SAW/SARC-64 Summary
(NEFSC CRD#18-03)

Public Presentation: April 2018
1. SAW Working Groups

2. External Peer Review Panel: Center of Independent Experts (CIE) + SSC.

3. Products: (Reviewer’s Reports) + (2 Science Reports)
   http://www.nefsc.noaa.gov/nefsc/saw/ (see SAW64)
   http://www.nefsc.noaa.gov/publications/ (see Ref. Docs.)

4. Management advice:
   • SAW/SARC reports support SSC in making ABC recommendation.
The 64th Northeast Regional
Stock Assessment Review Committee
Stephen H. Clark Conference Room – Northeast Fisheries Science Center
Woods Hole, Massachusetts
Nov. 28 –30, 2017

SARC Chairman:
Dr. John Boreman
(MAFMC SSC Chair)

SARC Panelists:
Dr. Robin Cook
(Glasgow, UK; CIE)

Dr. Joseph Powers
(Washington DC; CIE)

Ms. Kevin Stokes
(Wellington, NZ; CIE)

A. Atl. Mackerel
(A.) Mackerel
1. Examine spatial and ecosystem influences on stock

2. Estimate catch from all sources

3. Evaluate fishery independent and fishery dependent indices being used in the assessment

4. Estimate annual fishing mortality, recruitment and biomass for the time series

5. Propose biological reference points

6. Evaluate Stock status. Describe condition of the stock

7. Conduct stock projections

8. Review research recommendations and ID new ones
• Current 2017 assessment is accepted.

• 2009 assessment was not accepted by TRAC.

• Current Stock Status: overfished and overfishing.

• $F_{40\%}$, is an acceptable proxy for $F_{MSY}$, and basis for $B_{MSY}$ proxy.

• Stock Distribution changed to the N and E. Habitat and predator relationships were examined.

• Current single stock definition retained.
• Collaboration with Canadian scientists enabled accounting for the major sources of catch from the stock.

• US and Canadian egg surveys combined index provided critical new information relative to spawning stock biomass.

• Stock size projections are strongly influenced by size of the 2015 year class. Terminal year estimates like $R_{2015}$ have higher uncertainty. $R_{2015}$ is promising, but does not appear huge.
• Maintain the US and Canadian egg surveys for future assessments. This index is crucial for the assessment.

• Would have been useful to see more discussion of how the biological characteristics of the species affects its vulnerability to the existing fisheries.
Peak catches during 1970s by distant water fleets. Total Catch increased again after 2000, but declined recently after the stronger 1999 and 2003 YC’s passed through.
Mackerel: Fishing Mortality (1968-2016)

\[ F (\text{age 6+}) \text{ was high in the 1970s. It increased a lot after 2000 due to increased catches, accompanied by declining SSB.} \]
There were 2 periods of increasing SSB, when the 1982 and 1999 cohorts moved through. But overall, there has been a major drop in SSB since the 1970s.
There were strong Recr. Year classes in 1982, 1999, and 2003. Recr$_{2015}$ is promising, but terminal year estimates are more uncertain!
Current Status: overfished, overfishing. F has been > Fmsy since ~1987. There has been a long-term decline in SSB.
Example Mackerel Projection

Assumptions:
2017 catch = 21,898 mt; fish at $F_{\text{MSY}}$ proxy ($F40\% = 0.26$) during 2018+; Recruit CDF from 1975-2016.

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSB (mt)</td>
<td>Median</td>
<td>101,825</td>
<td>132,532</td>
<td>153,198</td>
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<td></td>
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<td>44,017</td>
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<td>81,410</td>
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<td>95th Percentile</td>
<td>207,193</td>
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<td>305,940</td>
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<td>Recruitment (000s)</td>
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<td>164,359</td>
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<td>1,169,815</td>
<td>1,179,224</td>
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<td>January 1 biomass (mt)</td>
<td>Median</td>
<td>135,714</td>
<td>172,598</td>
<td>200,558</td>
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<td>71,745</td>
<td>84,355</td>
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<td>95th Percentile</td>
<td>252,303</td>
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<tr>
<td>Catch (mt)</td>
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<td>24,948</td>
<td>30,023</td>
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<td>11,069</td>
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<tr>
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<td>95th Percentile</td>
<td>-</td>
<td>50,317</td>
<td>56,857</td>
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Note wide- Confidence Intervals on SSB.