Figure B2.1. Map of offshore strata sampled in the NEFSC spring, autumn, and winter surveys.
Figure B2.2. Map of inshore strata sampled in the NEFSC spring and autumn surveys in the Gulf of Maine.
Figure B2.3. Map of inshore strata sampled in the NEFSC spring and autumn surveys in Southern New England.
Figure B2.4. Map of inshore strata sampled in the NEFSC spring and autumn surveys in the Mid-Atlantic.
Figure B2.5. Species composition of skates from the spring survey. Panel A shows the composition of all species, panel B shows the composition of large species (>100 cm maximum length), and panel C shows the composition of the small species (maximum length < 100cm).
Figure B2.6. Distribution of winter skate from the spring and autumn NEFSC surveys from 1998-2006.
Figure B2.7. Distribution of winter skate from the NEFSC winter surveys from 2000-2006.
Figure B2.8. Distribution of winter skate from the NEFSC scallop surveys from 1985-1996.
Figure B2.9. Distribution of winter skate from the NEFSC scallop surveys from 1997-2006.
Figure B2.10. Abundance and biomass of winter skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1967-2006 in the Gulf of Maine to Mid-Atlantic offshore region.
Figure B2.11. Abundance and biomass of winter skate from the NESFC spring bottom trawl surveys from 1968-2006 in the Gulf of Maine to Mid-Atlantic offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.12. Bootstrapped abundance and biomass of winter skate from the NESFC spring bottom trawl survey in the Gulf of Maine to Mid-Atlantic region, offshore strata only. Mean index in solid squares, 95% confidence interval in open squares.
Winter Skate
GOM-MA Offshore Only - Autumn Survey

Abundance

Biomass

Figure B2.13. Abundance and biomass of winter skate from the NESFC autumn bottom trawl surveys from 1967-2005 in the Gulf of Maine to Mid-Atlantic offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.14. Bootstrapped abundance and biomass of winter skate from the NESFC autumn bottom trawl survey in the Gulf of Maine to Mid-Atlantic region, offshore strata only. Mean index in solid squares, 95% confidence interval in open squares.
Winter Skate
Percentiles of Length Composition

Spring Survey

Autumn Survey

Figure B2.15. Percentiles of length composition (5, 50, and 95) of winter skate from the NESFC spring and autumn bottom trawl surveys from 1967-2006 in the Gulf of Maine to Mid-Atlantic offshore region.
Figure B2.16. Winter skate length composition from the NEFSC spring and autumn trawl surveys in the Gulf of Maine to Mid-Atlantic offshore regions, 1967-1972.
Figure B2.17. Winter skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic offshore regions, 1973-1982.
Figure B2.18. Winter skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic offshore regions, 1983-1992.
Figure B2.19. Winter skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic offshore regions, 1993-2002.
Figure B2.20. Winter skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic offshore regions, 2003-2006.
Figure B2.21. Abundance and biomass of winter skate from the NESFC winter bottom trawl surveys from 1992-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.22. Bootstrapped abundance and biomass of winter skate from the NESFC winter bottom trawl survey. Mean index in solid squares, 95% confidence interval in open squares.
Winter Skate
Scallop Survey

Abundance

Biomass

Figure B2.23. Abundance and biomass of winter skate from the NESFC scallop surveys from 1985-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.24. Bootstrapped abundance and biomass of winter skate from the NESFC scallop survey. Mean index in solid squares, 95% confidence interval in open squares.
Winter Skate - Massachusetts Trawl Survey

Figure B2.25. Abundance and biomass of winter skate from the Massachusetts spring and autumn finfish bottom trawl survey in state waters (strata 11-36).
Winter Skate - CTDEP Finfish Survey

Figure B2.26. Abundance and biomass of winter skate from the CTDEP spring and autumn finfish bottom trawl survey in Connecticut state waters, 1984-2006.
Figure B2.27. Distribution of little skate from the spring and autumn NEFSC surveys from 1998-2006.
Figure B2.28. Distribution of little skate from the NEFSC winter surveys from 2000-2006.
Figure B2.29. Distribution of little skate from the NEFSC scallop surveys from 1985-1996.
Figure B2.30. Distribution of little skate from the NEFSC scallop surveys from 1997-2006.
Figure B2.31. Abundance and biomass of little skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1975-2006 in the Gulf of Maine to Mid-Atlantic (all strata).
Figure B2.32. Abundance and biomass of little skate from the NESFC spring bottom trawl surveys from 1979-2006 in the Gulf of Maine to Mid-Atlantic (all strata). The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.33. Bootstrapped abundance and biomass of little skate from the NESFC spring bottom trawl survey in the Gulf of Maine to Mid-Atlantic region (all strata). Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.34. Abundance and biomass of little skate from the NESFC autumn bottom trawl surveys from 1979-2005 in the Gulf of Maine to Mid-Atlantic (all strata). The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.35. Bootstrapped abundance and biomass of little skate from the NESFC autumn bottom trawl survey in the Gulf of Maine to Mid-Atlantic region (all strata). Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.36. Percentiles of length composition (5, 50, and 95) of little skate from the NESFC spring and autumn bottom trawl surveys from 1975-2006 in the Gulf of Maine to Mid-Atlantic region (all strata).
Figure B2.37. Little skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic (all strata), 1975-1982.
Figure B2.38. Little skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic (all strata), 1983-1992.
Figure B2.39. Little skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic (all strata), 1993-2002.
Figure B2.40.  Little skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Mid-Atlantic (all strata), 2003-2006.
Figure B2.41. Abundance and biomass of little skate from the NESFC winter bottom trawl surveys from 1992-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.42. Bootstrapped abundance and biomass of little skate from the NESFC winter bottom trawl survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.43. Abundance and biomass of little skate from the NESFC scallop surveys from 1985-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.44. Bootstrapped abundance and biomass of little skate from the NESFC scallop survey. Mean index in solid squares, 95% confidence interval in open squares.
Little Skate - Massachusetts Trawl Survey

Figure 2.45. Abundance and biomass of little skate from the Massachusetts spring and autumn finfish bottom trawl survey in state waters (strata 11-36).
Figure B2.46. Abundance and biomass of little skate from the CTDEP spring and autumn finfish bottom trawl survey in Connecticut state waters, 1984-2006.
Figure B2.47. Distribution of barndoor skate from the spring and autumn NEFSC surveys from 2000-2006.
Figure B2.48. Distribution of barndoor skate from the winter NEFSC surveys from 2000-2006 and the NEFSC scallop surveys from 1991-2006.
Figure B2.49. Abundance and biomass of barndoor skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.50. Abundance and biomass of barndoor skate from the NESFC spring bottom trawl surveys from 1968-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.51. Bootstrapped abundance and biomass of barndoor skate from the NESFC spring bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Barndoor Skate
GOM-SNE Offshore Only - Autumn Survey

Figure B2.52. Abundance and biomass of barndoor skate from the NESFC autumn bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Barndoor Skate - Autumn Survey  
GOM-SNE Offshore Only

Figure B2.53. Bootstrapped abundance and biomass of barndoor skate from the NESFC autumn bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.54. Percentiles of length composition (5, 50, and 95) of barndoor skate from the NESFC spring and autumn bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.55. Barndoor skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1963-1972.
Figure B2.56. Barndoor skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1973-1982.
Figure B2.57. Barndoor skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1983-1992.
Figure B2.58. Barndoor skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1993-2002.
Figure B2.59. Barndoor skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 2003-2006.
Figure B2.60. Abundance and biomass of barndoor skate from the NESFC winter bottom trawl surveys from 1993-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.61. Bootstrapped abundance and biomass of barndoor skate from the NESFC winter bottom trawl survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.62. Barndoor skate length composition from the NEFSC winter flatfish surveys, 1993-2006.
Figure B2.63. Abundance and biomass of barndoor skate from the NESFC scallop surveys from 1991-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.64. Bootstrapped abundance and biomass of barndoor skate from the NESFC scallop survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.65. Distribution of thorny skate from the spring and autumn NEFSC surveys from 1998-2006.
Figure B2.66. Distribution of thorny skate from the NEFSC scallop and shrimp surveys from 1985-2006.
Thorny Skate
GOM-SNE Offshore Only

Figure B2.67. Abundance and biomass of thorny skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.68. Abundance and biomass of thorny skate from the NESFC spring bottom trawl surveys from 1968-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.69. Bootstrapped abundance and biomass of thorny skate from the NESFC spring bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.70. Abundance and biomass of thorny skate from the NESFC autumn bottom trawl surveys from 1968-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.71. Bootstrapped abundance and biomass of thorny skate from the NESFC autumn bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Thorny Skate: GOM-SNE Offshore
Percentiles of Length Composition

Spring Survey

Autumn Survey

Figure B2.72. Percentiles of length composition (5, 50, and 95) of thorny skate from the NESFC spring and autumn bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.73. Thorny skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1963-1972.
Figure B2.74. Thorny skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1973-1982.
Figure B2.75. Thorny skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1983-1992.
Figure B2.76. Thorny skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1993-2002.
Figure B2.77. Thorny skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 2003-2006.
Figure B2.78. Abundance and biomass of thorny skate from the NESFC scallop surveys from 1985-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.79. Bootstrapped abundance and biomass of thorny skate from the NESFC scallop survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.80. Abundance and biomass of thorny skate from the Massachusetts spring and autumn finfish bottom trawl survey in state waters (strata 25-36).
Figure B2.81. Distribution of smooth skate from the spring and autumn NEFSC surveys from 2000-2006.
Figure B2.82. Distribution of smooth skate from the NEFSC scallop and shrimp surveys from 1985-2006.
Figure B2.83. Abundance and biomass of smooth skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.84. Abundance and biomass of smooth skate from the NESFC spring bottom trawl surveys from 1968-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.85. Bootstrapped abundance and biomass of smooth skate from the NESFC spring bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.86. Abundance and biomass of smooth skate from the NESFC autumn bottom trawl surveys from 1968-2006 in the Gulf of Maine to Southern New England offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Smooth Skate - Autumn Survey
GOM-SNE Offshore Only

**Abundance**

**Biomass**

Figure B2.87. Bootstrapped abundance and biomass of smooth skate from the NESFC autumn bottom trawl survey in the Gulf of Maine to Southern New England offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Smooth Skate: GOM-SNE Offshore
Percentiles of Length Composition

Spring Survey

Autumn Survey

Figure B2.88. Percentiles of length composition (5, 50, and 95) of smooth skate from the NESFC spring and autumn bottom trawl surveys from 1963-2006 in the Gulf of Maine to Southern New England offshore region.
Figure B2.89. Smooth skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1963-1972.
Figure B2.90. Smooth skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1973-1982.
Figure B2.91. Smooth skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1983-1992.
Figure B2.92. Smooth skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 1993-2002.
Figure B2.93. Smooth skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Gulf of Maine to Southern New England offshore region, 2003-2006.
Figure B2.94. Abundance and biomass of smooth skate from the NESFC scallop surveys from 1985-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.95. Bootstrapped abundance and biomass of smooth skate from the NESFC scallop survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.96. Distribution of clearnose skate from the spring and autumn NEFSC surveys from 2000-2006.
Figure B2.97. Distribution of clearnose skate from the winter NEFSC surveys from 2000-2006.
Clearnose Skate
Mid-Atlantic All strata

![Graph showing abundance and biomass of clearnose skate from NESFC spring and autumn surveys from 1975-2006 in the Mid-Atlantic (all strata).]

Figure B2.98. Abundance and biomass of clearnose skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1975-2006 in the Mid-Atlantic (all strata).
Figure B2.99. Abundance and biomass of clearnose skate from the NESFC spring bottom trawl surveys from 1976-2006 in the Mid-Atlantic (all strata). The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.100. Bootstrapped abundance and biomass of clearnose skate from the NESFC spring bottom trawl survey in the Mid-Atlantic region (all strata). Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.101. Abundance and biomass of clearnose skate from the NESFC autumn bottom trawl surveys from 1976-2006 in the Mid-Atlantic (all strata). The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.102. Bootstrapped abundance and biomass of clearnose skate from the NESFC autumn bottom trawl survey in the Mid-Atlantic region (all strata). Mean index in solid squares, 95% confidence interval in open squares.
Clearnose Skate
Percentiles of Length Composition

Spring Survey

![Graph showing length composition for spring surveys from 1975 to 2006.]

Autumn Survey

![Graph showing length composition for autumn surveys from 1975 to 2006.]

Figure B2.103. Percentiles of length composition (5, 50, and 95) of clearnose skate from the NESFC spring and autumn bottom trawl surveys from 1975-2006 in the Mid-Atlantic region (all strata).
Figure B2.104. Clearnose skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic (all strata), 1975-1982.

Consistent strata set not available prior to 1975/76

Spring Survey

Autumn Survey
Figure B2.105. Clearnose skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic (all strata), 1983-1992.
Figure B2.106. Clearnose skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic (all strata), 1993-2002.
Figure B2.107. Clearnose skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic (all strata), 2003-2006.
Figure B2.108. Abundance and biomass of clearnose skate from the NESFC winter bottom trawl surveys from 1992-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.109. Bootstrapped abundance and biomass of clearnose skate from the NESFC winter bottom trawl survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.110. Abundance and biomass of clearnose skate from the CTDEP spring and autumn finfish bottom trawl survey in Connecticut state waters, 1984-2006.
Figure B2.111. Distribution of rosette skate from the spring and autumn NEFSC surveys from 2000-2006.
Figure B2.112. Distribution of rosette skate from the winter NEFSC surveys from 2000-2006.
Figure B2.113. Abundance and biomass of rosette skate from the NESFC spring (circles) and autumn (squares) bottom trawl surveys from 1967-2006 in the Mid-Atlantic offshore region.
Rosette Skate
Mid-Atlantic Offshore Only - Spring Survey

Abundance

Biomass

Figure B2.114. Abundance and biomass of rosette skate from the NESFC spring bottom trawl surveys from 1968-2006 in the Mid-Atlantic offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.115. Bootstrapped abundance and biomass of rosette skate from the NESFC spring bottom trawl survey in the Mid-Atlantic offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.116. Abundance and biomass of rosette skate from the NESFC autumn bottom trawl surveys from 1967-2005 in the Mid-Atlantic offshore region. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.117. Bootstrapped abundance and biomass of rosette skate from the NESFC autumn bottom trawl survey in the Mid-Atlantic offshore region. Mean index in solid squares, 95% confidence interval in open squares.
Rosette Skate
Percentiles of Length Composition

Spring Survey

Autumn Survey

Figure B2.118. Percentiles of length composition (5, 50, and 95) of rosette skate from the NESFC spring and autumn bottom trawl surveys from 1967-2006 in the Mid-Atlantic offshore region.
Figure B2.119. Rosette skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic offshore region, 1967-1972.
Figure B2.120. Rosette skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic offshore region, 1973-1982.
Figure B2.121. Rosette skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic offshore region, 1983-1992.
Figure B2.122. Rosette skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic offshore region, 1993-2002.
Figure B2.123. Rosette skate length composition from the NEFSC spring and autumn bottom trawl surveys in the Mid-Atlantic offshore region, 2003-2006.
Figure B2.124. Abundance and biomass of rosette skate from the NESFC winter bottom trawl surveys from 1998-2006. The circles represent the original stratified mean, the squares represent the mean combining strata for bootstrapping, and the triangles represent the bootstrapped mean.
Figure B2.125. Bootstrapped abundance and biomass of rosette skate from the NESFC winter bottom trawl survey. Mean index in solid squares, 95% confidence interval in open squares.
Figure B2.126. Trends in spawning stock biomass indices for seven species of skates.

(EDITOR’S NOTE: BASED ON THE REVIEWER’S COMMENTS, THESE FIGURES WERE NOT INCLUDED IN THIS REPORT. THE FIGURES DEALT WITH ESTIMATES OF FISHING MORTALITY RATE.)