

Herring Specifications
for the
2010-2012 Fishing Years:
Analysis of Impacts and
Committee Recommendations

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Acronyms

- TRAC – Transboundary Resource Assessment Committee
- SSC – Scientific and Statistical Committee
- PDT – Plan Development Team
- OFL – Overfishing Limit
- ABC – Acceptable Biological Catch (new)
- OY – Optimum Yield
- ACL – Annual Catch Limit
(formerly total allowable catch TAC)
- DAH – Domestic Annual Harvesting
- DAP – Domestic Annual Processing
- TALFF – Total Allowable Level of Foreign Fishing
- JVP – Joint Venture Processing
- IWP – Internal Waters Processing
- USAP – U.S. At-Sea Processing
- BT – Border Transfer
- RSA – Research Set-Aside
- AM – Accountability Measure

2010-2012 Specs Discussion Document

- OFL, ABC – Section 2.2.1, p. 8
- Stock-wide ACL and OY – Section 2.2.2, p. 11
- TAC/Sub-ACL Options – Section 2.2.6, p. 28
- Affected Environment: Updated Stock and Fishery Information – Section 3.0, pp. 35-90
- Bycatch Information – Section 3.2.4, p. 60
- Biological Impacts: OFL/ABC Projections – Section 4.1.1, p. 91
- Biological Impacts: Risk Assessment – Section 4.1.2, p. 93
- Economic Impacts – Section 4.2, p. 120
- Social/Community Impacts – Section 4.3, p. 143

Current (2009) Specifications

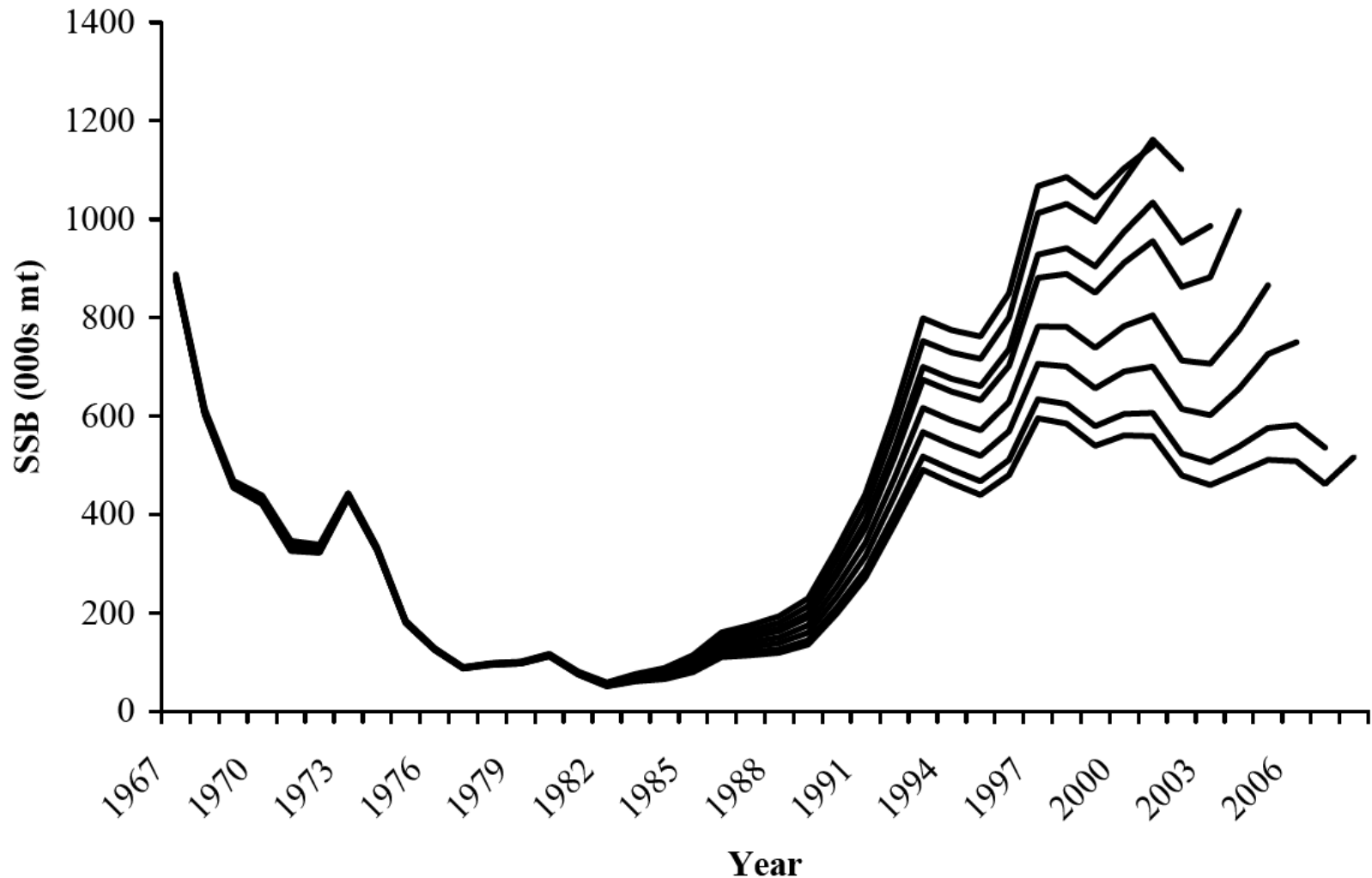
SPECIFICATION	ALLOCATION (MT)
ABC	194,000
U.S. OY	145,000
DAH	145,000
DAP	141,000
JVPt	0
JVP	0
IWP	0
USAP	20,000 (Areas 2 and 3 only)
BT	4,000
TALFF	0
RESERVE	0
TAC Area 1A	45,000 (43,650 after RSA)
TAC Area 1B	10,000 (9,700 after RSA)
TAC Area 2	30,000
TAC Area 3	60,000
Research Set-Aside	Areas 1A and 1B (3%) Utilized

Status of Herring Stock Complex

	BIOMASS	FISHING MORTALITY
REFERENCE POINTS (MSY = 181,400 mt)	$B_{MSY} = 670,600$ mt $B_{Threshold} = 335,290$ mt	$F_{MSY} = 0.27$ $F_{Target} = \text{Unk}^*$
2008 ESTIMATES (TRAC 2009)	651,700 mt	0.14

- Not overfished, 97% of B_{MSY}
- Overfishing not occurring

Status of Herring Stock Complex



RELEVANT FORMULAS

- $OFL - \text{Scientific Uncertainty} = ABC$
- $ABC - \text{Management Uncertainty} =$
 $\text{Stock-wide ACL} = \text{U.S. OY}$
- **Herring Committee specified management uncertainty to be 14,800 mt for 2010-2012.*
- $OY = \text{DAH} + \text{Reserve}$
- $\text{Stock-wide ACL} = \text{Sub-ACLs} + \text{RSAs}$
- $\text{DAH} = \text{DAP} + \text{JVPt} + \text{BT}$
- $\text{JVPt} = \text{JVPs} + \text{IWP}$

2010-2012 OFL and ABC

YEAR	OFL (mt)	ABC (mt) ALT 1	ABC (mt) ALT 2
2010	145,000	145,000	90,000
2011	134,000	90,000	90,000
2012	127,000	90,000	90,000

SSC revisited ABC on November 12, 2009 and recommends that ABC should be based on recent catch (1-5 years?).

Management Uncertainty

- Subtracted from ABC to derive stock-wide ACL/OY
- Proposed management uncertainty buffer = **14,800 mt**
- Accounts for Canadian catch (NB weir fishery)
- State waters catch minimal
- Herring discards very low and relatively insignificant relative to landings in the fishery and the ability to prevent ACLs from being exceeded
- *OS Recommendation* – current measures that allocate 5% of the TAC are sufficient to account for management uncertainty related to incidental catch, state waters catch, and discards in the fishery

TAC/Sub-ACL Options

- Option 1, Historical – based on catch distribution from 1999-2008
- Option 2, 2001 – based on TAC allocations for 2001 fishing year
 - Option 2 incorporates Area 2 reserve
 - Option 2A does not incorporate Area 2 reserve
- Option 3, 2009 – based on TAC allocations in 2009, same proportions reduced to new OY

None of these three options include seasonal/monthly restrictions. Analysis assumes monthly catches based on 2009 (incl. ASMFC measures).

TAC/Sub-ACL Options

- Option 4, Max 1A – maximizes catch in 1A while achieving an inshore exploitation ratio 0.24-0.28
 - Option 4A restricts Area 1A fishing July-September
 - Option 4B restricts Area 1A fishing May-July
- Option 5, Max 2 – maximizes catch in Area 2 while achieving an inshore exploitation ratio 0.24-0.28
 - Area 1A fishing restricted to July-September
- Option 6, Balanced – reduces catches in 1A, 1B, and 2 in a more balanced way while achieving an inshore exploitation ratio 0.24-0.28
 - Area 1A fishing restricted to July-September

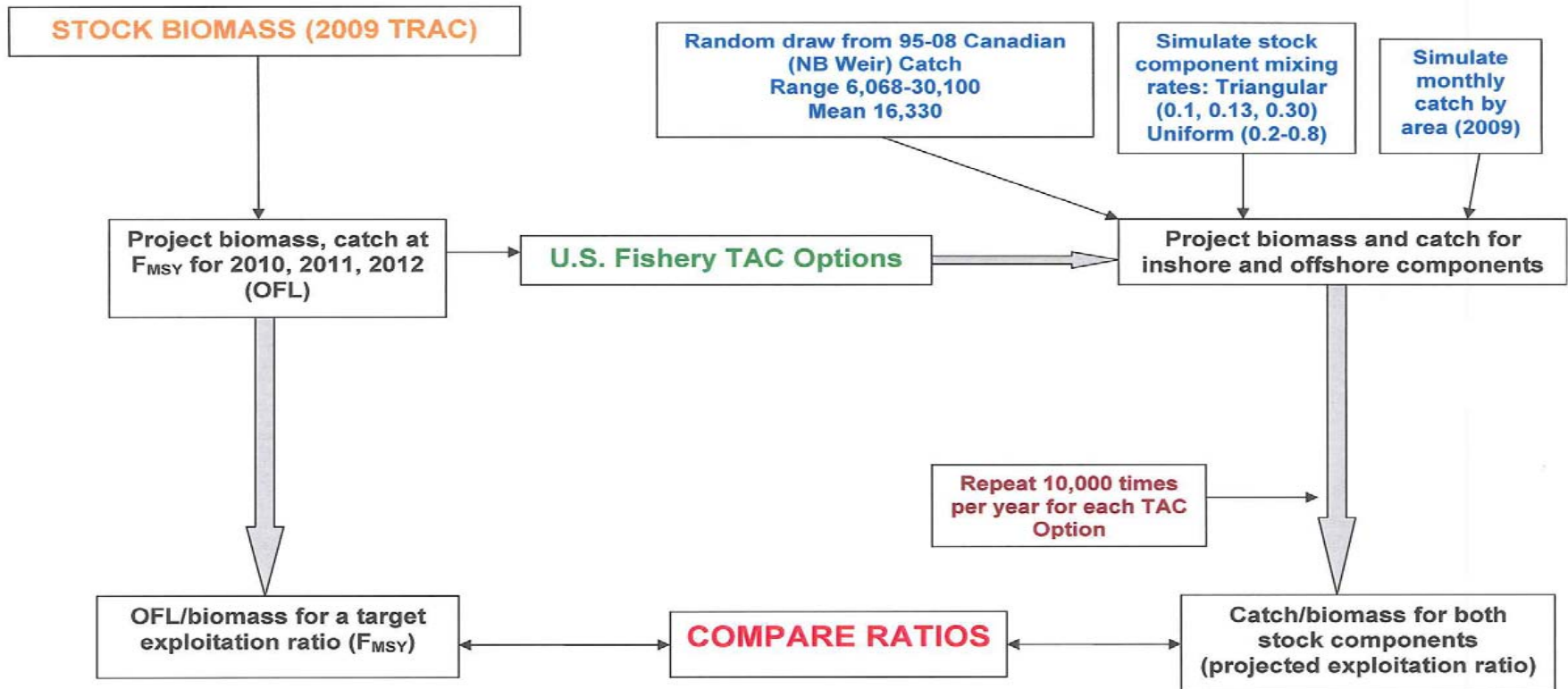
OFL/ABC Projections

	Catch ('000 mt)			
	2009	2010	2011	2012
OFL	92.1	145.0	134.0	127.0
ABC – Alternative 1	92.1	145.0	90.0	90.0
ABC – Alternative 2	92.1	90.0	90.0	90.0
No Action -ABC	92.1	194.0	194.0	194.0
No Action-OY	92.1	145.0	145.0	145.0
	Projected Fishing Mortality Rate			
	2009	2010	2011	2012
OFL	0.16	0.27	0.27	0.27
ABC – Alternative 1	0.16	0.27	0.17	0.17
ABC – Alternative 2	0.16	0.16	0.16	0.15
No Action -ABC	0.16	0.38	0.46	0.58
No Action-OY	0.16	0.27	0.29	0.32
	Projected Biomass (median, '000 mt)			
	2009	2010	2011	2012
OFL	620.2	598.8	551.8	509.8
ABC – Alternative 1	620.2	599.0	551.6	553.1
ABC – Alternative 2	620.2	599.0	607.3	605.7
No Action -ABC	621.7	601.1	504.8	407.2
No Action-OY	620.2	599.0	551.8	498.9

Risk Assessment

- Evaluates relative risk associated with options by simulating removals of inshore component using best available science about stock biomass, mixing rates, and catch distributions
- Draws from NB weir landings years 1995-2008 and assumes all NB weir catch comes from inshore component
- Randomly draws from inshore stock size (triangular 0.1-0.3) and stock mixing ratios
- Simulates removals of TACs 10,000 times to generate an exploitation rate – can be compared to the exploitation rate equivalent to F_{MSY} or another target

Risk Assessment

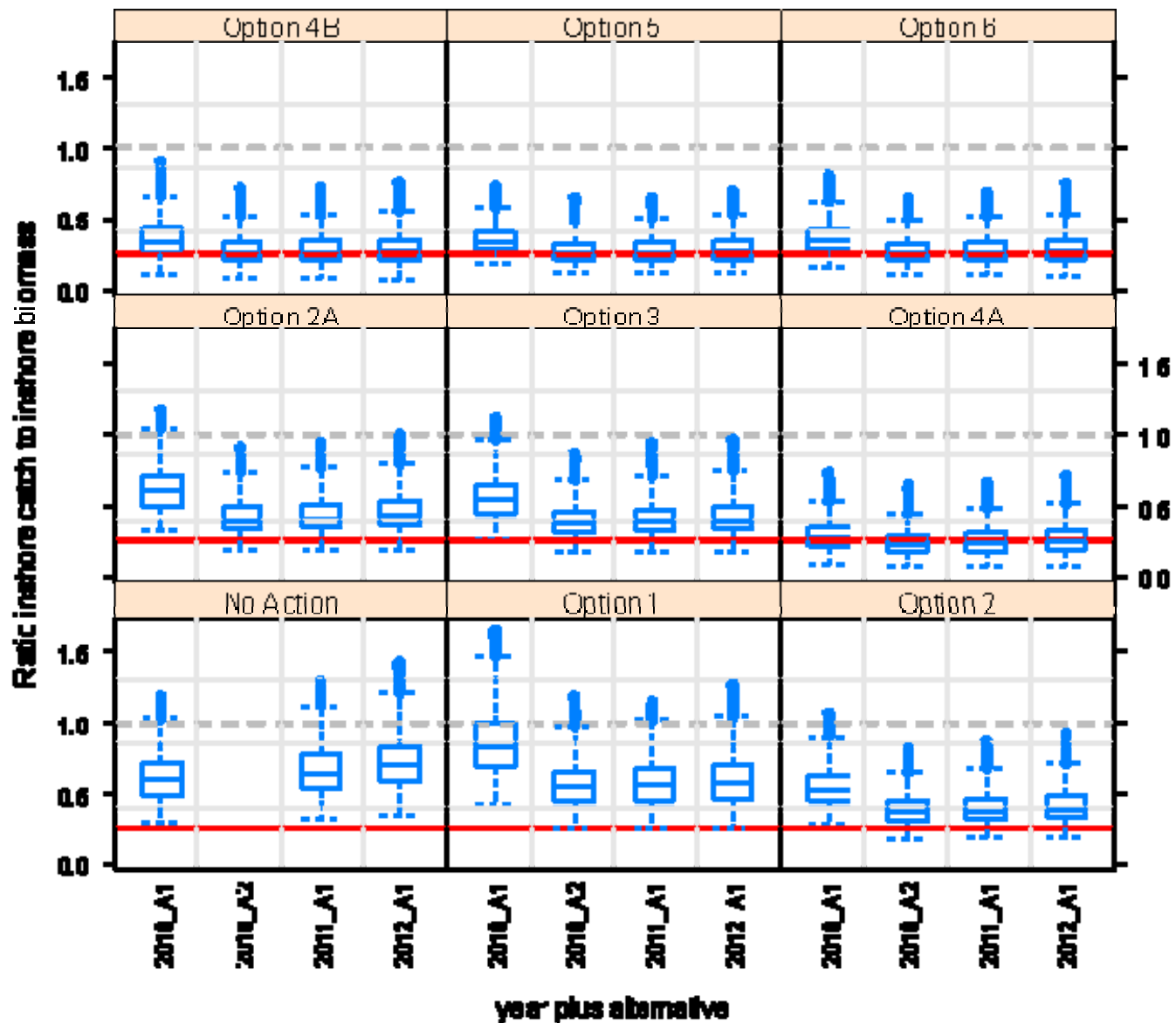


Risk Assessment - Results

- Ratio of OFL to Biomass was used as a proxy for target exploitation rate for inshore and offshore components (F_{MSY})
- General F_{MSY} range for herring stocks 0.2-0.3 (0.17-0.24 exploitation) – Committee target exploitation 0.24-0.28
- **High Risk Group** – all or most of distribution above 0.24 (No Action, Options 1, 2, 2A, 3, and Alt 1 for 4B, 5, and 6 in 2010)
- **Low Risk Group** – approximately 40% or more of distribution below 0.24 (Options 4A, 4B, 5, excl. Alt 1)
- None of the options pose a risk to offshore component
- Complete results in Appendix III of document

Risk Assessment - Results

Ratio of inshore catch to inshore biomass



Risk Assessment – Considerations

- Setting ABC at 90,000 mt (or another number) accounts for scientific uncertainty but does not prevent excessive mortality on the smaller inshore stock component
- Removals from one year do not impact starting biomass in the next year – years are independent of each other and assume that F is not exceeded in the previous year
- In some options, flexibility exists to change the monthly catch distribution in 1A without affecting analysis
 - May-July can be distributed in any proportion in Opts 4A, 4B, 6
 - Quotas can be assigned to periods instead of months
 - Underages cannot be moved to months later in the year
- Canadian catch has a large influence on removals of the inshore stock – late-year adjustments to 1A TAC if management uncertainty buffer is not fully utilized does not affect outcome

Economic Impacts

1. Loss of revenues based on stock-wide ACLs that are lower than recent years' landings
2. Changes in harvesting costs for alternative fisheries and/or fishing farther from shore
3. Impacts to the lobster fishery from 1A reductions and seasonal restrictions
4. Impacts to the mackerel fishery from Area 2 reductions
5. Impacts on processors

Economic Impacts

- Total difference between Alternative 1 and Alternative 2 ACL in 2010 is \$13.6 million
- For Alternative 2 and Alternative 1 in 2011/2012, potential loss of revenue for harvesters is \$2.4 million
- MWT vessels - \$2,863 additional day operating costs
- BT vessels - \$503 additional day operating costs
- PS vessels - \$1,300 additional day operating costs (not likely able to fish offshore)
- High degree of uncertainty as to whether Area 3 fish can make up for some losses in other areas
- Impacts of derby fishing may be problematic in options with very restrictive seasons (safety concerns as well)

Economic/Social Impacts

- Seasonal restrictions could cause price fluctuations and will impact consistency of supply – will affect processors and bait dealers, makes business planning difficult
- 10% increase in bait costs = 1.5% decrease in net returns for lobster fisherman
- Availability of bait alternatives unclear but likely to change prices – timing will be critical and predictability is a concern
- Increased on-land transportation costs, increased shipping/handling costs
- Some herring/lobster-dependent communities are particularly vulnerable because of location and lack of alternative employment

Economic/Social Impacts

- ME lobster communities – high rate of dependence on lobster, high unemployment rates, higher rates of families below poverty line
- Business networks/relationships between bait dealers and lobstermen will be strained
- Impacts on Prospect Harbor (sardine cannery) of particular concern
- Vinalhaven – isolated island community dependent on lobster
- Challenges for Gloucester and New Bedford to maintain working waterfronts – loss of supply, fewer lines running in the plants, loss of employment opportunities (affected by reductions in all areas and potential impacts on mackerel fishery)

Committee Recommendations 11/10/09

- Alternative 2, Option 2A (modified) – numbers adjusted to total the stock-wide ACL/OY and carried through all three fishing years
- If by considering landings through October 15, less than 9,000 mt has been taken in the NB weir fishery, then 3,000 mt will be reallocated to the 1A fishery in November and December
- Set JVP, IWP, TALFF, USAP, and Reserve at zero, and set Border Transfer at 4,000 mt
- No RSAs for 2010-2012
- Fixed Gear set-aside to be reduced proportionately in 1A (295 mt)

Committee Recommendations 11/10/09

SPECIFICATION	2010-2012 ALLOCATION (MT)
OFL	145,000/134,000/127,000
ABC	90,000
Stock-wide ACL/U.S. OY	75,200
DAH	75,200
DAP	71,200
JVPt	0
JVP	0
IWP	0
USAP	0
BT	4,000
TALFF	0
RESERVE	0
TAC/Sub-ACL Area 1A	26,546
TAC/Sub-ACL Area 1B	4,362
TAC/Sub-ACL Area 2	22,146
TAC/Sub-ACL Area 3	22,146
Research Set-Aside	None
Fixed Gear Set-Aside (1A)	295

SSC Revised Advice on ABC

- ABC should be based on recent catch
- New benchmark assessment ASAP

Staff Recommendation – If ABC is increased above 90,000 mt, additional catch should be allocated to Area 3

- Risk assessment suggests that exploitation of inshore component will be above F_{MSY} under proposed TACs for inshore areas
- High degree of uncertainty with assessment, stock projected to decline under F_{MSY} with average recruitment
- Recruitment is uncertain, and 3 of the last 4 year classes have been below median
- Proposed TAC for Area 3 is low relative to size and ability of offshore stock to sustain additional fishing effort

Timeline

- OS/Section made preliminary recommendations on specs and identify sub-ACL options for further analysis October 6, 2009
- Herring PDT analyzed options, developed assessment (biological, economic, social) Oct 2009
- Herring AP reviewed proposed specs and analysis and provided recommendations to OS Nov 9, 2009
- OS/Section developed final recommendations Nov 10, 2009 – OS recommendations reviewed/approved by the Council at November 17-19, 2009 Meeting
- 2010-2012 Specifications package to be submitted by December 15, 2009
- Implementation ASAP in 2010, quotas retroactively apply
- ASMFC to finalize specs February 2010