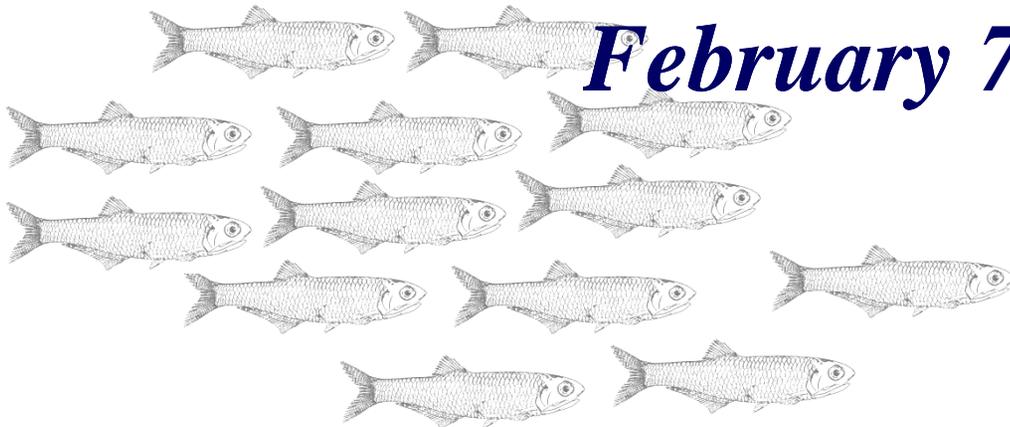


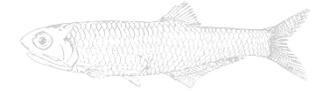


*Working towards healthy, self-sustaining populations
for all Atlantic coast fish species or successful
restoration well in progress by 2015*

Update of 2010 Final Landings

February 7, 2012





Proposed Rule

Management Area	2010 Sub-ACL (mt)	2010 Landed herring (mt)	2010 Discarded herring (mt)	2010 Total herring catch (mt)	2010 Overage (mt)	2012 Sub-ACL (mt)
1A	26,546	28,364	60	28,424	1,878	24,668
1B	4,362	5,997	3	6,001	1,638	2,724

- Reduce 1A Sub-ACL 26,546 by 1,878 to 24,668 mt in 2012
- Reduce 1B Sub-ACL 4,326 by 1,638 to 2,724 mt in 2012.
- NEFMC PDT concluded that methodologies are appropriate.





Addendum II

Once a final total catch for a fishing year is determined, during the subsequent fishing year using the best available information (including VTR reports to account for incidental catch in other fisheries), ACL/Sub-ACL overage would result in a reduction of the corresponding ACL/sub-ACL for the fishing year after the final total catch is tallied. The deduction will be equal to the amount that was exceeded.



**Amendment 5 to the
Atlantic Herring FMP:
Measures to Address River
Herring Bycatch**

Lori Steele, NEFMC Staff, Herring PDT Chair

ASMFC Shad/River Herring Board, February 7, 2012

A5 Timeline

- Draft EIS approved Sept 2011 NEFMC meeting
- Preliminary Draft EIS submitted late November
- Formal Draft EIS submitted late January 2012
- Amendment 5 comment period Mar-Apr 2012
- Public hearings March 2012
- Final selection of measures April 2012 Council Meeting
- ASMFC Spring Meeting, May 2012
- Completion/submission of Final Measures/FEIS ASAP, May/June 2012
- Implementation January 1, 2013

Goals and Objectives

GOAL (AMENDMENT 5)

To develop an amendment to the Herring FMP to improve catch monitoring and ensure compliance with the Magnuson-Stevens Act (MSA)

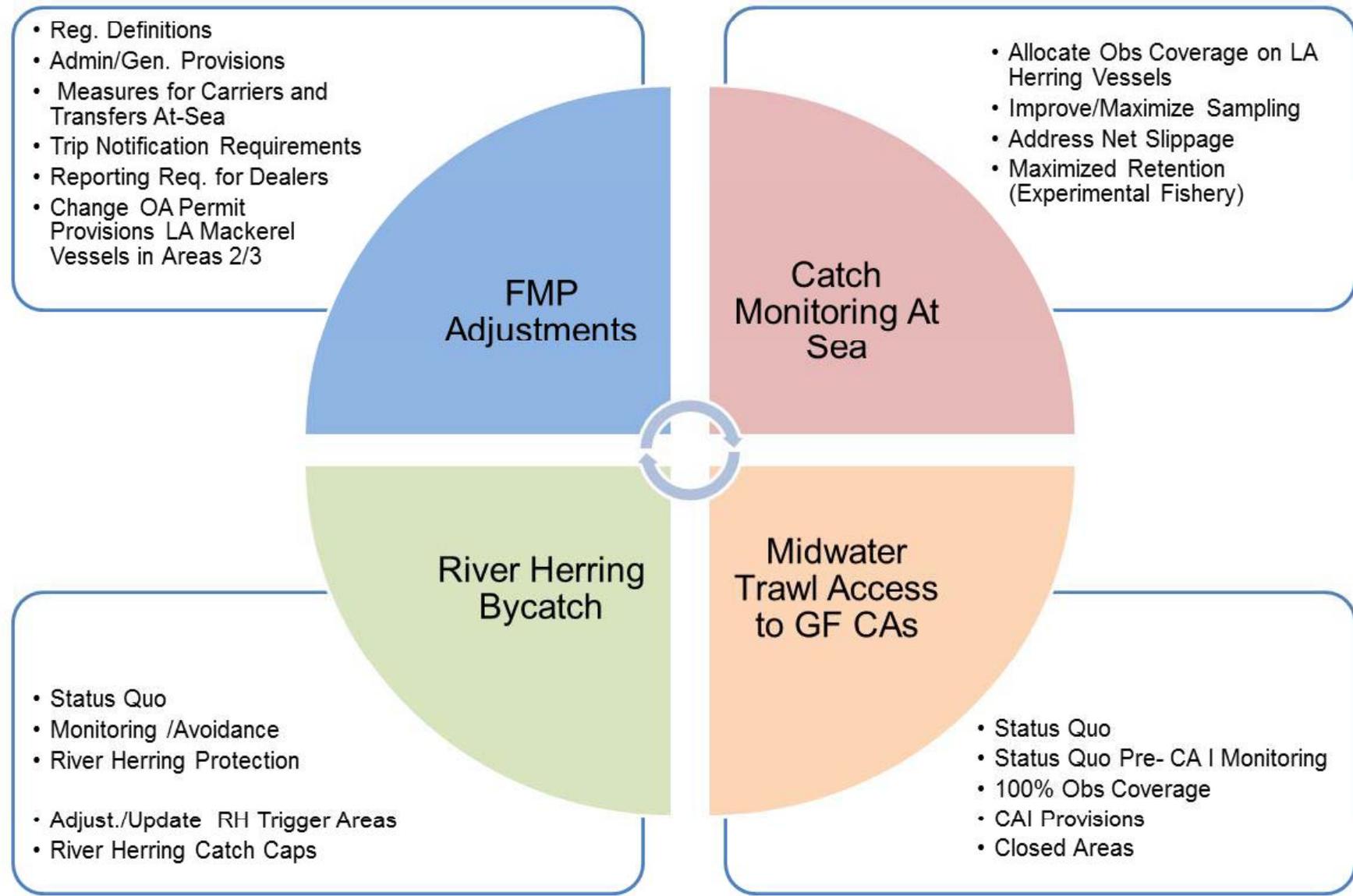
OBJECTIVES (AMENDMENT 5)

1. To implement measures to improve the long-term monitoring of catch (landings and bycatch) in the herring fishery;
2. To implement other measures as necessary to ensure compliance with the MSA;
3. To implement measures to address bycatch in the Atlantic herring fishery;
4. In the context of Objectives 1 -4 (above), to consider the health of the herring resource and the role of herring as a forage fish and a predator fish throughout its range

Amendment 5 Alts Under Consideration

- Fishery Management Program – Regulatory Definitions, Admin/General Provisions, Carrier Vessels, Transfers at Sea, Trip Notifications, Dealer Reporting, Mackerel Open Access Permits
- Catch Monitoring At-Sea – Allocation of Observer Coverage on LA Vessels, Maximizing Sampling, Net Slippage, Maximized Retention Experimental Fishery
- Measures to Address River Herring Bycatch – Monitoring/Avoidance, Protection, Trigger-Based Approaches
- MWT Access to Groundfish Closed Areas – Observer Coverage, CAI Provisions, Closed Areas

Amendment 5 Alts Under Consideration



River Herring Alternatives

(Section 3.3)

- Spatial Management Alternatives
- Link to management goals and measures/options under consideration
- Different measures may be selected in different areas, depending on goals
- Options for applying to Category A/B/C/D permit holders

Alternative 1 – No Action

Alternative 2 – RH Monitoring/Avoidance

Alternative 3 – RH Protection

Herring Vessels

Table 51 Number of Vessels by Atlantic Herring Permit Category, 2008-2010

		Year		
		2008	2009	2010
Herring Permit Category	A	45	45	42
	B	5	4	4
	C	58	55	55
	D	2,409	2,394	2,258

Alternative 2: River Herring Monitoring/Avoidance

(Section 3.3.2)

- Monitor river herring bycatch and encourage avoidance
- Areas based on at least one observed tow of river herring catch greater than 40 pounds 2005-2009

Option 1 – 100% Observer Coverage

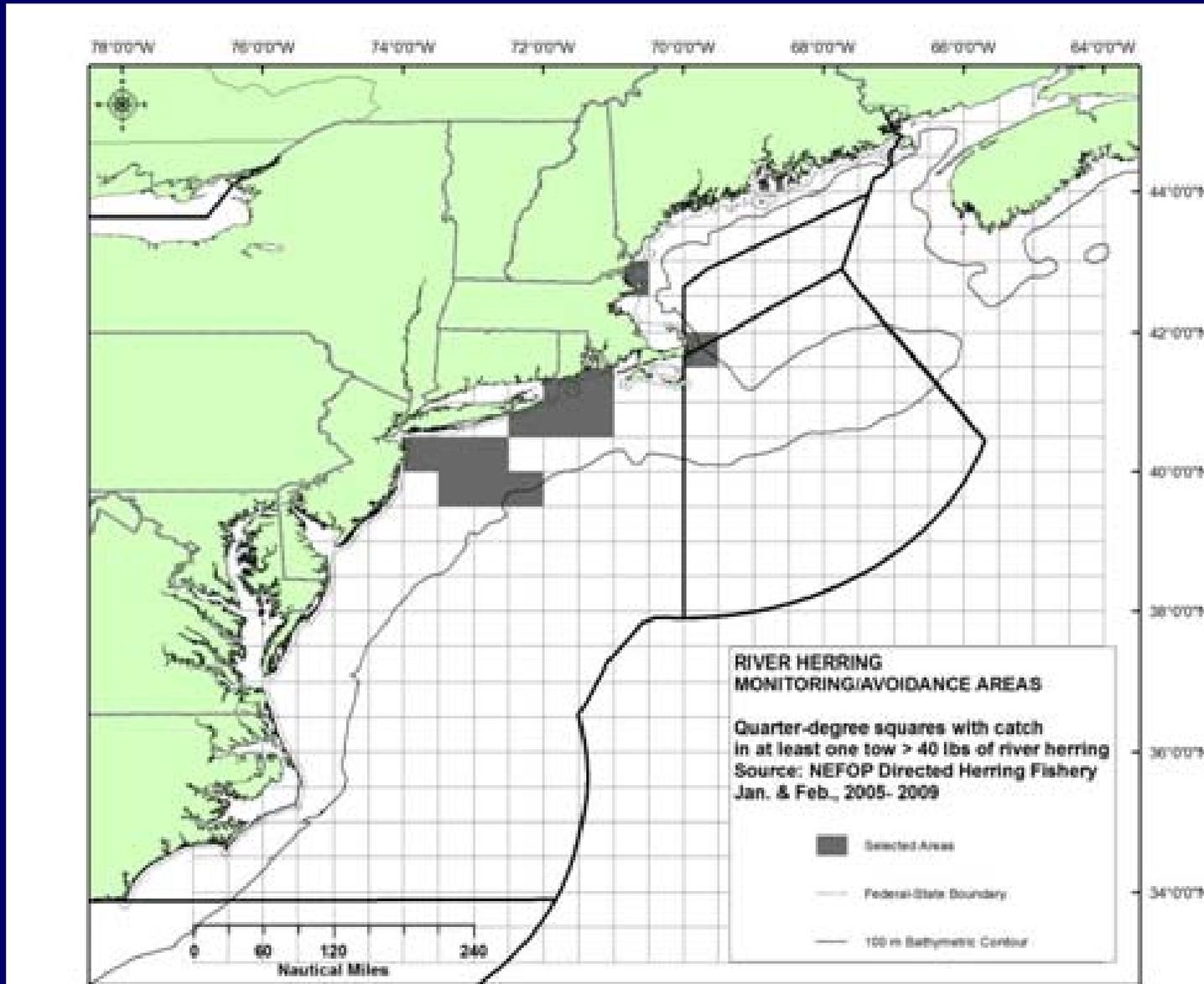
Option 2 – Closed Area I Sampling Provisions

Option 3 – Trigger-Based Monitoring

Option 4 – SMAST/MA DMF Project

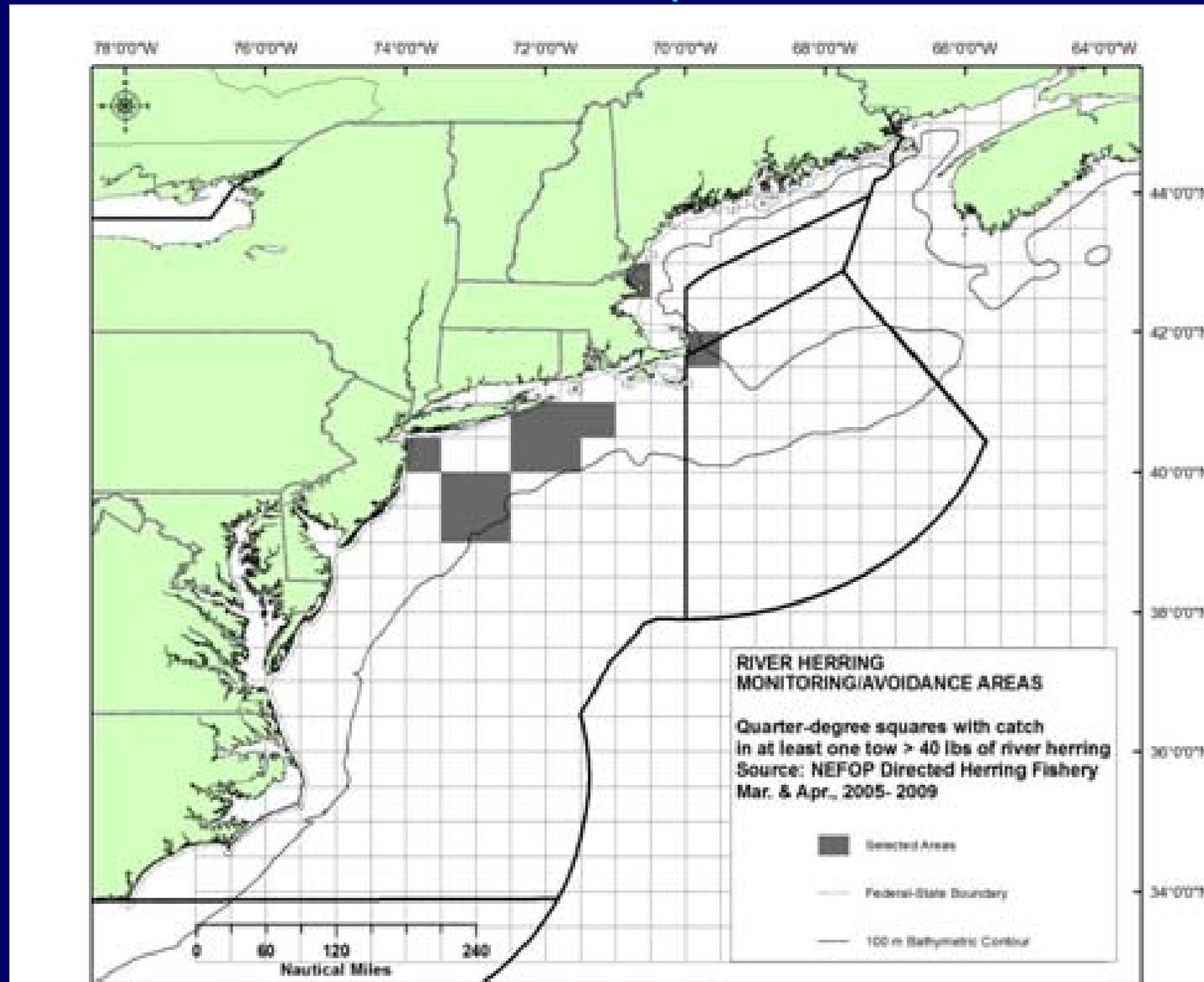
Alternative 2: River Herring Monitoring/Avoidance

January/February



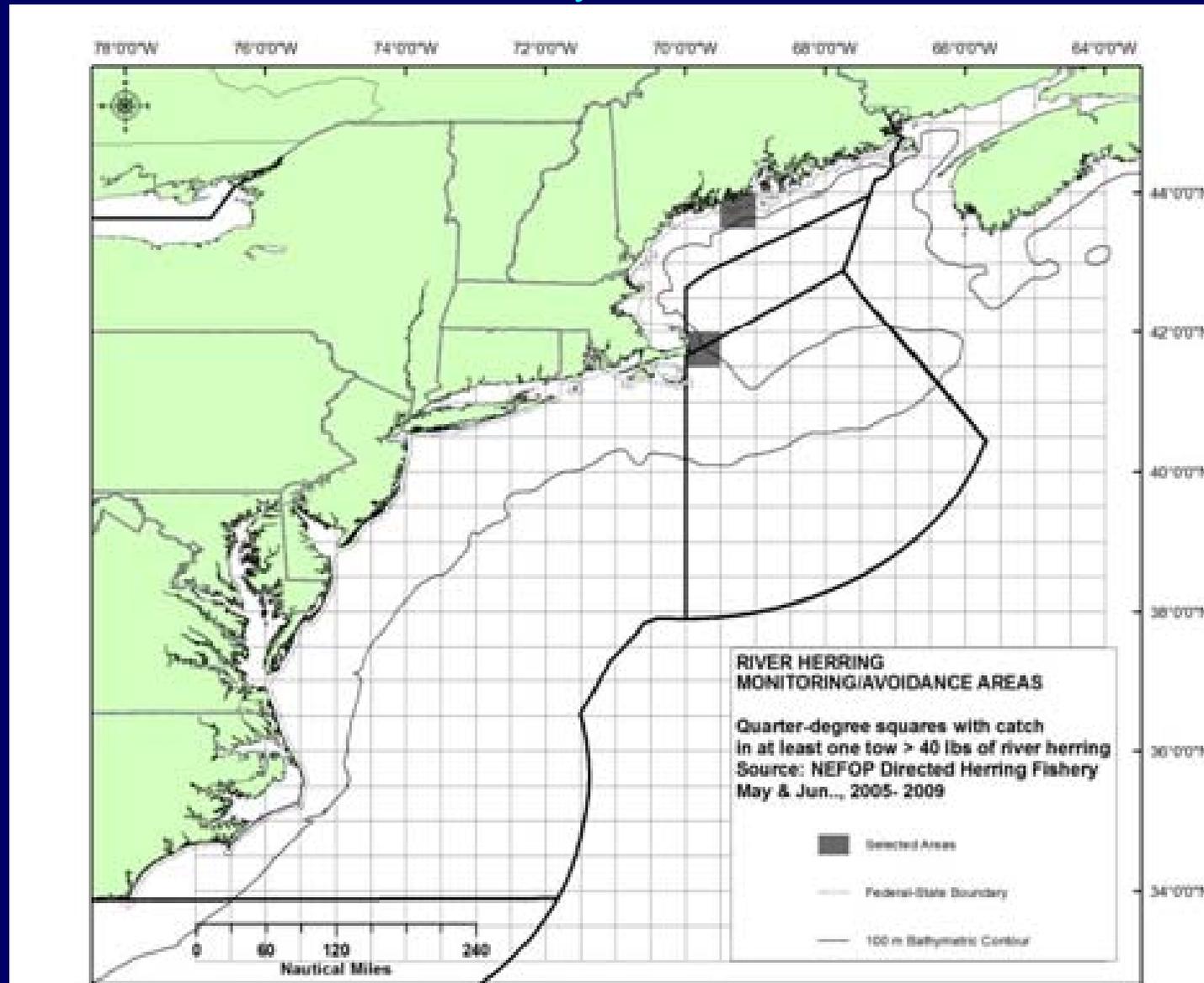
Alternative 2: River Herring Monitoring/Avoidance

March/April



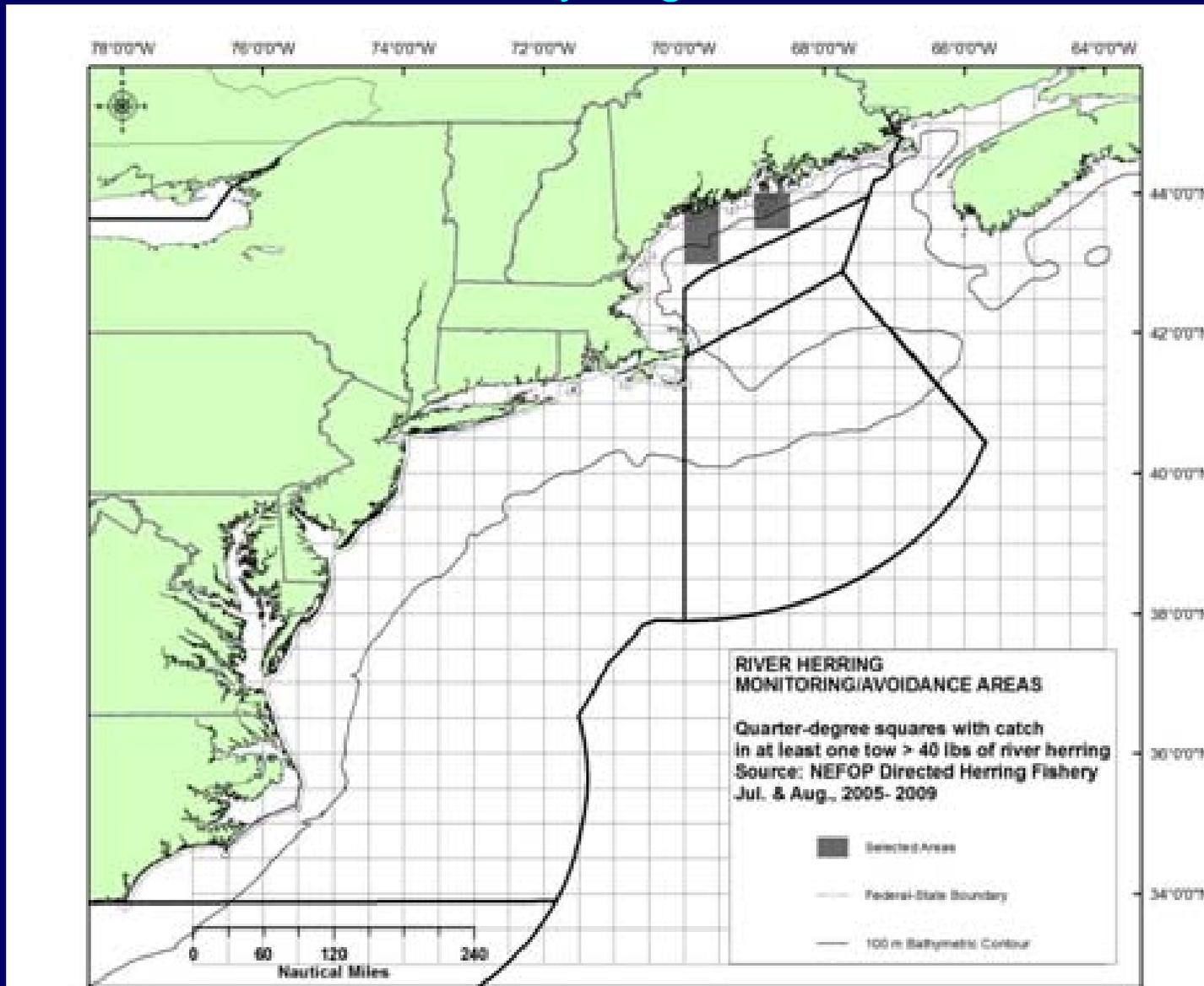
Alternative 2: River Herring Monitoring/Avoidance

May/June



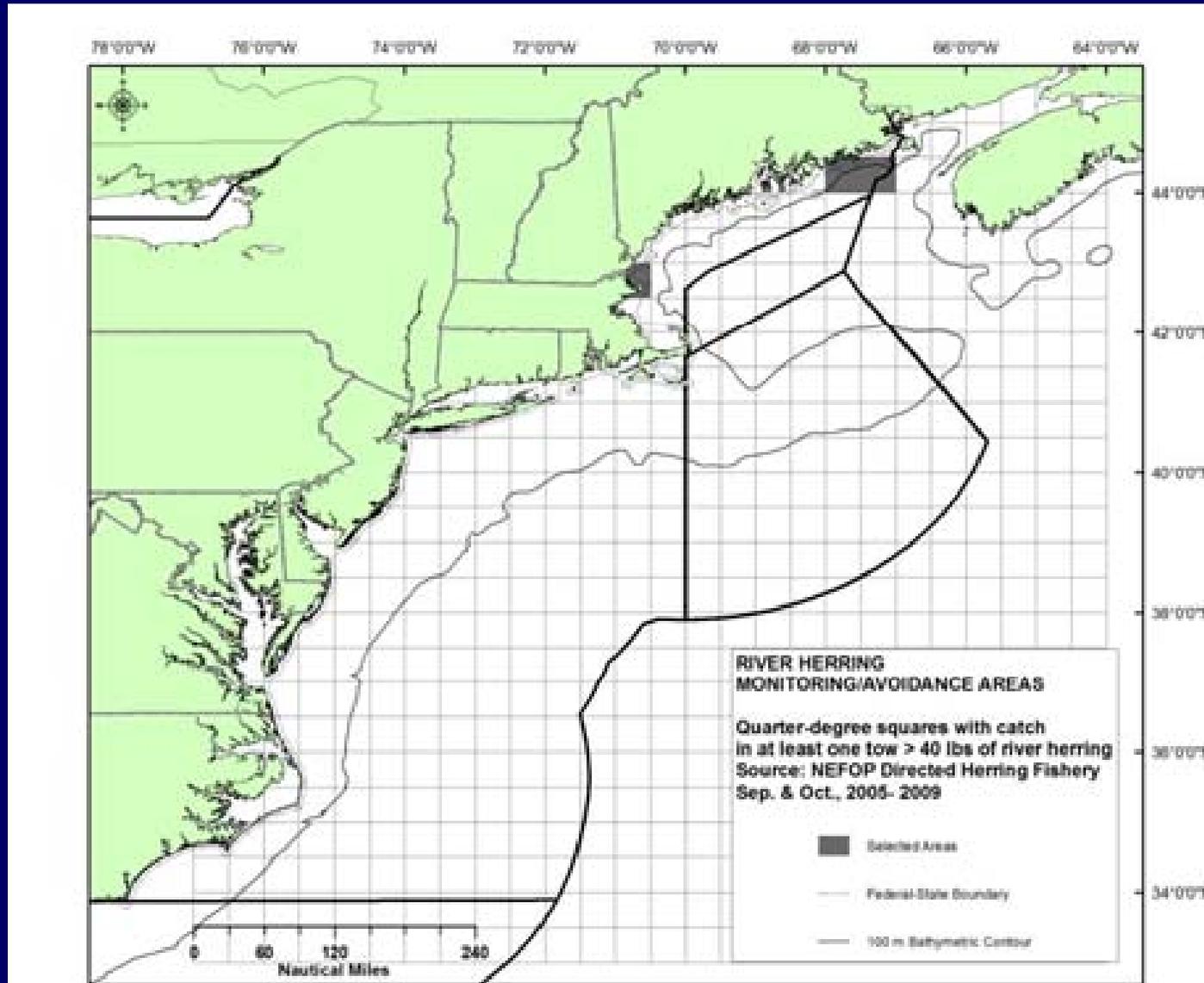
Alternative 2: River Herring Monitoring/Avoidance

July/August



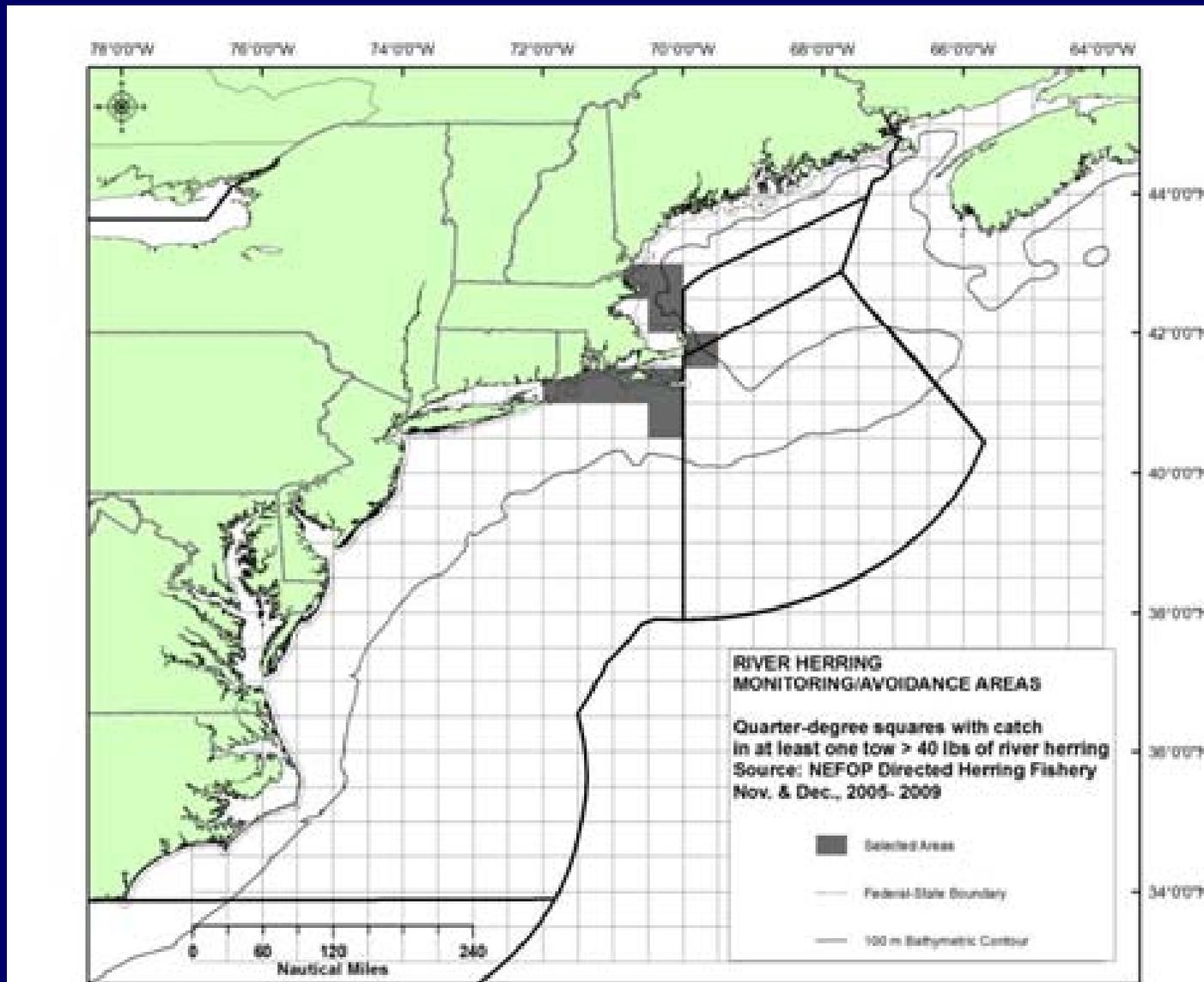
Alternative 2: River Herring Monitoring/Avoidance

September/October



Alternative 2: River Herring Monitoring/Avoidance

November/December



Alternative 3: River Herring Protection

(Section 3.3.3)

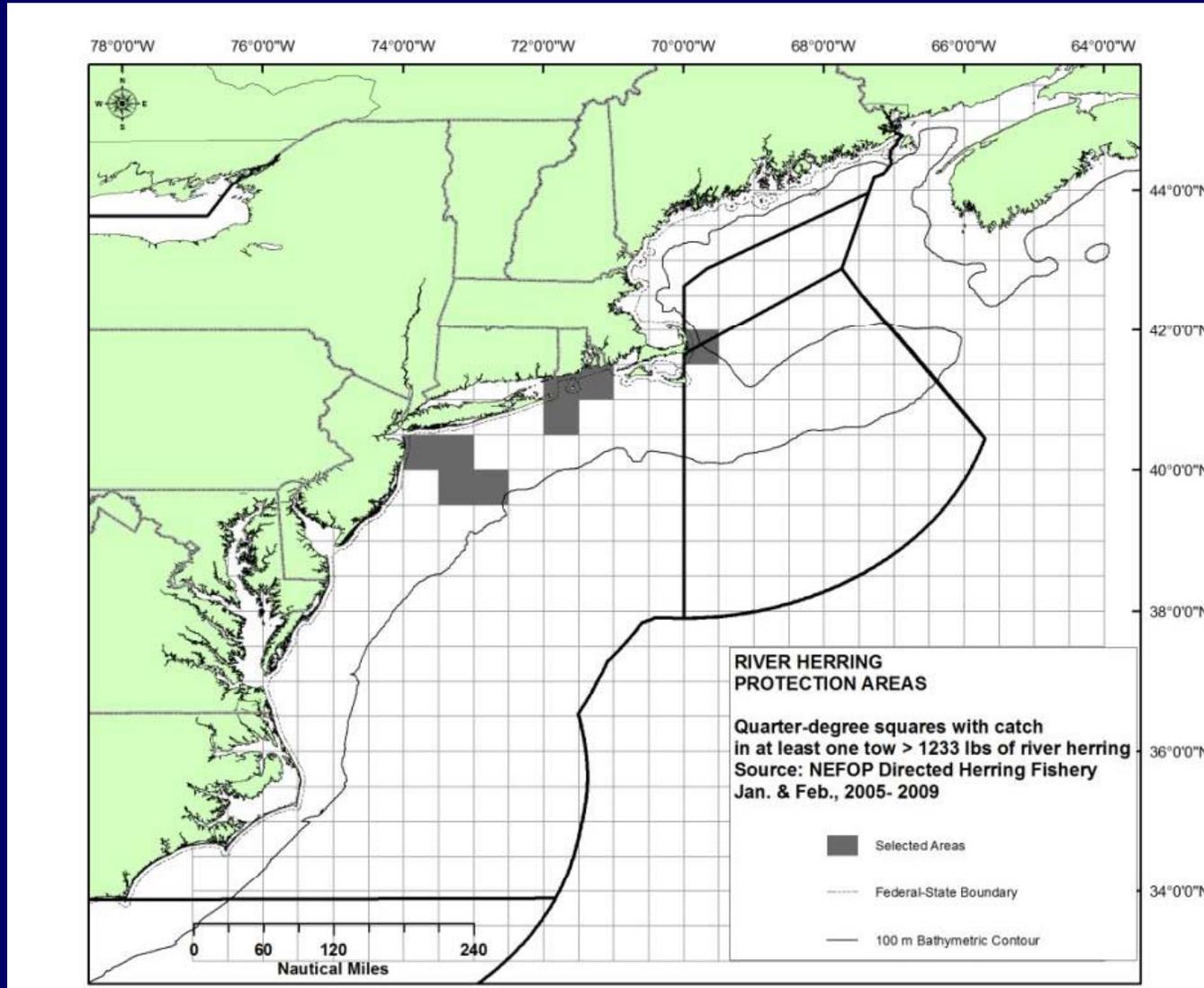
- Protect river herring in areas where fishery encounters are most likely
- Areas based on at least one observed tow of river herring catch greater than 1,233 pounds 2005-2009

Option 1 – Closed Areas

Option 2 – Trigger-Based Monitoring

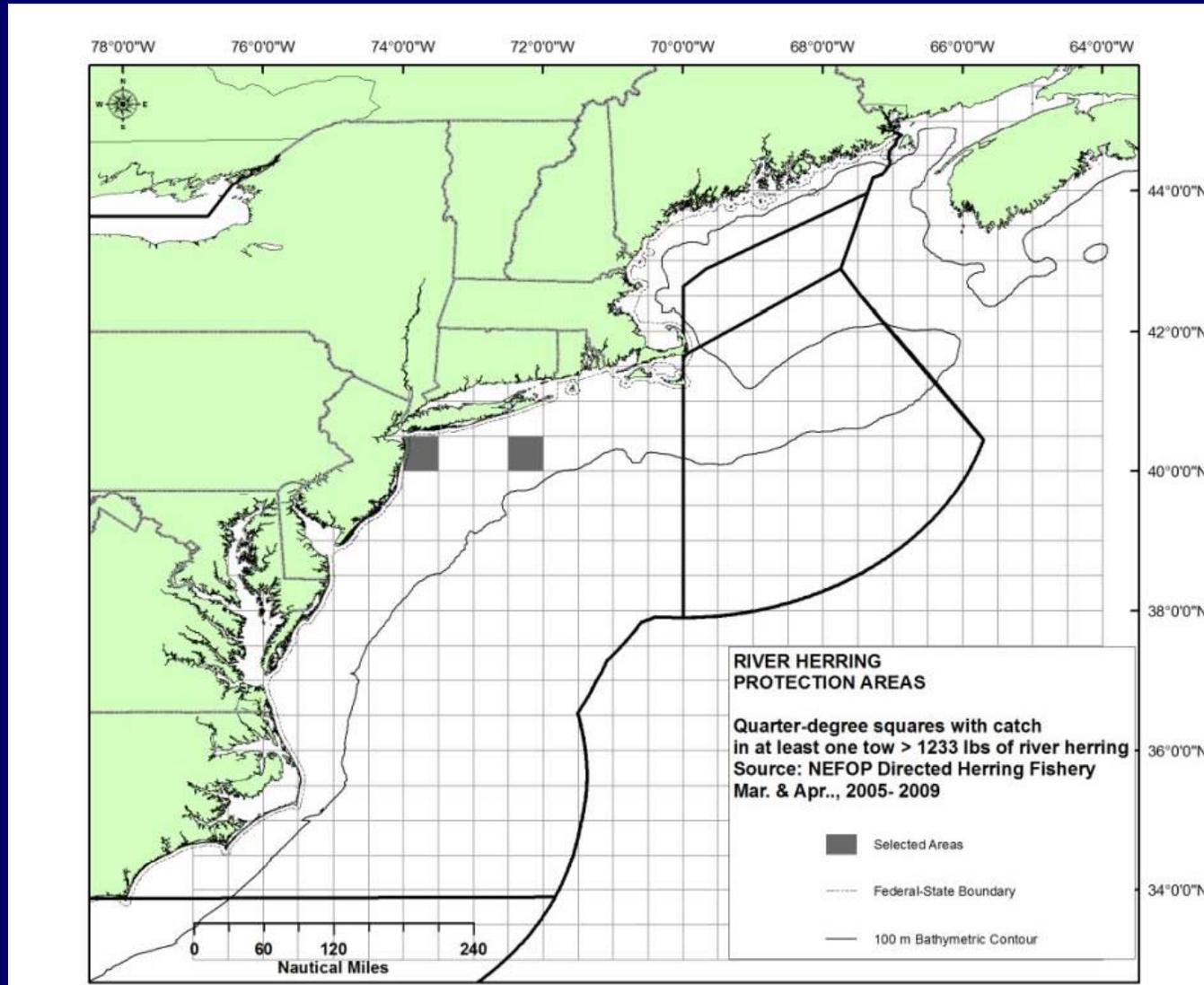
Alternative 3: River Herring Protection

January/February



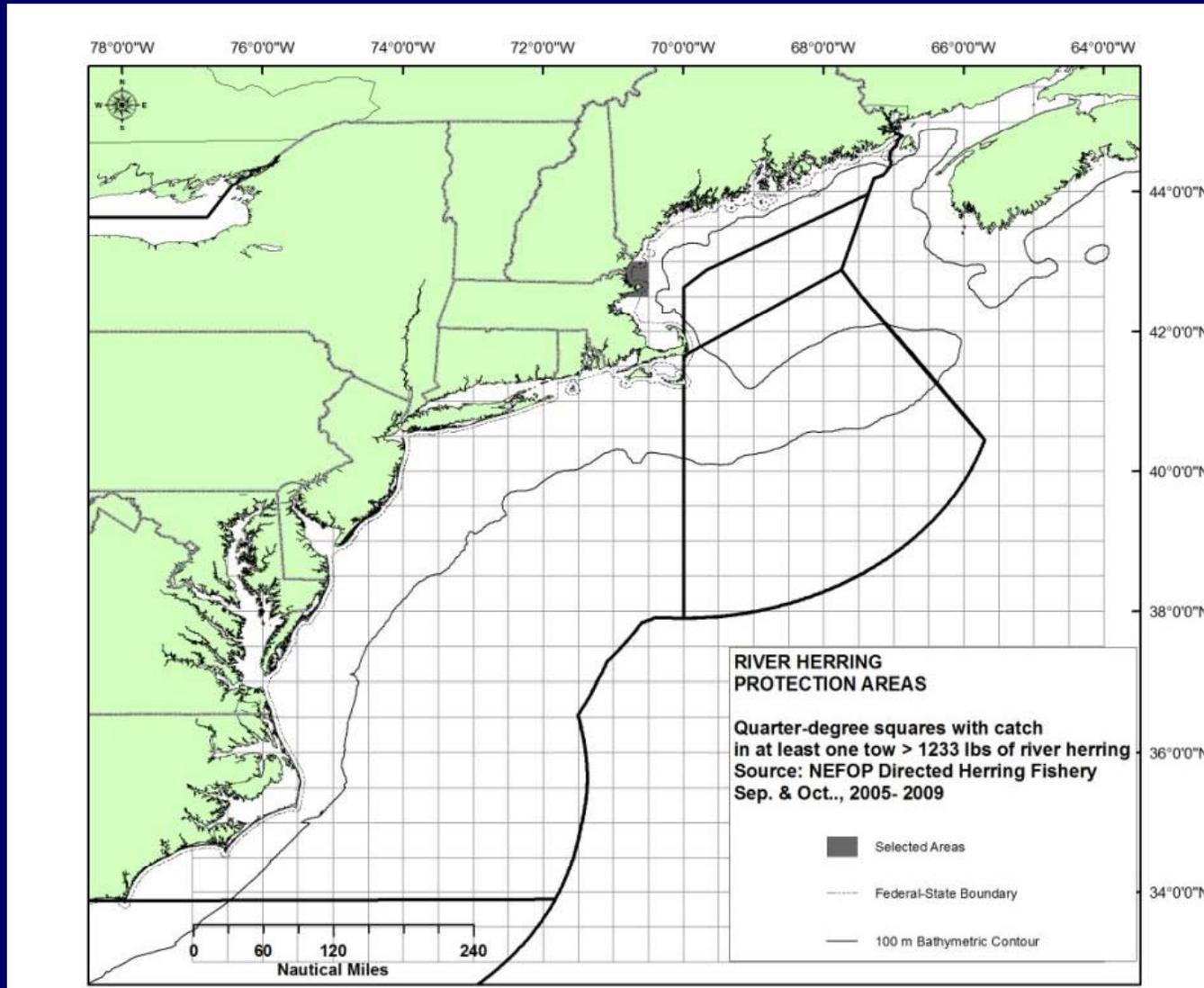
Alternative 3: River Herring Protection

March/April



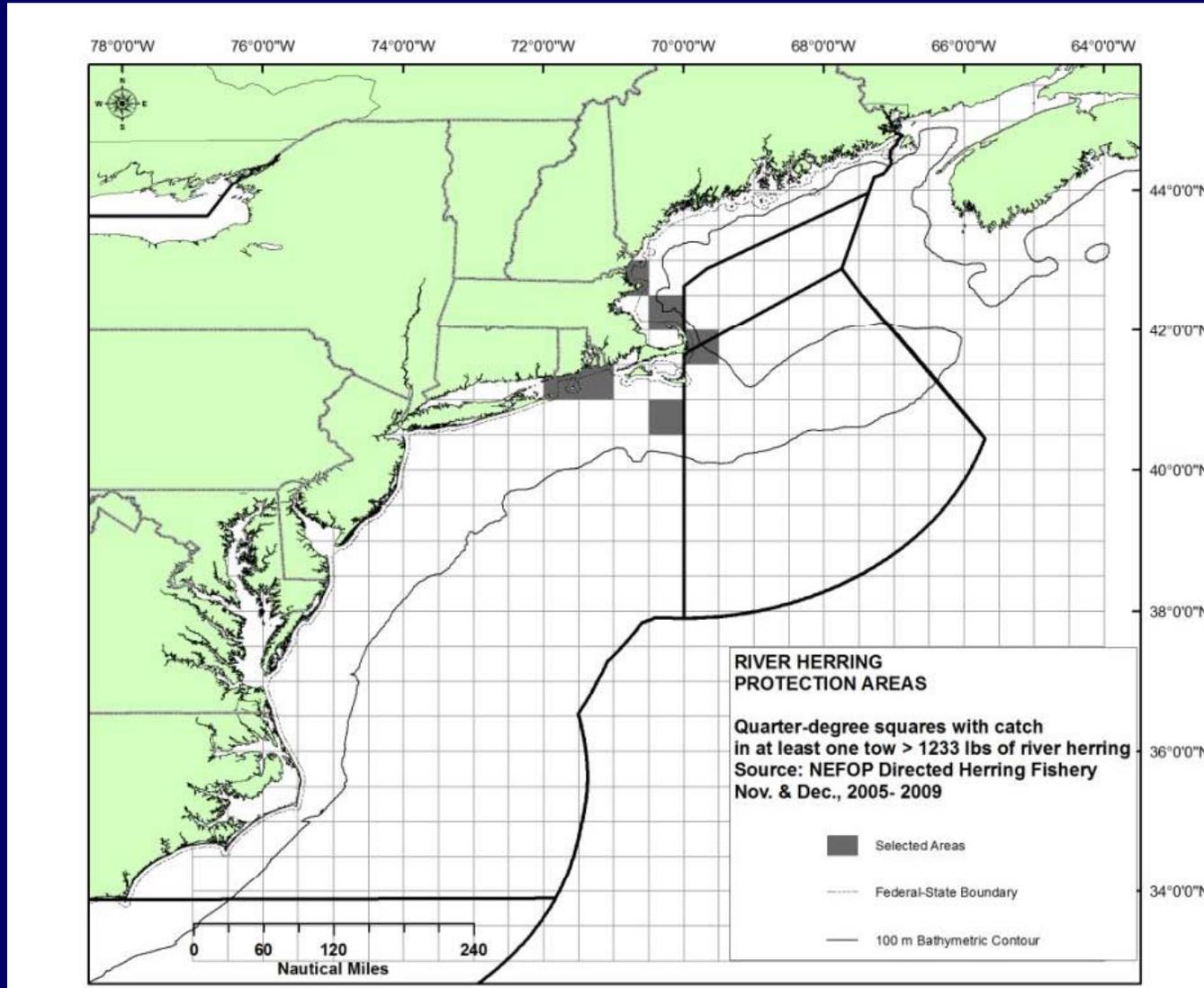
Alternative 3: River Herring Protection

September/October



Alternative 3: River Herring Protection

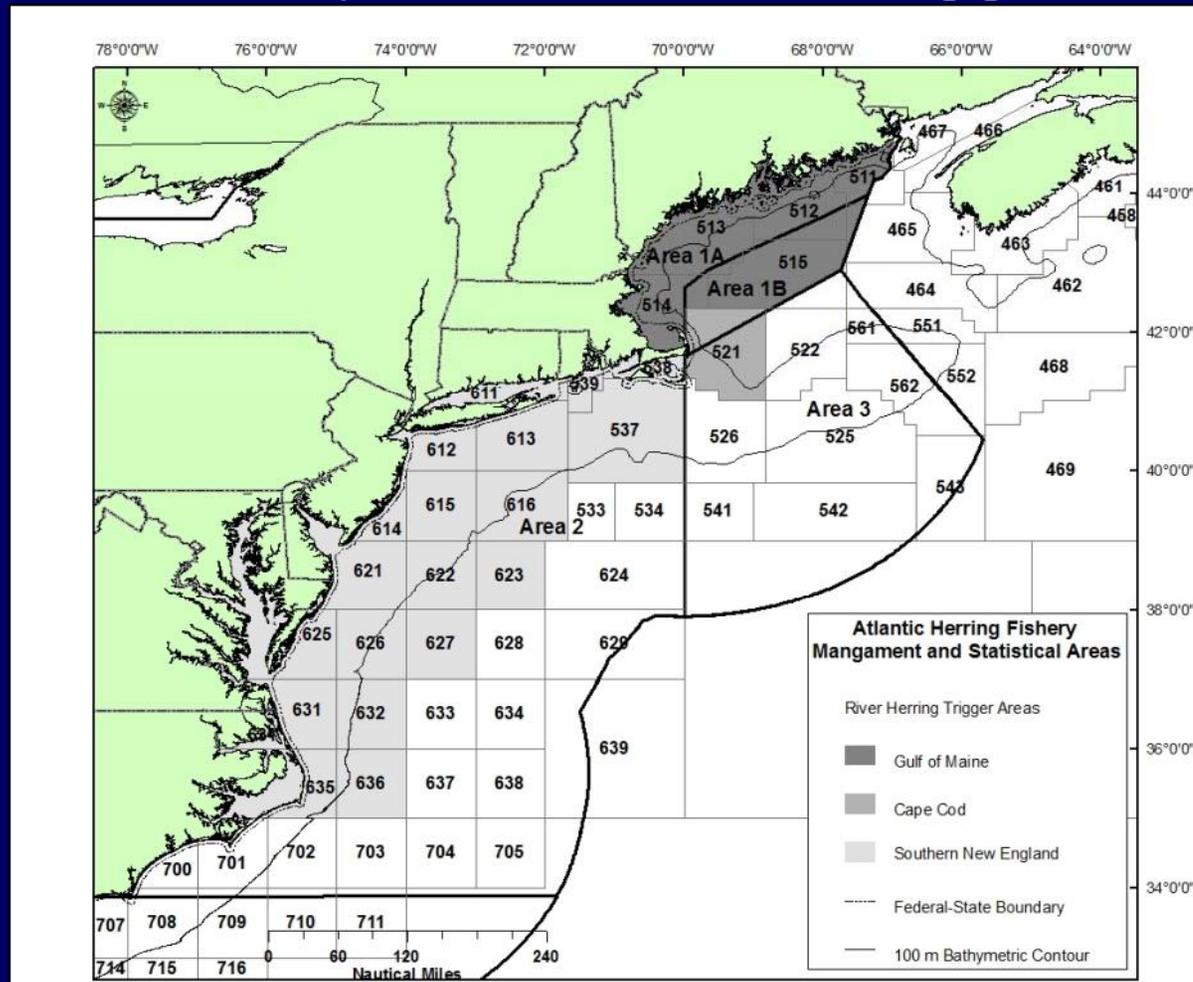
November/December



Trigger-Based Monitoring/Protection Options

Alternatives 2 and 3

Apply monitoring/avoidance or protection measures in a trigger area only, when a catch trigger is reached

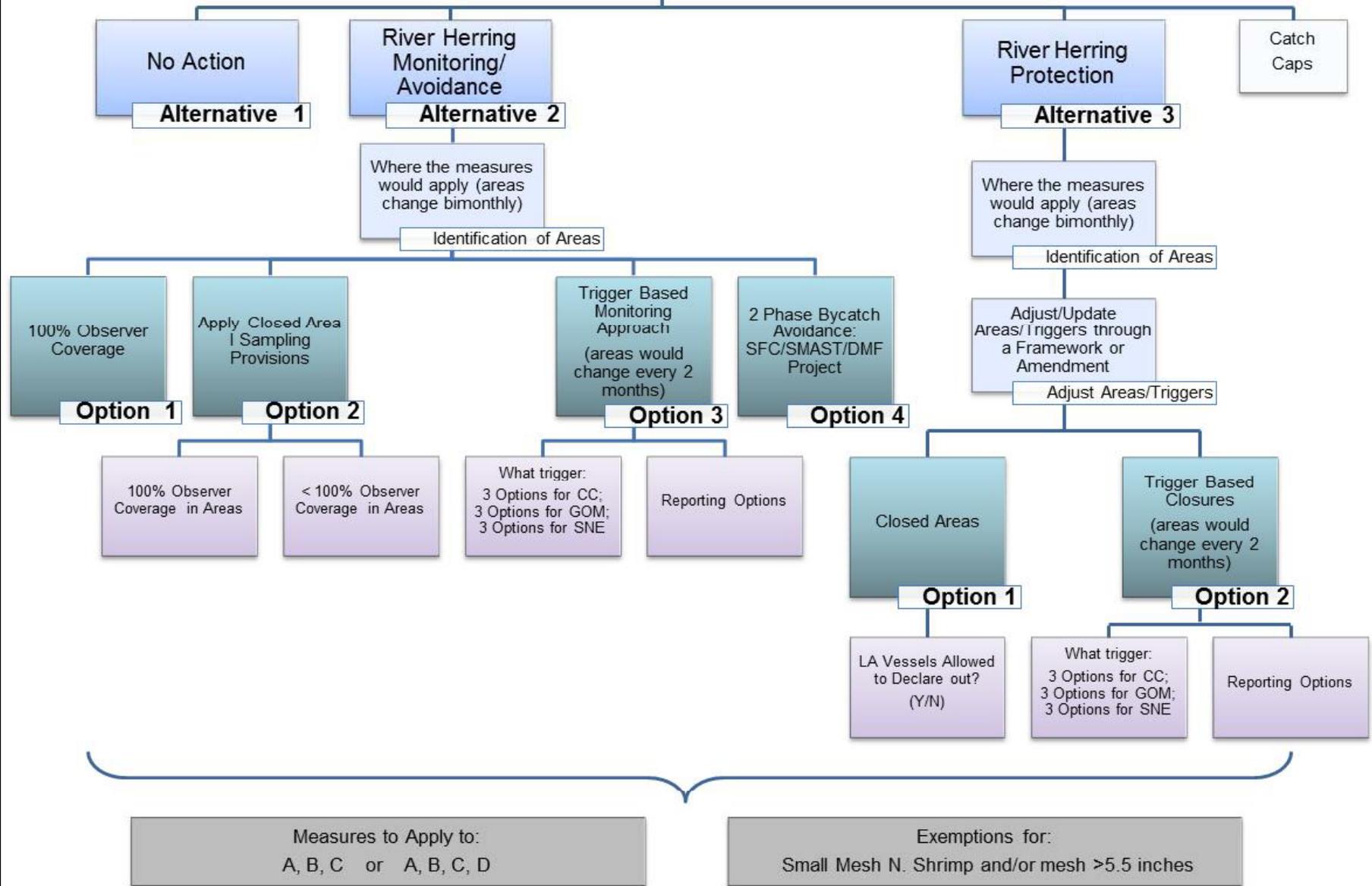


River Herring Catch Caps

Section 3.3.5

- Placeholder to be considered by the Council after ASMFC completes a stock assessment
- Can be implemented in the future through a framework adjustment or specifications process
- Consistent with MA Council approach for setting catch caps through specifications in the future
- Catch trigger options in Amendment 5 lay the technical groundwork

Management Measures to Address River Herring Bycatch



Catch Monitoring Program

Many measures proposed for catch monitoring program will address river herring bycatch.

- Quota monitoring and reporting provisions
- Reporting requirements for federally-permitted dealers (3.1.6)
- Increased observer coverage (3.2.1)
- Maximized retention experimental fishery (3.2.4)
- Measures to maximize sampling and address net slippage (3.2.2 and 3.2.3)

Reporting Requirements for Dealers

Section 3.1.6

- Option 1: No Action
- Option 2: Require to Accurately Weigh All Fish
 - Sub-Option: If dealers do not sort by species, they would be required to document (annually) how they estimate the relative composition of a mixed catch
 - Sub-Option: If dealers do not sort by species, they would be required to document (for each landing submission) how they estimate the relative composition of a mixed catch
 - Sub-Option: Require federally permitted Atlantic herring dealers to obtain vessel representative confirmation of SAFIS transaction records to minimize data entry errors at the first point of sale

Alternatives to Allocate Observer Coverage on Limited Access Herring Vessels

(Section 3.2.1)

1. Targets/priorities for allocating coverage
2. Provisions/process for reviewing/allocating/prioritizing coverage
3. Options for funding observer coverage
4. Provisions for utilizing service providers and authorizing waivers in specific circumstances that may prevent deployment of an observer

ALTERNATIVE	PRIORITIES/TARGETS FOR ALLOCATING OBSERVER DAYS	PROCESS FOR REVIEWING/ALLOCATING DAYS	FUNDING	OBSERVER SERVICE PROVIDERS/WAIVERS	ADDITIONAL COMMENTS
ALT 1: NO ACTION	<ul style="list-style-type: none"> • SBRM • CAI and other areas/times required in A5 	<ul style="list-style-type: none"> • No Action (SBRM) 	<ul style="list-style-type: none"> • No Action (Federal funds, subject to resource limitations and priorities) 	No Action (N/A)	
ALT 2: 100% OBSERVER COVERAGE	<ul style="list-style-type: none"> • 100% of declared herring trips for A/B/C vessels 	<ul style="list-style-type: none"> • No Action • SBRM process plus additional days required on A/B/C vessels 	<ul style="list-style-type: none"> • Option 1: No Action • Option 2: Federal and Industry Funds 	<ul style="list-style-type: none"> • Consistent with scallop/groundfish regs; option to include States as service providers 	<ul style="list-style-type: none"> • Herring PDT analysis evaluates NEFOP observer coverage and provides input re. certification for States that may provide sea sampling services
ALT 3: REQUIRE SBRM COVERAGE LEVELS AS MINIMUM	<ul style="list-style-type: none"> • SBRM coverage levels would be mandated as minimum levels—no reprioritizing • CAI and other areas/times required in A5 	<ul style="list-style-type: none"> • No Action (SBRM) 	Same as Alt 2	Same as Alt 2	<ul style="list-style-type: none"> • Herring PDT analysis evaluates distribution of LA herring vessels across current SBRM fleets to identify the fleets to which this alt applies
ALT 4: ALLOCATE COVERAGE BASED ON COUNCIL TARGETS	<ul style="list-style-type: none"> • 30% CV for haddock/herring and 20% CV on for RH catch estimates for A/B/C vessels • CAI and other areas/times required in A5 	<ul style="list-style-type: none"> • Option 1: Supplemental NEFSC/SBRM Analysis • Option 2: Herring PDT Supplemental Analysis 	Same as Alt 2	Same as Alt 2	<ul style="list-style-type: none"> • Herring PDT analysis shows example of supplemental analysis that can be provided to the Council to determine priorities when allocating observer days on LA herring vessels

Measures to Maximize Sampling and Address Net Slippage (Section 3.2.2)

SLIPPAGE = Unobserved catch, i.e., catch that is discarded prior to being observed, sorted, sampled, and/or brought on board the fishing vessel. Slippage can include the release of fish from a codend or seine prior to completion of pumping or the release of an entire catch or bag while the catch is still in the water.

- Fish that cannot be pumped and that remain in the net at the end of pumping operations are considered to be *operational discards* and not slipped catch. Observer protocols include documenting fish that remain in the net in a discard log before they are released, and existing regulations require vessel operators to assist the observer in this process. Management measures in this amendment to address this issue and improve the observers' ability to inspect nets after pumping to document operational discards.
- Discards that occur at-sea after catch brought on board and sorted are also not considered slipped catch.

Measures to Maximize Sampling and Address Net Slippage

- Measures to Maximize Sampling – Safe Sampling Station, Reasonable Assistance, Notification Requirements, Communication, Visual Access to Codend
- Released Catch Affidavit for Slippage Events
- Closed Area I Sampling Provisions (All fish must be pumped across the deck for sampling, including operational discards)
- Catch Deduction and Possible Trip Termination for Slippage Events
- Alternative for Maximized Retention Experimental Fishery

Section	Measure	Measure Description	CM Goals /Objectives Met
3.2.2	Additional Measures to Improve/Maximize Sampling At-Sea		
3.2.2.1	Option 1: No Action		
3.2.2.2	Option 2: Implement Additional Measures to Improve Sampling		
	Sub-Option 2A	Requirement to provide at-sea Observers with a safe sampling station, a safe method to obtain samples, and a storage space for baskets and sampling gear	●
	Sub-Option 2B	Requirement to provide at-sea Observers with reasonable assistance to enable Observers to carry out their duties	●
	Sub-Option 2C	Requirement to provide Observers notice when pumping may be starting and when to allow sampling of the catch, and when pumping is coming to an end.	●
	Sub-Option 2D	Requirement for an Observer on any vessel taking on fish wherever/whenever possible	●
	Sub-Option 2E	In pair trawl operations, additional communication requirement between boats if fish are being pumped to both vessels to keep the Observer informed of catch.	●
	Sub-Option 2F	Requirement to provide and assist NMFS certified Observers in obtaining visual access to the codend (or purse seine bunt) and any of its contents after pumping has ended, before the pump is removed	●

3.2
Catch
Monitoring
At-Sea:
More Detail

Section	Measure	Measure Description	CM Goals/ Objectives Met
3.2.3	Measures to Address Net Slippage		
3.2.3.1	Option 1	No Action	Status Quo in Fishery
3.2.3.2	Option 2	Require Released Catch Affidavit for Slippage Events	★ ●
3.2.3.3	Option 3	Closed Area I Sampling Provisions	★ ●
3.2.3.4	Option 4	Catch Deduction (and Possible Trip Termination) for Slippage Events	
	Sub-Option 4A	Catch deduction and possible trip termination	★ ●
	Sub-Option 4B	Closed area I provisions with catch deduction and possible trip termination	★ ●
	Sub-Option 4C	Closed area I provisions with trip termination only (10 Events)	★ ●
	Sub-Option 4D	Closed area I provisions with trip termination only (5 Events)	★ ●

3.2
Catch
Monitoring At-
Sea:
More Detail

Section	Measure	Measure Description	Goals/Objectives Met
3.2.4	Maximized Retention Alternative (Experimental Fishery)		
3.2.4.1	Alternative 1	No Action	Status Quo in Fishery
3.2.4.2	Alternative 2	Evaluation of Maximized Retention Through the Annual Issuance of Exempted Fishing Permits	Unclear

3.2
 Catch
 Monitoring
 At-Sea:
 More Detail

**Potential Impacts of the Catch Monitoring at Sea Alternatives
(Section 3.2)**

Measure Description	VEC 1: Atlantic Herring	VEC 2: Non-Target Species /Other Fisheries	VECs 3 and 4: Essential Fish Habitat and Protected Resources	VEC 5: Fishery Related Business and Communities
<p>Section 3.2.1.2, Alternative 2 - 100% Observer Coverage: Funding Option 2 - federal and industry funds States as Service Providers Option 2 - states authorized</p>	<p style="text-align: center;">Positive</p> <p>Benefits to resource would be highest under this alternative because it increases the likelihood of better documenting herring catch the most; may improve the precision of estimates of discards and/or landed bycatch; long-term effects may have low positive effects; relationship between observer coverage and precision important to consider at high levels of coverage</p>	<p style="text-align: center;">Positive</p> <p>May be difficult, if not impossible, to generate bycatch estimates for non-target species like river herring with a CV of zero; may increase precision and capture rare events; may not be feasible; analysis of coverage shows increase in precision may not occur, although could shift funding from other fisheries</p>	<p style="text-align: center;">Neutral/Unknown</p> <p>Measures are not likely to affect EFH; the effects to Protected Resources are dependent on the amount of funding</p>	<p style="text-align: center;">Potentially High Negative</p> <p>Impacts depend on funding options for observer coverage; would only create negative impacts on herring-related businesses or communities if Federal funds were not used to pay for the additional observer coverage; full cost of 100% coverage of the A/B/C herring fishery is likely to be approximately \$2.5M per year</p>
<p>Section 3.2.1.3, Alternative 3 - Require SBRM Coverage Levels as Minimum: Funding Option 2 - federal and industry funds</p>	<p style="text-align: center;">Low Positive</p> <p>May improve the precision of estimates of discards and/or landed bycatch; long-term effects may have low positive effects</p>	<p style="text-align: center;">Unknown</p> <p>May improve estimates of bycatch due to increased sample sizes, although could shift sampling resources away from other fisheries, meaning less precise estimates of bycatch and greater uncertainty of impacts to resource</p>	<p style="text-align: center;">Neutral</p> <p>Measures are not likely to affect EFH or Protected Resources that may be encountered by the herring fishery</p>	<p style="text-align: center;">Potentially Low Negative</p> <p>Impacts depend on funding options for observer coverage; would negatively impact herring-related businesses if the industry has to pay for coverage</p>
<p>Section 3.2.1.4, Alternative 4 - Council Specified Targets: Funding Option 2 - federal and industry funds</p>	<p style="text-align: center;">Low Positive</p> <p>May improve the precision of estimates of discards and/or landed bycatch; long-term effects may have low positive effects</p>	<p style="text-align: center;">Positive</p> <p>Allocation of additional observer coverage of river herring and haddock may lead to a great understanding and reliability of their bycatch estimates; would not impact the SBRM allocation scheme, and would therefore not cause other fisheries to be under-sampled</p>	<p style="text-align: center;">Neutral/Low Positive</p> <p>Measures are not likely to affect EFH; Protected Resources may benefit from additional monitoring</p>	<p style="text-align: center;">Potentially Negative</p> <p>Impacts depend on funding options for observer coverage; would negatively impact herring-related businesses if the industry has to pay for coverage; depends on the Council-specified targets/priorities</p>

**Potential Impacts of the Catch Monitoring at Sea Alternatives
(Section 3.2) Continued**

Measure Description	VEC 1: Atlantic Herring	VEC 2: Non-Target Species /Other Fisheries	VECs 3 and 4: Essential Fish Habitat and Protected Resources	VEC 5: Fishery Related Businesses and Communities
<p>Section 3.2.2.2, Additional Measures Improve Sampling: Option 2A - requirements for a safe sampling station Option 2B - requirements for reasonable assistance Option 2C - requirements to provide notice Option 2D - requirements for trips with multiple vessels Option 2E - pair trawl communication Option 2F - visual access to net/codend</p>	<p align="center">Neutral</p> <p>May have little impact on the Atlantic herring resource; several of the measures may provide some additional information on the contents of slipped nets, discards, and landed catch, but likely to be qualitative</p>	<p align="center">Low Positive</p> <p>Several of the measures may provide some additional information on the contents of slipped nets, discards, and landed catch, but likely to be qualitative</p>	<p align="center">Neutral</p> <p>Measures are not likely to affect EFH or Protected Resources</p>	<p align="center">Neutral</p> <p>Minimal direct economic impacts on the herring fishery; the proposed steps for improving or maximizing sampling at sea are currently a part of every herring vessels' normal operating practices, according to interviewed captains; it is unknown how this measure may affect purse seine operations; any economic impacts to the herring fishery will be through increased administrative and regulatory burden, but expected to be slight</p>
<p>Section 3.2.3.2, Measures to Address Net Slippage: Option 2 - require released catch affidavit for slippage events</p>	<p align="center">Unknown</p> <p>May improve accounting of Atlantic herring catch but still represents an estimate; may therefore be redundant and unlikely to affect herring resource</p>	<p align="center">Neutral</p> <p>May improve accounting of non-target species/other fisheries catch, but still represents an estimate</p>	<p align="center">Neutral</p> <p>Released catch affidavits are not likely to affect EFH or Protected Resources</p>	<p align="center">Neutral</p> <p>Minimal impacts on the directed herring fishery</p>
<p>Section 3.2.3.3, Measures to Address Net Slippage: Option 3 - CAI Sampling Provisions</p>	<p align="center">Positive</p> <p>Likely to improve accounting of Atlantic herring catch; may improve statistics used in stock assessment and reduce uncertainty to an unknown degree</p>	<p align="center">Low Positive</p> <p>Likely to improve accounting of non-target species/other fisheries</p>	<p align="center">Low Positive</p> <p>Observer coverage levels are not likely to affect EFH; information gathering for Protected Resources may benefit from increased coverage</p>	<p align="center">Potentially Low Negative</p> <p>Minimal direct economic impacts on the herring fishery; however there may be new challenges associated with bringing operational discards on board for some vessels; increased times spent pumping fish to be sampled and observed; it is unknown how this measure may affect purse seine operations</p>

**Potential Impacts of the Catch Monitoring at Sea Alternatives
(Section 3.2) Continued**

Measure Description	VEC 1: Atlantic Herring	VEC 2: Non-Target Species /Other Fisheries	VECs 3 and 4: Essential Fish Habitat and Protected Resources	VEC 5: Fishery Related Businesses and Communities
<p>Section 3.2.3.4, Measures to Address Net Slippage: Option 4 - catch deduction (and possible trip termination) for slippage events Option 4A -catch deduction, possible trip termination Option 4B - with CAI provisions Option 4C - with CAI provisions (10 events) Option 4D - with CAI provisions (5 events)</p>	<p>Potentially Low Positive</p> <p>would likely result in sub-ACLs being attained more quickly with subsequent directed fishery closures occurring sooner; possible increase in herring abundance</p>	<p>Neutral/Potentially Low Positive</p> <p>Effects difficult to predict; trip termination could reduce the amount of effective fishing effort in an area throughout the course of the fishing season, thereby reducing bycatch and mortality of non-target species; the extent of the impacts will be determined by how fishing effort shifts and whether or not the fleet moves into an area(s) with a higher potential of encountering these species.</p>	<p>Unknown</p> <p>Not likely to affect EFH; impacts to Protected Resources will vary based on reaction of the fleet to the new measures</p>	<p>Negative</p> <p>Trip termination increases costs to participants; sub-ACL deductions could reduce catch and revenue, although this is likely to have an effect only in Areas 1A and 1B unless sub-ACLs are fully utilized in other areas; aggregate revenues expected to decline by \$12,000-\$15,000 per slippage event in areas where ACLs are fully utilized; potential safety concerns with trip termination and measures that are perceived as punitive</p>
<p>Section 3.2.4.2, Alternative 2: Evaluation of maximized retention through the annual issuance of exempted fishing permits</p>	<p>Unknown/Low Positive</p> <p>Would likely have little effect on the herring resource because it would not affect the mortality rate exerted on the stock; dealers may record previously undocumented catch</p>	<p>Unknown/Low Positive</p> <p>Could increase the scientific knowledge available to fisheries managers about bycatch of non-target species; impacts to mackerel fishery would need to be evaluated by NMFS when the alternative is developed</p>	<p>Neutral</p> <p>Exempted fishing permits are not likely to affect EFH or Protected Resources</p>	<p>Unknown</p> <p>Could degrade the quality of the catch by damaging in while in the fish hold; retention of non-marketable fish in the hold of a vessel reduces the amount of marketable fish which can be landed; magnitude of these effects are unknown at this time.</p>

Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

- Coincidence of River Herring/Shad
- River Herring Catch Comparison
- Migration Patterns/Assessment of the Monitoring/Avoidance Areas
- Assessment of the Protection Areas
- Impacts of Spatial Closures and Triggers on Herring Fishery
 - Mapping fishing effort relative to proposed monitoring/avoidance/protection areas
 - Projections re. when triggers may be reached
- Impacts on VECs

Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

Table 159 River Herring Catch Comparison for 2010 Data

Fishery	2010 River Herring Catch	
	Catch (lbs.)	Source
Maine Directed Alewife Landings	1,342,293	Maine DMR
All Fleets (estimated)	531,314 *	NEFSC
Directed Herring Fleet (estimated)	165,915 **	Herring PDT
* High of 3.6 mil lbs. in 1997 (1989-2010)		
** High of 1.9 mil lbs. in 2007 (2005-2010)		

Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

Are there any adjacent fishery-based areas?

Are there any adjacent survey-based areas?

Does the fishery-based area overlap a survey-based area?

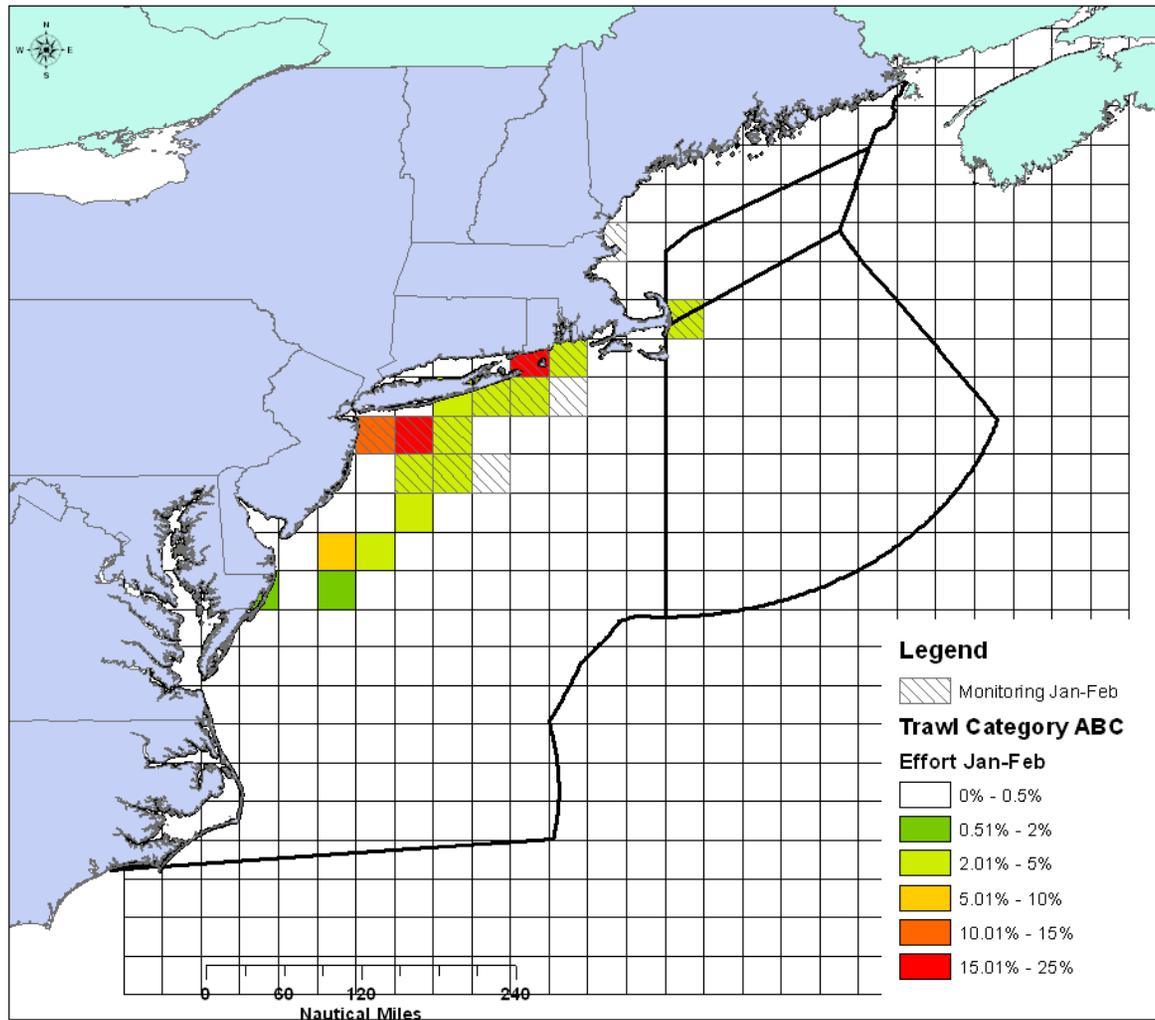
Table 161 Comparison of River Herring Monitoring/Avoidance for January-February (Fishery-Based Areas) with Winter Survey-Based Areas

Map reference Quarter-degree square	Monitoring/Avoidance Areas												
	January - February												
	G 42704	J 41694	K 41712	L 41711	O 40723	P 40714	Q 40713	S 40732	T 40731	U 40722	X 39733	Y 39724	Z 39723
How many observer tows were greater than 40 lbs of river herring?	1	5	31	43	1	5	3	3	8	3	12	4	2
Are there any adjacent fishery-based areas?	NO	NO	YES										
Are there any adjacent winter survey-based areas?	NO	NO	YES										
Does the fishery-based area overlap a survey-based area?	NO	NO	NO	NO	YES	YES	YES	NO	NO	YES	YES	NO	NO

Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

Figure 108 Trawl Effort (ABC only) and Monitoring Areas, January – February



Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

Table 180 Fishing Time (%) Inside and Outside the Monitoring Areas

Gear	Category	Fishing Time (%)		
		Not Monitored	Monitored	Grand Total
PUR		88.8%	11.2%	100.0%
TR	ABC	55.3%	44.7%	100.0%
	D	76.3%	23.7%	100.0%
Grand Total		62.2%	37.8%	100.0%

Table 182 Herring Catch (%) Inside and Outside the Monitoring Areas

Gear	Category	Herring Catch (%)		
		Not Monitored	Monitored	Grand Total
PUR		94.4%	5.6%	100.0%
TR	ABC	54.2%	45.8%	100.0%
	D	75.8%	24.2%	100.0%
Grand Total		59.4%	40.6%	100.0%

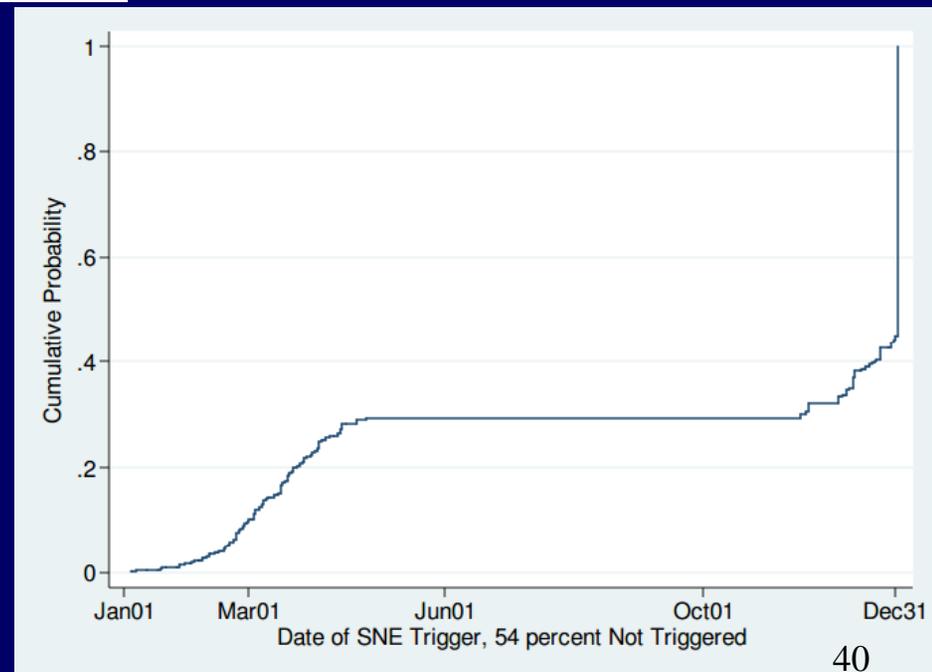
Impacts of River Herring Bycatch Measures

Impacts of Trigger-Based Management Approaches

Area	SUB-OPTIONS		
	3A (Max)	3B (Median)	3C (Mean)
CC	1,159,700	93,400	269,600
GOM	294,000	92,400	127,100
SNE	729,500	585,000	478,500

Table 4 Sub-Options for River Herring Catch Triggers (Pounds)

Figure 131 Probability of Southern New England (Max) Trigger Being Exceeded with 100% Observer Coverage



Impacts of Measures Under Consideration

Impacts of Measures to Address River Herring Bycatch

Economic- Atlantic herring fishery participants		
Possible Measure	Positive Impacts	Negative Impacts
No Action (A1)	No additional positive impacts.	No additional negative impacts.
Fixed Bimonthly Monitoring Areas (Alt.2, Opt.1-3)	There are no economic benefits to the directed Atlantic herring fishery, relative to the status quo (no action alternative).	<p>The SBRM-prioritized monitoring of fishing fleets can be considered the optimal pattern of observer coverage. To the extent that Fixed Bimonthly Monitoring Areas results in diversion of scarce observer days away from this optimal pattern of observer coverage, there is an economic loss. This is a loss of information which will result in less data available about bycatch in other fisheries and, presumably, stock assessments with larger errors. If the Fixed Bimonthly Monitoring Areas do not shift observer days away from the optimal pattern, then there is no information loss.</p> <p>If additional observer coverage is paid for by industry, this represents a negative economic impact. This can be calculated by estimating the additional observer coverage days and multiplying by the cost of an observer day.</p> <p>The Closed Area I Sampling Provisions would entail slightly higher regulatory and compliance costs than the other options being considered.</p>
Fixed Bimonthly Avoidance Areas (Alt.2, Opt.4)		
Fixed Bimonthly Protection Areas (Alt. 3, Opt.1)	There are no direct economic benefits to the directed Atlantic herring fishery, relative to the status quo (no action alternative).	<p>Decreases in revenue in the directed Atlantic Herring Fishery and/or increases in costs of fishing for participants in the directed Atlantic Herring Fishery.</p> <p>The largest impacts are likely to be felt by trawl fishery participants during the winter season due to the high overlap between the Protection Areas and the current spatio-temporal distribution of fishing effort.</p>
Triggered Bimonthly Protection Areas (Alt.3, Opt.2)	There are no direct economic benefits to the directed Atlantic herring fishery, relative to the status quo (no action alternative).	<p>Decreases in revenue in the directed Atlantic Herring Fishery and/or increases in costs of fishing for participants in the directed Atlantic Herring Fishery.</p> <p>The largest impacts are likely to be felt by trawl fishery participants during the winter season due to the high overlap between the Protection Areas and the current spatio-temporal distribution of fishing effort.</p> <p>These costs are likely to be lower than Alt 3, Opt 1; however, there is substantial uncertainty associated with projecting when the Triggers might be reached.</p>

Potential Impacts of the Management Measures to Address River Herring Bycatch (Section 3.3)

Measure Description	VEC 1: Atlantic Herring	VEC 2: Non-Target Species /Other Fisheries	VECs 3 and 4: Essential Fish Habitat and Protected Resources	VEC 5: Fishery Related Businesses and Communities
<p>Section 3.3.2.2.1, 3.3.2.2.2, and 3.3.2.2.3; Alternative 2 - Monitoring/Avoidance Management Options: Option 1 - 100% Observer Coverage Option 2 - CAI sampling provisions Option 3 - trigger based monitoring</p>	<p>Low Positive</p> <p>No direct biological impact on the herring resource; indirect long-term benefits likely to result from improvements to catch sampling, increased sampling, and a reduction in unobserved catch</p>	<p>Positive</p> <p>May improve understanding of river herring encounters in the Atlantic herring fishery through focused monitoring and could lead to possible reductions in river herring mortality if the fleet avoids those areas; more monitoring may mean more bycatch/discards information in specific areas where river herring may be missed; monitoring specific areas instead of across the full range of the species may miss important river herring encounters by the fleet</p>	<p>Low Positive</p> <p>Observer coverage levels are not likely to affect EFH; information gathering for Protected Resources may benefit from increased coverage</p>	<p>Negative</p> <p>Potential for increased costs associated with industry payment for observers; could trigger additional losses, thereby affecting bait supplies; slightly higher regulatory/compliance costs; indirect users of the river herring resource may benefit if higher stock levels of river herring are achieved; uncertainty of trigger mechanisms makes business planning difficult; complexity of trigger reporting options likely to be very challenging for fishery participants to provide accurate catch information in a real-time manner; impact may be mitigated for shrimp fishery and large-mesh bottom trawl vessels if exemption is approved</p>
<p>Section 3.3.2.2.4, Alternative 2 - Monitoring/Avoidance Management Options: Option 4 - two phase bycatch avoidance approach based on SFC project</p>	<p>Neutral</p> <p>No direct biological impact on the herring resource; indirect long-term benefits if the industry can work cooperatively to develop a long-term avoidance strategy</p>	<p>Potentially Positive</p> <p>Could be reductions in river herring mortality in the bimonthly avoidance areas; would need to be adequate incentives in place for the fleet to avoid the areas</p>	<p>Neutral</p> <p>The shift in effort is not likely to affect EFH or Protected Resources</p>	<p>Low Positive</p> <p>Collaboration with trusted institutions may allow herring fishery participants to participate in observations and facilitate monitoring/sampling that will lead to appropriate adjustments of Monitoring/Avoidance Areas and to the development of avoidance strategies; could ultimately reduce costs associated with bycatch avoidance because the industry would likely prioritize cost-effectiveness when developing strategies</p>

**Potential Impacts of the Management Measures to Address River Herring
Bycatch (Section 3.3)**

Measure Description	VEC 1: Atlantic Herring	VEC 2: Non-Target Species /Other Fisheries	VECs 3 and 4: Essential Fish Habitat and Protected Resources	VEC 5: Fishery Related Businesses and Communities
<p>Section 3.3.3.2.1, Alternative 3 - River Herring Protection: Option 1 - closed areas</p>	<p align="center">Low Positive</p> <p>Not likely to affect total removals of herring from the fishery; many of the blocks proposed for seasonal closure under Alternative 3 overlap substantially with the herring fishery, suggesting that directed herring fishing effort may be reduced, at least seasonally, in some of the areas; other fishing activity is likely to occur, though, and any short-term benefits to the resource are likely small and difficult to quantify</p>	<p align="center">Positive</p> <p>May provide river herring protection during at-sea migrations, leading to reductions in mortality; fixed protection areas would not provide river herring mortality protection outside of protection areas; open areas could therefore have increased river herring encounter rates, depending on year-to-year variability associated with river herring distribution</p>	<p align="center">Unknown</p> <p>Closed areas levels are not likely to affect EFH; Protected Resources impacts are unknown due to uncertainty in shift of effort</p>	<p align="center">Negative</p> <p>Decreases in revenue in the directed fishery and/or increases in costs of fishing may occur with the closures; trawl fishery participants during the winter season may experience hardship due to the overlap with Protection Areas; may be straight-forward option to enforce; economic and social costs may be incurred though the variability of the hotspots; impact may be mitigated for shrimp fishery and large-mesh bottom trawl vessels if exemption is approved</p>
<p>Section 3.3.3.2.2, Alternative 3 - River Herring Protection: Option 2 - trigger based closed areas</p>	<p align="center">Low Positive</p> <p>Not likely to affect total removals of herring from the fishery; many of the blocks proposed for seasonal closure under Alternative 3 overlap substantially with the herring fishery, suggesting that directed herring fishing effort may be reduced, at least seasonally, in some of the areas; other fishing activity is likely to occur, though, and any short-term benefits to the resource are likely small and difficult to quantify</p>	<p align="center">Low Positive</p> <p>May provide river herring protection during at-sea migrations, reducing mortality; fixed protection areas would not provide river herring protection outside of the areas; open areas could therefore have increased river herring encounter rates, depending on year-to-year variability associated with river herring distribution; triggered closures may not be implemented quickly enough to protect river herring during migration</p>	<p align="center">Unknown</p> <p>Closed areas levels are not likely to affect EFH; Protected Resources impacts are unknown due to uncertainty in shift of effort</p>	<p align="center">Negative</p> <p>Decreases in revenue in the directed fishery and/or increases in costs of fishing may occur with the closures; trawl fishery participants during the winter season may experience hardship due to the overlap with Protection Areas; economic and social costs may be incurred though the variability of the hotspots, complexity of reporting catch under triggers, and uncertainty associated with reaching the triggers during the fishing year</p>

A5 Timeline – What's Next?

- Draft EIS approved Sept 2011 NE Council meeting
- Preliminary Draft EIS submitted late November
- Formal Draft EIS submitted late January 2012
- Amendment 5 comment period Mar-Apr 2012
- Public hearings March 2012
- Final selection of measures April 2012 Council Meeting
- Completion/submission of Final Measures/FEIS ASAP, May/June 2012
- Implementation January 1, 2013

Examination of issued related to Atlantic herring spawning and management

Matt Cieri on behalf of the Technical
Committee

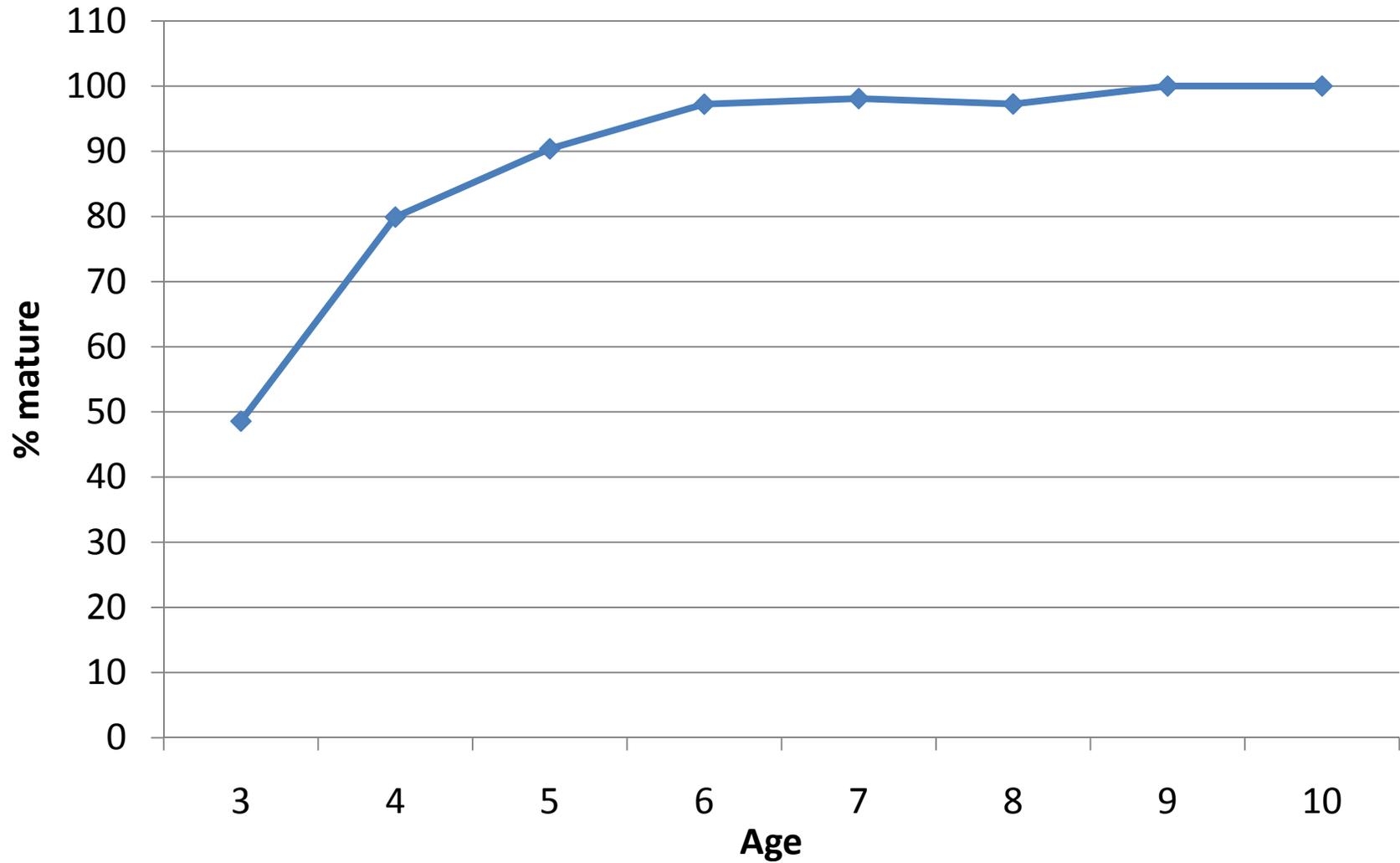
Background

- Section initiated a review of spawning regulations and management
- TC took a look at the issues and developed a white paper based on Section discussions
- Examined the issues via conference call in January
- Brought up a number of issues and questions which were further analyzed

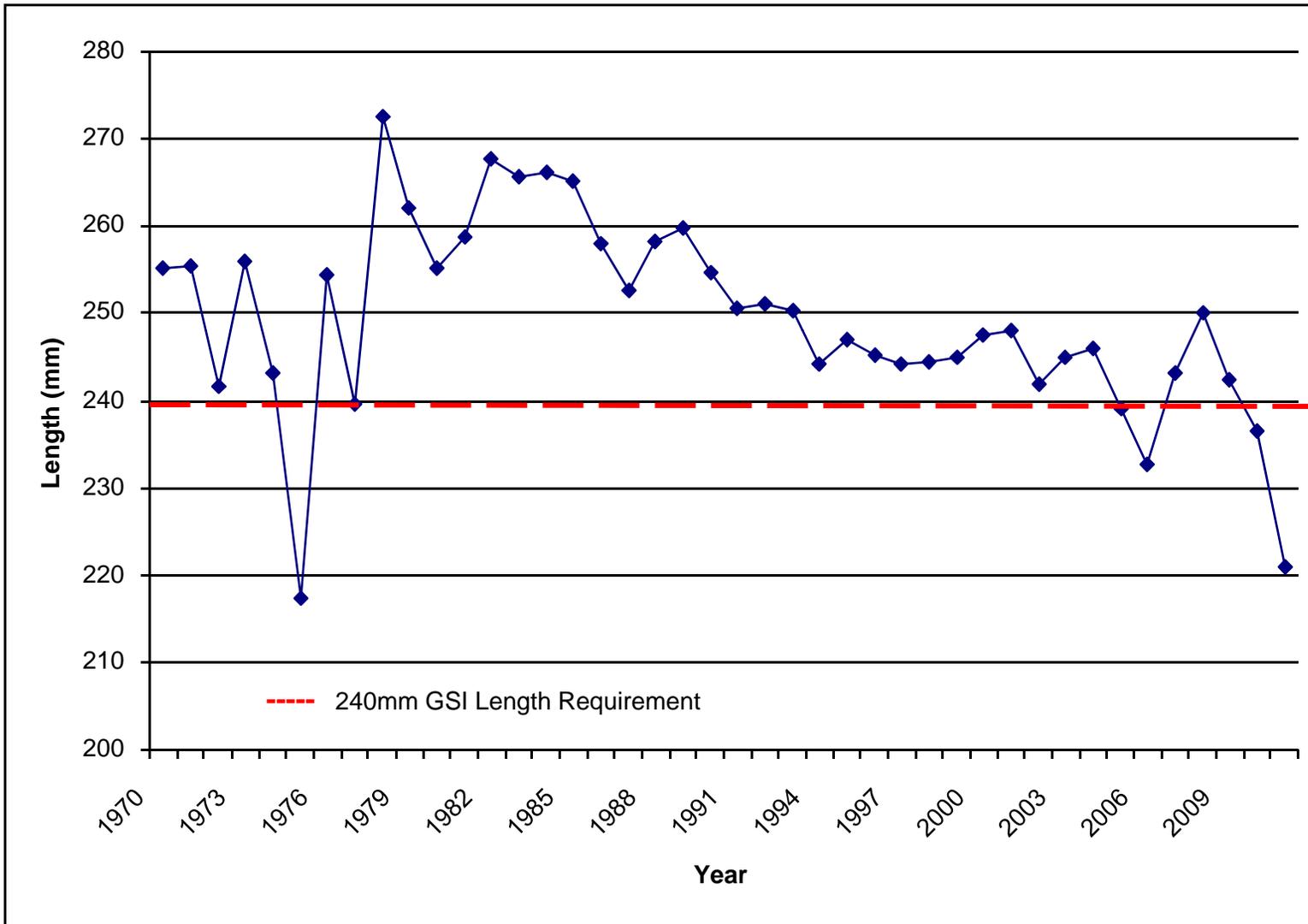
First things First

- Issue of smaller fish spawning
- Generally seen across the fishery
 - All Areas
- Spawning is at the same age (mostly)
- Size at age has decreased
- Implications for current spawning regulations

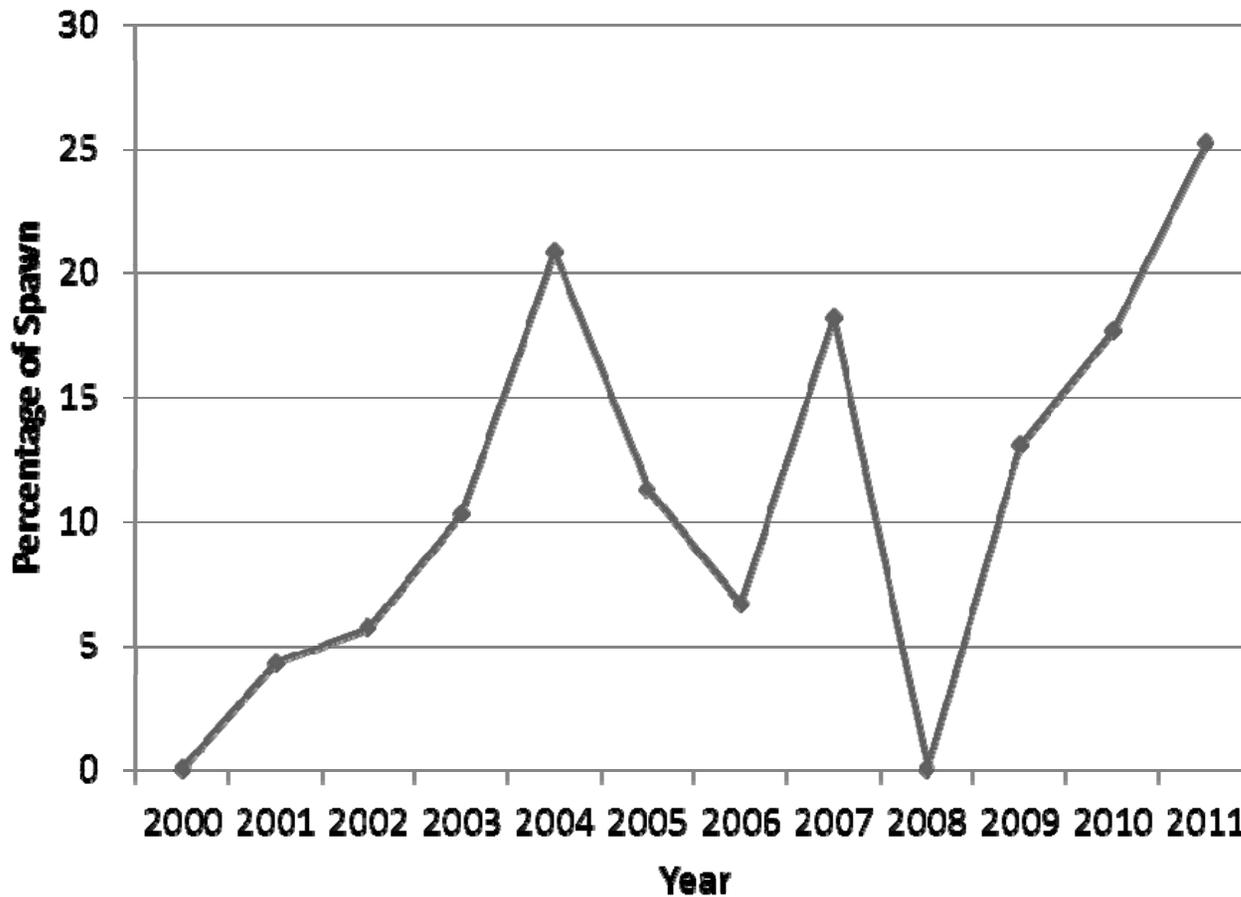
Percentage of mature females by age 2005-2010 Area 1A



Mean total length (in mm) of age three females caught in area 1A during the spawning season (Aug –Oct)



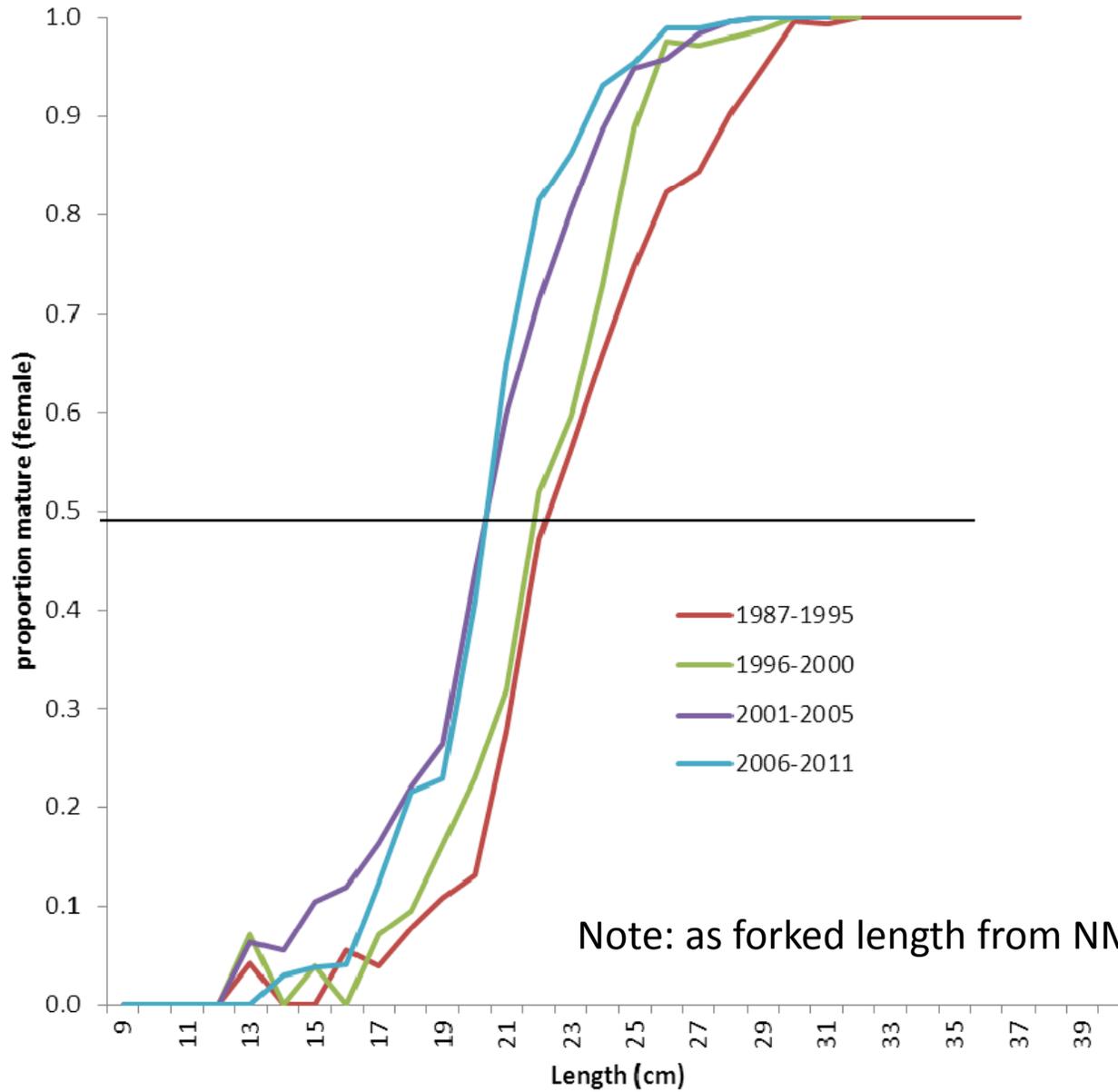
Percentage of spawning or developing females (> 10% GSI or > ICNAF stage 3) Aug –Oct. by year in Area 1A, for fish 23-24 cm total length. Note: from commercial samples.



Percentage of spawning or developing females (> 10% GSI or > ICNAF stage 3) Aug –Oct. by year and length bin from commercial samples.
 Note blank cell are because of “no data” while zeros are calculated

Total Length (cm)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	average 2000-2011
21-22										0		20	10
22-23			5	0		0	0	0		0	0	23	4
23-24	0	4	6	10	21	11	7	18	0	13	18	25	11
24-25	31	16	38	13	27	23	9	19	0	19	12	30	20
25-26	39	28	49	30	38	42	15	20	11	18	30	40	30
26-27	70	36	65	42	59	57	29	26	24	7	27	55	41
27-28	87	76	85	66	67	72	41	35	47	29	37	80	60
28-29	94	84	90	77	74	74	62	50	51	46	44	69	68
29-30	96	96	96	89	84	81	71	68	59	64	64	68	78
30-31	98	100	100	92	86	94	72	84	73	83	69	100	88
31-32	100	100	100	100	100	95	73	90	85	100	100	100	95
32-33	100	100	100				83	100	50	0	67		55
33-34							100	100	100				

Proportion of females mature 1987-2011: all areas



TC questions and further analysis

- Do less than 24 cm fish spawn earlier than larger spawners?
 - Generally “No”: Fish in the same area develop along the same timeline regardless of size
 - Males tend to stay at stage 4 prior to females reaching full maturity

TC questions and further analysis

- Do the default spawning dates overlap with peak spawning times?
 - Difficult to tell as fishing activity is halted as an area approaches spawning times
 - Generally the current regulations seem to be working well.
 - Some indication that Downeast and Mid- Maine are spawning later than defaults
 - Not significantly so...about 5 Days
 - Could be changed: but may overlap other areas more strongly

Spawning Closures Dates 2005 - 2011

	Eastern Maine		Western Maine		MA/NH	
	Close	Open	Close	Open	Close	Open
Default	15-Aug	12-Sep	1-Sep	29-Sep	21-Sep	19-Oct
2011	25-Aug	21-Sep	4-Sep	1-Oct	16-Sep	13-Oct
2010	15-Aug	11-Sep	1-Sep	28-Sep	1-Oct	28-Oct
2009	25-Aug	22-Sep	17-Sep	14-Oct	21-Sep	18-Oct
2008	17-Aug	14-Sep	5-Sep	3-Oct	21-Sep	19-Oct
2007	11-Aug	8-Sep	13-Sep	11-Oct	24-Sep	19-Oct
2006	28-Aug	25-Sep	1-Sep	1-Nov	15-Sep	13-Oct
2005	22-Aug	18-Sep	2-Sep	20-Sep	21-Sep	19-Oct

TC questions and further analysis

- Are regulations necessary (or practical) to address vast differences between sampled herring taken in the northern and southern range of spawning areas on the same dates?
 - Some differences found between MA-DMF and ME DMR sampling.
 - Maybe an issue of fish in the northern part of the MA/NH area more mature than southern areas
 - May be a need to adjust the MA/NH and W. ME Spawning area boundary
 - TC can examine more fully if warranted

TC questions and further analysis

- Do the current spawning closure regulations effectively protect local populations from extinction/extirpation? Could the regulations be improved upon?
 - “The TC agrees that these measures are highly effective to protect spawning fish when aggregated for spawning.”
 - Some improvement and standardization needed

TC questions and further analysis

- Should the goals of the spawning closures be clarified or expanded?
 - More of a management issue than technical
 - Some clarification is probably necessary

TC questions and further analysis

- Is it appropriate to sample a non-directed trip? Would directed-only be definable or practical?
 - Non-directed trips are important especially as the directed fishery is closed out of the areas during that time
 - Non-directed trips provide some window (though limited) on the progression of spawning

TC questions and further analysis

- **How many samples are necessary?**
 - Current regulations require “at least two samples of 50 fish or more, in either length category, taken from commercial catches during a period not to exceed seven days apart”
 - TC suggests that this be increased to two 100 fish samples instead of two 50 fish samples

TC questions and further analysis

- Do the spawning regulations provide sufficient guidance for standardized regulations among states?
 - Generally “No”: Discrepancies in the regulations among states.
 - Need to standardize
 - Has worked well due to cooperation between MA, NH, and ME sampling personnel
 - But is not codified: As personnel change this could be an issue

TC summary Recommendations

- To initiate an addendum to address spawning management including:
 - Goals and Objectives
 - Adjust size of fish analyzed downward
 - Examine the default dates for E. & W. Maine area
 - If desired
 - Address the MA/NH and W. Maine spawning area boundary
 - Standardize sampling protocol and regulations among states.