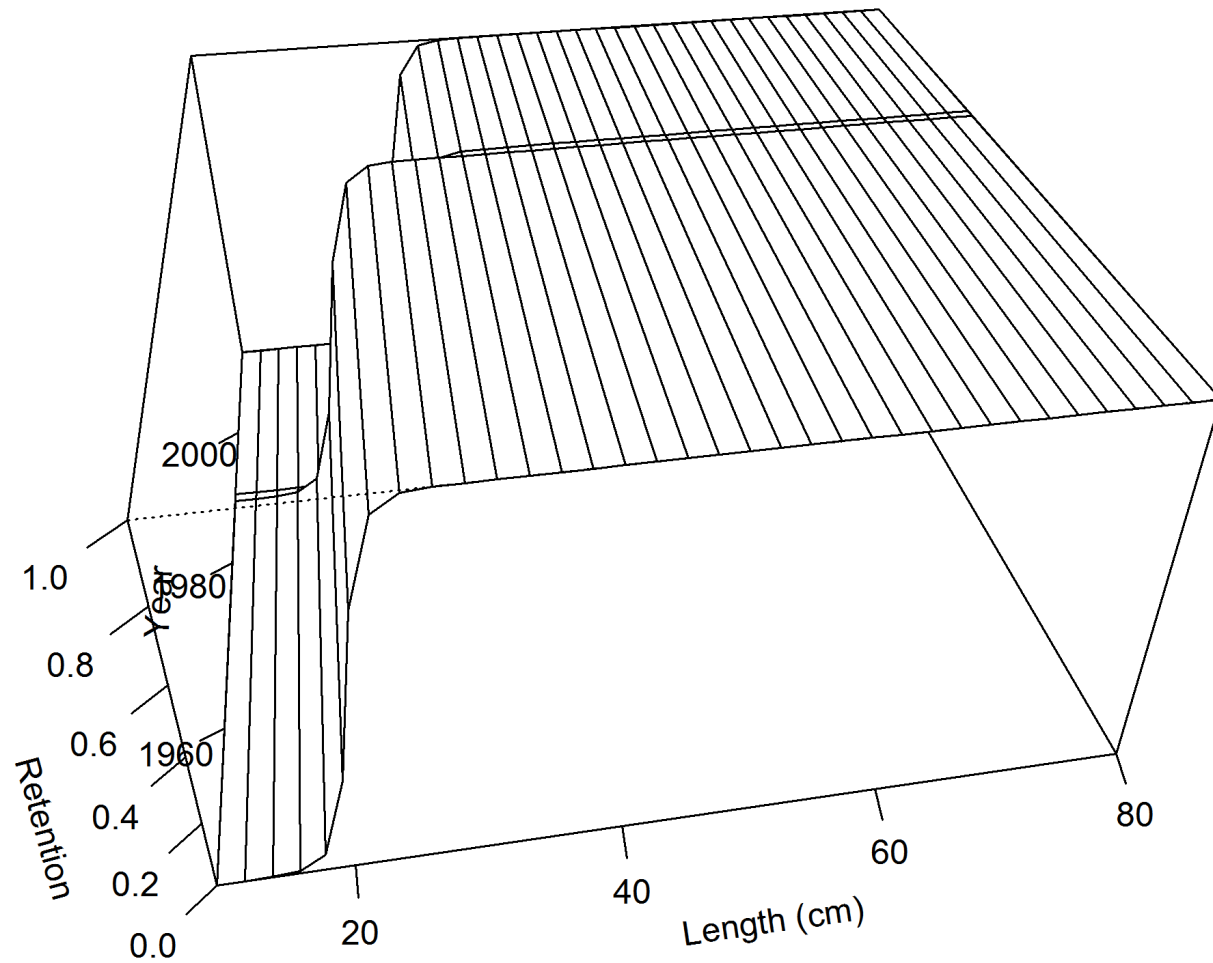


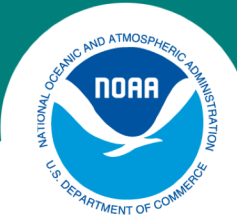
**Derived age-based from length-based selectivity by fleet in 2015**



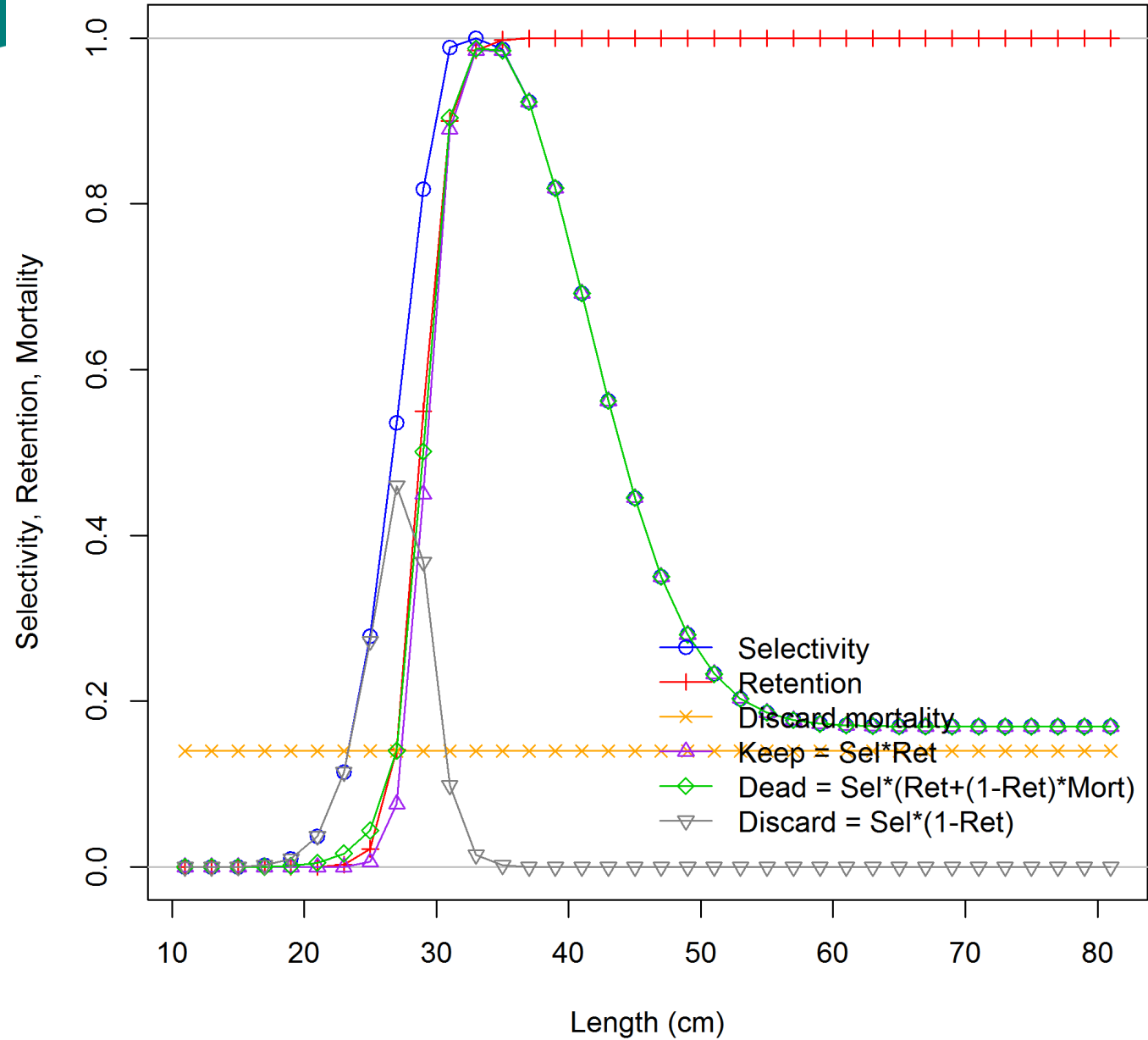


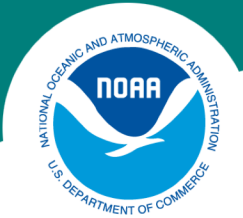
# Time Varying Retention: Commercial Monroe County



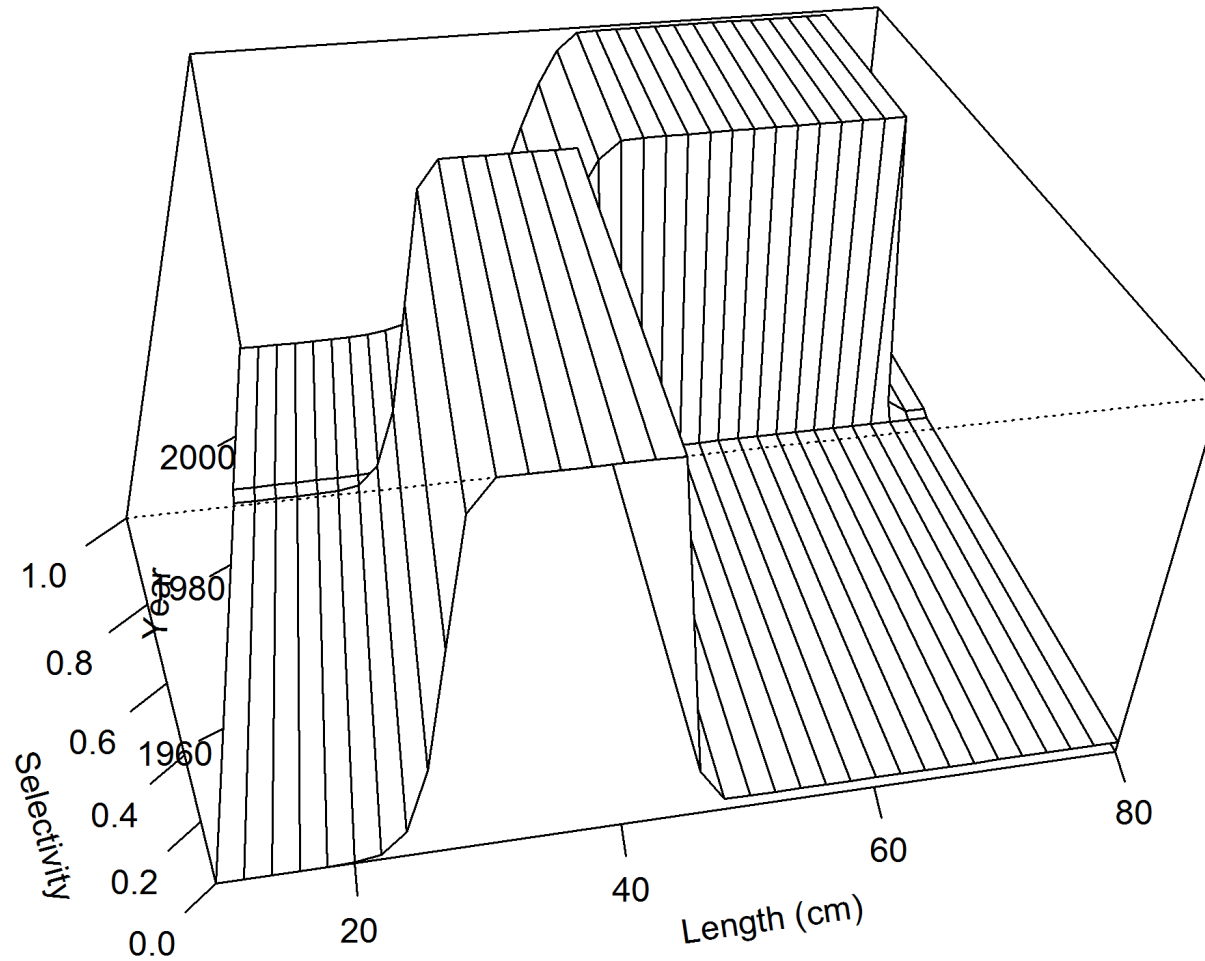


**Ending year selectivity for CHL\_MC\_1**



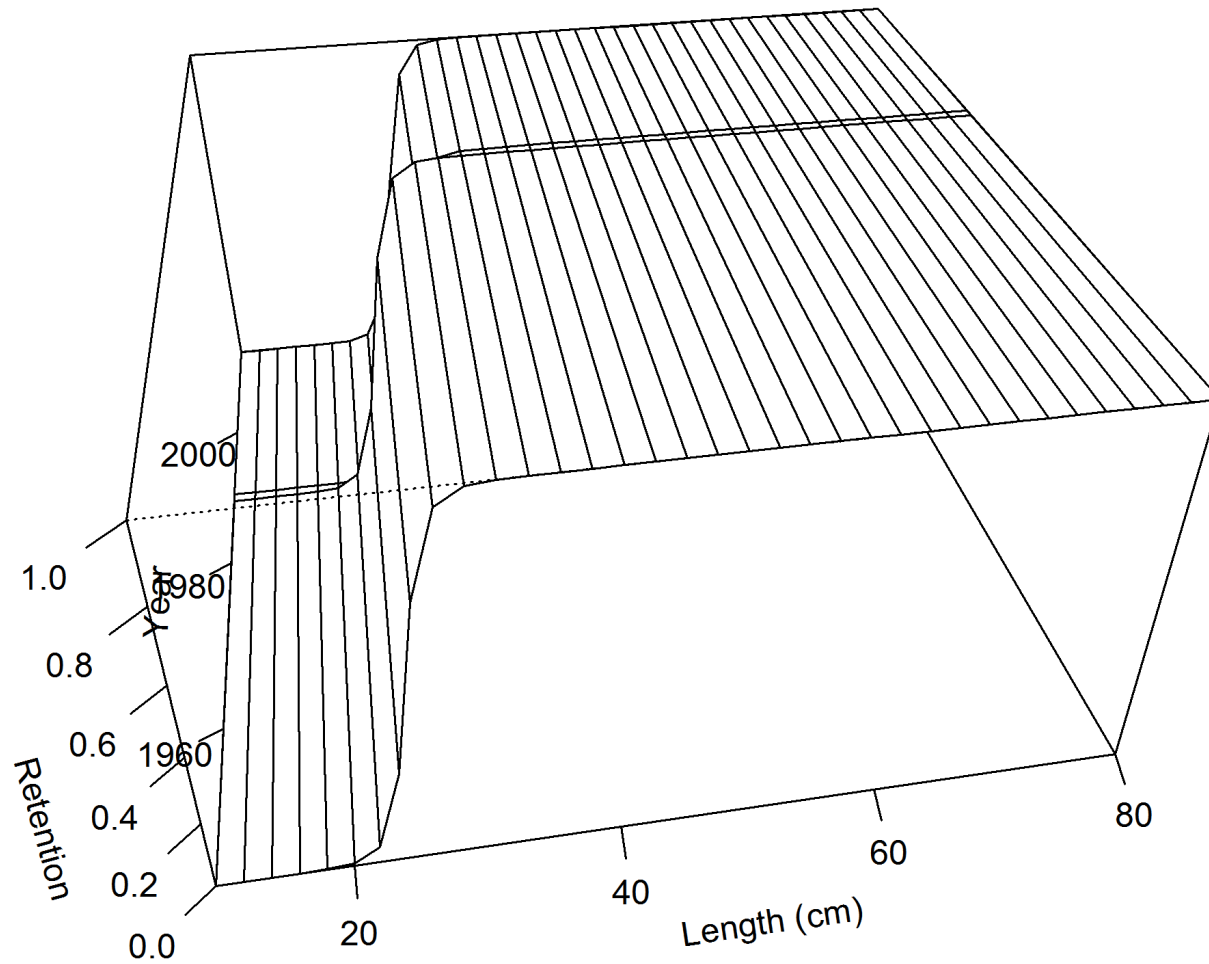


## Time Varying Selectivity: Commercial Other Than Monroe County



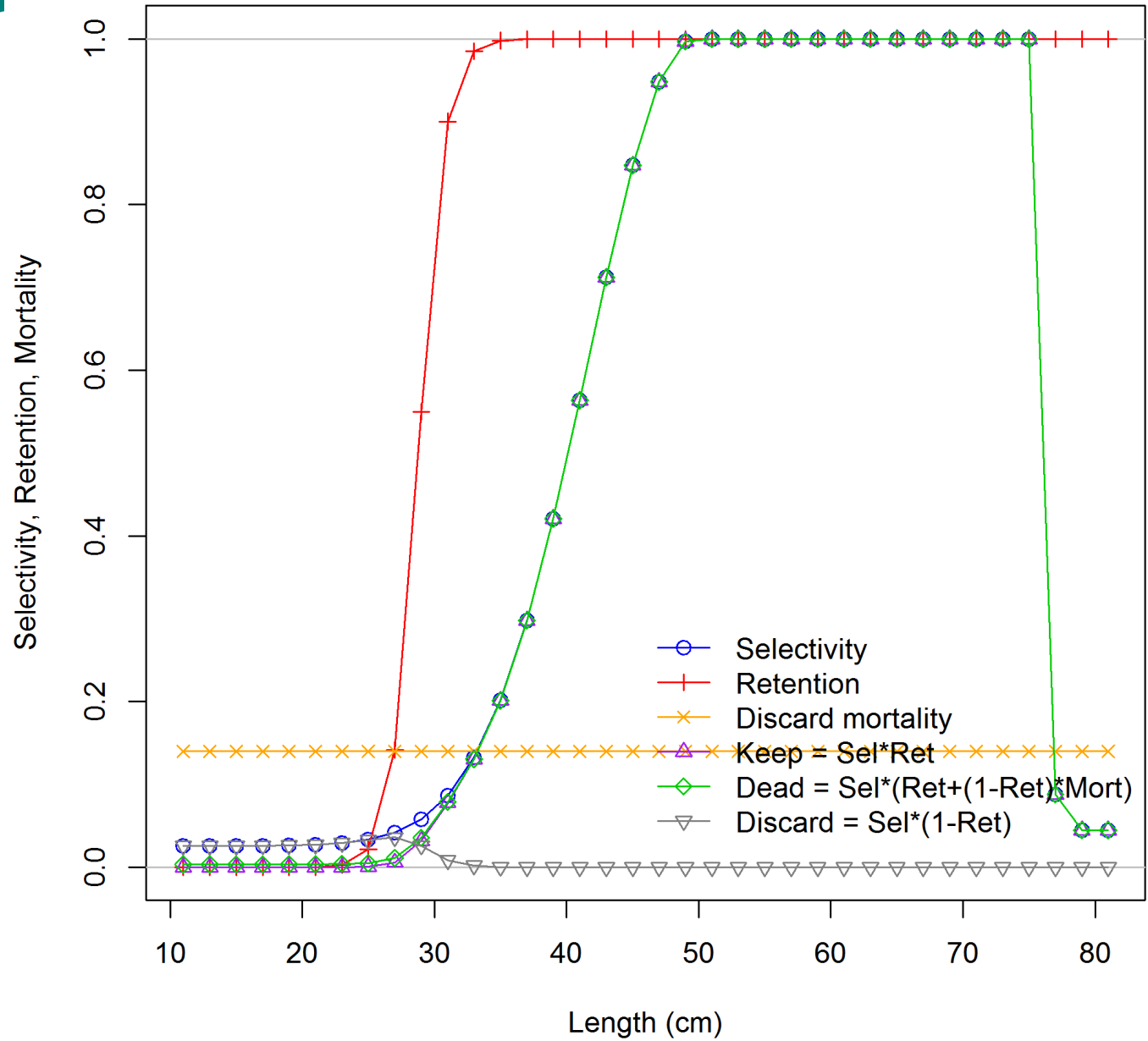


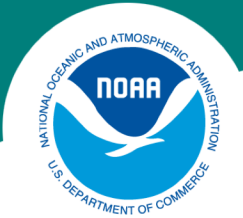
# Time Varying Retention: Commercial Other Than Monroe County



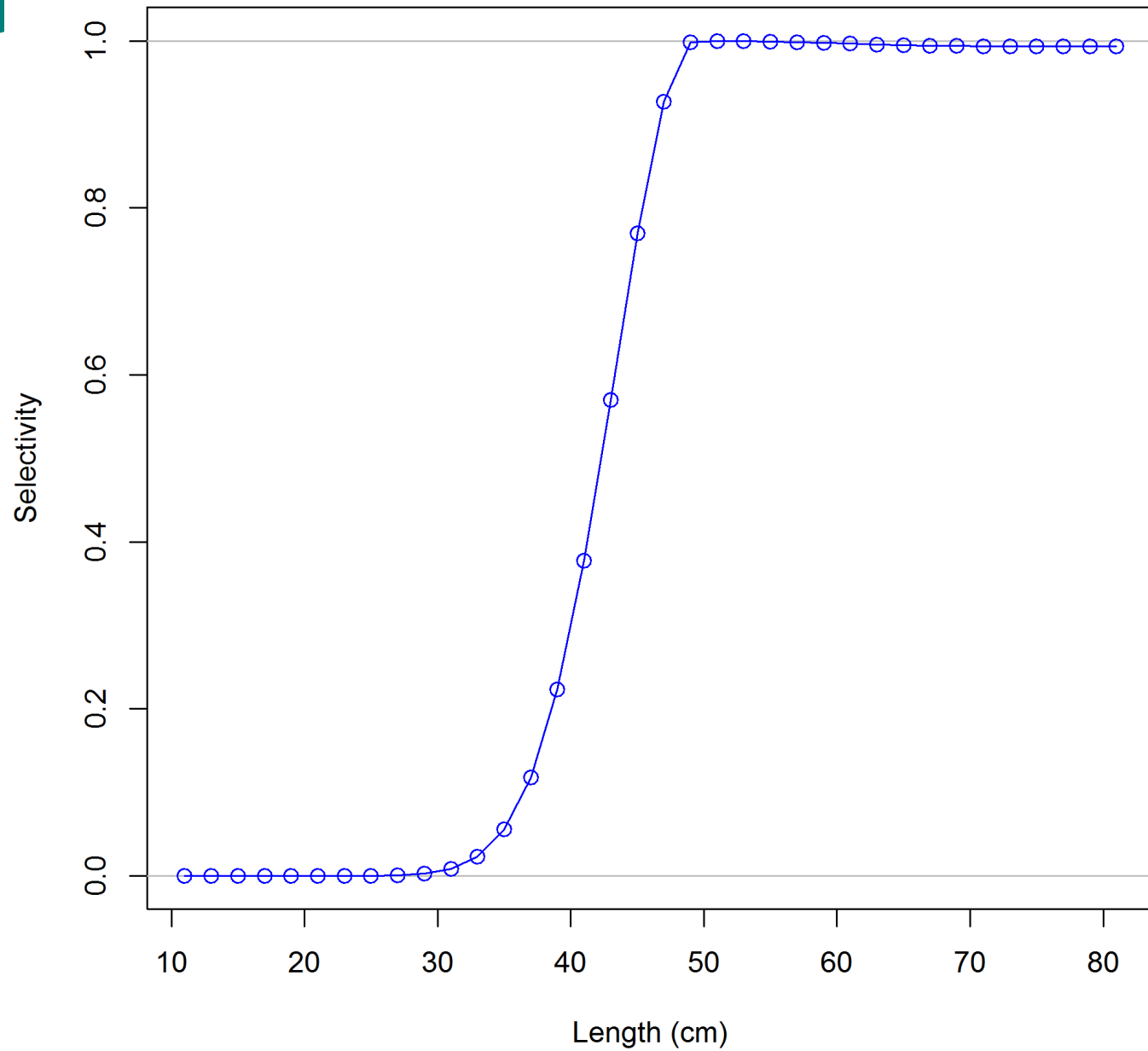


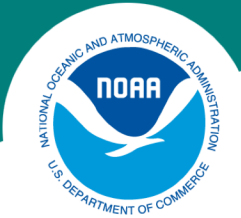
Ending year selectivity for CHL\_nMC\_2



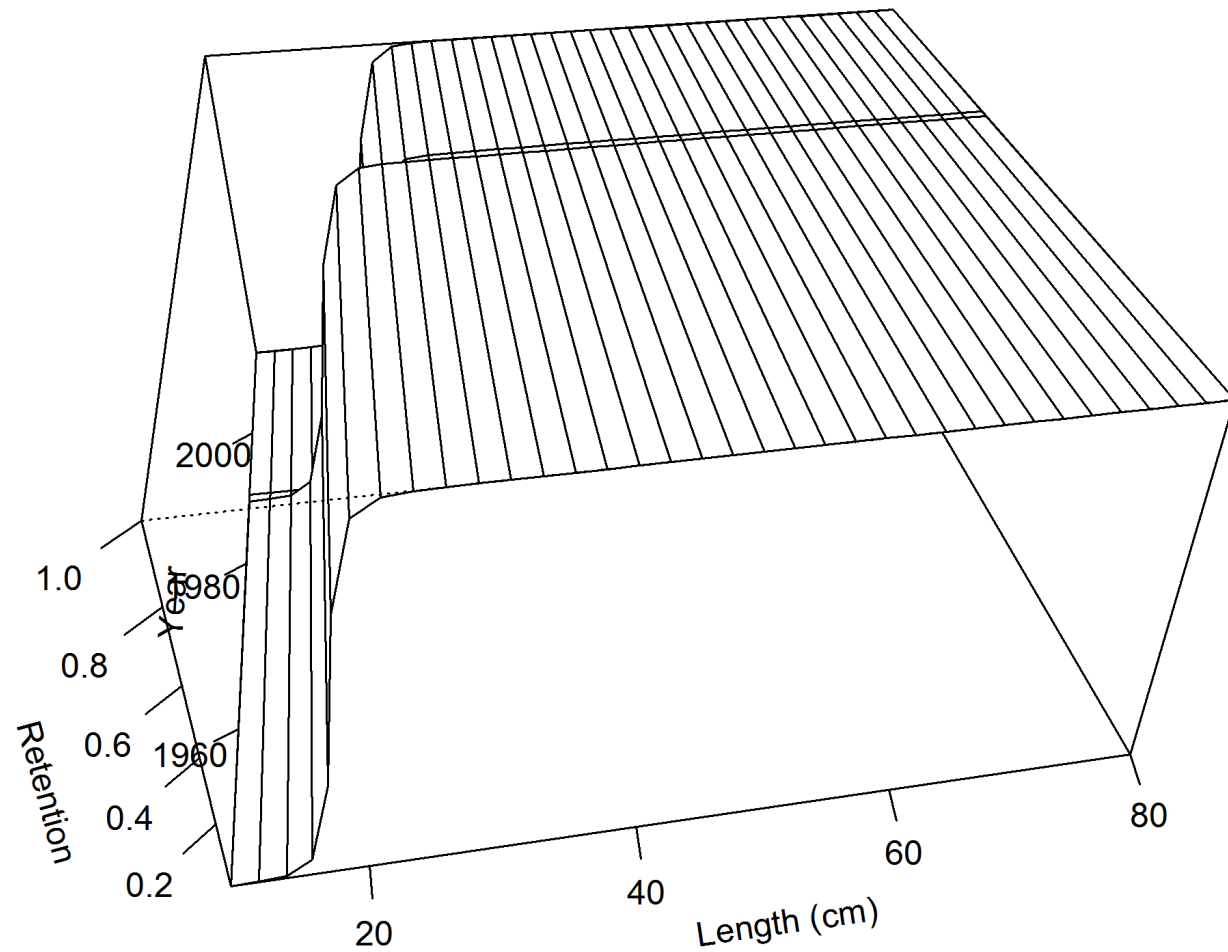


**Ending year selectivity for CM\_LL\_3**

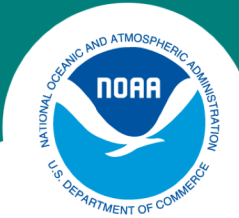




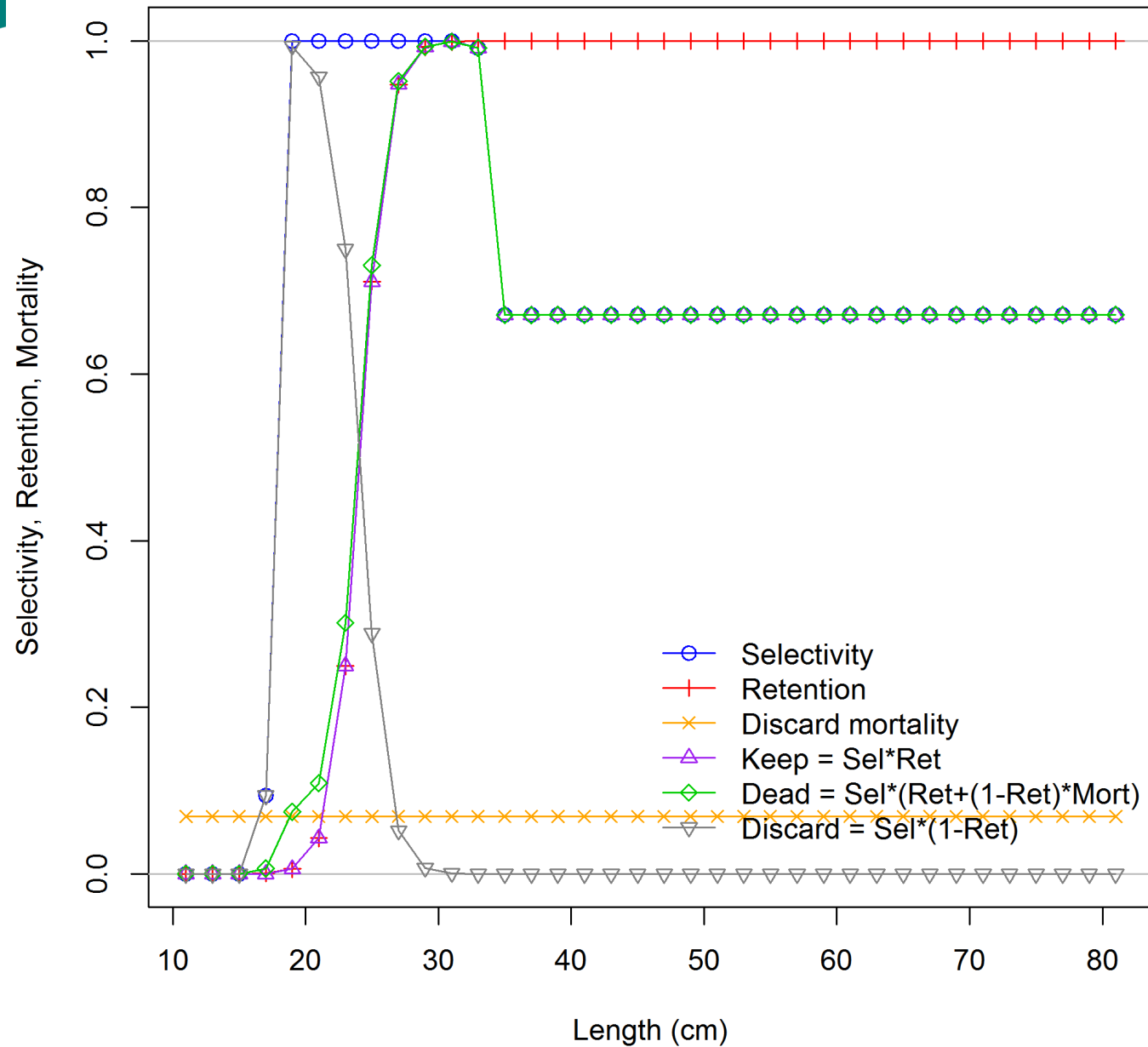
## Time Varying Retention: Recreational Private

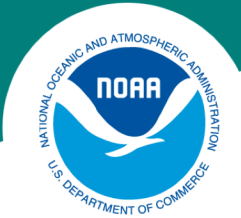




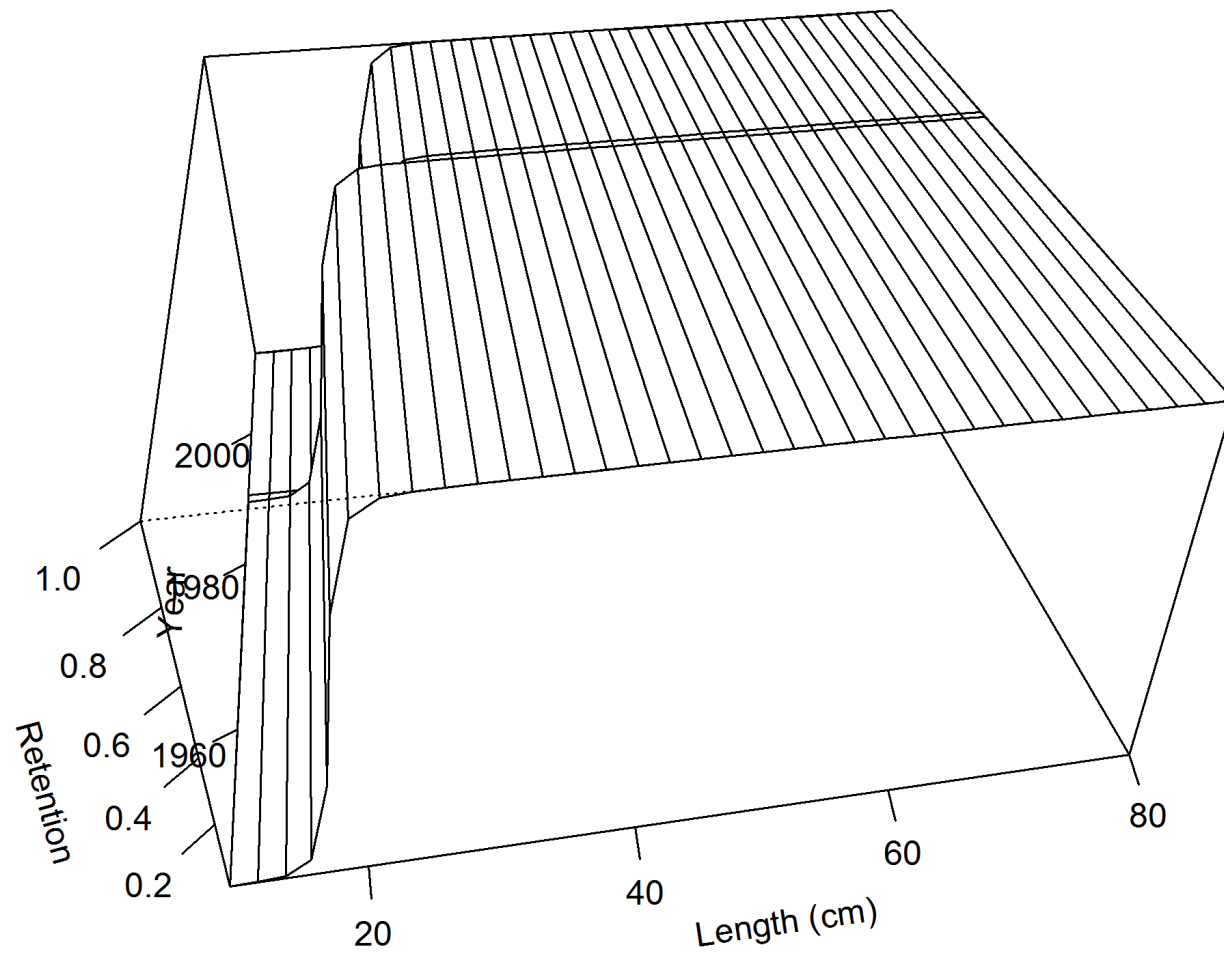


**Ending year selectivity for REC\_PR\_4**

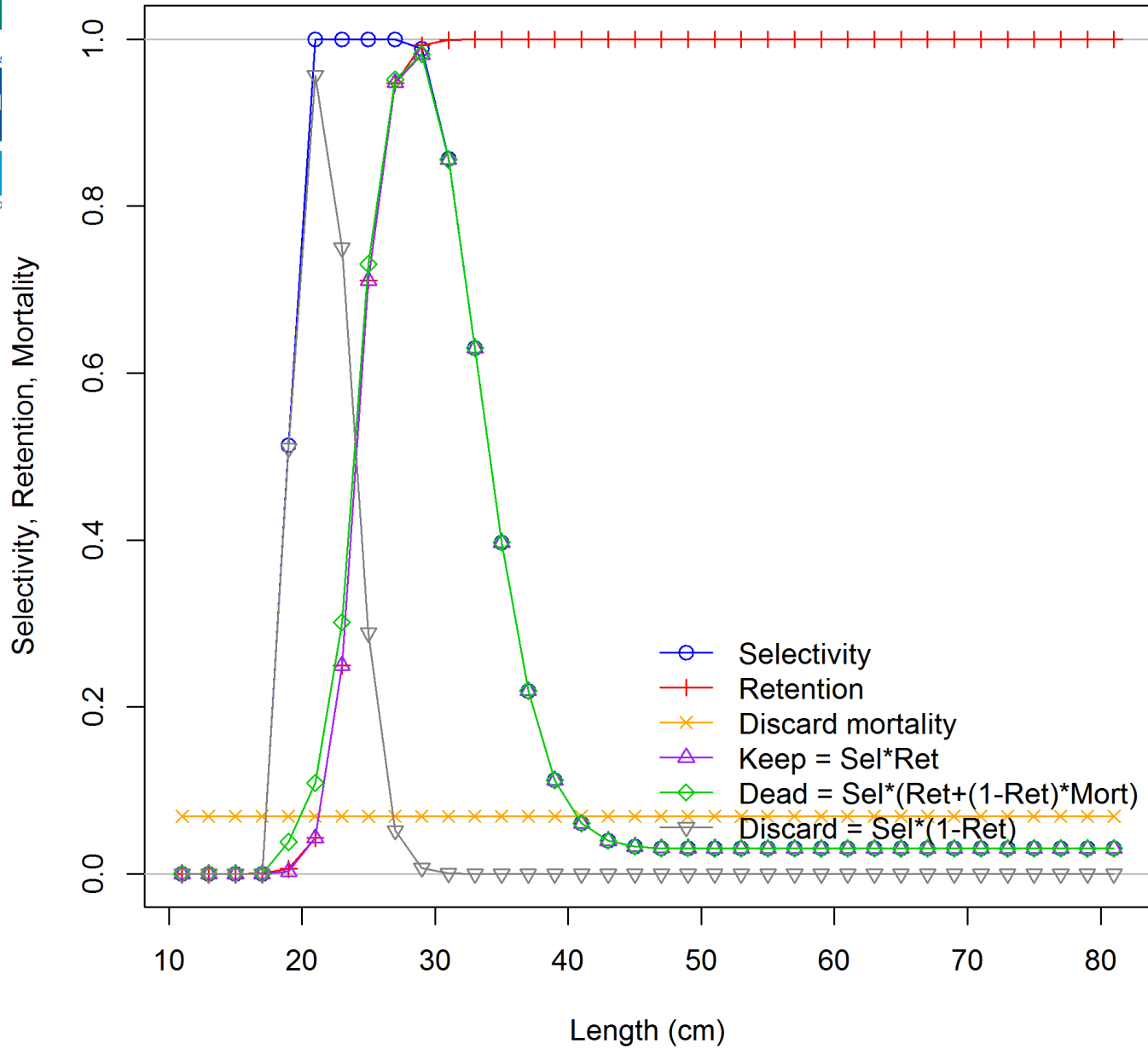




## Time Varying Retention: Recreational Shore

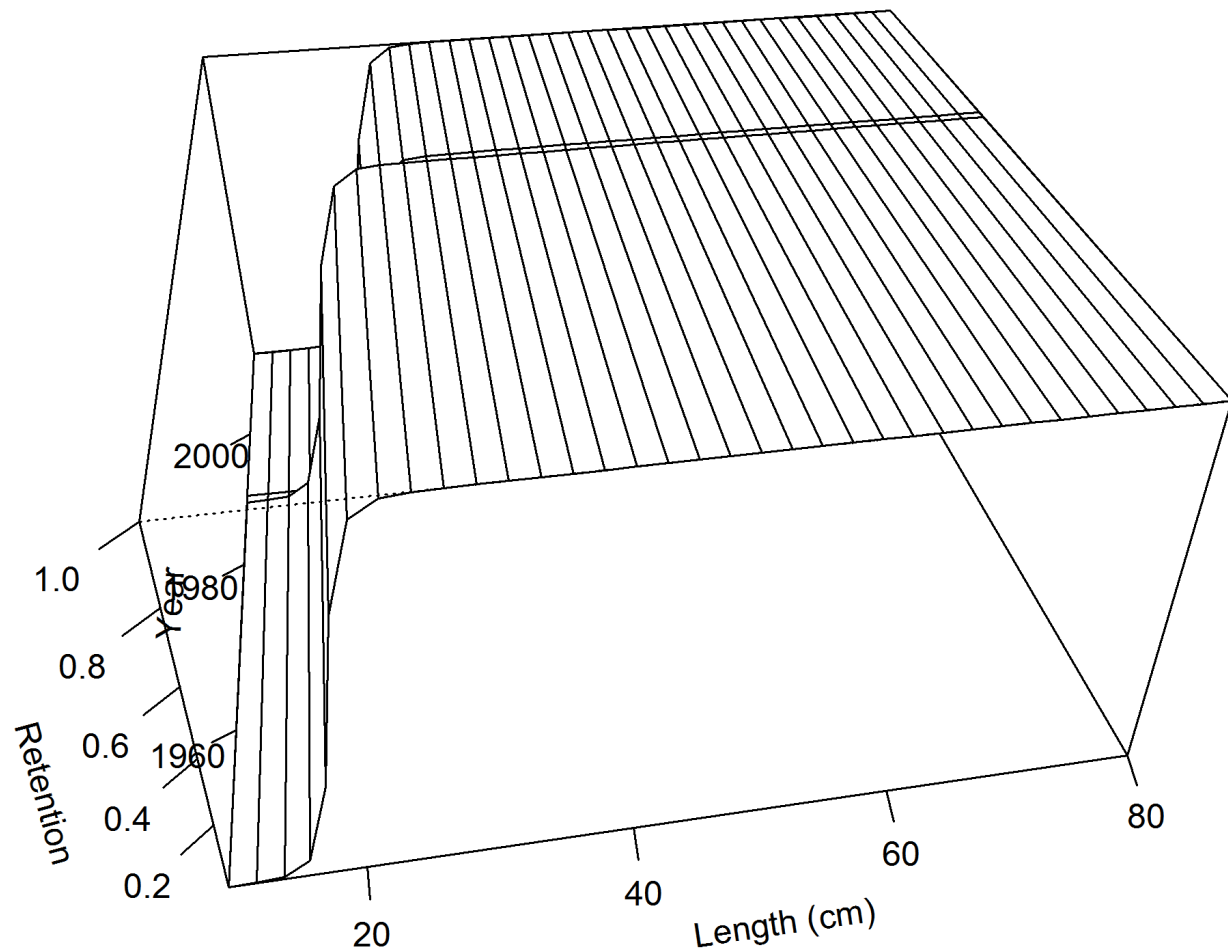


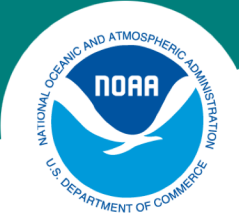
Ending year selectivity for Rec\_Shore\_5



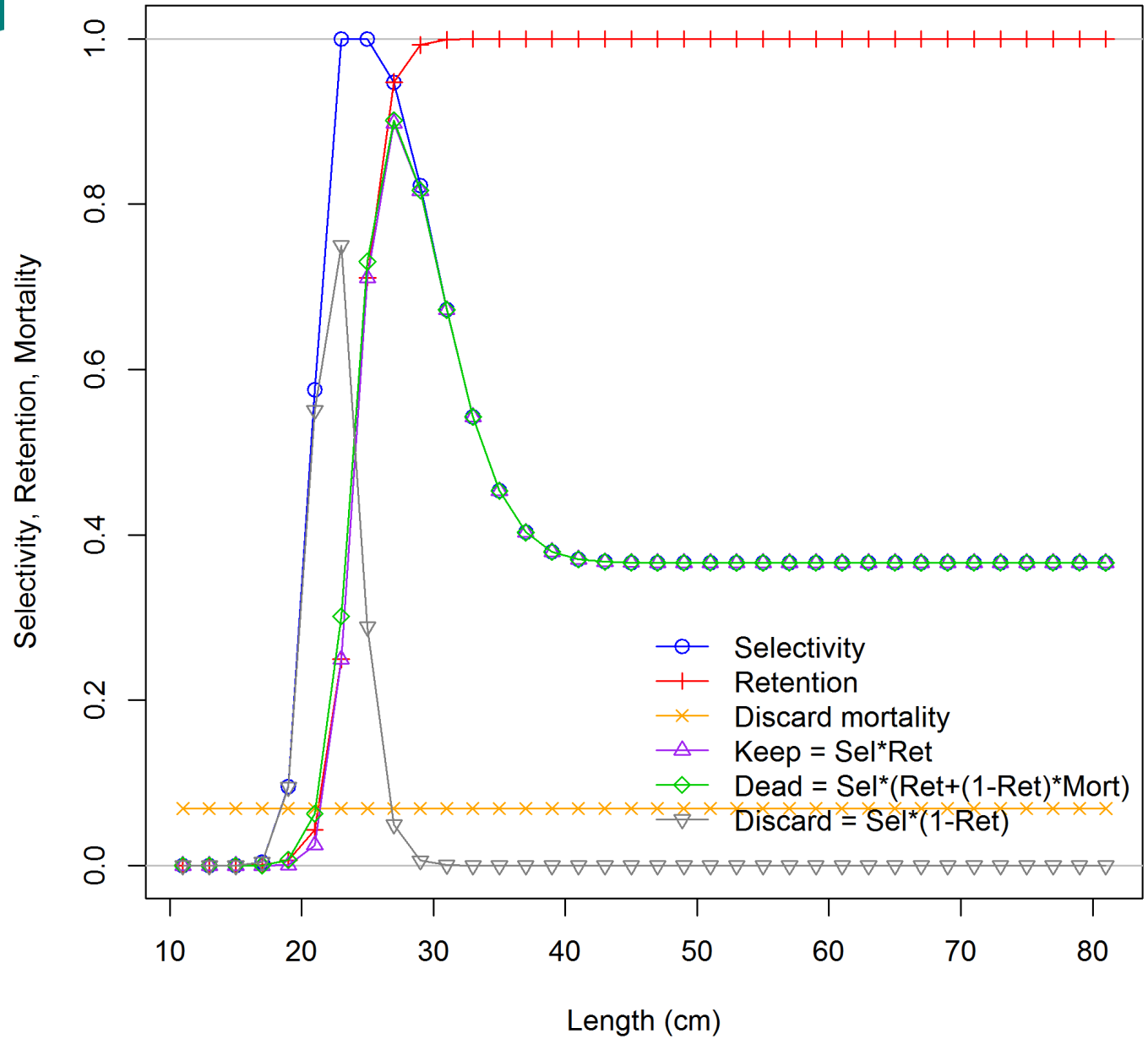


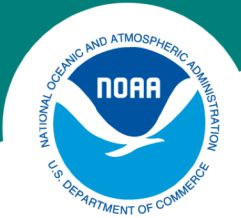
# Time Varying Retention: Recreational Charterboat/Headboat



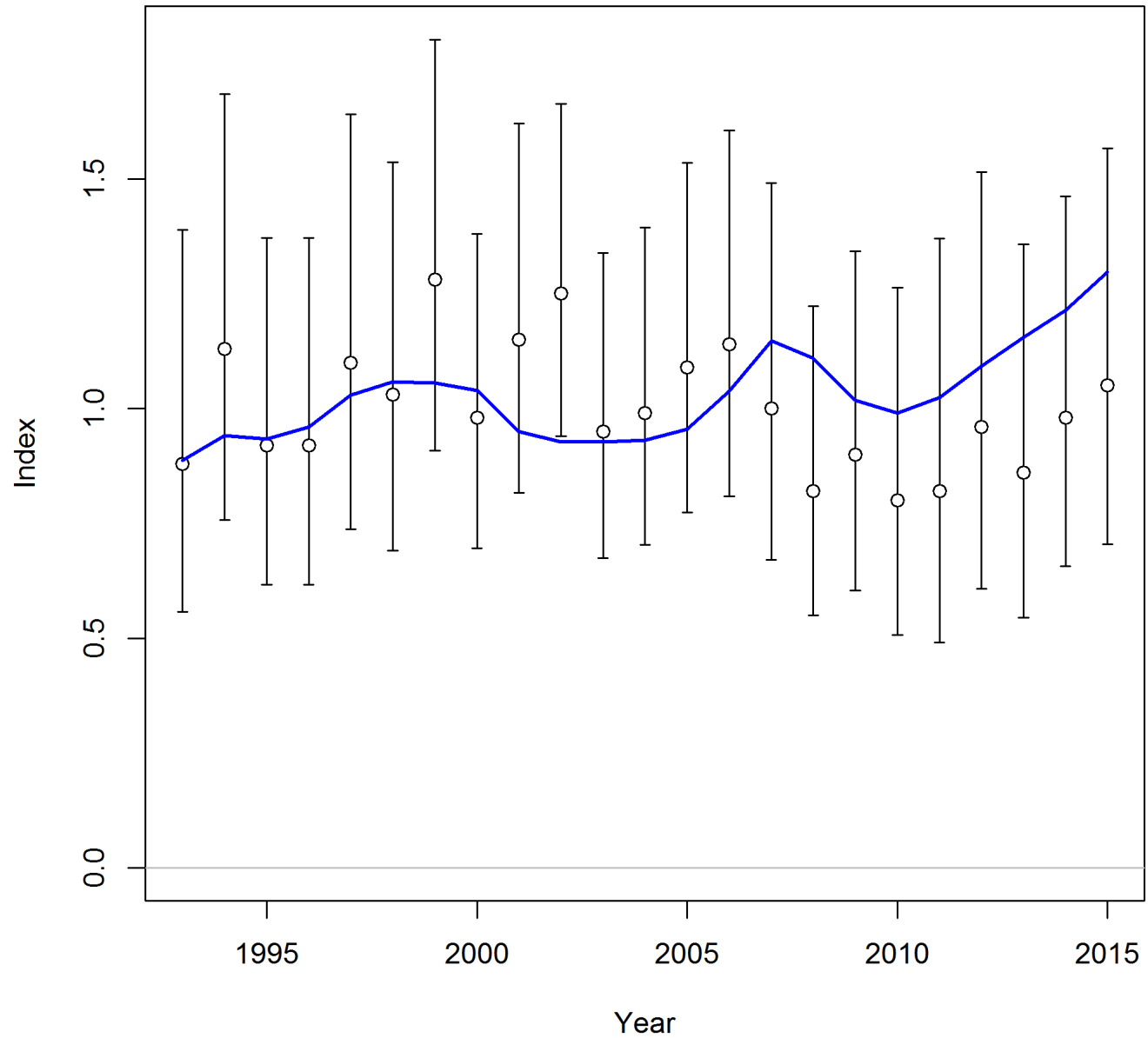


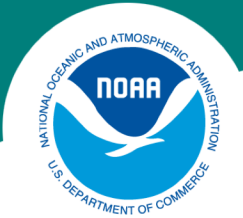
**Ending year selectivity for Rec\_HB\_CBT6**



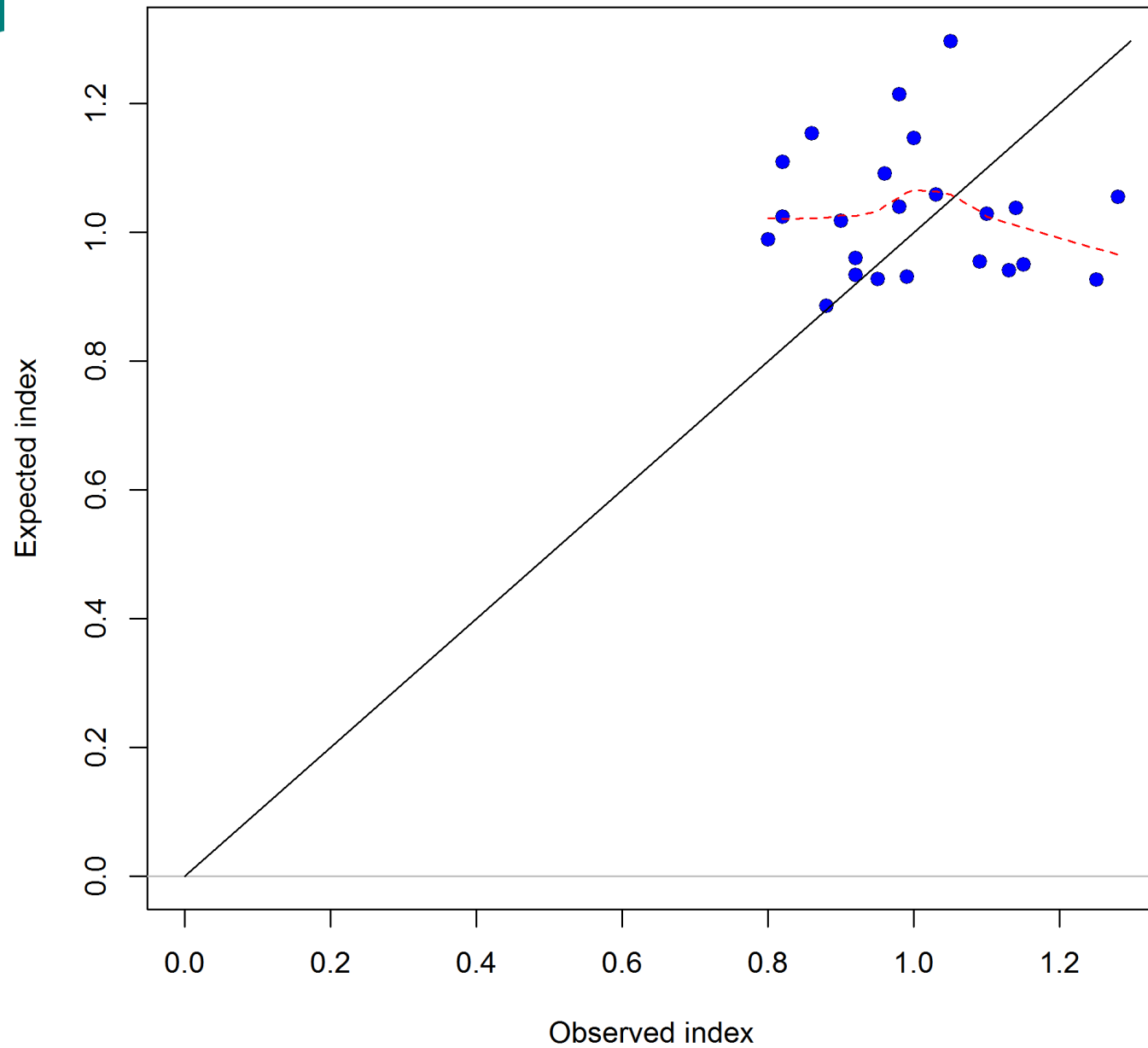


## Commercial Handline Index



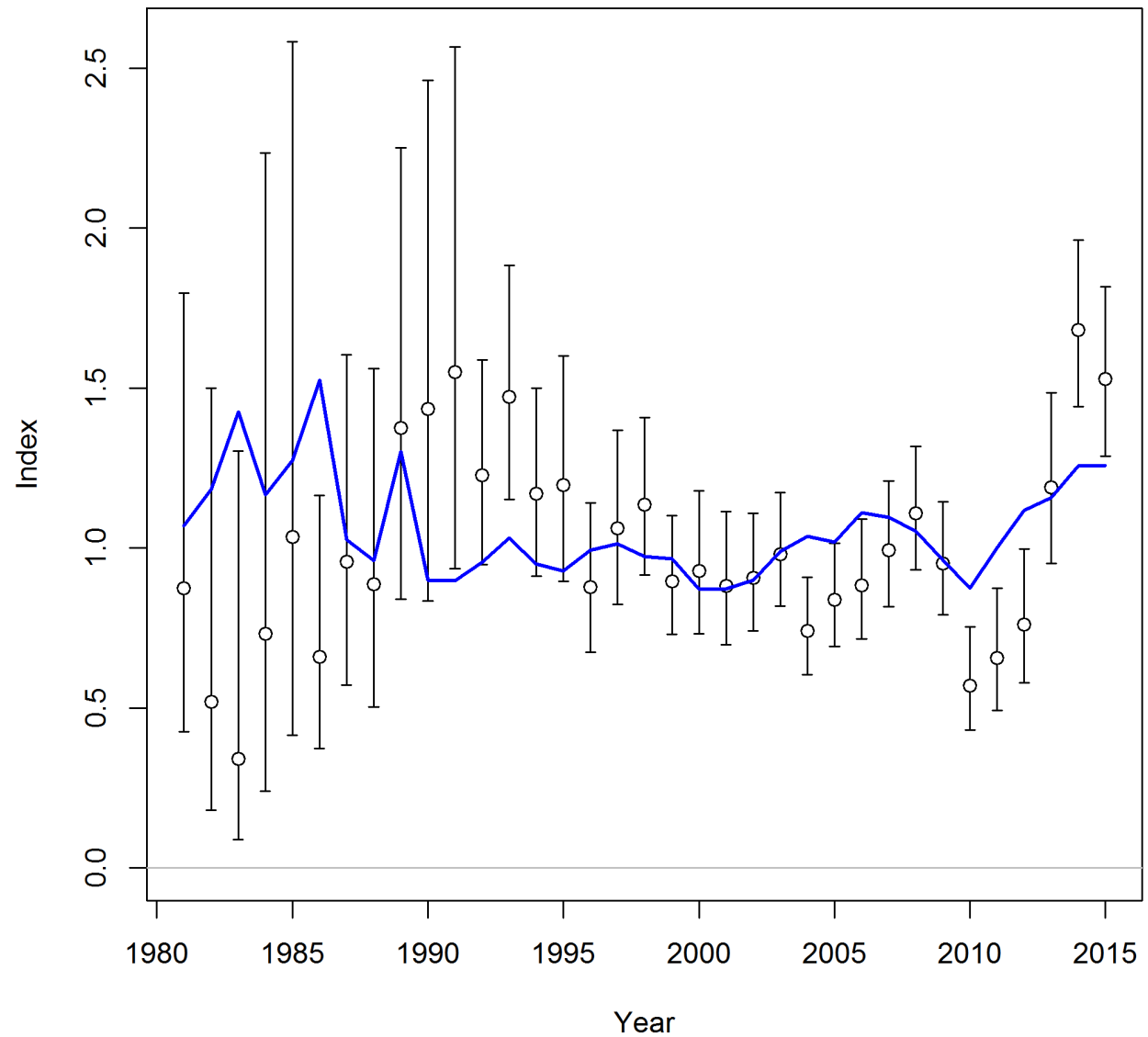


Index CHL\_MC\_1

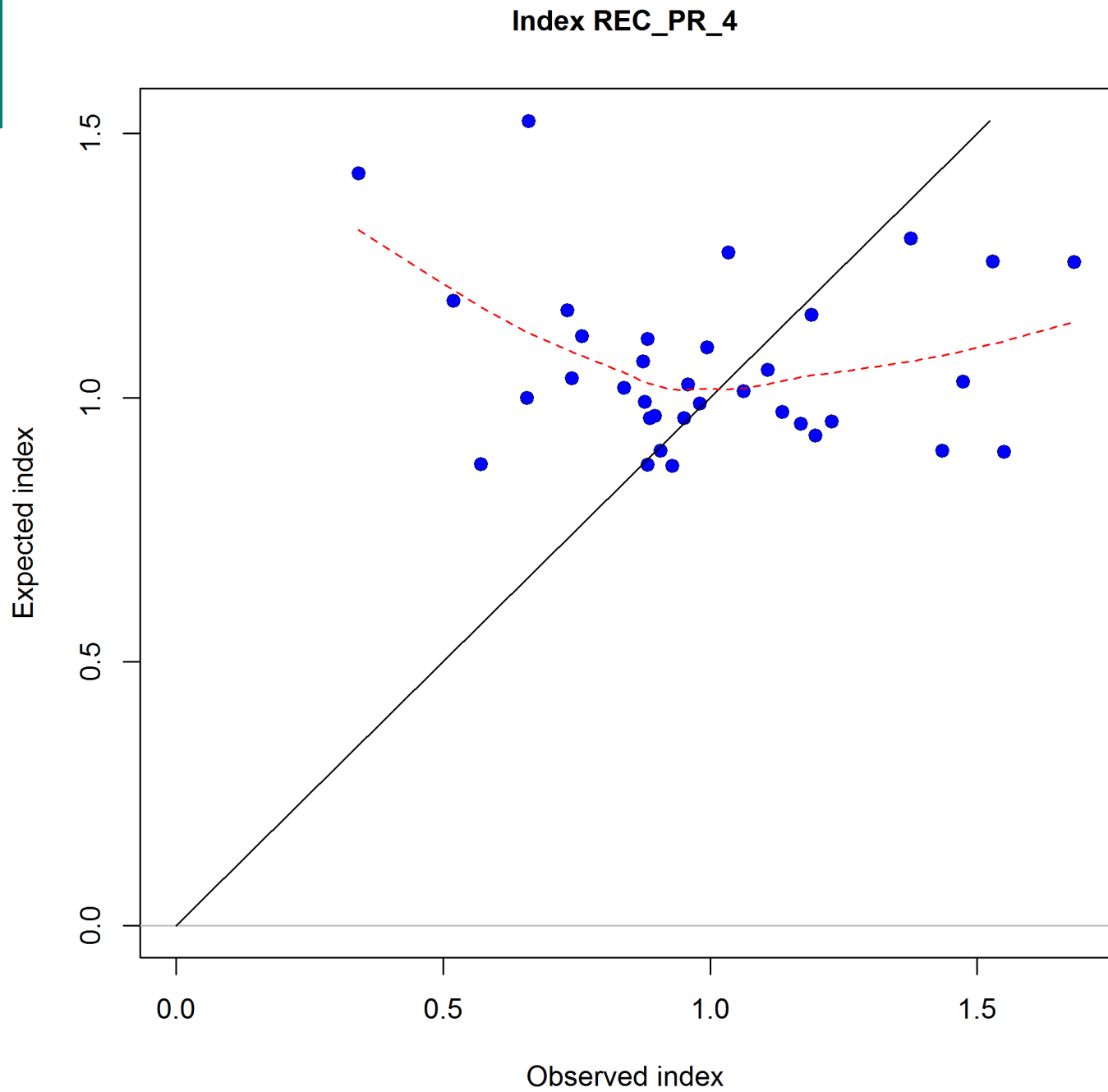
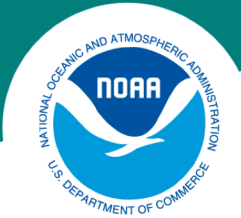


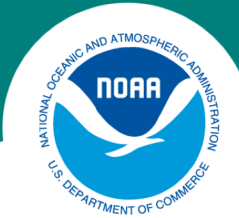


# Recreational Handline Index

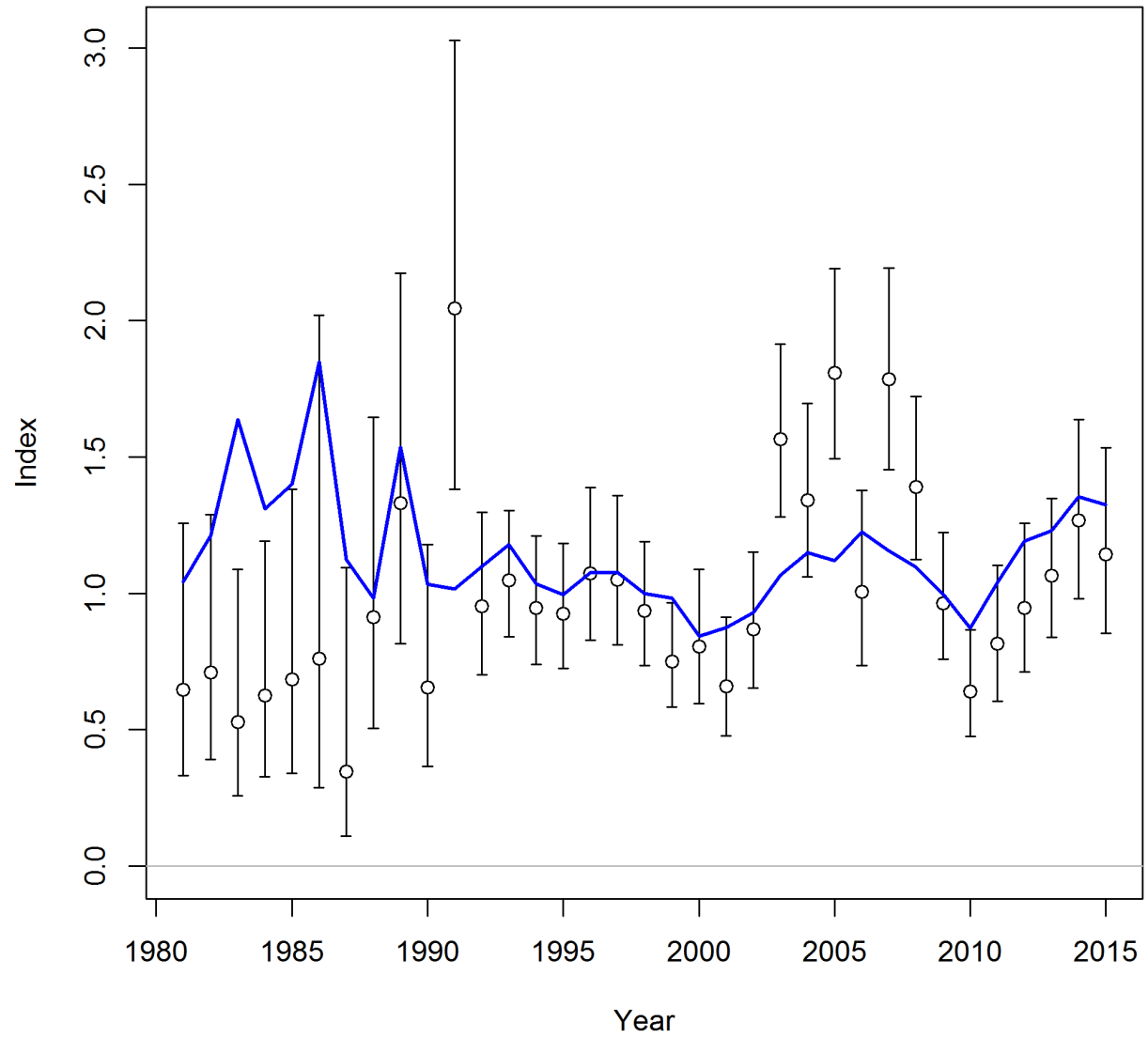


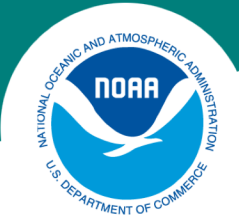




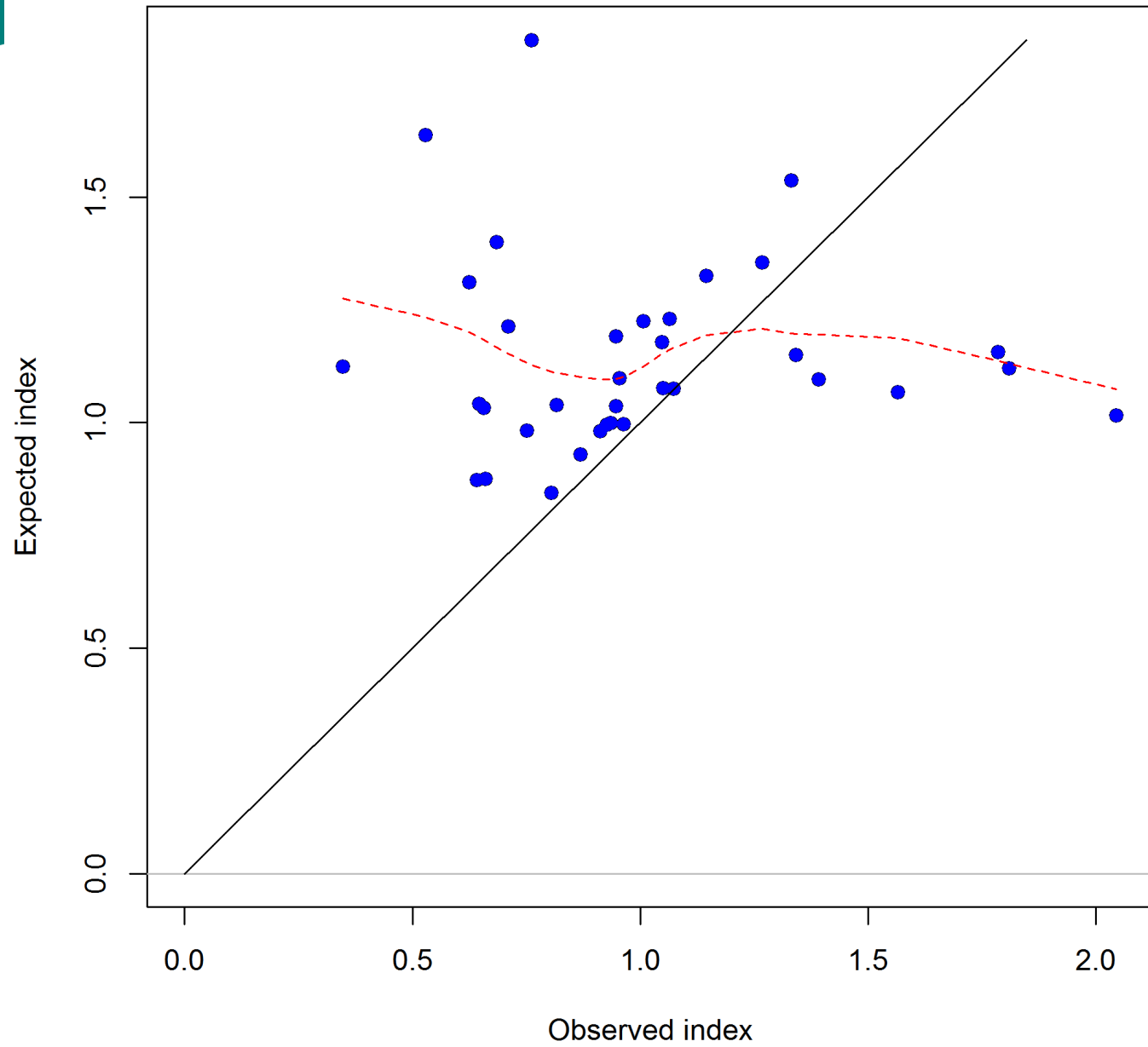


# Recreational Shore Index



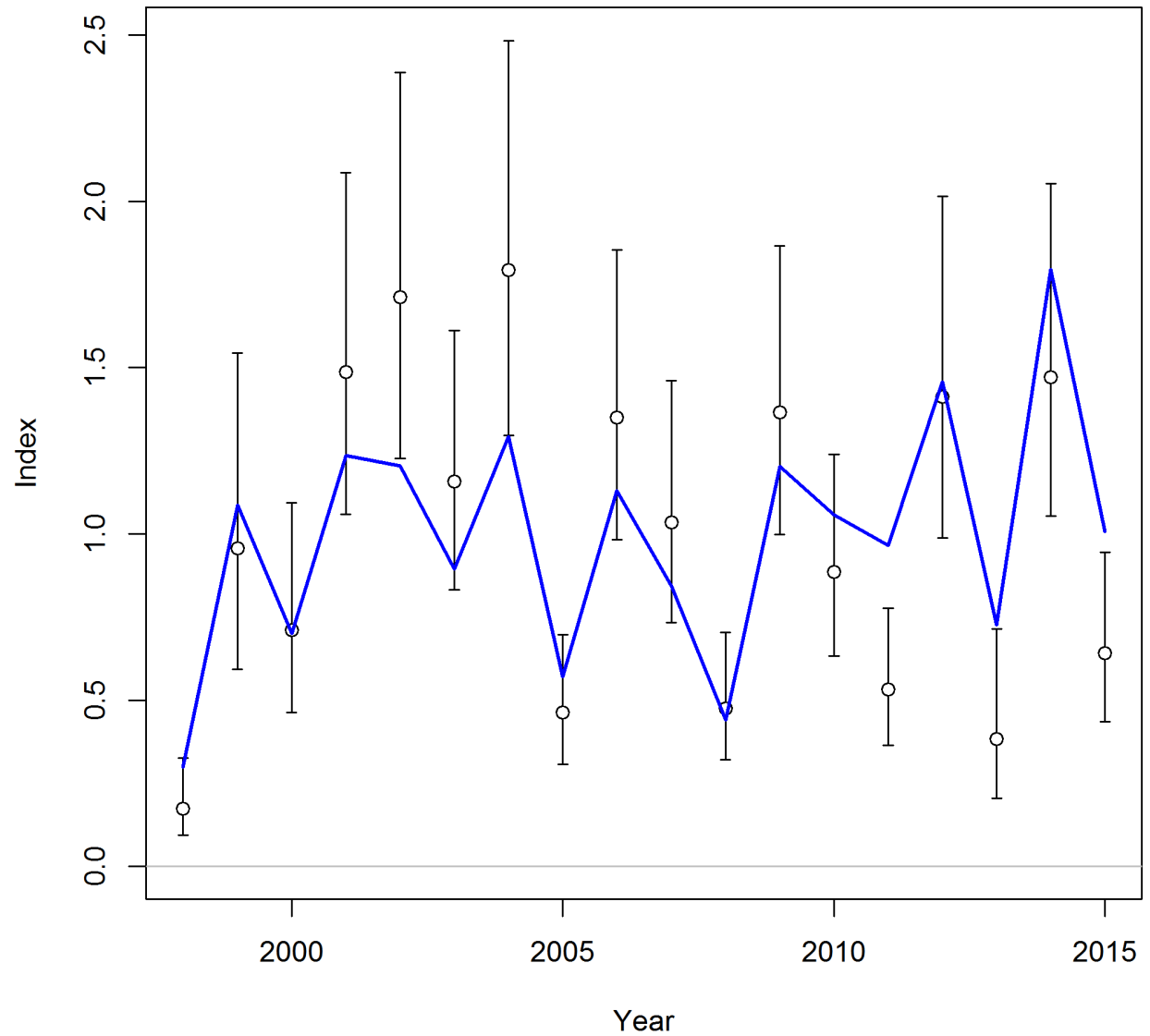


**Index Rec\_Shore\_5**



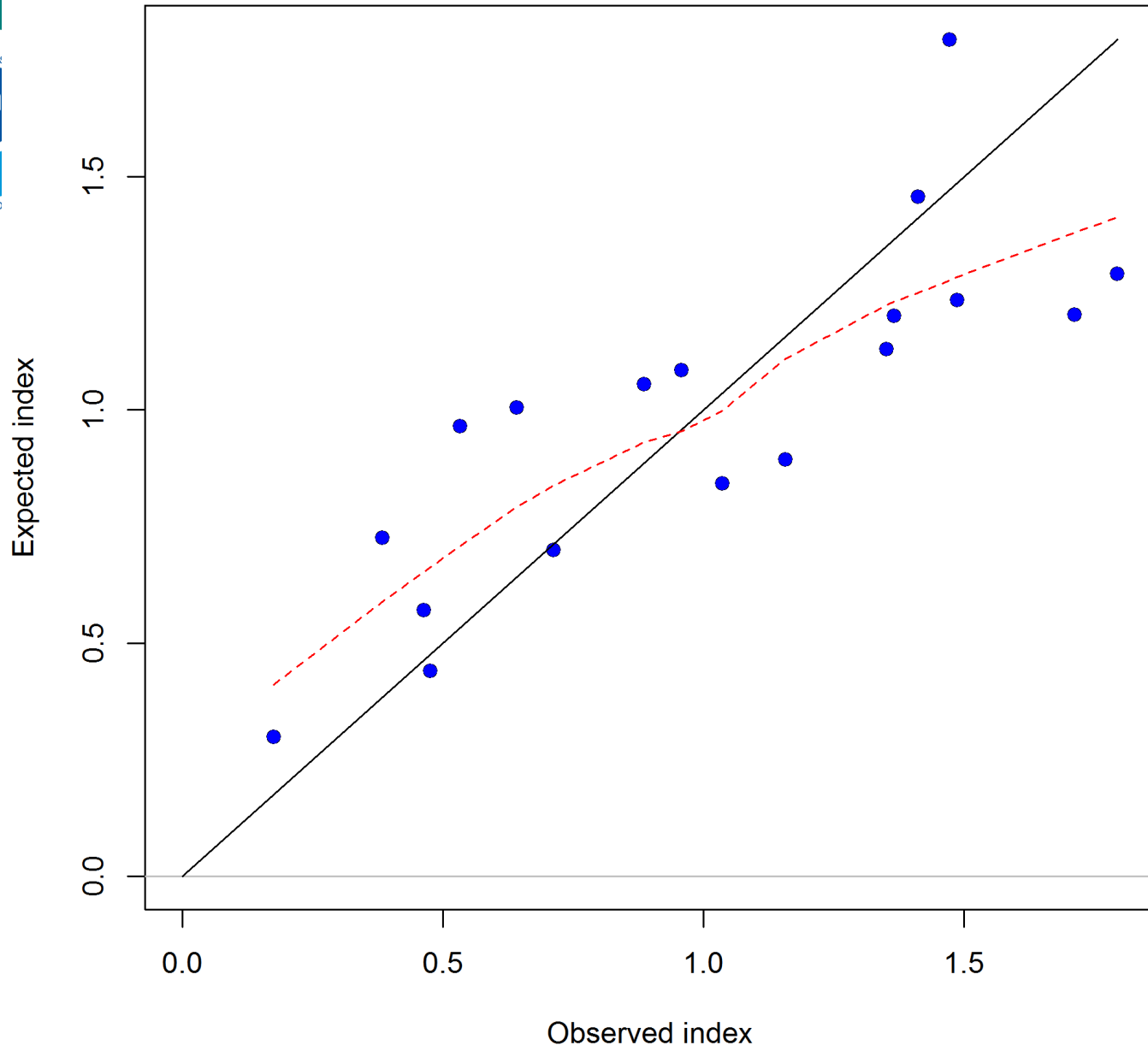


## FWRI Age 0 Index



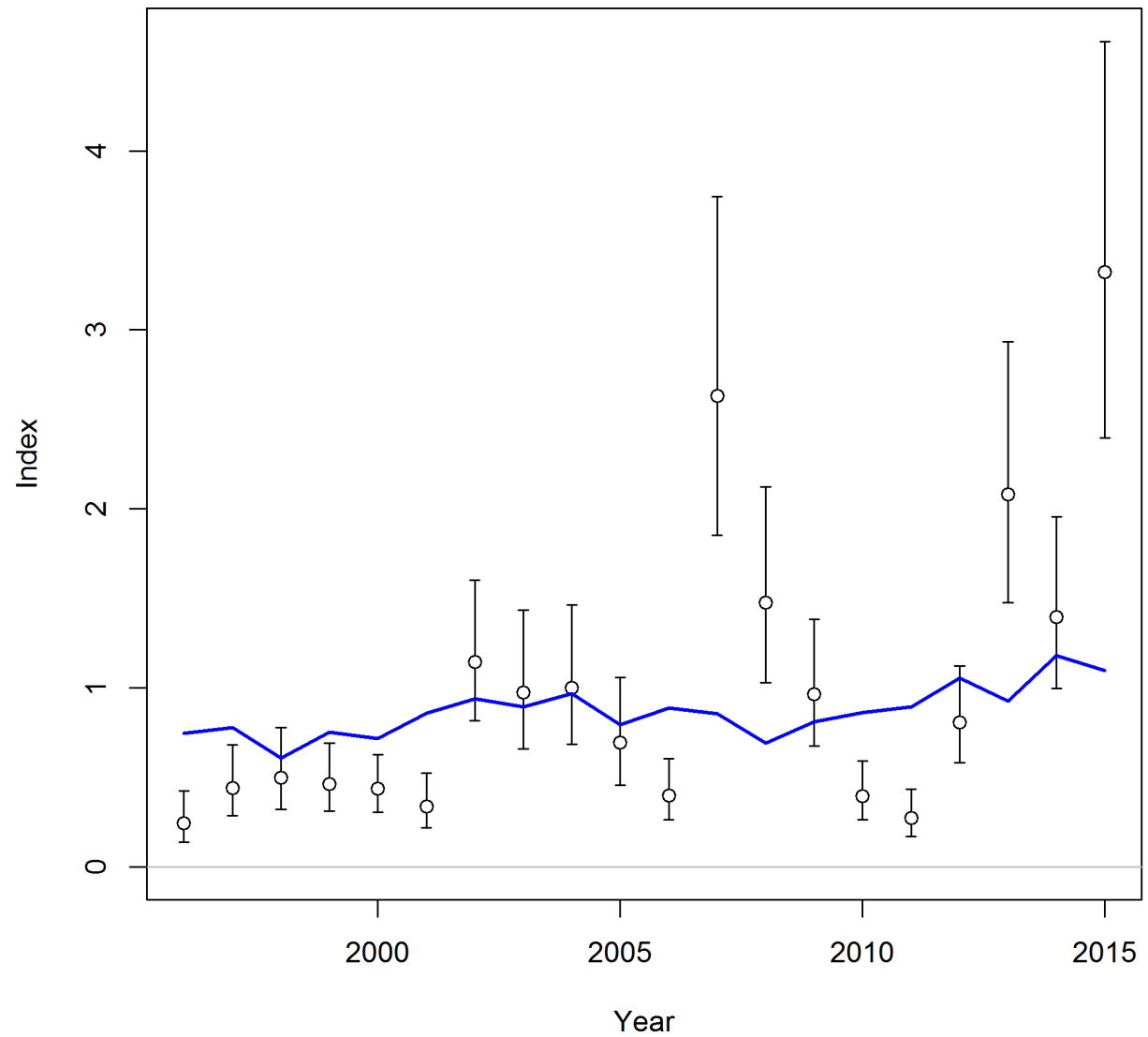


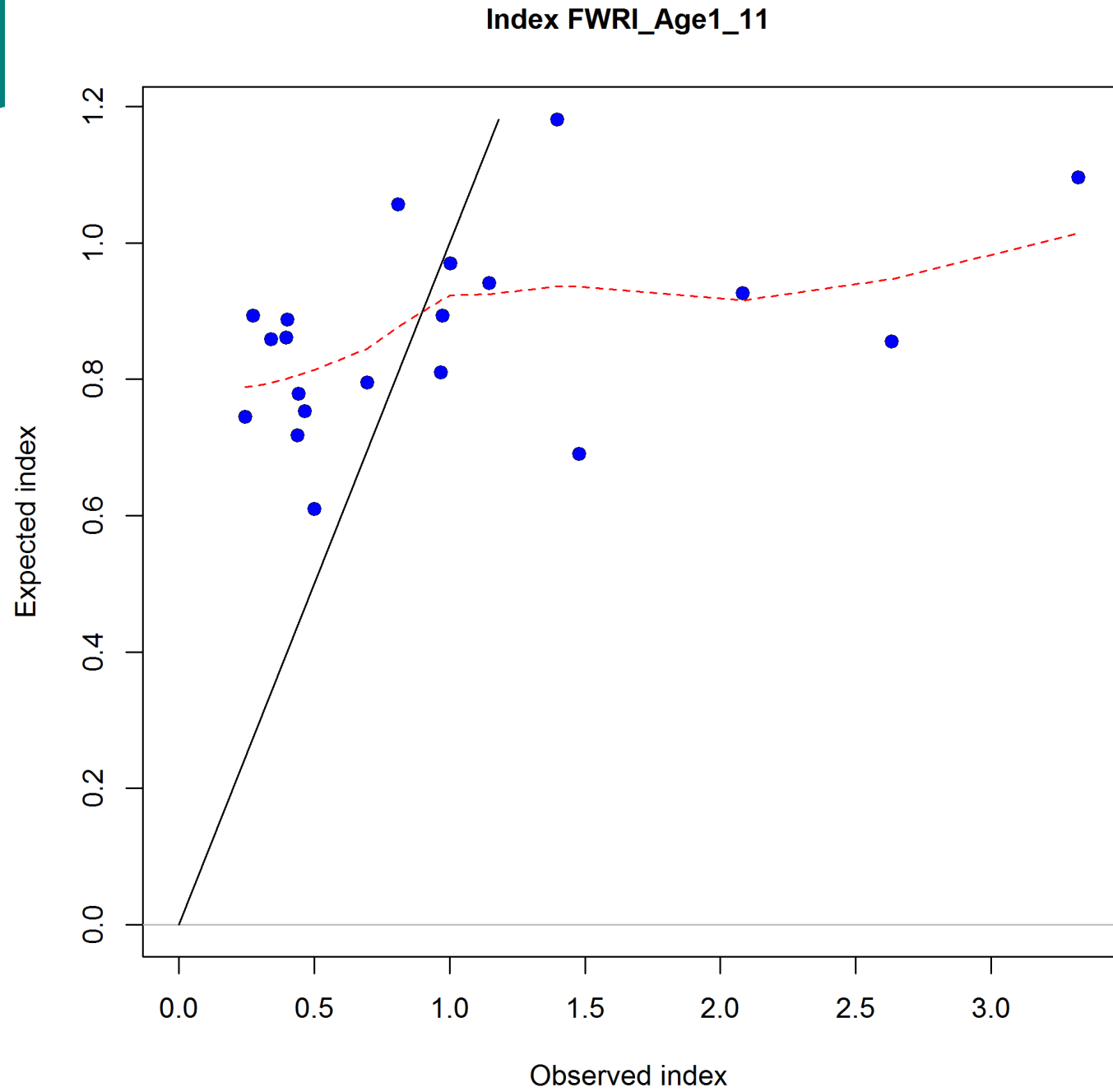
### Index FWRI\_Age0\_10





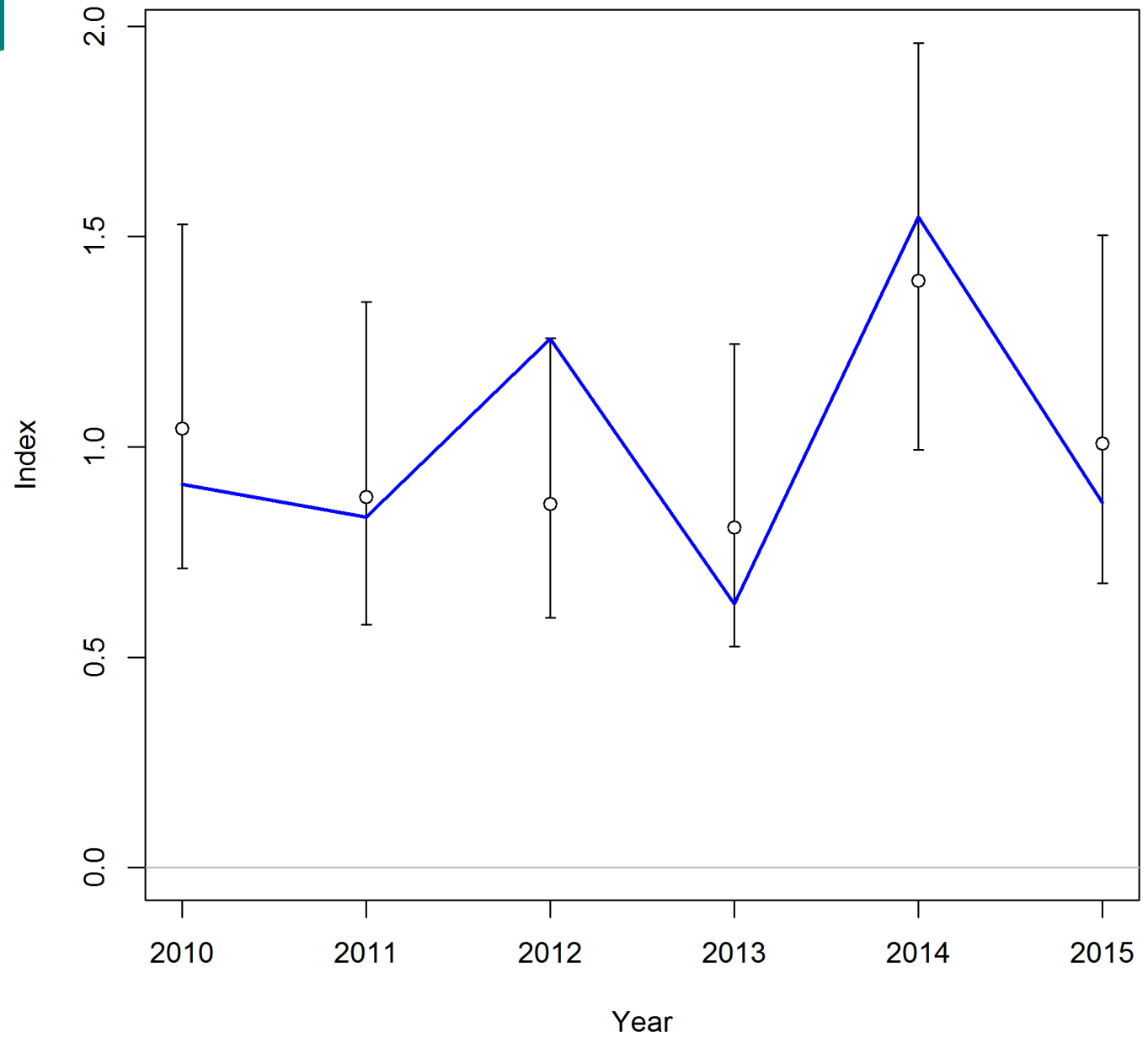
## FWRI Age 1 Index



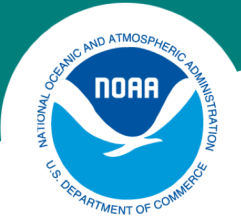




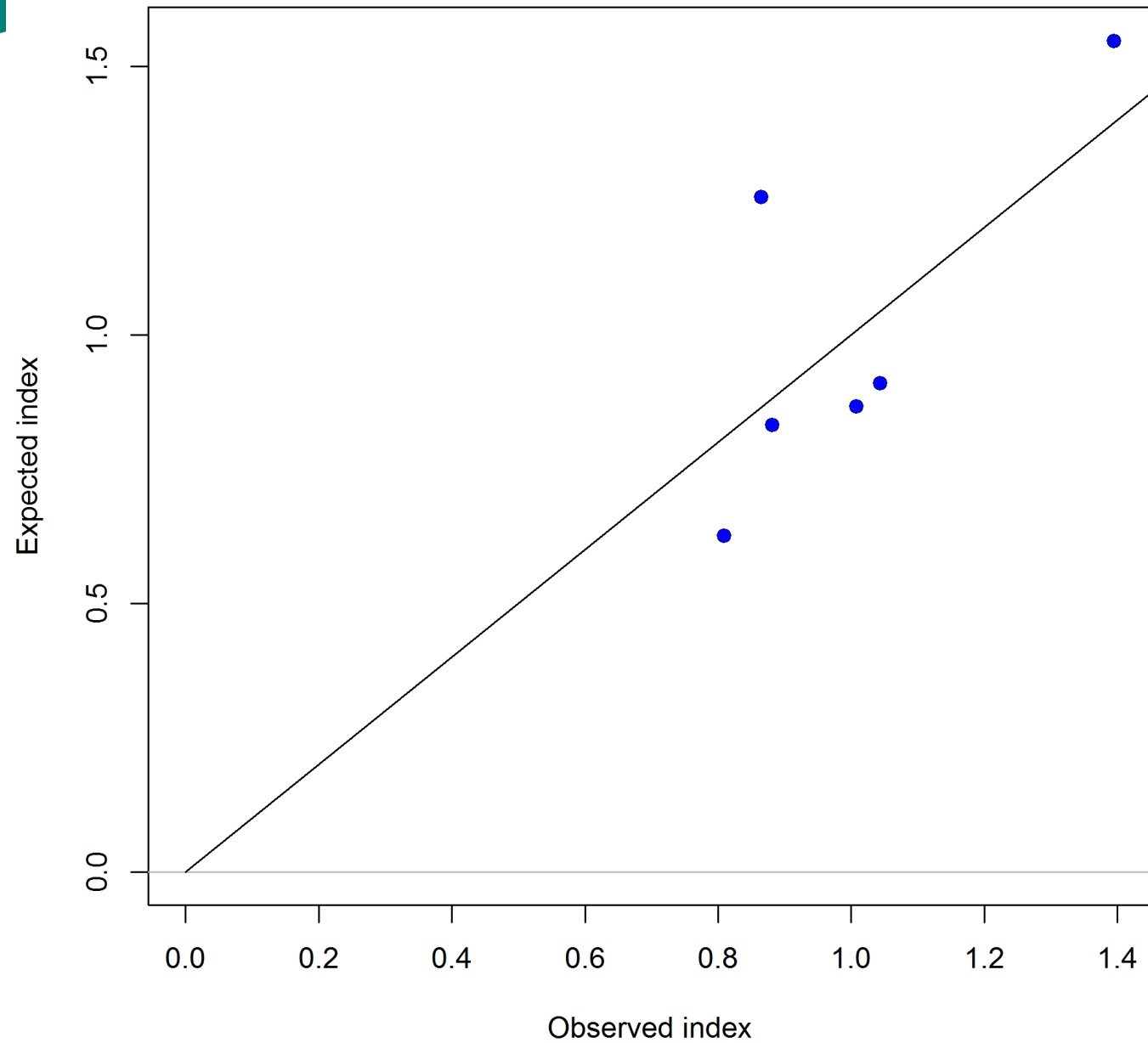
**Index SEAMAP\_Trawl\_12**

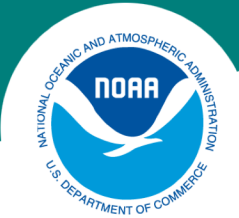




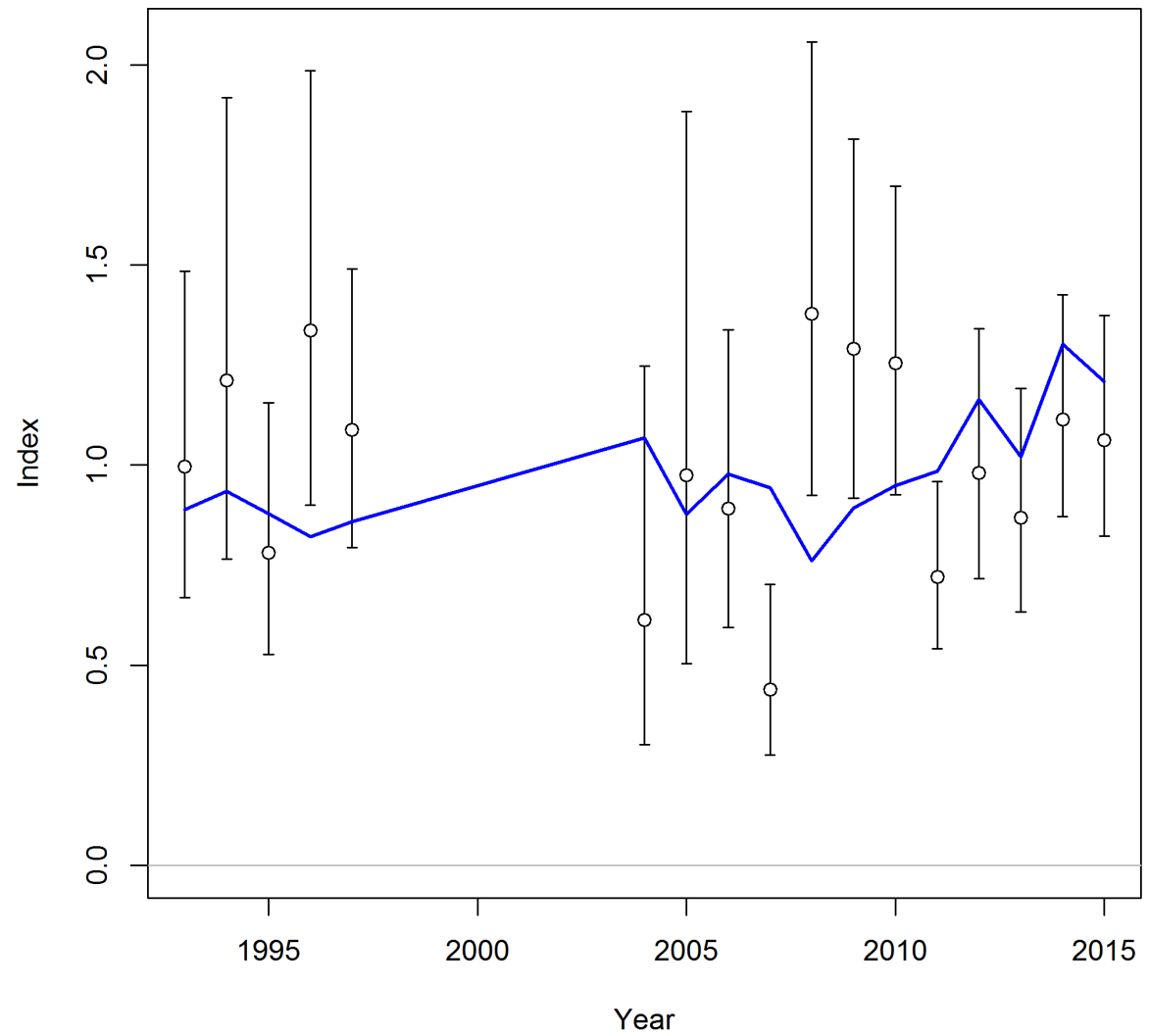


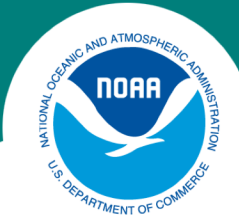
**Index SEAMAP\_Trawl\_12**



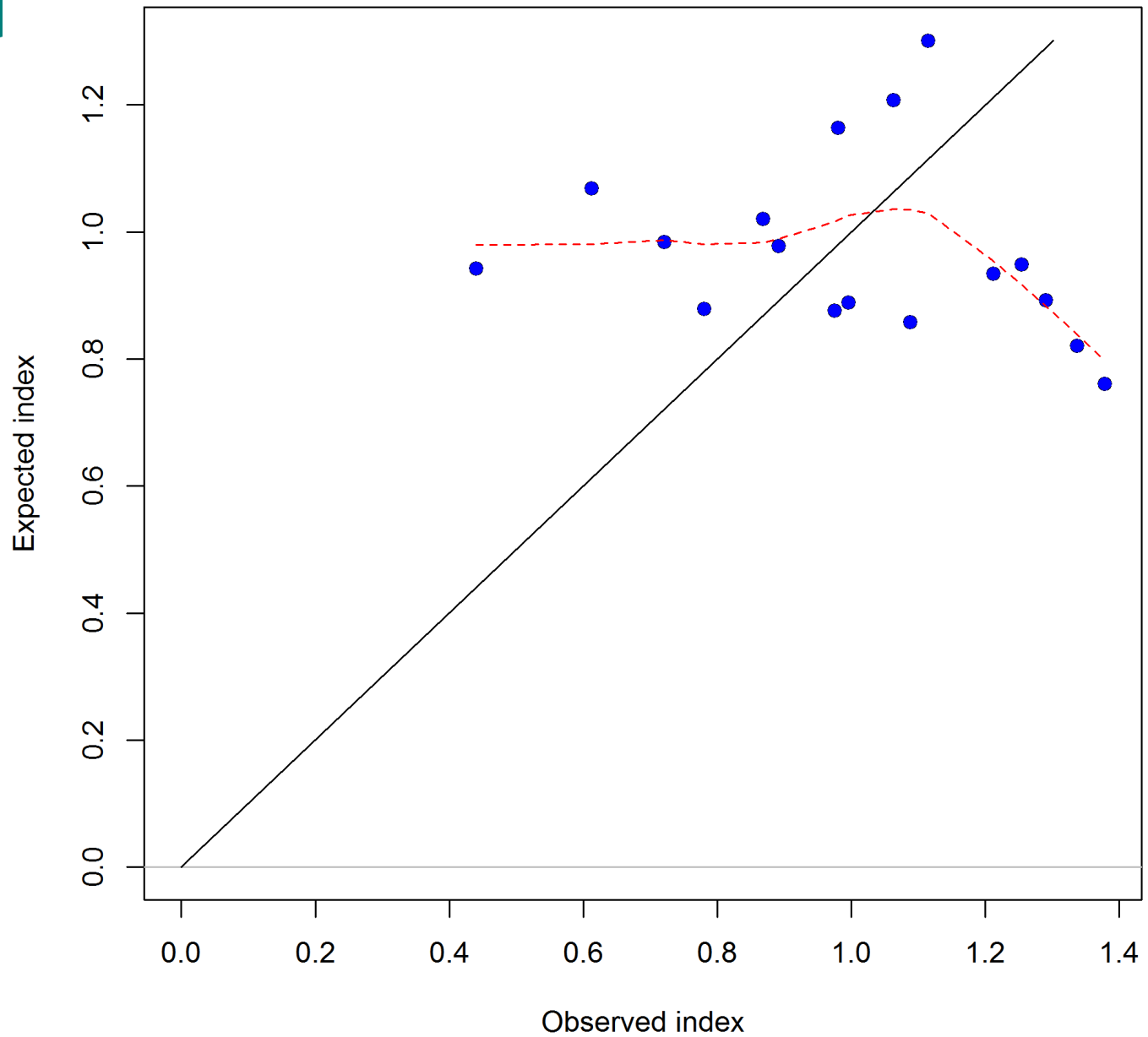


## NMFS FWRI Video Index



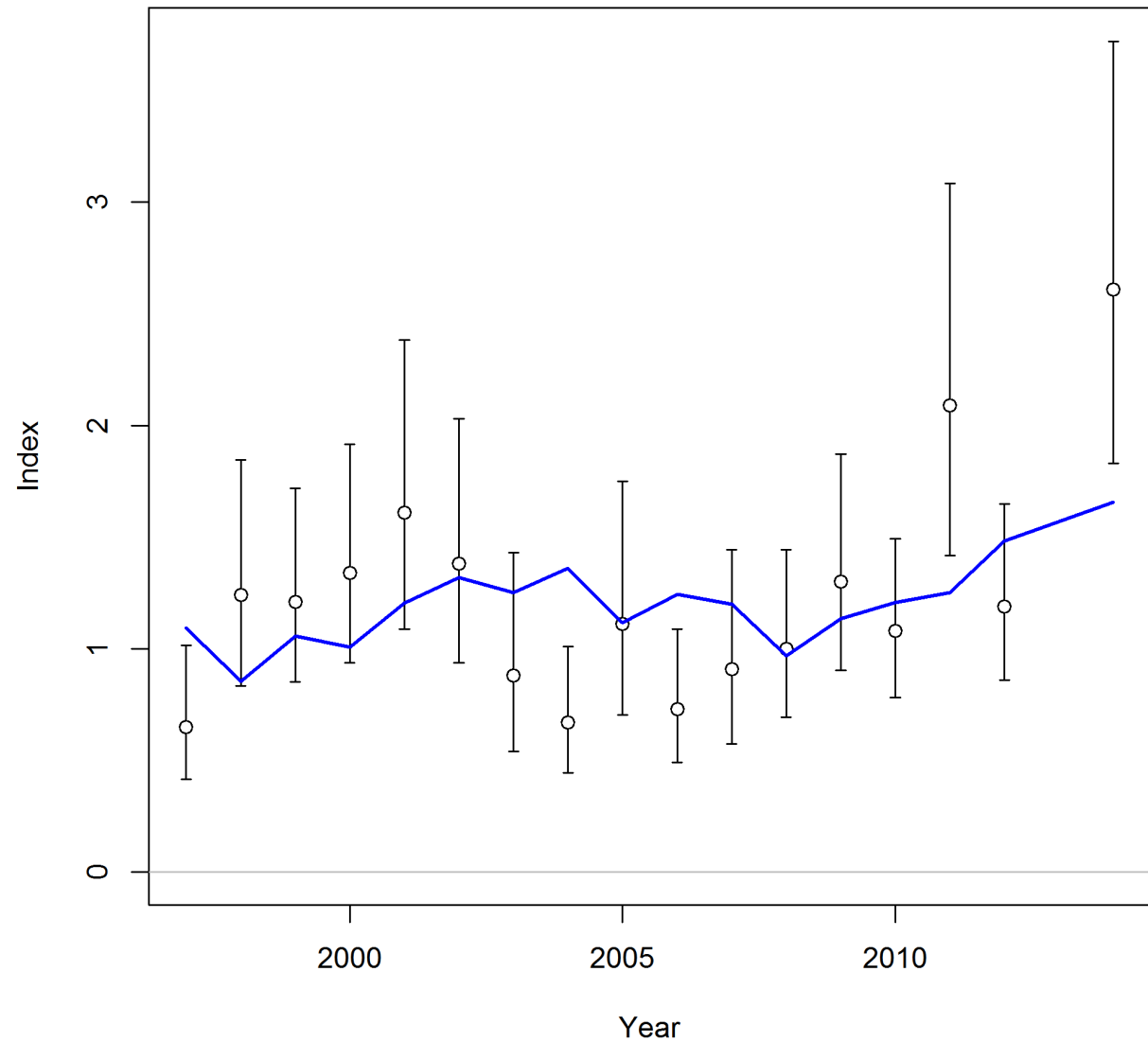


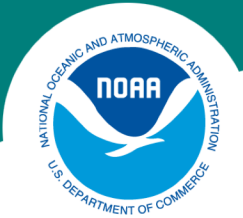
Index NMFS\_FWRI\_Video\_13



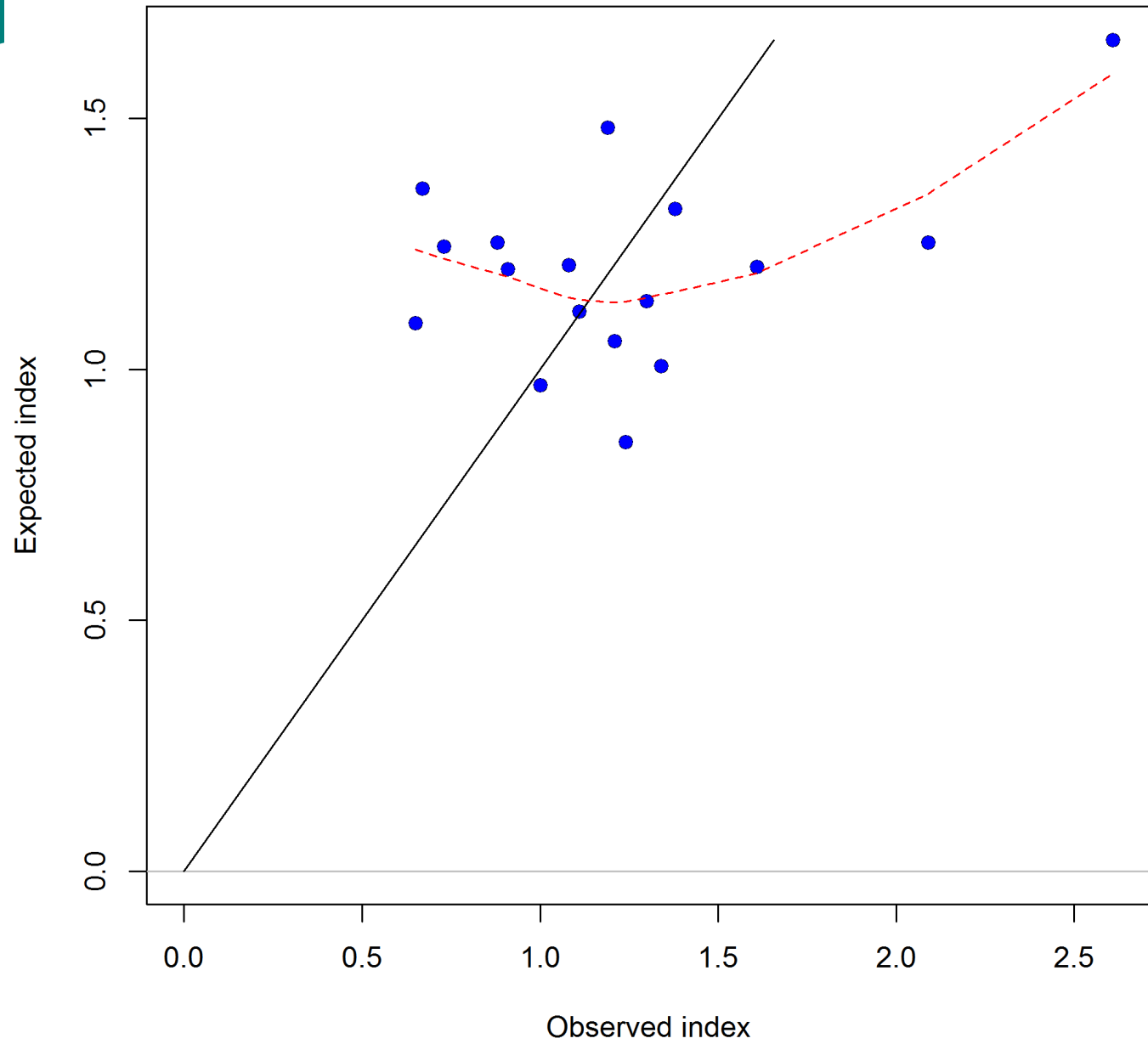


# Visual Survey Index



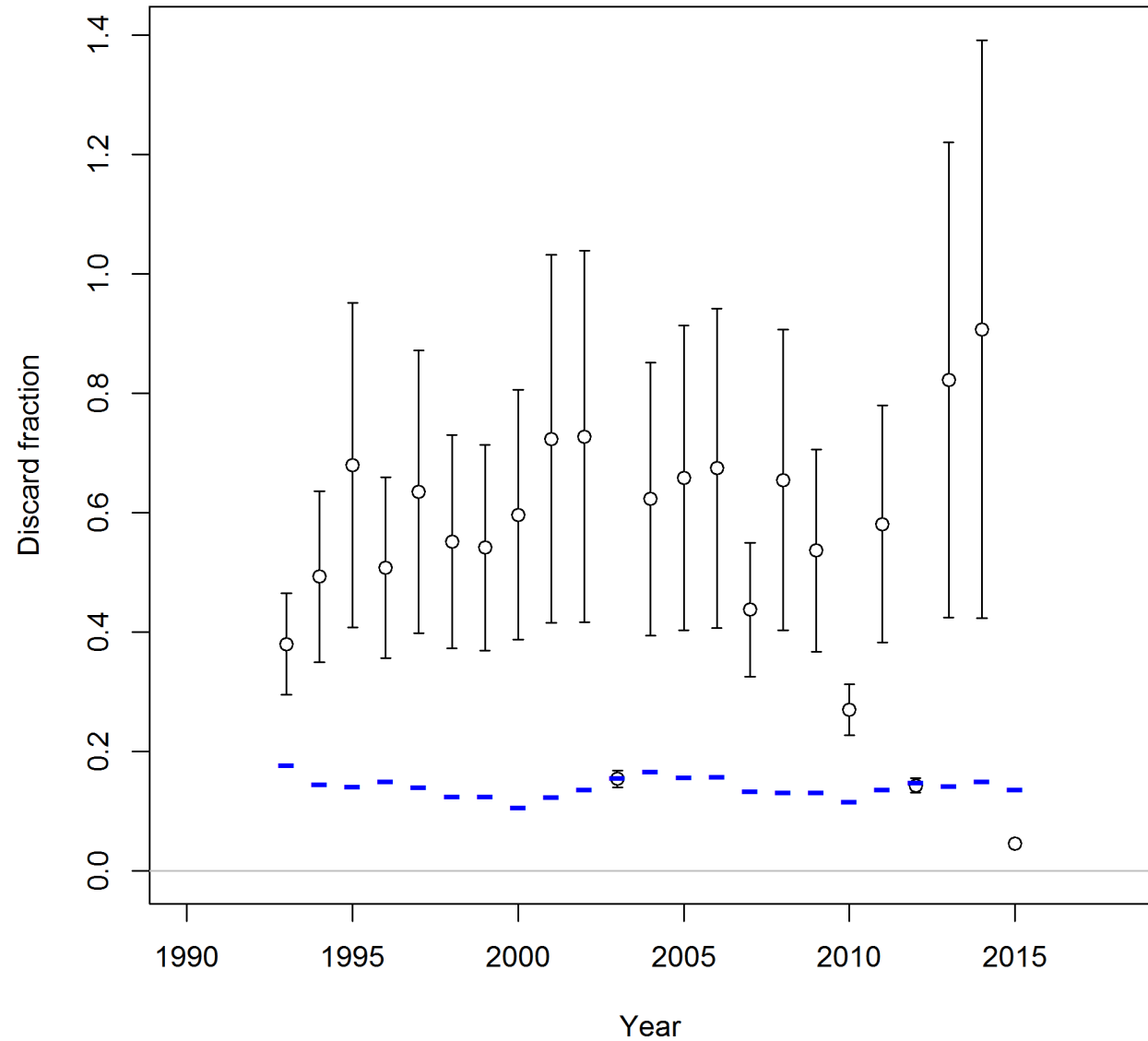


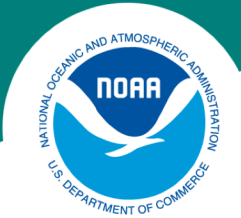
**Index Visual\_Survey\_14**



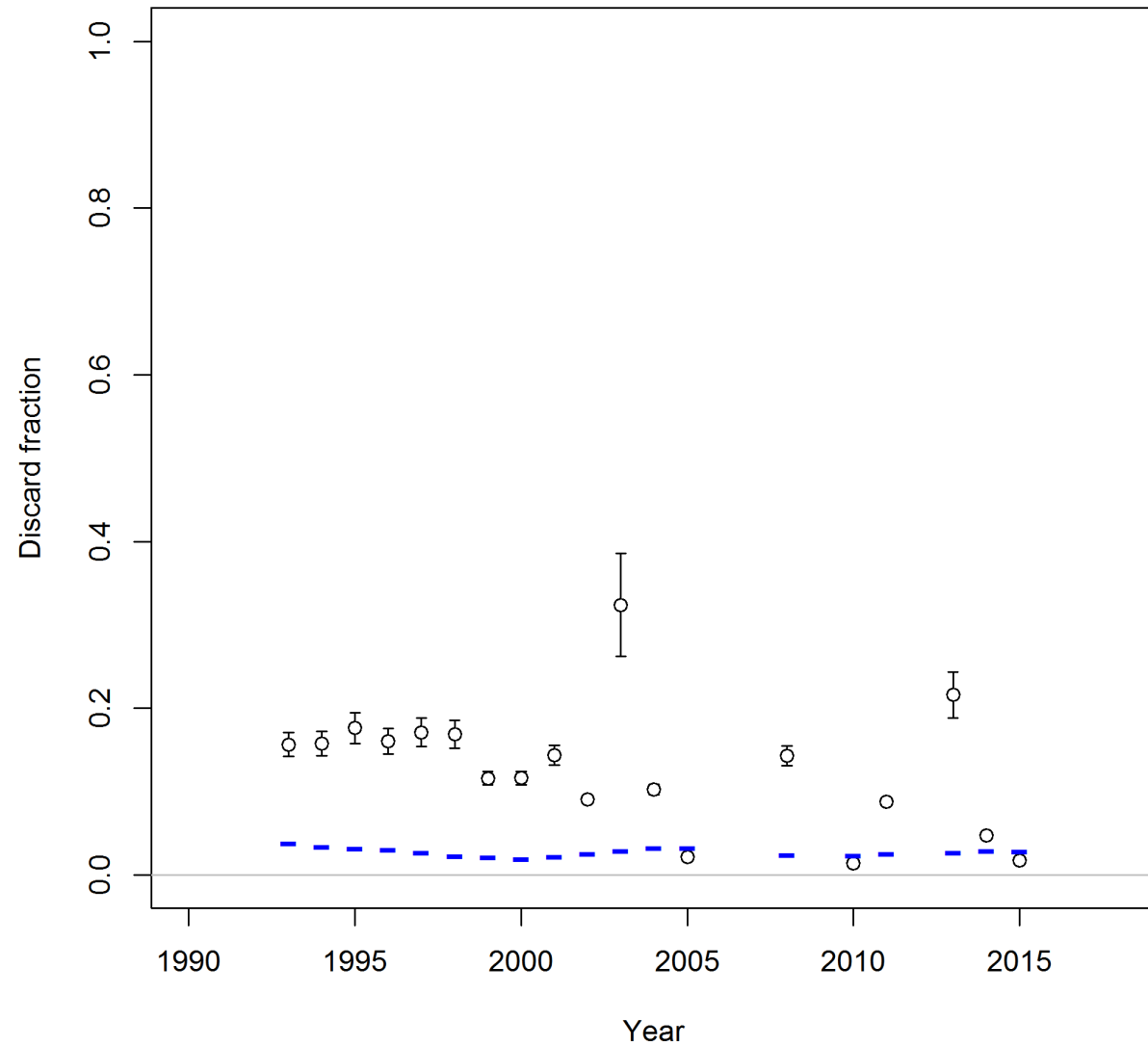


# Discard Fraction: Commercial Monroe County



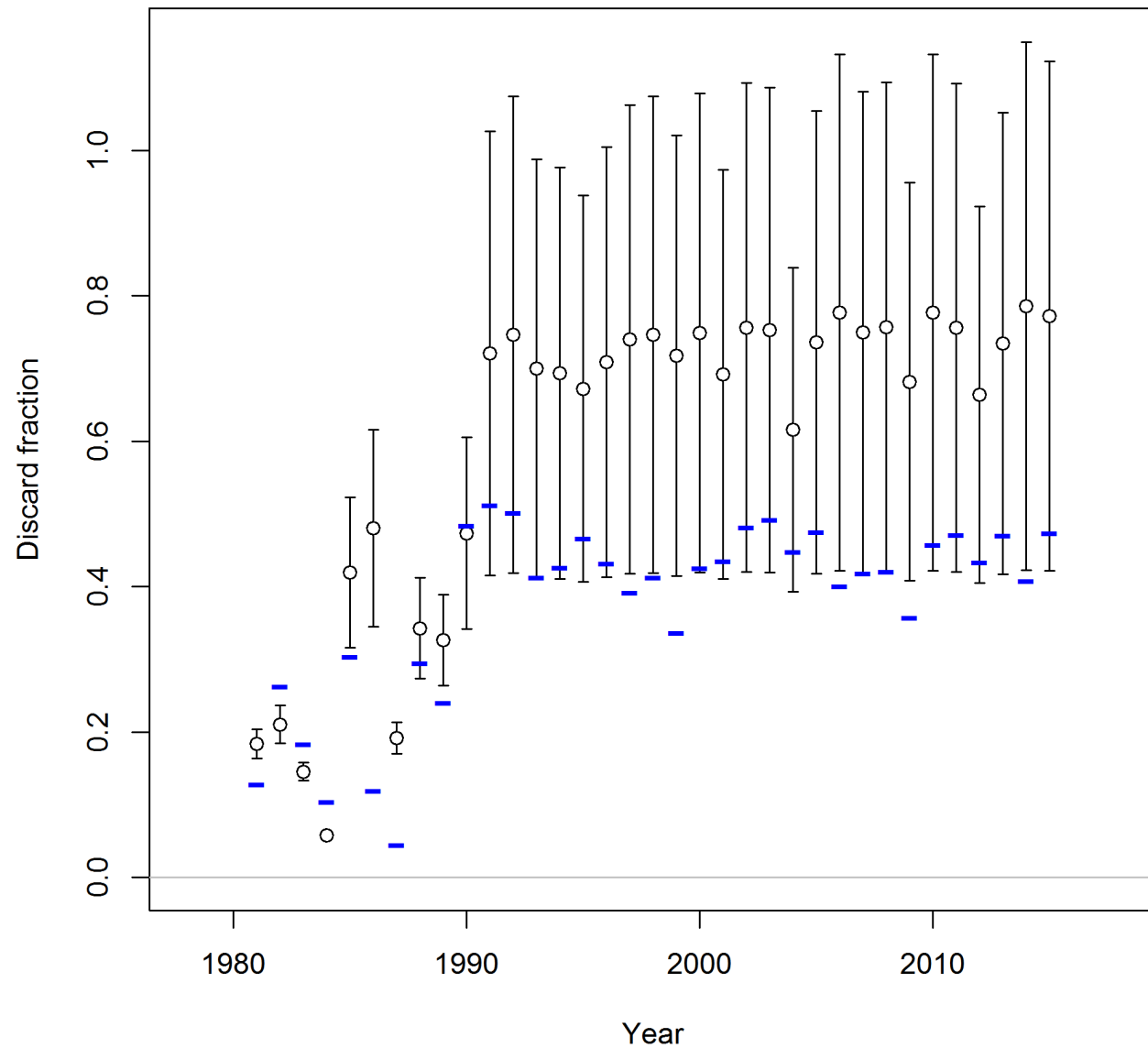


## Discard Fraction: Commercial other than Monroe County

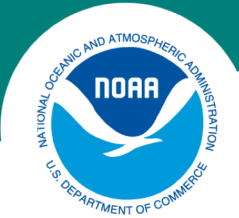




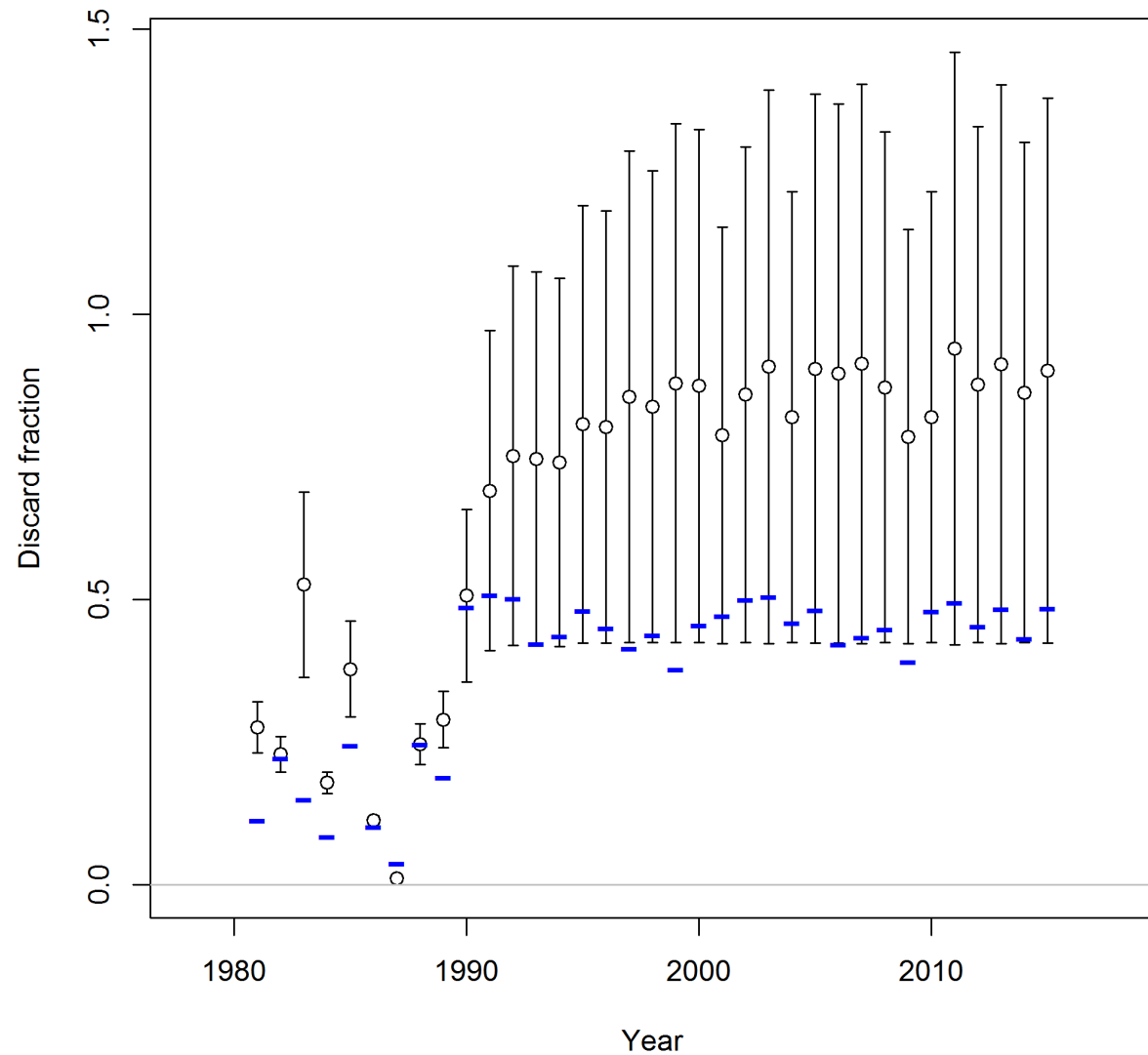
## Discard Fraction: Recreational Private

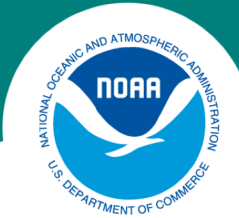




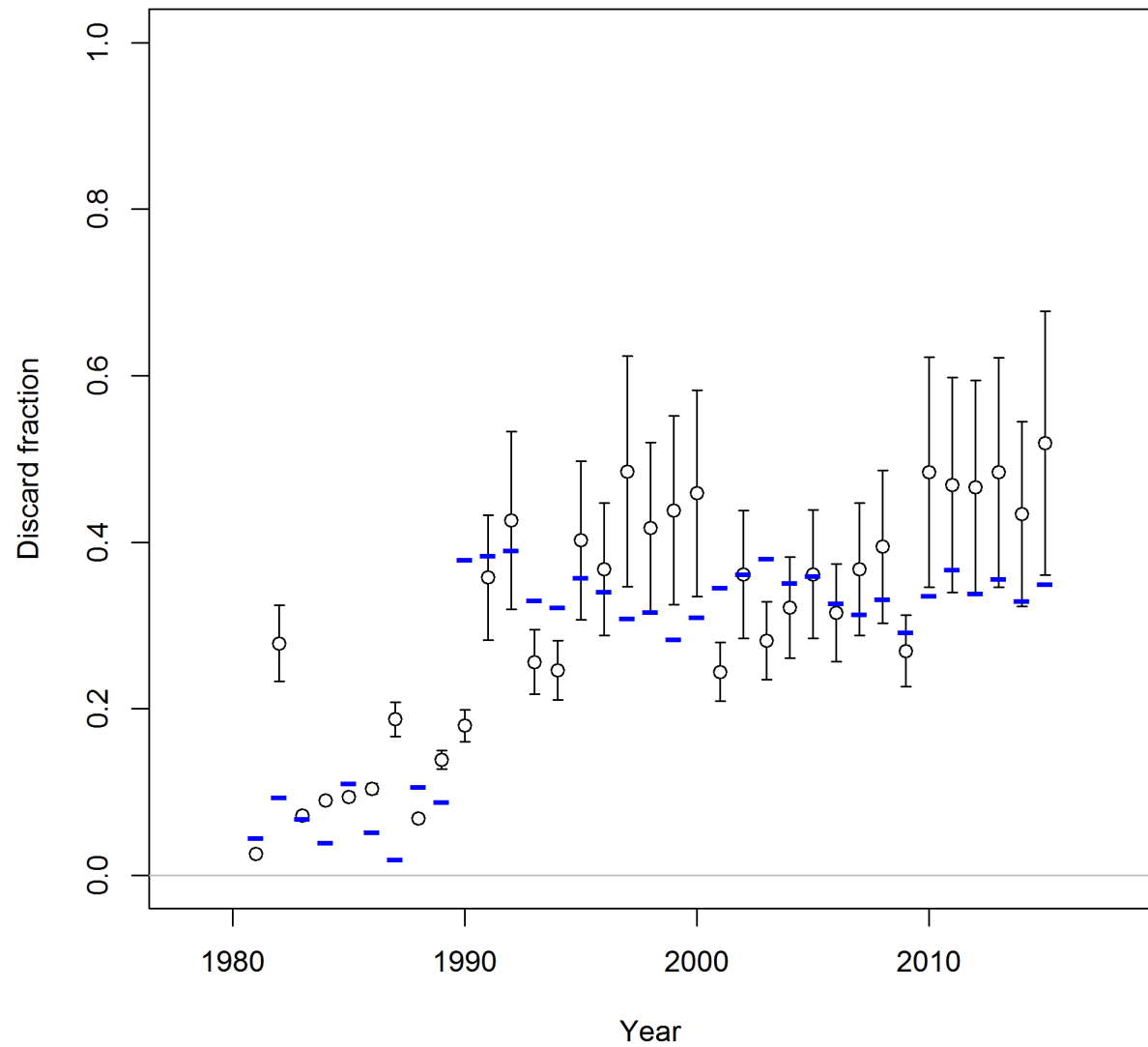


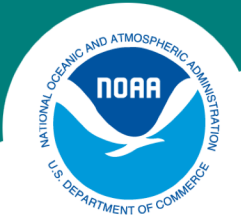
## Discard Fraction: Recreational Shore



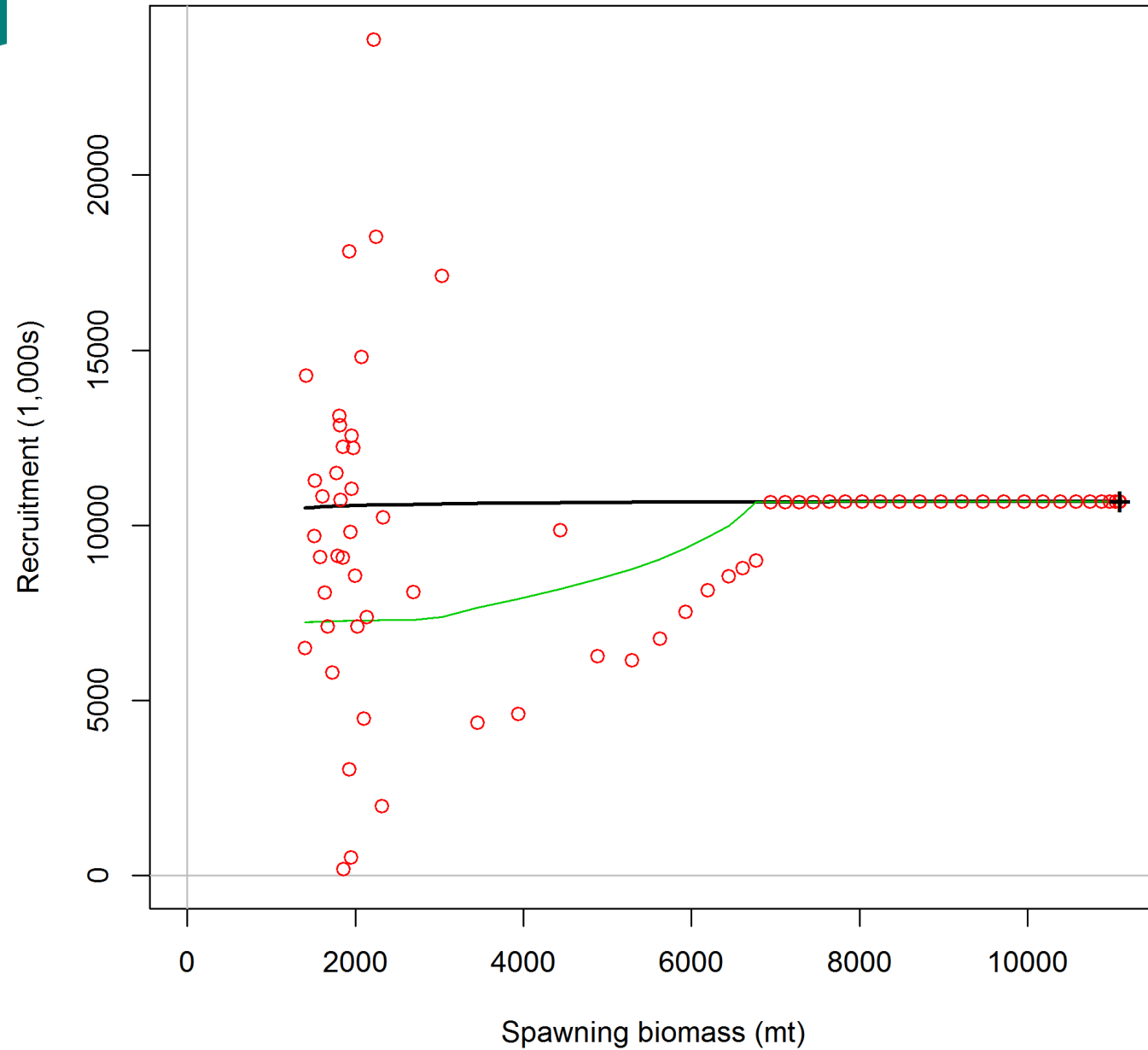


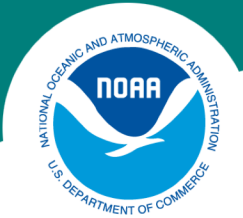
## Discard Fraction: Recreational Charterboat/Headboat



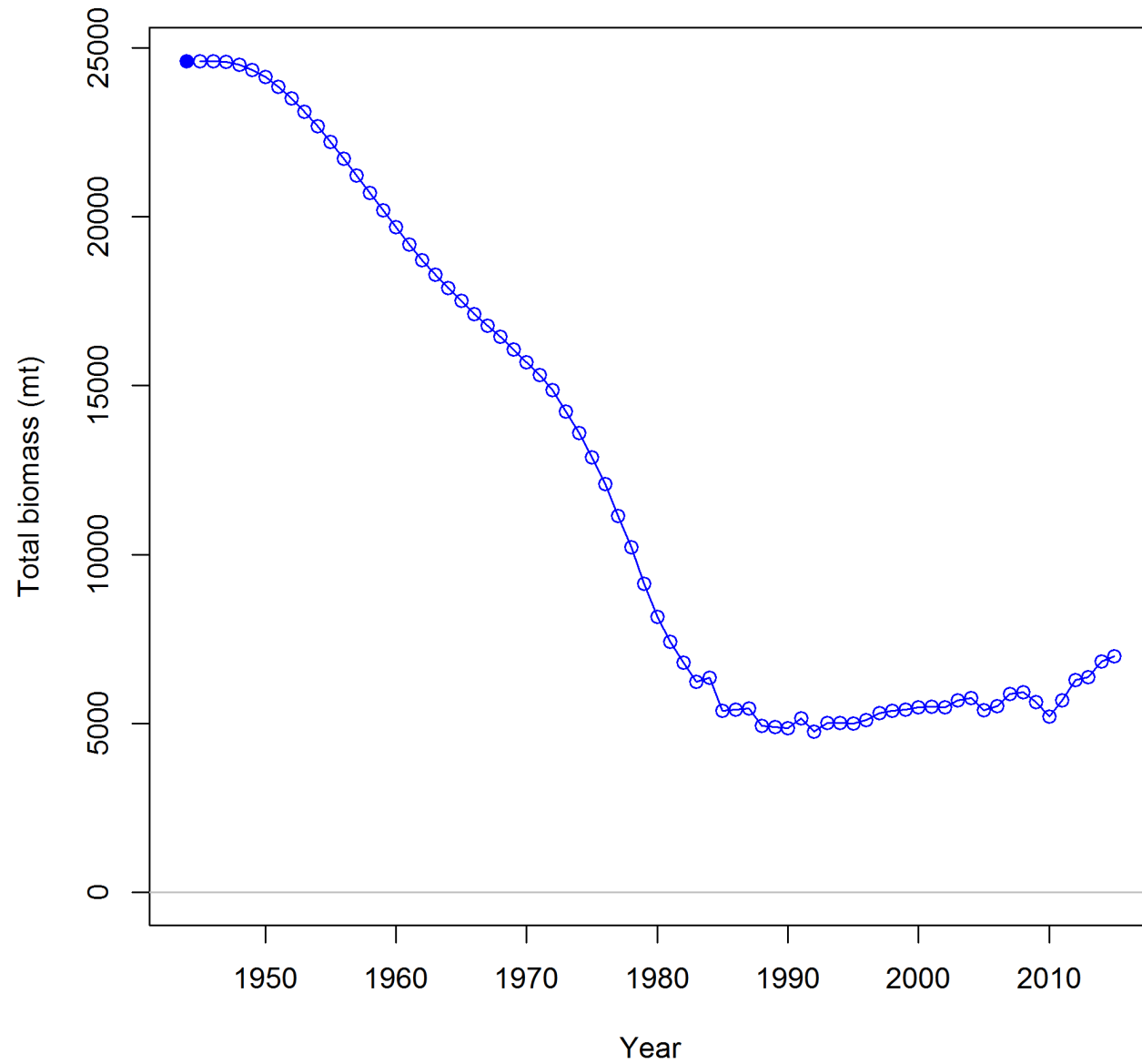


# Spawner Recruit Relationship



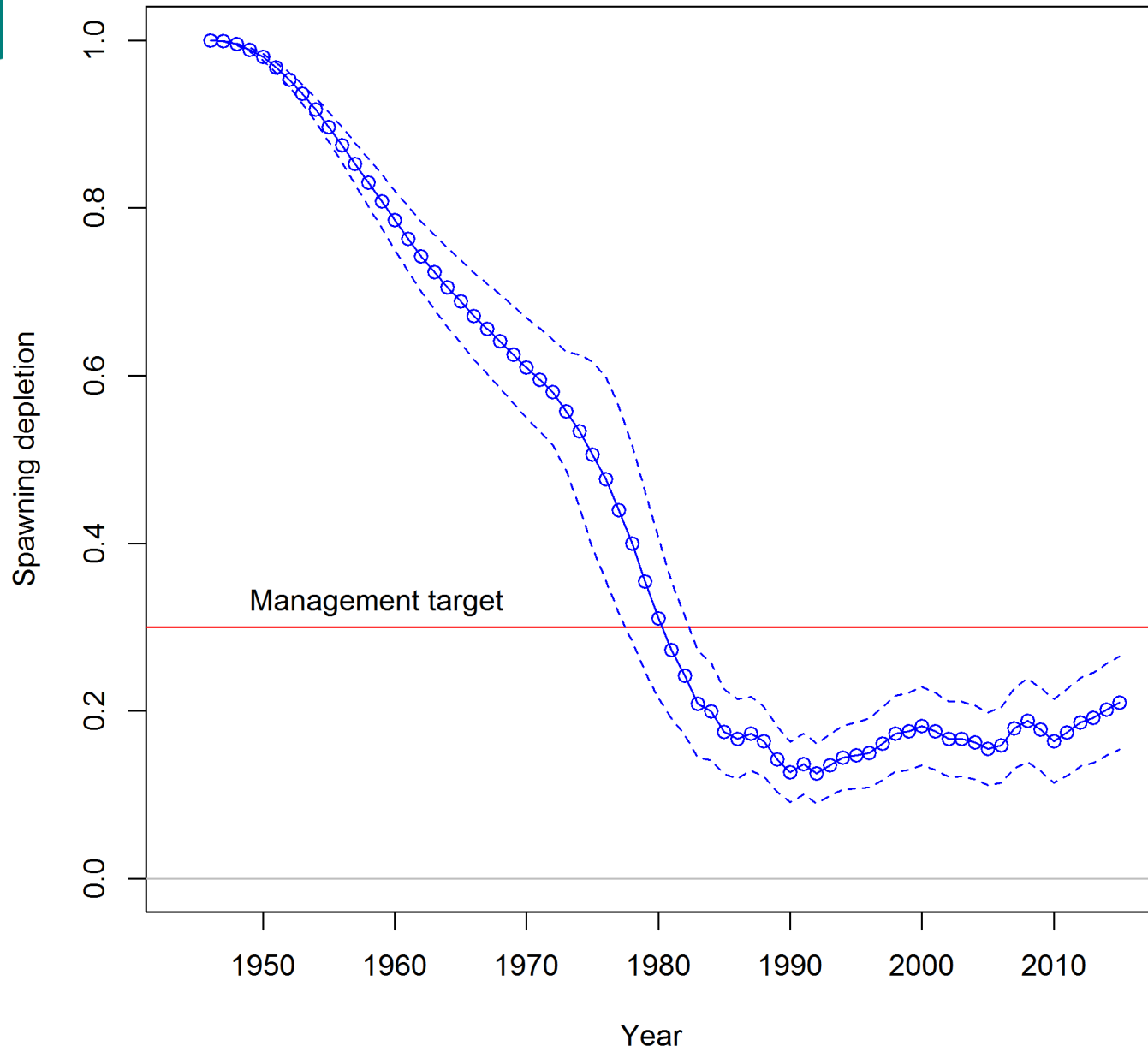


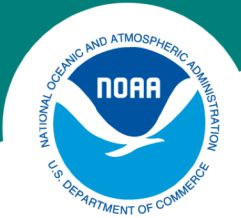
## Total Biomass





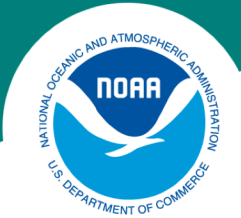
### Spawning depletion with ~95% asymptotic intervals



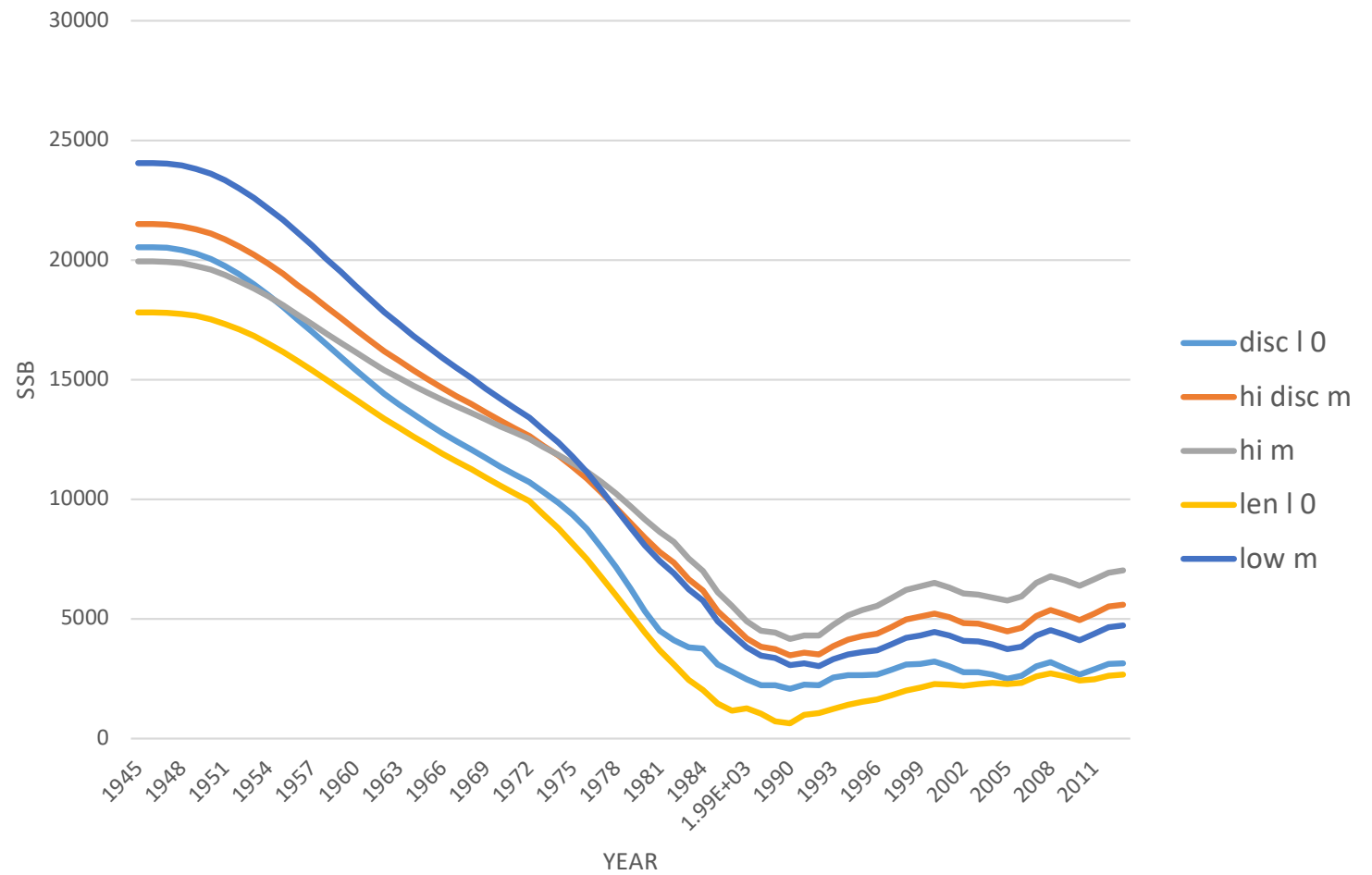


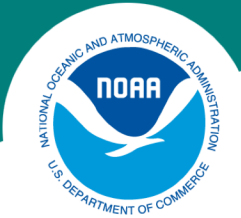
## Sensitivity Analysis

- Low Natural Mortality
- High Natural Mortality
- High Discard Mortality
- No Length effect
- No discard effect
- Jackknife
- Retrospective
- Jitter

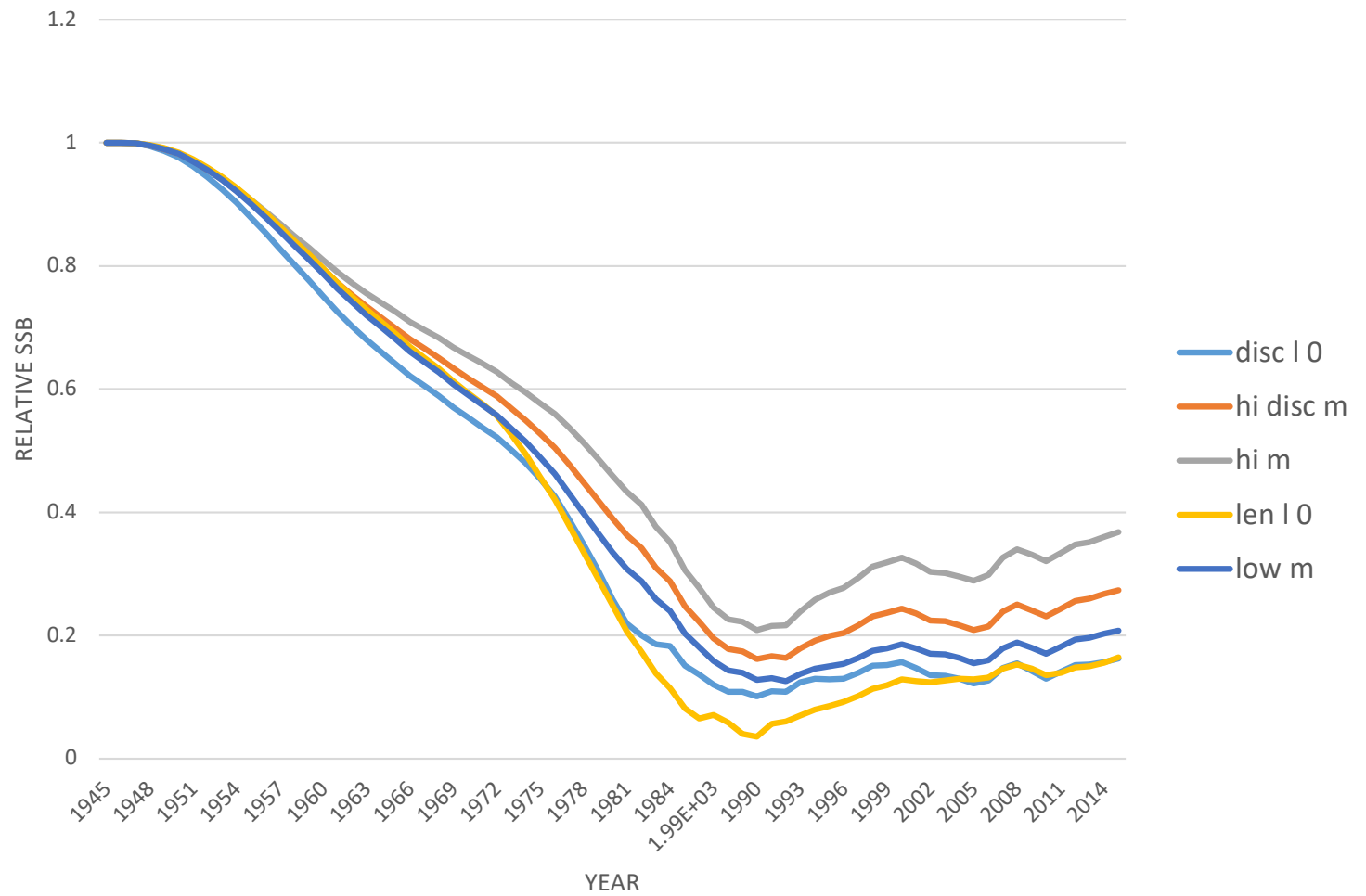


# Sensitivities

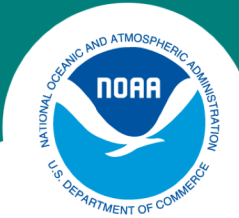




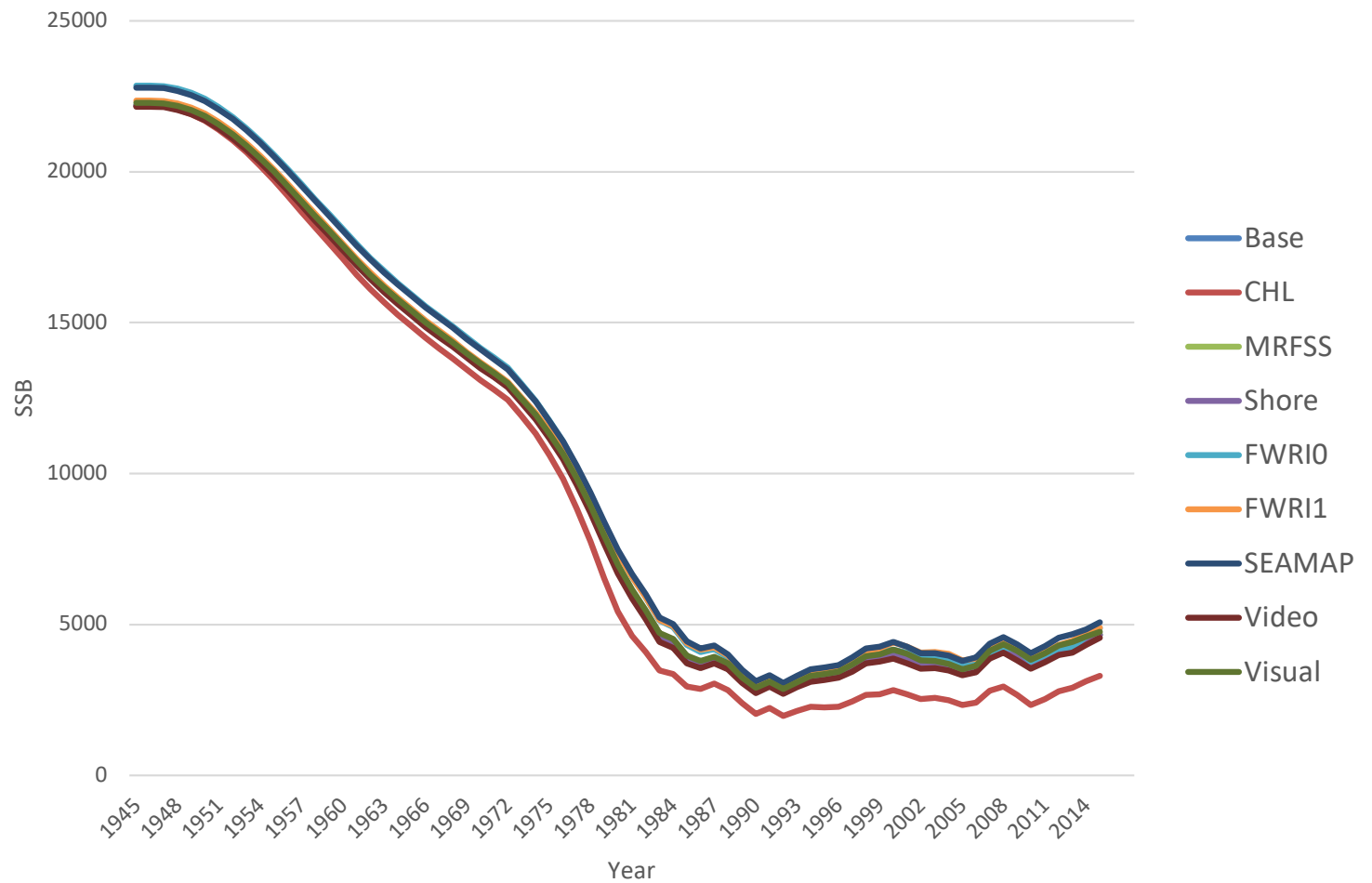
# Sensitivities

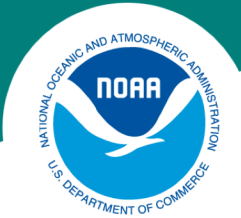




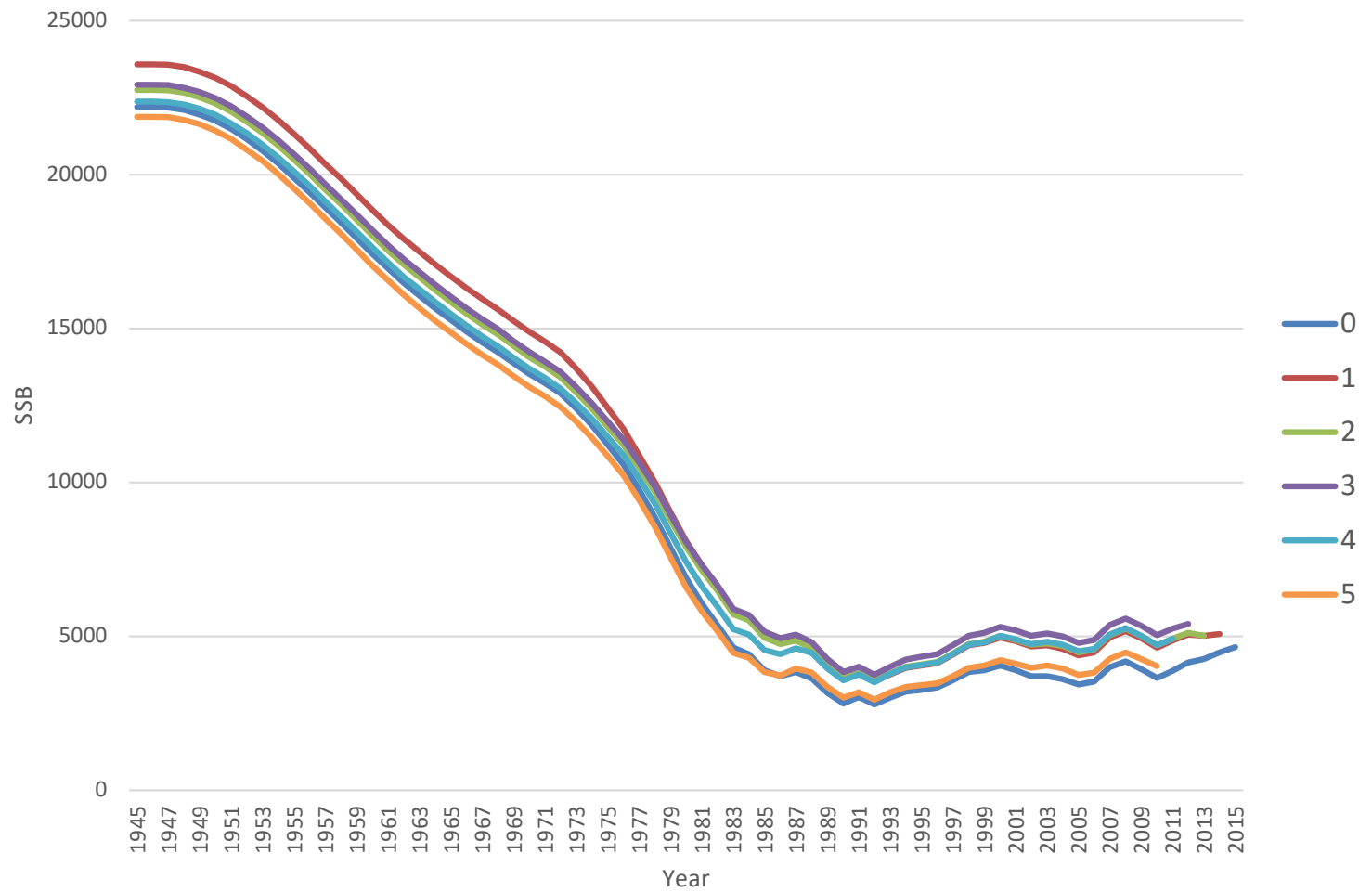


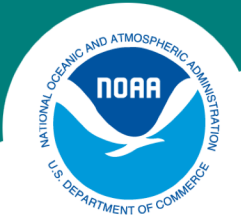
# Jackknife



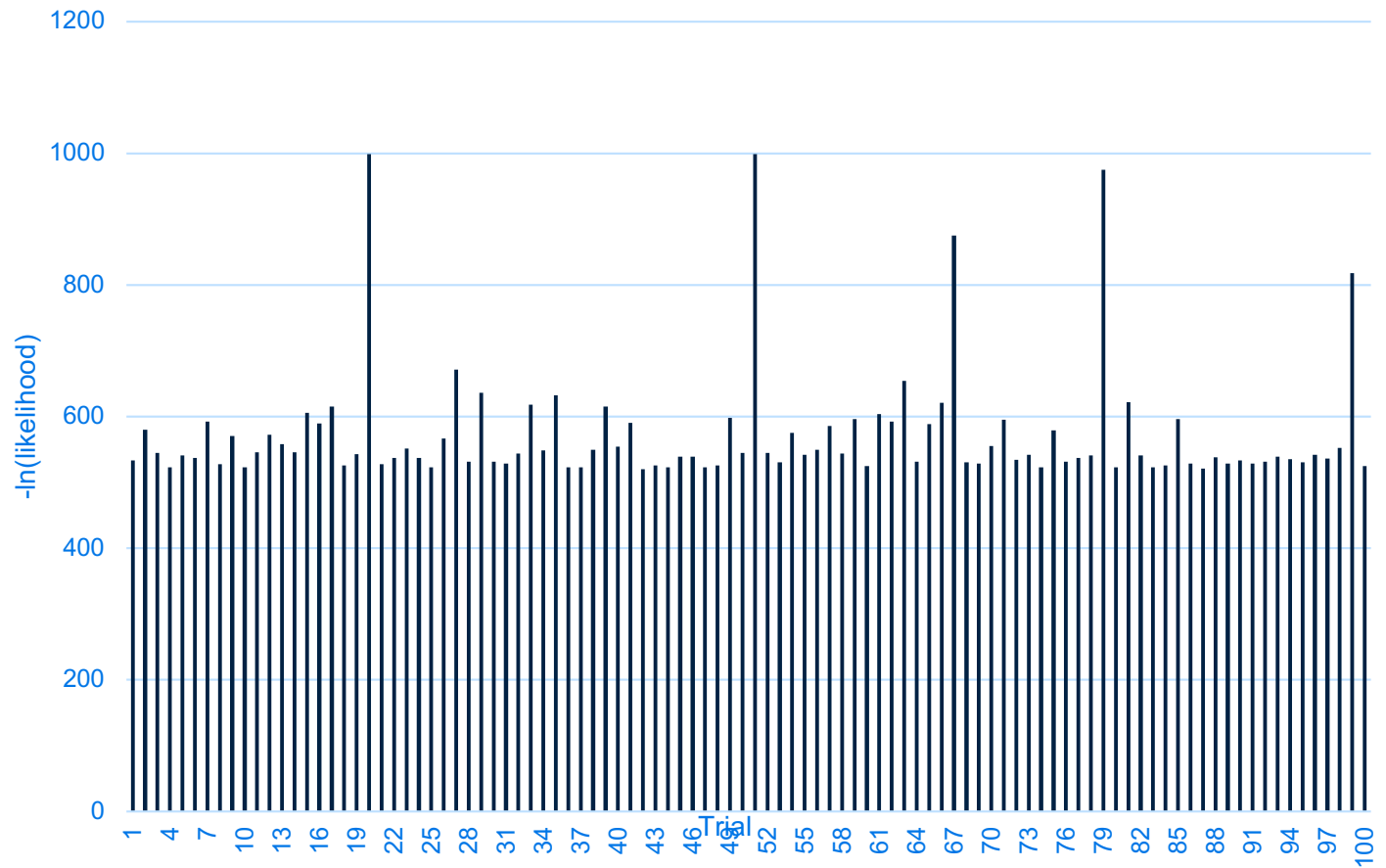


# Retrospective

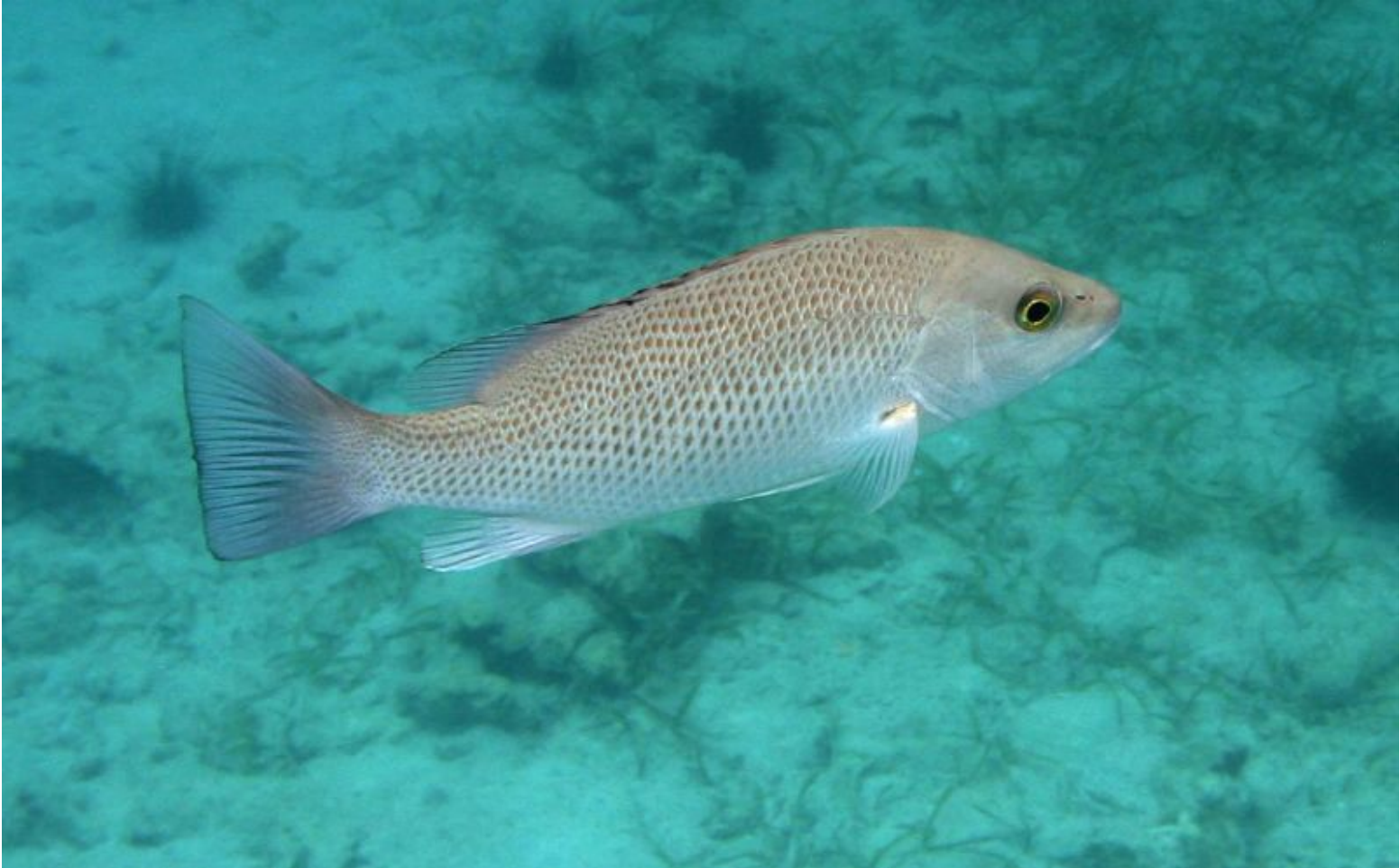
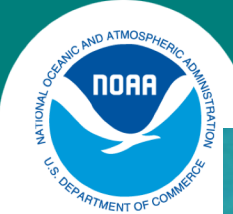


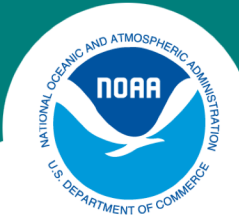


## Jitter Results

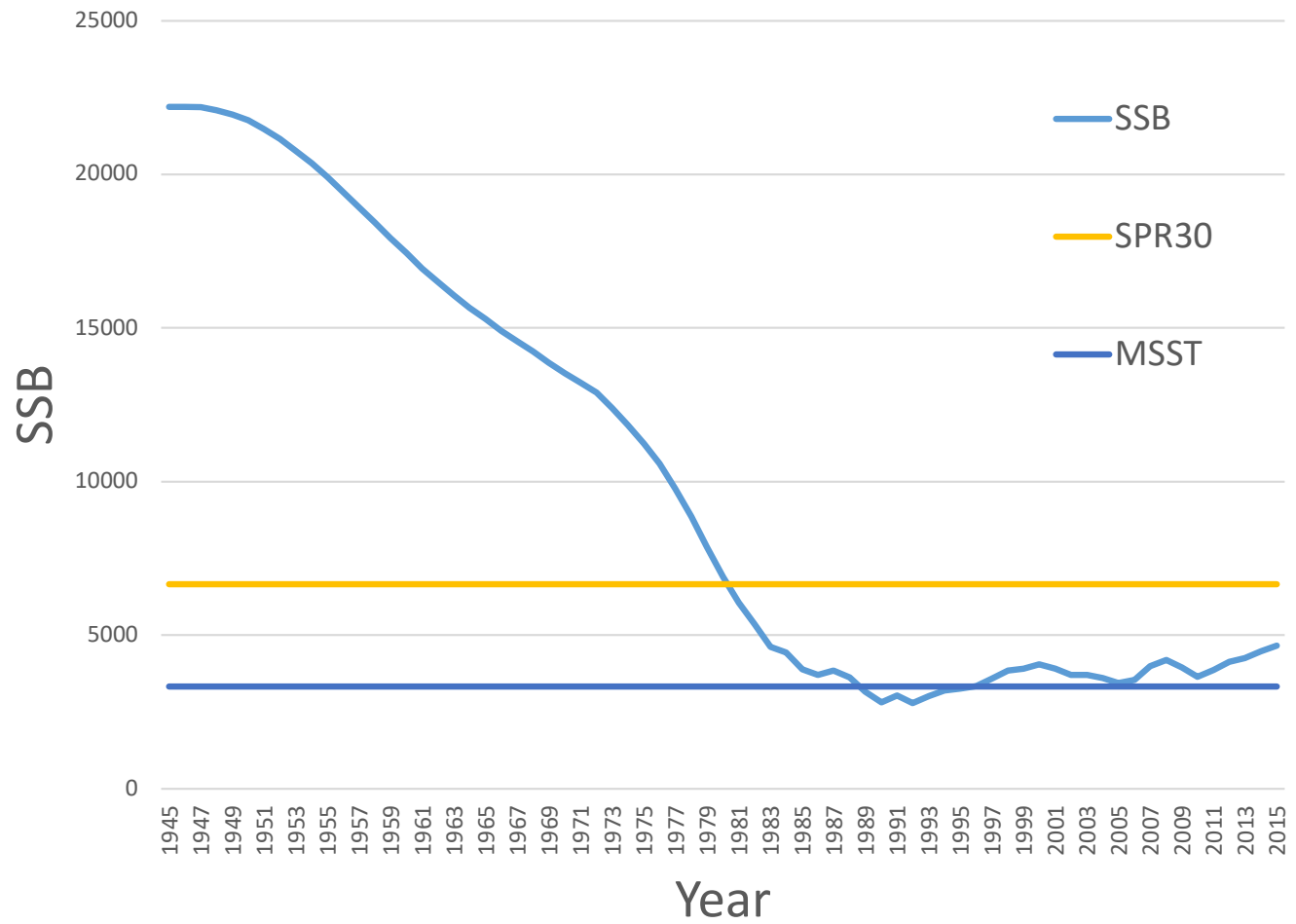


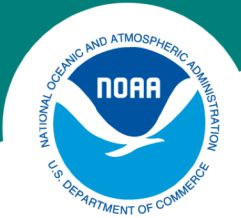
**NOAA  
FISHERIES  
SERVICE**





# SSB Benchmark





# F Benchmark

