



ALWTRP Vertical Line Model:

Updates and Analysis of Team Members' Proposals

Prepared for the Atlantic Large Whale Take Reduction Team
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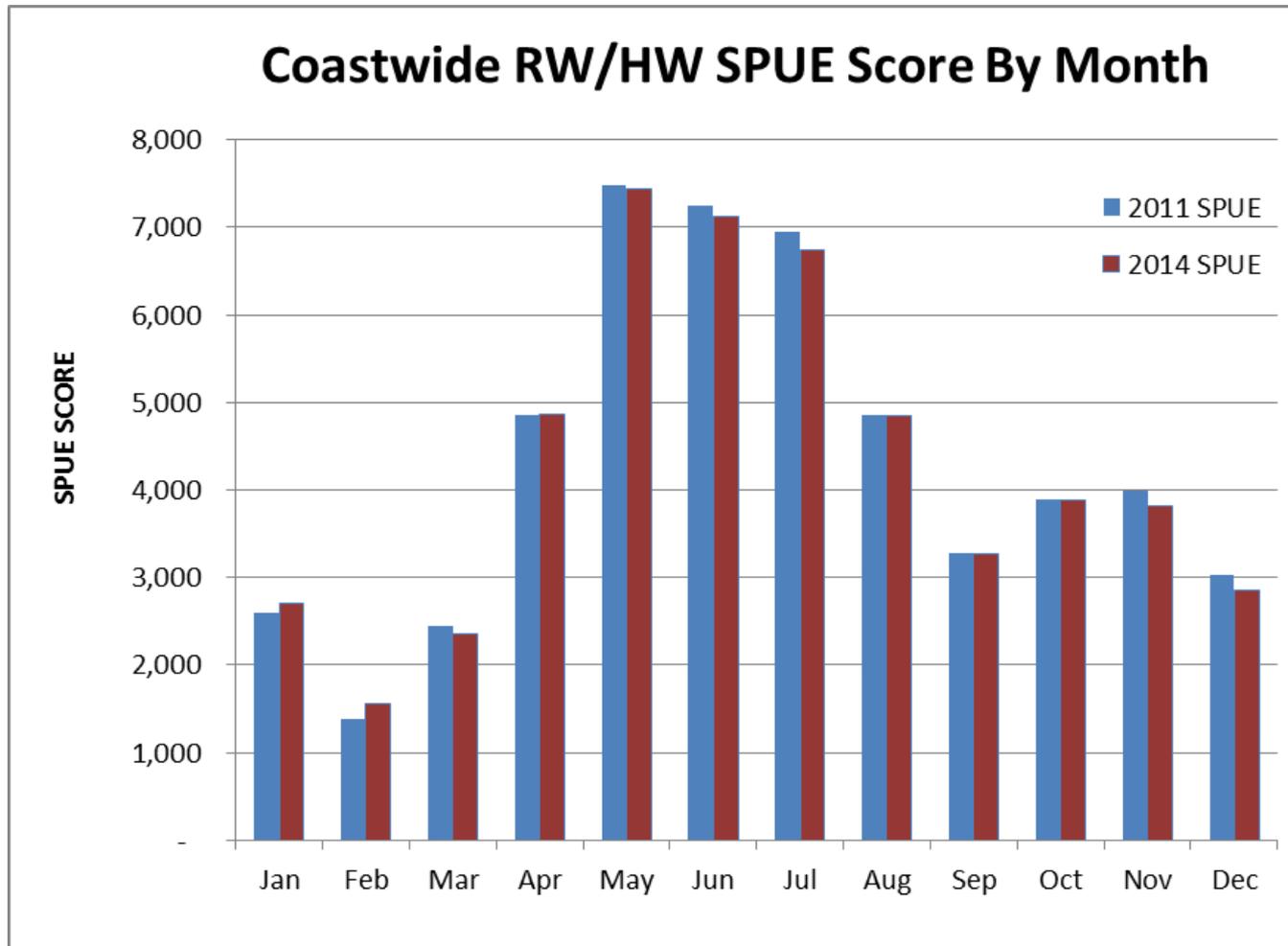
Updated Vertical Line Estimates

- ❖ Baseline scenario takes into account all newly enacted ALWTRP requirements, including:
 - Minimum trap per trawl requirements that become applicable June 1, 2015, as specified in June 27, 2014 Final Rule.
 - Closure of Massachusetts Restricted Area from February 1 through April 30 (and expanded area), as specified in December 12, 2014 Final Rule.
- ❖ Baseline also incorporates closure of the Outer Cape LMA from February 1 through March 31, as specified in the FMP and December 12, 2014 Final Rule.
- ❖ Analysis of baseline co-occurrence ***assumes compliance with new regulatory requirements.***
 - Baseline gear configurations revised to conform to minimum trap per trawl requirements.
 - Assumes suspension of all activity affected by closure of Massachusetts Restricted Area and Outer Cape LMA.

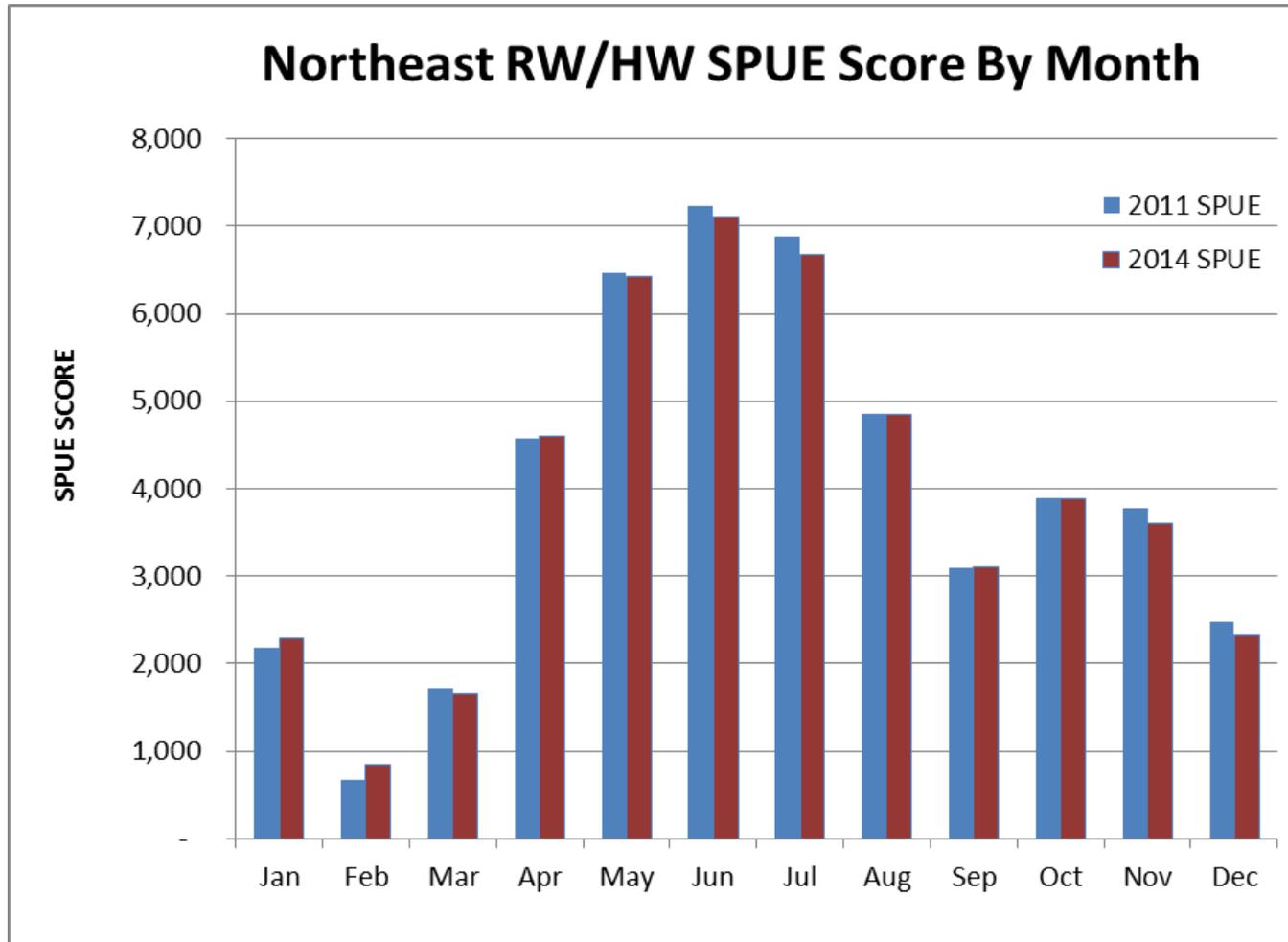
Updated Whale Sightings

- ❖ Model incorporates updated whale sightings dataset from North Atlantic Right Whale Consortium.
- ❖ Includes new data from aerial surveys by:
 - Center for Coastal Studies (Cape Cod Bay) - through 2013.
 - NEFSC (Northeast and Mid-Atlantic) - through 2012.
 - Wildlife Trust (South Carolina and northern/Georgia EWS) - through 2011.
 - Sea to Shore Alliance (South Carolina and northern/Georgia EWS) - 2011 - 2013.
 - Florida Wildlife Research Institute (southern and central EWS) - through 2013.
 - Associated Scientists at Woods Hole (Florida nearshore) - 2011, 2012.
- ❖ Also incorporates new data from New England Aquarium shipboard surveys through 2012.

Impact on RW/HW SPUE Scores: Coastwide

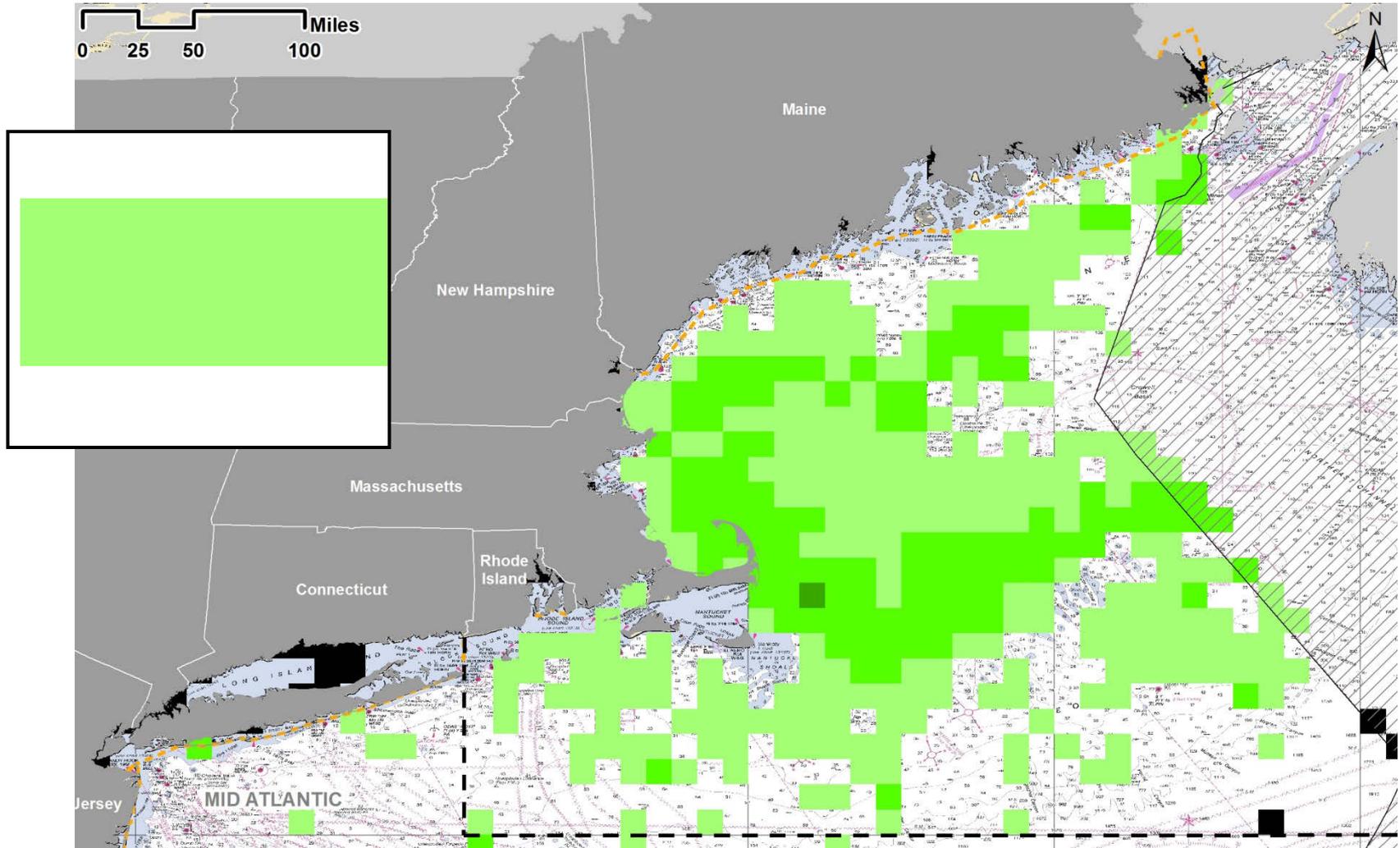


Impact on RW/HW SPUE Scores: Northeast

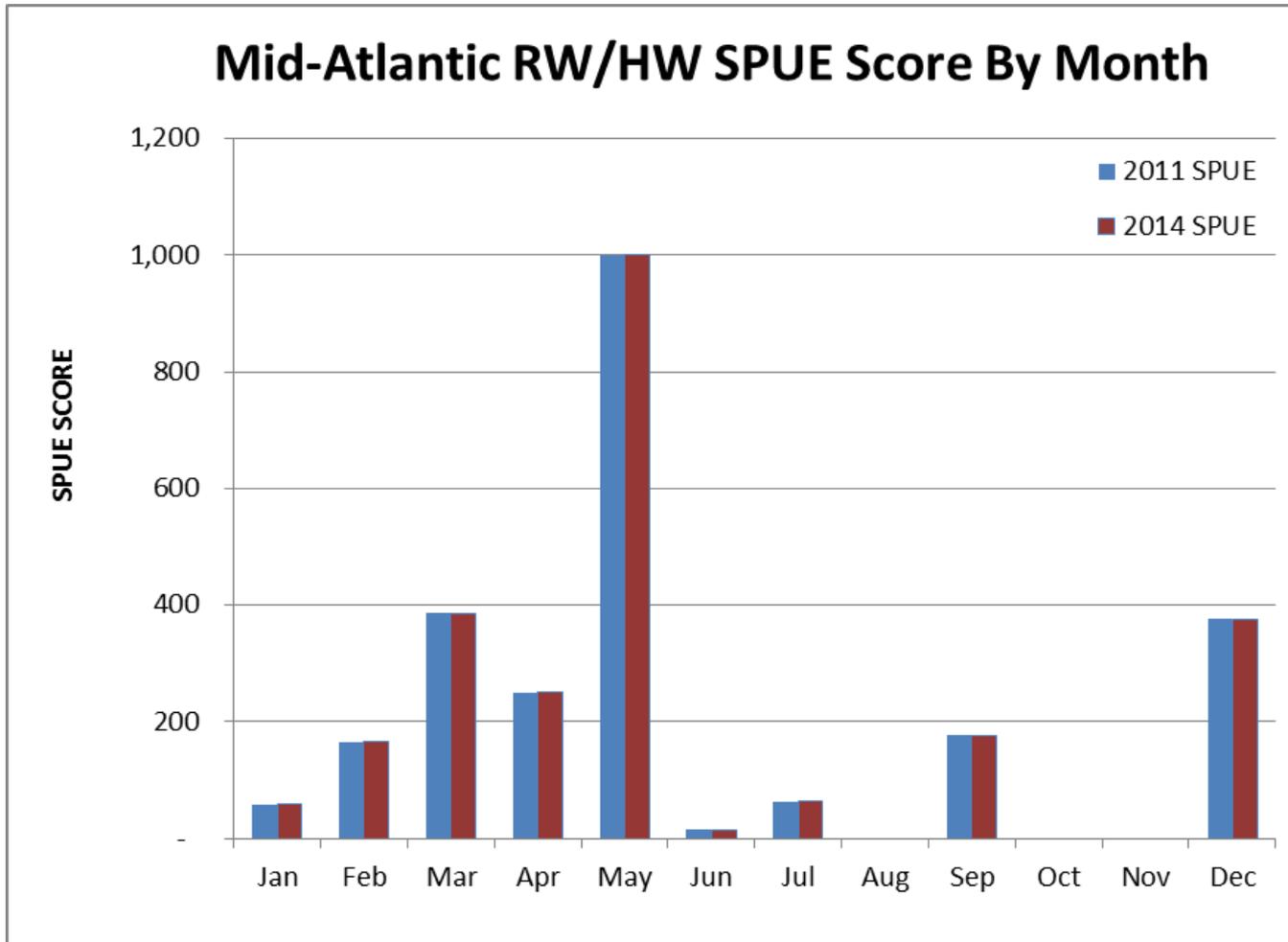


RW/HW SPUE Scores: Northeast

Annual Average SPUE Scores RW/HW

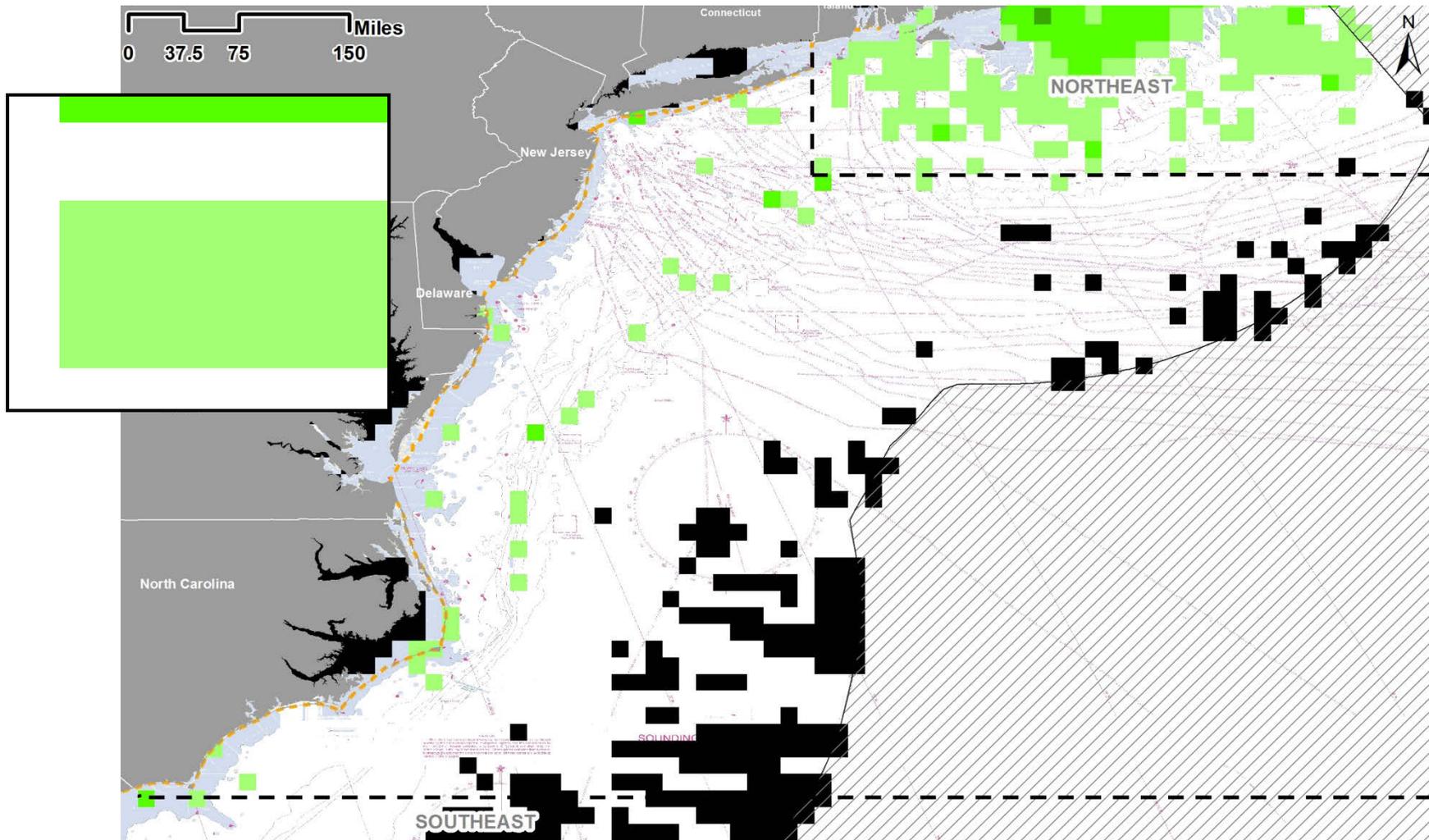


Impact on RW/HW SPUE Scores: Mid-Atlantic

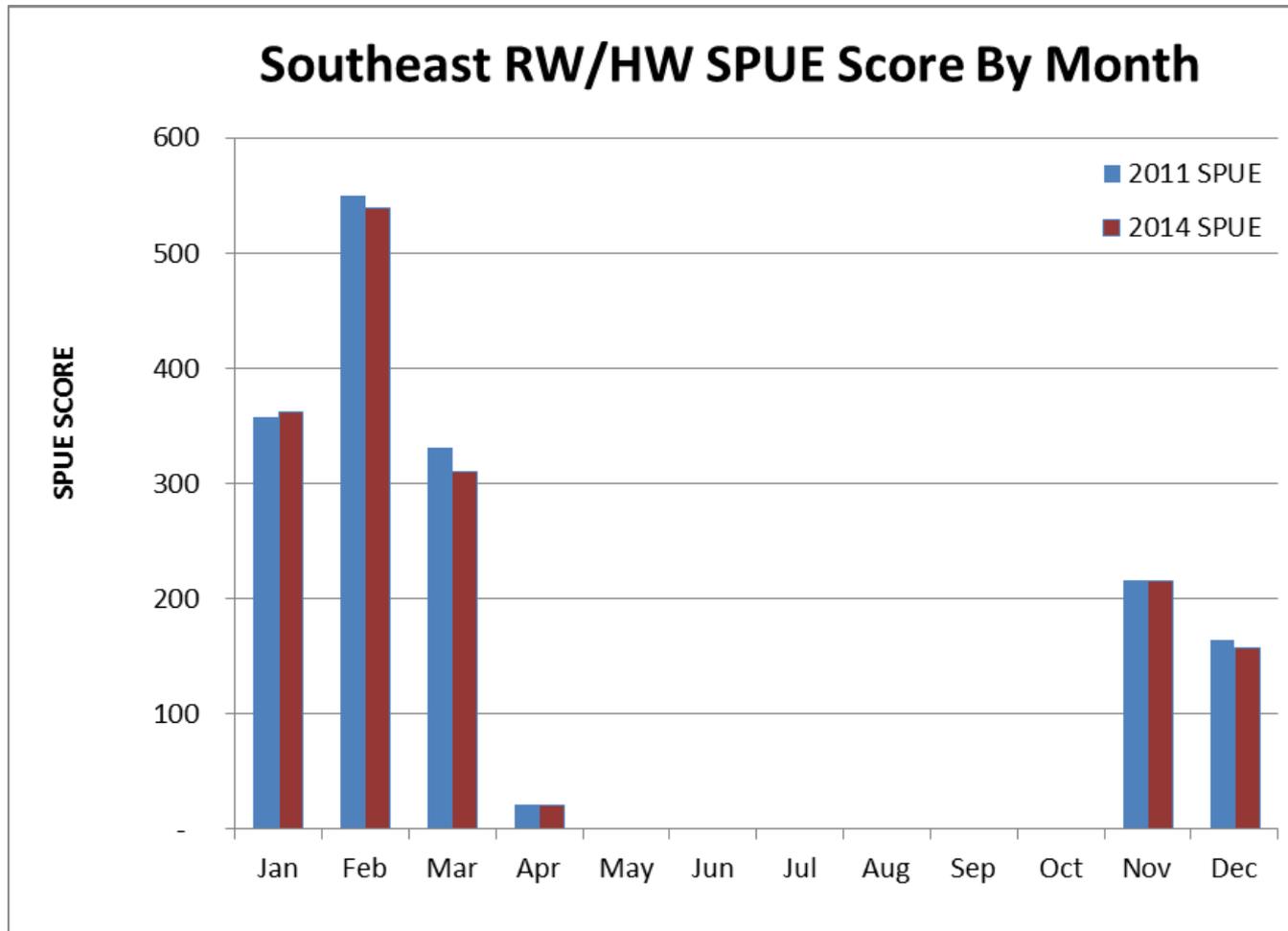


RW/HW SPUE Scores: Mid-Atlantic

Annual Average SPUE Scores RW/HW

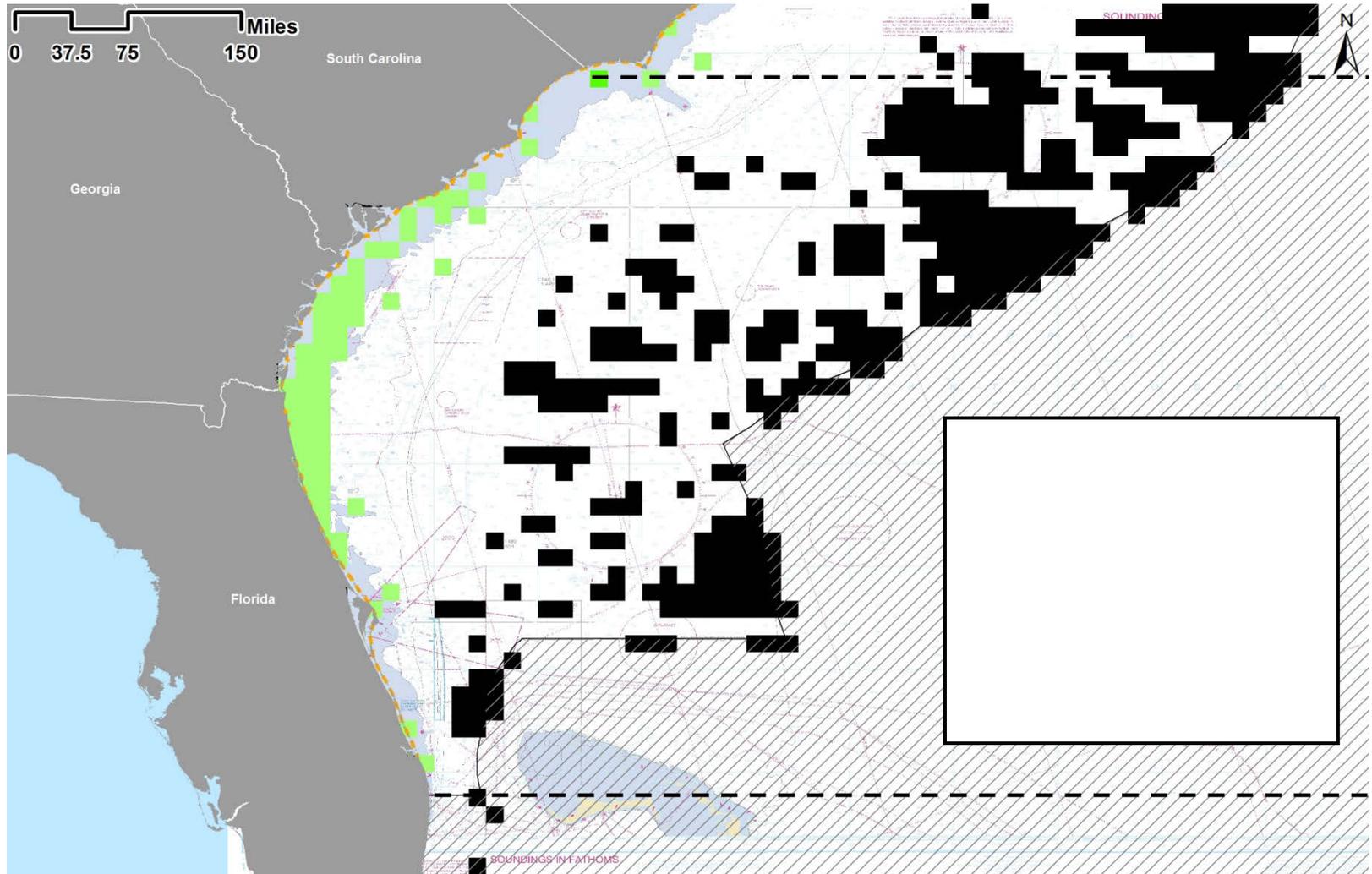


Impact on RW/HW SPUE Scores: Southeast



RW/HW SPUE Scores: Southeast

Annual Average SPUE Scores RW/HW



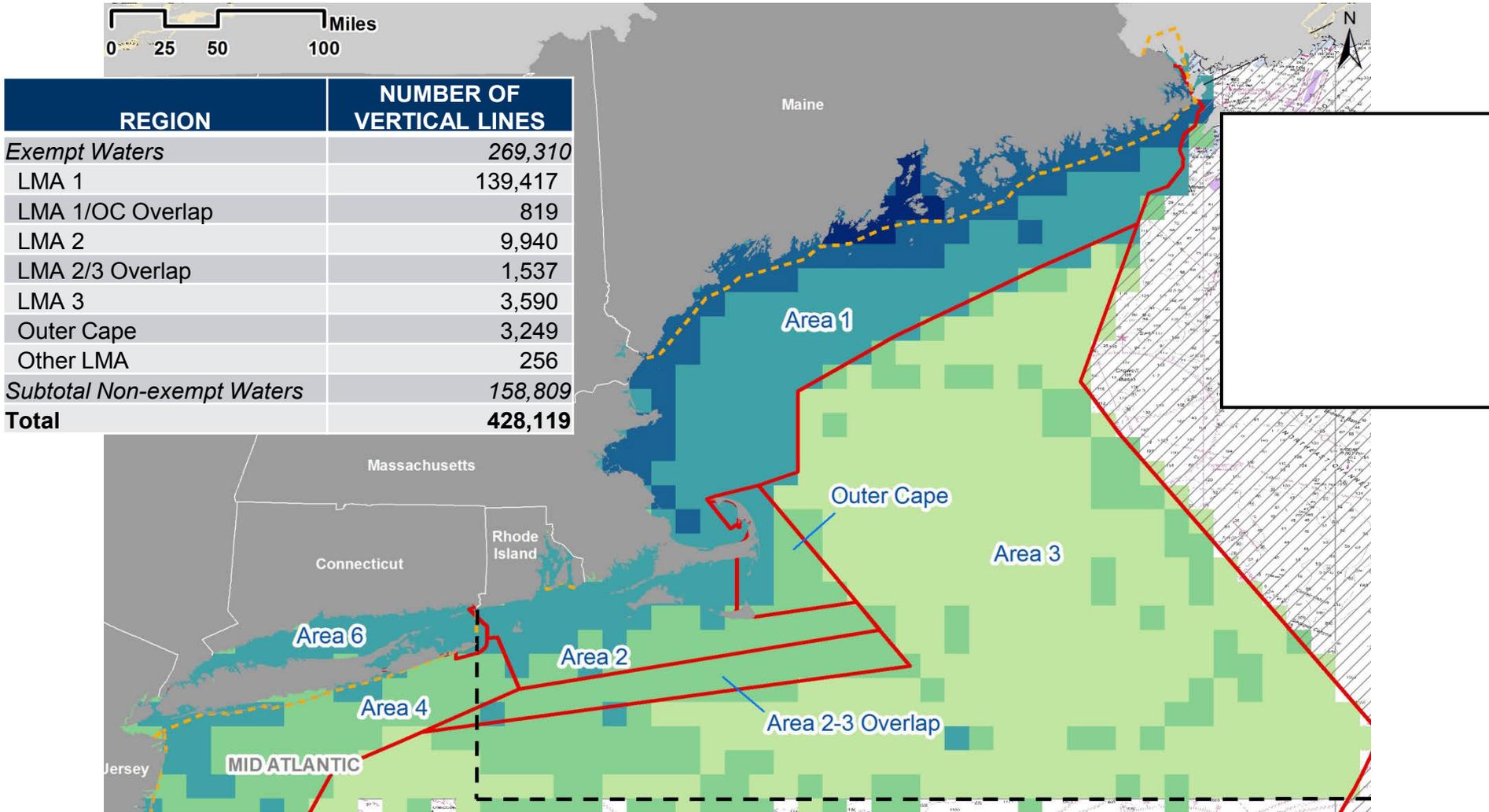
Vessel Activity: No Changes

- ❖ Due to time constraints, vessel activity datasets have not been updated.
- ❖ Activity for vessels with Federal permits - 2011 data.
- ❖ Activity for vessels that fish exclusively in state waters:

STATE	YEAR	STATE	YEAR
ME	2011	DE	2011
NH	2010	MD	2010
MA	2010	VA	2010
RI	2010	NC	2011
CT	2011	SC	2010
NY	2010	GA	2010
NJ	2010	FL	2010

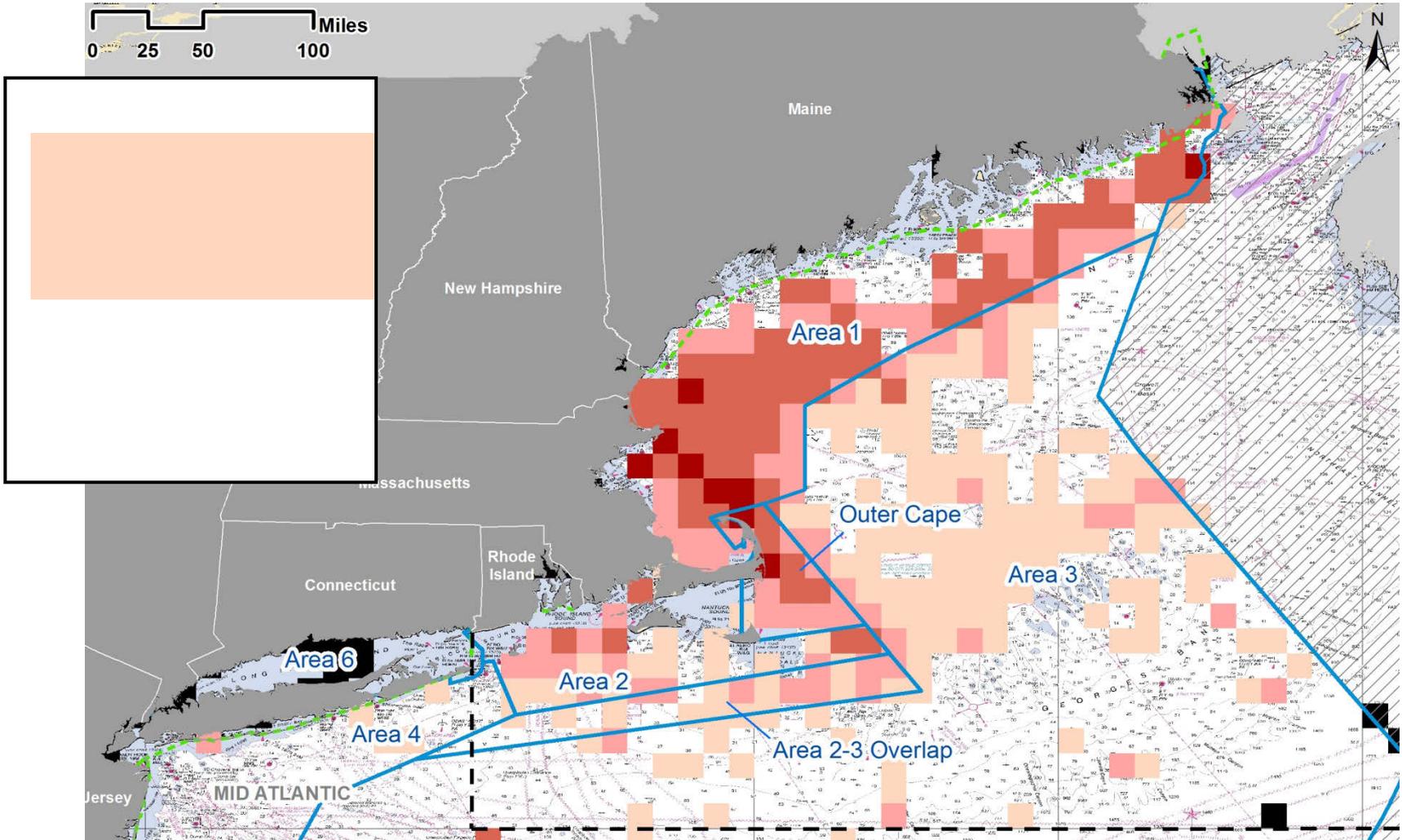
Updated Baseline Results: Northeast

Annual Average Estimated Number of Vertical Lines ~ All Fisheries



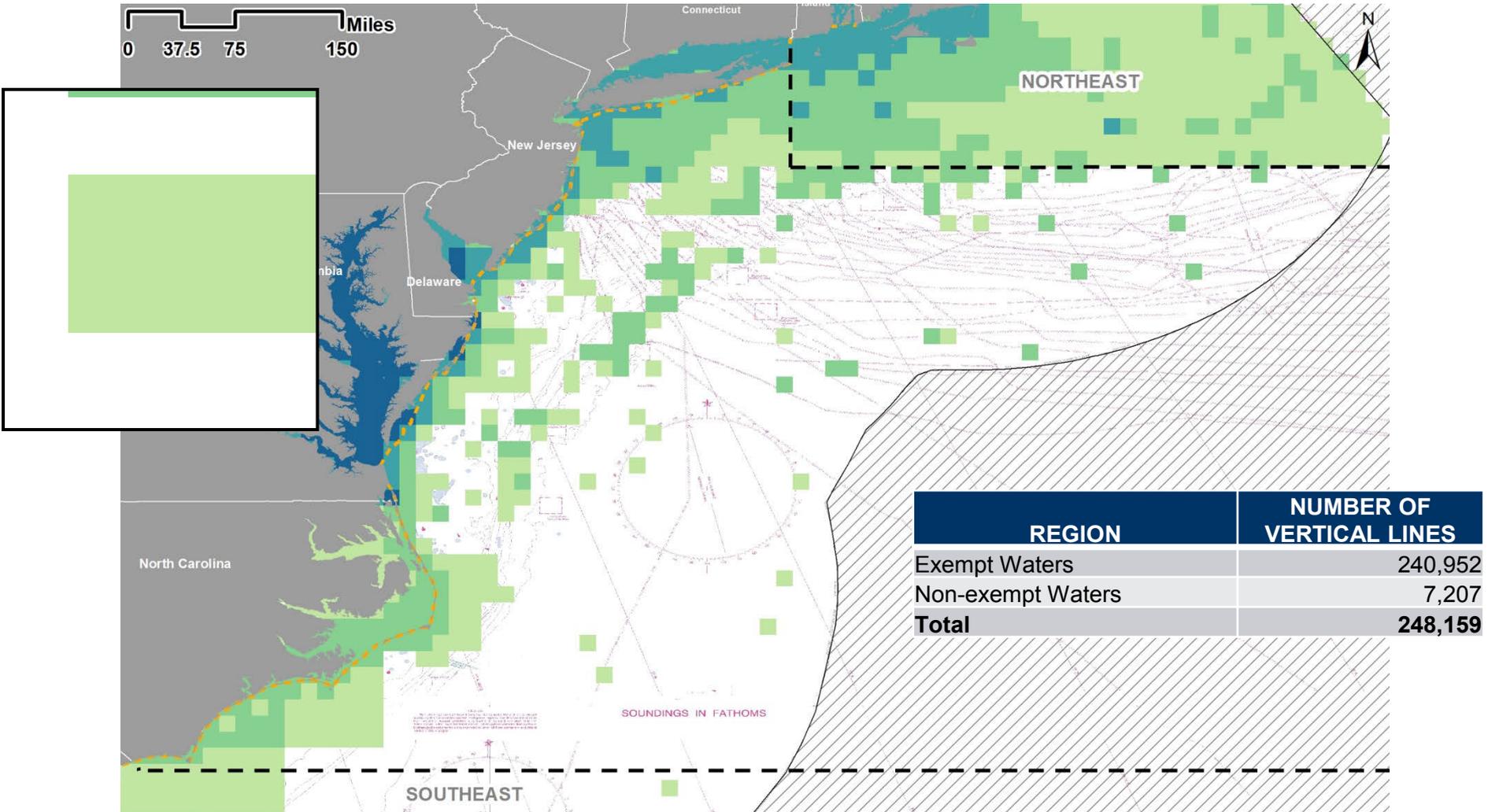
Updated Baseline Results: Northeast

Annual Average Co-occurrence of Vertical Lines and RW/HW
~ All Fisheries, Non-exempt Waters



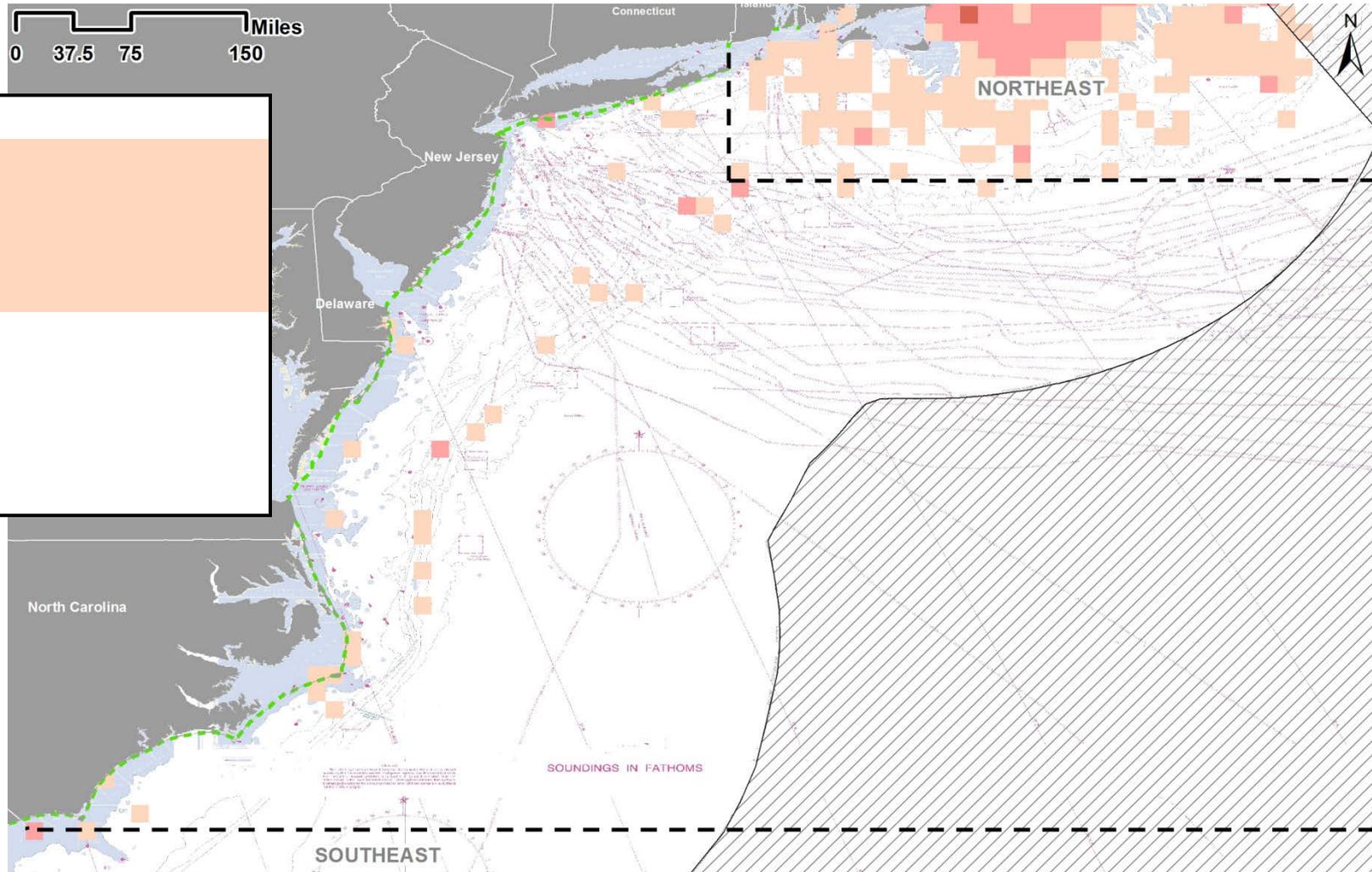
Updated Baseline Results: Mid-Atlantic

Annual Average Estimated Number of Vertical Lines ~ All Fisheries



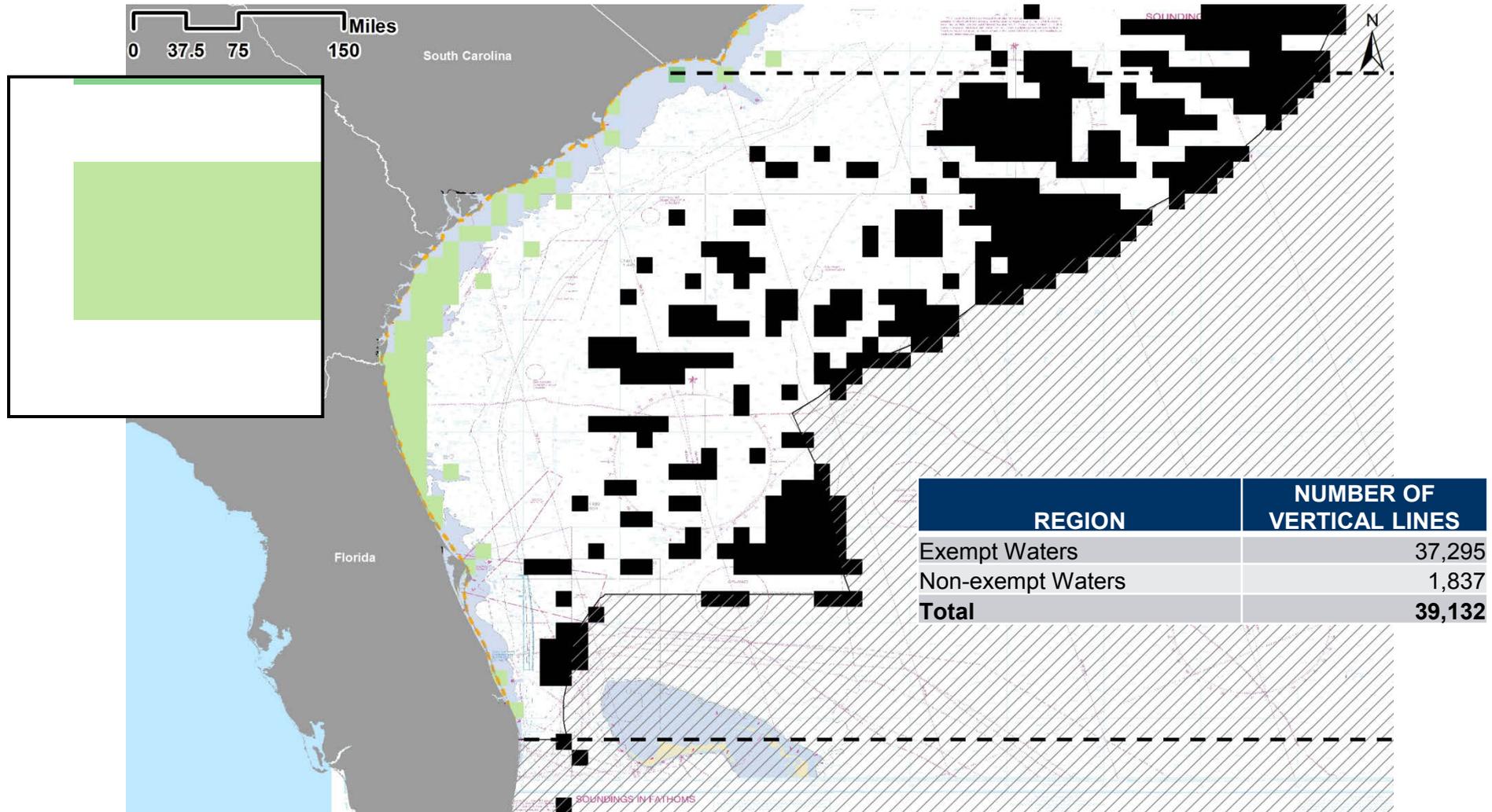
Updated Baseline Results: Mid-Atlantic

Annual Average Co-occurrence of Vertical Lines and RW/HW
~ All Fisheries, Non-exempt Waters



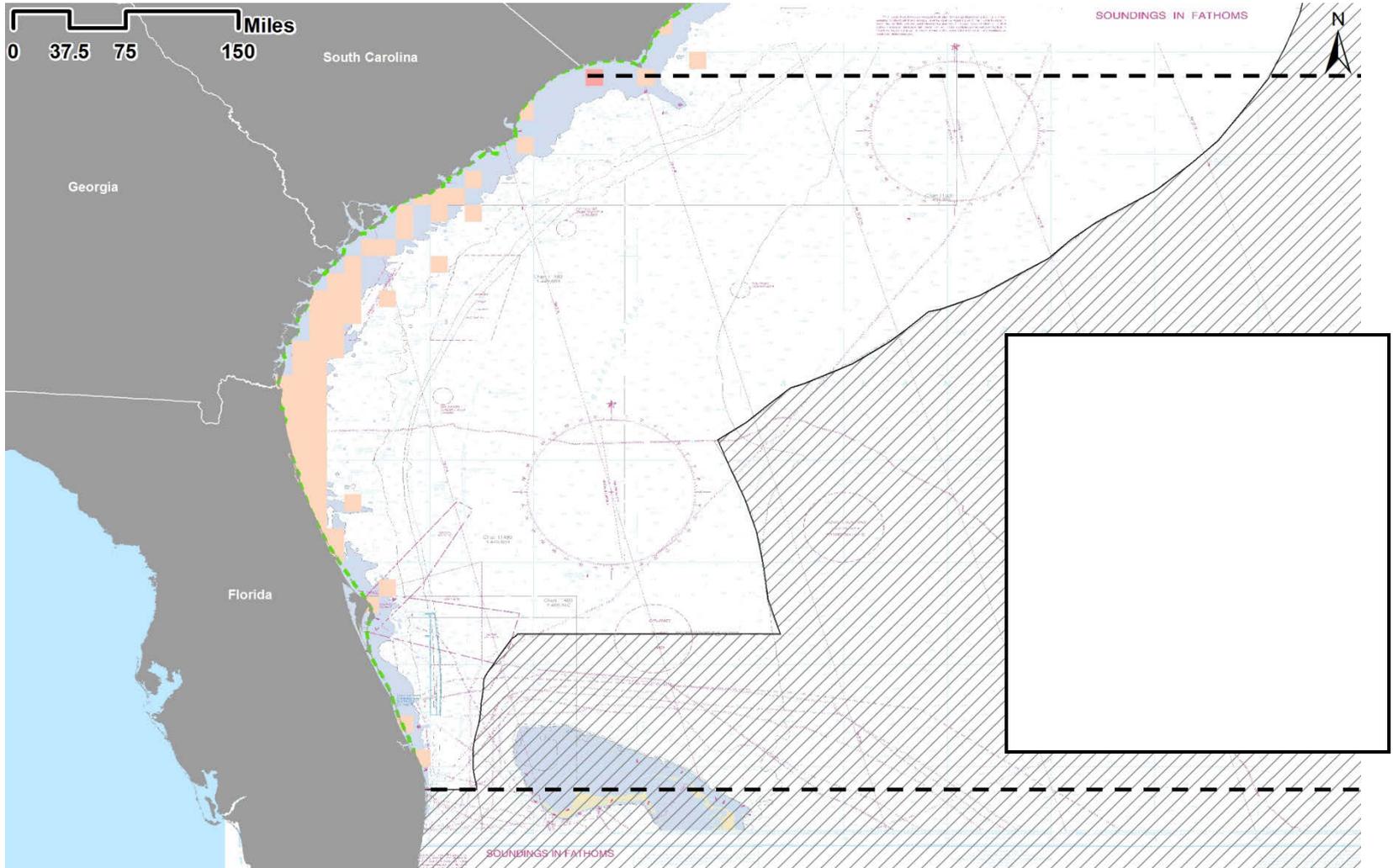
Updated Baseline Results: Southeast

Annual Average Estimated Number of Vertical Lines ~ All Fisheries, Non-exempt Waters



Updated Baseline Results: Southeast

Annual Average Co-occurrence of Vertical Lines and RW/HW
~ All Fisheries, Non-exempt Waters



Implications of Updates for Analysis of Proposals

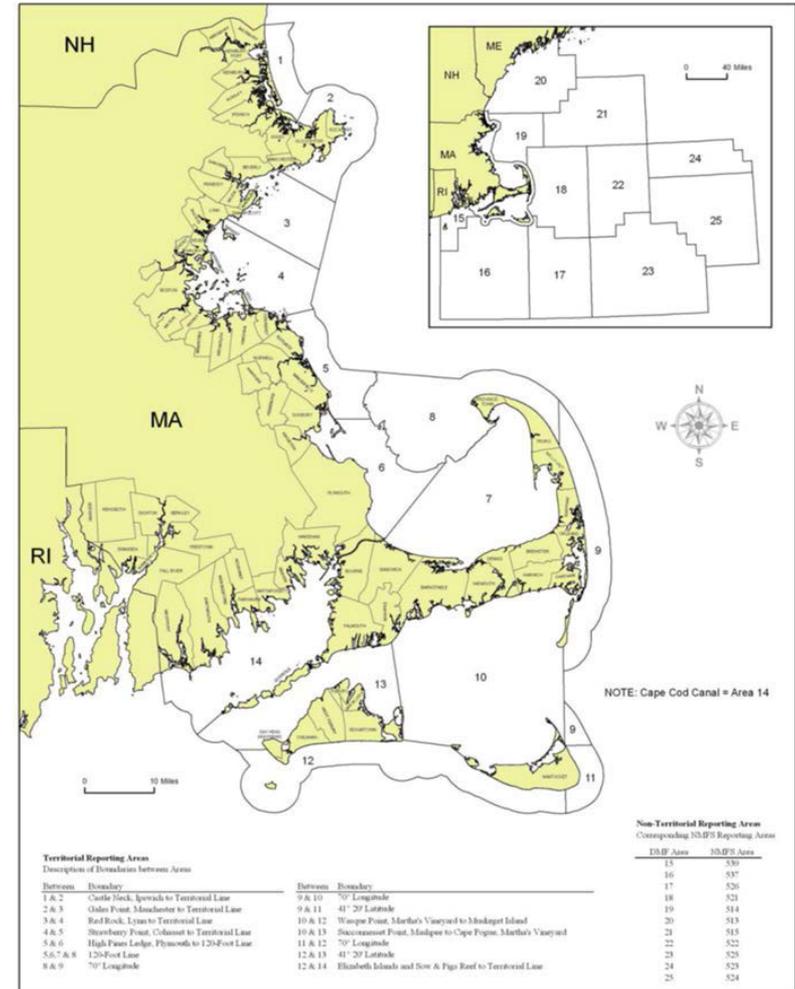
- ❖ Analysis begins with a new baseline:
 - Updated sightings data.
 - Gear configurations that comply with newly enacted requirements.
 - *Lower co-occurrence scores.*
- ❖ Estimates of the impact of a change in regulations on co-occurrence (i.e., percentage increases or decreases) are presented *relative to the new baseline*.
- ❖ Results are not directly comparable to those made in the recent FEIS; i.e., where SPUE >0:
 - An increase or decrease of a given number of lines is likely to have a *greater percentage impact* on co-occurrence *under the new baseline* than it would have previously.
 - Proposals that *increase* the number of vertical lines *relative to the new baseline* - e.g., exemptions from newly enacted trawling requirements - will show an *increase in co-occurrence scores*.

Analysis of TRT Members' Proposals

- ❖ Massachusetts Division of Marine Fisheries exemption proposals:
 - Request #1 - Southern state waters.
 - Request #2 - Northern state waters.
- ❖ Rhode Island Department of Environmental Management: exemption proposal for RI state waters.
- ❖ Conservation community:
 - Seasonal closure - Jordan Basin.
 - Seasonal closure - Jeffreys Ledge.
- ❖ Consistent with geographic focus of proposals, analysis focuses on impacts *in Northeast waters* seaward of the ALWTRP exemption line.

Massachusetts DMF Proposal: Background Data

- ❖ MA DMF proposal would exempt trap/pot gear in most state waters from minimum trawling requirements.
- ❖ In state waters, as elsewhere, model uses 2011 VTR data or Federal lobster permit data to characterize distribution of activity by vessels that hold Federal permits.
- ❖ Model uses 2010 data provided by MA DMF to characterize distribution of activity by vessels that hold only a state permit.
 - Location - by statistical reporting area (SRAs 1 through 14).
 - Activity assumed to be evenly distributed throughout SRA.
 - Activity is reported on a monthly basis.

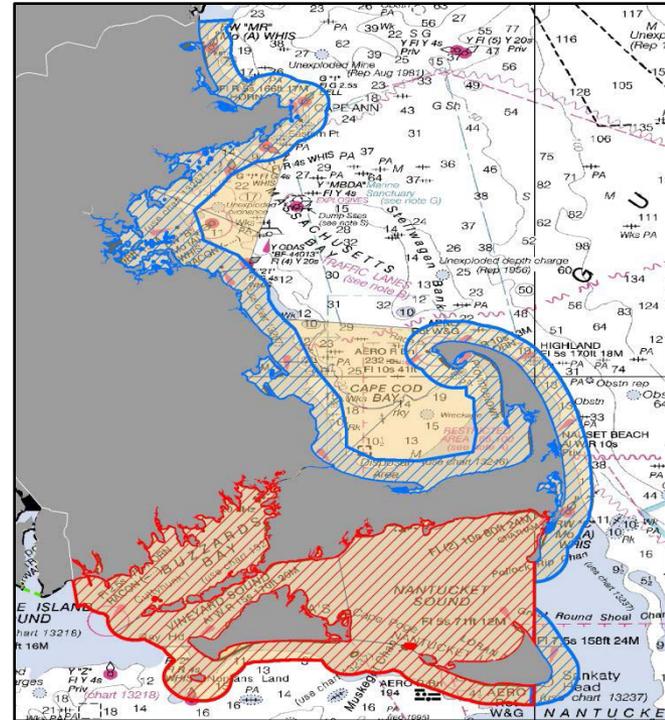


Massachusetts DMF Proposal: Background Data

- ❖ Gear configuration options for lobster and other trap/pot gear are based on 2009 MA DMF data.
 - Monthly catch reports collected data on average number of buoy lines fished by trap/pot vessels.
 - Coverage: 80 percent of active vessels.
- ❖ Gear configurations for lobster fishery:
 - Model specifies 28 options (i.e., 28 “model vessels”) defined by total effort (number of traps fished) and gear set (traps per trawl).
 - Distribution of configurations varies by month and SRA.
- ❖ Gear configurations for other trap/pot fisheries:
 - Model specifies three options, based on gear configurations for three major OTP fisheries: black sea bass, conch, and scup.
 - Distribution of configurations varies by month, reflecting seasonal variation in activity across these fisheries.

Analysis of Massachusetts DMF Proposal

- ❖ Baseline characterization of gear configurations in Massachusetts waters assumes that vessels that previously fished singles would meet new requirements by fishing pairs.
- ❖ Analysis of the impact of the DMF proposal assumes these vessels would revert to fishing singles.



MA DMF Request #1: Southern State Waters

- ❖ Would exempt trap/pot gear from minimum two-trap per trawl requirement in Massachusetts state waters south of 41° 40' N and west of 70° 00' W.
- ❖ Estimate of vessels affected in the peak month:
 - Lobster - 34 (July).
 - Other trap/pot - 72 (August).
- ❖ Estimated impacts on vertical line and co-occurrence scores:

Period	Northeast Non-Exempt Waters	
	Vertical Line	Co-Occurrence
Winter	+0.7%	+0.0%
Spring	+2.9%	+0.9%
Summer	+2.1%	+1.1%
Fall	+2.0%	+0.0%
Annual	+2.1%	+0.6%

MA DMF Request #2: Northern State Waters

- ❖ Would exempt trap/pot gear from minimum two-trap per trawl requirement in Massachusetts state waters north and east of Cape Cod within three miles of shore.
- ❖ Estimate of vessels affected in the peak month:
 - Lobster - 121 (August).
 - Other trap/pot - 1 (July, December).
- ❖ Estimated impacts on vertical line and co-occurrence scores:

Period	Northeast Non-Exempt Waters	
	Vertical Line	Co-Occurrence
Winter	+0.2%	+0.1%
Spring	+3.8%	+16.6%
Summer	+4.5%	+7.6%
Fall	+2.2%	+3.5%
Annual	+3.2%	+7.4%

Rhode Island DEM Proposal: Background Data

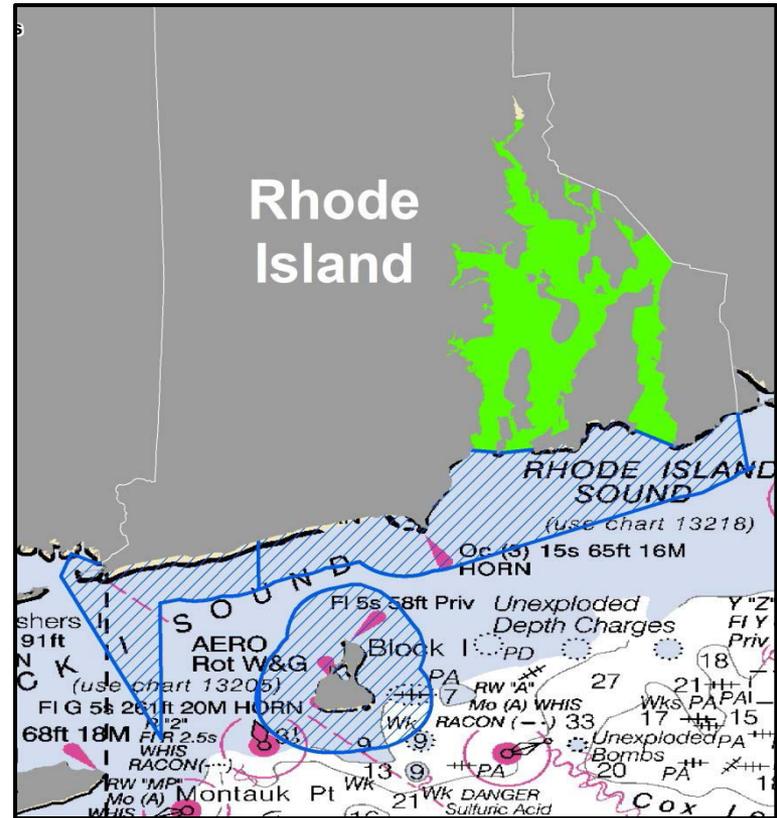
- ❖ Proposal would exempt trap/pot gear from minimum two-trap per trawl requirement in all Rhode Island state waters.
- ❖ In state waters, as elsewhere, model uses 2011 VTR data or Federal lobster permit data to characterize distribution of activity by vessels that hold Federal permits.
- ❖ Model uses 2010 data provided by RI DEM to characterize distribution of activity by vessels that hold only a state permit.
 - NMFS Area 539 - Narragansett Bay (exempt) and RI coastal waters.
 - NMFS Area 611 - RI coastal waters.
 - Activity by vessels that hold only a state permit is assumed to be evenly distributed *within the state waters portion* of each area.
 - Activity is reported on a monthly basis.

Rhode Island DEM Proposal: Background Data

- ❖ Gear configuration options for lobster and other trap/pot vessels are based on 2010 RI DEM data and DEM's professional judgment.
- ❖ Gear configurations for lobster fishery:
 - Model specifies 16 options (i.e., 16 “model vessels”) defined by total effort (number of traps fished) and gear set (traps per trawl).
 - Distribution of configurations varies by season, but not by area.
- ❖ Gear configurations for other trap/pot fisheries:
 - Model specifies two model vessels, one for each statistical area.
 - Number of traps fished varies by month.

Analysis of Rhode Island DEM Proposal

- ❖ Baseline characterization of gear configurations in Rhode Island waters assumes that vessels that previously fished singles would meet new requirements by fishing pairs.
- ❖ Analysis of the impact of the DEM proposal assumes these vessels would revert to fishing singles.



Estimated Impact of RI DEM Proposal

- ❖ Estimate of vessels affected (peak month):
 - Lobster - 21 (July).
 - Other trap/pot - 57 (July).
- ❖ Estimated impacts on vertical line and co-occurrence scores:

Period	Northeast Non-Exempt Waters	
	Vertical Line	Co-Occurrence
Winter	+0.1%	+0.0%
Spring	+0.6%	+0.0%
Summer	+0.5%	+0.0%
Fall	+0.1%	+0.0%
Annual	+0.4%	+0.0%

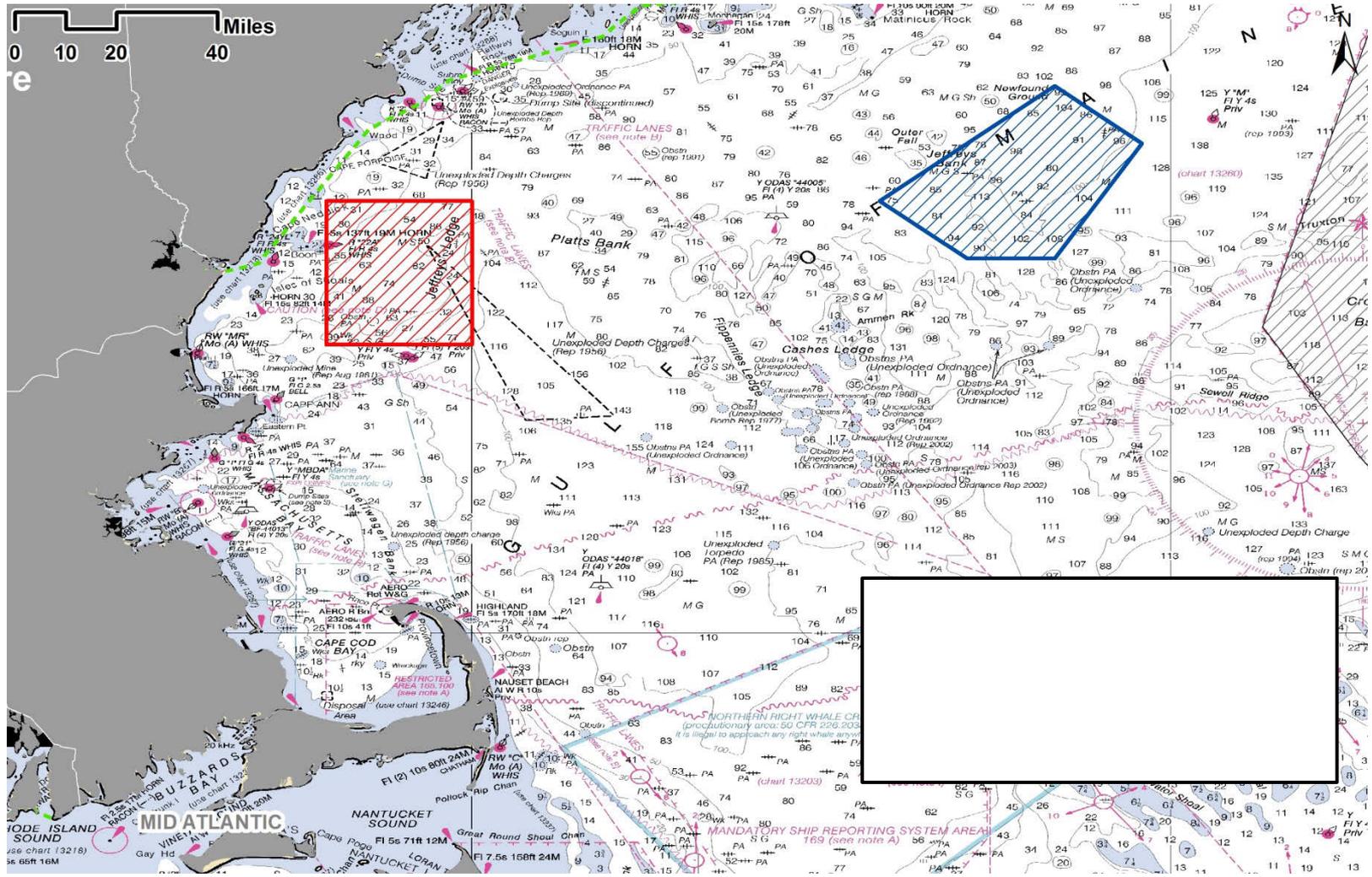
Conservationists' Proposal: Jordan Basin

- ❖ Proposal would close Jordan Basin Restricted Area to all trap/pot gear from November 1 through January 31.
- ❖ Affected area: 725 square miles.
- ❖ Location:
 - Federal waters, primarily within LMA 3.
 - Also extends to a small portion of LMA 1 (Maine Zone C).
- ❖ Model uses 2011 VTR data or Federal lobster permit data to characterize distribution of activity in the area.
- ❖ Estimate of activity affected:
 - One lobster vessel in LMA 3.
 - Four lobster vessels in LMA 1 (full-time equivalent).

Conservationists' Proposal: Jeffreys Ledge

- ❖ Proposal would close Jeffreys Ledge to all trap/pot gear from October 1 through January 31.
- ❖ Affected area: 607 square miles.
- ❖ Location:
 - Federal waters of LMA 1, off New Hampshire and southern Maine.
 - Primarily within Maine Zone G.
- ❖ Model uses 2011 VTR data or Federal lobster permit data to characterize distribution of activity in the area.
- ❖ Estimate of activity affected: Approximately 69 lobster vessels (full-time equivalent).

Conservationists' Proposal: Jeffreys Ledge



Conservationists' Proposal: Activity Suspended

- ❖ Consistent with FEIS, analysis considers two scenarios to estimate potential impacts on vertical line and co-occurrence scores:
 - All activity affected by closures is suspended.
 - Activity affected by closures is relocated to nearby waters.
- ❖ Estimated impacts on vertical line and co-occurrence scores, assuming activity is suspended:

Period	Northeast Non-Exempt Waters	
	Vertical Line	Co-Occurrence
Winter	-1.5%	-33.1%
Spring	-0.0%	-0.0%
Summer	-0.0%	-0.0%
Fall	-2.1%	-9.7%
Annual	-0.8%	-4.8%

Conservationists' Proposal: Activity Relocated

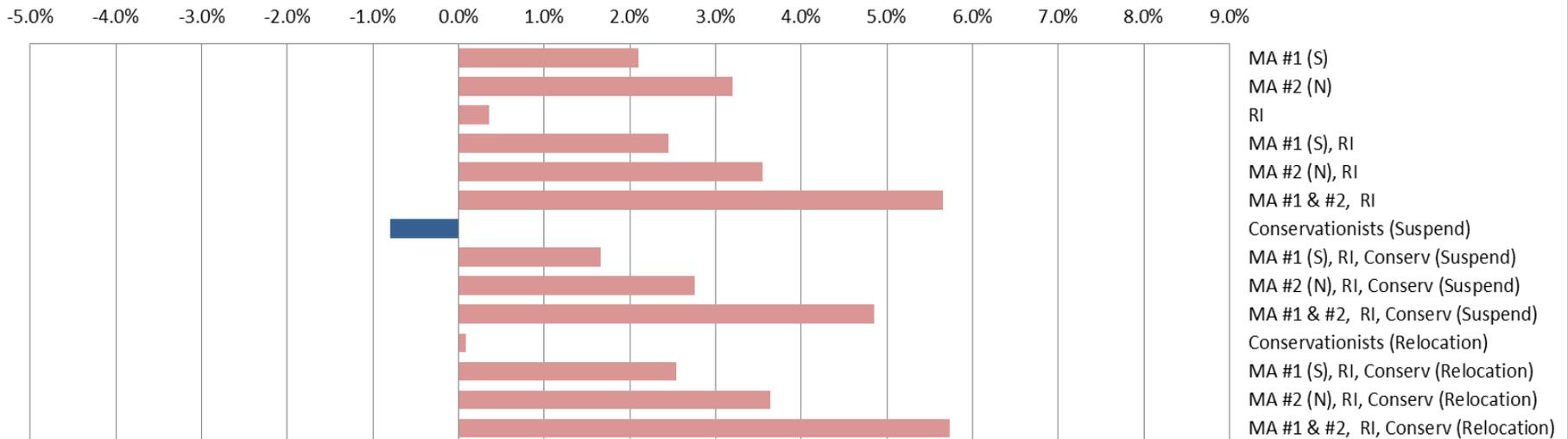
- ❖ Estimated impacts on vertical line and co-occurrence scores, assuming activity is relocated:

Period	Northeast Non-Exempt Waters	
	Vertical Line	Co-Occurrence
Winter	+0.1%	-25.8%
Spring	+0.0%	-0.0%
Summer	+0.0%	-0.0%
Fall	+0.2%	-4.6%
Annual	+0.1%	-2.5%

- ❖ Increase in vertical line use stems from relocation of effort to areas where shorter trawls are more common.

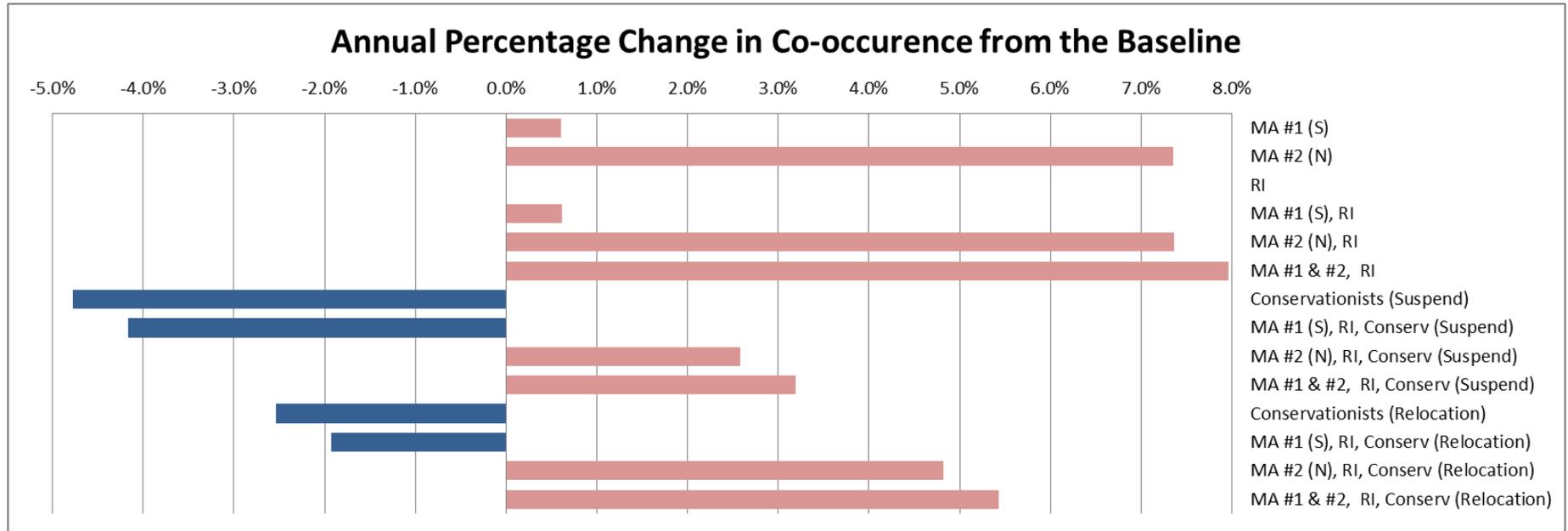
Summary of Impacts: Vertical Line/Northeast

Annual Percentage Change in Vertical Line from the Baseline



*Maine DMR’s exemption proposal requests a quarter-mile buffer around several islands in the Gulf of Maine. The scale at which the Vertical Line Model characterizes the distribution of fishing gear (i.e., 10-minute grid cells) is too coarse to provide a meaningful assessment of vertical line use within a quarter mile of shore. Consistent with the FEIS, we anticipate that this proposal is unlikely to have a substantial impact on overall vertical line use in the Northeast.

Summary of Impacts: Co-Occurrence/Northeast



*Maine DMR's exemption proposal requests a quarter-mile buffer around several islands in the Gulf of Maine. The scale at which the Vertical Line Model characterizes the distribution of both gear and whales (i.e., 10-minute grid cells) is too coarse to provide a meaningful assessment of co-occurrence within a quarter mile of shore. Consistent with the FEIS, we anticipate that this proposal is unlikely to have a substantial impact on overall co-occurrence scores in the Northeast.

Summary of Impacts: Vertical Line/Northeast

Exemption Proposal	Period				
	Annual	Winter	Spring	Summer	Fall
MA #1 (S)	2.1%	0.7%	2.9%	2.1%	2.0%
MA #2 (N)	3.2%	0.2%	3.8%	4.5%	2.2%
RI	0.4%	0.1%	0.6%	0.5%	0.1%
MA #1 (S), RI	2.5%	0.7%	3.5%	2.6%	2.2%
MA #2 (N), RI	3.6%	0.3%	4.5%	5.0%	2.3%
MA #1 & #2, RI	5.7%	0.9%	7.4%	7.1%	4.3%
Conservationists (Suspend)	-0.8%	-1.5%	0.0%	0.0%	-2.1%
MA #1 (S), RI, Conserv (Suspend)	1.7%	-0.8%	3.5%	2.6%	0.1%
MA #2 (N), RI, Conserv (Suspend)	2.8%	-1.3%	4.5%	5.0%	0.2%
MA #1 & #2, RI, Conserv (Suspend)	4.9%	-0.6%	7.4%	7.1%	2.2%
Conservationists (Relocation)	0.1%	0.1%	0.0%	0.0%	0.2%
MA #1 (S), RI, Conserv (Relocation)	2.5%	0.8%	3.5%	2.6%	2.4%
MA #2 (N), RI, Conserv (Relocation)	3.6%	0.4%	4.5%	5.0%	2.5%
MA #1 & #2, RI, Conserv (Relocation)	5.7%	1.0%	7.4%	7.1%	4.5%

Summary of Impacts: Co-Occurrence/Northeast

Exemption Proposal	Period				
	Annual	Winter	Spring	Summer	Fall
MA #1 (S)	0.6%	0.0%	0.9%	1.1%	0.0%
MA #2 (N)	7.4%	0.1%	16.6%	7.6%	3.5%
RI	0.01%	0.0%	0.0%	0.0%	0.0%
MA #1 (S), RI	0.6%	0.1%	0.9%	1.1%	0.0%
MA #2 (N), RI	7.4%	0.1%	16.6%	7.6%	3.5%
MA #1 & #2, RI	8.0%	0.1%	17.5%	8.7%	3.5%
Conservationists (Suspend)	-4.8%	-33.1%	0.0%	0.0%	-9.7%
MA #1 (S), RI, Conserv (Suspend)	-4.2%	-33.1%	0.9%	1.1%	-9.7%
MA #2 (N), RI, Conserv (Suspend)	2.6%	-33.0%	16.6%	7.6%	-6.2%
MA #1 & #2, RI, Conserv (Suspend)	3.2%	-33.0%	17.5%	8.7%	-6.2%
Conservationists (Relocation)	-2.5%	-25.8%	0.0%	0.0%	-4.6%
MA #1 (S), RI, Conserv (Relocation)	-1.9%	-25.7%	0.9%	1.1%	-4.6%
MA #2 (N), RI, Conserv (Relocation)	4.8%	-25.7%	16.6%	7.6%	-1.1%
MA #1 & #2, RI, Conserv (Relocation)	5.4%	-25.6%	17.5%	8.7%	-1.1%