

Options for addressing the Ecological Reference Points (ERPs) task

ASMFC Spring Meeting
2012

Overview

- Multispecies TC presentation of Multiple Objective Decision Analysis (MODA) during winter meeting
- Board requested
 - Problem statement
 - Budget breakdown
 - List of potential funding sources
- Will also discuss additional options

History of ERP Task

- May 2010 Board tasks TC to develop **“alternative reference points”** (see Motion #5)
- Biomass (SSB) based options (single species)
- Numbers based options (single species)
- Options that account for predation (multi species)
 - Joint with Multispecies TC

History of ERP Task

- MSTC and AMTC developed short list of potential reference point approaches
- Each with specific management goal
- March 2011, Board tasks Menhaden and Multispecies TC to “**proceed with work on the Multispecies Approach as a priority**”
- “Multispecies Approach” referred to TC report Goal 3: “**Increase forage base for predators of menhaden**”

History of ERP Task

- If multispecies approach was adopted, TC requested the following Board direction:
“
 1. quantify goals for establishing predator-prey ratio threshold or triggers,
 2. quantify magnitude of the desired increase in forage availability, and
 3. identify the predator species of interest given additional model development would be necessary to include species other than those considered thus far.“

Problem statement

- Since March 2011, Board has been focused on interim (MSP based) reference points
- TC has not received direction necessary to move forward
- Goal of “increasing forage base for predators” is still too broad
 - Ex: Which predators are you most concerned about?
 - Ex: Increase forage base how much? How much predator biomass do you want to support?

Current situation

- TC has been given task, but not the tools to complete it
- MODA proposed during February meeting
- How to move forward???
 - Rescind task
 - Trial and error
 - Board provides TC with management goals
 - Several options to accomplish this

Moving forward

- Option 1 – Rescind task
- MSP reference points intended to be “interim”, but don’t need to be
- Discussions during February 2012 Board meeting suggested Board may not fully support multispecies management

Moving forward

- Option 2 – Trial and error

Quantify the amount of menhaden biomass necessary to sustain the forage needs of striped bass, bluefish, and weakfish predators at their threshold biomass levels.

- Biomass reference point
 - indicate when menhaden biomass has dropped too low to support key predators at their thresholds
- Fishing mortality rate to maintain that level of menhaden biomass

Moving forward

- Stated interpretation probably not what Board had in mind
- Provide feedback to TC, and we try again...and again...
- Not efficient use of time
- Unlikely to pass peer review

Moving forward

- Option 3 – Board provides TC with specific management objectives
- Option 3A – Multiple Objective Decision Analysis
 - Presented to Board in February
- Option 3B – Facilitated workshops

Moving forward

	3A (MODA)	3B
Develop stakeholder working group	✓	✓
Facilitated workshops to define management objectives	✓	✓
TC develops reference points	✓	✓
Stakeholder working group defines performance criteria	✓	
Modeling to evaluate performance of reference point options	✓	
Working group evaluates results	✓	

Hypothetical Example - MODA

- Working group reaches consensus:
 - Objective 1: maintain self-sustaining menhaden stock
 - Objective 2: maintain enough forage to support striped bass at target biomass
 - Objective 3: maintain bait and reduction fishery harvest potential of min X lbs/year
- Identify potential ERPs
 - “Predator-prey ratios” addresses Objectives 2
 - “Depletion from K” approach addresses Objective 1
- Evaluate ability of ERPs to achieve objective

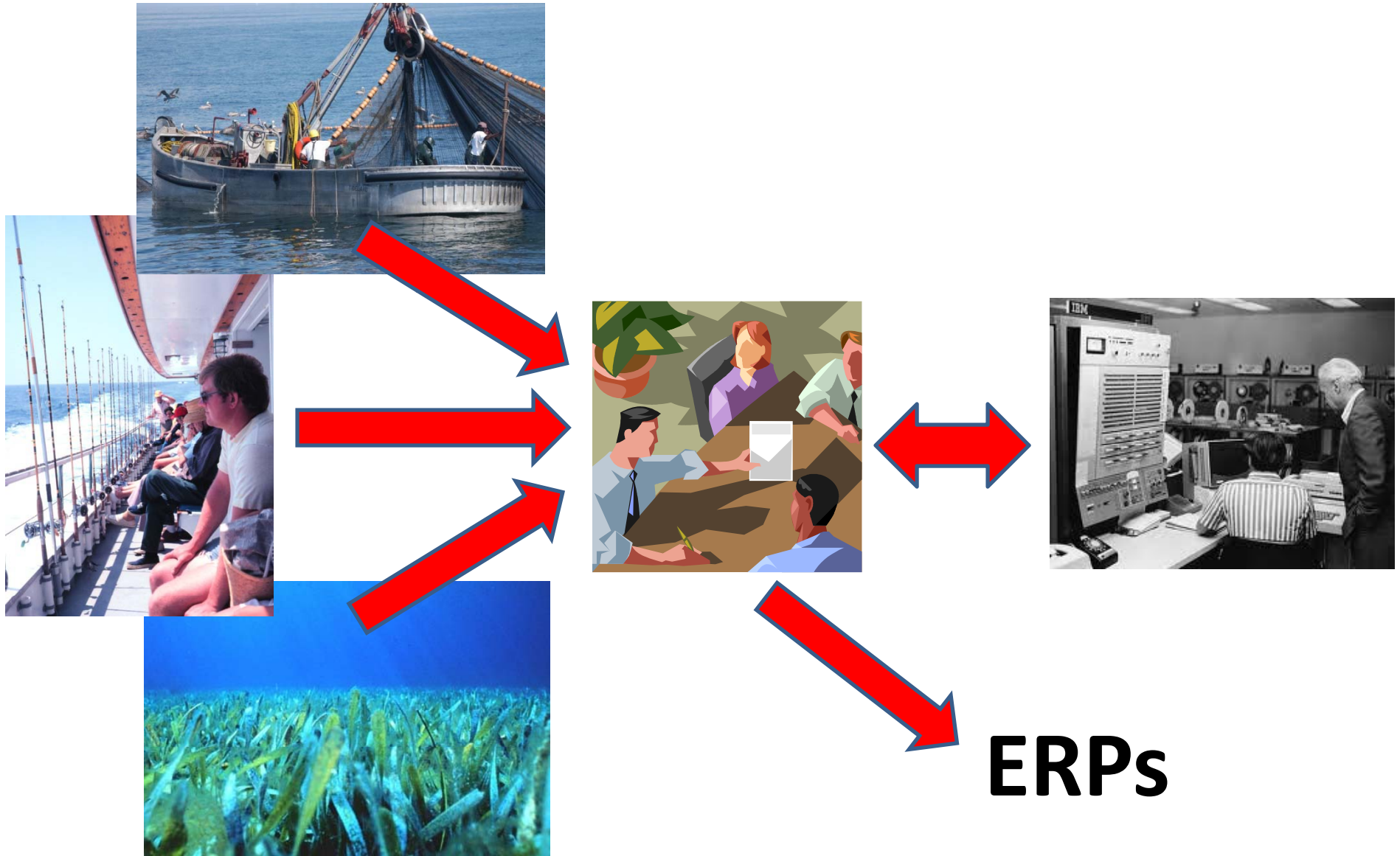
MODA Products

1. Set of rigorously evaluated ERPs for presentation to Atlantic menhaden Board
2. Set of menhaden and predator modeling tools for future use.

Option 3B – Facilitated Workshops Only

- Two facilitated, small-group workshops with representative managers and stakeholders
- Product = set of specific management goals for menhaden and its key predators of interest
- Allow TC to refine and complete their task
- ERPs untested; less likely to pass peer review

Option 3A – Multiple Objective Decision Analysis



Similar projects

- Not a new concept
- MODA used widely for conflicting interest issues
- Similar processes to evaluate harvest policies
 - ASMFC Adaptive Resource Management (ARM)
 - Florida grouper

Estimated Budgets

Option	Timeframe for completion	Budget
Current situation	1 year	ASMFC Multispecies budget = \$20,000/year
3A – MODA	2 years	+\$150,000/year
3B - Workshops	1.5 years	+\$50,000 total

Estimated Budgets

Option	Timeframe for completion	Budget
Current situation	1 year	ASMFC Multispecies budget = \$20,000/year
3A – MODA	2 years	+\$150,000/year
Horseshoe crab ARM process		\$100,000/year +in-kind from USFWS
3B – Workshops	1.5 years	+\$50,000 total

Additional Funds - Budget Breakdown

Item	Option 3A MODA	Option 3B
Facilitator(s)	\$20,000	\$20,000
Travel	\$30,000	\$30,000
Modeling consultant	\$100,000	
Total annual	\$150,000	
Total for project	\$300,000	\$50,000

Relative Effort, Pros, & Cons

	Option 1 MODA	Option 2 Workshops
Effort	High	Moderate
Pros	<ul style="list-style-type: none"> -Explicit management goals & objectives -Integrated manager and stakeholder involvement -Collaborative model development -Rigorous ERP testing and evaluation -Consensus ERP recommendations for Board 	<ul style="list-style-type: none"> -Explicit management goals & objectives -Integrated manager and stakeholder involvement
Cons	<ul style="list-style-type: none"> -Significant investment of time and money 	<ul style="list-style-type: none"> -No rigorous ERP testing and evaluation

Potential Funding Sources

- Will depend on option chosen:
 - NOAA
 - Private foundations and trusts
 - Mix of stakeholder groups
- Must have Board support before approaching funding sources

Timeline

- Need input at this or next board meeting to meet 2015 deadline.
- Alternative ACTION:
 - Option 1: Rescind ERP task
 - Option 2: Approve workshop only concept
 - Option 3: Approve MODA concept
- If no action, TC will interpret ERP task (trial and error)

Board Subcommittee Involvement

- Current Situation
 - None
- Option 1: MODA
 - 4 meetings and 2-4 conference calls per year for 2 years
- Option 2: Facilitated Workshops Only
 - 2 meetings over next 6-8 months, plus 2-3 conference calls total

Relative Effort

Goup	Current Situation	Option 1 MODA	Option 2 Workshops
MS & AM TCs	High	High	High
ASMFC Staff	Moderate	High	Moderate
Board subcommittee	-	High	Moderate
Outside modeler		High	-

Management Board

- Approve Working Group & Modeling Team



Working Group

- Specify mgmt objectives & performance measures



Management Board

- Approve mgmt objectives & performance measures



Working Group

- Identify ERP options to consider
- Identify critical uncertainties



Management Board

- Review recommendations
- Make final decision on ERPs



Working Group

- Consider tradeoffs
- Recommend ERPs to Board



Working Group

- Evaluate ERP performance



Modeling Team

- Assemble data, build models
- Demonstrate ERP performance
- Explore sensitivities



Working Group



Modeling Team

- Select ERP options to consider
- Identify critical uncertainties
- Recommend weighting of alternative models/scenarios



Working Group



- Develop model structure:
 - Menhaden population
 - Key predator population(s)
 - Predator-prey link function
 - Environmental forcing functions
 - Fishery dynamics
 - Survey and landings data collection
- Pass simulated data through assessment model(s)
- Demonstrate performance of ERPs for each model/scenario

- Evaluate ERPs relative to performance measures – did ERPs meet Working Group’s needs?
- If yes, proceed to considering tradeoffs and making recommendations
- If no, follow up arrow...

Working Group

- Representatives from Atlantic Menhaden Board, reduction and bait industries, recreational fishing interests, environmental groups
- Modeling Team would include a contracted modeler and reps from Atlantic Menhaden TC and MSTC.

Similarities & differences between ARM & MODA

ARM

- Explicitly stated multiple management objectives for horseshoe crab and red knot populations
- Evaluated management options (e.g. harvest levels)
- **Harvest program implementation strategy**

MODA

- Explicitly state multiple management objectives for menhaden and major predator(s)
- Evaluate ecological reference points relative to management objectives
- **Reference point evaluation strategy**

Motion to recommend to the ISFMP Policy Board to task the Multispecies Technical Committee and the Menhaden Technical Committee with (1), to proceed with work on the Multispecies Approach as a priority; and (2), have the Menhaden Technical Committee prepare and present annual recruitment information to the board; and (3), utilize the goal to increase abundance in spawning stock biomass and to initiate an addendum to implement an interim reference point of 15 percent MSP level and develop a suite of management measures the board could use in managing the fishery.

Management Board

- Approve Working Group & Modeling Team



Working Group

- Specify mgmt objectives & performance measures



Management Board

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Working Group

- Identify ERP options to consider
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Management Board

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Working Group

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Working Group

- Evaluate ERP performance



Modeling Team

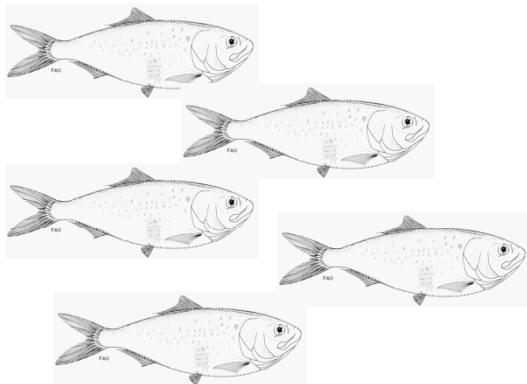
- Assemble data, build models
- Demonstrate ERP performance
- Explore sensitivities





*Working towards healthy, self-sustaining populations
for all Atlantic coast fish species or successful
restoration well in progress by 2015*

**Draft Public Information Document of
Amendment 2 to the ISFMP for Atlantic
Menhaden**





Timeline

- Feb 2012 - Board review PID for public comment
- Spring 2012 - Public Comment/Hearing Period for PID
- May 2012 - Board reviews public comment on PID, tasks PDT to develop Draft Amendment 2 (narrows the focus for management tools)
- Summer 2012 PDT develops Draft Amendment 2
- August 2012 - Board reviews Draft Amendment 2 for public comment
- Fall 2012 - Public Comment/hearing Period for Draft Amendment 2
- ASMFC 2012 Annual Meeting - Board reviews public comment on Draft Amendment 2 and finalizes the document





Purpose

- New interim F reference points approved Nov 2011
 - ❖ Based on MSP, intended to provide increased protection for spawning adults
 - ❖ Threshold $F_{15\%MSP}=1.32$
 - ❖ Target $F_{30\%MSP}=0.62$
- Based on the terminal estimate $F_{2008} = 2.28$, overfishing is occurring and the Board must take steps to reduce fishing mortality to the new target
- The purpose of the PID is to scope a suite of potential tools to manage the fishery towards the F target





Overview

- Timeline to Achieve the Fishing Mortality Target
- Timely and Comprehensive Catch Reporting
- Recreational Fishery Management Tools
- Commercial Fishery Management Tools
- *De Minimis* Requirements
- **How would you like the Atlantic menhaden fisheries to look in the future?**





1. Timeline to Achieve Target

- The Board must take steps to end overfishing immediately
 - ❖ Meet the threshold
- Reducing F to the target requires a longer time frame
- The Board is considering a 1 to 10 year time frame to achieve the target
- **If reducing F occurs over a longer time period should the reductions in landings be equal across years?**





Stock Assessment Update

- Apr 2012: Compile Data for Stock Assessment Update
- May 2012: Stock Assessment Modeling
- June 2012: Assessment Workshop
- July 2012: Finalize Stock Assessment Update and Draft Amendment 2
- Aug 2012: Review and approval of Draft Amendment 2 and 2012 Stock Assessment





Achieving Threshold

Landings (1000s mt)	2013	2014	2015	2016	2017
75	0.56	0.89	1.00	1.00	1.00
100	0.40	0.74	0.93	0.99	1.00
125	0.28	0.55	0.78	0.91	0.96
150	0.17	0.37	0.56	0.73	0.84
175	0.10	0.22	0.35	0.47	0.56
200	0.05	0.11	0.17	0.22	0.28
225	0.02	0.05	0.07	0.08	0.09





Achieving Target

Landings (1000s mt)	2013	2014	2015	2016	2017
75	0.21	0.62	0.91	0.99	1.00
100	0.09	0.35	0.66	0.88	0.96
125	0.02	0.15	0.38	0.59	0.76
150	0.01	0.05	0.14	0.27	0.40
175	0.00	0.01	0.04	0.07	0.11
200	0.00	0.00	0.00	0.01	0.02
225	0.00	0.00	0.00	0.00	0.00





2. Timely Catch Reporting

- Current catch reporting does not provide complete data, particularly in the bait fishery
- Better reporting would allow managers to monitor landings throughout the season
- It would also allow to more easily evaluate the effectiveness of particular management tools
- **How should the landings reporting system be improved?**





3. Recreational Measures

- Important bait in many recreational fisheries
- Currently no recreational fishery management measures have been implemented
- To reduce F , there is a need to explore other management options that could be used to control the recreational fishery





3. Recreational Options

- Option 1: Status quo
- Option 2: Size limits
- Option 3: Bag limits
- Option 4: Seasons
- Option 5: Area Closures
- Option 6: Gear Restrictions





4. Commercial Fishery

- Menhaden supports a reduction and bait fishery
 - Commercial Harvest in 2010
 - ❖ Reduction Fishery ~ 80% of total landings
 - ❖ Bait fishery is ~ 20% of total landings
- Several fisheries rely on menhaden for bait





4. Commercial Fishery

- Management changes proposed for both commercial bait and reduction fishery
- Harvest level scenarios to achieve the new threshold and target F rates will come from the 2012 stock assessment update





Commercial Options

- Option 1: Status Quo
 - ❖ Chesapeake Bay Harvest Cap
- Option 2: Trip Limits
- Option 3: Gear Restrictions
- Option 4: Season Closures
- Option 5: Area Closures





Commercial Options

- Option 6: Quotas
 - ❖ Need additional monitoring requirements
- Option 7: Effort Controls
- Option 8: Limited Entry





5. De minimis Requirements

- De minimis status may exempt a state from certain commercial or recreational measures, or monitoring requirements
- Not currently defined in the Atlantic Menhaden FMP
- **Should the Board Consider de minimis criteria?**
- **Should the criteria be specific to the commercial bait, commercial reduction and recreational fishery?**





Social and Economic Impacts

➤ Social and Economic Impacts

- ❖ CESS is drafting an impacts section
- ❖ Data sources currently available will be reviewed





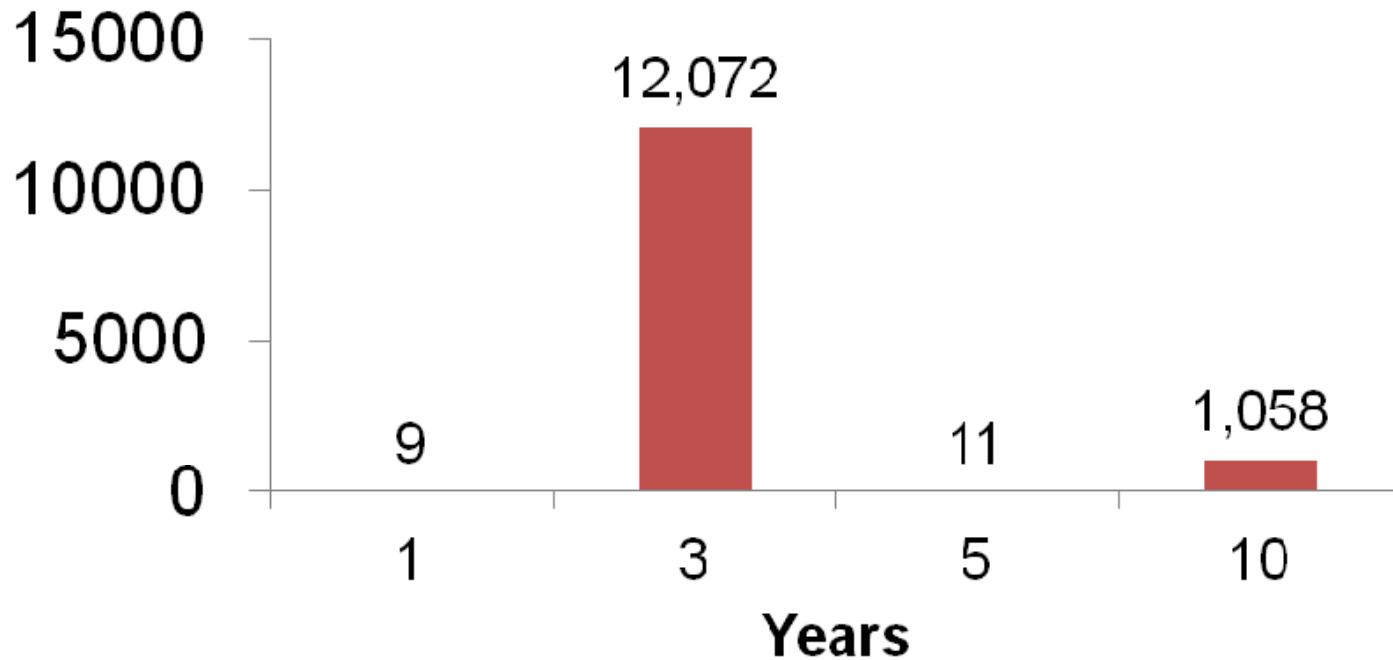
PID Comment Summary

- 22,641 comments received
- 104 personalized individual letters
- 18 organization letters
- 22,519 comments from form or co-signed letters (13 different letters)
- 12 public hearings in 12 states





Issue 1: Time to Achieve the Target



- 11,101 comments for ≥ 0.50 probability
- 72 comments for ≥ 0.75 probability





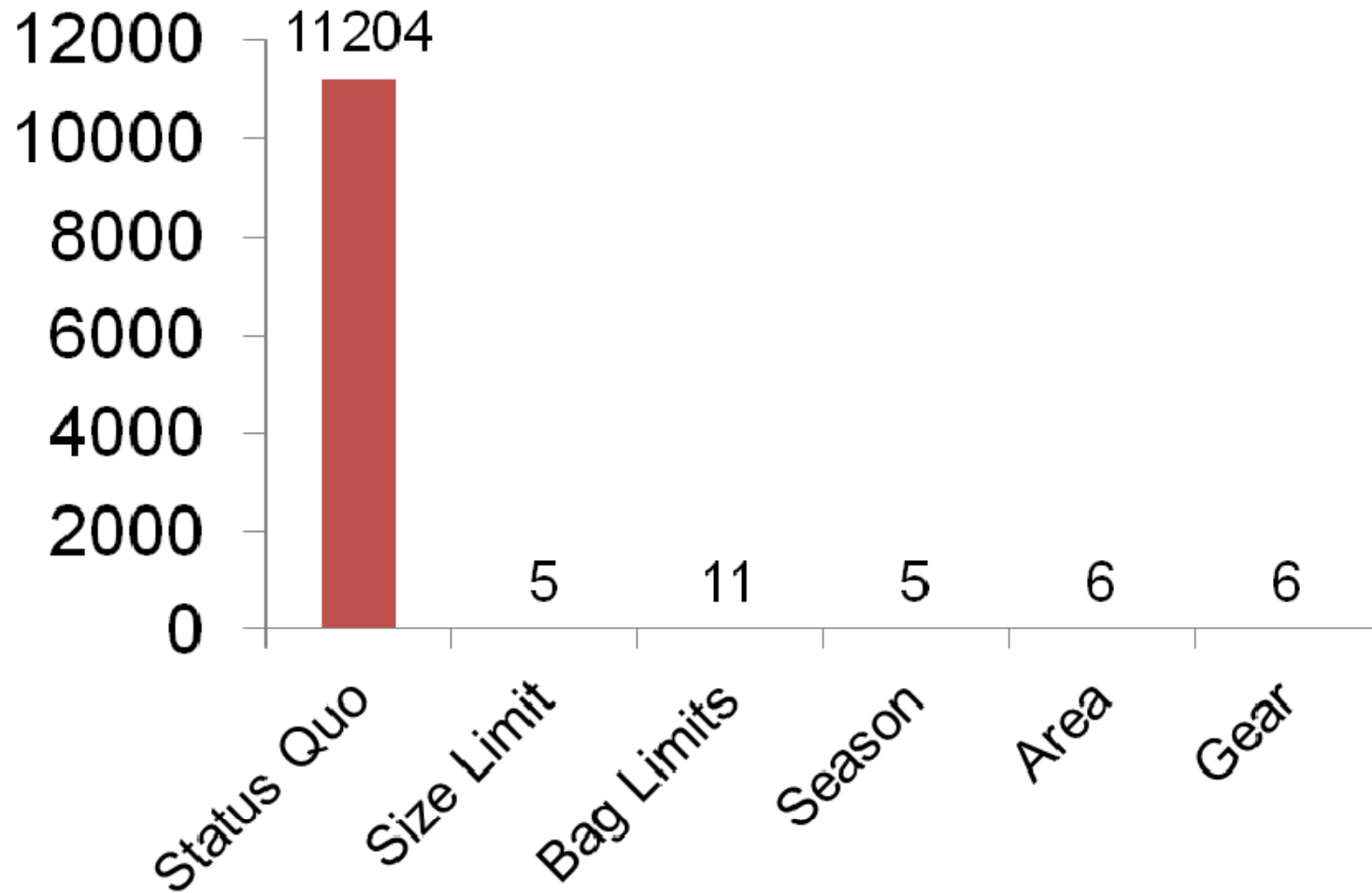
Issue 2: Reporting

- 12,240 favored more comprehensive and timely reporting system
- Weekly dealer reporting
- Weekly harvester reporting
- ACCSP data standards
- *De minimis* should not be exempt
- Comprehensive, transparent and enforceable.





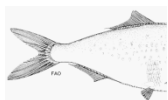
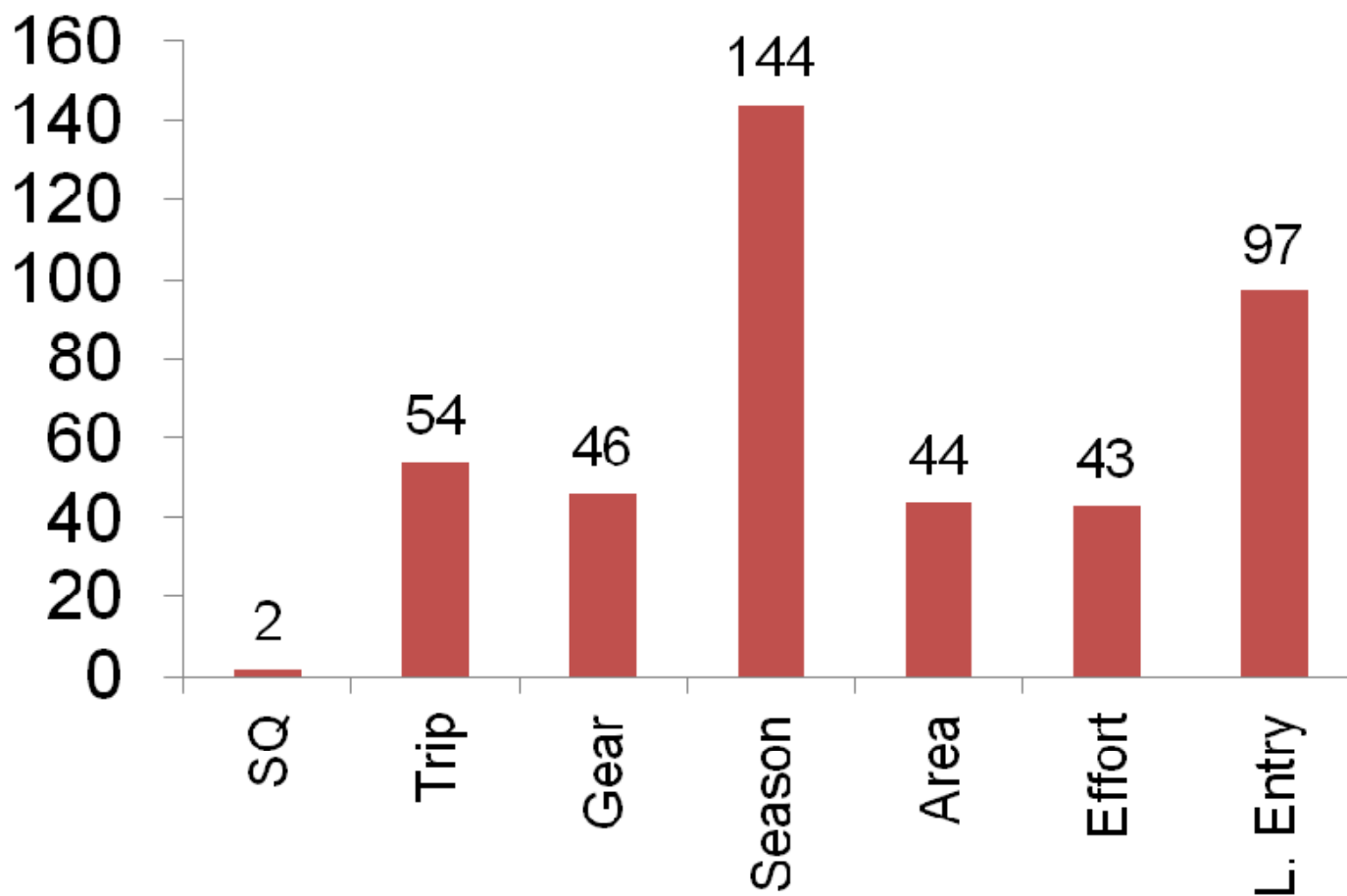
Issue 3: Recreational Measures





Issue 4: Commercial Measures

➤ 21,463 favored quotas





Issue 5: *De minimis*

- 11,119 favored including *de minimis* criteria in the FMP.
- *De minimis* criteria should be strict and evaluated annually for status determination
- *De minimis* states should still have to provide biological monitoring





Additional Comments

- Implement complimentary management measures in federal waters (EEZ)
- Remove the ten year option from the timeline to achieve the target
- Consider the impacts the reductions will have on local communities
- Industry sees plenty of menhaden, and they question the science





Additional Comments

- Conserve menhaden
- Timeline to achieve the threshold and target should be immediate
- Manage the reduction and bait fisheries separately
- Take reductions slowly





Additional Comments

- Remove the one year option from the timeline to achieve the target
- Protect menhaden for their ecological purposes
- The new adult survey conducted in New England should be included in the stock assessment update
- Allocation should be based on history by state and regulated by state





Additional Comments

- Moratorium should be considered
- Consider discard mortality when using trip limits
- Penalties for violations should be large enough to discourage violators
- Days at sea should not be considered
- Reduce the reduction fishery only





Additional Comments

- Perform a full economic and social impact analysis including other fisheries that rely on menhaden for bait
- Environment drives the stock change not fishing
- Fishing is much more expensive now than it was historically
- Ecological depletion of menhaden is the main issue





Additional Comments

- Ecological based reference points are needed
- Implement management measures to achieve the target in 3 years
- Restore menhaden to historic abundance
- Perform a benchmark stock assessment as soon as possible





Additional Comments

- The biomass (fecundity) reference point needs to match the new fishing mortality reference points
- If recreational fishery landings increase substantially reconsider it for management
- A complete social and economic analysis is needed before any recommendations on management options can be made





Additional Comments

- More information should be gathered before moving forward with the amendment
- Allocation of any quota should be based on history of each fishery
- Act now
- Not enough landings history information to implement a limited entry program



Relative Effort

Goup	Current Situation	Option 1 MODA	Option 2 Workshops
MS & AM TCs	High	High	High
ASMFC Staff	Moderate	High	Moderate
Board subcommittee	-	High	Moderate
Outside modeler		High	-