SAW/SARC-56 Summary
(NEFSC CRD#13-04)

Presentation to MAFMC: Apr. 2013
(with focus on Atlantic Surfclam)
SAW/SARC Process

1. SAW Working Groups

2. External Peer Review Panel: Center of Independent Experts (CIE) + SSC.
   - Emphasis on reviewing just the science/assessment.

3. Products: (Reviewer’s Reports) + (2 Science Reports)
   http://www.nefsc.noaa.gov/nefsc/saw/ (see SAW56)
   http://www.nefsc.noaa.gov/publications/ (see Ref. Docs.)

4. Management advice:
   • SAW/SARC reports support SSC in making ABC recommendation.
   • Primarily developed by Tech. Committees, PDTs, SSC.
The 56th Northeast Regional Stock Assessment Review Committee (56th SARC)  
Stephen H. Clark Conference Room – Northeast Fisheries Science Center  
Woods Hole, Massachusetts  
Feb. 19-22, 2013

SARC Chairman:
Dr. Ed Houde  
(Univ. of Maryland; MAFMC SSC)

SARC Panelists:
Dr. Kevin Stokes 
(Stokes.net.nz, NZ; CIE)

Dr. Michael Smith  
(CEFAS, UK; CIE)

Dr. Martin Cryer  
(Director of Fisheries Management., NZ; CIE)

A. Atlantic surfclam
B. White hake
(A.) Atlantic surf clam
1. Estimate catch from all sources including landings and discards. Describe the spatial and temporal patterns in landings, discards, fishing effort and LPUE. Characterize the uncertainty in these sources of data.

2. Present the survey data being used in the assessment (e.g., regional indices of abundance, recruitment, state surveys, age-length data, relevant cooperative research, etc.). Investigate the utility of commercial LPUE as a measure of relative abundance. Characterize the uncertainty and any bias in these sources of data.

3. Evaluate the current stock definition in terms of spatial patterns in biological characteristics, population dynamics, fishery patterns, the new cooperative survey, utility of biological reference points, etc. If appropriate, recommend one or more alternative stock definitions, based on technical grounds. Integrate these results into TOR-4.
4. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series (integrating results from TOR-3), and estimate their uncertainty. Include a historical retrospective analysis to allow a comparison with previous assessment results. Review the performance of historical projections with respect to stock size, recruitment, catch and fishing mortality.

5. State the existing stock status definitions for “overfished” and “overfishing”. Then update or redefine biological reference points (BRPs; point estimates or proxies for $B_{MSY}$, $B_{THRESHOLD}$, $F_{MSY}$ and MSY) and provide estimates of their uncertainty. This should be carried out using the existing stock definition and, if possible, for the recommended “alternative” stock definitions from TOR-3. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for BRPs. Comment on the appropriateness of existing BRPs and the “new” (i.e., updated, redefined, or alternative) BRPs.

6. Evaluate stock status with respect to the existing assessment model and with respect to any new assessment model. Determine stock status based on the existing stock definition and, if appropriate and if time permits, for “alternative” stock definitions from TOR-3.
   a. When working with the existing model, update it with new data and evaluate stock status (overfished and overfishing) with respect to the existing BRP estimates.
   b. Then use the newly proposed model and evaluate stock status with respect to “new” BRPs and their estimates (from TOR-5).
7. Develop approaches and apply them to conduct stock projections and to compute the statistical distribution (e.g., probability density function) of the OFL (overfishing level) and candidate ABCs (Acceptable Biological Catch; see Appendix to the SAW TORs).
   a. Provide numerical annual projections (3-5 years). Each projection should estimate and report annual probabilities of exceeding threshold BRPs for F, and probabilities of falling below threshold BRPs for biomass. Use a sensitivity analysis approach in which a range of assumptions about the most important uncertainties in the assessment are considered (e.g., terminal year abundance, variability in recruitment).
   b. Comment on which projections seem most realistic. Consider the major uncertainties in the assessment as well as sensitivity of the projections to various assumptions.
   c. Describe this stock’s vulnerability (see “Appendix to the SAW TORs”) to becoming overfished, and how this could affect the choice of ABC.

8. Review, evaluate and report on the status of the SARC and Working Group research recommendations listed in the most recent SARC reviewed assessment and review panel reports. Identify new research recommendations.
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<tr>
<th>Atl. surfclam</th>
<th>SARC56 Panel Findings (1)</th>
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<tbody>
<tr>
<td>• Stock is not overfished and overfishing is not occurring in 2011</td>
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<td>• The surfclam fishery has been concentrated in relatively small areas. Much of the stock area has not been heavily fished. This explains the low overall $F$ estimates, and is consistent with previous assessments.</td>
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<td>• Projections: very low probabilities of the stock being over-fished in any of the projected years.</td>
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<td>• The assumed natural mortality rate ($M = 0.15$) is uncertain and may overstate stock productivity. Further work on $M$ is recommended to better understand stock vulnerability.</td>
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<td>• The SARC could not decide whether to recommend changing from the current single stock definition. This should not prevent conducting stock assessments by subareas, nor should it preclude area-based management, if appropriate.</td>
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• The rationale for using $B_{1999}$ as a basis for BRPs was questioned and needs to be clearer.

• Trends in landings per unit effort (LPUE) during the past decade are downward, except for GBK. Recent LPUE on GBK: five times higher than elsewhere.

• Commercial LPUE trends are similar to the declining surfclam stock trends estimated in the analytical assessment. LPUE could potentially serve as a useful index of abundance.
EEZ Catch of Atl. surfclam

EEZ catch ranged 15-20 kmt meats. Mostly harvested from New Jersey region.
Commercial LPUE of Atl. surfclam

In recent yrs: LPUE has declined, except for GB
Recruitment: Declined throughout 1990s. Has Increased recently.
Fishing mortality over time, and associated overfishing level, $F_{\text{Threshold}}$. 

Not Overfishing in 2011

$F'_{11} \sim 0.03$
Spawning Stock Biomass over time, and associated overfished level, $SSB_{\text{Threshold}}$.

- $SSB_{11} \sim 1,060 \text{ kmt}$
- $SSB_{\text{THRESH}} \sim 486 \text{ kmt}$

Not Overfished in 2011
### Spawning Stock Biomass by Area in 2011

<table>
<thead>
<tr>
<th>Area</th>
<th>Biomass (kmt meats)</th>
<th>Percentage of Biomass</th>
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<tbody>
<tr>
<td>N (= GB)</td>
<td>357</td>
<td>34%</td>
</tr>
<tr>
<td>S (=all else)</td>
<td>703</td>
<td>66%</td>
</tr>
<tr>
<td>Total (N+S)</td>
<td>1,060</td>
<td>100%</td>
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## Atl. surfclam: Biological Reference Points (BRP)

<table>
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<tr>
<th>Reference Point</th>
<th>2010 Last assessment</th>
<th>Revised</th>
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<tr>
<td>$F_{MSY}$</td>
<td>$M=0.15 \text{ y}^{-1}$</td>
<td>Same</td>
</tr>
<tr>
<td>$B_{1999}$</td>
<td>1086 thousand mt meats</td>
<td>1944 thousand mt meats</td>
</tr>
<tr>
<td>$B_{MSY\ proxy} = \frac{1}{2}B_{1999}$ (target)</td>
<td>543 thousand mt meats</td>
<td>972 thousand mt meats</td>
</tr>
<tr>
<td>$B_{Threshold} = \frac{1}{2}B_{MSY\ proxy}$</td>
<td>272 thousand mt meats</td>
<td>486 thousand mt meats</td>
</tr>
<tr>
<td>$MSY$</td>
<td>NA</td>
<td>98 thousand mt meats</td>
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• Re-Investigate using LPUE as an index of abundance in the assessment. Undertake formal investigation of commercial LPUE for use in future assessment model.

• 1999-based biomass ref. pnts need to be better justified and possibly reconsidered.

• Determine whether a different assumed value of M (natural mortality) should be used in the population model and as basis for BRPs. Reconsider BRPs. Stock may be more vulnerable.

• Better characterization of clam habitat on GBK

• Further work on conversion factors between clam size, meat yield, and landings.
(B.)  White hake

Occurs primarily in Gulf of Maine
Previous White hake Assessment (GARM-III, CRD08-15, 2008)

1. overfished
2. overfishing

Most recent Assessment (CRD13-04, 2013)

1. NOT overfished
2. NOT overfishing
White hake:

F and BRP

In 2011: Not overfishing.
White hake: SSB and BRP

In 2011: Not overfished