Black sea bass; Figures

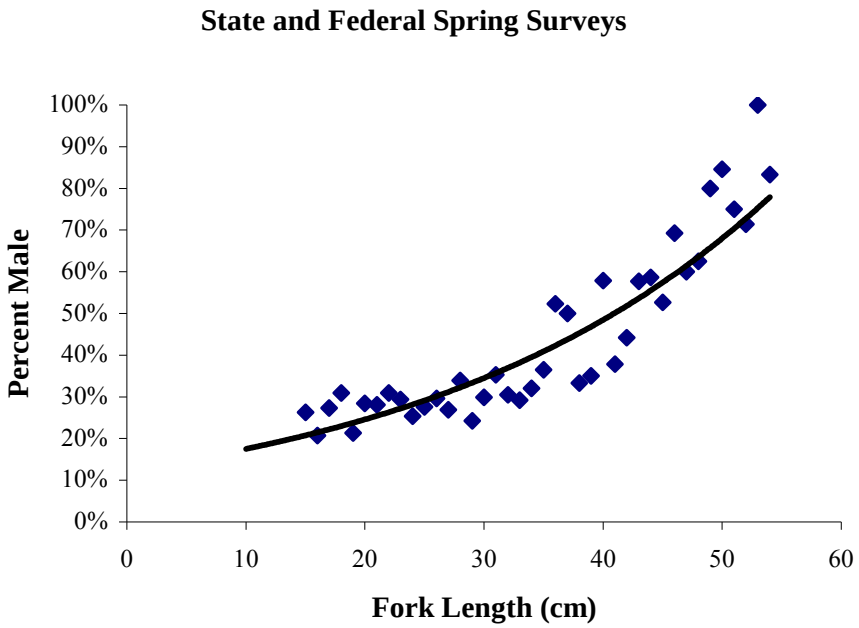

Figure 1. Sex ratio of black sea bass at length (cm) from combined NEFSC and MA DMF spring surveys.

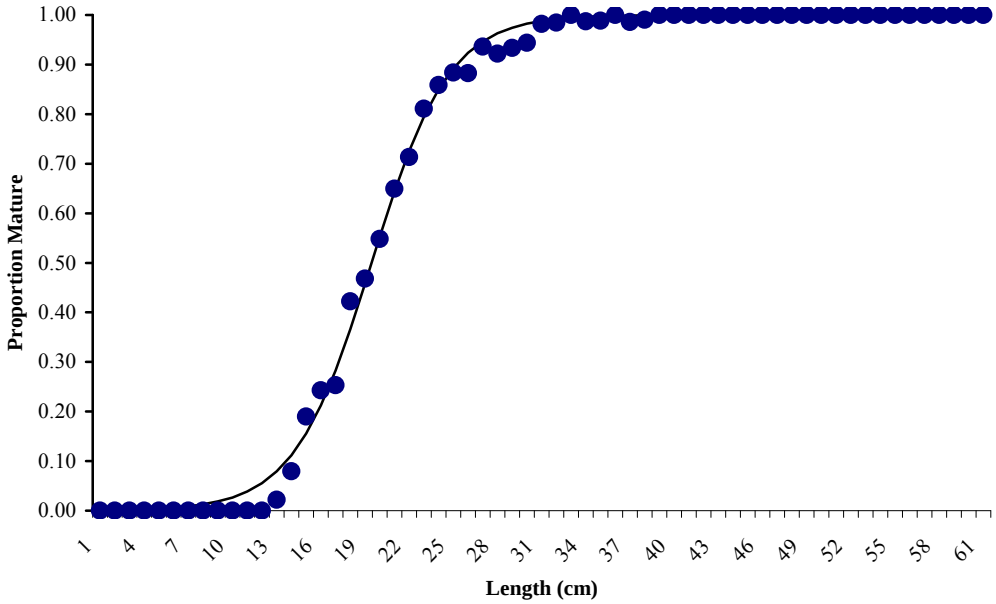

Figure 2. Proportion mature (male and female combined) by length based on samples from NEFSC spring surveys.

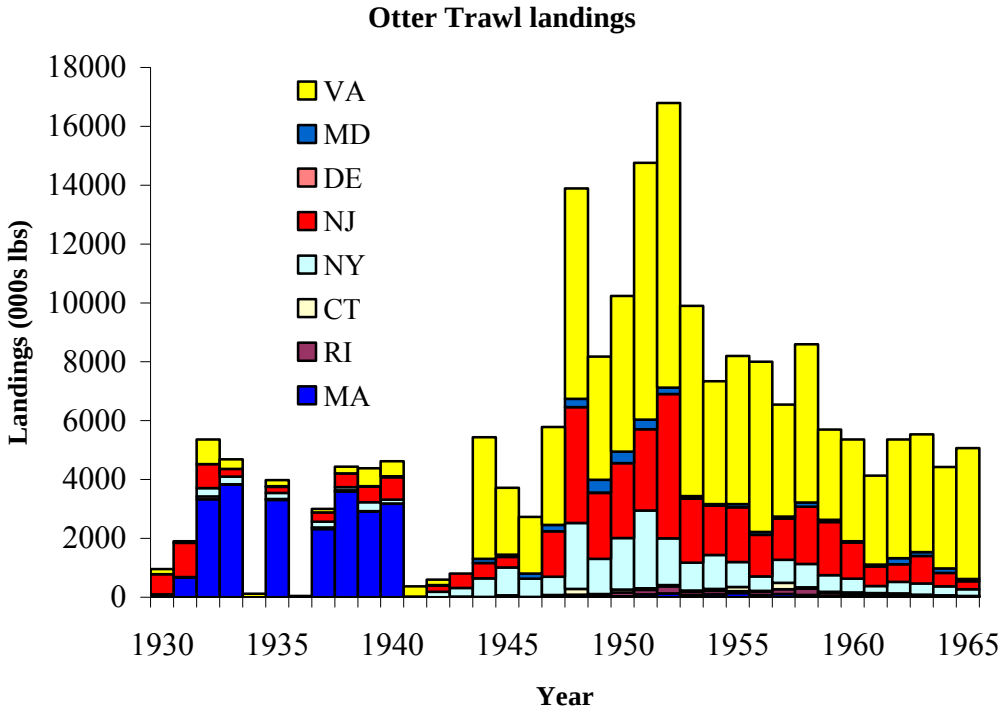

Figure 3. Commercial otter trawl landings (000s lbs) by state for 1930 to 1965. (Source: Fisheries of the U.S.)

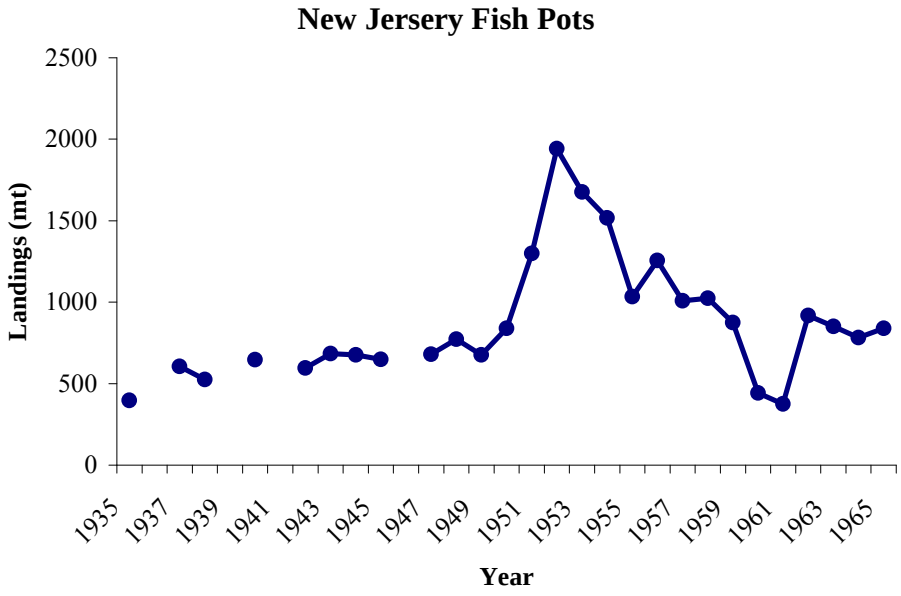

Figure 4. Landings (mt) of sea bass from NJ fish pots, 1935-1965.

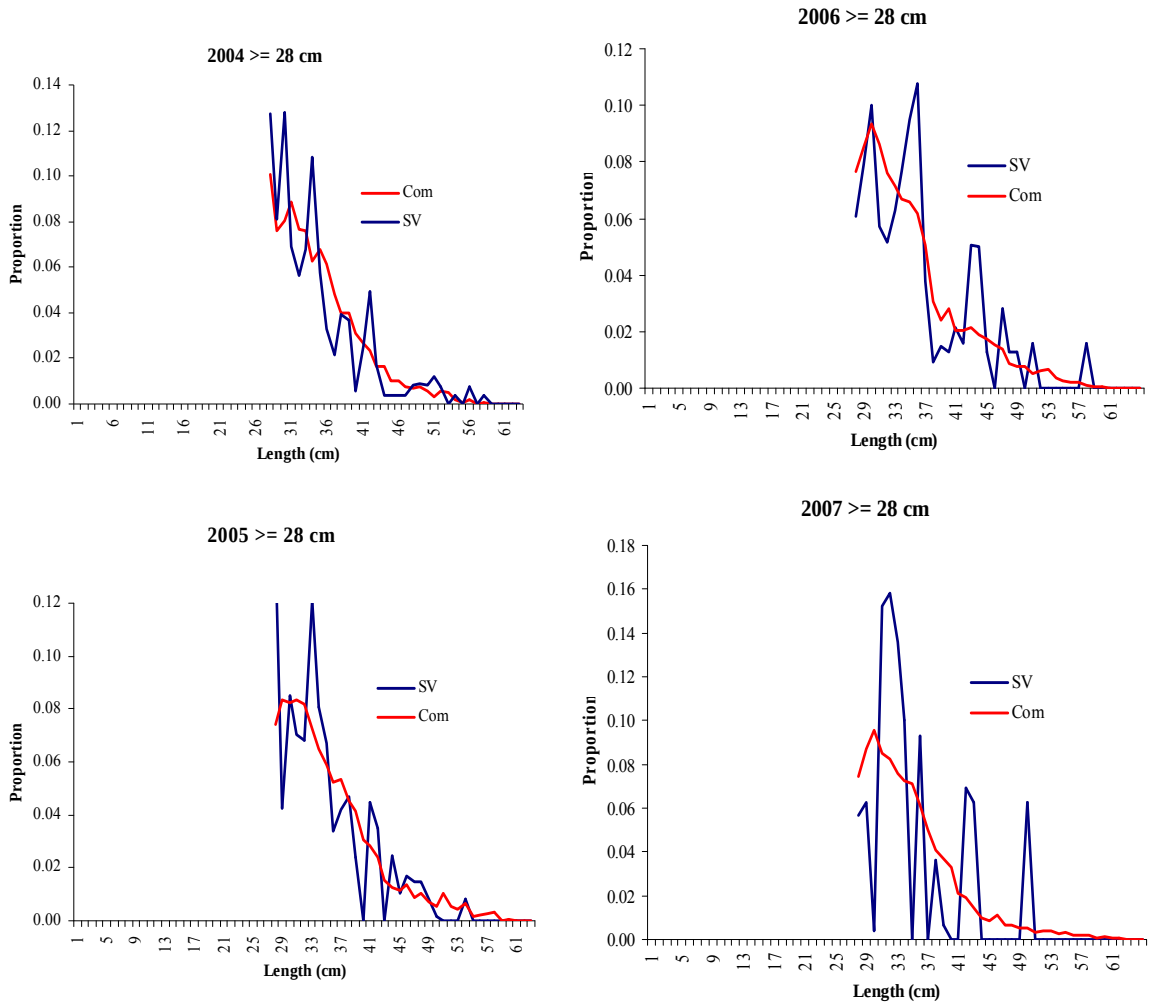

Figure 5. Comparison of proportion at length between commercial fisheries and NEFSC spring offshore survey. Size limited to lengths at full recruitment to the fisheries.

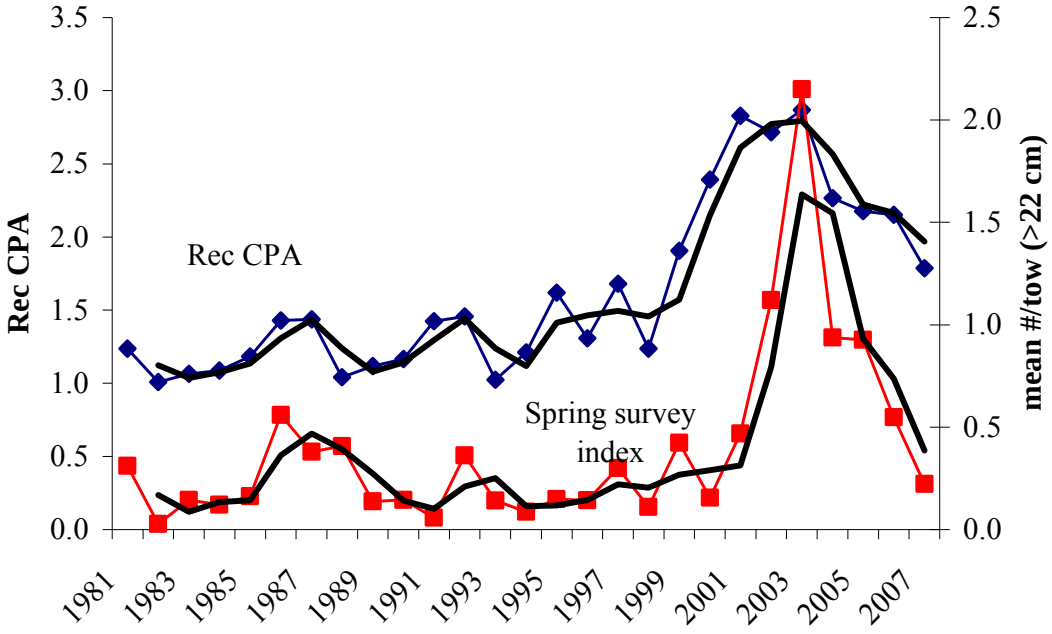

Figure 6. NEFSC Spring offshore survey stratified mean number per tow compared to MRFSS number per angler trip.

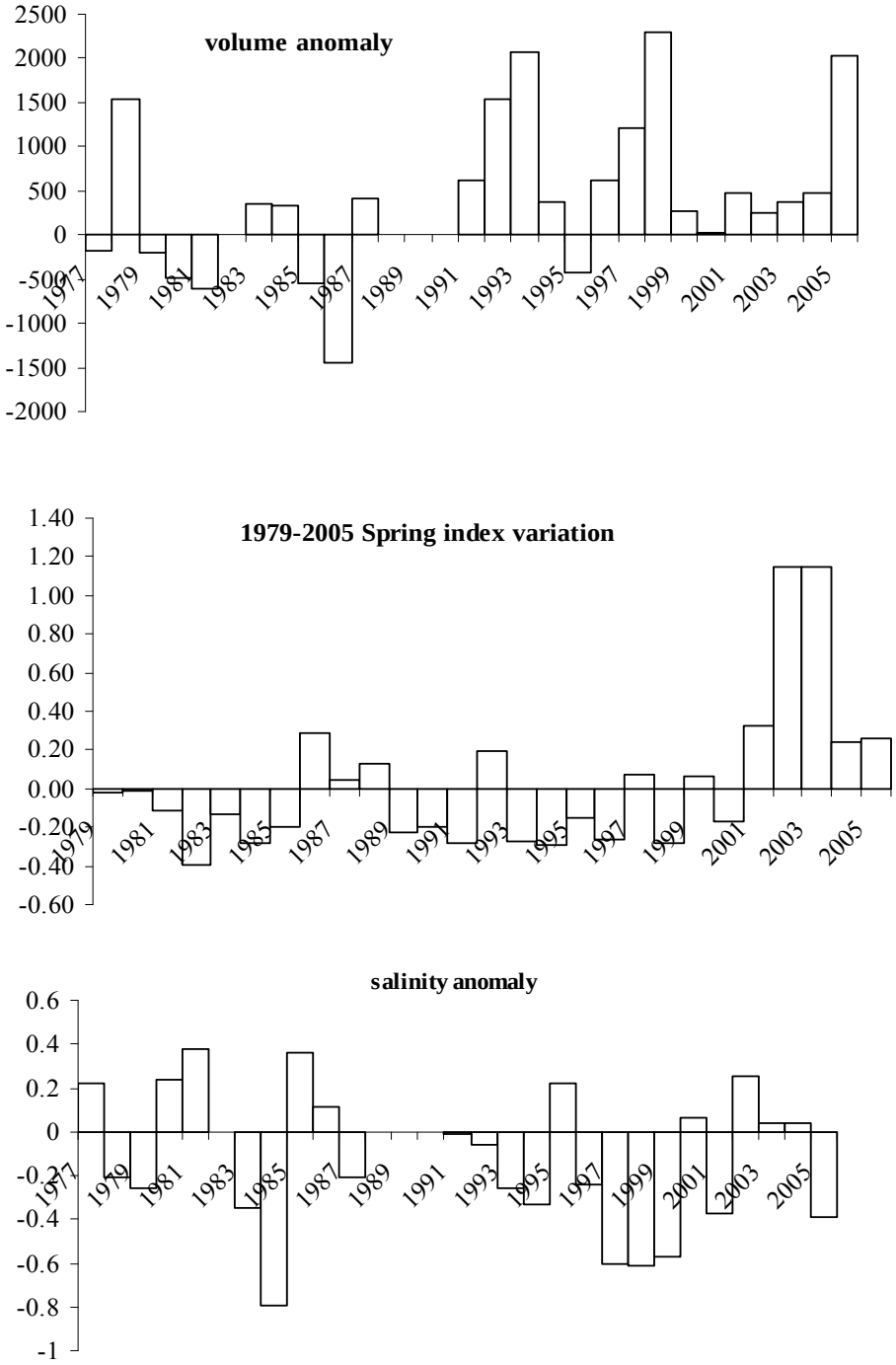

Figure 7. Spring oceanographic anomalies in the mid-Atlantic and variation from the time series mean of NEFSC spring survey indices, 1979-2005.

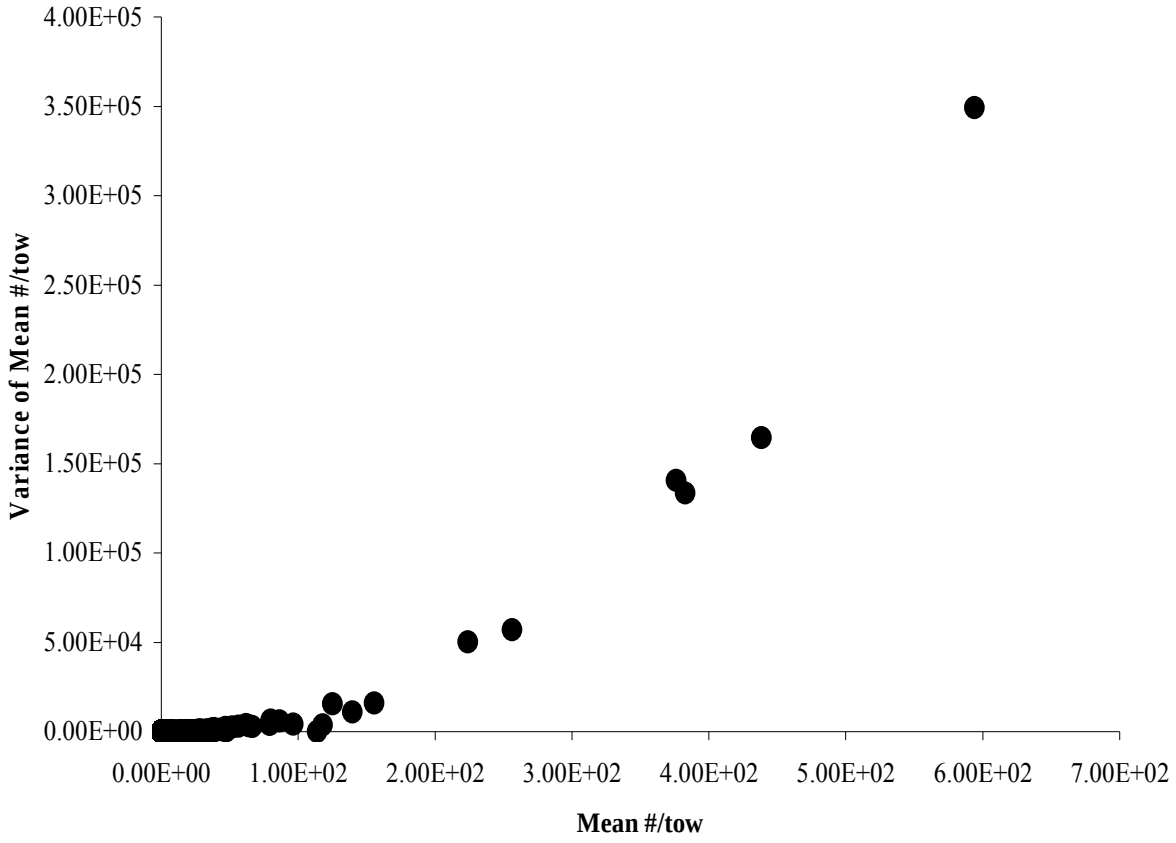

Figure 8. Relationship between black sea bass mean #/tow and associated variance for NEFSC Spring survey.

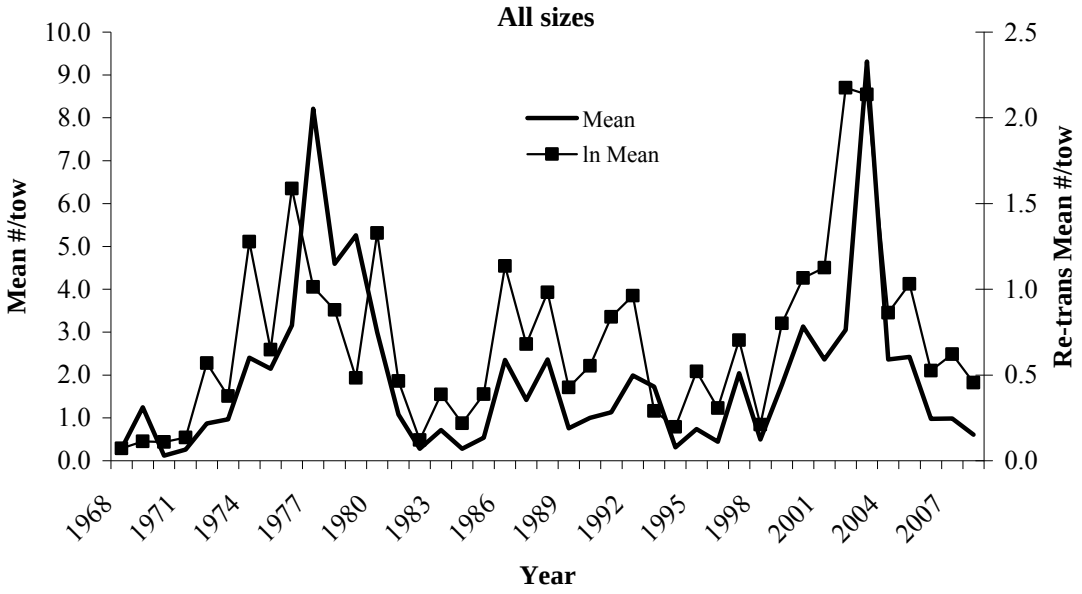

Figure 9a. NEFSC spring offshore stratified mean num/tow and re-transformed $\log_e$ stratified mean num/tow for black sea bass of all sizes.

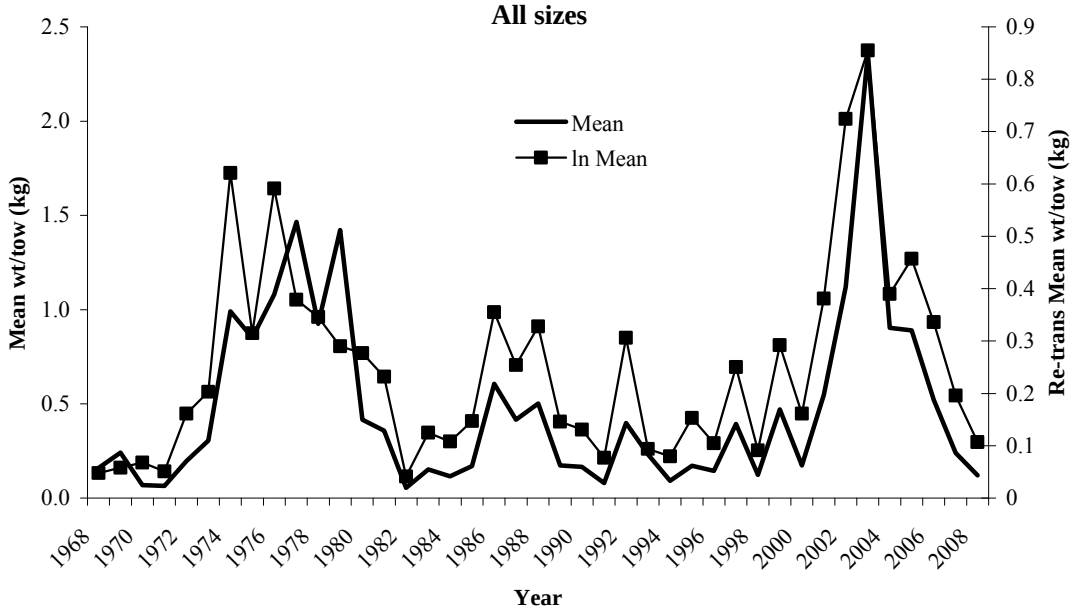

Figure 9b. NEFSC spring offshore stratified mean wt/tow (kg) and re-transformed $\log_e$ stratified mean wt/tow (kg) for biomass of black sea bass, all sizes.

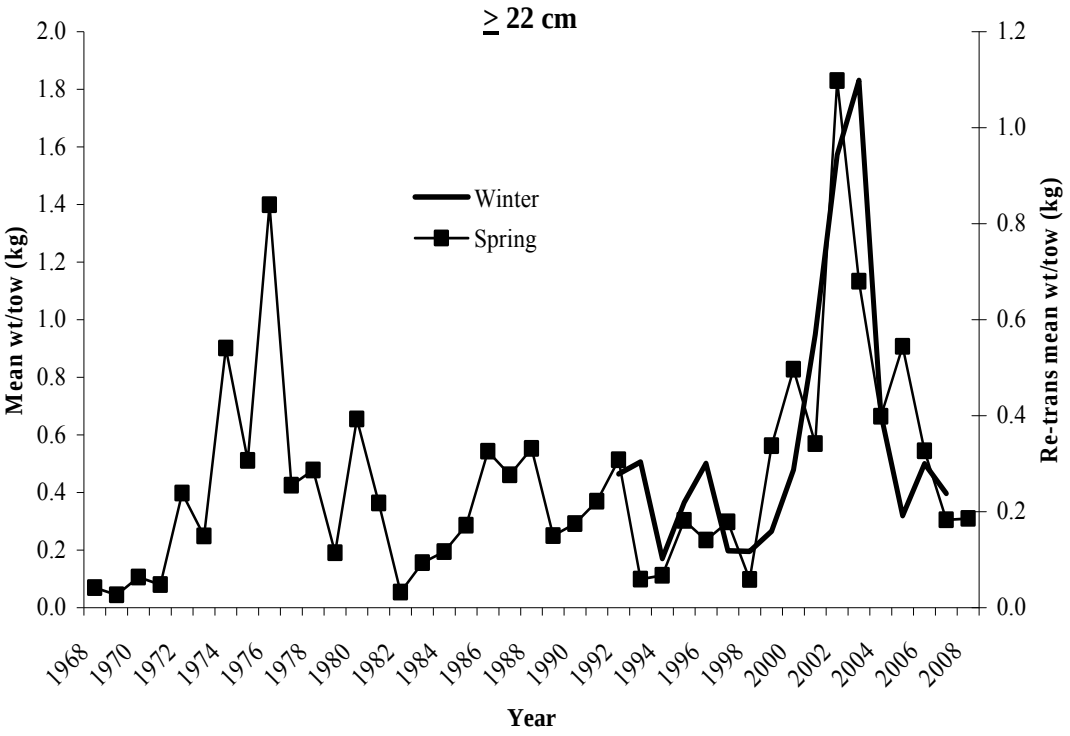

Figure 10. NEFSC spring and winter offshore re-transformed $\log_e$ stratified mean wt/tow (kg) indices for exploitable biomass of black sea bass ($\geq$ 22 cm).

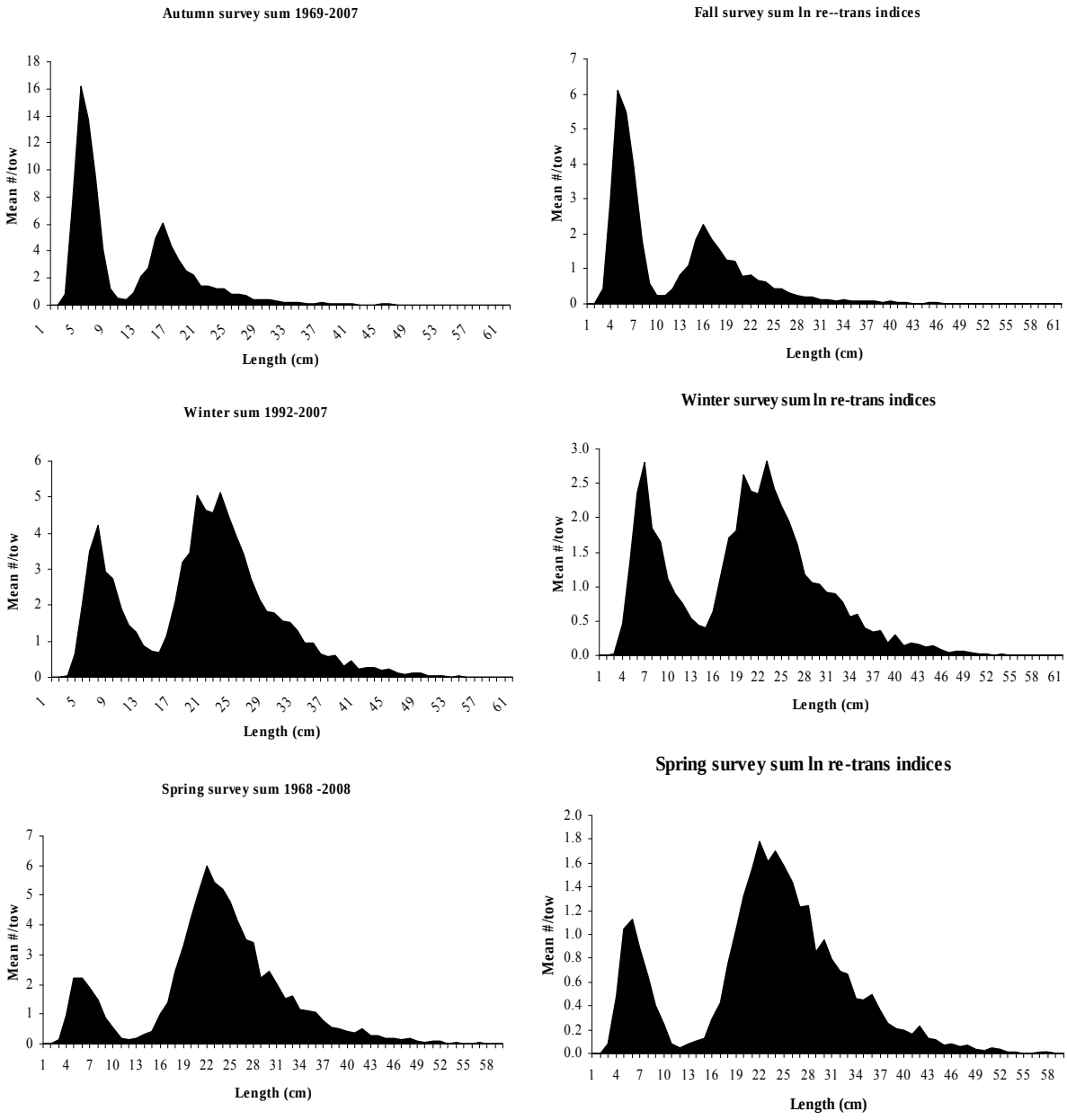

Figure 11. NEFSC spring, winter and autumn length frequencies for combined years showing recruits as first distinctive mode.

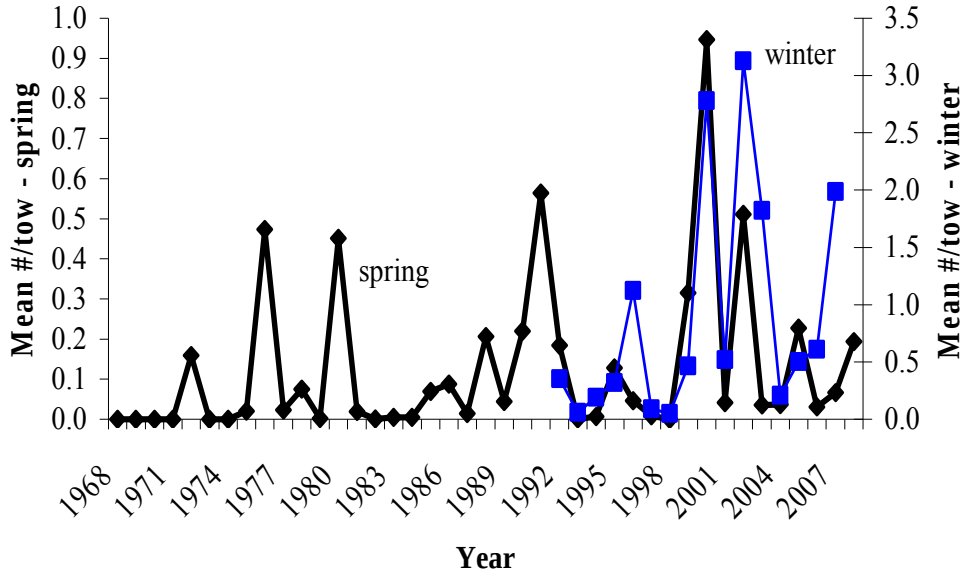

Figure 12. NEFSC spring and winter indices of juvenile abundance (stratified mean #/tow for sea bass ≤ 14 cm).

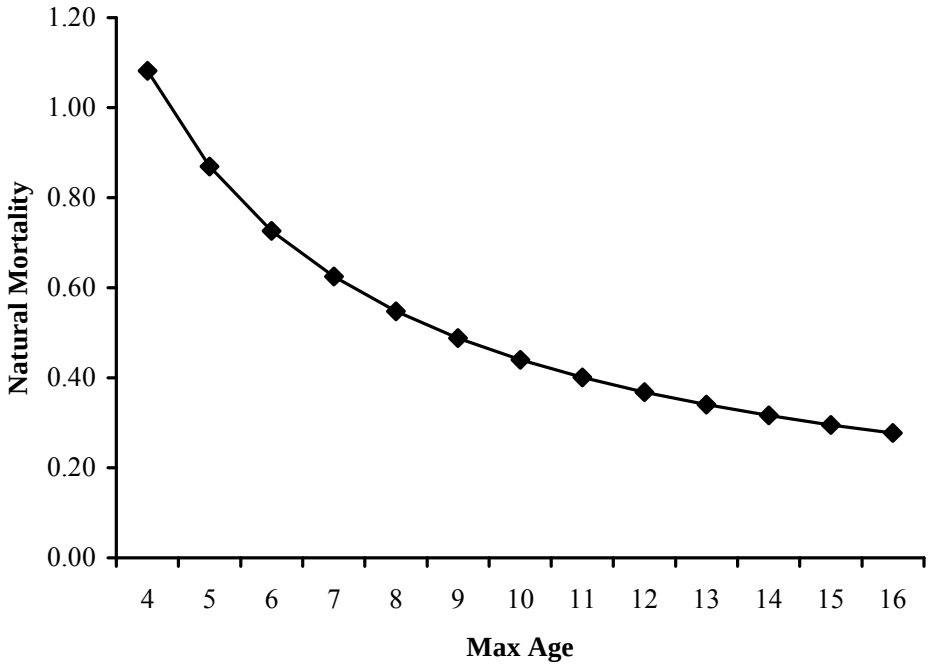

Figure 13. Relationship between maximum age and natural mortality as determined from Hoenig equation.

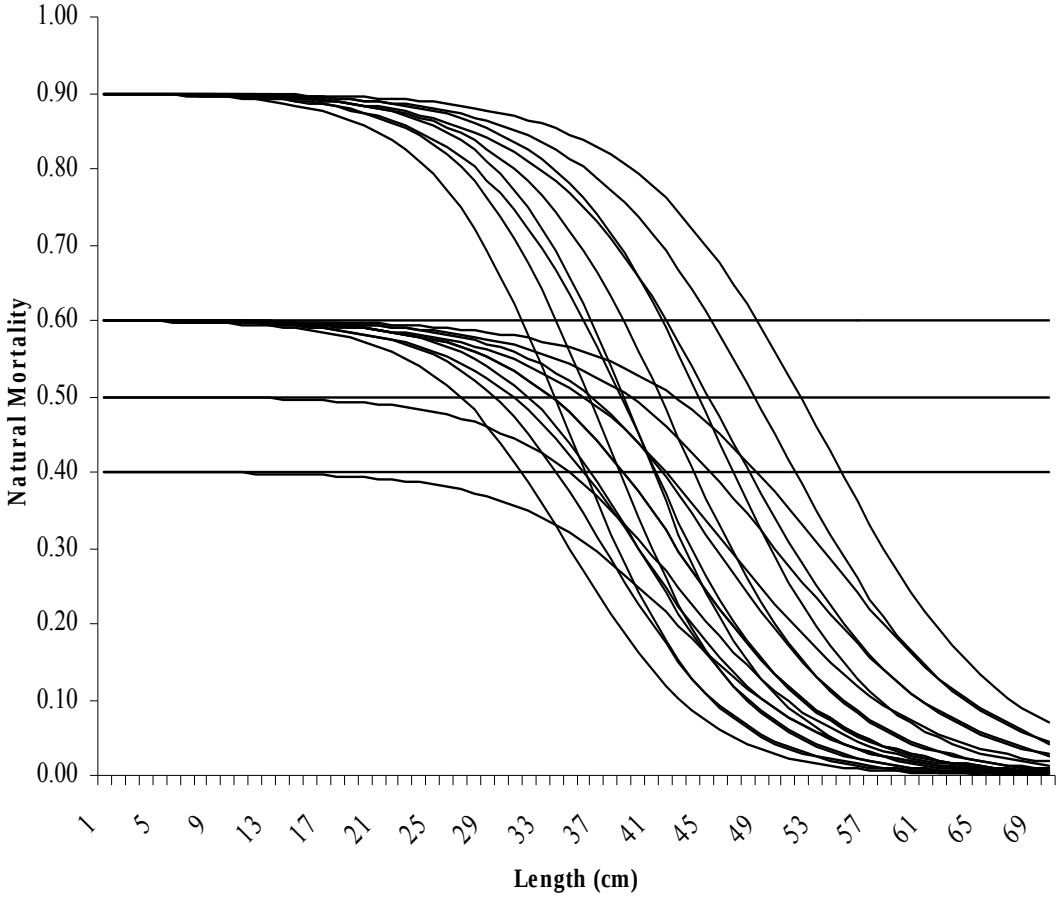

Figure 14. Patterns of natural mortality used in reference point calculations. Logistic models with initial M values of 0.4, 0.5, 0.6 and 0.9 as well as constant M of 0.4, 0.5 and 0.6.

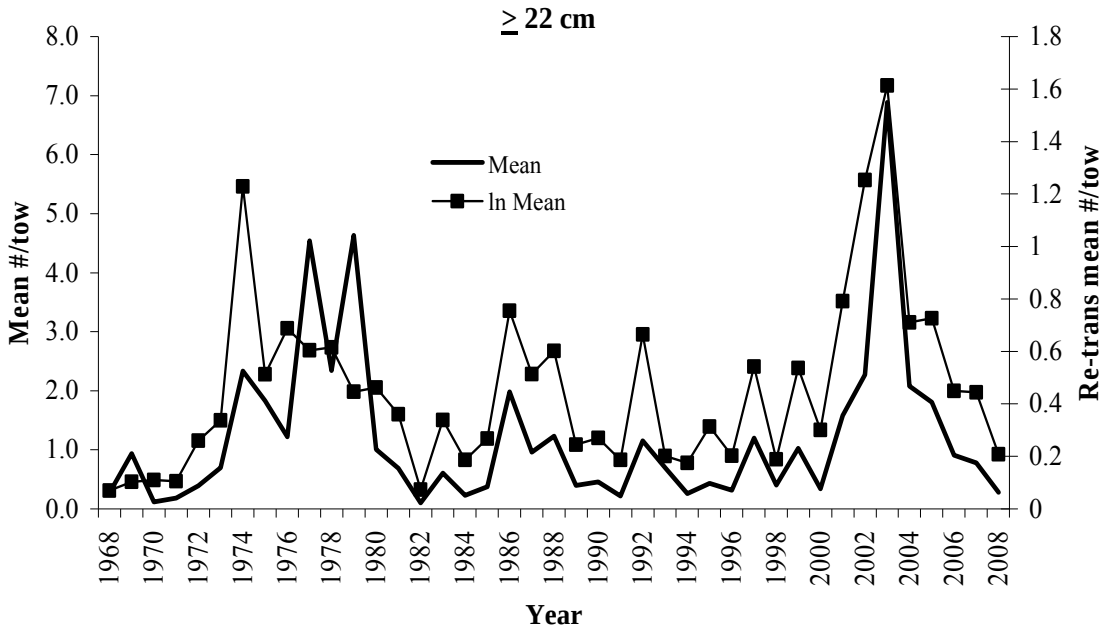

Figure 15. NEFSC spring offshore and winter survey indices (mean #/tow) for black sea bass ≥ 22 cm. Indices of relative abundance used as input to SCALE model.

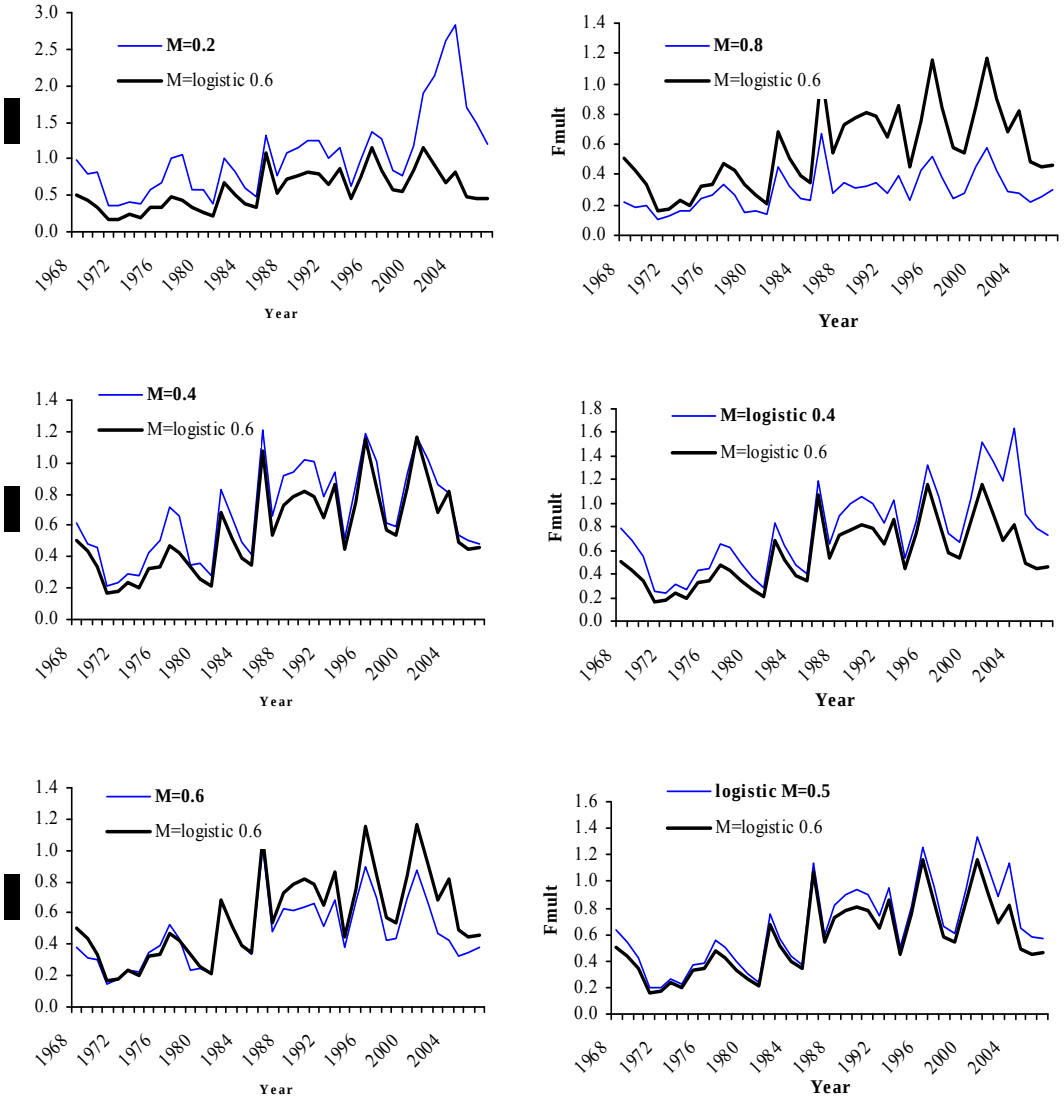

Figure 16. Time series of fishing mortality from the SCALE model under a variety of natural mortality estimates.

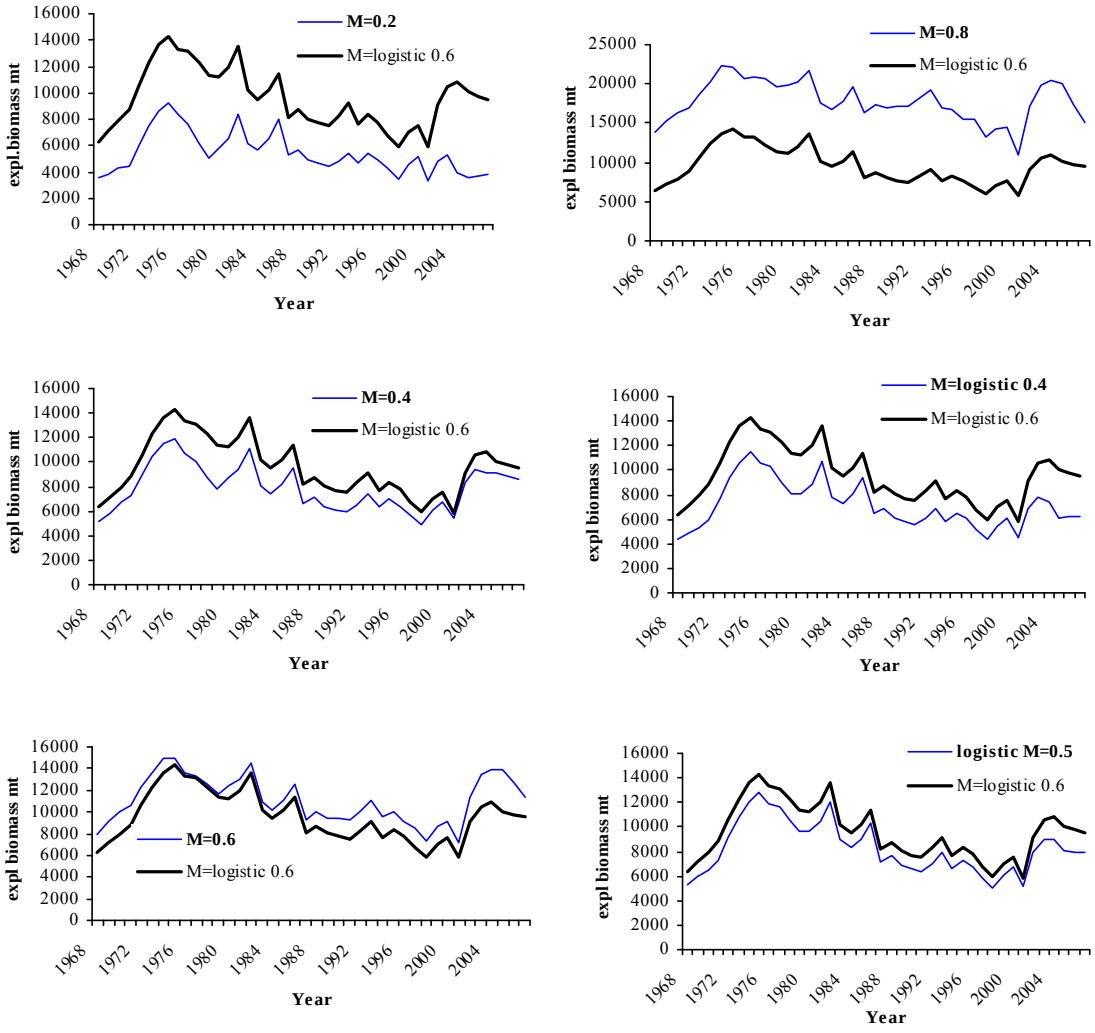

Figure 17. Time series of exploitable biomass (mt) estimates from SCALE under a variety of natural mortalities.

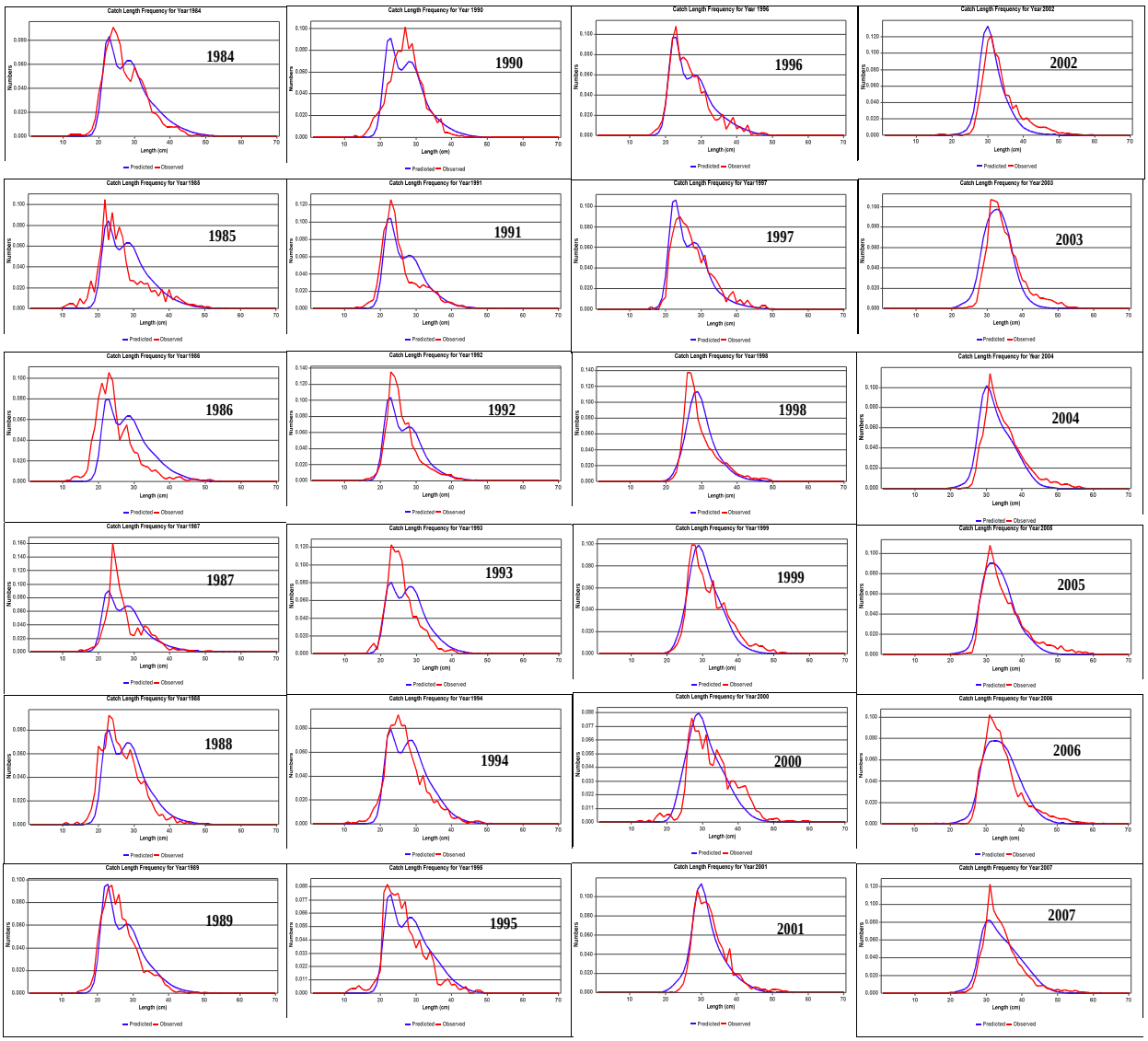

Figure 18. Observed fishery length frequencies 1984-2007 and frequencies predicted by SCALE model using constant M=0.4. Blue equal predicted, red observed.

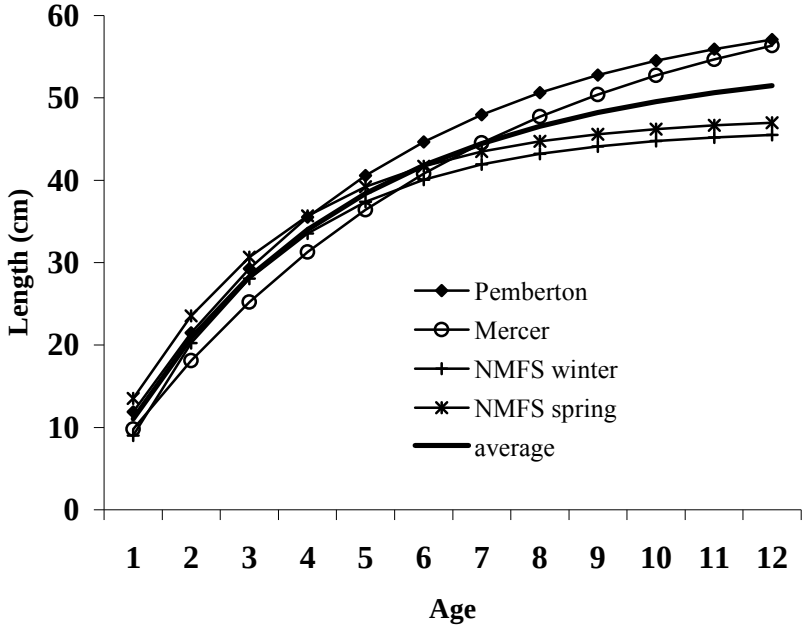

Figure 19. Black sea bass von Bertalanffy growth curves through age 12.

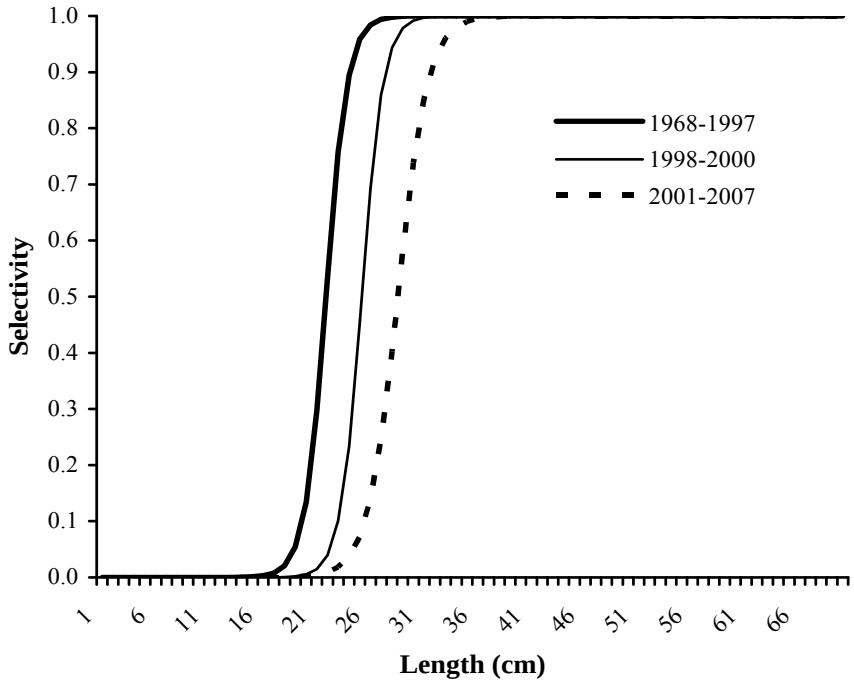

Figure 20. Selectivity patterns for black sea bass from SCALE model, constant M=0.4.

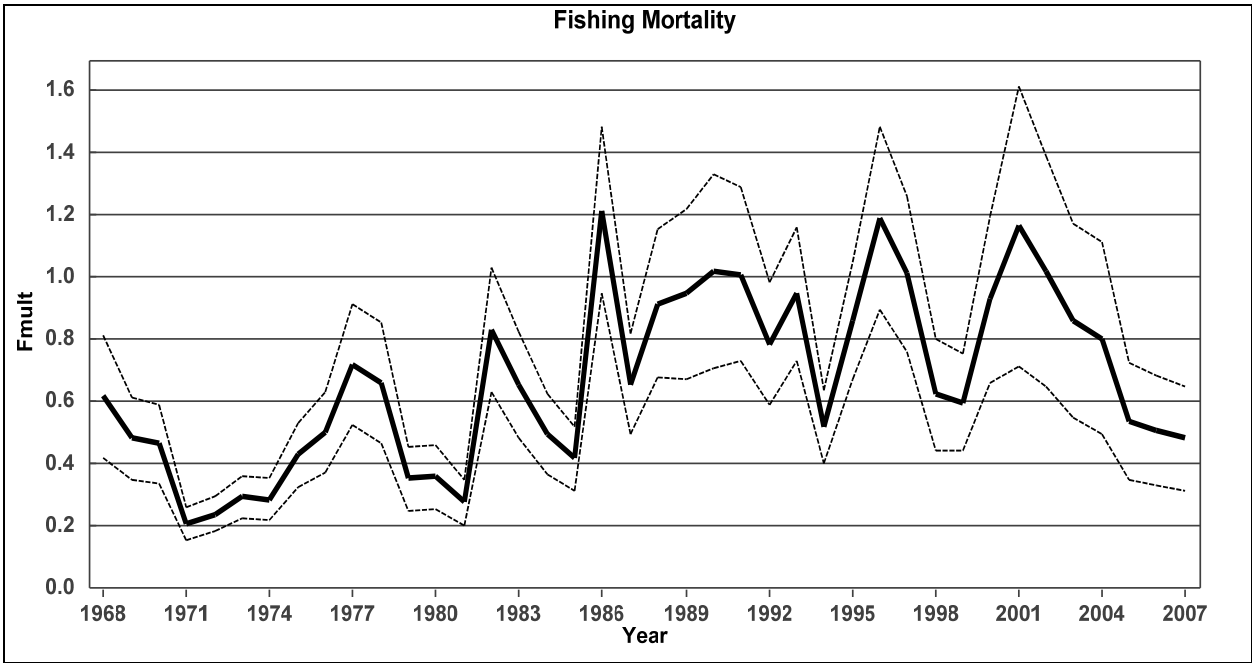

Figure 21. Estimated fishing mortality for black sea bass, 1968-2007 from SCALE model using constant M=0.4.

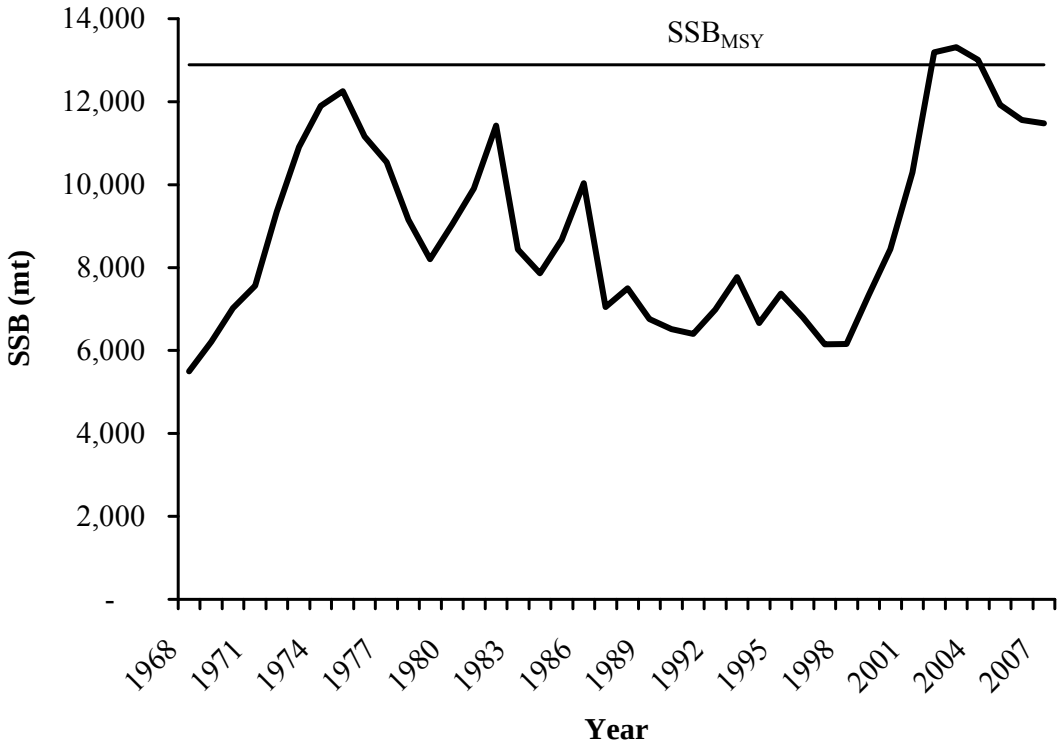

Figure 22. Black sea bass spawning stock biomass from SCALE model using constant M=0.4 and associated SSB_{MSY}.

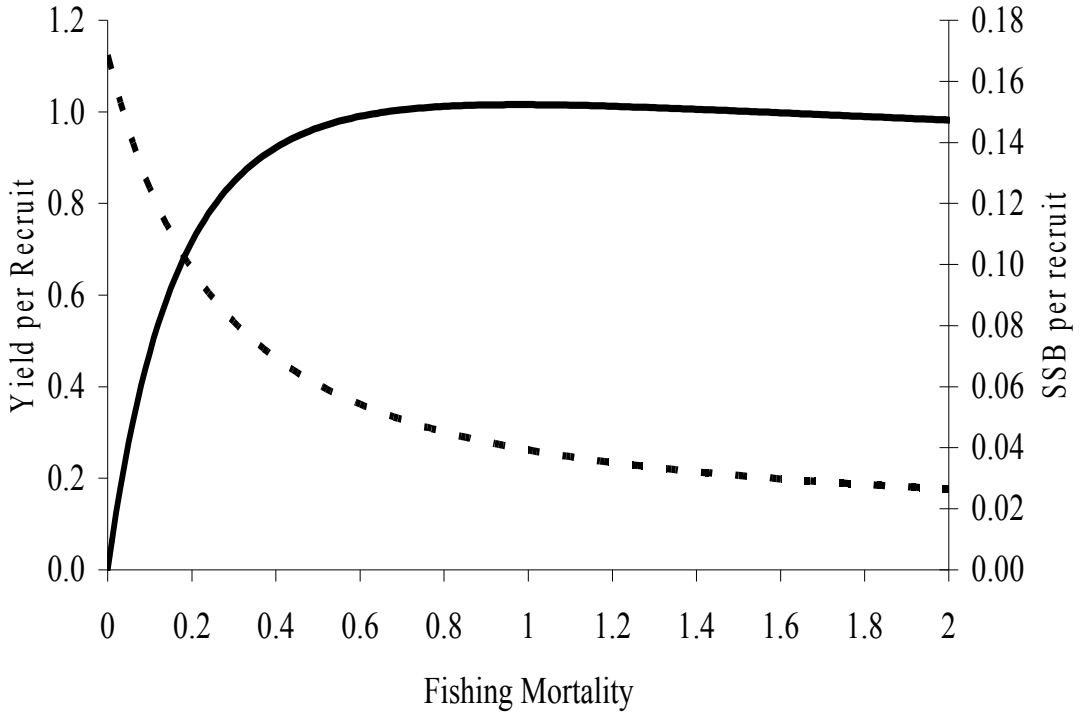

Figure 23. Yield and spawning biomass per recruit for black sea bass at constant M=0.4.

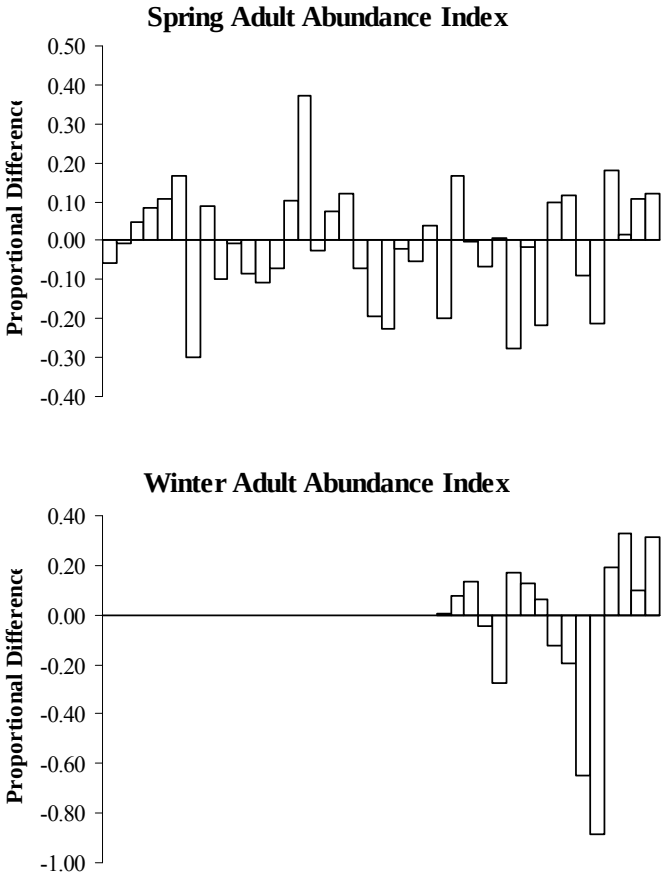

Figure 24. Residual patterns from observed and predicted NEFSC black sea bass survey indices.