Board Working Group Report on Revisiting Allocation

Atlantic Menhaden Management Board
August 2015

Vision: Sustainably Managing Atlantic Coastal Fisheries
Revisiting Allocation

Background

• Amend 2: Board to revisit allocation in 2016

• State by state allocation currently
  – Allocation based on average landings from 2009-2011.
Same Board subgroup working on ERPs
Explored full range of allocation options
Old and new concepts
Started broad then focus on the specifics

**Draft Goal:**
- Fair and equitable distribution of coastwide total allowable catch among states/jurisdictions, regions, and fishery interests.
Revisiting Allocation

• WG considered landings history, the performance of state fisheries, and the challenges associated with the current management program.

• Those challenges include:
  – minimizing discard mortality
  – accommodating small-capacity fisheries, true bycatch fisheries, small scale fisheries and fixed-gear fisheries
  – aligning harvest opportunities with the distribution and size composition of the resource;
  – ensuring equitable access to quota among gear types and management units;
  – and striking a fair and equitable balance between current needs/interests/capacity and future growth opportunities
Revisiting Allocation

• **A: Coastwide quotas**

• **B: State by State quotas**

• **C: Regional quotas**
  - Two regions: (1) North (2) South. Machipongo Inlet, VA is divide
  - Two regions: (1) Coastwide (2) Chesapeake Bay
  - Three regions: (1) New England (2) Mid-Atlantic (3) Ches Bay South
  - Four regions: (1) New England (2) Mid-Atlantic (3) Ches Bay (4) South Atlantic

• **D: Quotas by disposition (i.e., bait, reduction)**
E: Fleet Capacity Quotas

- WG spent a majority of time discussing the fleet capacity allocation option.
  - Reviewed gear specific landings history
  - Evaluated gear permitting and management in states
  - Examples of three and two fleet options
1. Small Fleet

- Types of gears include, but not limited to, cast net, trawl, trap/pot, haul seine, fyke net, hook and line, other.

- Approximately 3.14 million pounds annually or 0.7% of coastwide total allowable catch (TAC) from 2009-2012.

- Managed with a soft quota
  - (e.g., 1% of coastwide TAC, or 3.5 – 5.0 million lbs)
2. Medium Fleet

- Types of gears include, but not limited to, pound nets, gill nets
- Approximately 18.92 million pounds annually or ~5% of the coastwide TAC.
- Managed with a soft or hard quota
  – (e.g., 6-8% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.
3. Large Fleet

- Types of gears include, but not limited to, purse seines and pair trawls
- Approximately 408.7 million pounds annually or ~95% of the coastwide TAC.
- Managed with a hard quota
  - (e.g., 93-96% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.
1. Small Fleet

- Types of gears include, but not limited to, cast net, trawl, trap/pot, haul seine, fyke net, hook and line, pound nets and gill nets.

- Small capacity fleet could be defined by a trip limit.

- Alternatively, trip limits could be implemented if small capacity harvest fires established triggers (see below).

- Approximately 22 million pounds annually or 6% of coastwide landings from 2009-2012.

- Managed with a soft quota (e.g., 6% of coastwide TAC), but this harvest would be allowed to fluctuate above the quota in year when fish are available.
1. Small Fleet Continued

- Annual review of small scale catches relative to coastal catch – these fisheries operate in aggregate on a small portion of the coastal TAC.
- Set triggers if small scale fleet harvest grows to an unacceptable level. (e.g. implement trip limits, return to state by state quotas for small scale fleets).
- States could implement management to prevent substantial growth in their small scale fisheries.
2. Large-Capacity Fleet:

- Types of gears include, but not limited to, purse seines and pair trawls
- Approximately 408.7 million pounds annually or ~95% of the coastwide TAC.
- Managed with a hard quota (e.g., 93-96% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.
Two Fleet Example

- Quota
- Industrial fleet harvest
- Small capacity bait harvest
- Total harvest

Percentage of quota vs. Time
• **F: Minimum Fixed Quotas**

  Each state would receive a minimum fixed percent quota (e.g., 1% of the coastwide TAC). If a state’s quota was not used it could be transferred.

• **G: Seasonal Quotas**

  This is a better management option implemented under a regional or state by state quota allocation.
Allocation Timeframes

- Potential Allocation Timeframes

- 2009-2011: Status quo, timeframe used for state by state allocation in Amendment 2

- 2009-2012: Similar timeframe to Amendment 2, but includes 2012 which was the last year prior to the implementation of Amendment 2 in 2013.

- Weighted allocation with half weight for a long period, and half weight for more recent short period.

- Example: half weight for 2009-2012, and half weight for 2013-2015
Issues for Further Consideration

- Bycatch allowance
- Episodic Events Set Aside
- quota rollovers, paybacks, and transfers
- location of harvest
- accommodation for ecosystem-based management programs that establish harvest controls at local/regional levels.
Update on Menhaden Socioeconomic Analysis
Request for Proposals update

• Goal: socioeconomic analysis of the Atlantic menhaden commercial fisheries

• CESS met in September and October to discuss objectives and deliverables

• Primary objective: explore social equity and distributional consequences of management change on both the Atlantic menhaden commercial bait and reduction fisheries
Coastwide bait fishery deliverables

• Trend in average and total revenues from menhaden (by state and year)
  – Distribution of revenues, operational costs

• Total bait sales and proportion of menhaden sales

• Identify the clients or purchasers (both commercial and recreational)
  – Identify the product forms and prices
    • Wholesale with prices and area
    • Retail with prices and area
Reduction fishery deliverables

• Trend in landings and revenues ideally with operational costs
• Time series with capacity utilization and fixed costs
• Time series in quantity of quota allocated, quota landed, and menhaden processed
• Importance in the community in terms of how many direct and ancillary jobs supported, etc.
  – Change over time
• Characterization of the coastwide menhaden fishery is a necessary first step **before** economic analyses to explore allocation trade-offs

• Proposed project will provide useful socioeconomic information, but not optimize allocation

• Recommend that Board Allocation Subgroup meet with CESS RFP Subcommittee
  
  – Short delay in project start, but deliverables expected early 2017 still
Ecosystem Management Objectives Workgroup (EMOW)

Shanna Madsen
BERP WG Coordinator
Background

• The BERP WG has been tasked to develop ecological reference points (ERPs)
  – Incorporate predatory demands

• *Ecological Reference Points for Atlantic Menhaden* report
  – Presented a suite of potential modeling approaches for SEDAR 40 feedback
  – Suggested facilitated workshops to develop specific management objectives
  – Necessary to guide model development
Introduction

• Ecosystem Management Objectives Workshop
  – Dr. Michael Jones, SEDAR 40 Chair
  – Webinar Aug 14th
    • Reviewed agenda, expectations, workshop goals
    • Great Lakes case-study

• Workshop Aug 31st- Sept 1st
  – Report in meeting materials
Structured Decision Making

• Logical, organized, transparent approach to identify and evaluate options
  – Define objectives and associated measures of performance
  – Identify decision alternatives
  – Evaluate the consequences of alternatives relative to objectives
    • Consider uncertainty and risk
  – Evaluate trade-offs among competing objectives
  – Identify “best” alternatives through balancing trade-offs and reducing risk
  – Implement and monitor
Structured Decision Making

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Setting Objectives

• Fundamental
  – The end you are trying to achieve, statements about what a group truly values

• Means
  – “Stepping stones” – the means that get us to the ends represented by our fundamental objectives

• Performance measures
  – How you determine you have met an objective
Setting Objectives

• Fundamental
  – Ensure a full and enjoyable retirement

• Means
  – Have sufficient retirement savings

• Performance measure
  – Retirement risk calculator
Fundamental Objectives

• Achieve broad public support for management
• Sustain menhaden to provide:
  – For fisheries
  – For predators
  – Historical and cultural values
  – Other ecosystem services
  – →All to provide both social and economic benefits
• Minimize risks to sustainability due to a changing environment
• Provide stability for all types of fisheries (for both menhaden and species that depend on menhaden)
• Sustain ecosystem resiliency or stability
Means Objectives

• Science
  – Increase knowledge base
  – Better communication of science
  – Account for variation

• Management
  – Define clear objectives
  – Provide timely advice

• Ecosystem
  – Ensure adequate supply of menhaden for predator groups & food web

• Account for spatial/temporal variation when managing trade-offs

• Minimize the risks of collapse
  – For menhaden, the fishery, and the ecosystem
Performance Measures

• Sustain menhaden to provide for fisheries
  – Meeting or exceeding (positively) reference points
  – Non-truncated age distribution
  – Achieving yield objectives for all fisheries

• Sustain menhaden to provide for predators
  – Same as for fishery, assuming ERPs are used
  – Predators in a healthy nutritional state
  – Distribution of menhaden relative to predator requirements

• Provide stability for all types of fisheries (both direct and indirect)
  – Variability in employment and yield
Outcome

• Discussed intersection between BERP WG models and fundamental objectives
  – Agreed that not all objectives can be met by ecosystem models

• BERP WG assessed the ability of each modeling approach to address EMOW-identified management objectives

• Established potential objectives for ecosystem management

• This is a first step in SDM
  – Management strategy evaluation
Ecological Reference Point
Recommendations for Draft
Amendment 3 Development

Menhaden Board Meeting
Annual Meeting, St. Augustine, FL
November 3, 2015
Background

• During the SEDAR process put forth a number of tools to address ERPs
• BERP WG used the EMOW report and the SEDAR 40 peer review to:
  – *Identify* fundamental objectives and performance measures that could be addressed using ecological models and approaches
  – *To assess* the ability of each ERP model or tool to address management objectives & performance metrics from the EMOW report.
  – *Make recommendations* on the appropriate tools to move forward.
• BERP WG recognizes that some Fundamental Objectives cannot be addressed without outside help and expertise

  – Example: “Sustain Atlantic menhaden to provide for historical and cultural values” or “Achieve broad public support for management”

  – Requires additional data (e.g., socioeconomic) or identification of relationships that are outside the purview of the BERP WG
## Original Suite of Modeling Approaches

<table>
<thead>
<tr>
<th>APPROACH</th>
<th>BRIEF SUMMARY OF ERP/EBFM PRODUCTS</th>
<th>TIME REQUIRED TO DEVELOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem indicators</td>
<td>Ecosystem indicators</td>
<td>1-2 months, annual updates</td>
</tr>
<tr>
<td>Nutrition Ref Points</td>
<td>Ecosystem indicators</td>
<td>1-2 months. <strong>Additional data collection program required.</strong></td>
</tr>
<tr>
<td>Production models</td>
<td></td>
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<tr>
<td>Steele-Henderson</td>
<td>MSY-based ERPs for menhaden, consumption estimates</td>
<td>6 months-1 year</td>
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<tr>
<td>Single-species models</td>
<td></td>
<td></td>
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<tr>
<td>BAM-based forage services ERPs</td>
<td>SPR-based ERPs for menhaden</td>
<td>Completed. Associated harvest calcs deliverable by early 2015.</td>
</tr>
<tr>
<td>BAM or SS-based time-varying M</td>
<td>SPR-based ERPs for menhaden</td>
<td>1 year</td>
</tr>
<tr>
<td>tuned to consumption index</td>
<td></td>
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<tr>
<td>BAM-based MSE</td>
<td>MSE platform for testing performance of single-species ERPs</td>
<td>Planned for 2015</td>
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<tr>
<td>Multi-species models</td>
<td></td>
<td></td>
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<tr>
<td>MSVPA or MSSCAA + BAM projections</td>
<td>Estimate of minimum forage needs for major predators</td>
<td>Near completion. Could be available early 2015.</td>
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<tr>
<td>MSSCAA</td>
<td>Forage services ERPs for menhaden, consumption estimates, platform for MS-MSE</td>
<td>1 year to finalize model, 3-4 years for MS-MSE</td>
</tr>
<tr>
<td>Ecopath with Ecosim</td>
<td>Forage services ERPs for menhaden, consumption estimates, platform for MS-MSE</td>
<td>2 years for model development, 3-4 years for MS-MSE</td>
</tr>
</tbody>
</table>
Model Selection

• Models were selected based on:
  – ability to address multiple objectives
  – ability to predict and monitor performance measures
  – technical merits
  – adherence to the SEDAR recommendations

• **Recommended** moving forward with surplus production & multispecies statistical catch-at-age

• **Recommended** ecosystem indicators as monitoring tool
  – The majority recommended this contextual approach
  – Some felt that stand-alone control rules could be based on EI
  – Examine more closely at our next meeting
Table 1: BERP WG recommended modeling approaches to develop ERPs for Atlantic menhaden and the fundamental objectives they address

<table>
<thead>
<tr>
<th>FUNDAMENTAL OBJECTIVES</th>
<th>PERFORMANCE MEASURES</th>
<th>Timeline for management use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustain menhaden to provide for fisheries</td>
<td>Abundance/biomass of menhaden</td>
<td>X</td>
</tr>
<tr>
<td>Sustain menhaden to provide for predators</td>
<td>Menhaden yield objectives</td>
<td>X</td>
</tr>
<tr>
<td>Provide stability for all types of fisheries</td>
<td>Age Composition</td>
<td>X</td>
</tr>
<tr>
<td>Historical distribution (Age comp as proxy)</td>
<td>Abundance/biomass of predators</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Predator yield objectives</td>
<td>X</td>
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<td></td>
<td>Predator nutrition</td>
<td>X</td>
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<td></td>
<td>Prey availability relative to predator distribution</td>
<td>X</td>
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<tr>
<td></td>
<td>Stability in yield for directed menhaden fisheries</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Stability in yield for non-menhaden fisheries</td>
<td>X</td>
</tr>
</tbody>
</table>

**Single-Species Models**

- **BAM Statistical Catch-at-Age Model (current model)**
  - Abundance/biomass of menhaden: X
  - Menhaden yield objectives: X
  - Age Composition: X
  - Historical distribution (Age comp as proxy): X
  - Stability in yield for directed menhaden fisheries: X
  - Timeline for management use: Ready now

**Multi-Species Models**

- **Surplus Production**
  - Abundance/biomass of menhaden: X
  - Menhaden yield objectives: X
  - Age Composition: X
  - Historical distribution (Age comp as proxy): X
  - Stability in yield for directed menhaden fisheries: X
  - Timeline for management use: 6 months-1 year to finalize, 2-3 years for committee review, peer review

- **Steele-Henderson Catch-at-Age**
  - Abundance/biomass of menhaden: X
  - Menhaden yield objectives: X
  - Age Composition: X
  - Historical distribution (Age comp as proxy): X
  - Stability in yield for directed menhaden fisheries: X
  - Timeline for management use: 1 year to finalize model, 2-3 years for committee review, peer review

- **Multi-species Catch-at-Age (MSSCA)**
  - Abundance/biomass of menhaden: X
  - Menhaden yield objectives: X
  - Age Composition: X
  - Historical distribution (Age comp as proxy): X
  - Stability in yield for directed menhaden fisheries: X
  - Timeline for management use: 1 year to finalize model, 2-3 years for committee review, peer review

*: Possible to develop a spatially-explicit version of the model that would meet that performance objective, but would require extensive additional work (10+ yrs)

Whittled list down based on the objectives defined in EMOW Report
ERP Timeline

• Full process will take 3-4 years to complete
  – Implement the code and test
  – Gather, update, vet the data on predators and prey (catch, samples, indices, diet data, etc.)
  – Examine sensitivity analysis, diagnostics, and model behavior: choose final base runs
  – Compare with external efforts
    • (Ecopath w Ecosim, another surplus production model)
  – Update and get feedback from the Board
  – Develop TOR and go through peer review
  – After acceptance by Review and Board, conduct MSE
In the Interim...

- **Recommended** the use of the BAM single-species reference points accepted from Benchmark

- Board may consider the use of *ad hoc* ecological approaches (such as Lenfest and others) or **any** approach they feel necessary
  
  – **Did Not Recommend** *ad hoc* approaches as outlined in a previous memo and after reconsideration

- If the BERP WG recommendations are approved we will move forward with the assessment process
Questions?

Menhaden Board Meeting
Annual Meeting, St. Augustine, FL
November 3, 2015
Amendment 3 Timeline Options

Atlantic Menhaden Management Board
August 2015

Vision: Sustainably Managing Atlantic Coastal Fisheries
Two Issues for Amendment

• 1. Allocation
• 2. Reference Points

Things to remember:
• 187,880 mt TAC for 2015 and 2016
• Stock Assessment Update in 2017
Allocation Considerations

- Board WG has potential list of allocation options compiled
- CESS Socio-economic analysis available in early 2017
- Does the Board want to wait for the socio-economic analysis before moving forward revisiting allocation?
1. Don’t wait for socio-economic analysis
   - Implementation in 2017

2. Wait for socio-economic analysis:
   - PID Feb 2017, Amendment Aug 2017
   - Implementation in 2018.
Reference Points

• Current reference points
  – Passed peer review SEDAR 40
  – approved for management use
  – not yet part of a management document

• Ecosystem Reference Points
  – BERP ERPs available 2019-2020 to meet management objectives
  – Lenfest ERP available, but BERP WG does not recommend using for management
Reference Point Options

1. Addendum to consider current ref pts, and lenfest ERP
   - Implementation in 2017

2. Amendment to consider current ref pts, and lenfest ERP
   - Implementation for 2017
   - Implementation for 2018 (matches with CESS)

3. Amendment to consider current ref pts, and all other ERP options.
   - Implementation in 2020
Questions?