Figures

[SAW53 Editor's Note:
The SARC-53 review panel did accept the work presented on TORs 1-4 (which primarily gives an update on fishing patterns, landings and survey data. Tables B1-B23 and Figures B1-B66 are associated with TORs 1-4.

The SARC-53 review panel did not accept new assessment models (or results from those new models) that were prepared by the SAW53 Working Group. Tables B24-B33 and Figures B67-B110 are associated with the new models and results. They are included in this report to demonstrate the work that was done by the SAW Working Group for the December 2011 peer review. However, those Tables and Figures are not intended to be used for management at this time.]

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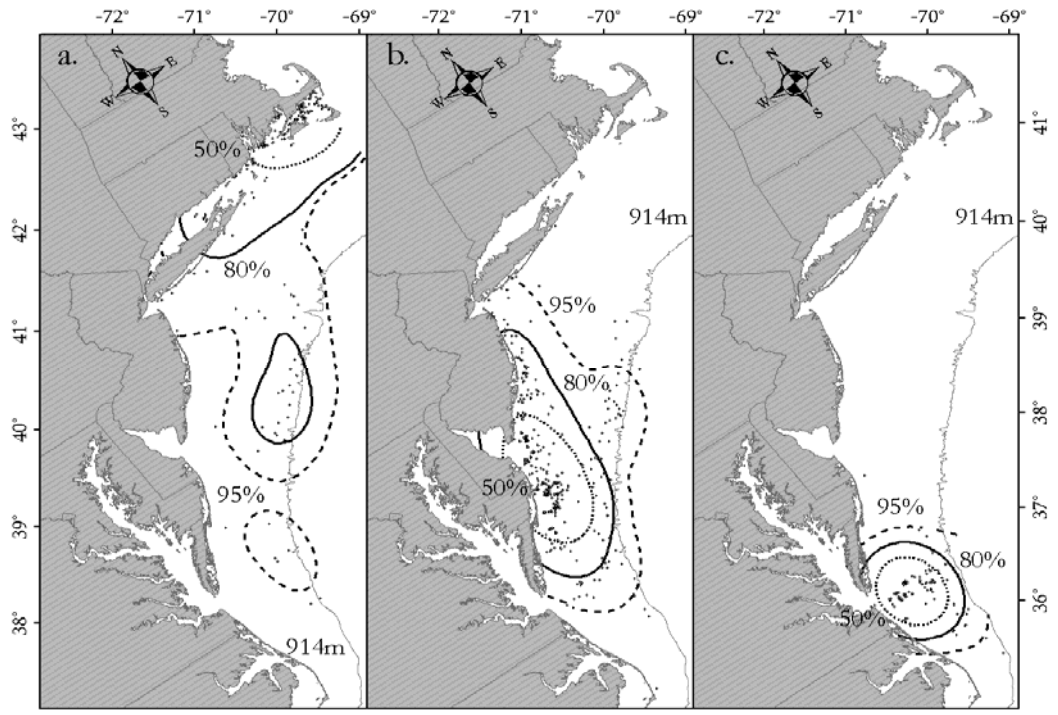

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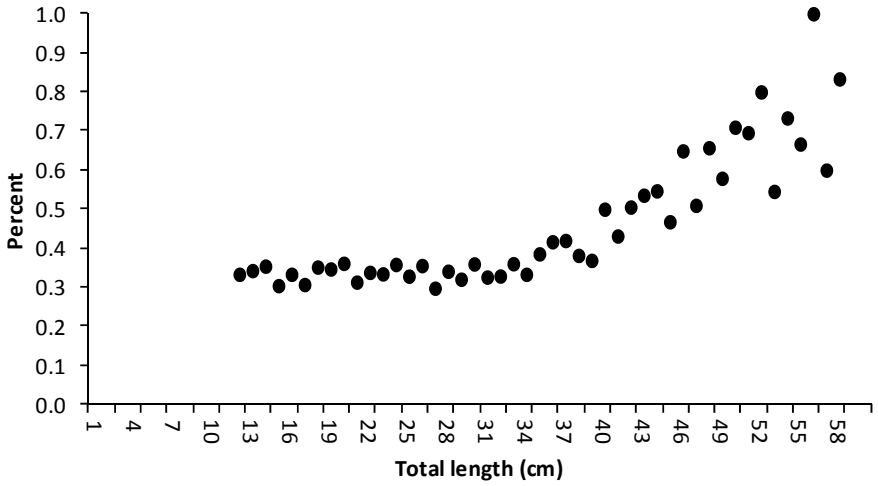


Figure B2. Percent male black sea bass from NMFS surveys, 1981-2010 (n=6,238)

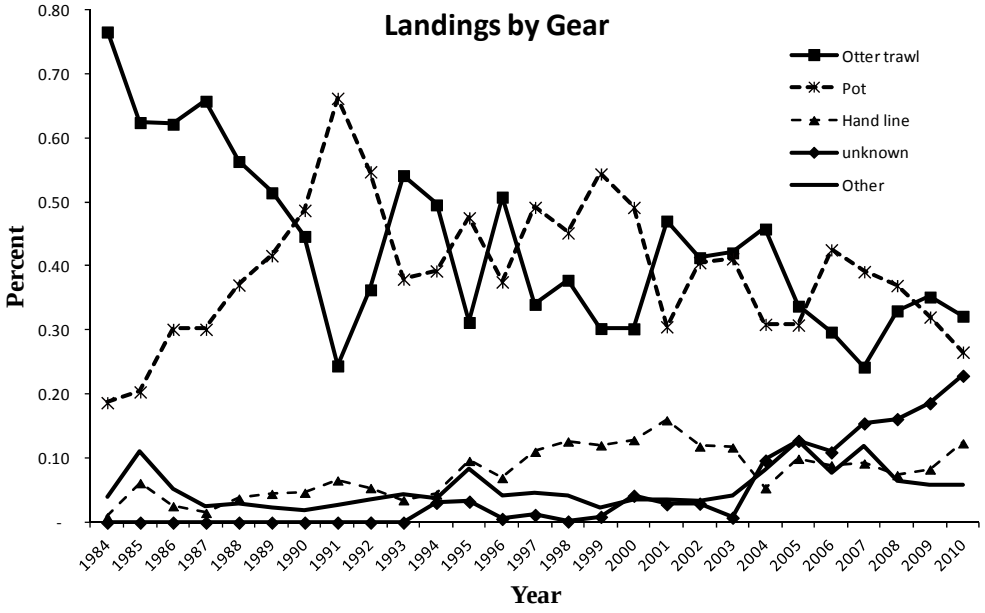
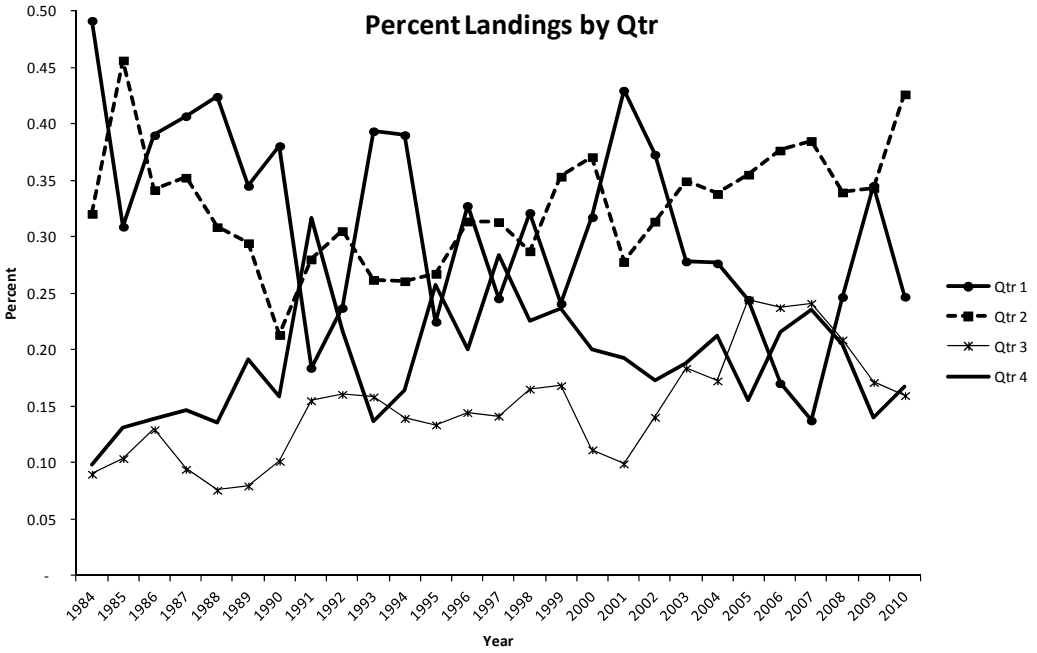


Figure B3. Black sea bass commercial landings by gear type, 1984-2010.



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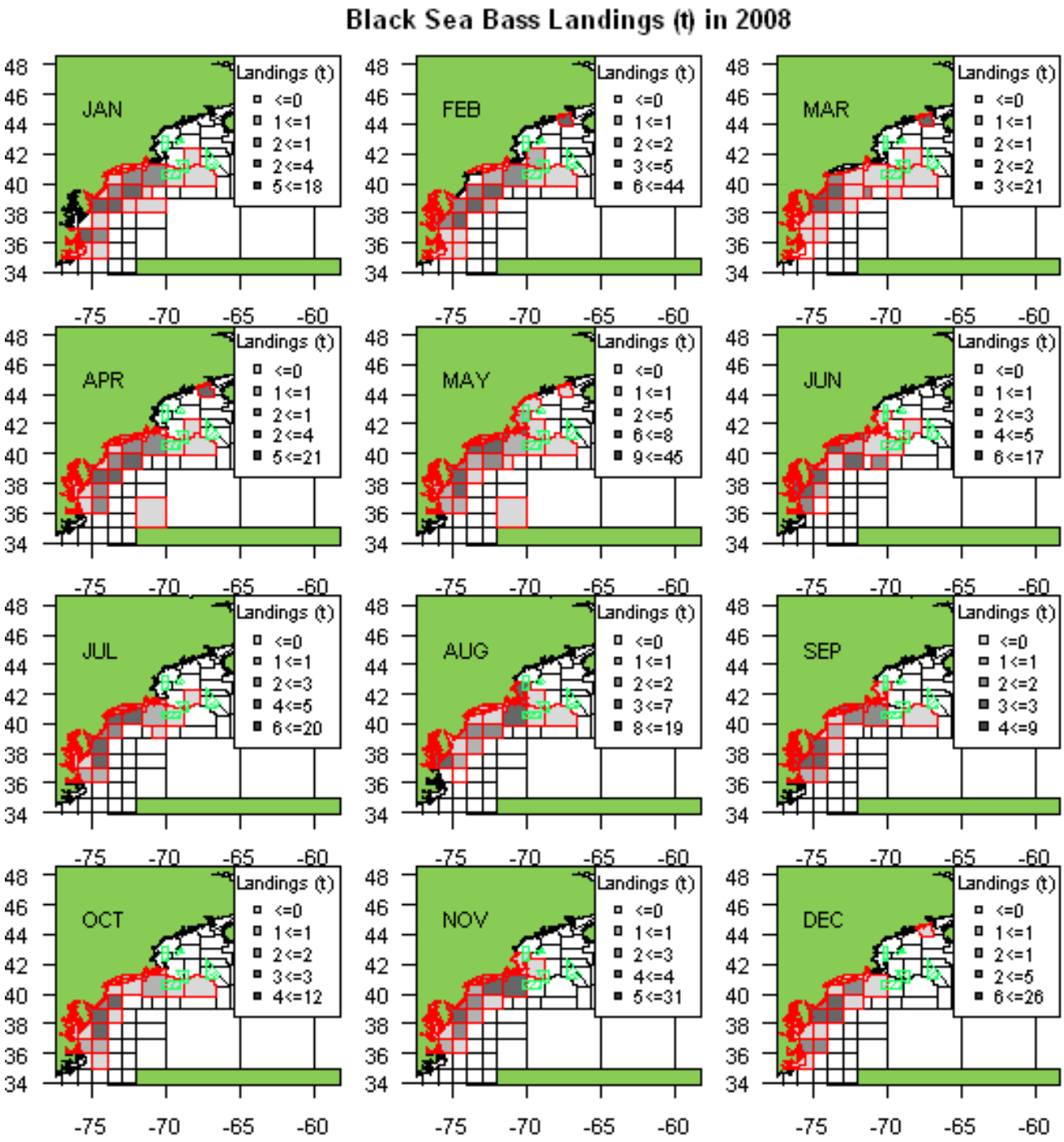
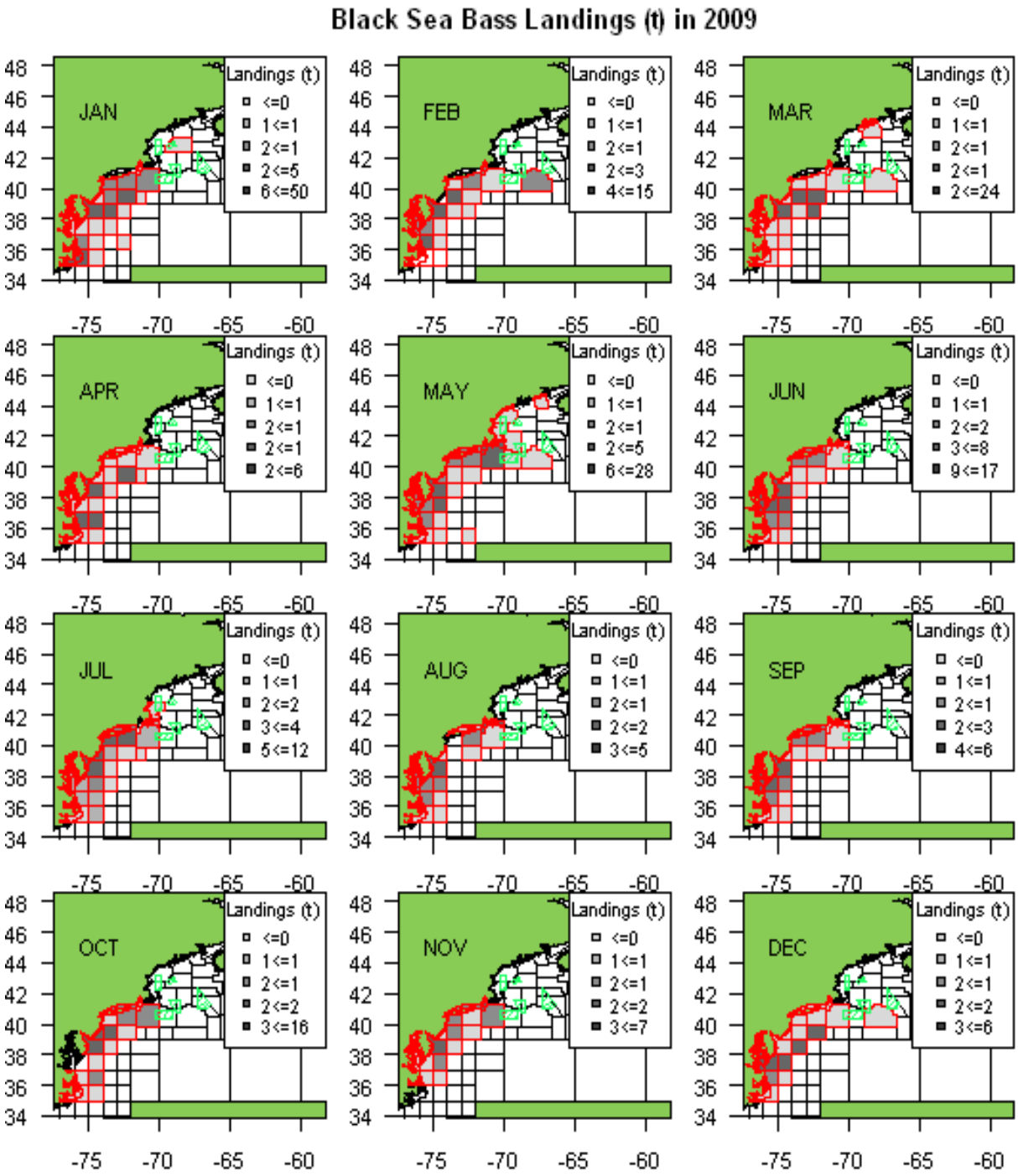


Figure B5. Commercial black sea bass landings, 2008, by statistical area.



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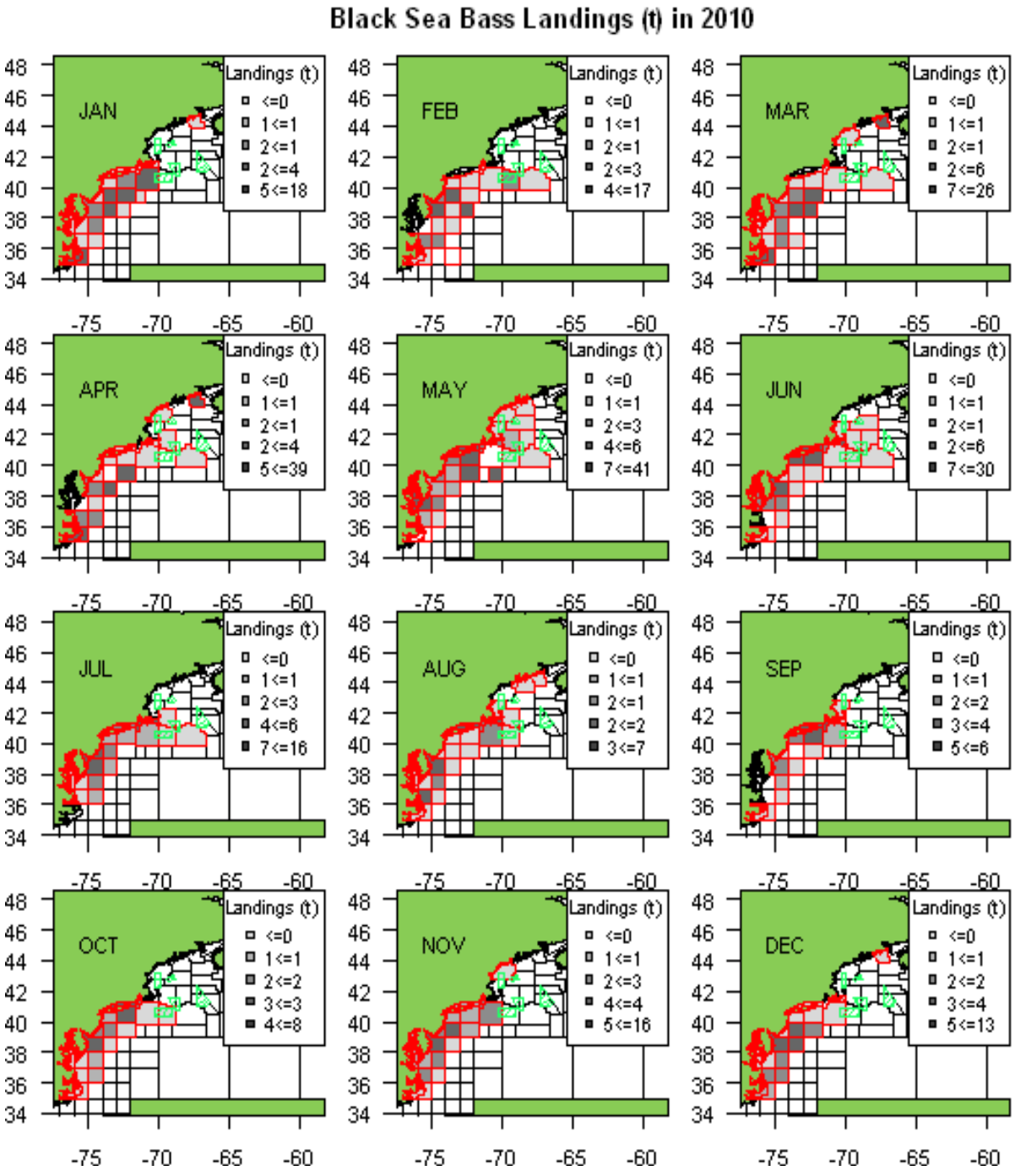

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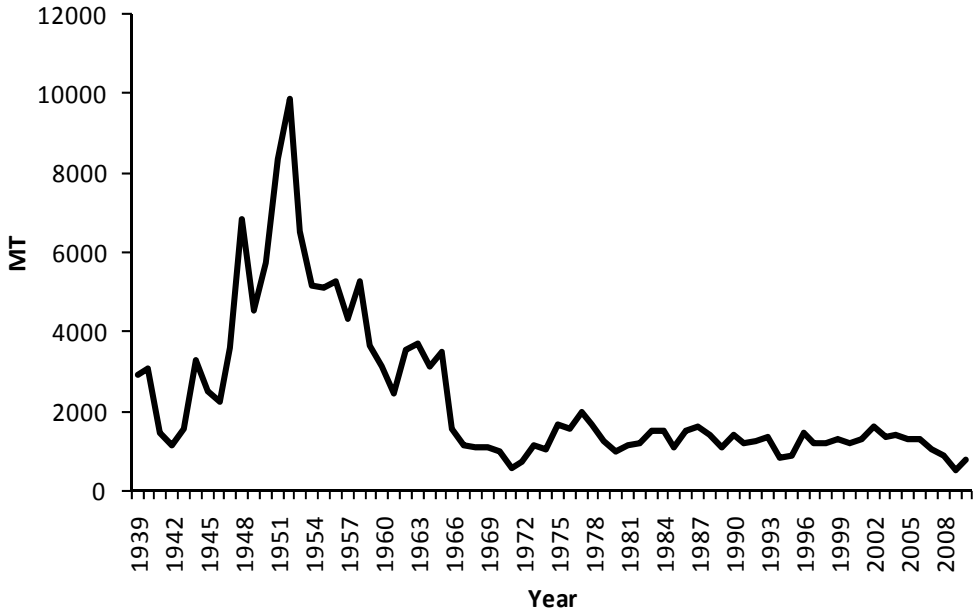

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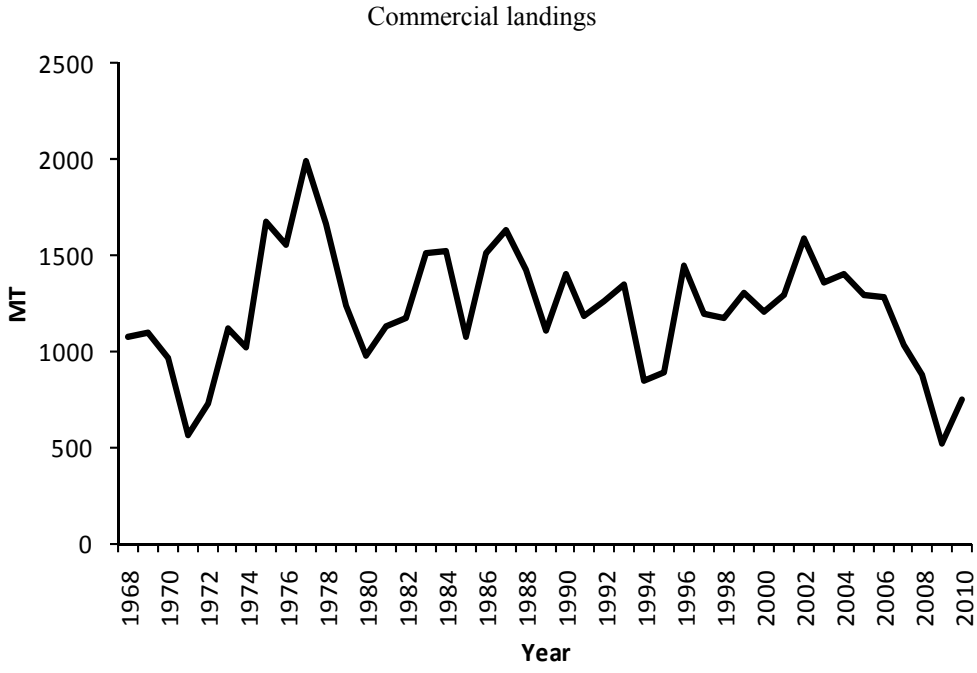

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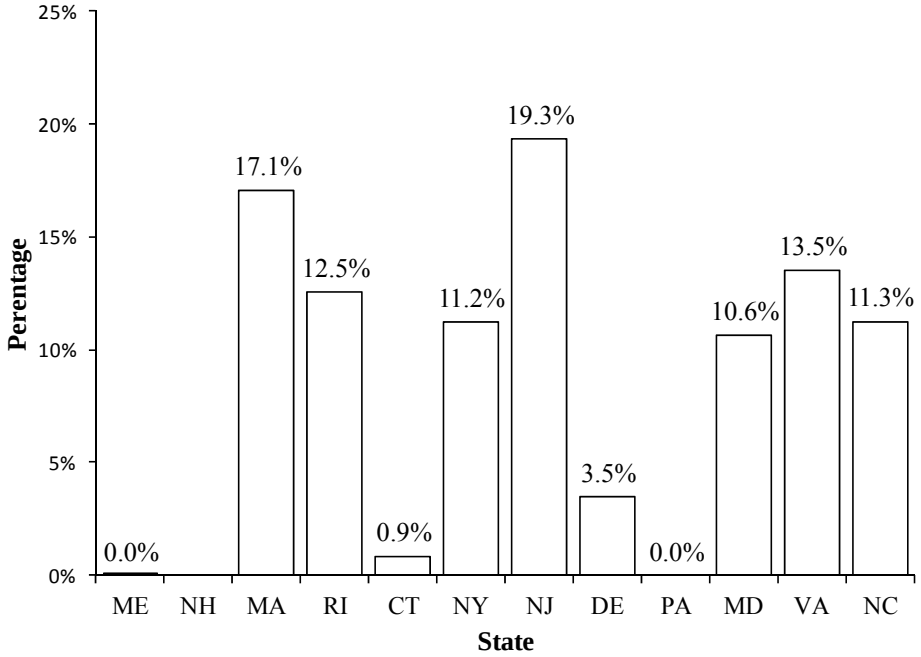

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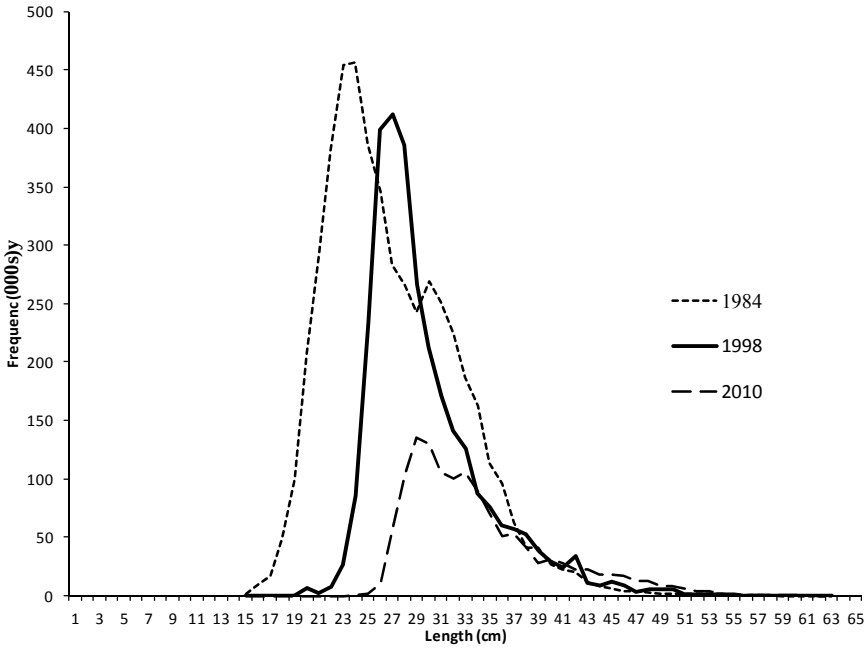
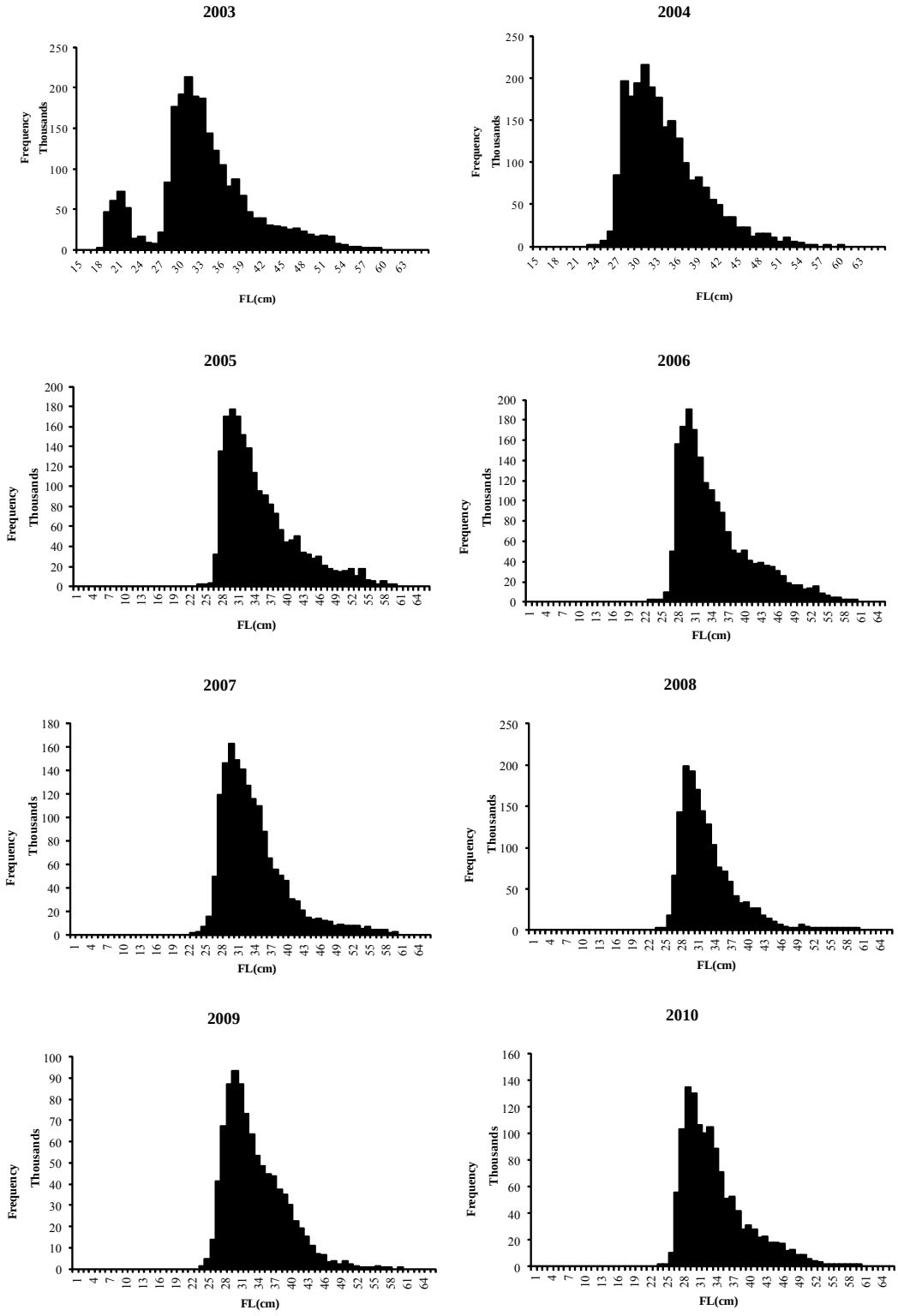


Figure B11. Length frequency comparison of black sea bass commercial landings; 1984,1998 and 2010.



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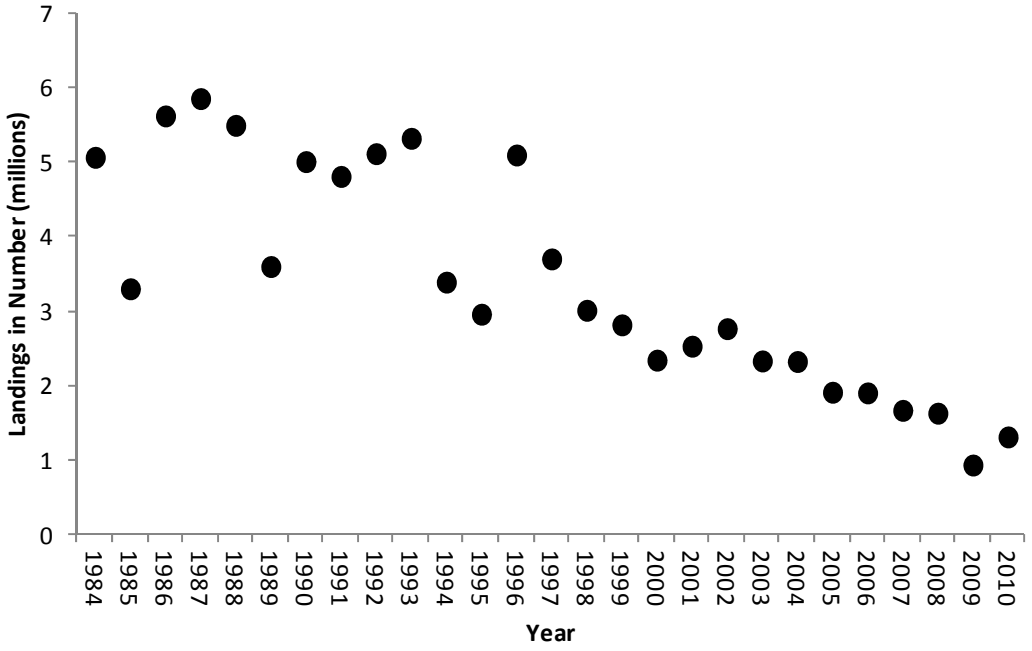

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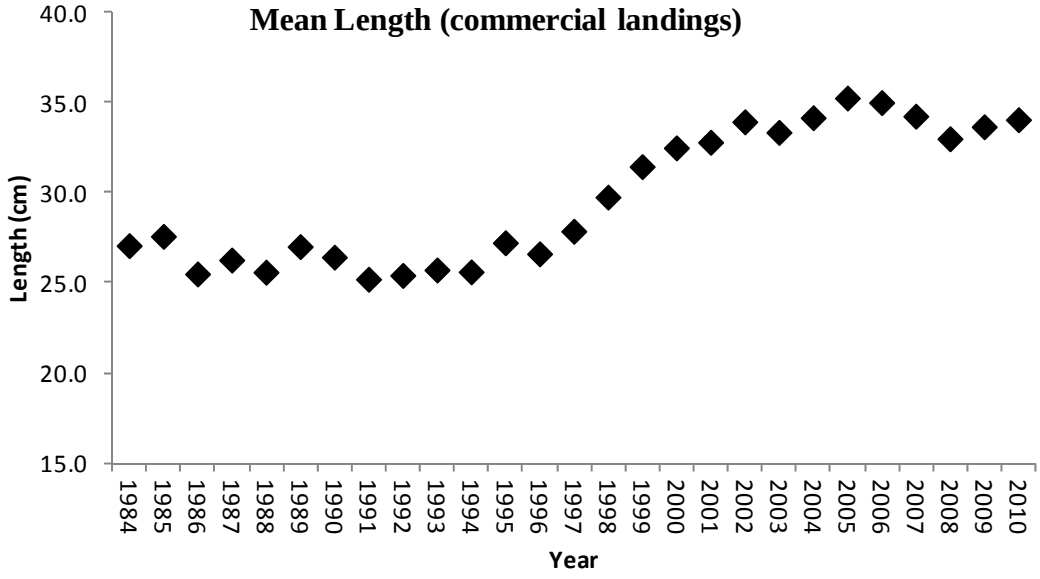

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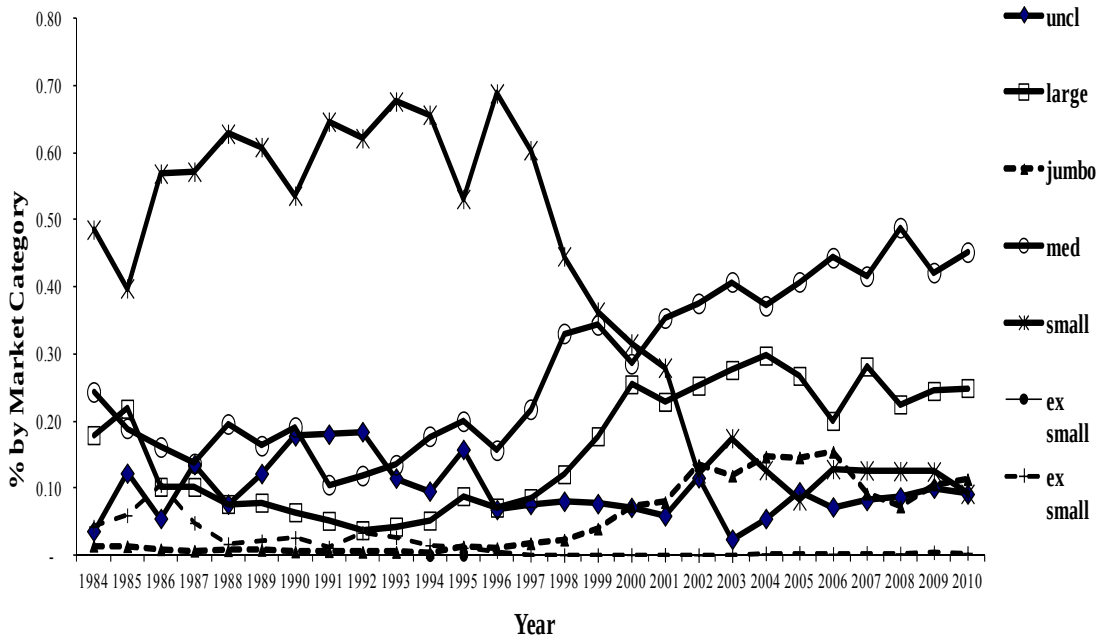

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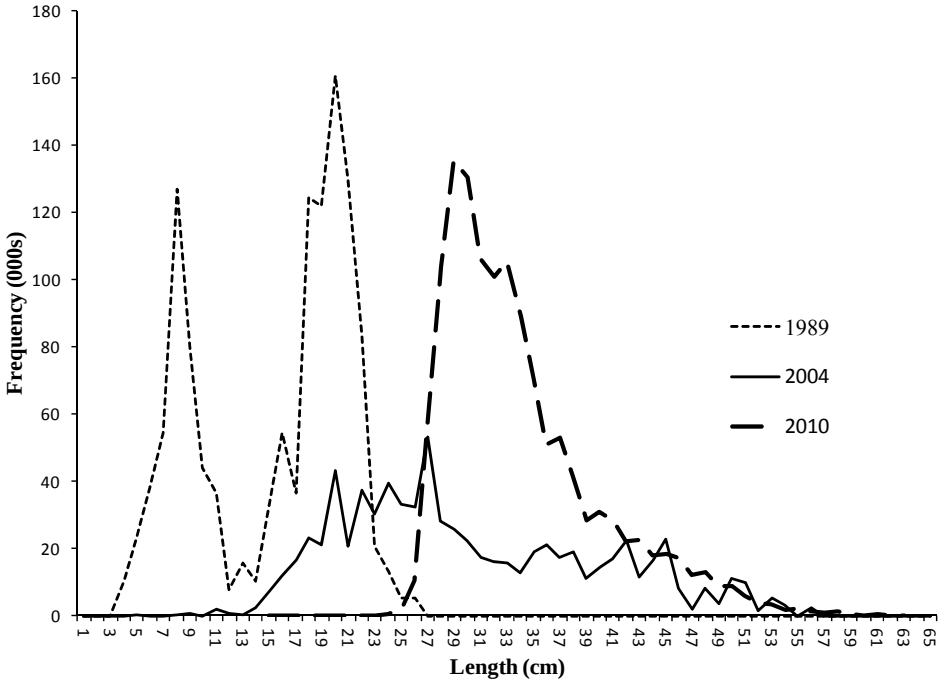

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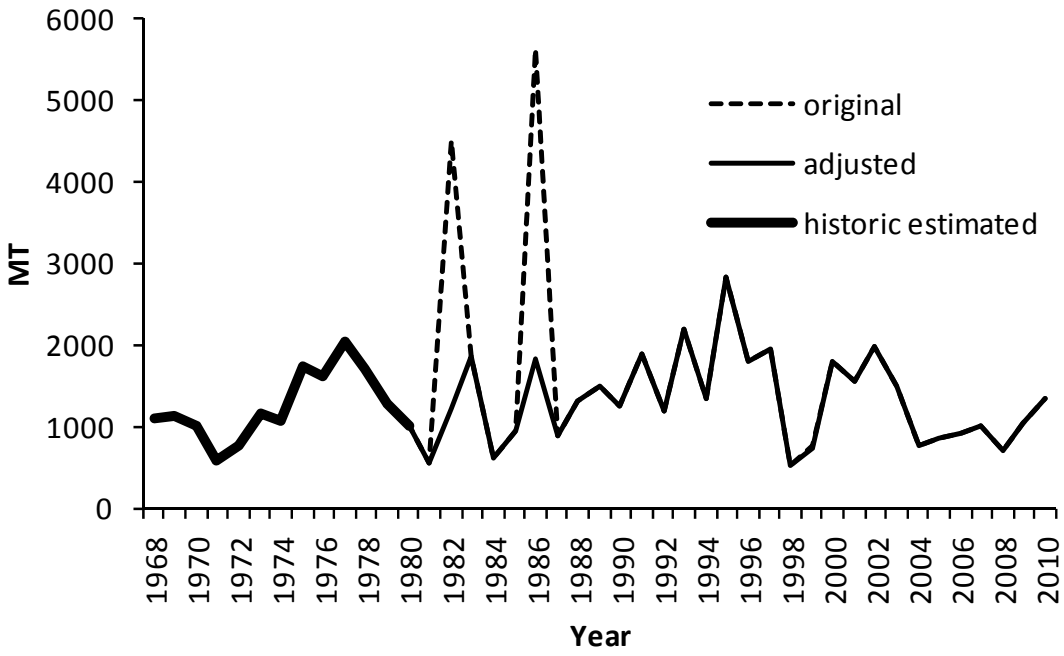

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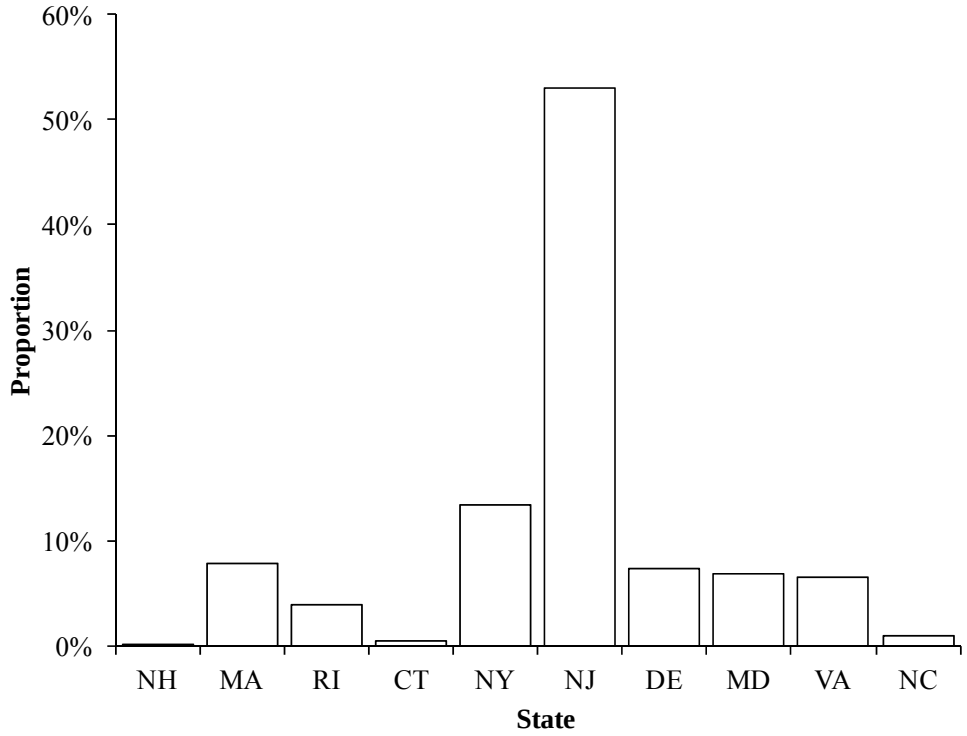

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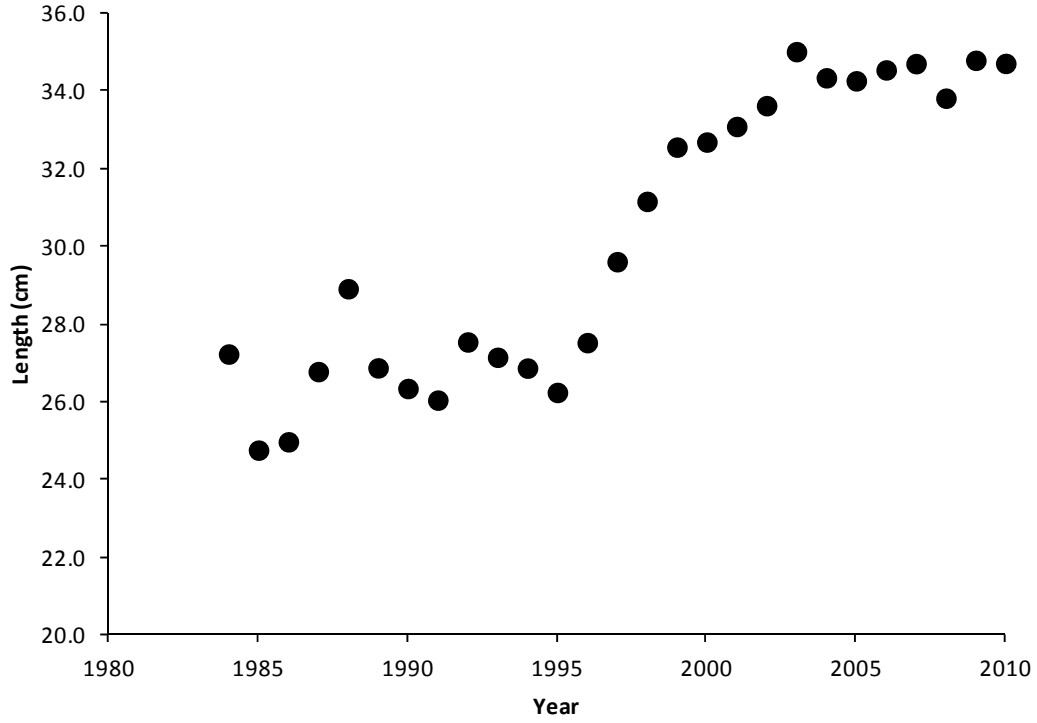

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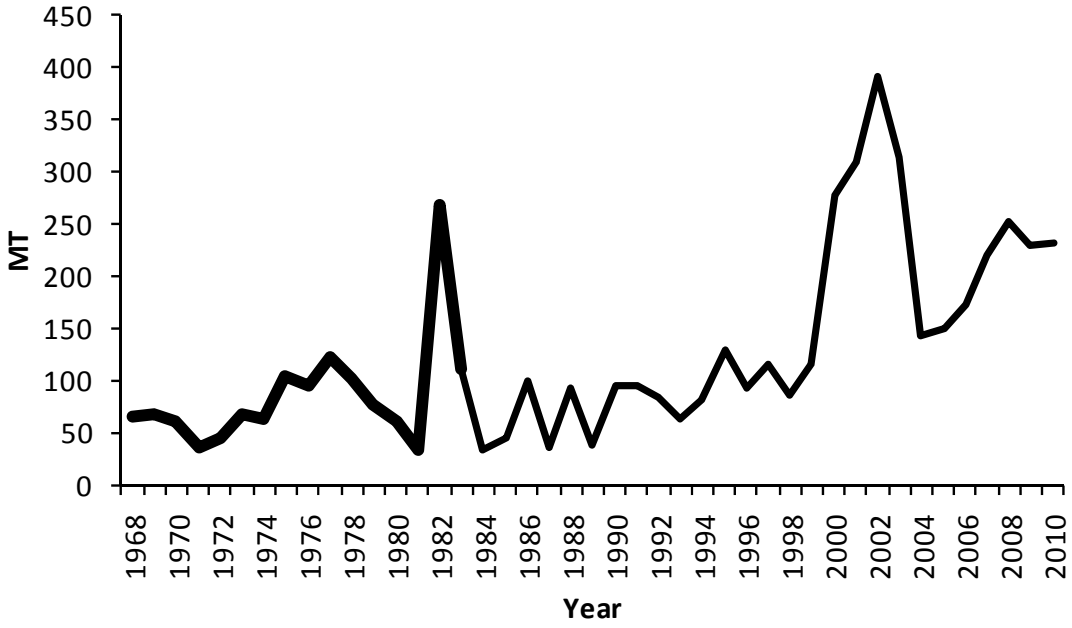

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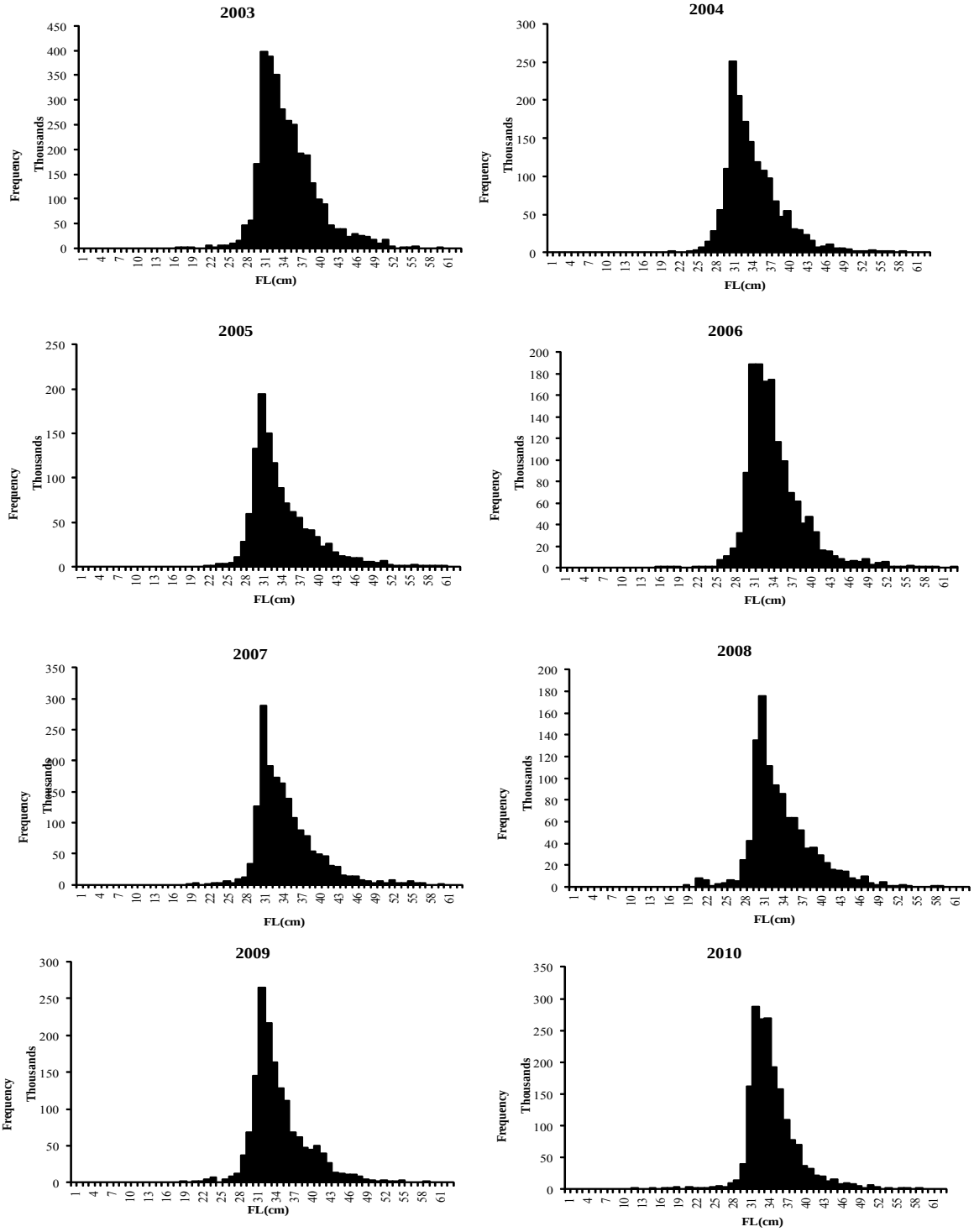

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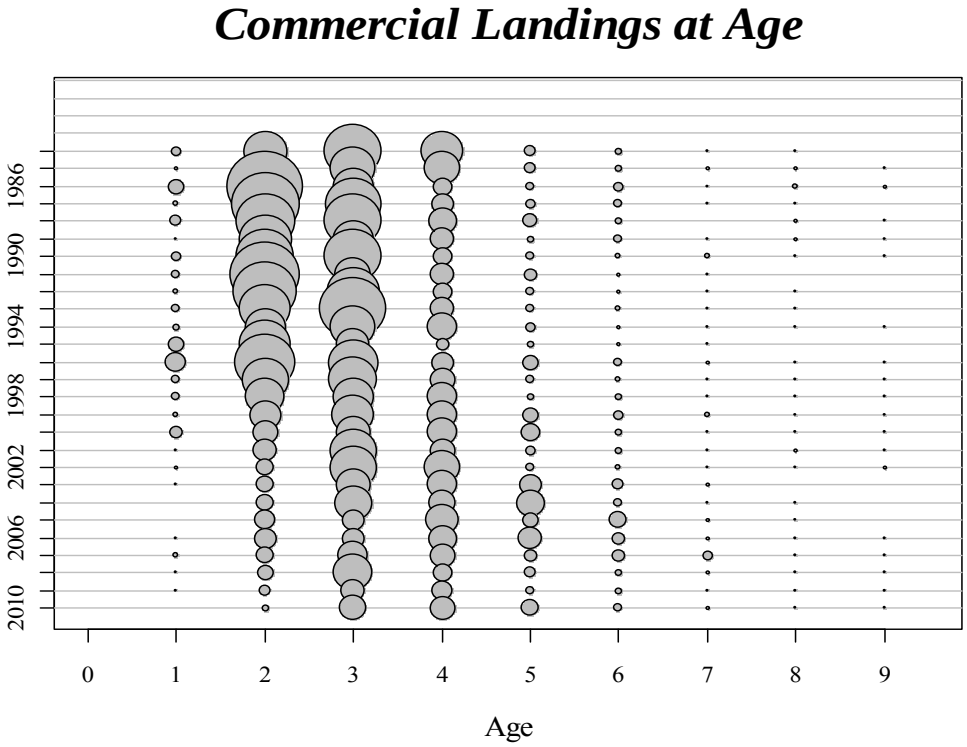

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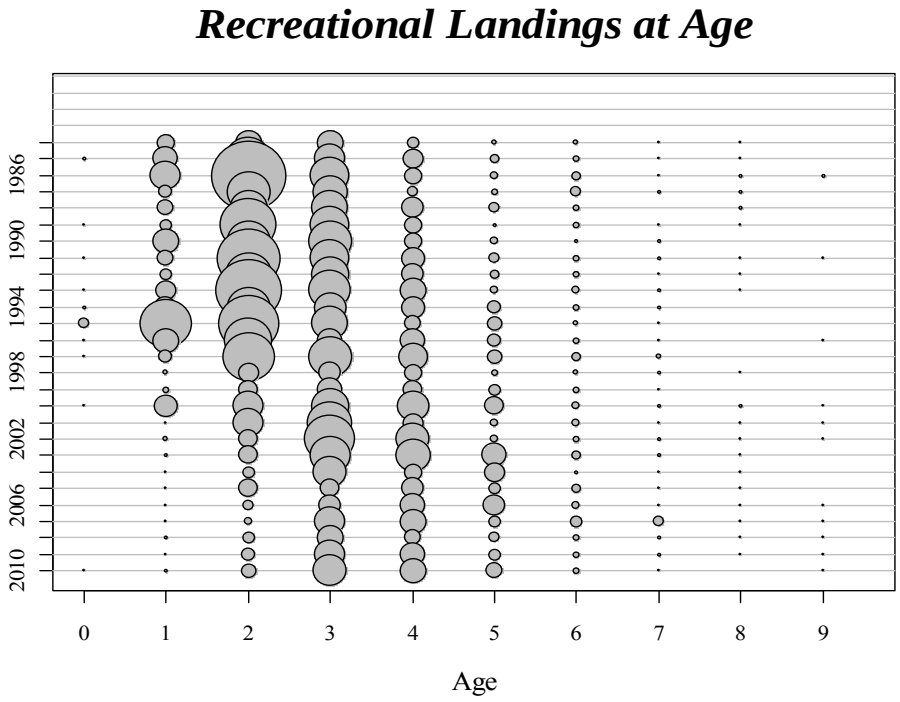

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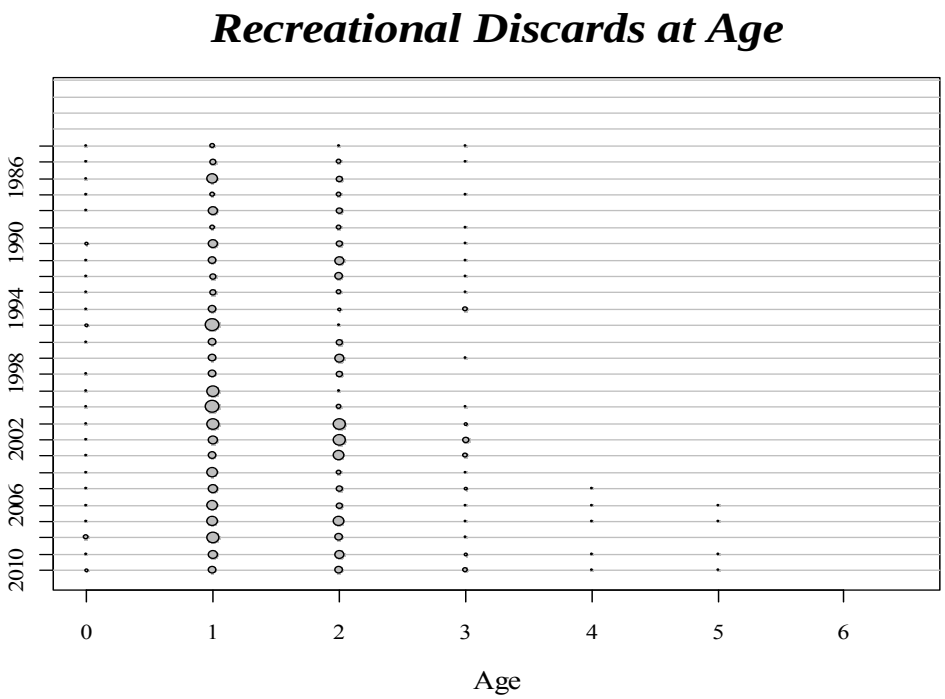

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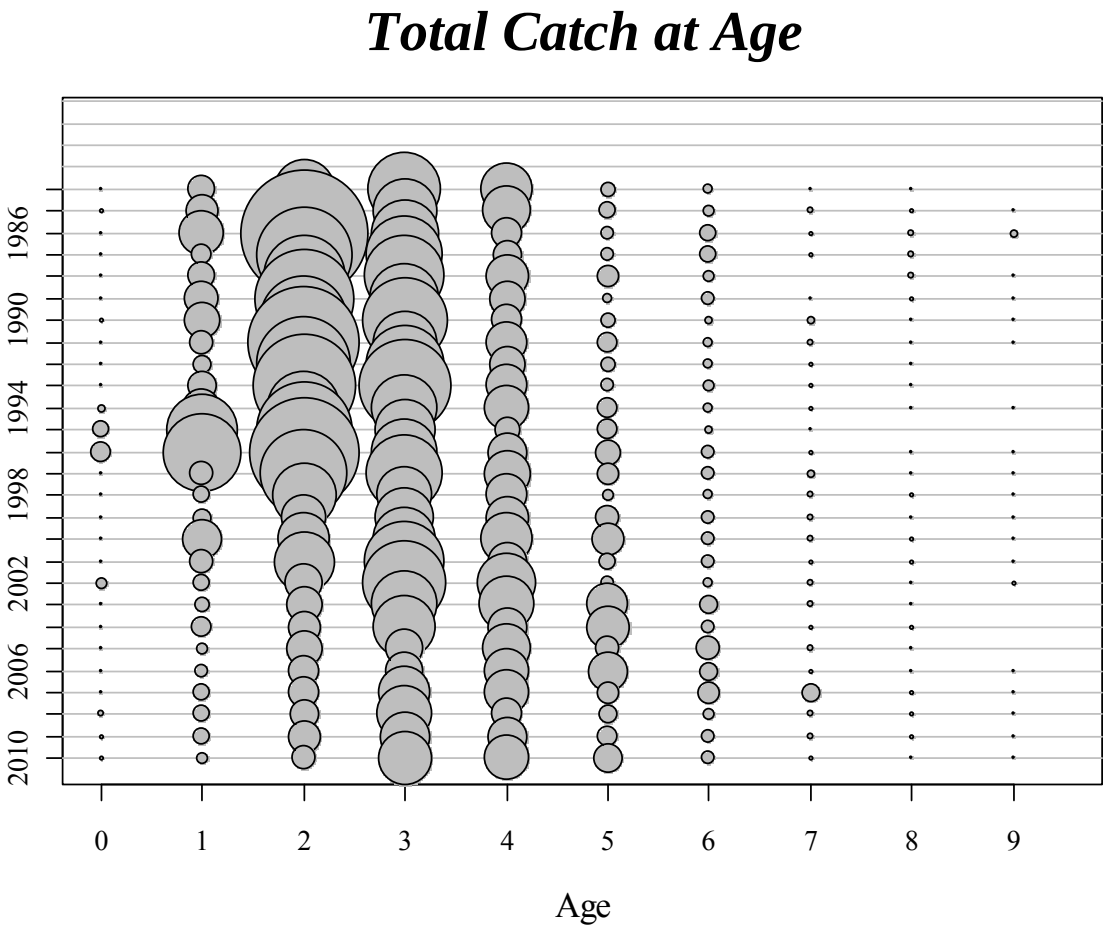

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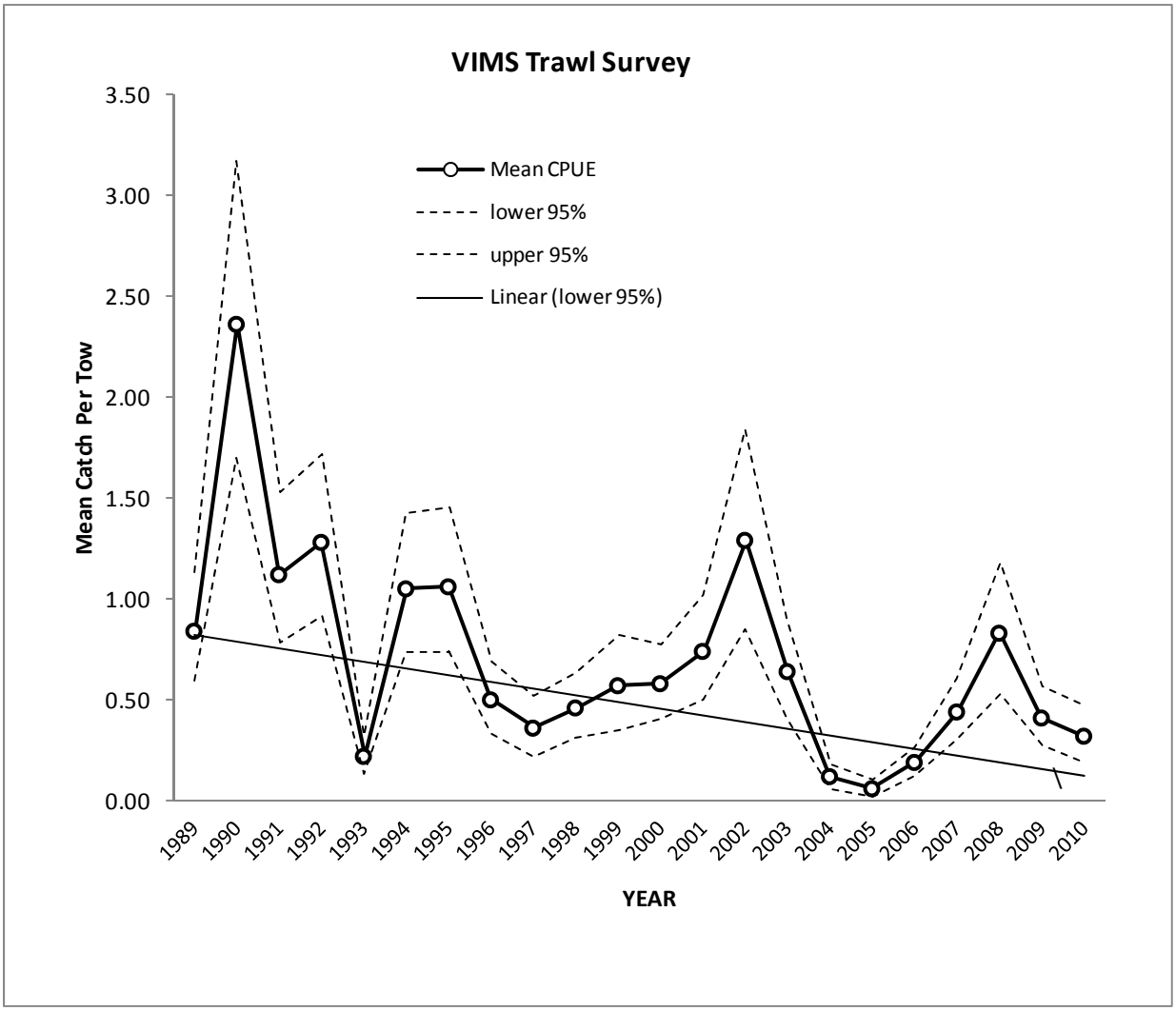

Figure B27. Virginia Institute of Marine Science trawl survey results for age 1 black sea bass.

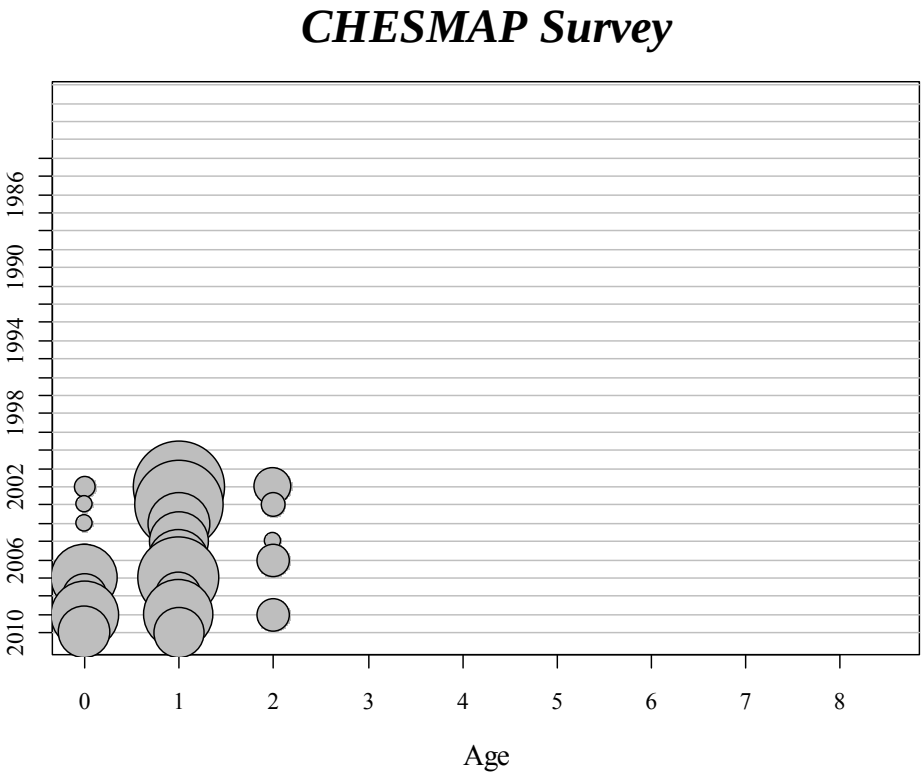

Figure B28. Age distribution of Chesapeake Bay CHESMAP survey.

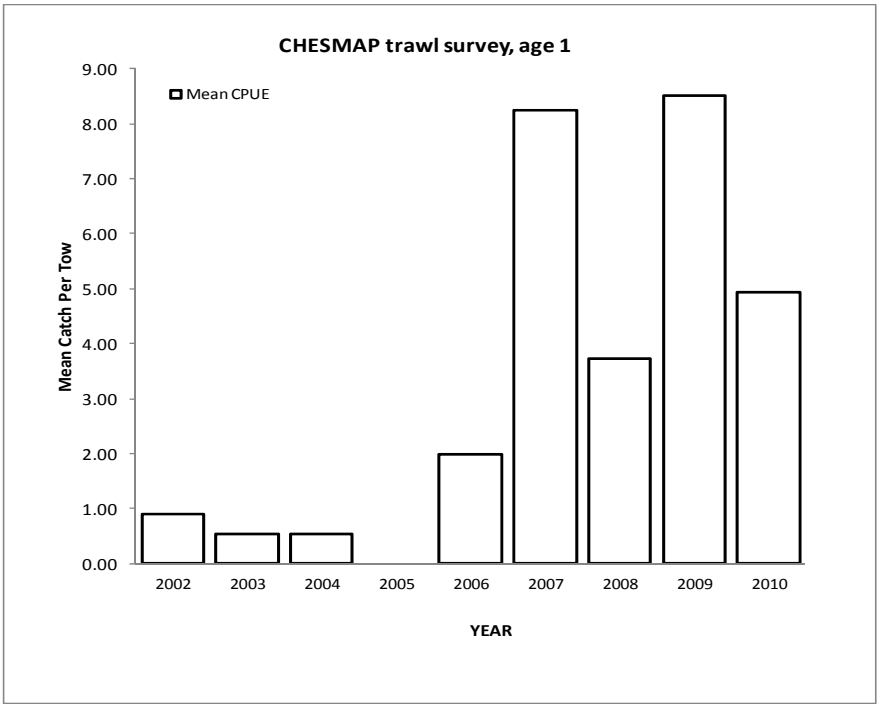

Figure B29. CHESMAP indices of black sea bass age 1 abundance.

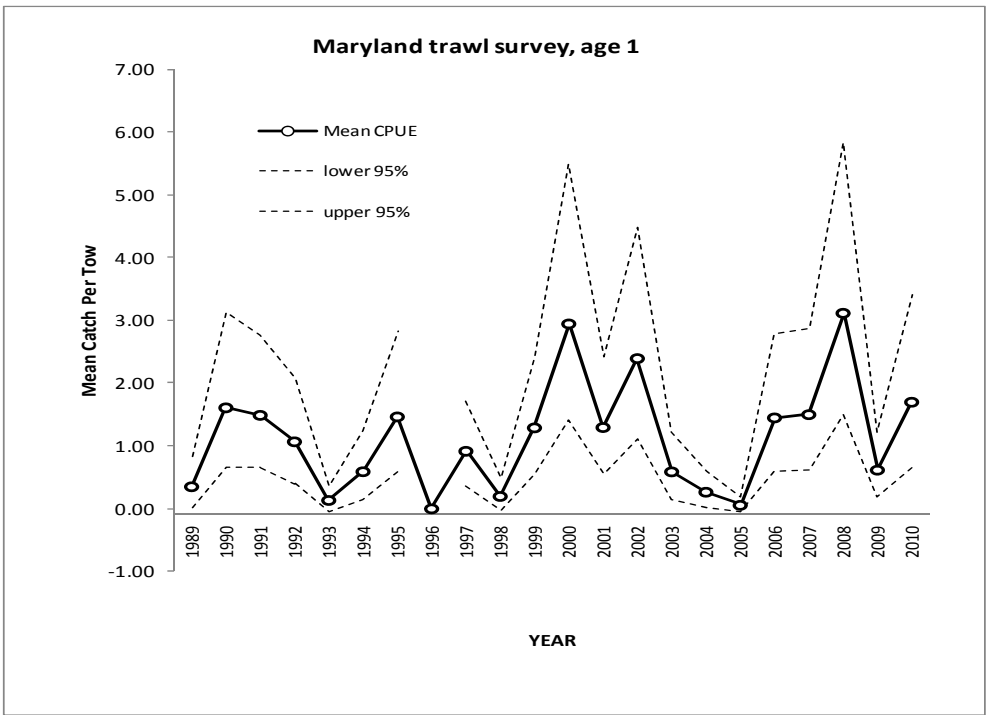

Figure B30. Mean catch per tow of black sea bass from MD coastal bay survey.

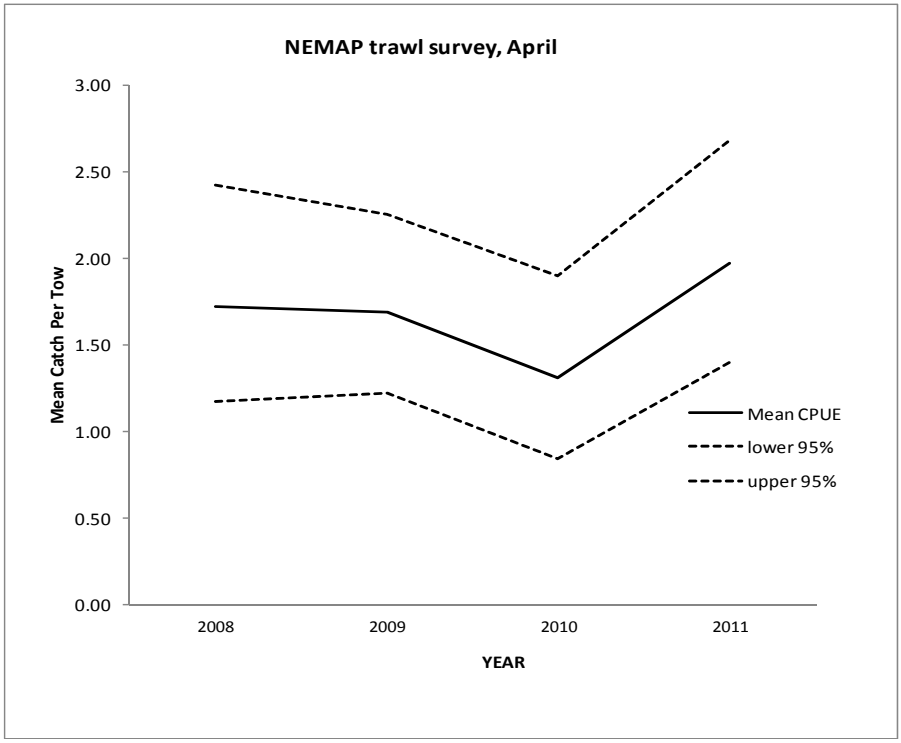

Figure B31. Black sea bass indices of abundance from April NEMAP survey.

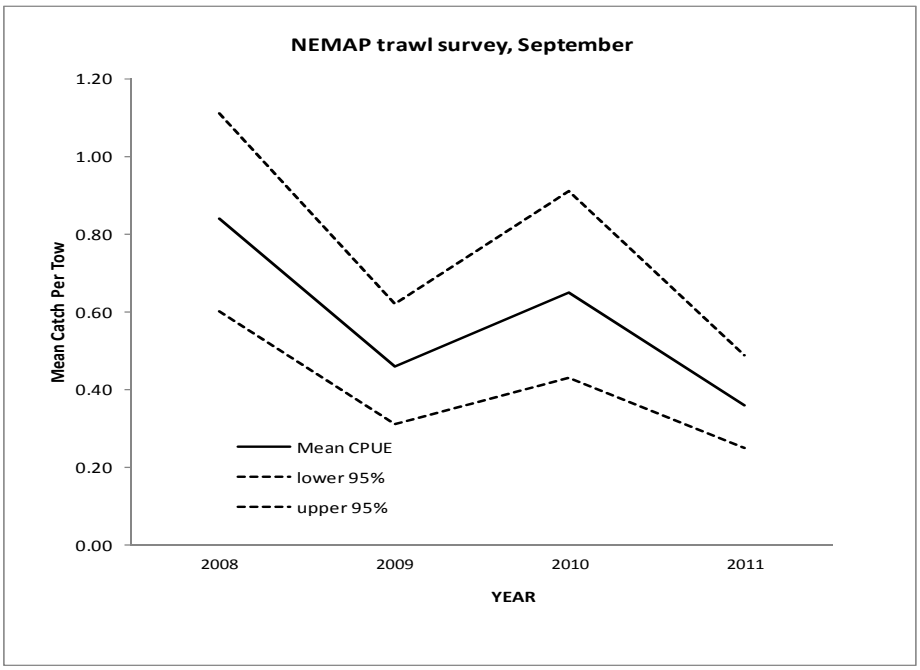

Figure B32. Black sea bass indices of abundance from September NEMAP survey.

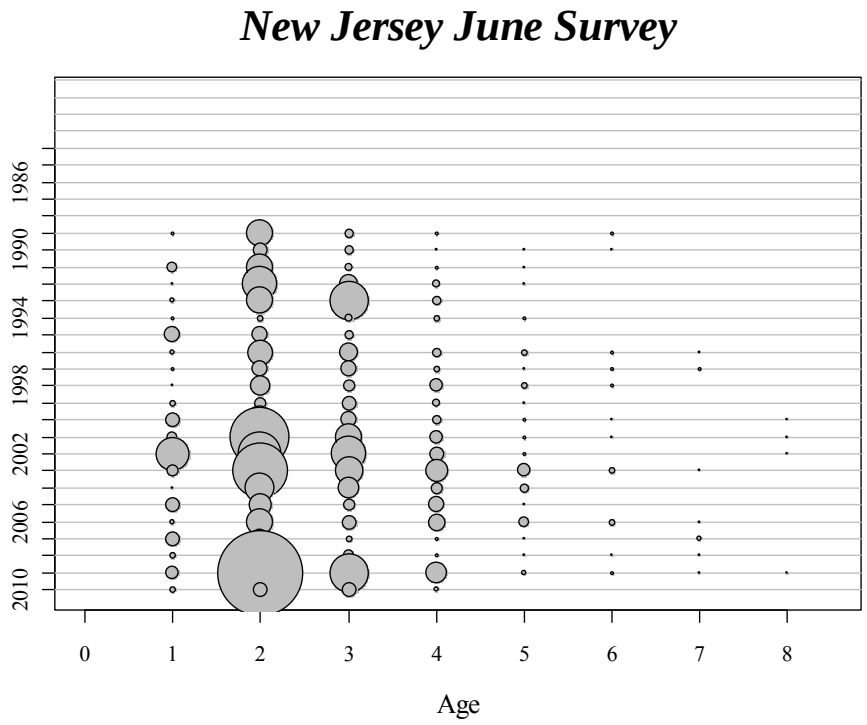

Figure B33. Age distribution of New Jersey June ocean trawl survey.

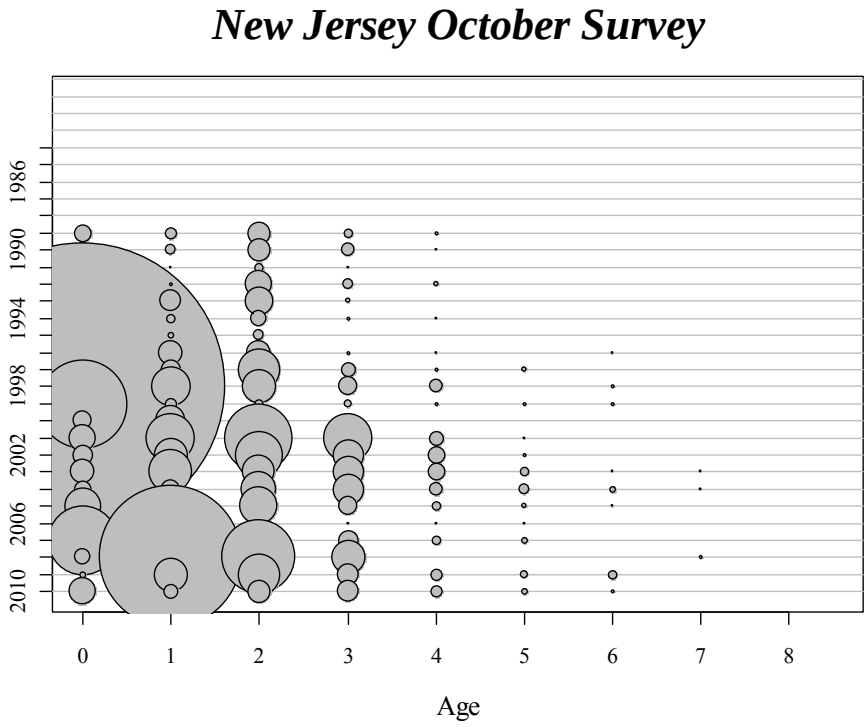

Figure B34. Age distribution of New Jersey October ocean trawl survey.

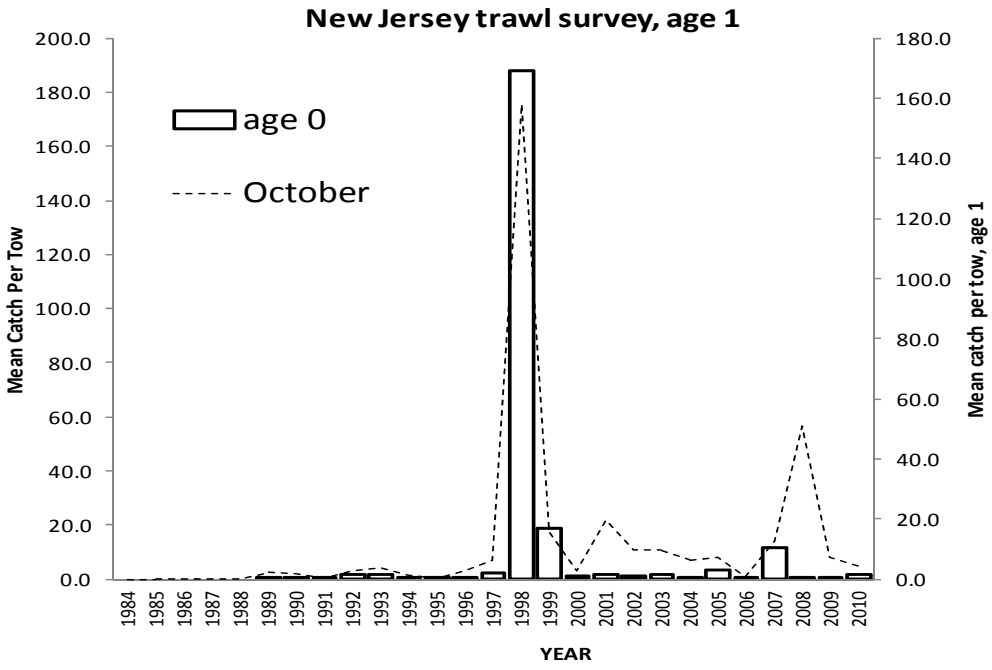

Figure B35. Age 0 indices of abundance from New Jersey October ocean trawl survey.

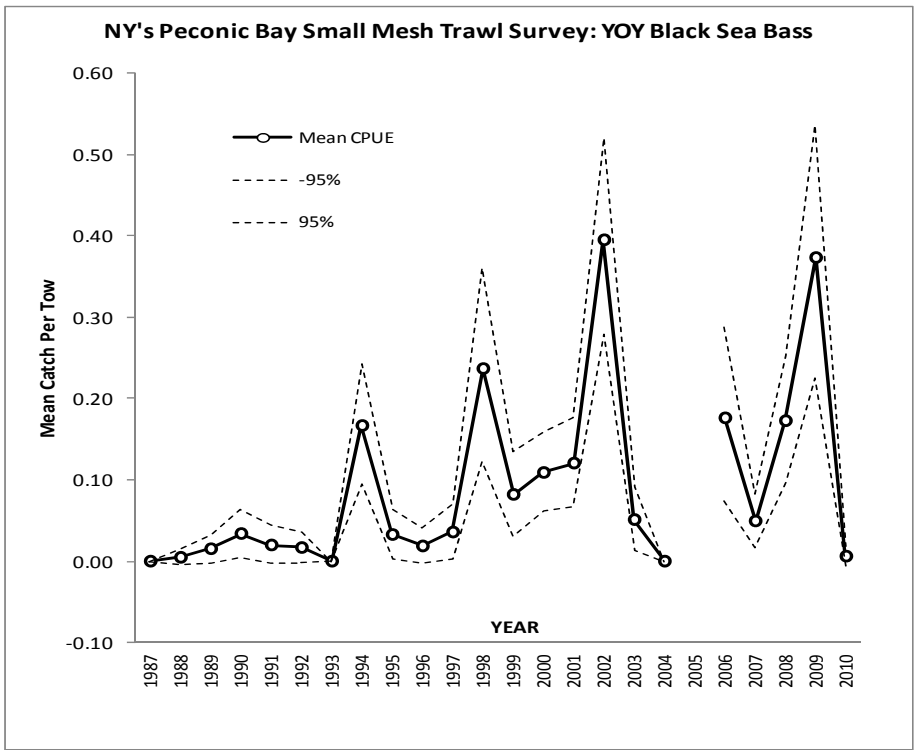

Figure B36. Black sea bass indices of age 0 abundance from Peconic Bay New York trawl survey.

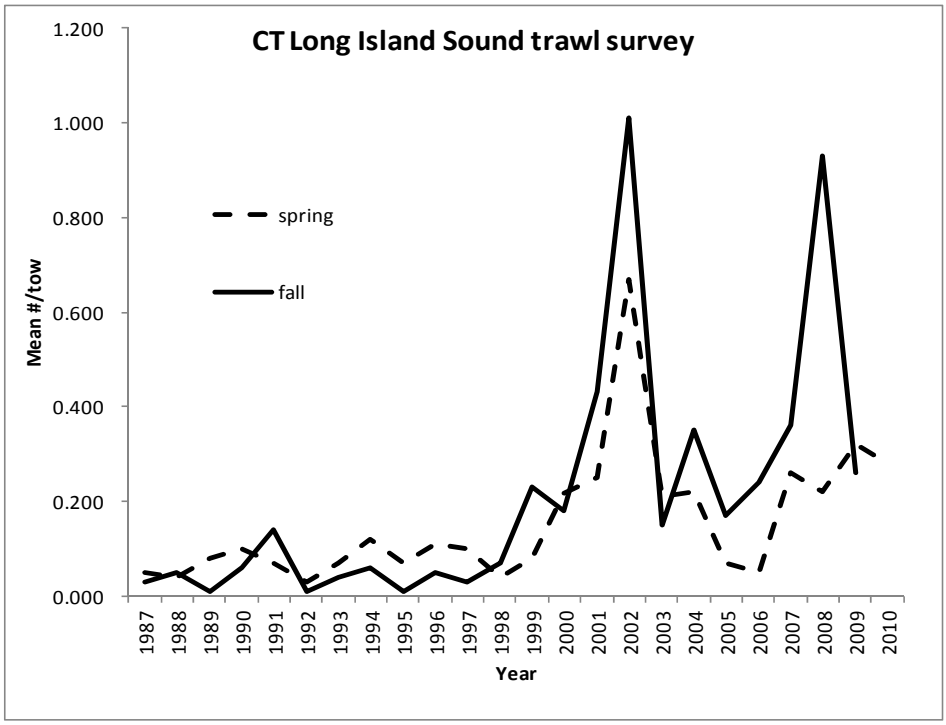

Figure B37. Black sea bass indices of abundance from CT Long Island trawl surveys.

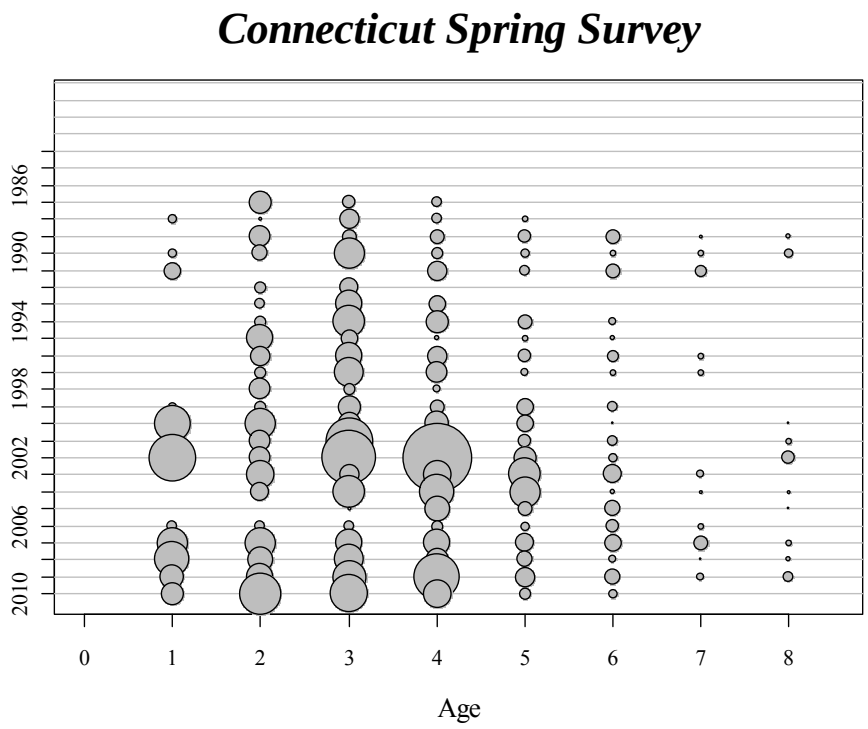

Figure B38. Black sea bass age distribution from CT Long Island Sound spring survey.

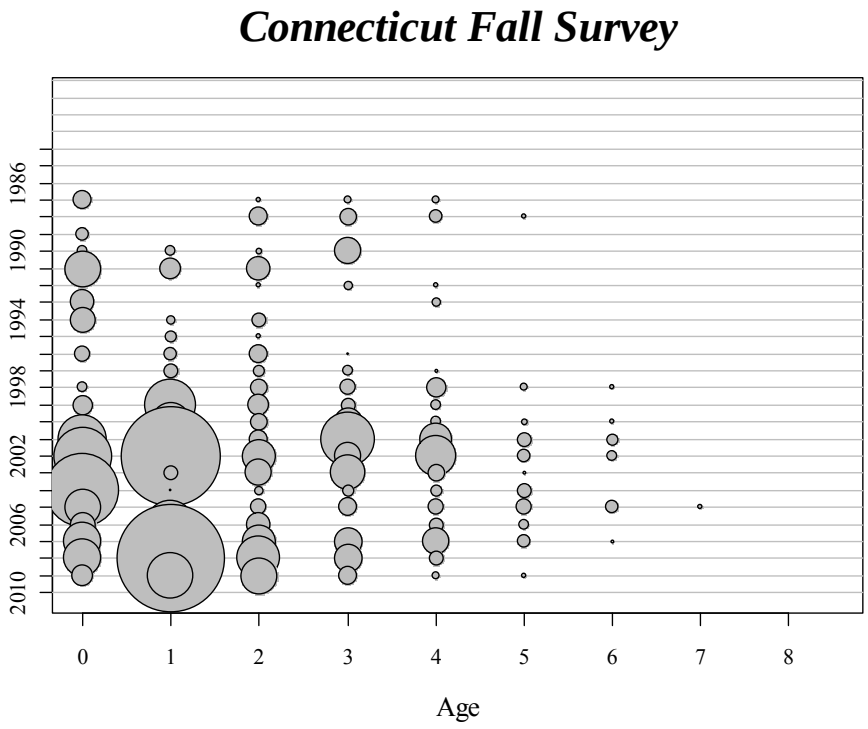

Figure B39. Black sea bass age distribution from CT Long Island Sound fall survey.

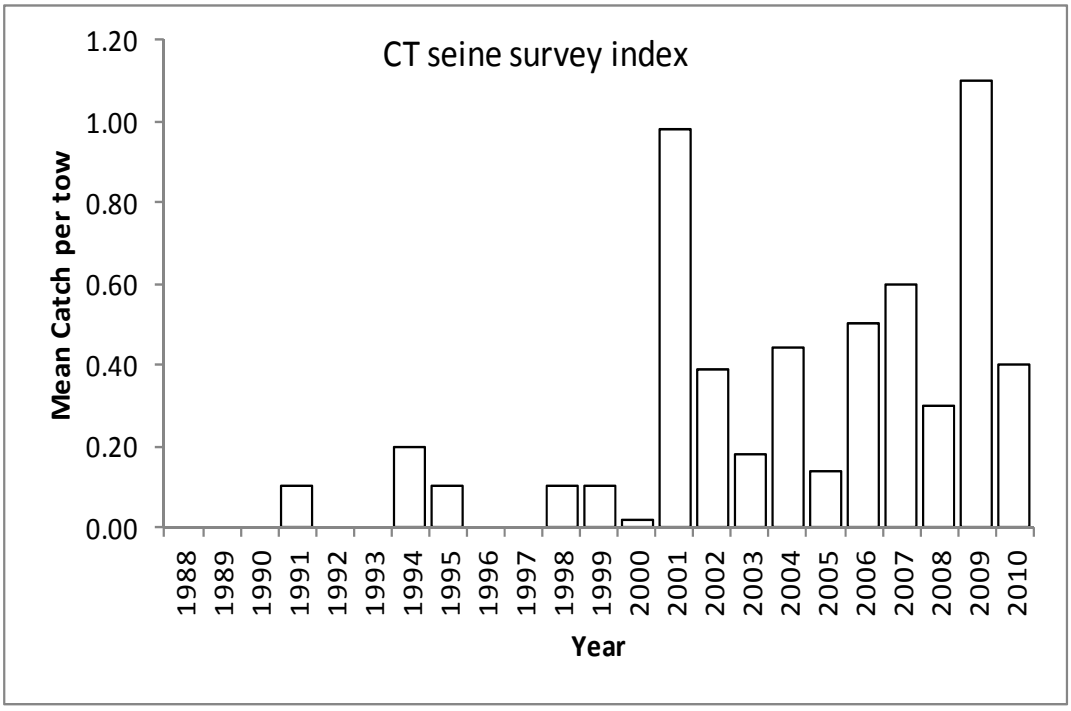

Figure B40. Black sea bass indices of abundance from CT seine survey of coastal ponds.

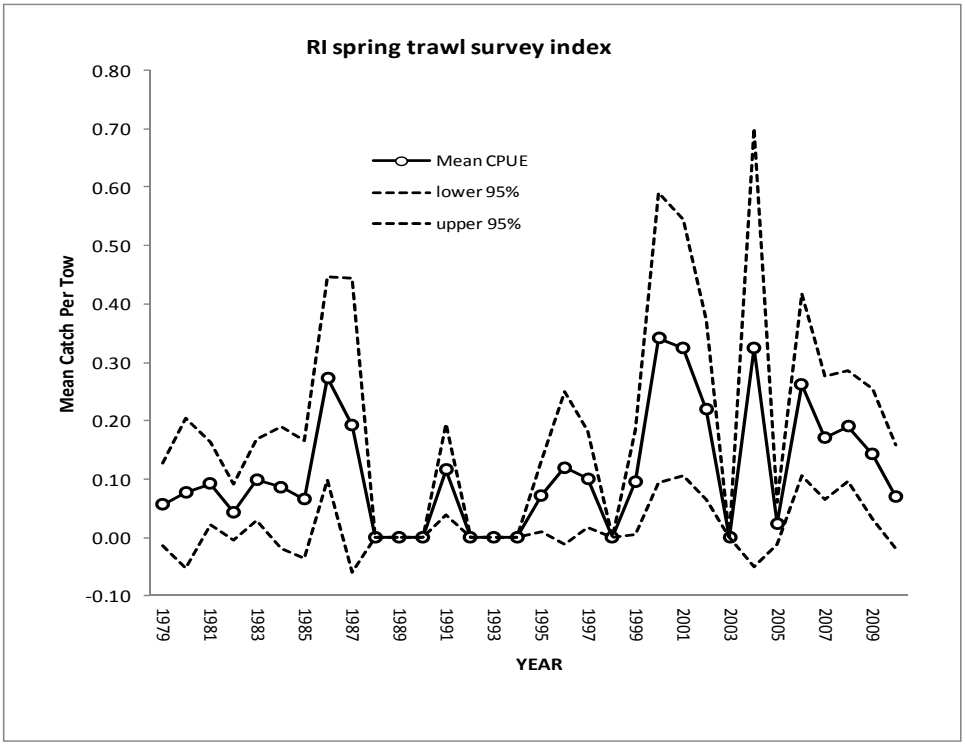

Figure B41. Black sea bass indices of abundance from RI spring trawl survey.

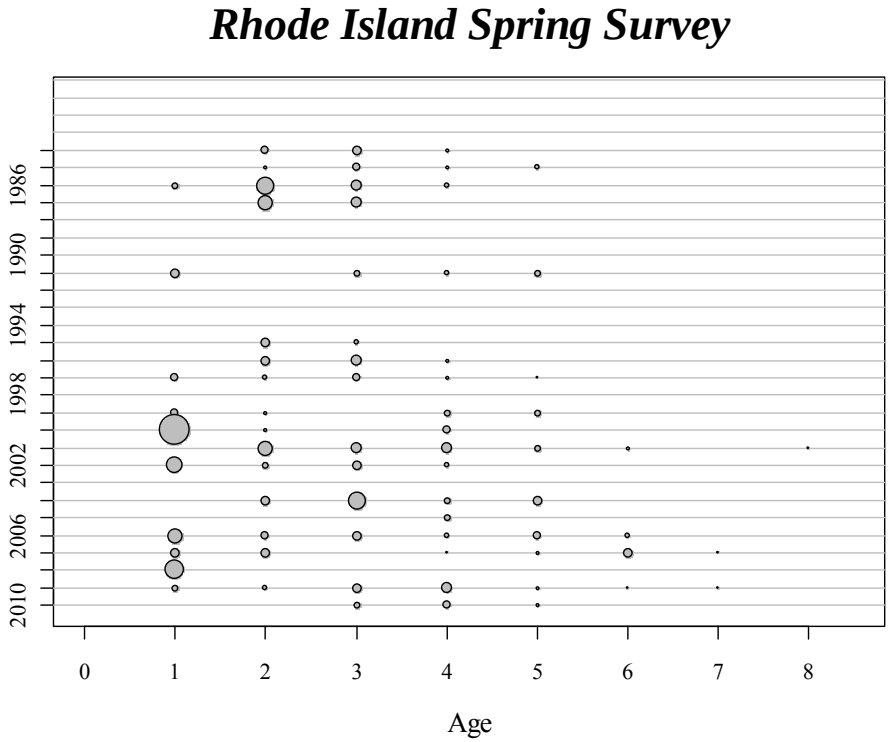

Figure B42. Black sea bass age distribution of RI spring trawl survey.

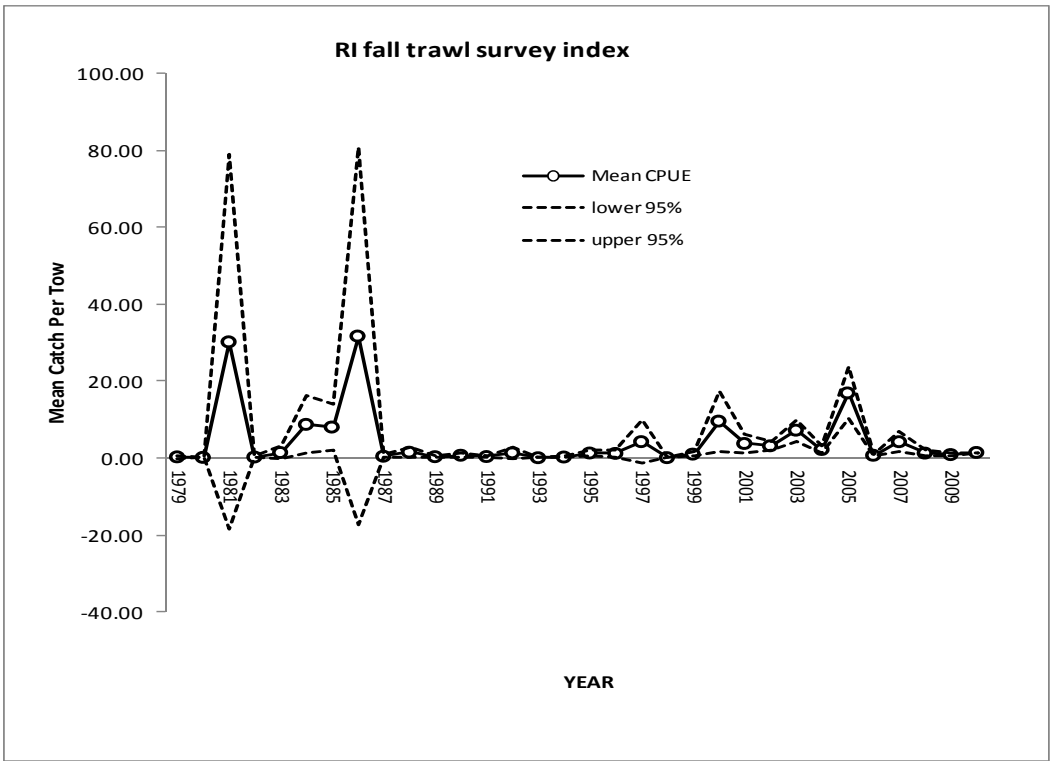

Figure B43. Black sea bass indices of abundance from RI fall trawl survey.

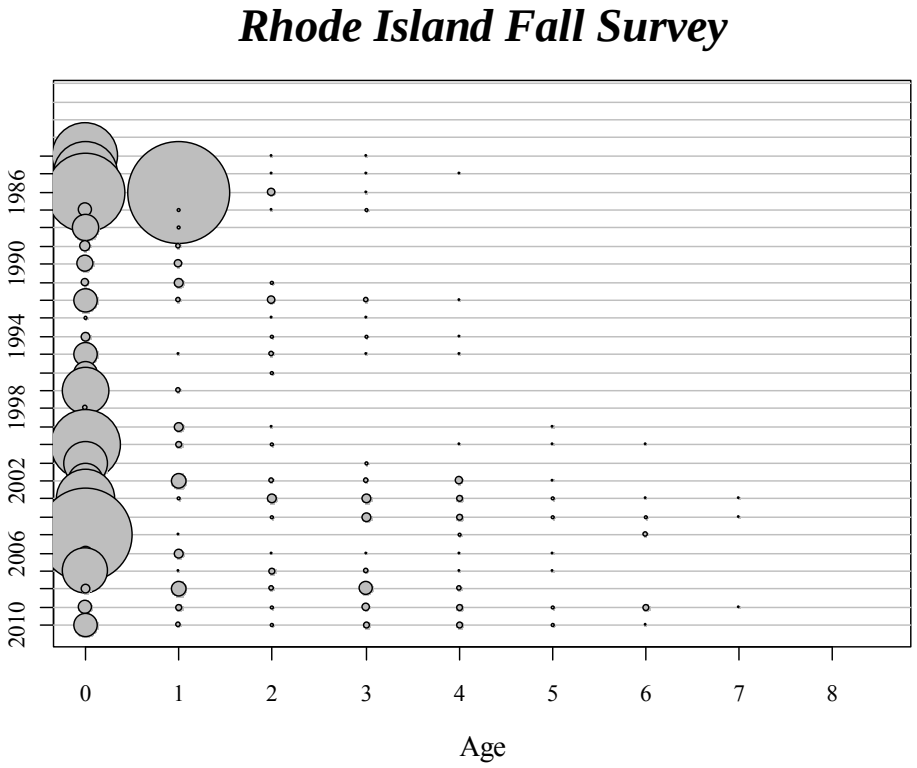

Figure B44. Black sea bass age distribution of RI fall trawl survey.

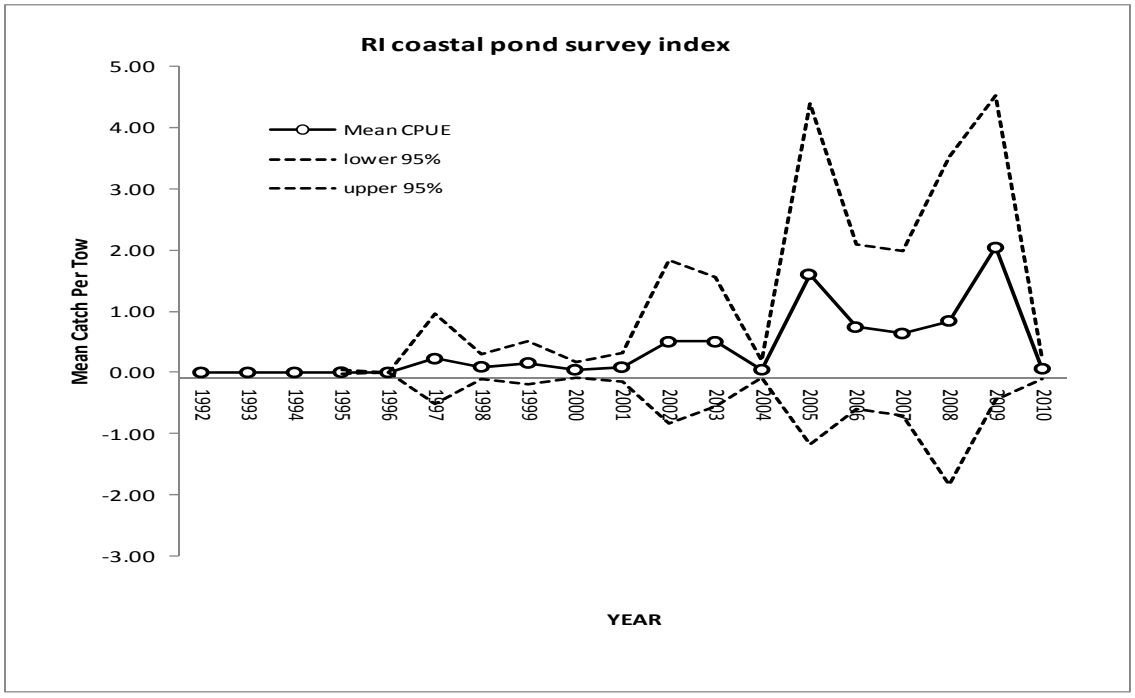

Figure B45. Black sea bass indices of abundance from RI coastal pond survey.

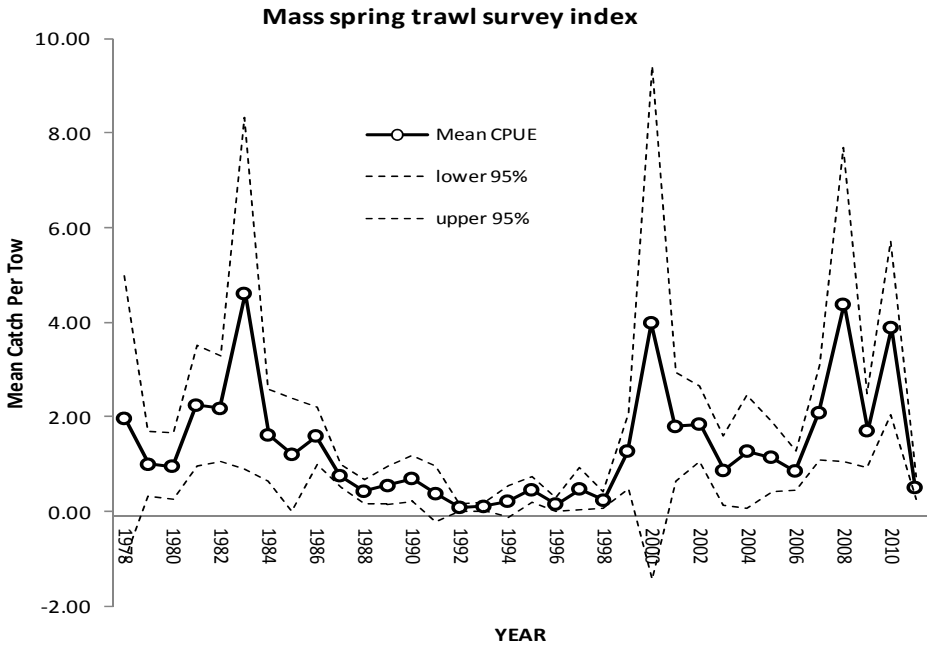

Figure B46. Black sea bass indices of abundance from MA spring trawl survey.

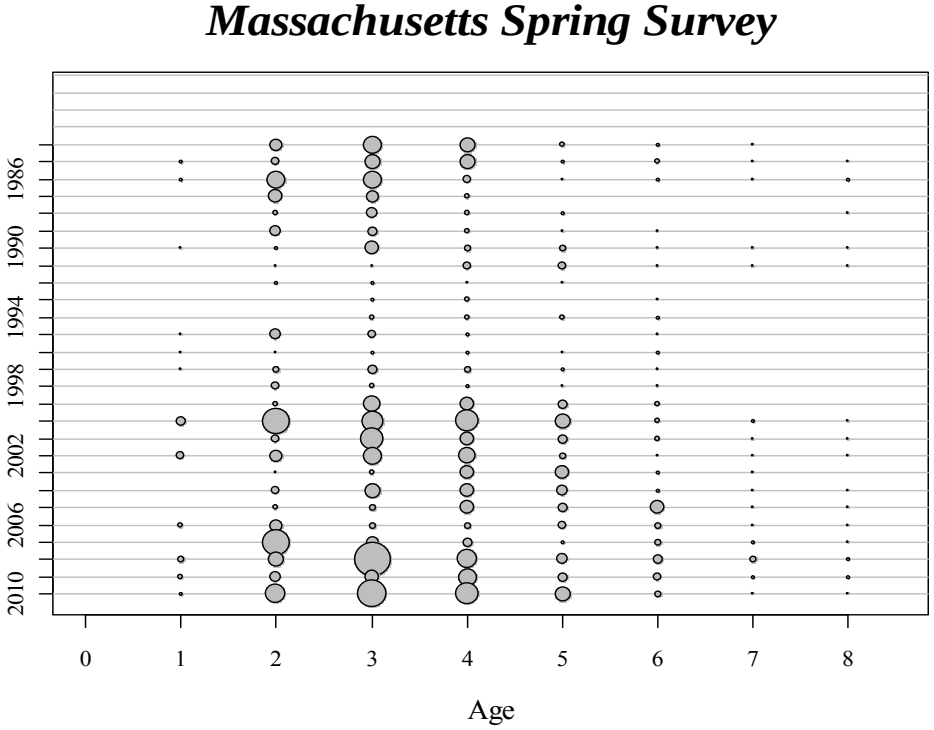

Figure B47. Black sea bass age distribution of MA spring trawl survey.

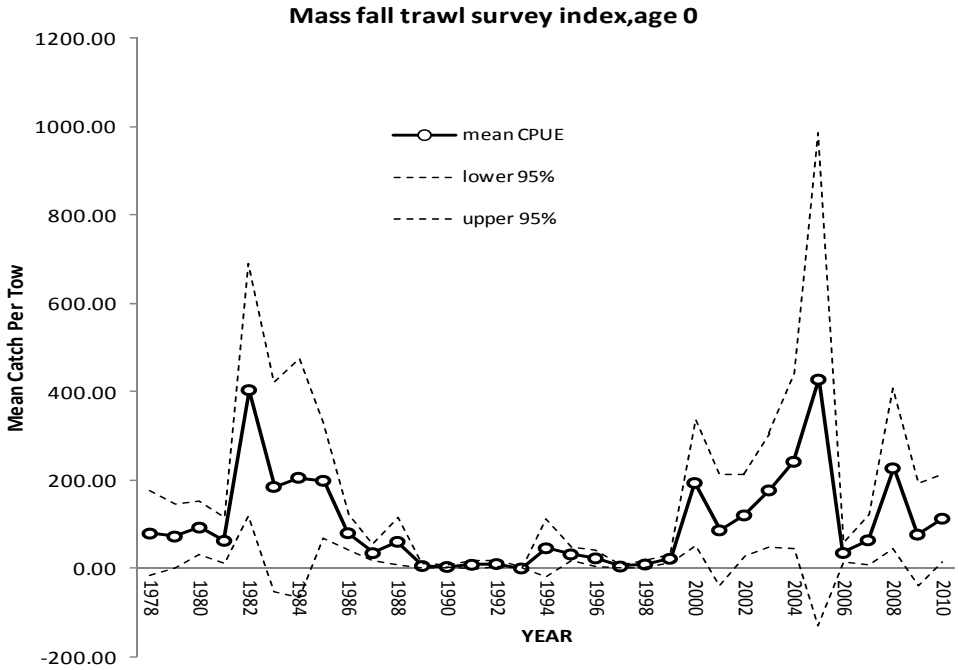

Figure B48. Black sea bass indices of age 0 abundance from MA fall trawl survey.

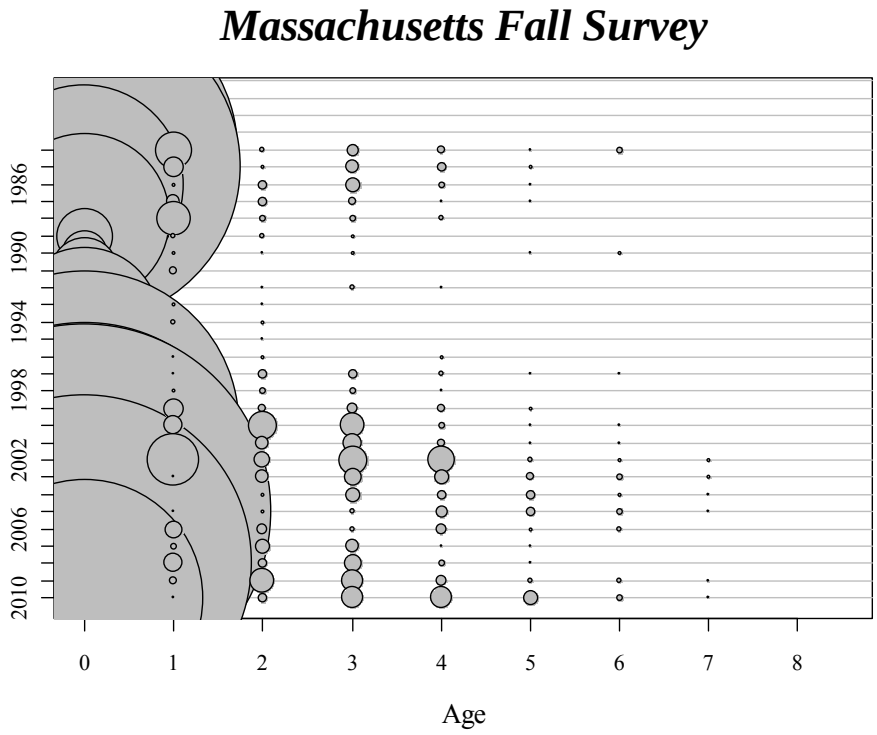

Figure B49. Black sea bass age distribution of MA fall trawl survey.

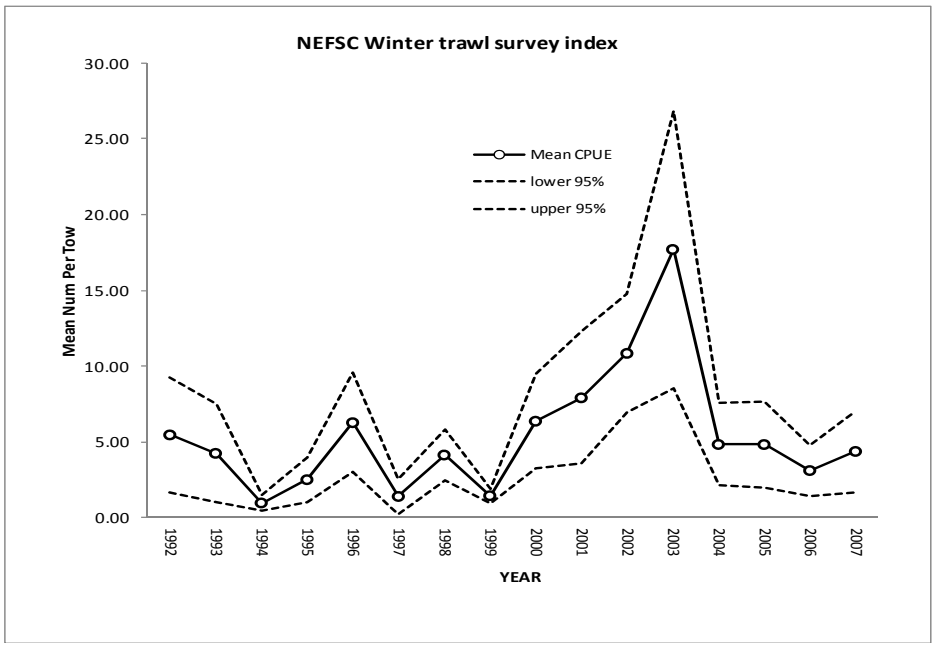

Figure B50. Black sea bass mean number per tow from NEFSC winter trawl survey.

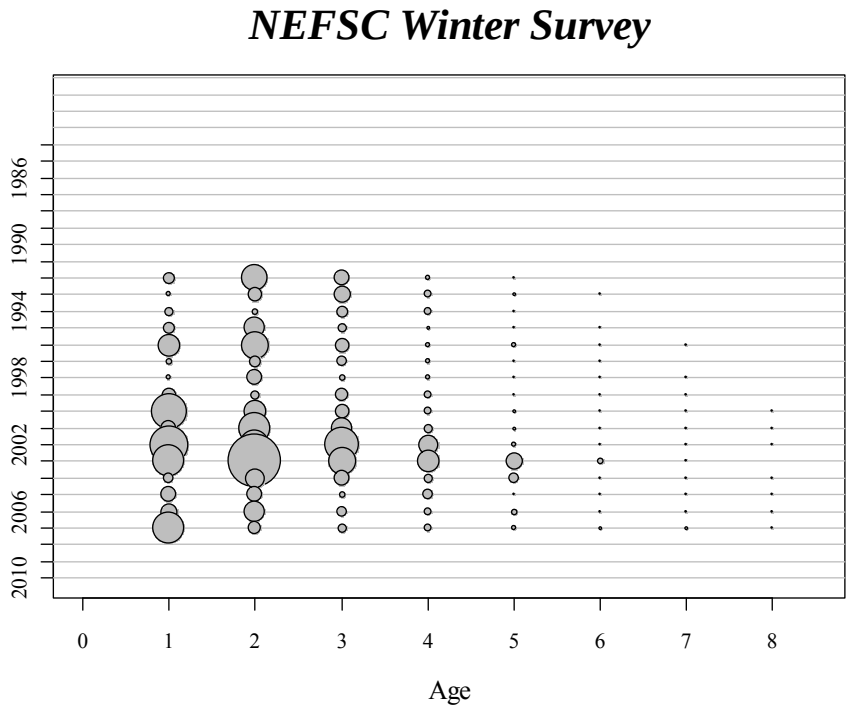

Figure B51. Black sea bass age composition of NMFS winter trawl survey.

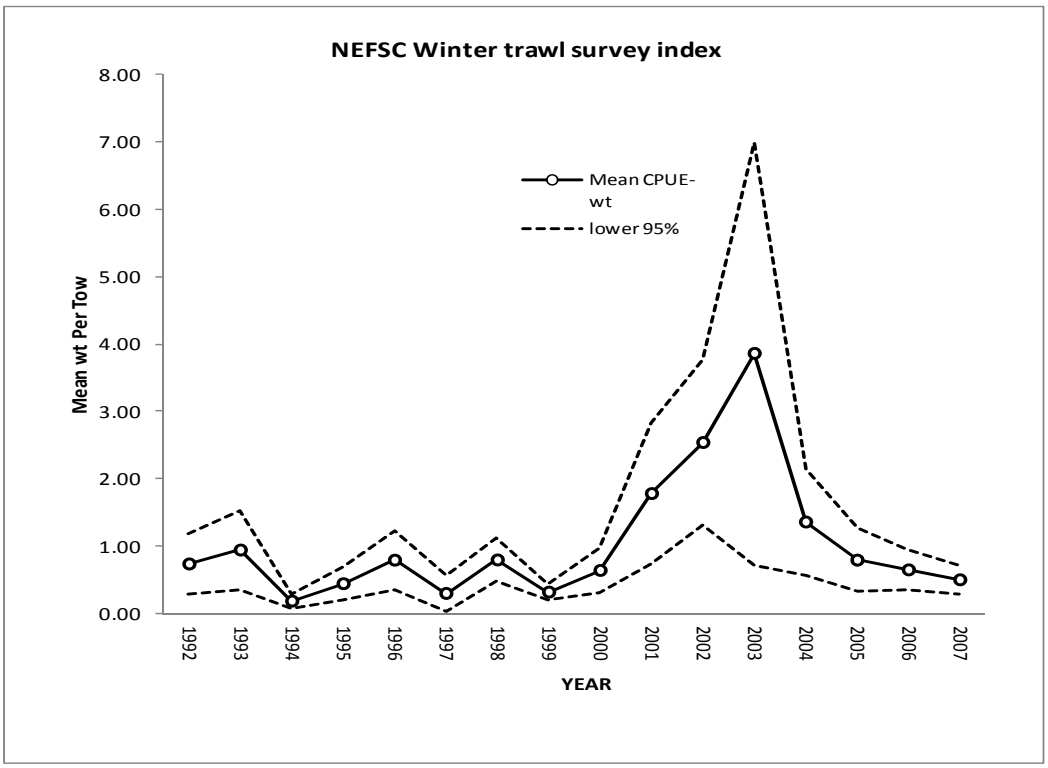

Figure B52. Black sea bass mean weight per tow from NEFSC winter trawl survey.

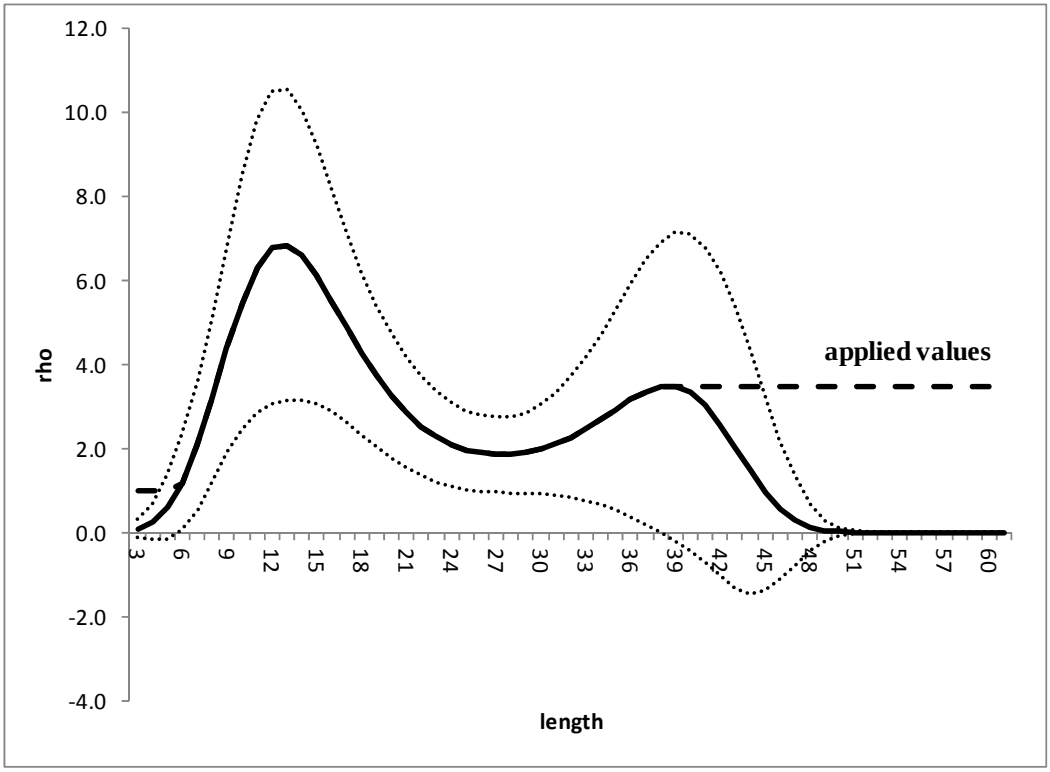

Figure B53. FRV Bigelow to Albatross calibration coefficients for black sea bass.

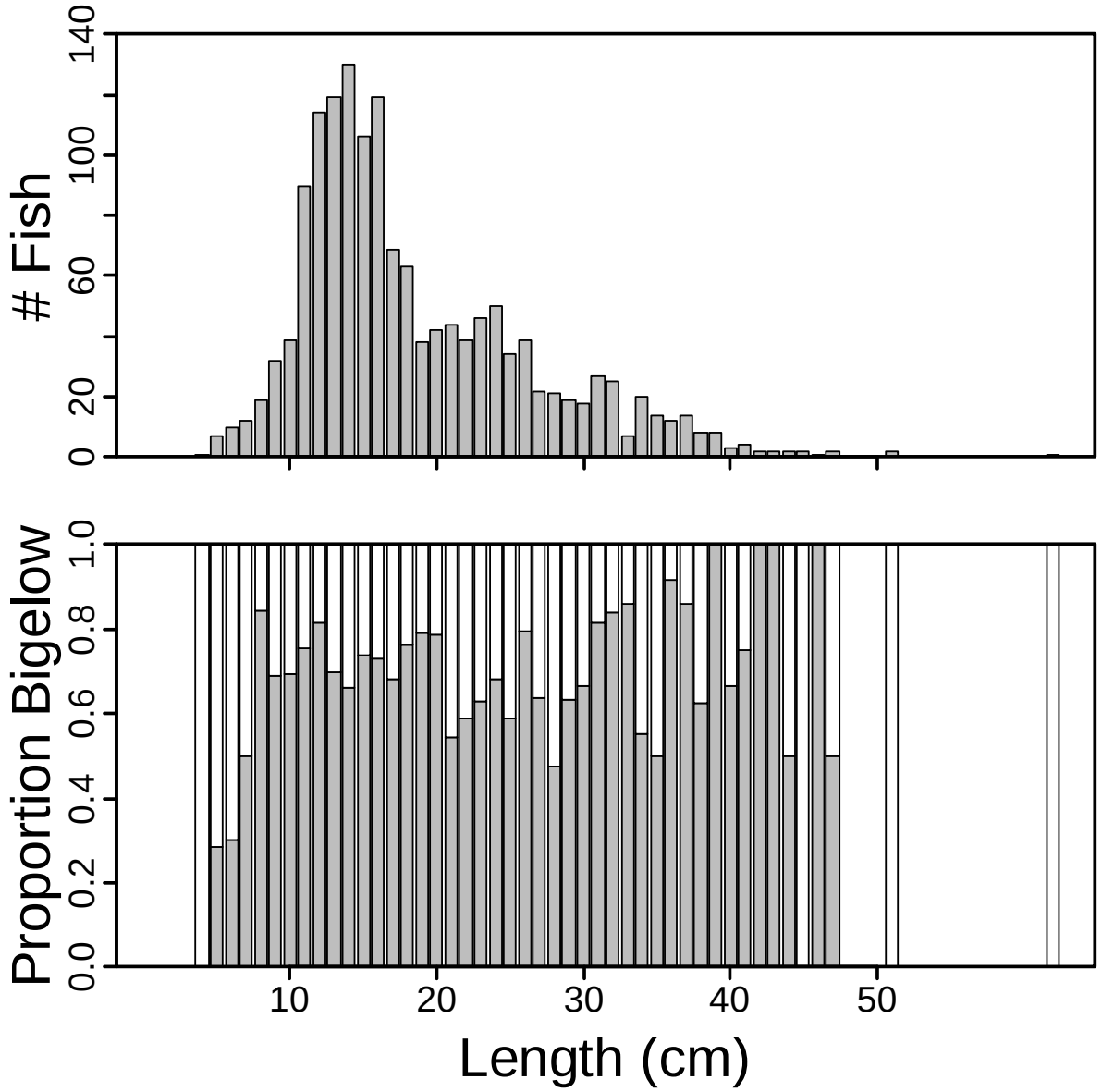

Figure B54. Total number of fish captured at each station in offshore strata (both vessels combined) at length (top) and proportions captured by the *Albatross IV* (white) and *Henry B. Bigelow* (gray) (bottom) from data collected at all stations in 2008 (T. Miller, pers. comm.)

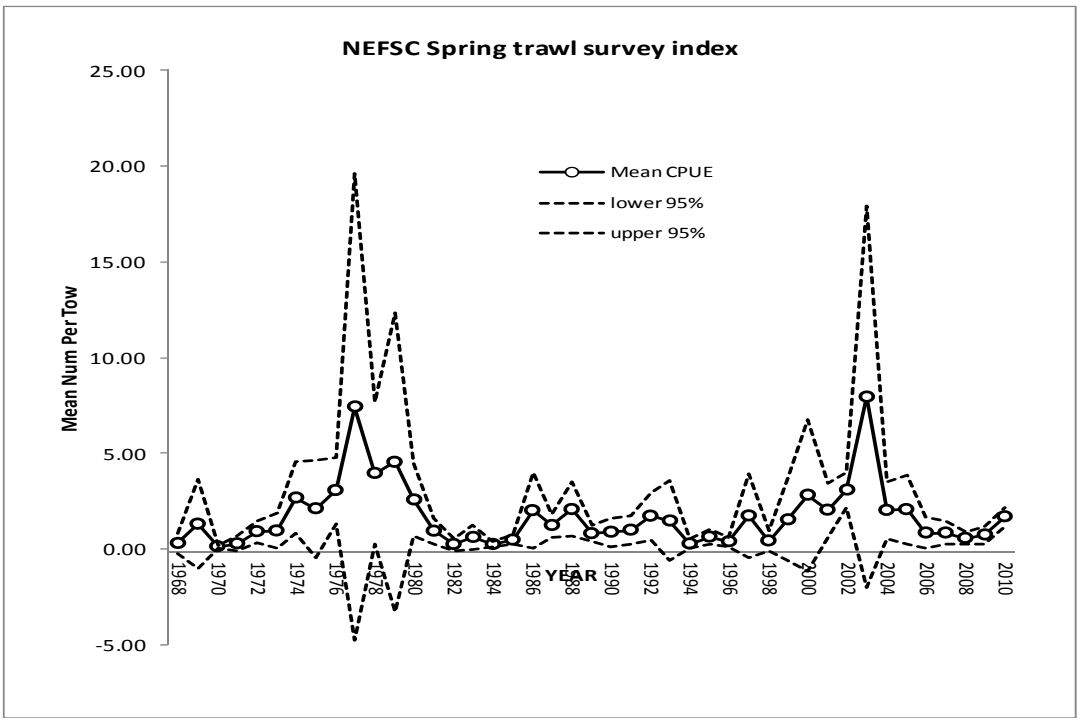

Figure B55. Black sea bass mean number per tow from NEFSC spring trawl survey.

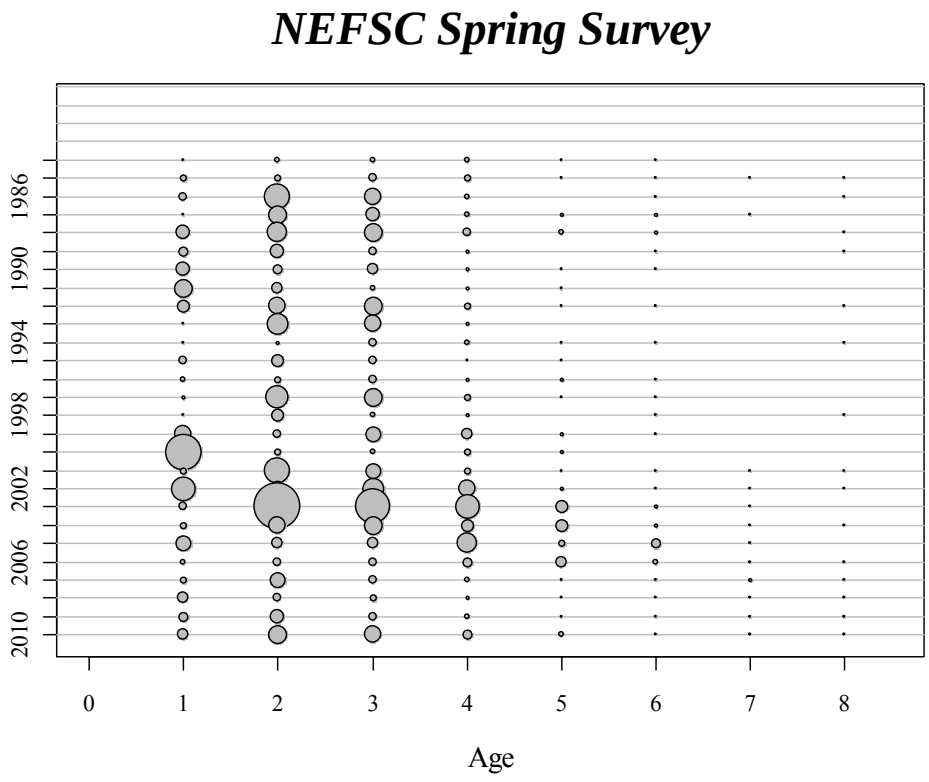

Figure B56. Black sea bass age composition of NMFS spring trawl survey.

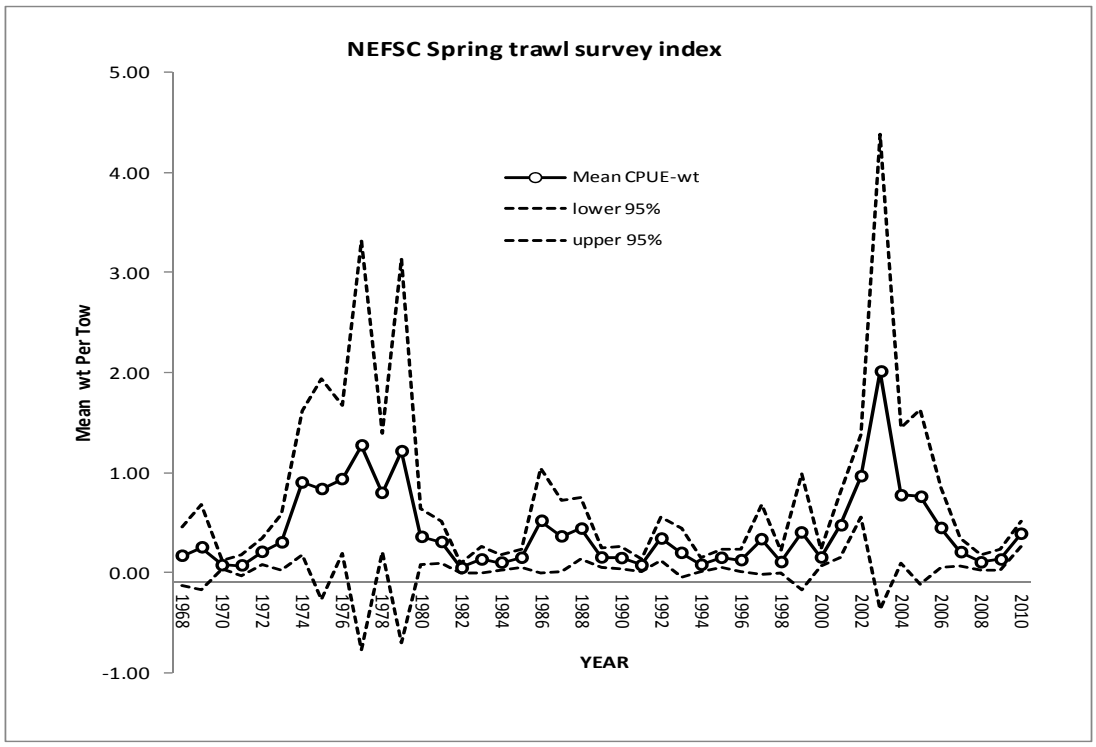

Figure B57. Black sea bass mean weight per tow from NMFS spring trawl survey.

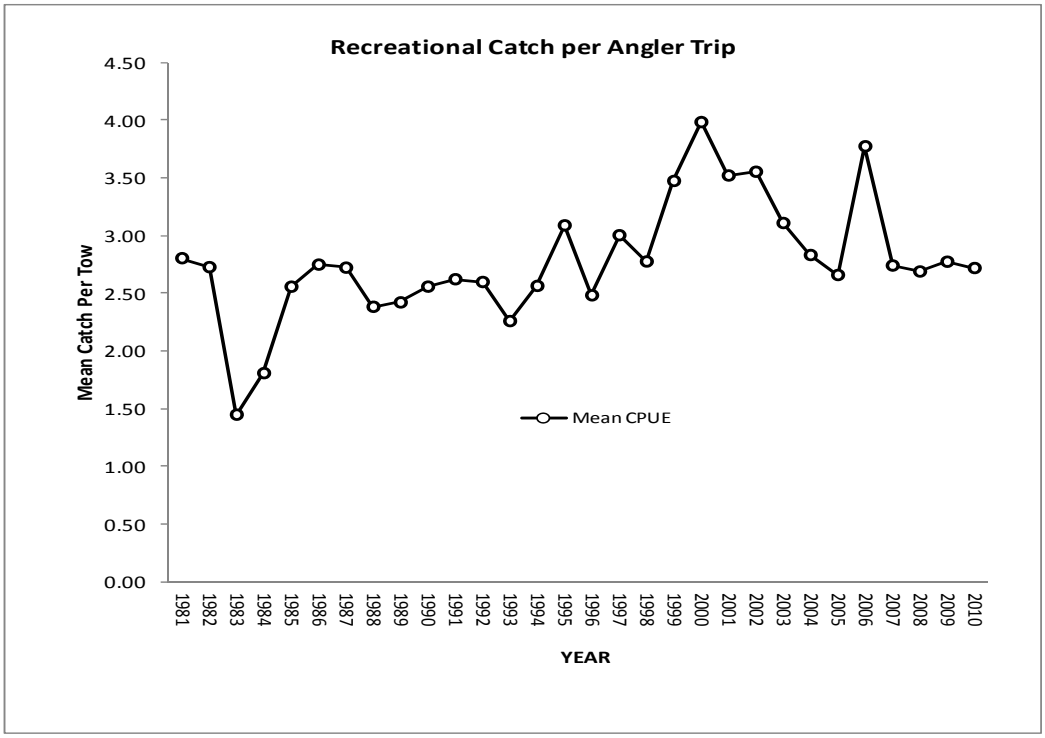

Figure B58. Recreational catch per angler trip for northern stock of black sea bass, 1981-2010.

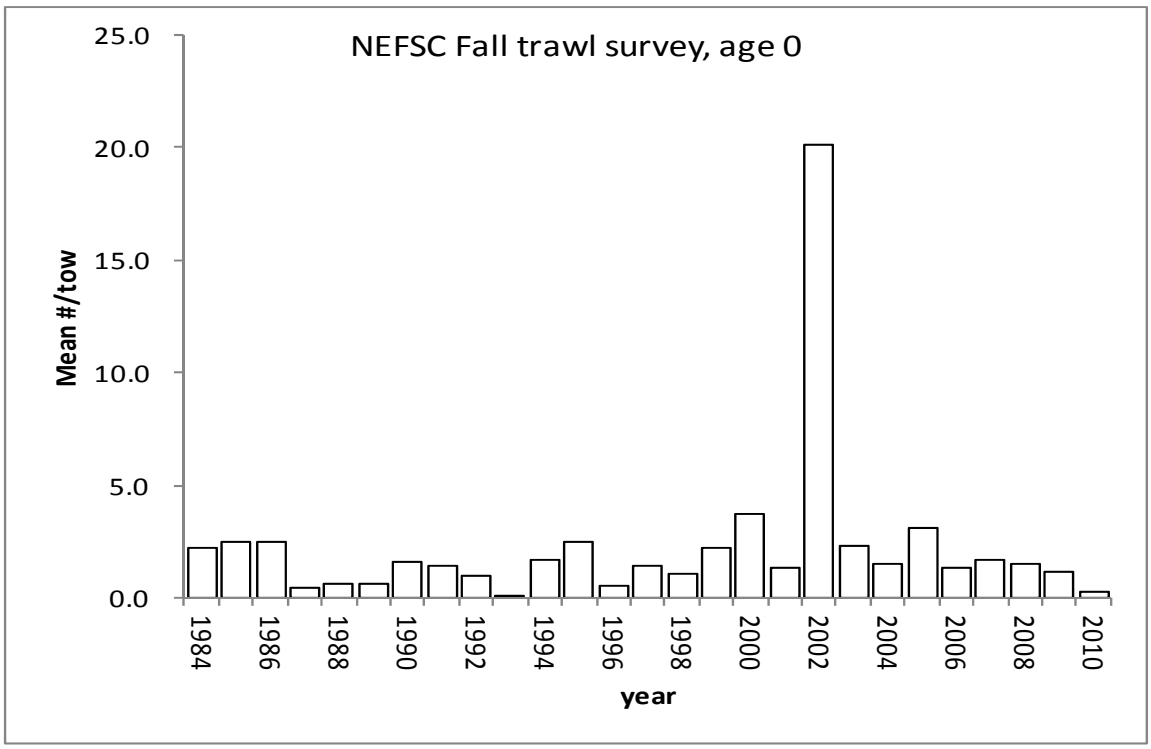

Figure B59. Black sea bass indices of age 0 abundance from NMFS fall trawl survey.

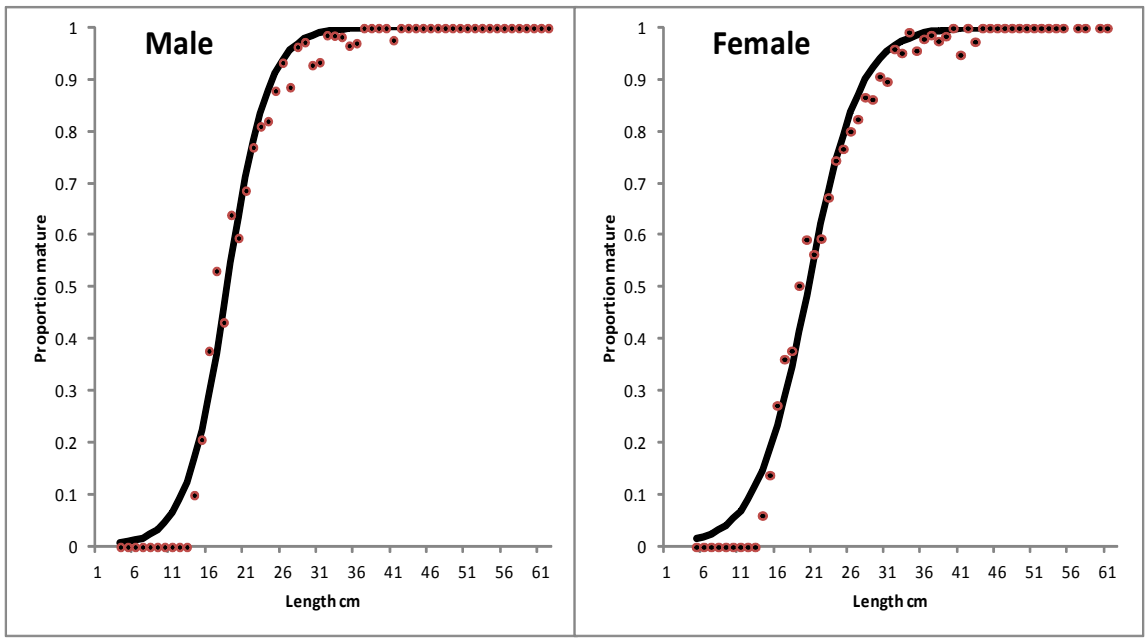

Figure B60. Black sea bass observed and predicted maturity at length for male and female from NMFS survey data.

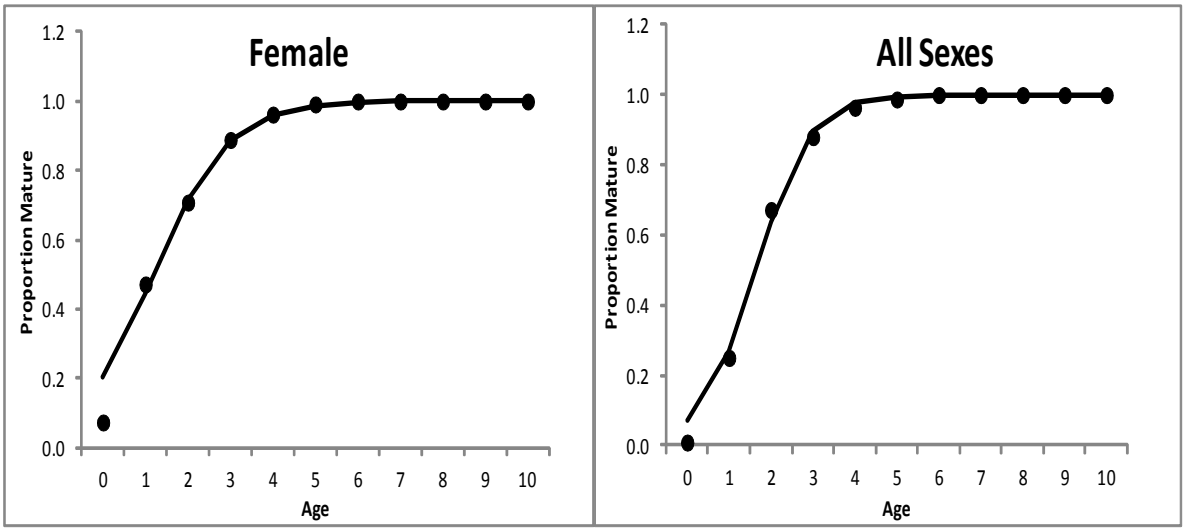

Figure B61. Black sea bass observed and predicted maturity at age for female and male/female combined from NMFS survey data.

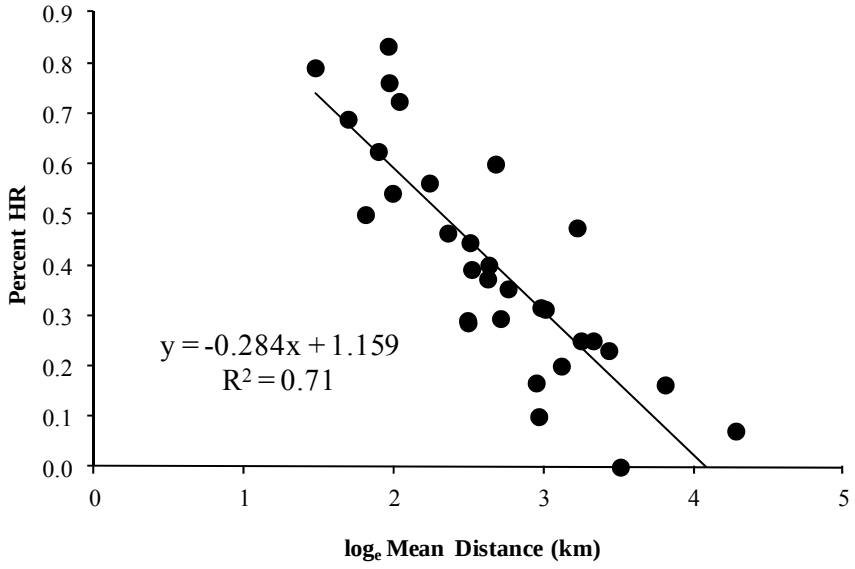

Figure B62. Relationship between distance tagged black sea bass traveled and percent return to within 10 km of release site the following season.

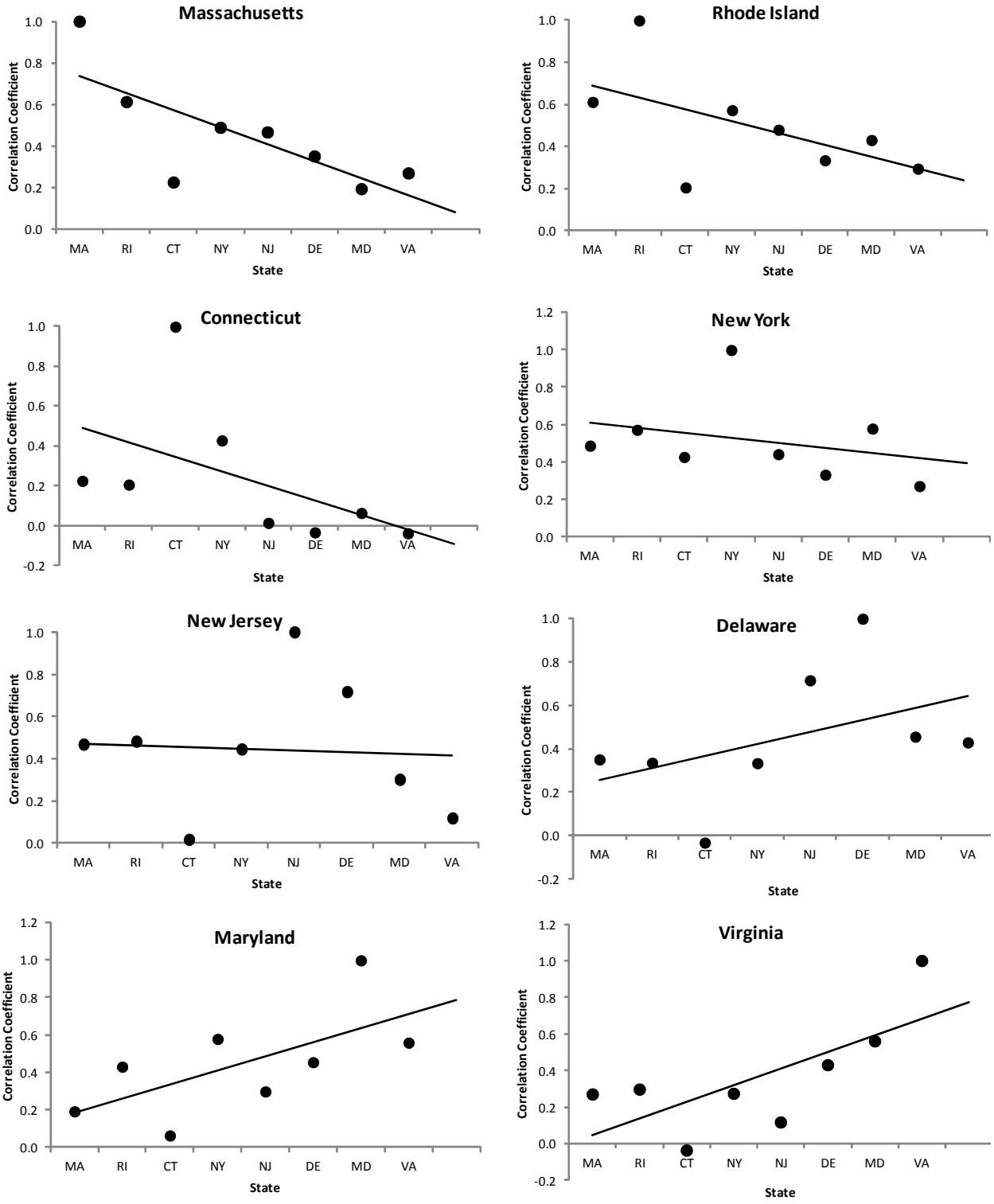

Figure B63. Correlation coefficients and trendline of black sea bass catch per angler trip (1984-2010) among states, MA to VA

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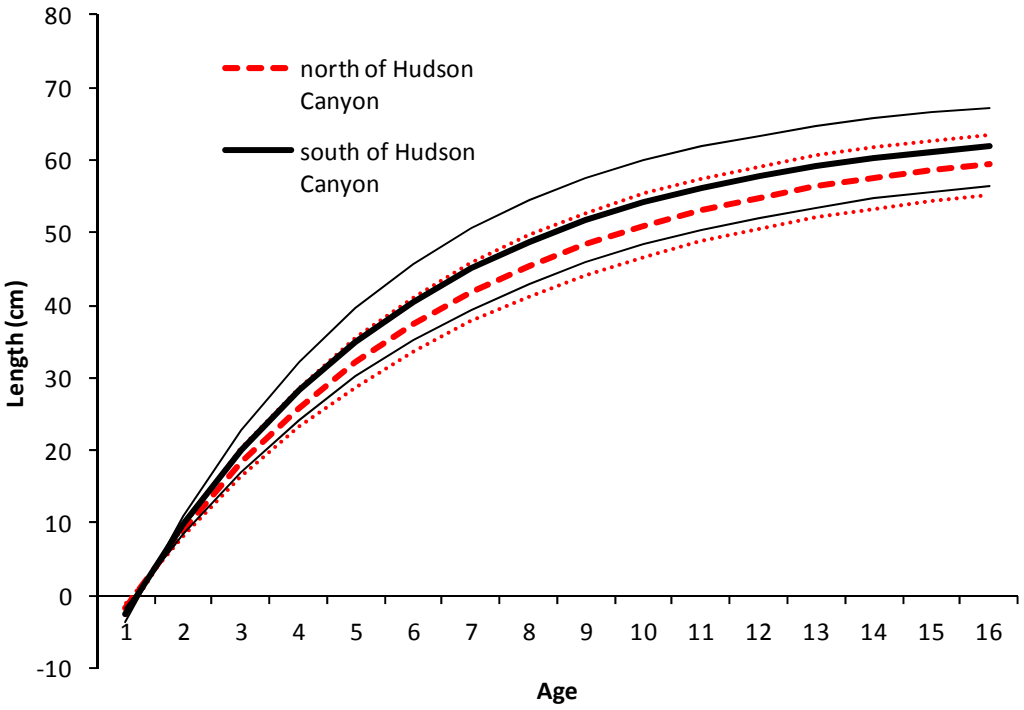

Figure B64. Black sea bass von Bertalanffy growth curves north and south of Hudson Canyon.

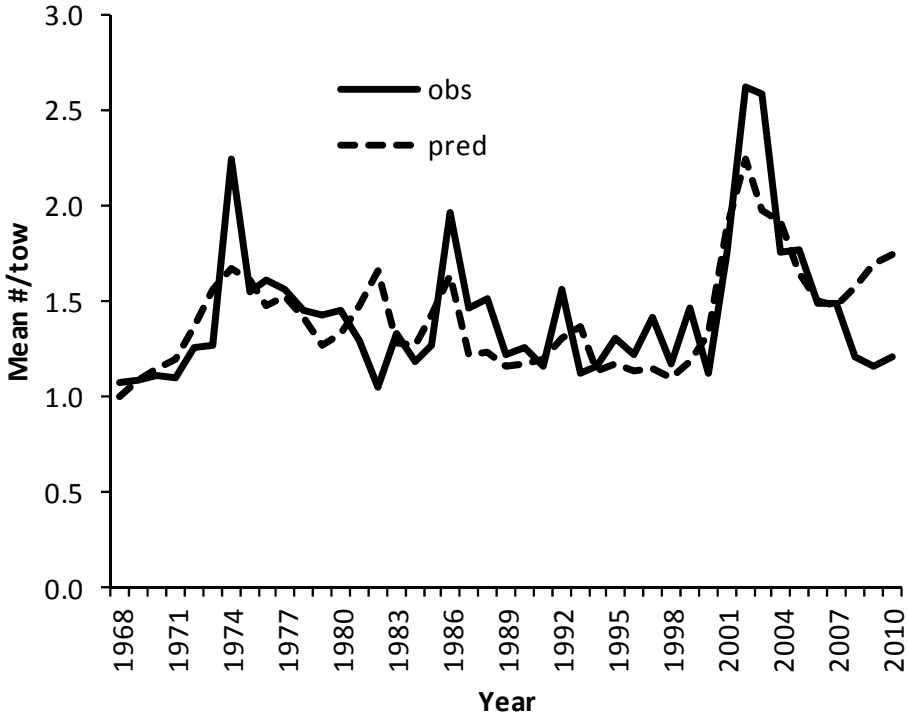

Figure B65. Observed and predicted adult (≥22 cm) black sea bass NMFS spring indices from June SCALE model.

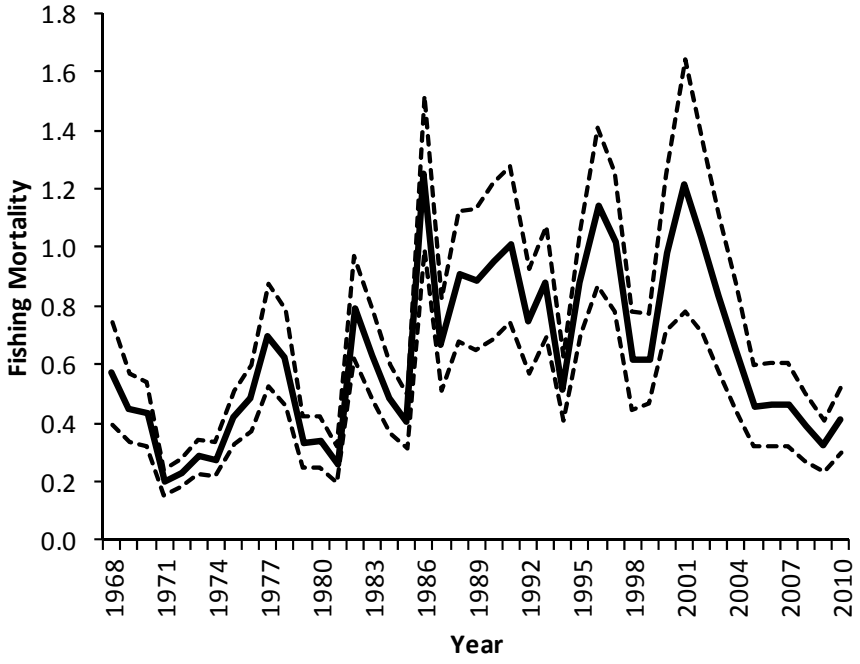

Figure B66. Estimates of black sea bass fishing mortality (± 1 std dev) from June 2011 SCALE model.

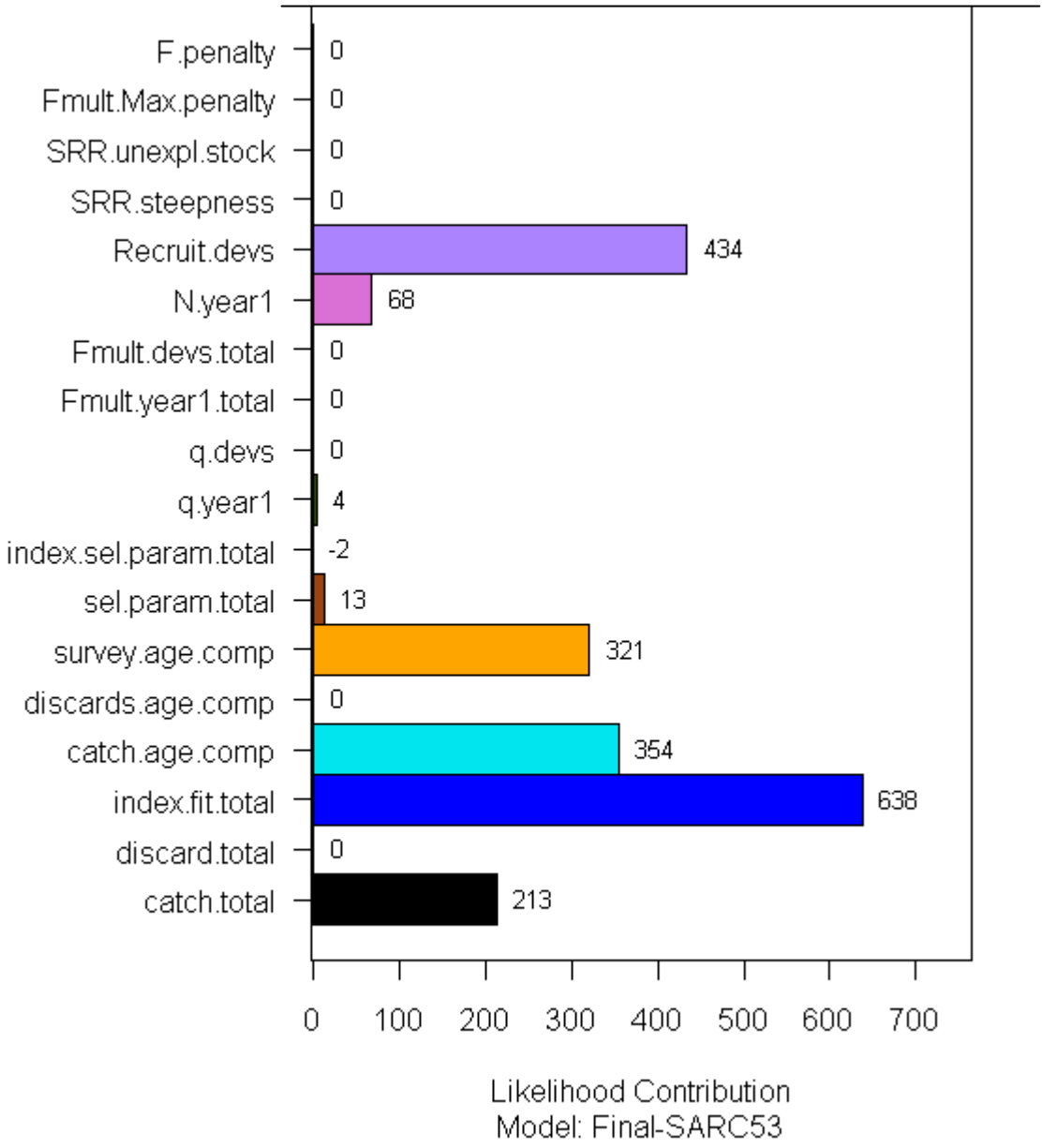

Figure B67. Components of ASAP model objective function.

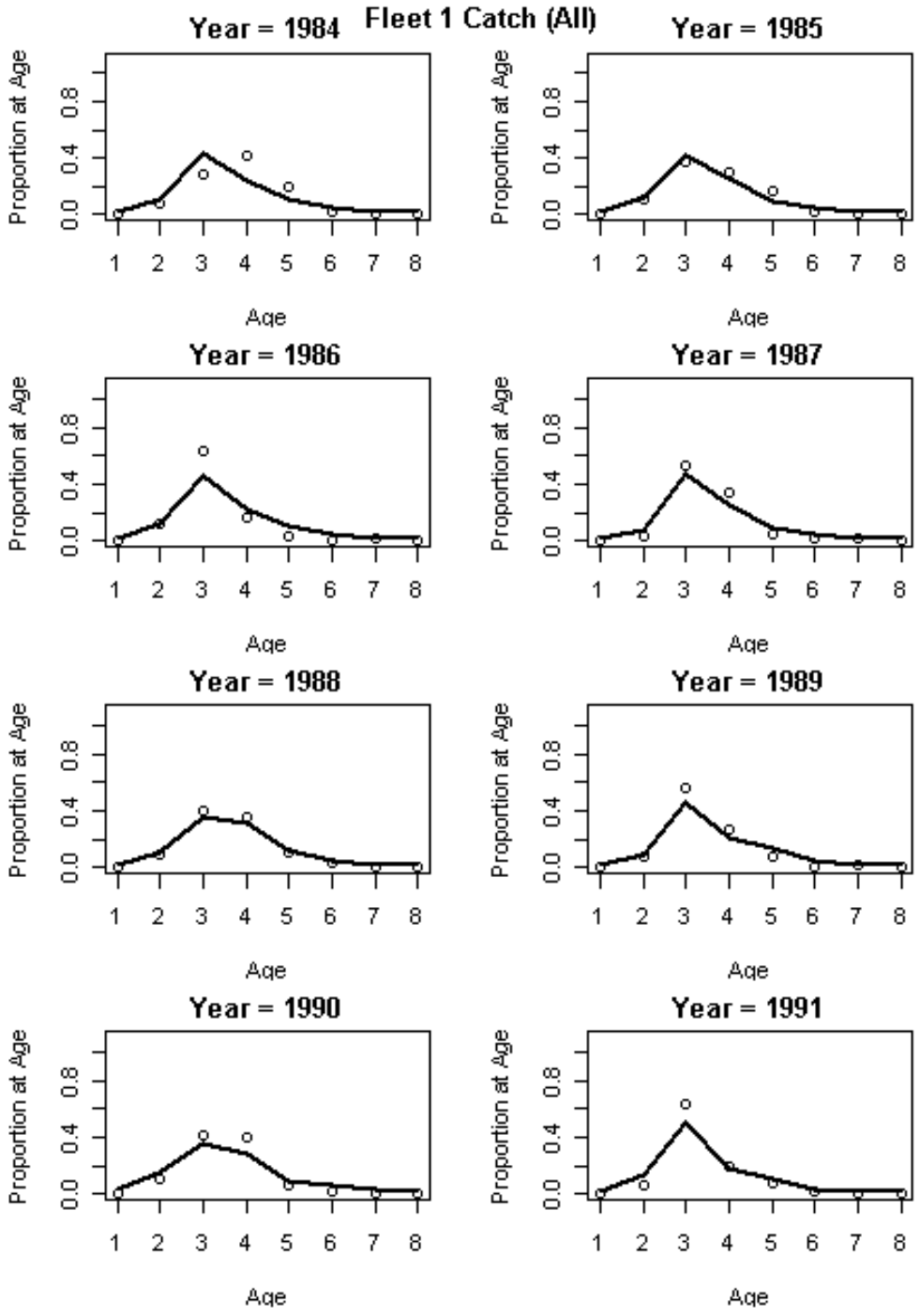

Figure B68a. Observed and predicted age comps of fleet, 1984-2010. (note: ages are shown are a+1).

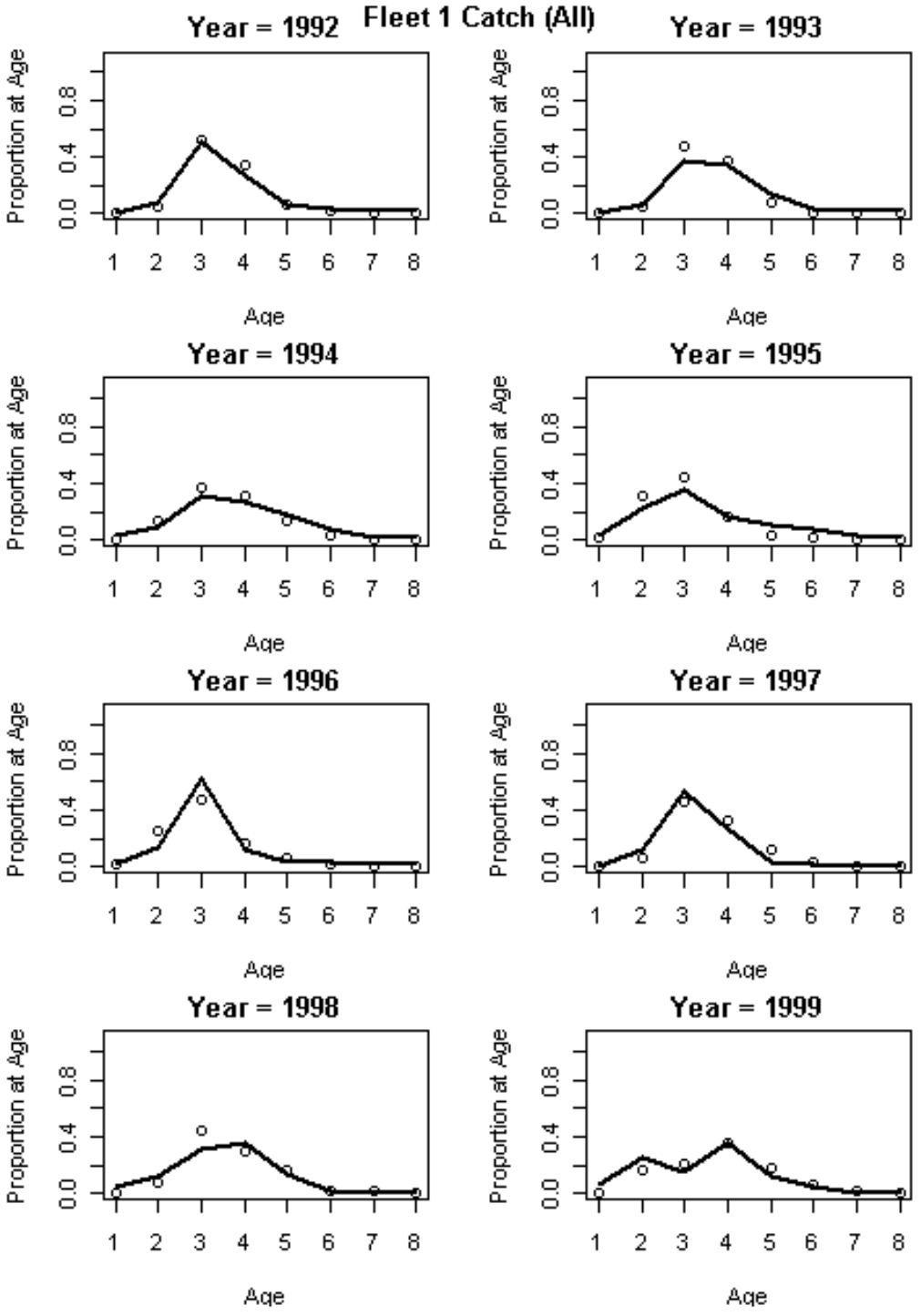

Figure B68b. Observed and predicted age comps of fleet, 1984-2010. (note: ages are shown are a+1).

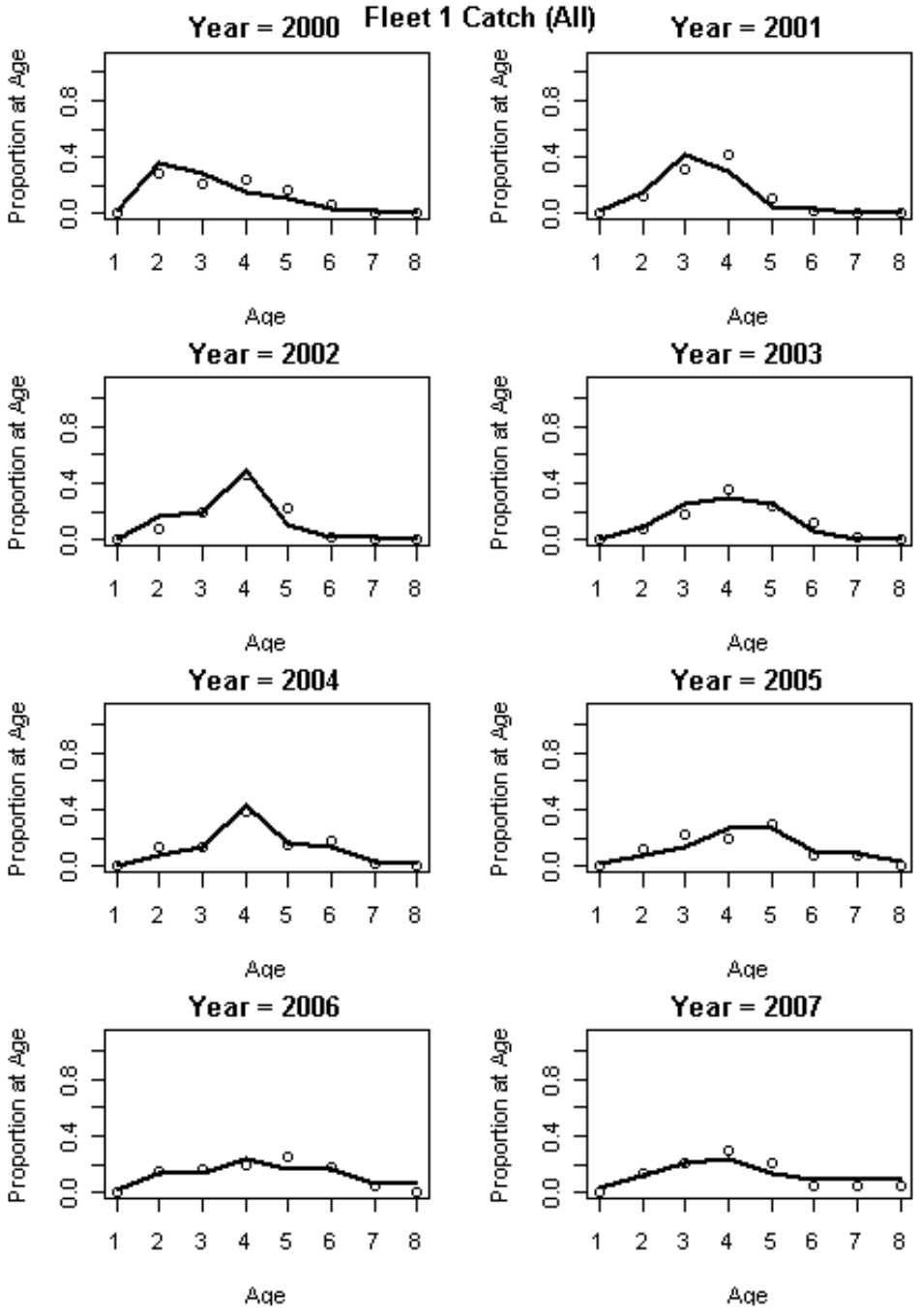

Figure B68c. Observed and predicted age comps of fleet, 1984-2010. (note: ages are shown are a+1).

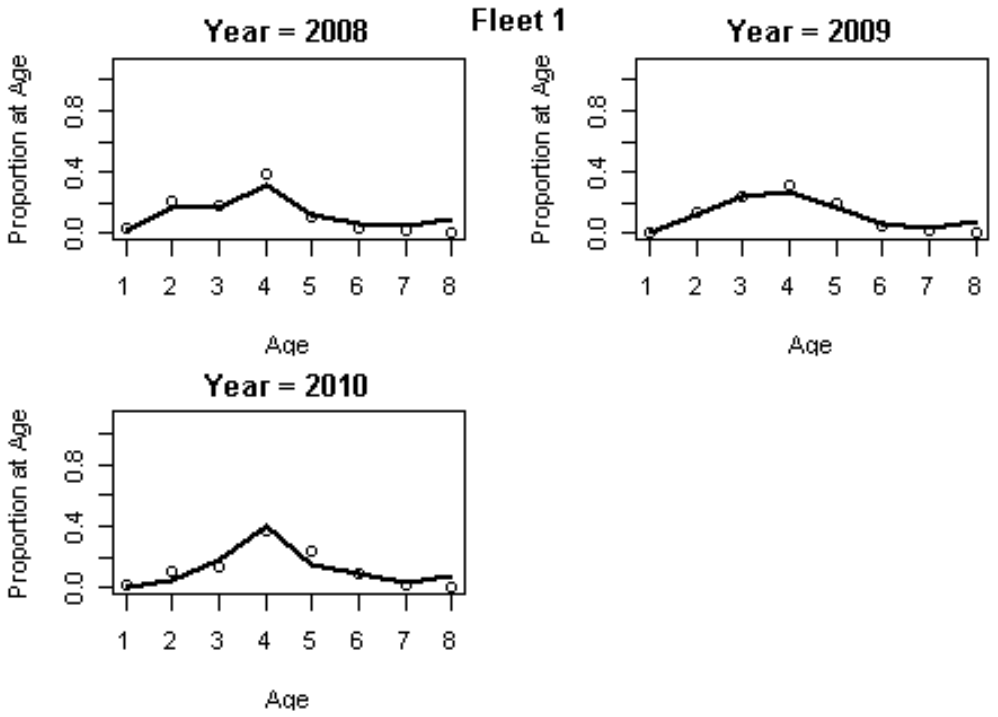

Figure B68d. Observed and predicted age comps of fleet, 1984-2010. (note: ages are shown are a+1).

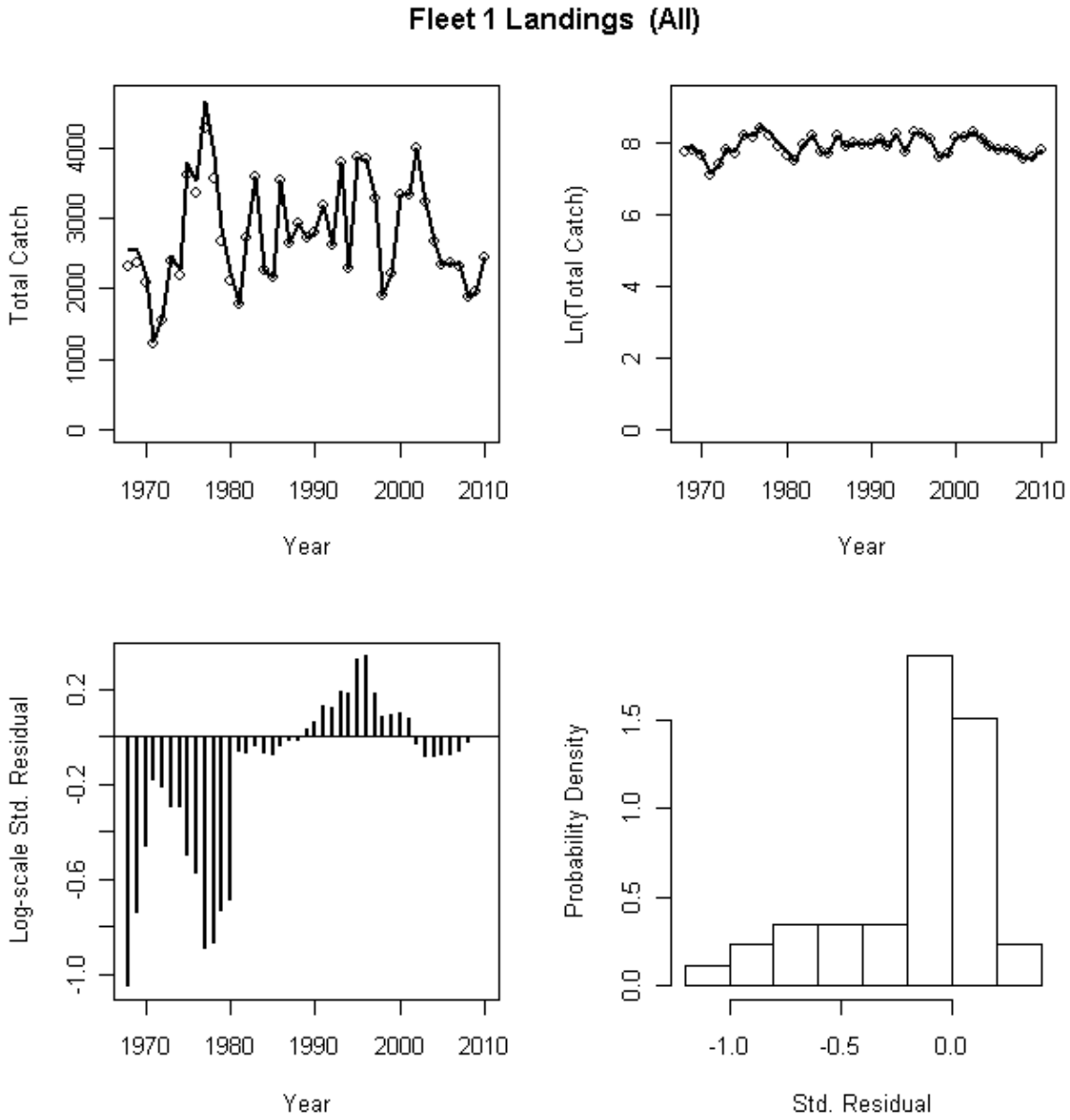

Figure B69. Observed and predicted catch and residual patterns from ASAP model.

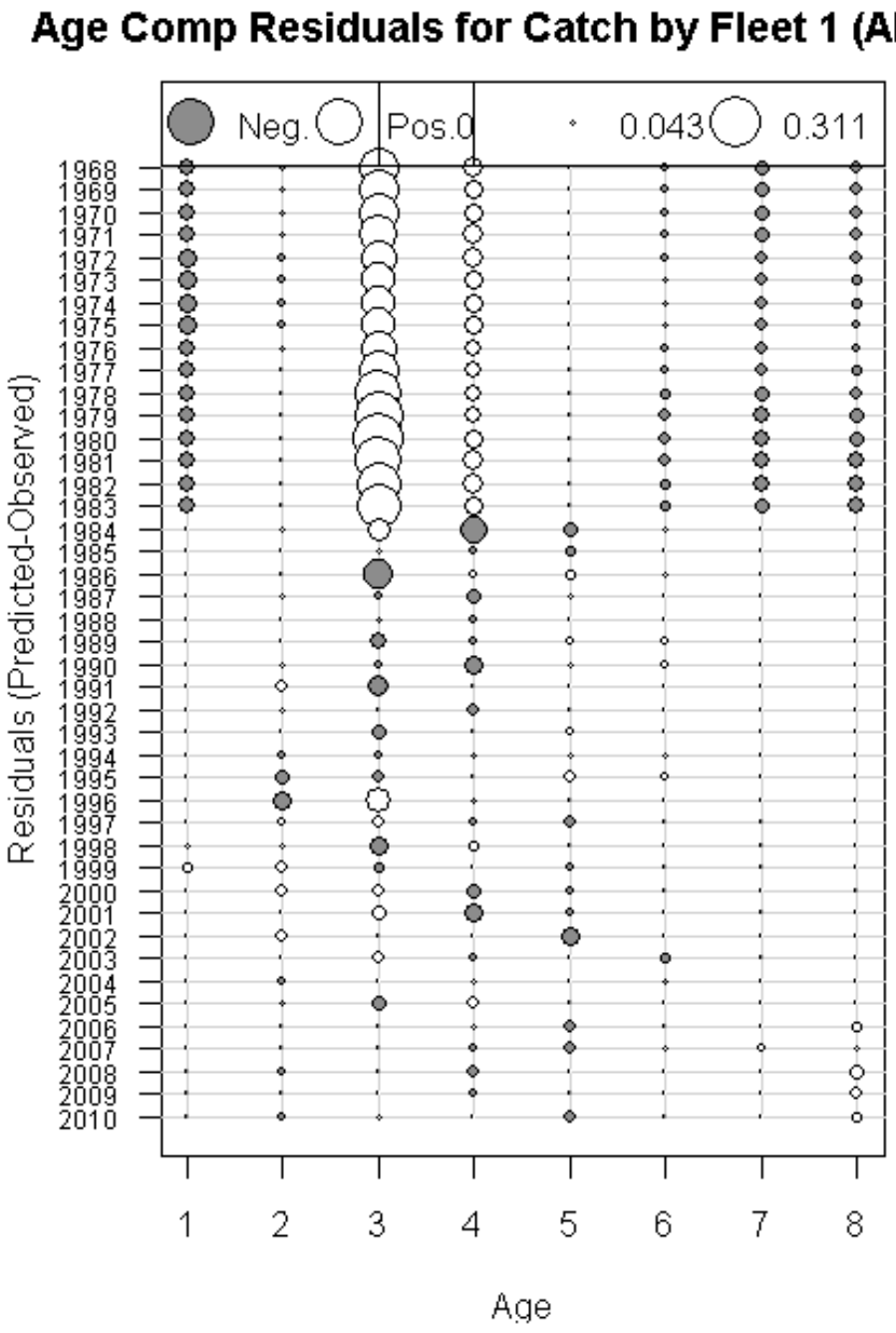

Figure B70. Age composition residuals of catch from ASAP model. (note: ages are shown are a+1).

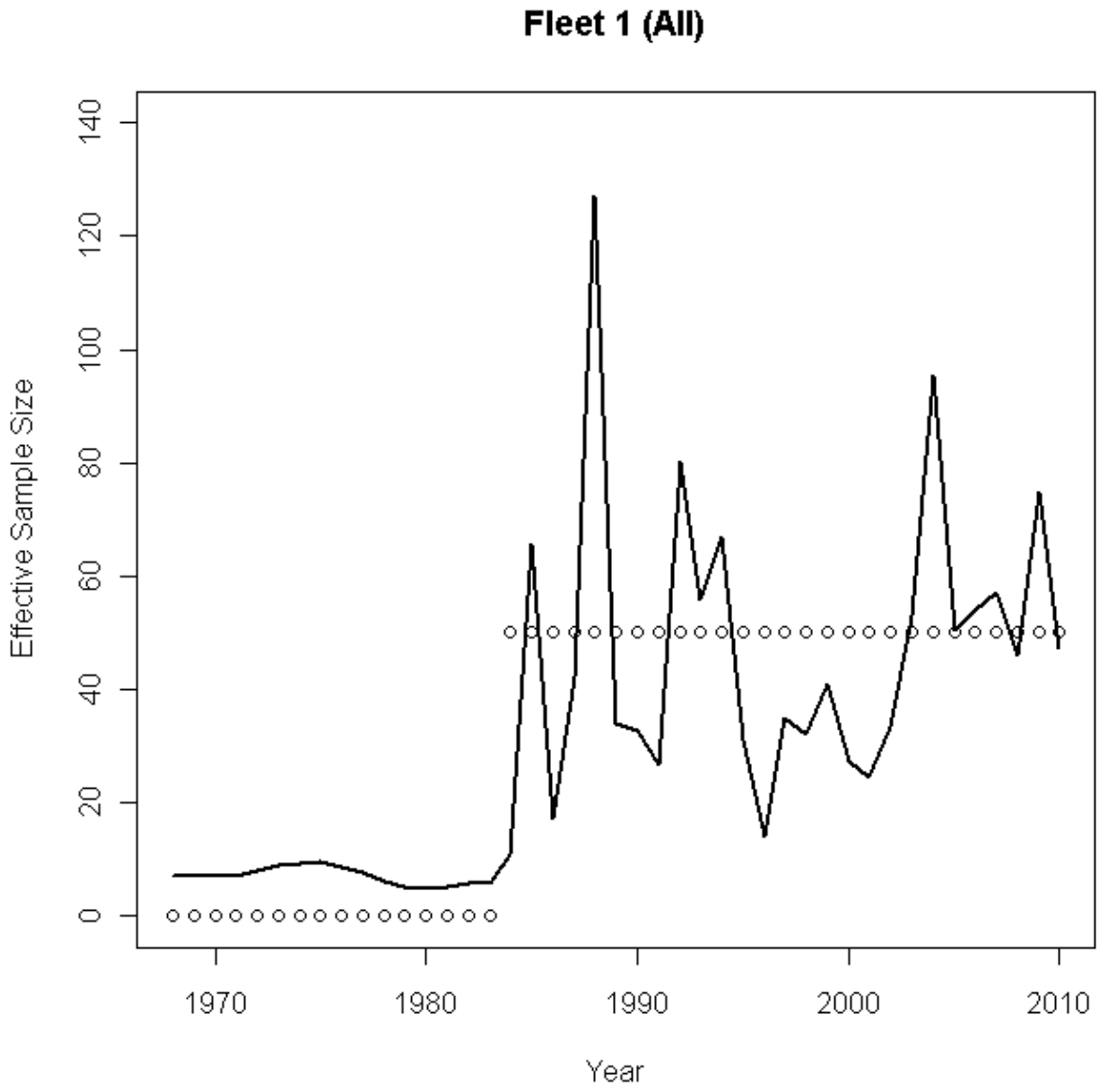

Figure B71. Observed and predicted effective sample size for fleet in ASAP model.

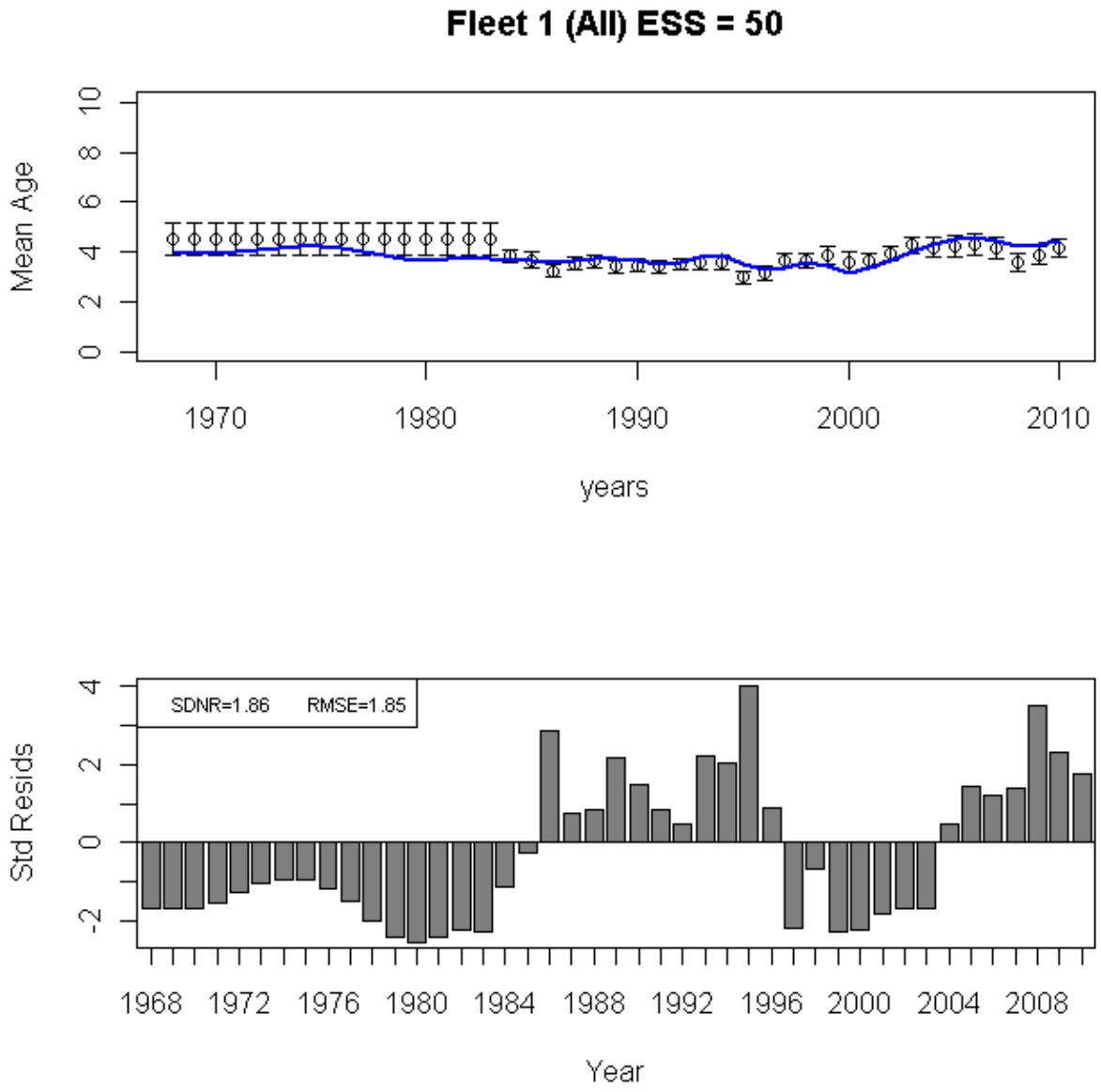

Figure B72. Fleet mean age and effective sample size plus residuals from ASAP model.

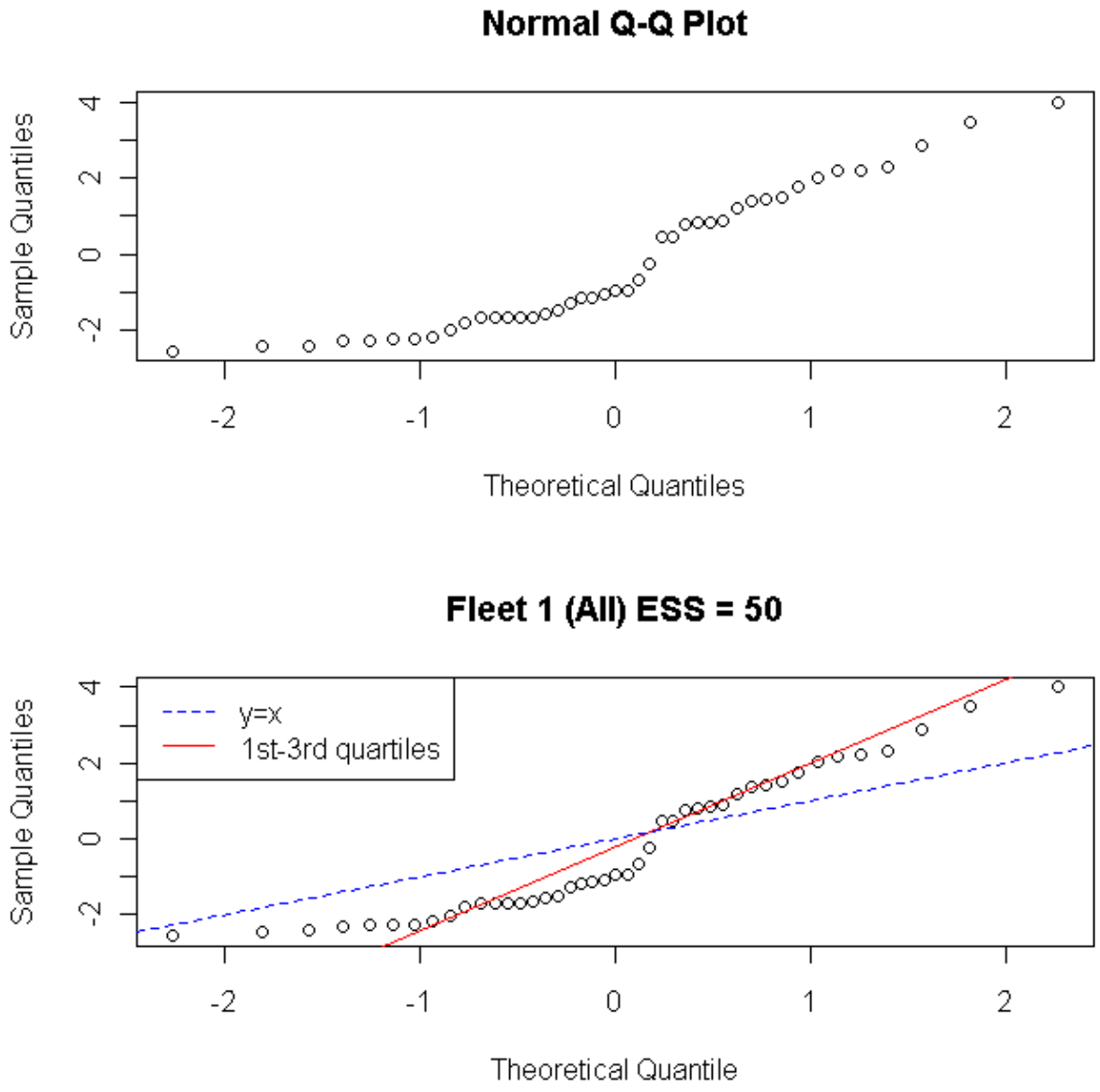

Figure B73. Quantile plots of ASAP model results.

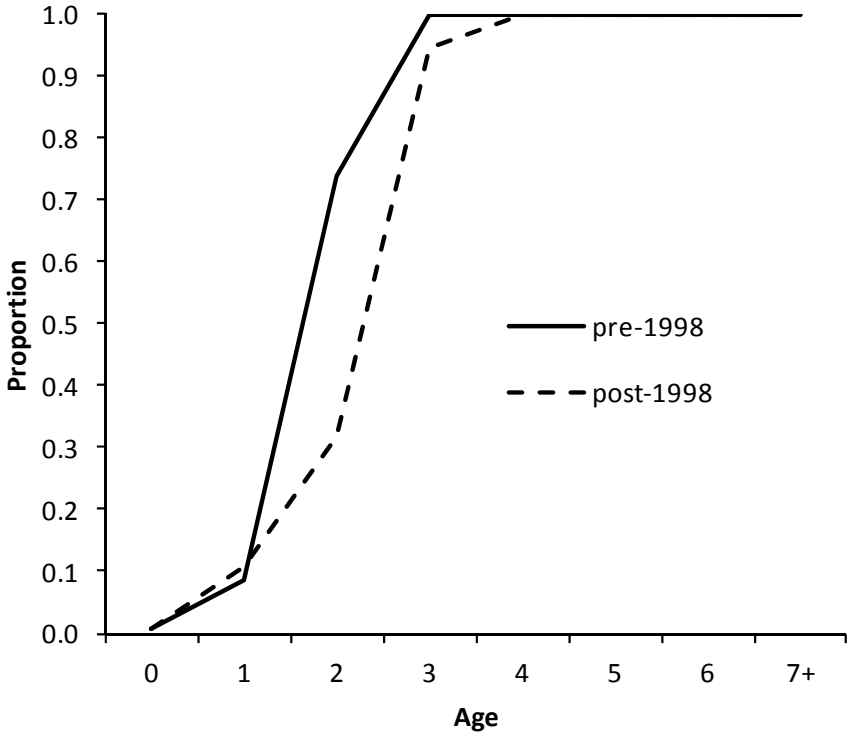

Figure B74. Catch selectivity at age pre- and post 1998 for fleet in ASAP model.

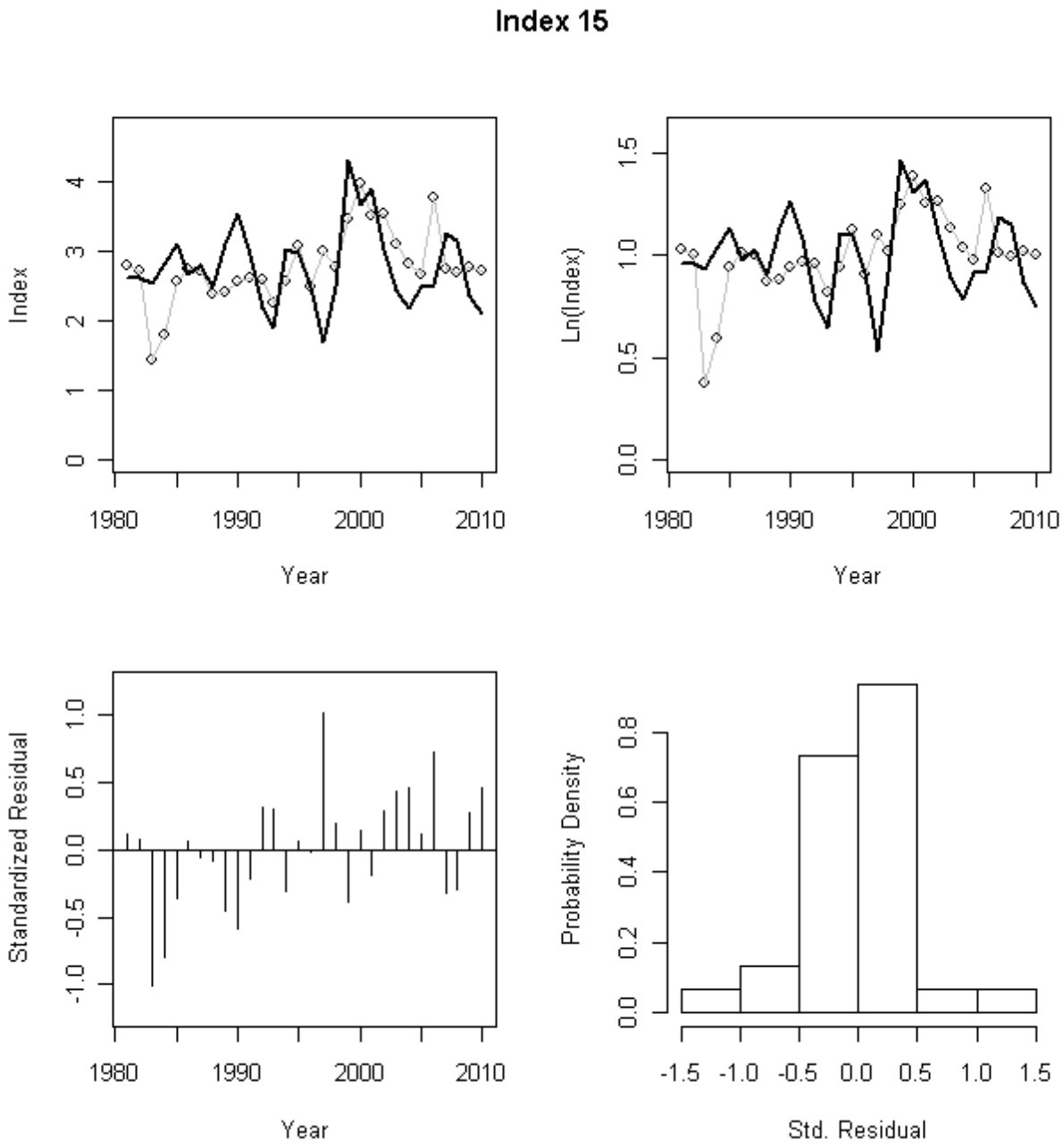

Figure B75. Observed and predicted indices and residual patterns for REC catch per angler index in ASAP model.

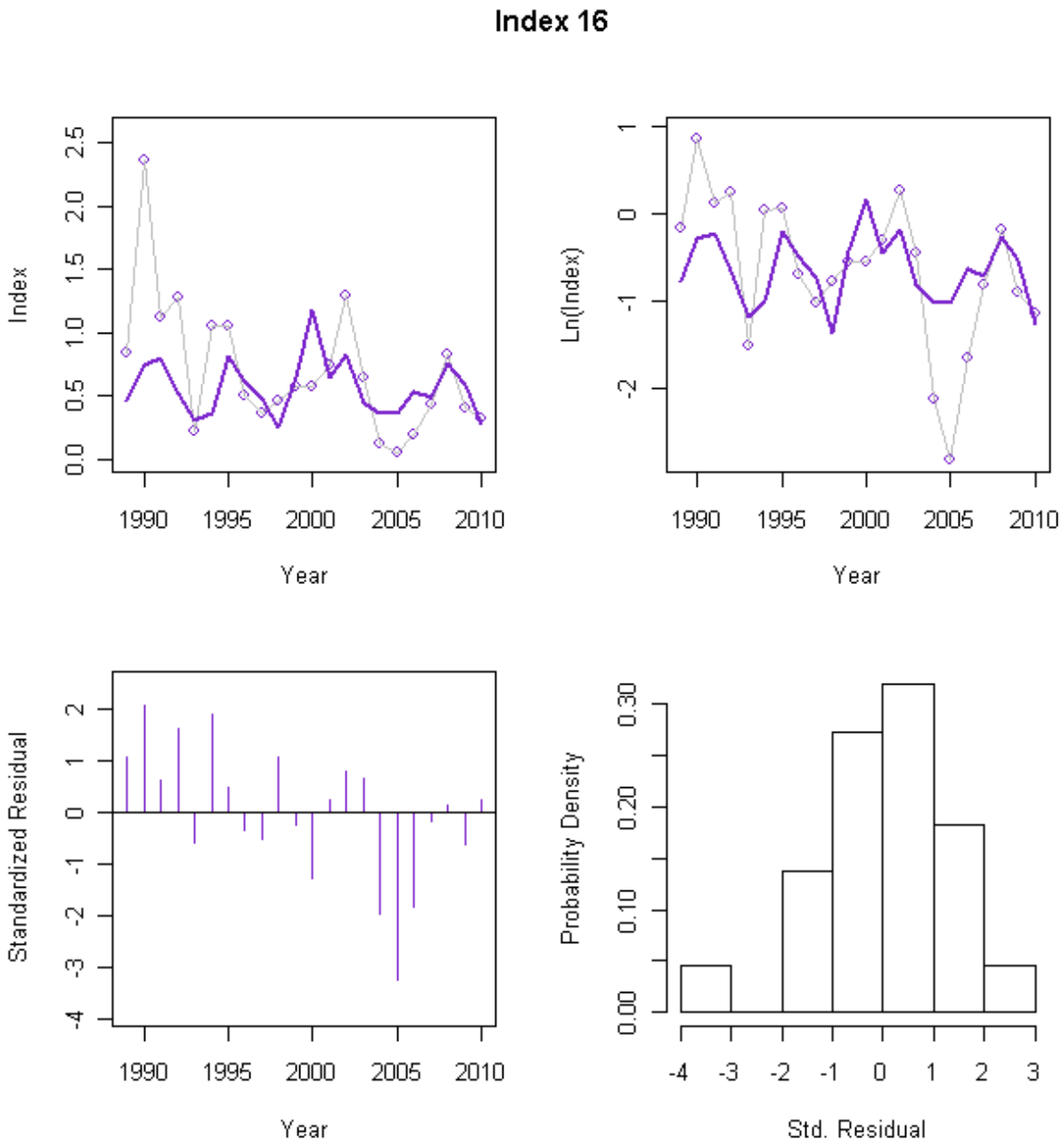

Figure B76. Observed and predicted indices and residual patterns for VA age 1 index (mean number per tow) in ASAP model.

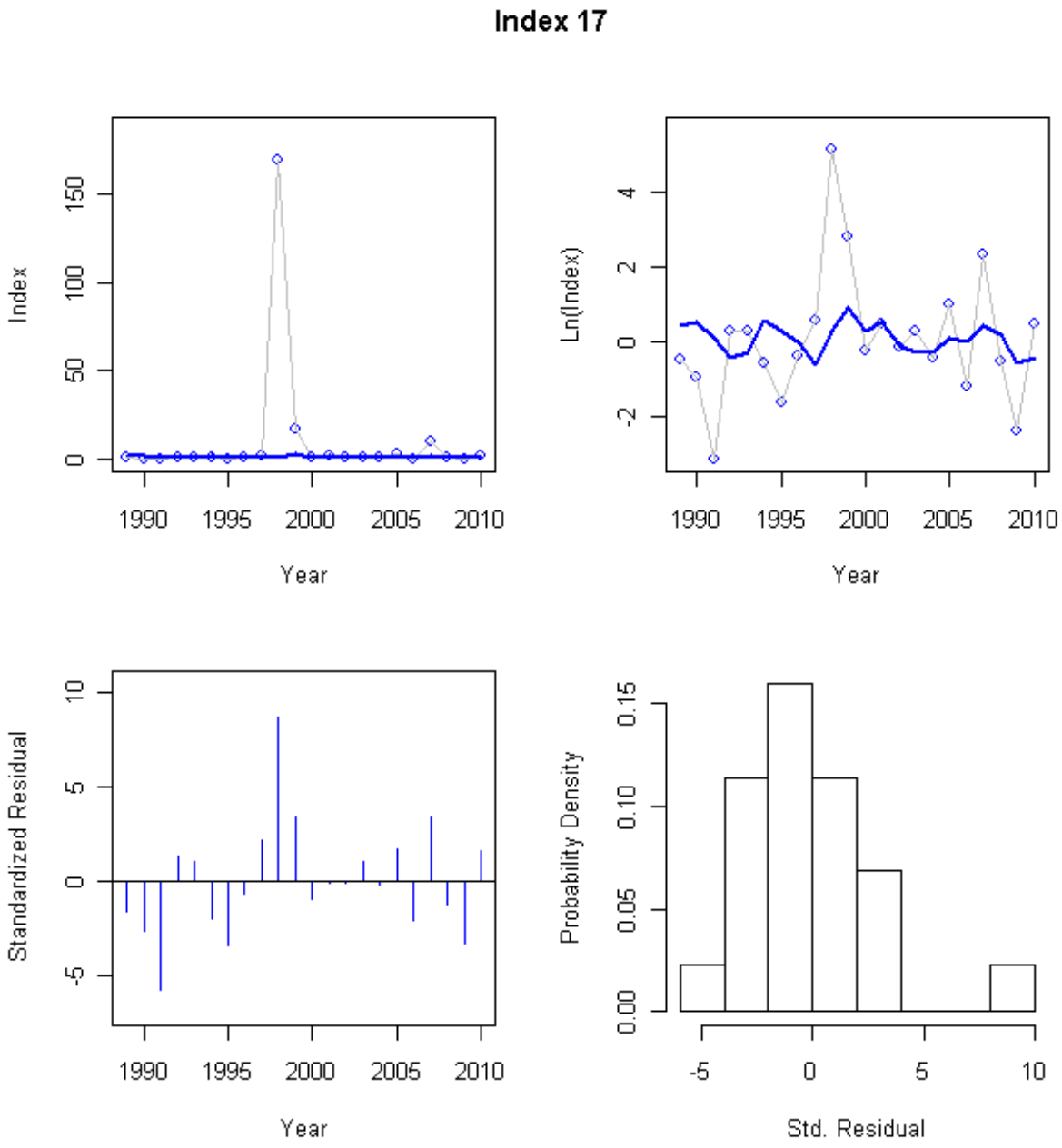

Figure B77. Observed and predicted indices and residual patterns for NJ age 0 index (mean number per tow) in ASAP model.

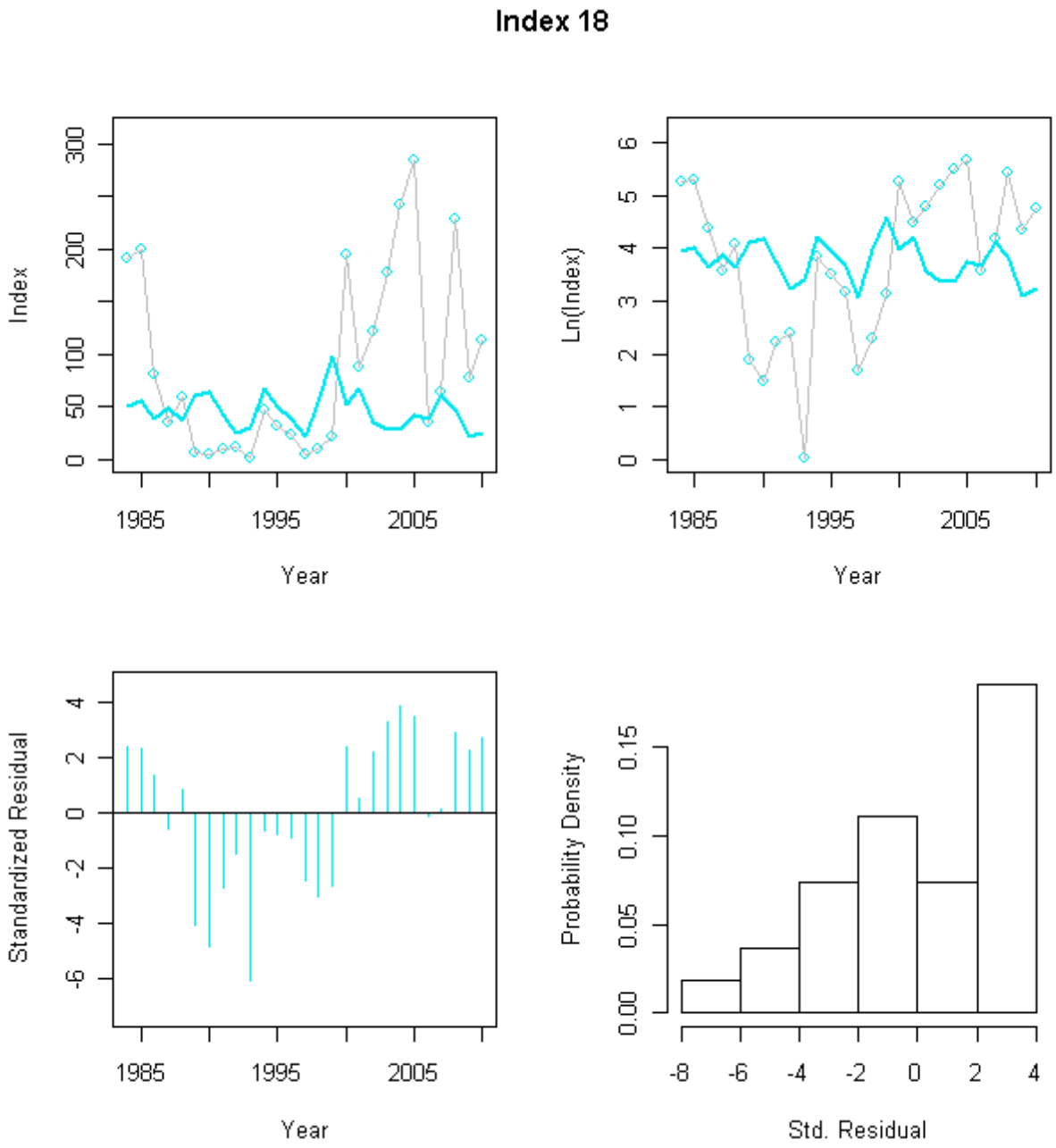

Figure B78. Observed and predicted indices and residual patterns for MA age 0 index (mean number per tow) in ASAP model.

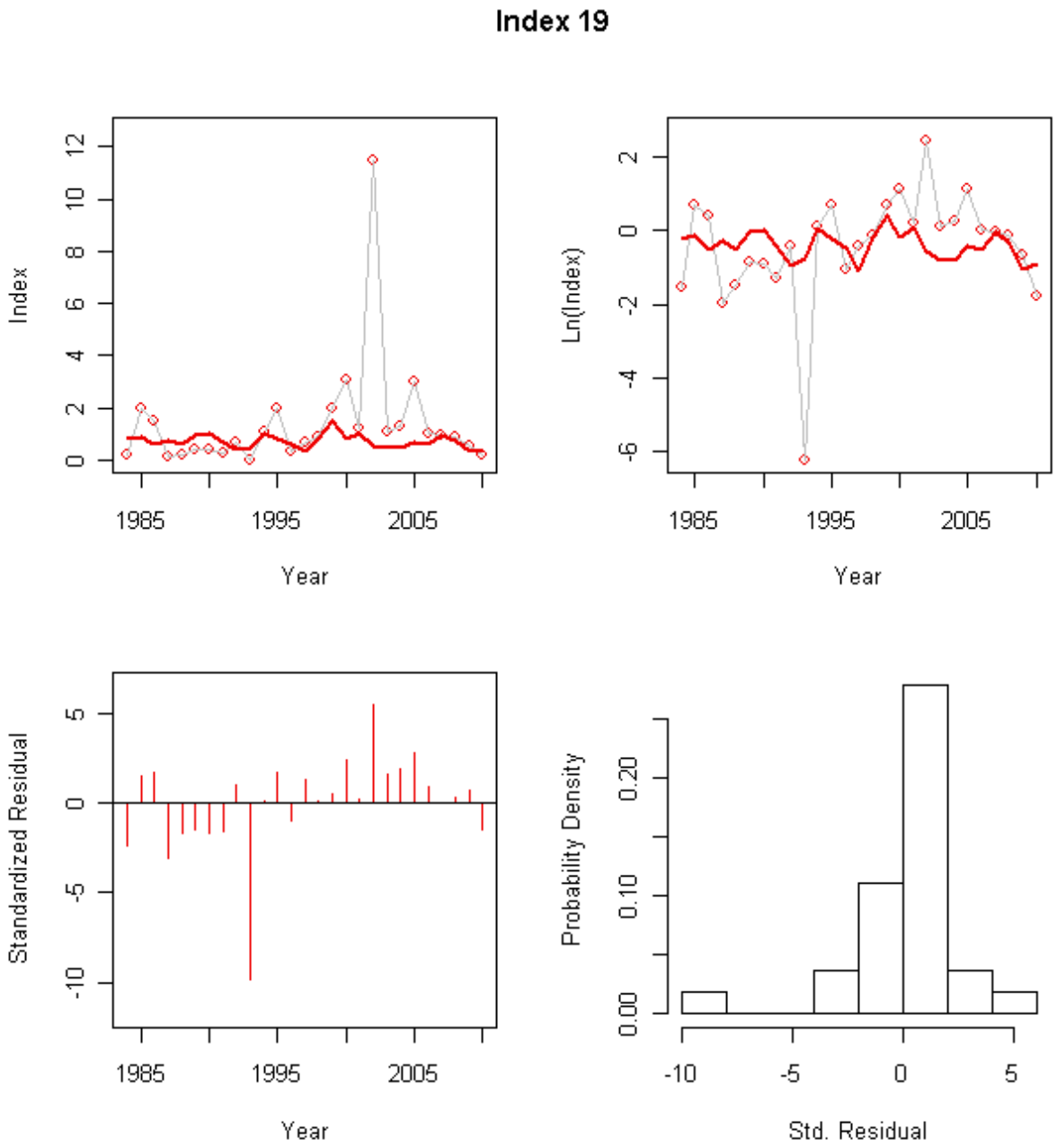

Figure B79. Observed and predicted indices and residual patterns for NEFSC Fall trawl survey age 0 index (mean number per tow) in ASAP model.

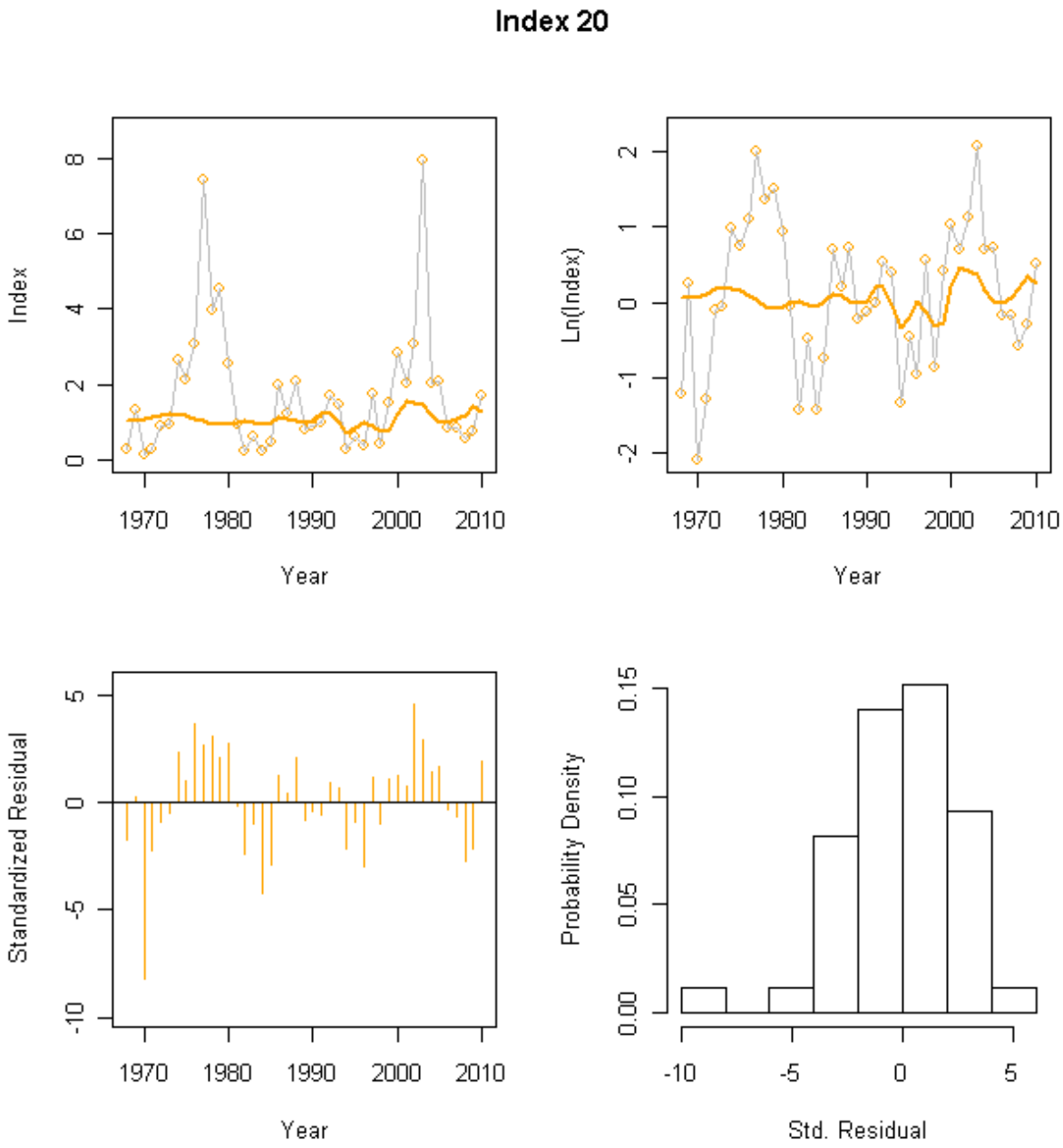

Figure B80. Observed and predicted indices and residual patterns for NEFSC spring trawl survey index (mean number per tow) in ASAP model.

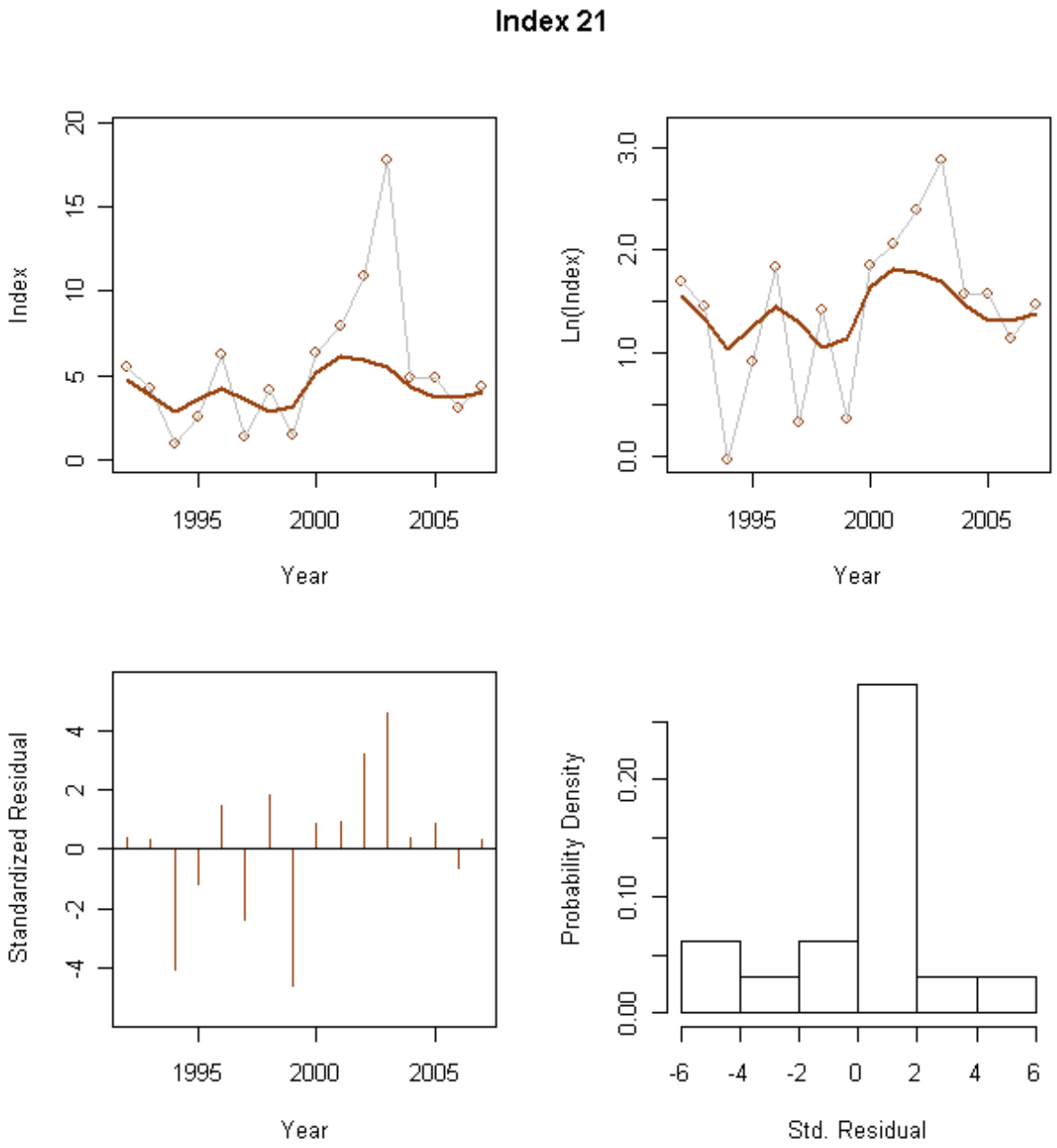

Figure B81. Observed and predicted indices and residual patterns for NEFSC winter trawl survey index (mean biomass per tow) in ASAP model.

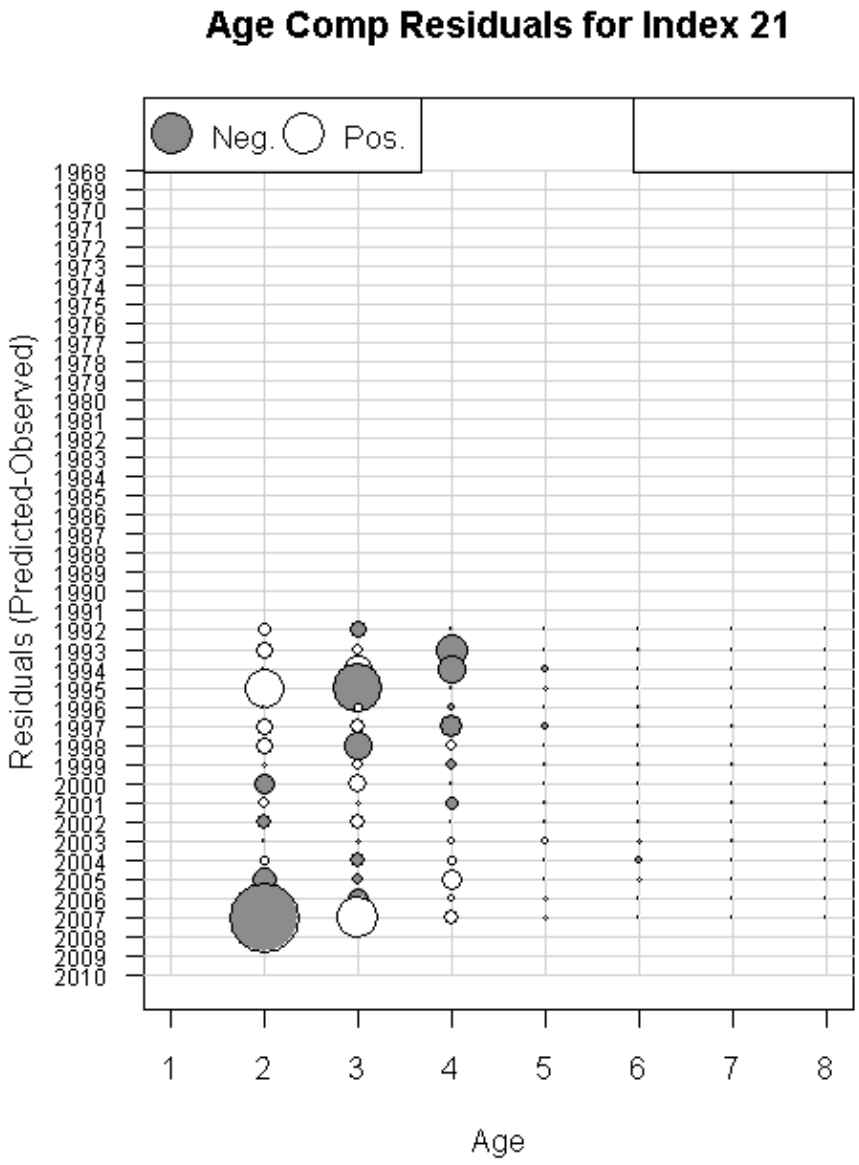

Figure B82. Age composition of NMFS winter trawl survey in ASAP model. (note: ages are shown are a+1).

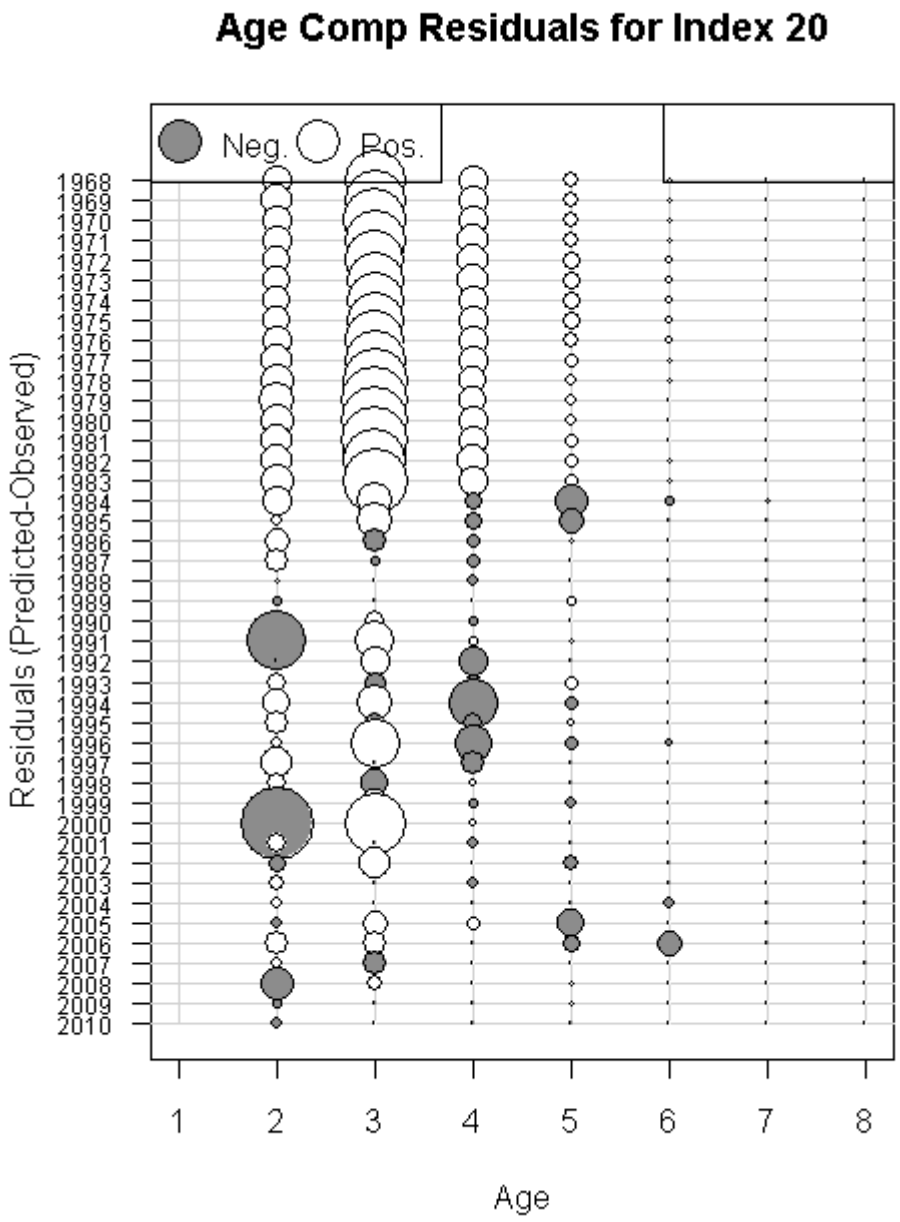

Figure B83. Age composition of NMFS spring trawl survey in ASAP model. (note: ages are shown are a+1).

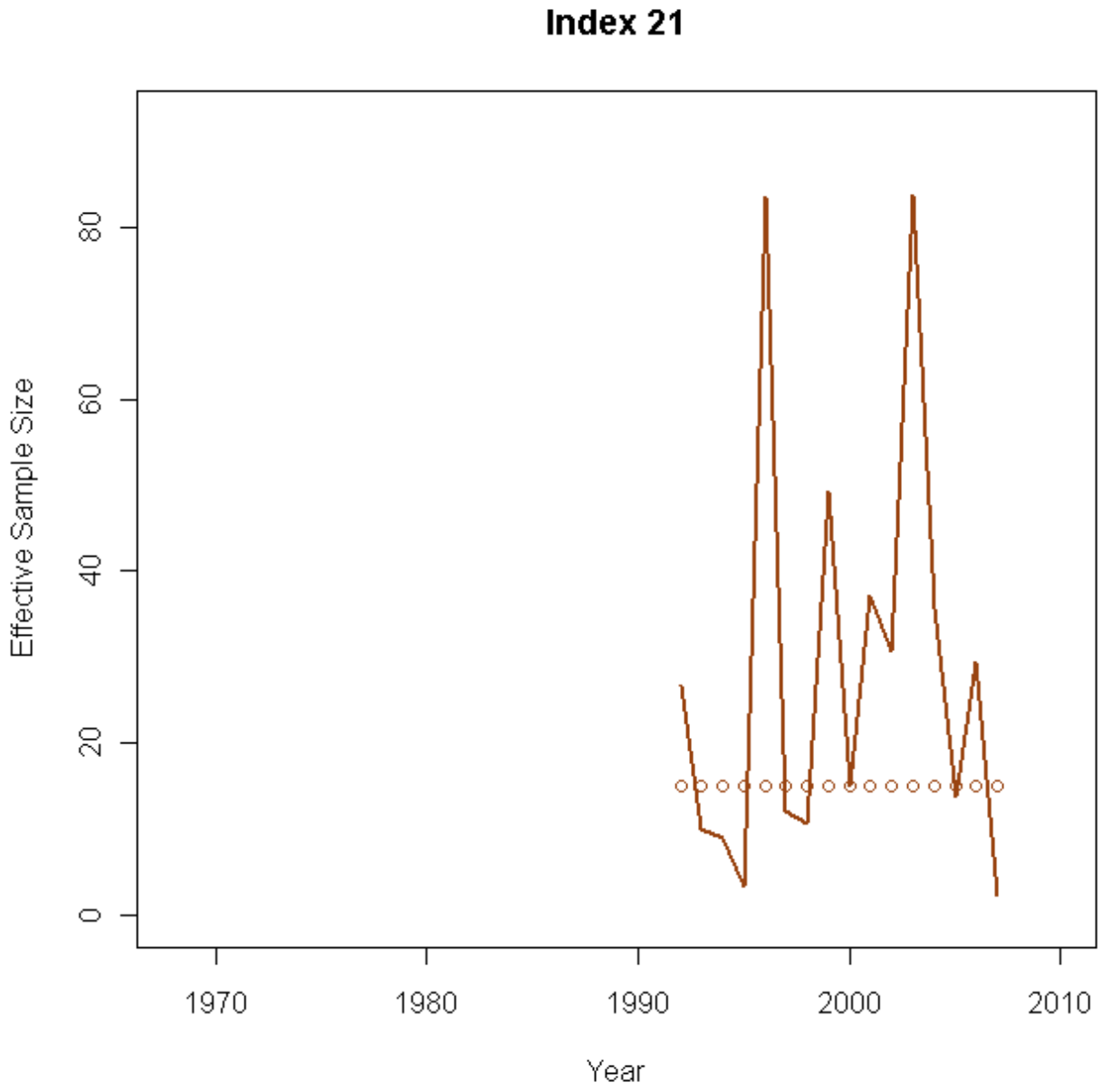

Figure B84. Observed and predicted effective sample size for NEFSC winter trawl survey index.

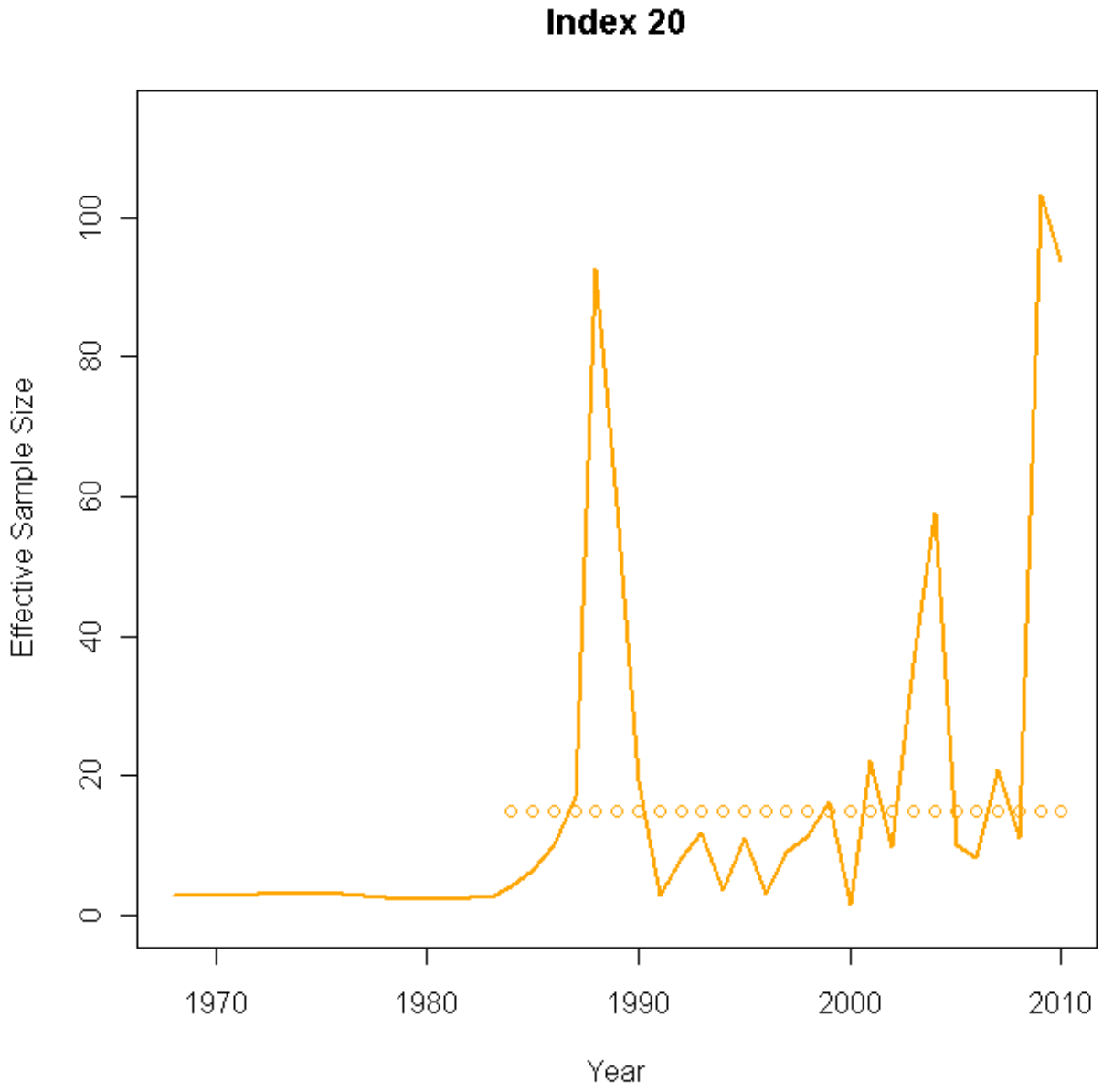

Figure B85. Observed and predicted effective sample size for NEFSC spring trawl survey index.

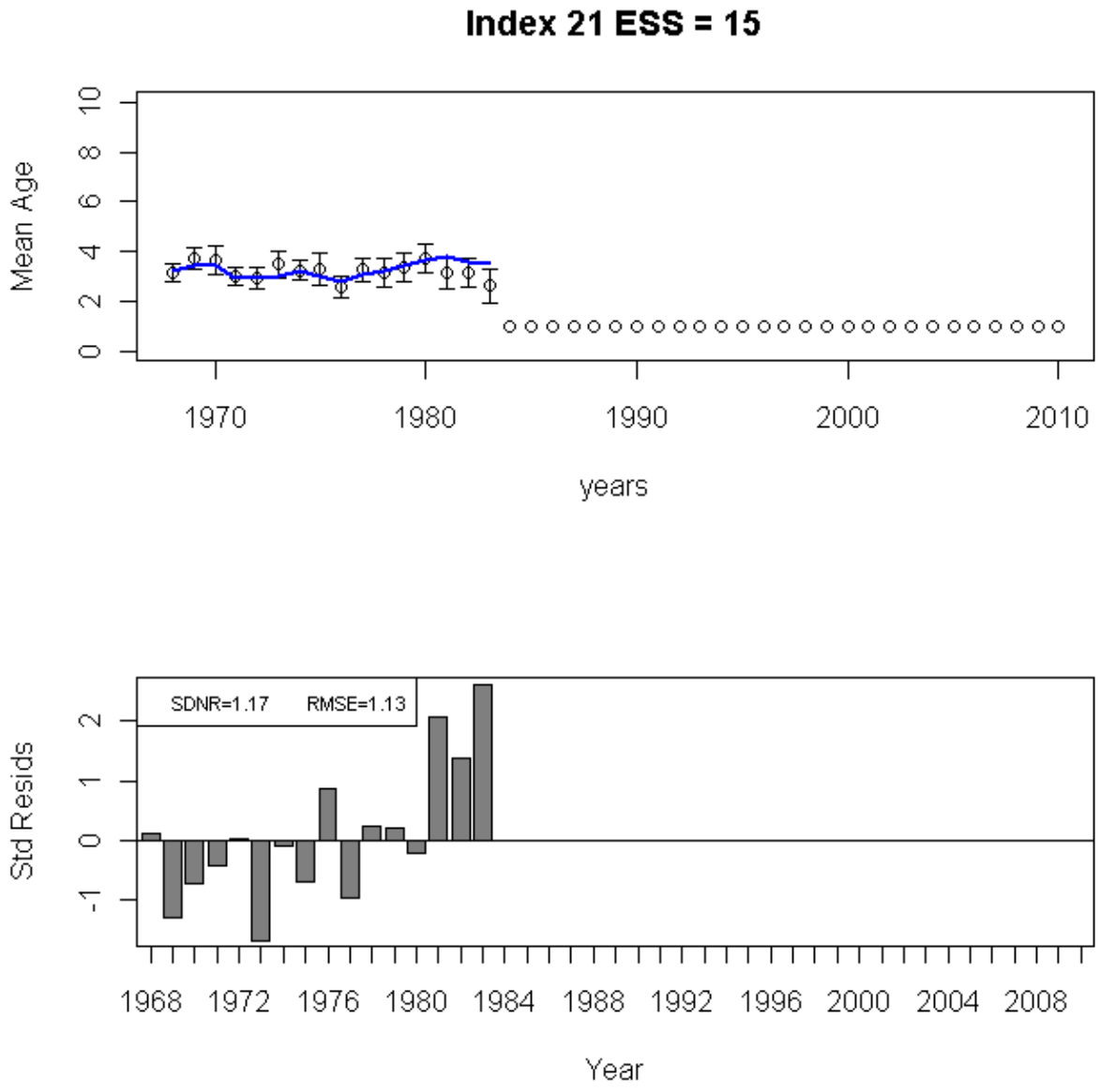

Figure B86. Mean age and effective sample size for NEFSC winter trawl survey in ASAP model.

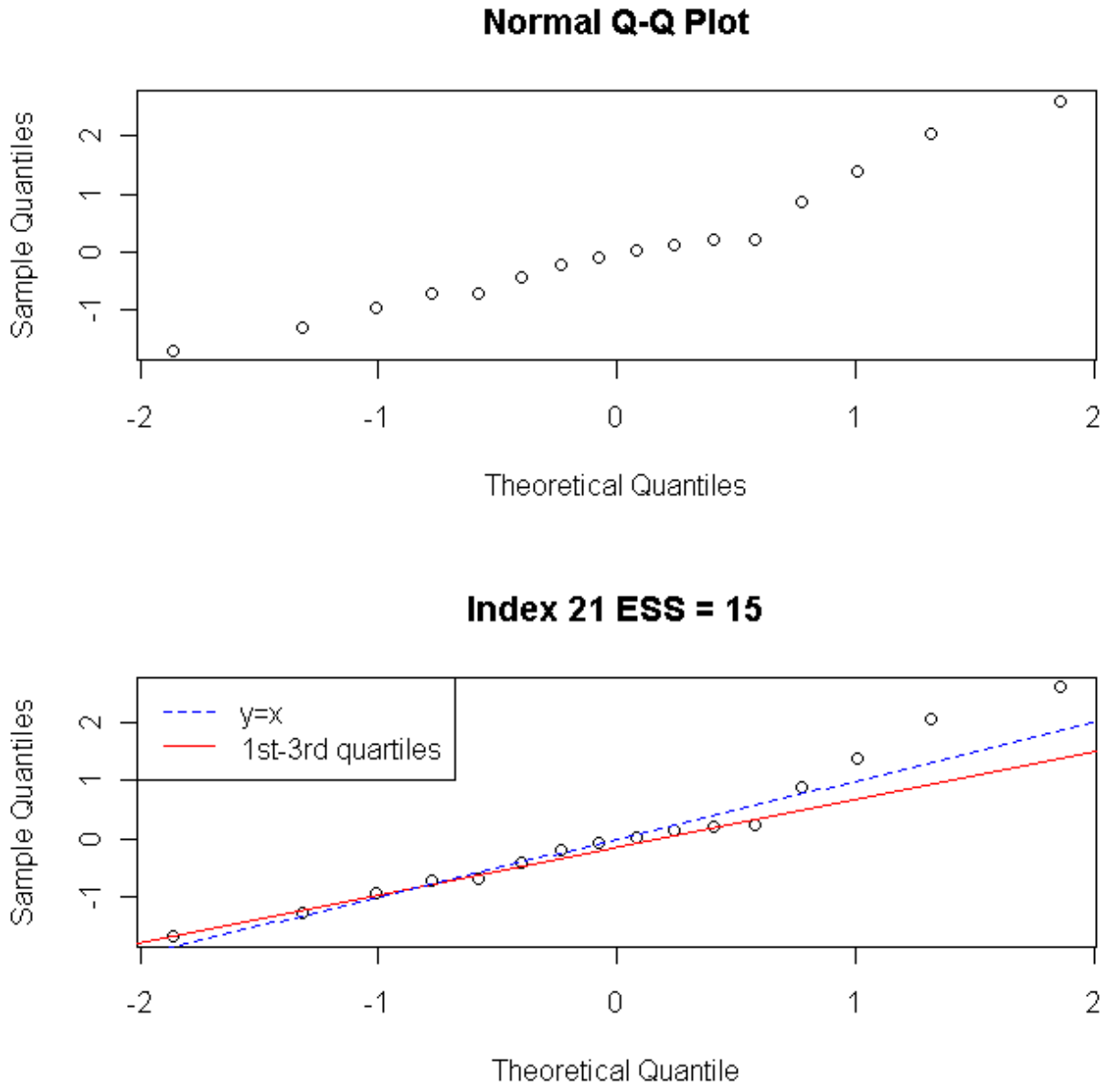

Figure B87. Quantiles from NEFSC winter trawl survey indices.

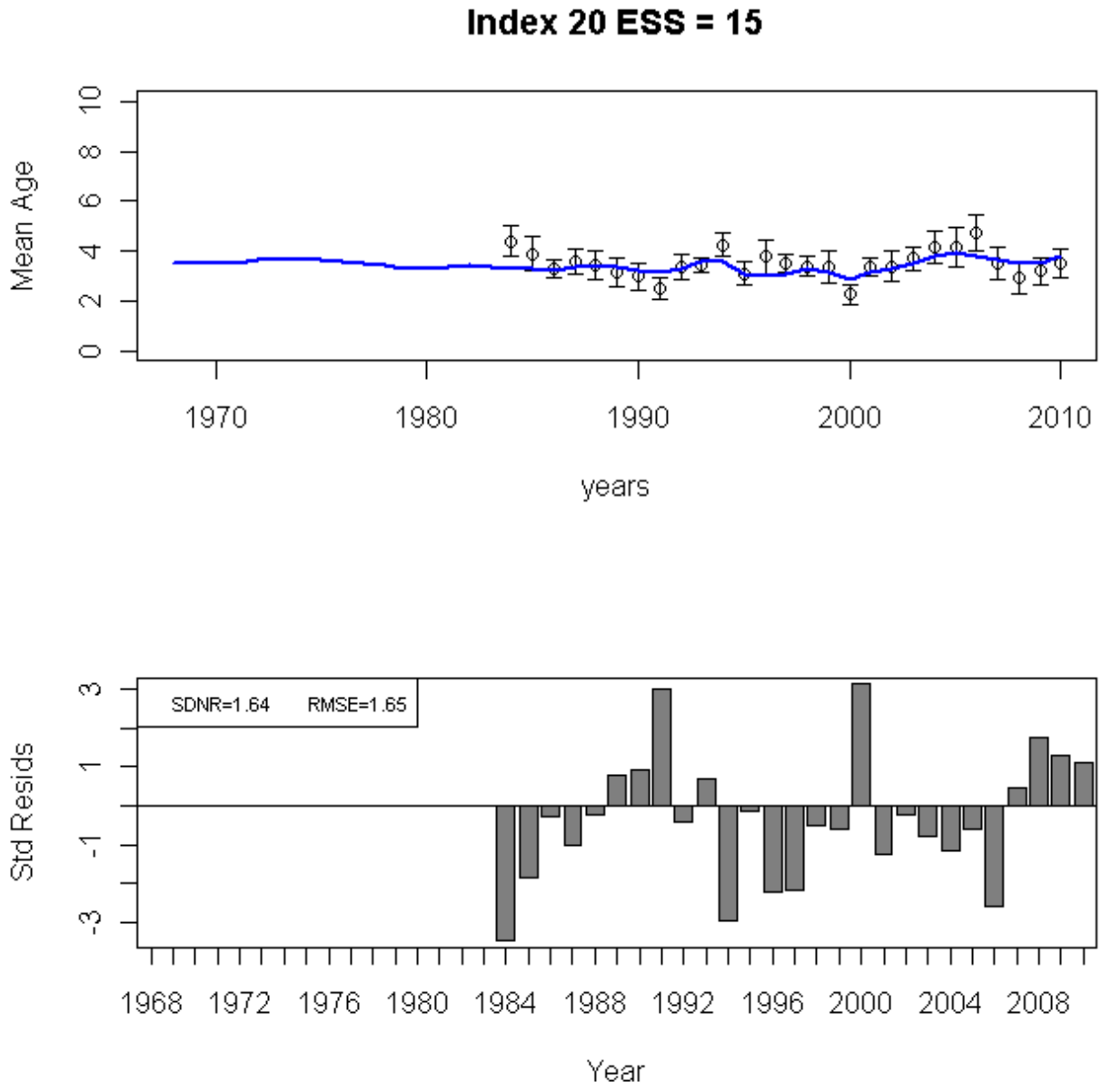

Figure B88. Mean age and effective sample size for NEFSC spring trawl survey in ASAP model.

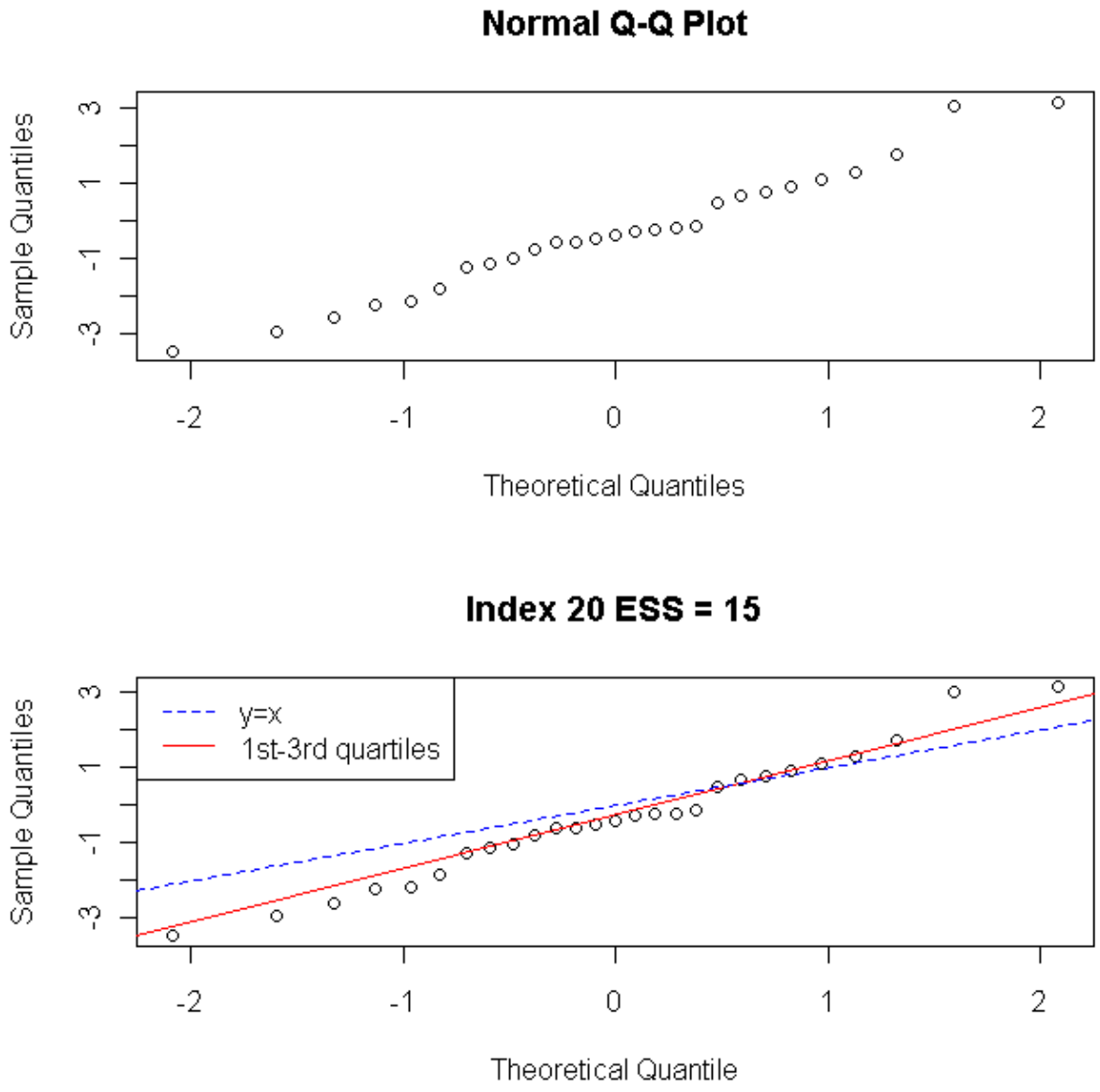

Figure B89. Quantiles from NEFSC spring trawl survey indices

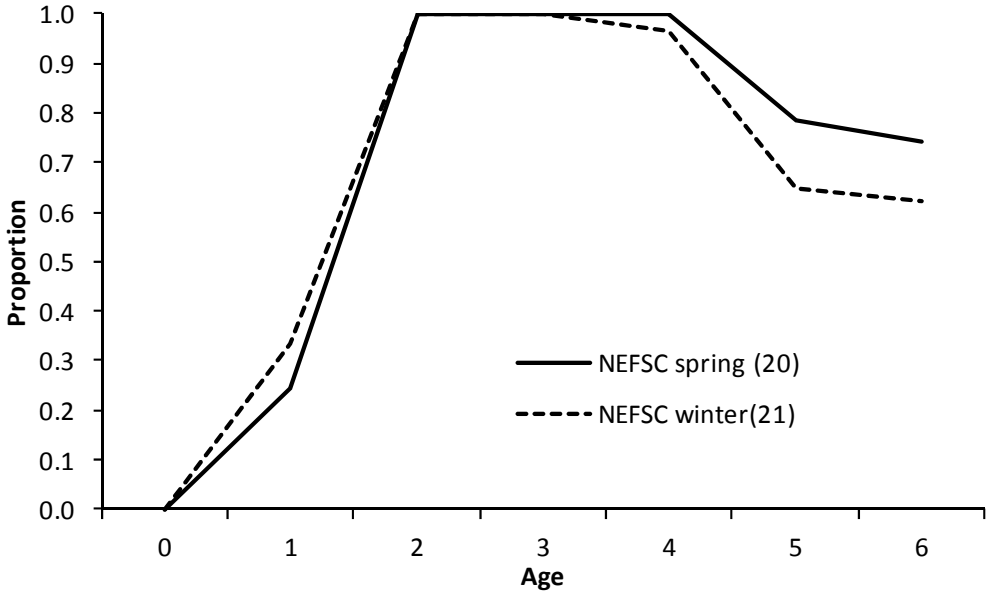

Figure B90. Selectivity at age from ASAP model for NEFSC winter and spring survey indices.

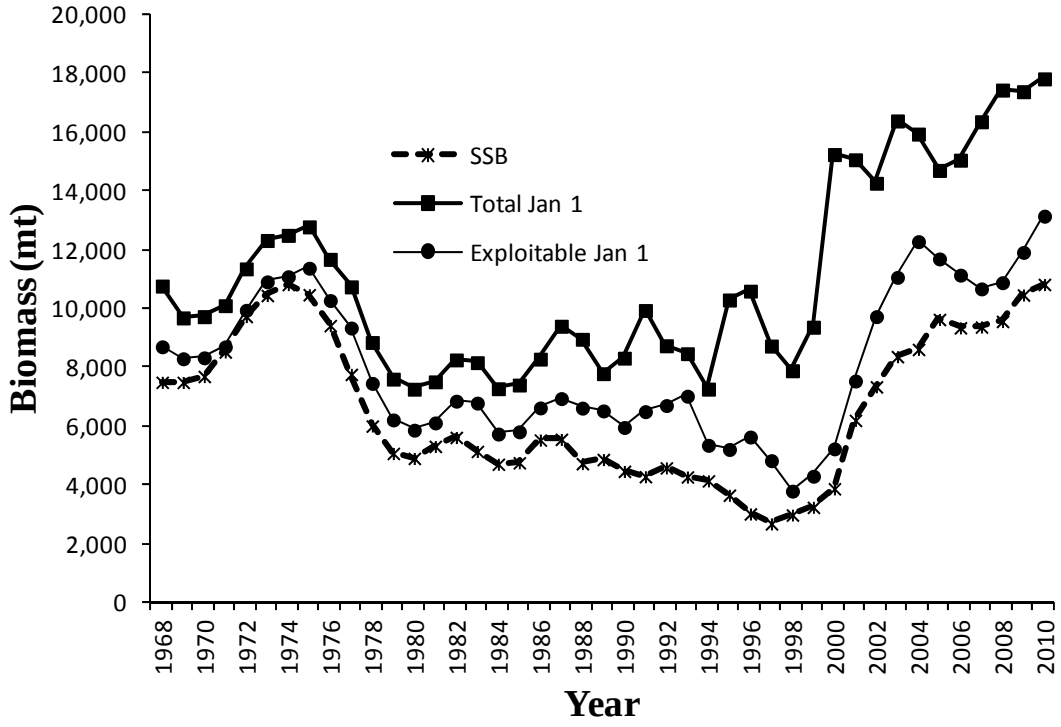

Figure B91. Predicted black sea bass spawning stock biomass, exploitable biomass and January 1 biomass from ASAP model results.

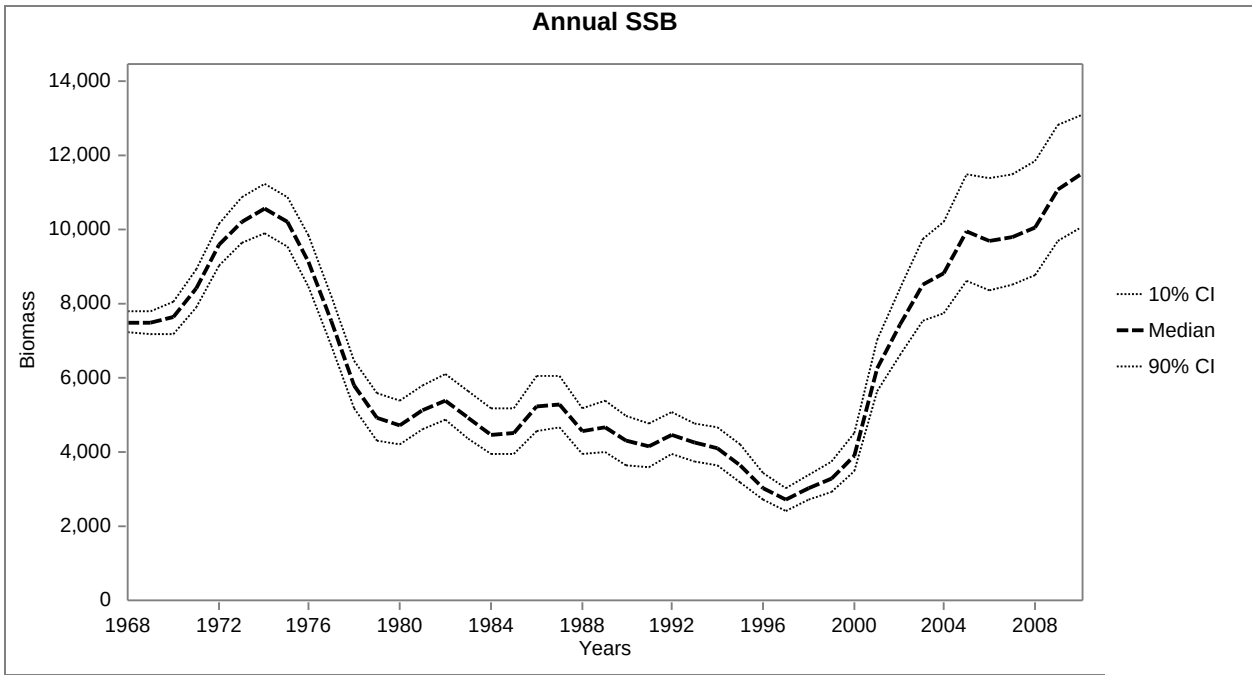

Figure B92. Results of MCMC run for black sea bass spawning stock biomass.

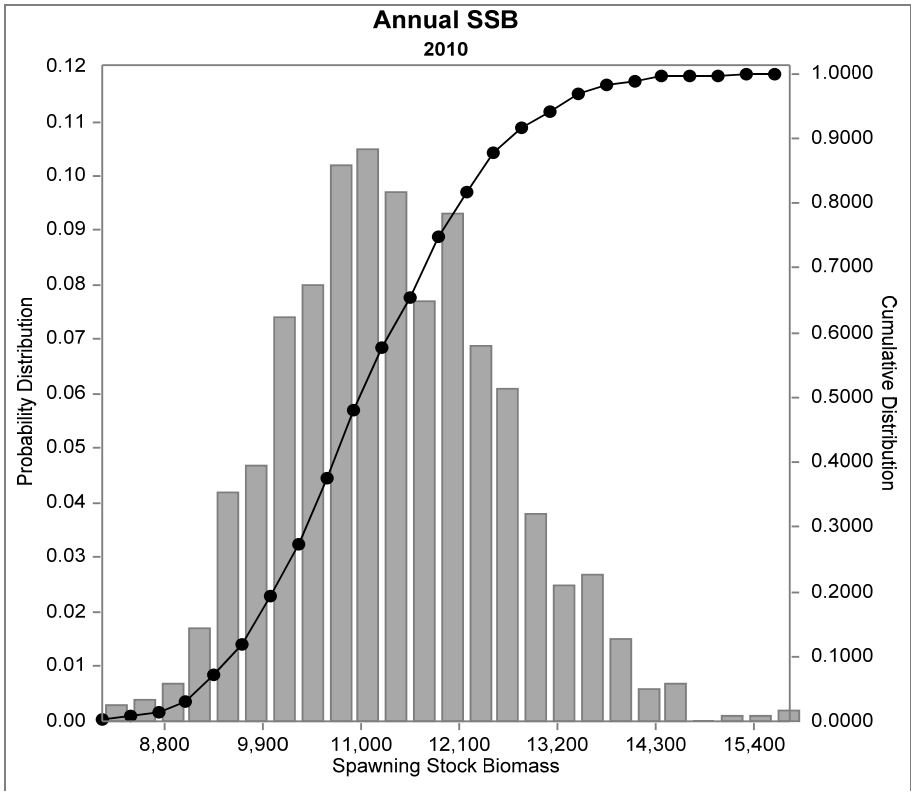

Figure B93. Distribution of 2010 black sea bass SSB from MCMC run.

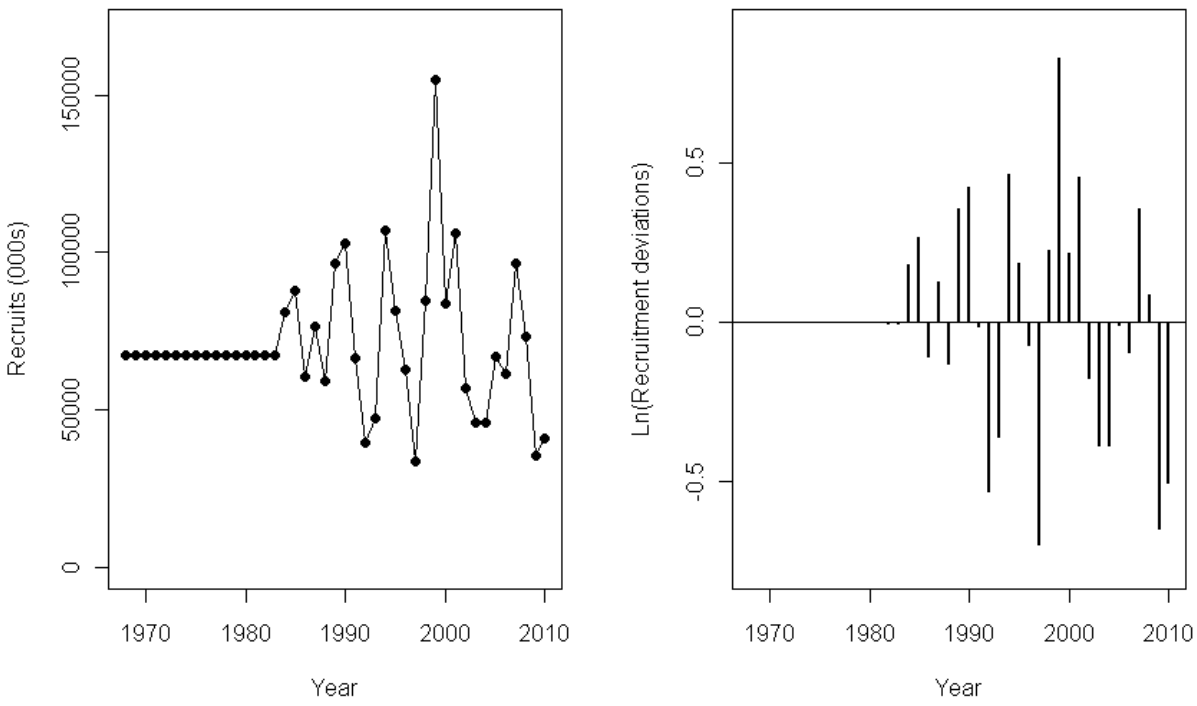

Figure B94. Predicted black sea bass age 0 recruits and associated residuals from ASAP model.

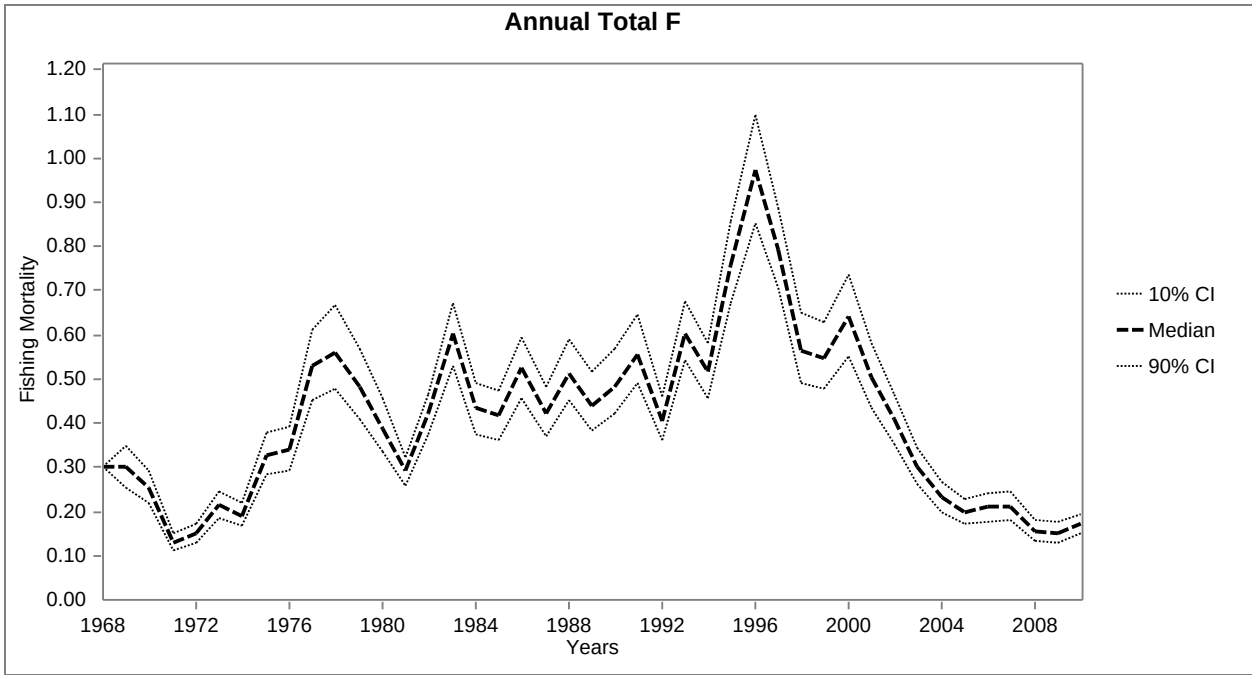

Figure B95. Results of MCMC run for black sea bass fishing mortality.

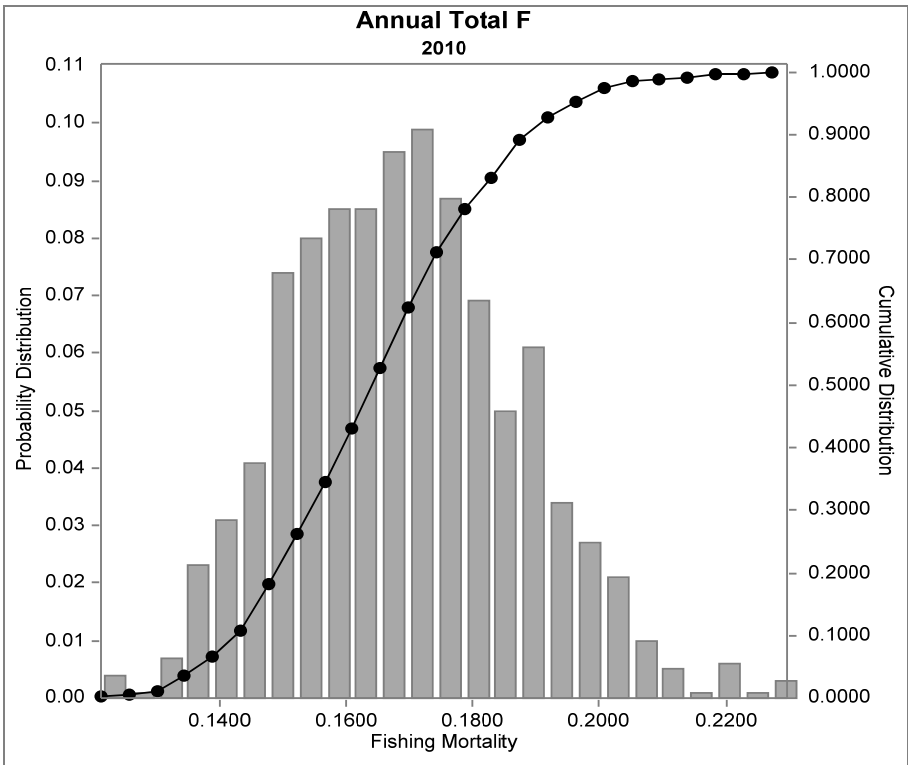

Figure B96. Distribution of 2010 black sea bass fishing mortality from MCMC run.

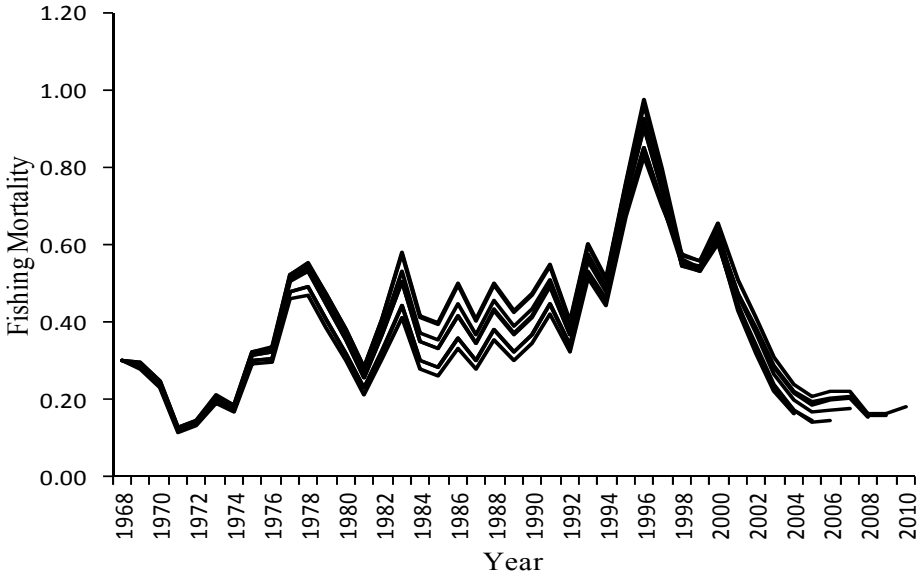

Figure B97. Retrospective pattern of fishing mortality, 2003-2010, from ASAP model results.

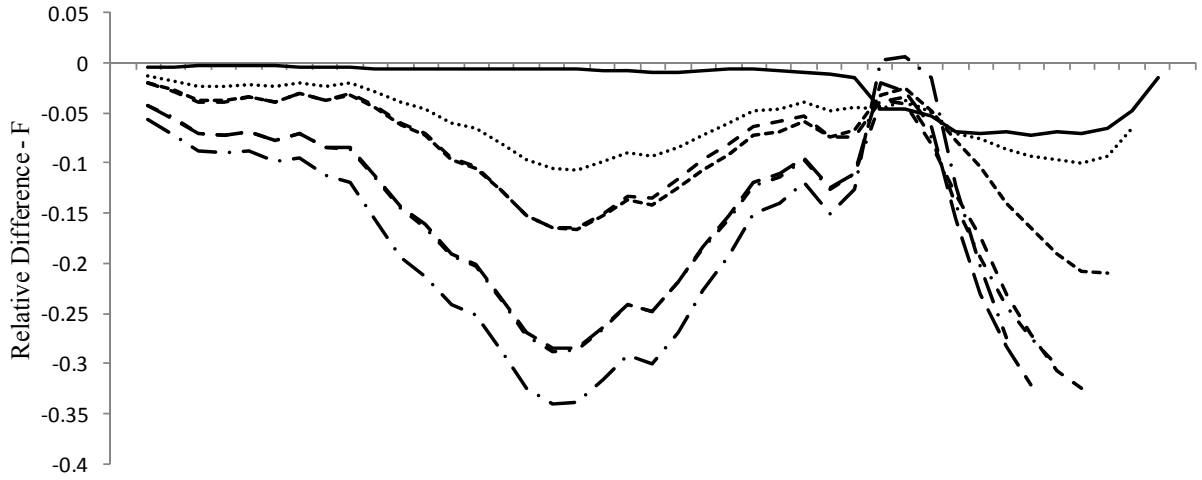

Figure B98 . Relative difference of fishing mortality, 2003-2010, from ASAP model results.

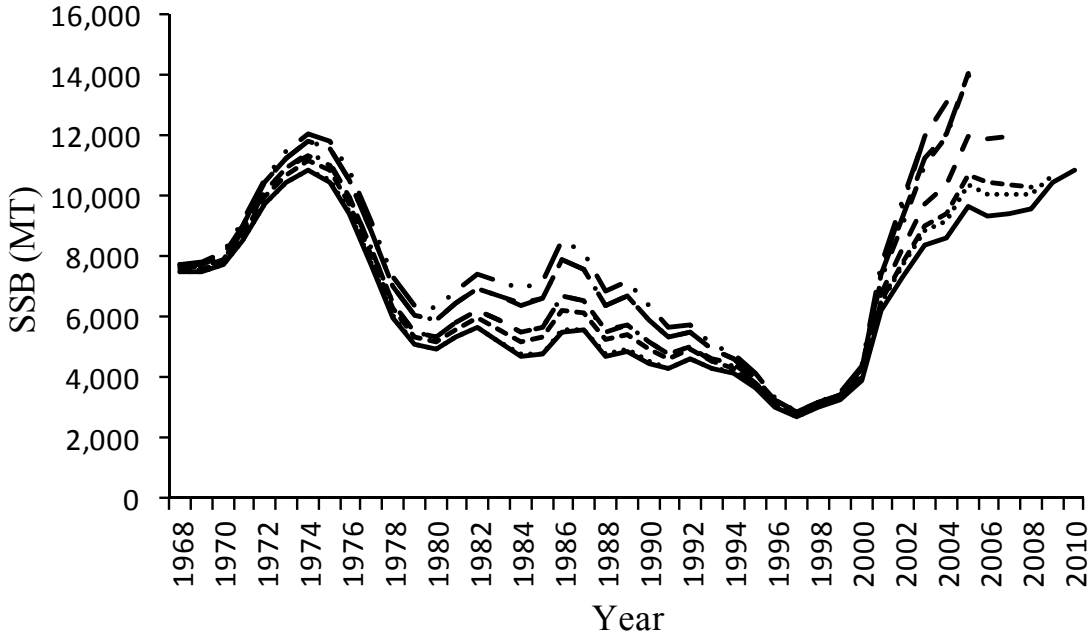

Figure B99. Retrospective pattern of spawning biomass, 2003-2010, from ASAP model results.

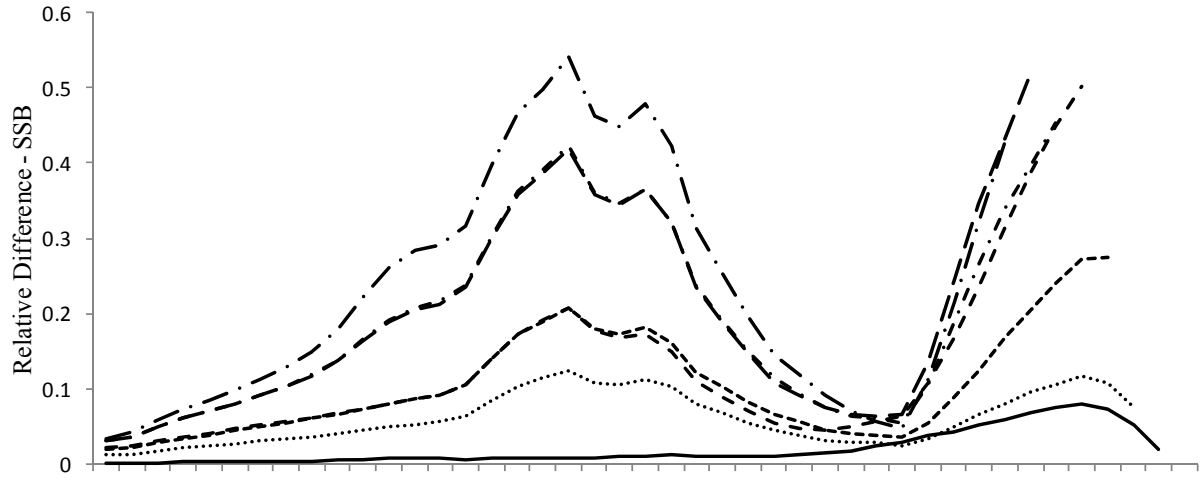

Figure B100. Relative difference of spawning biomass, 2003-2010, from ASAP model results.

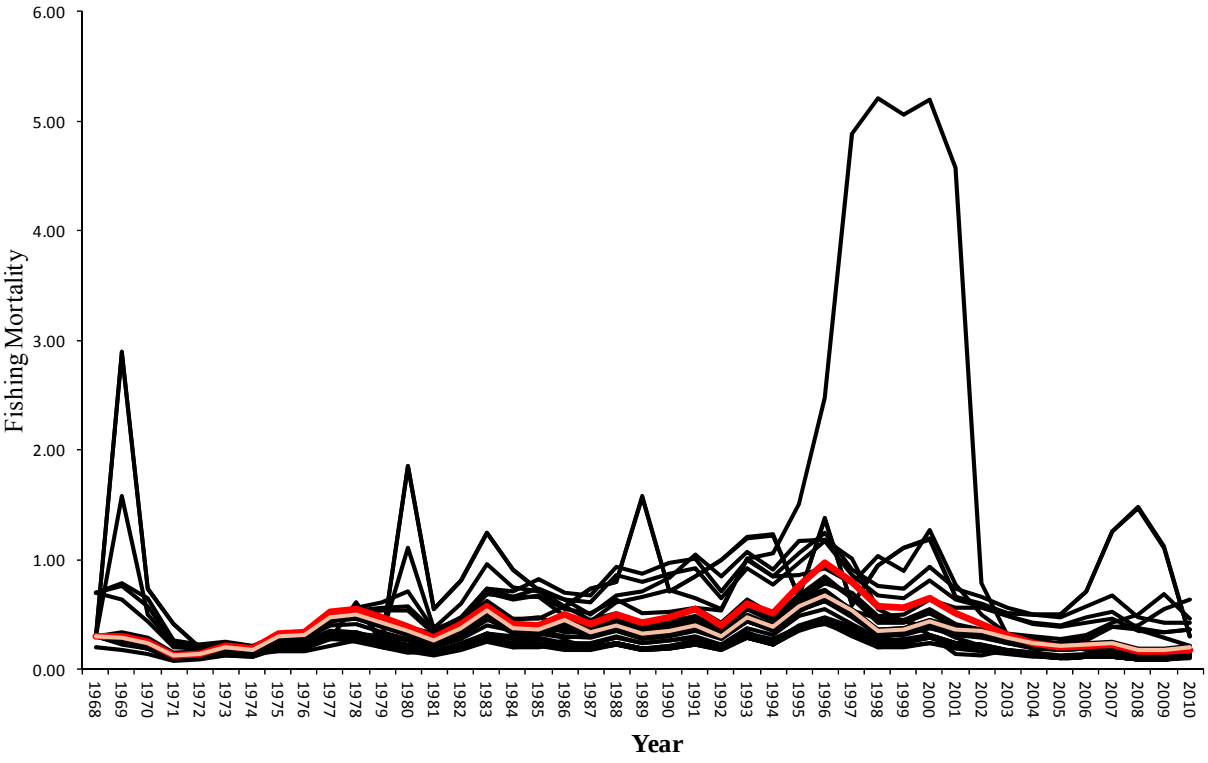

Figure B101. Fishing mortality estimates from the various ASAP and SCALE models considered by the WG. Red line represents final model.

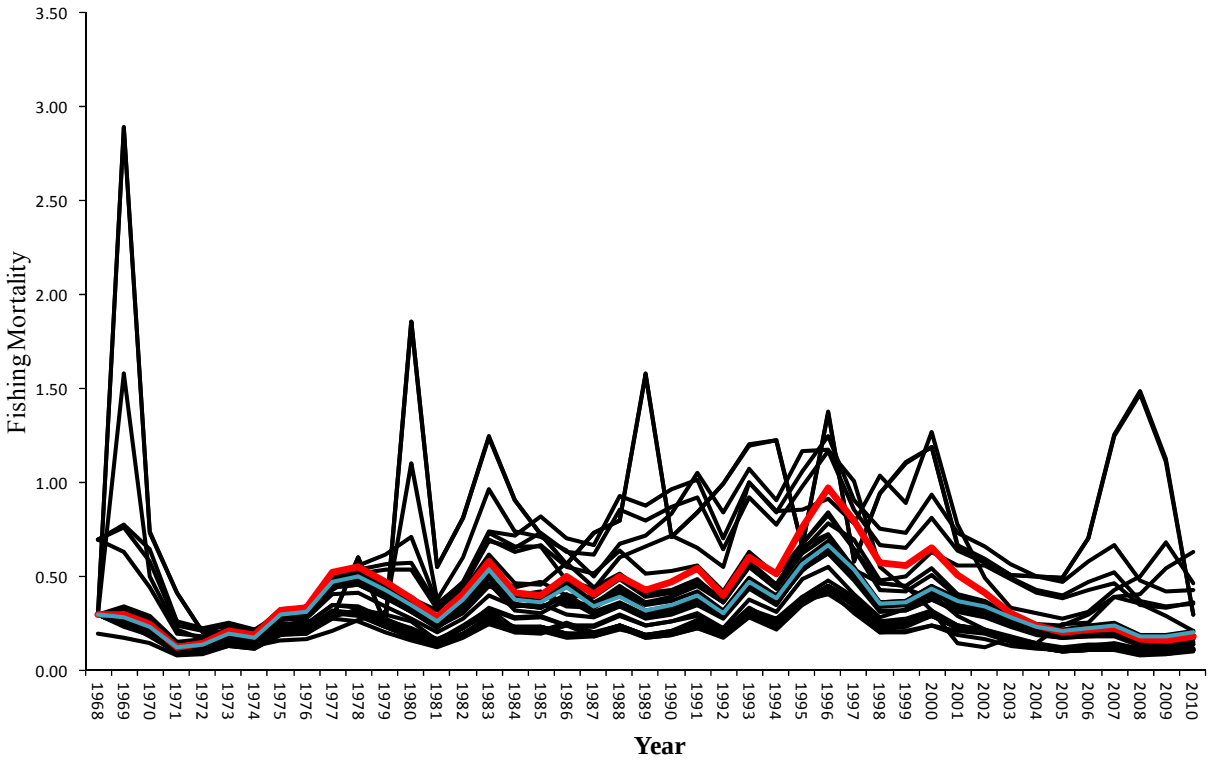

Figure B102. Fishing mortality estimates from the various ASAP and SCALE models considered by the WG, with the maximum value not included. Red line represents final model.

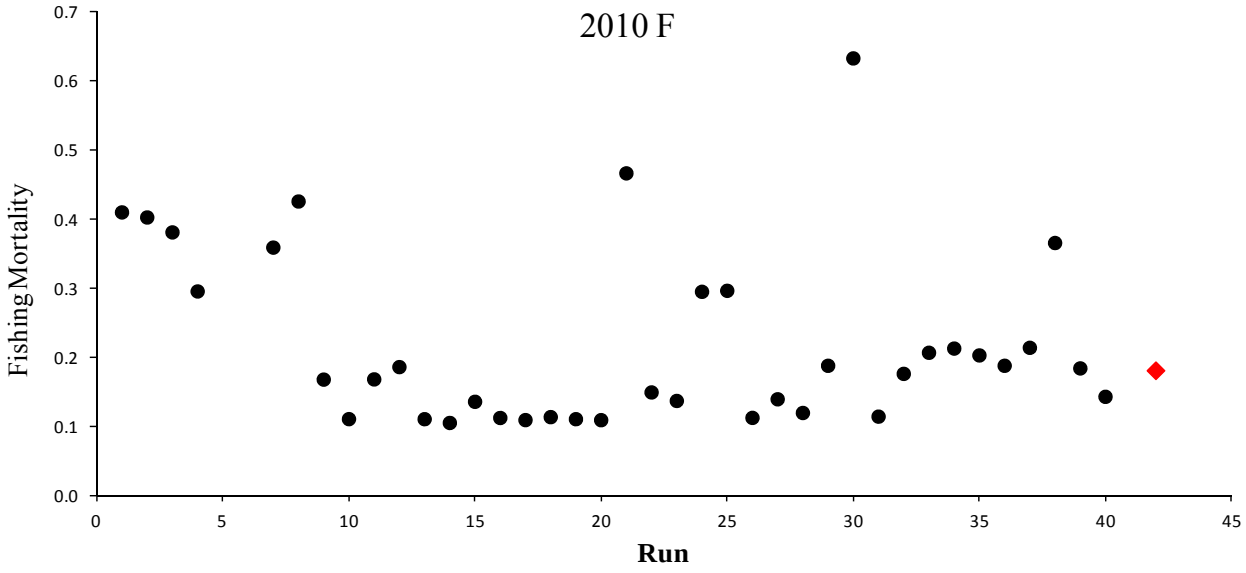

Figure B103. 2010 estimates of fishing mortality from among the models considered by the WG. Red diamond represents the final model results.

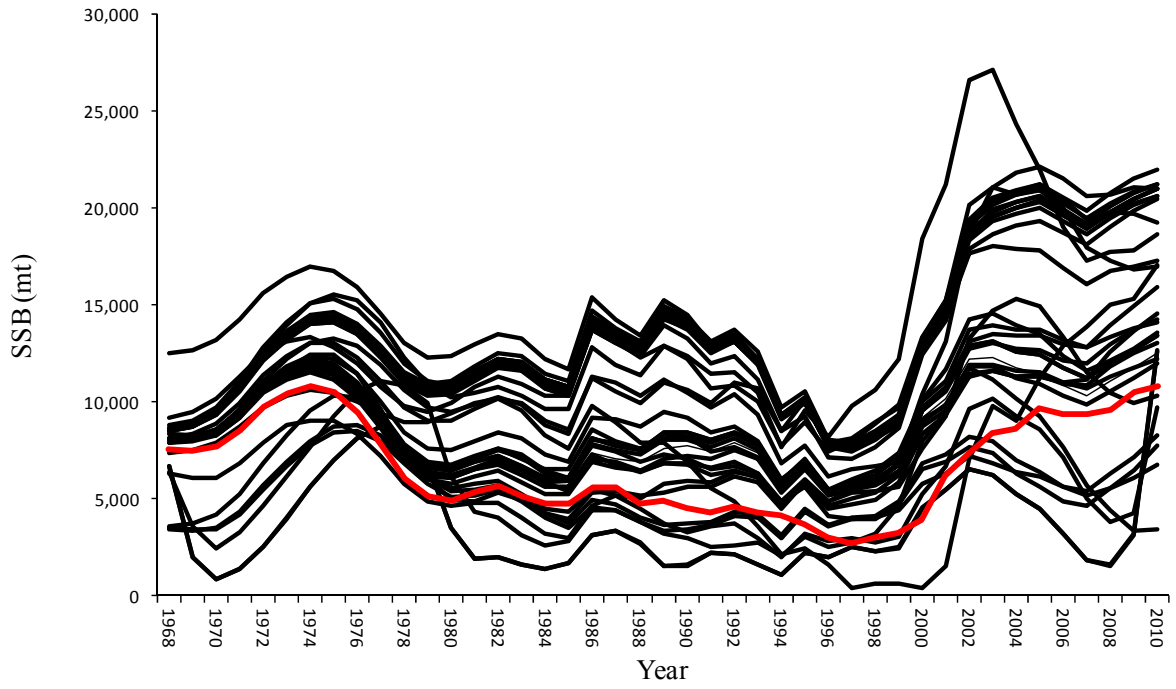

Figure B104. Spawning stock biomass estimates from the various ASAP and SCALE models considered by the WG. Red line represents final model.

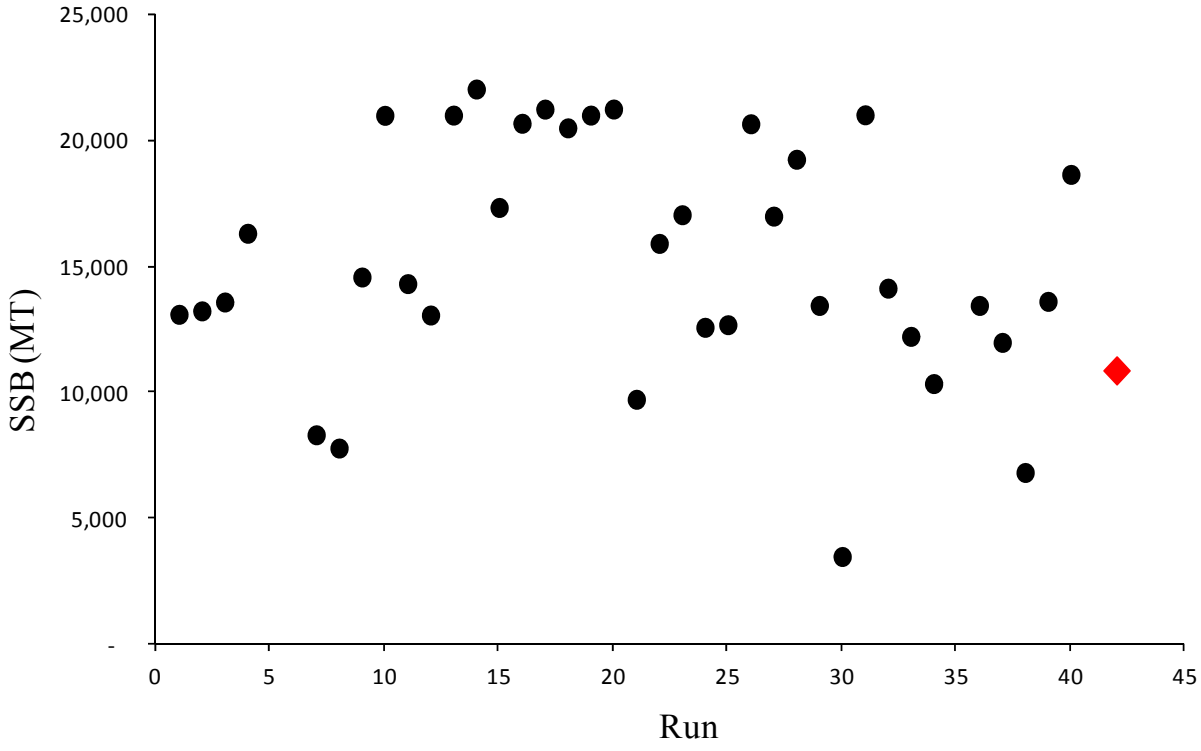

Figure B105. 2010 estimates of spawning stock biomass from among the models considered by the WG. Red diamond represents the final model results.

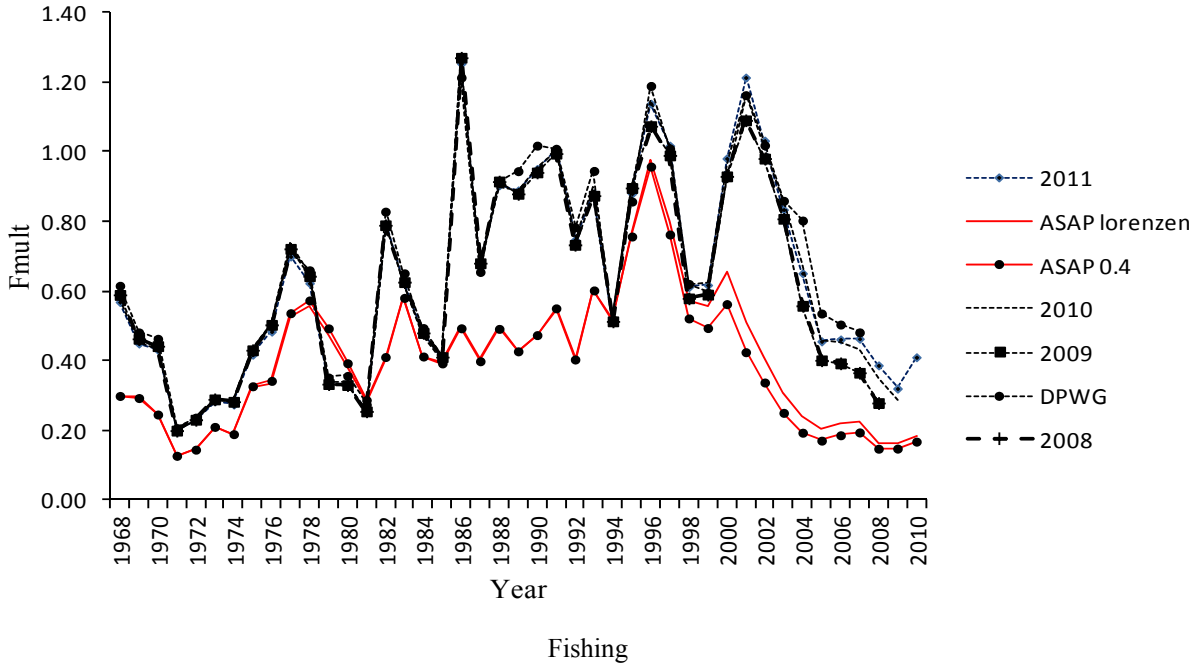

Figure B106. Historical retrospective of black sea bass fishing mortality estimates. ASAP models are the recommendation of the WG.

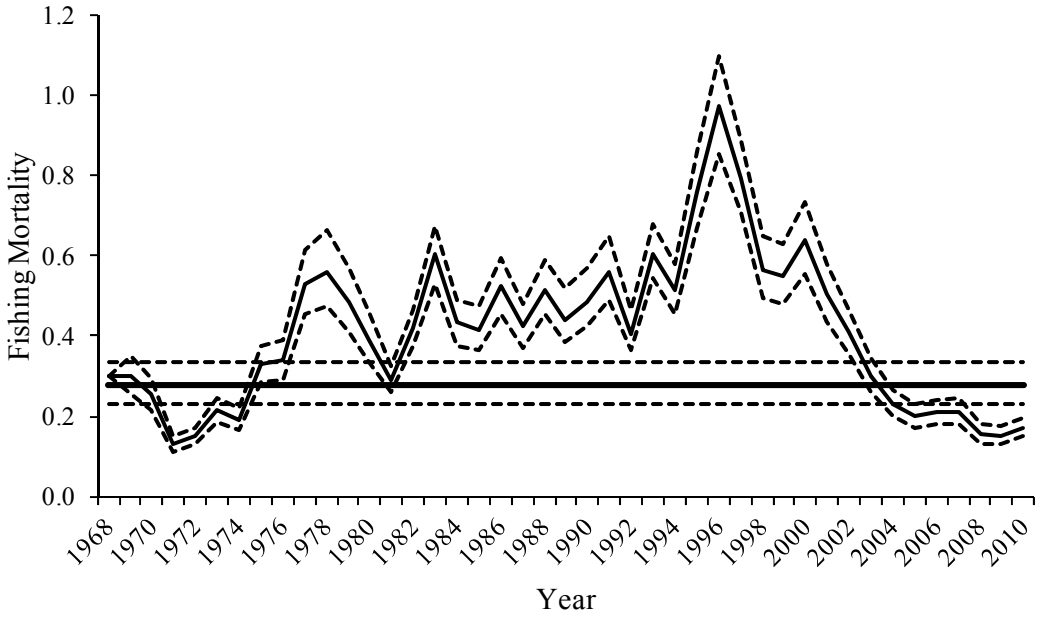

Figure B107. Fishing mortality time series and associated biological reference point (median from stochastic yield per recruit).

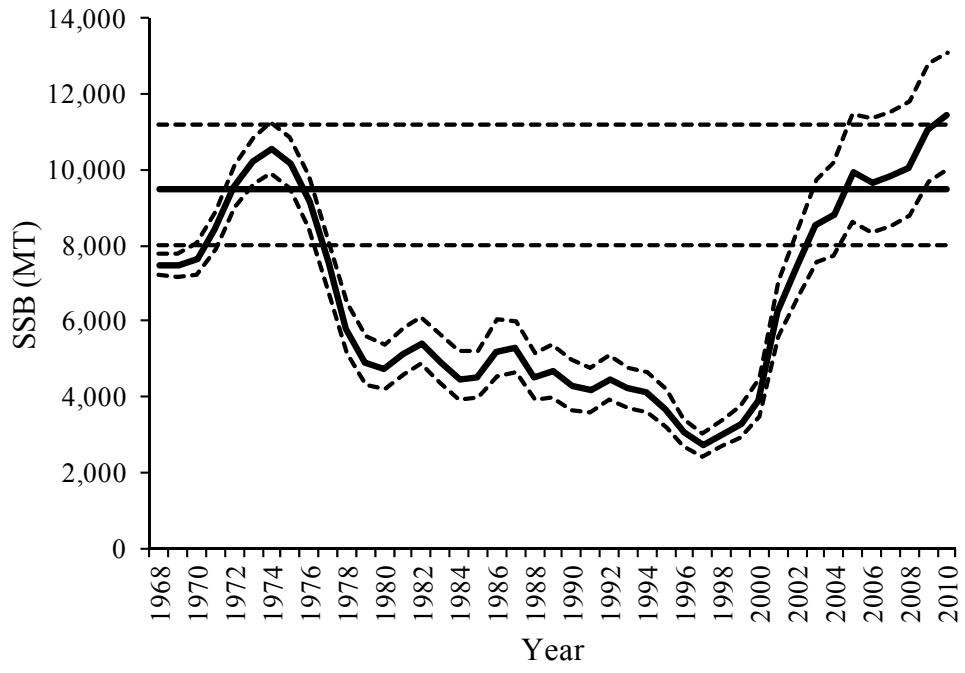

Figure B108. Spawning stock biomass time series and associated biological reference point (median from stochastic yield per recruit).

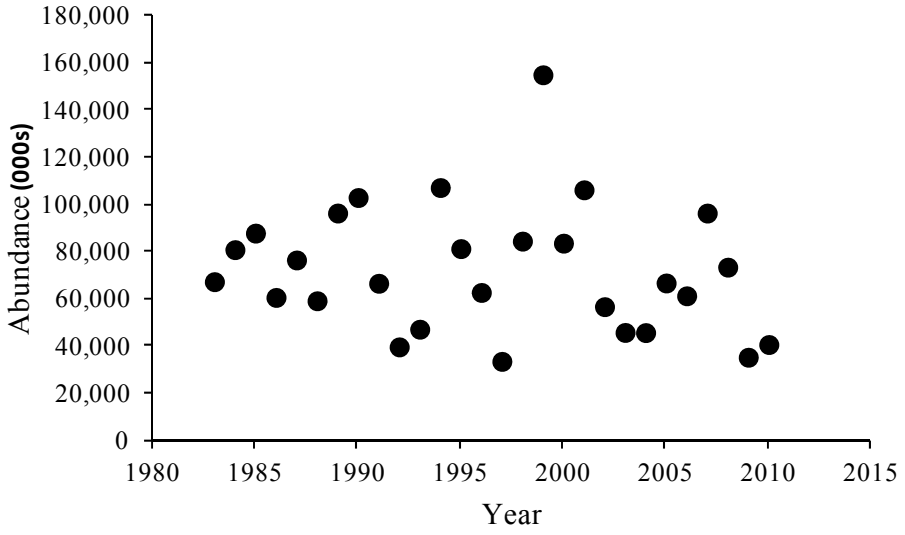

Figure B109. Estimated recruitment from final ASAP model used in projections.

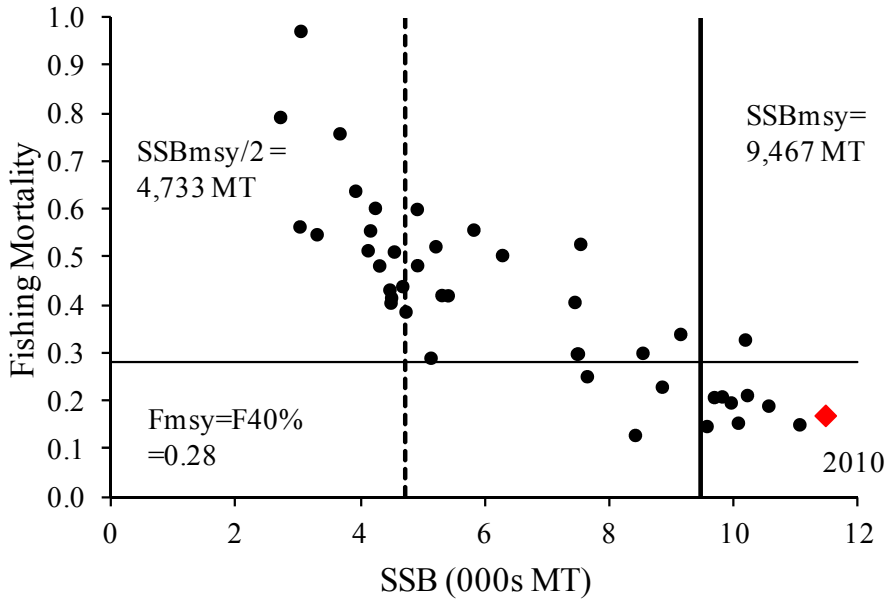

Figure B110. Relationship between time series spawning stock biomass and fishing mortality for black sea bass. Lines represent biological reference points and the red diamond is the 2010 value.