



# American Lobster Draft Addendum XXV



American Lobster Management Board  
January 31, 2017

# Goal of Addendum XXV



*Recognizing the impact of climate change on the stock, the goal of Addendum XXV is to respond to the decline of the SNE stock and its decline in recruitment while preserving a functional portion of the lobster fishery in this area.*

		GOM/GBK	SNE
<b>Abundance (millions)</b>	2011-2013 Reference	24	10
	Threshold	66	24
	Target	107	32
<b>Effective Exploitation</b>	2011-2013 Reference	0.48	0.27
	Threshold	0.50	0.41
	Target	0.46	0.37



# Timeline



Aug. – Oct. 2016	Draft addendum developed
Oct. 2016 – Feb. 2017	Preliminary industry comment and subcommittee review
Feb. 2017	Board reviews document and makes any necessary changes
Feb. – Apr. 2017	Public comment period, LCMTs prepare preliminary proposals
Early May 2017	Board reviews public comments, selects management measures
Late May 2017	LCMTs submit proposals to meet increase in egg production
Aug. 2017	Board reviews and approves LCMT proposals
2018	Implementation

# What Happened Since October



- Industry and agencies submitted comments on draft Addendum XXV
  - MA, RI, CT, NY, NOAA Fisheries
- Subcommittee reviewed comments and provided recommendations to Board
- Board reviewed and approved recommended changes to draft Addendum XXV
- PDT incorporated Board recommended changes into draft Addendum XXV



# Editorial Changes



- ✓ Outline expectations of addendum in introduction
- ~ Add VTS data to provide recent evidence of low settlement
- ✓ Describe dichotomy between high abundance in GOM/GBK and low abundance in SNE
- ✓ Include non-trap landings from MA
- ✓ Remove recreational landings from NH
- ✓ Review number of active permits in Table 3
- ✓ Add terminal year to Figure 3
- ✓ Add table of mgmt. action taken since 2009 stock assessment
- ✓ Highlight potential economic impacts to Jonah crab fishery
- ✓ Reword discussion of mgmt. tools to reflect Board positions
- ✓ Note that studies on trap reductions took place inshore
- ✓ State that final implementation schedule depends on egg production target chosen



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# Additional Alternatives



- ✓ Add 30% egg production target
- ✗ Add issue to discuss implementation of gauge size changes in relation to inter-state commerce
- ✓ Add issue which asks how season closures to should be implemented in relation to the Jonah crab fishery
- ✓ Add issue to discuss impacts to recreational fishery
- ✓ Add issue to explore uniform mgmt. measures across LCMAs
- ✓ Add issue to ask whether mgmt. measures should be linked
- ~ Add issue to discuss credit for on-going trap reductions
- ~ Add issue to discuss the acceleration of on-going trap reductions
- ✓ Add additional options to split the GOM/GBK and SNE portions of LCMA 3



# On-going Trap Reductions



- What year serves as the baseline for this addendum?
- TC analysis on mgmt. tools relies on data from 2015 Stock Assessment. Last year of data is 2014.
- 2014 is the baseline for Addendum XXV. Action implemented after 2014 which produced measureable increases in egg production counts towards egg production target chosen by Board.
- If the Board wants to use a different baseline, or exclude specific management tools from counting towards the egg production target, they need to specify this to the PDT.



# Accelerate Trap Reductions



- Request to accelerate trap reductions in order to take additional trap cuts and meet implementation deadline of Addendum XXV.
- Implementation schedule represents final deadline for trap reductions. LCMAs can implement trap reductions ahead of this schedule, if they choose.
- On-going trap reductions can be accelerated to allow LCMTs to take additional action and meet the implementation timeline of Addendum XXV.



# Management Options



## 1. Target Increase in Egg Production

Option A: 0% increase in egg production

Option B: 20% increase in egg production

Option C: 30% increase in egg production

Option D: 40% increase in egg production

Option E: 60% increase in egg production

# Management Options



## 2. Management Tools

Option A: Management tools can be used independently

Option B: Trap reductions and season closures must be used in conjunction with gauge size changes; trap reductions and season closures cannot account for more than half of the increase in egg production

# Management Options



## 3. Recreational Fishery

Option A: Recreational fishery must abide by all management action taken in Addendum XXV

Option B: Recreational fishery must abide by gauge size changes and season closures

Option C: Recreational fishery must abide by gauge size changes

# Management Options



## 4. Season Closures

### Option A: Lobster Traps Removed from Water

Sub-Option I: Most Restrictive Rule Applies

Sub-Option II: Most Restrictive Rule Does Not Apply

### Option B: No Possession of Lobsters While Fishing

Sub-Option I: Most Restrictive Rule Applies

Sub-Option II: Most Restrictive Rule Does Not Apply

### Option C: Limit for Non-Trap Bycatch Fisheries

Sub-Option I: Most Restrictive Rule Applies

Sub-Option II: Most Restrictive Rule Does Not Apply

# Management Options



## 5. Uniform Regulations

Option A: Regulations are not uniform across LCMAs

Option B: Gauge size changes and season closures are uniform across LCMAs 4 and 5

Option C: Gauge size changes and season closures are uniform across LCMAs 2, 4, 5, and 6

# Management Options



## 6. Implementation of Mgmt. Measures in LCMA 3

Option A: Maintain LCMA 3 as a single area

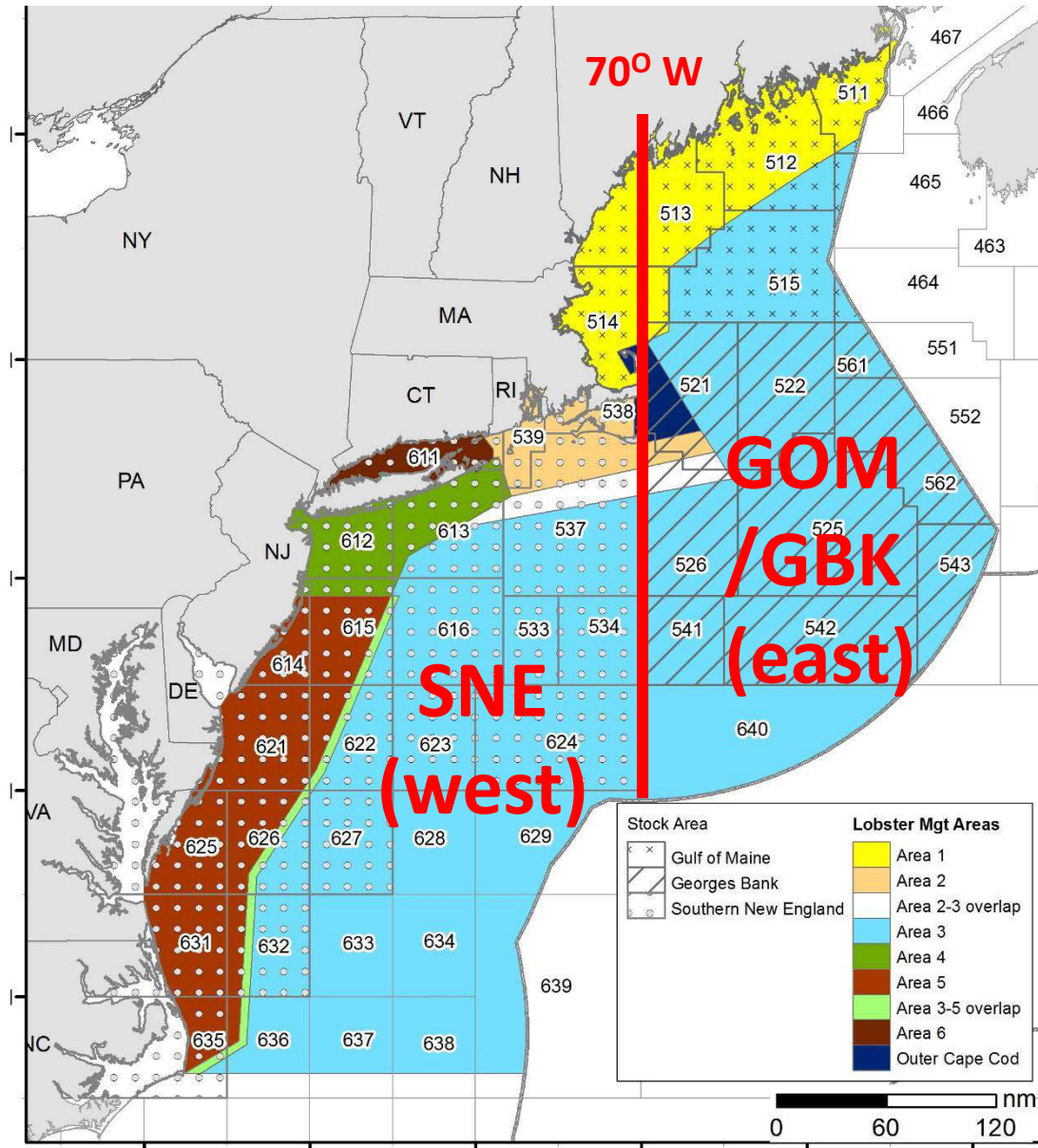
Option B: Split LCMA 3 along the 70°W

longitude line with a one time declaration

Option C: Split LCMA 3 along the 70°W

longitude line with an annual declaration

# Stock Boundaries



# De Minimis Proposal



Proposal asks whether *de minimis* states should be exempt from mgmt. measures taken in Addendum XXV.

Option A: *De minimis* states must implement all mgmt. measures adopted under Addendum XXV

Option B: *De minimis* states are exempt from Addendum XXV mgmt. measures if the state meets the following criteria:

- i. Close the lobster fisheries in the *de minimis* states to new entrants
- ii. Allow only lobster permit holders of the *de minimis* state to land lobsters in that state
- iii. Limit lobster landings in the *de minimis* state to no more than 40,000 lbs. annually

# LCMA 3 Overlap Proposal

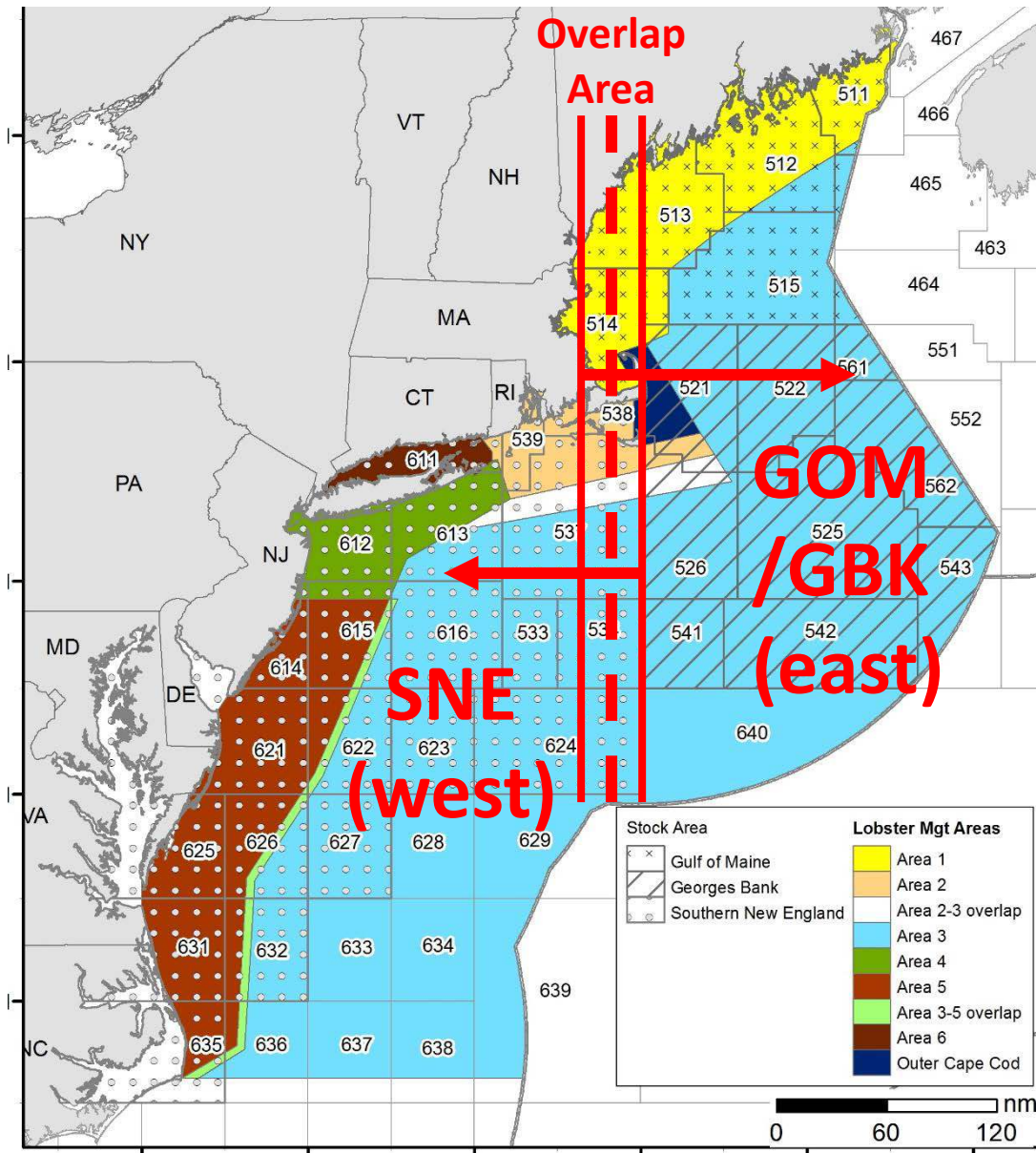


Proposal asks whether another option should be added to *Issue 6. Implementation of Mgmt. Measures in LCMA 3* to create an overlap zone

Option D: Split LCMA 3 along the 70°W longitude line with an overlap area

- Overlap zone defined by 30' on either side of 70°W longitude line
- Fishermen elect to fish in either eastern or western portion of LCMA 3 but all can fish in overlap zone

# Stock Boundaries



# Questions for the Board



- What year would should serve as the baseline for this addendum?
- Should an issue which discusses an exemption for *de minimis* states be added to the addendum?
- Should an option which proposes an overlap zone in LCMA 3 be added to the addendum?
- Should this document be approved for public comment?



# **TC Report to the Board on GOM/GBK**

Kathleen M. Reardon  
ASMFC Technical Committee  
1/31/2017

# Motion at Spring 2016 Meeting

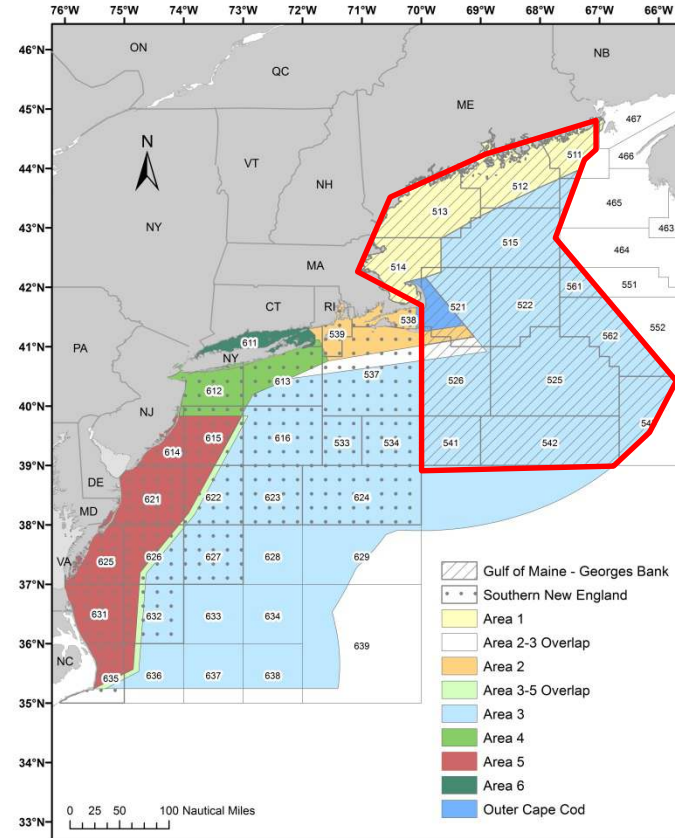


- Synthesize current literature and studies which investigate the **connectivity** between the GOM/GBK stock and Canada
- Plot changes in **size distribution of egg-bearing females** over time in the GOM/GBK stock
- Describe changes in **GOM ocean currents** and how this could be affecting larval supply patterns
- Investigate the **stock-recruit relationship** in the GOM/GBK stock
- Review on-going research on GOM lobster in order to identify **research holes and prioritize** the importance of these data holes to effective management
- Examine the **competing biological management measures** and look at the benefits of harmonizing these measures
- **Investigate and develop a TLA** as a potential control rule using average harvest and abundance values from the last 10 years as baselines.

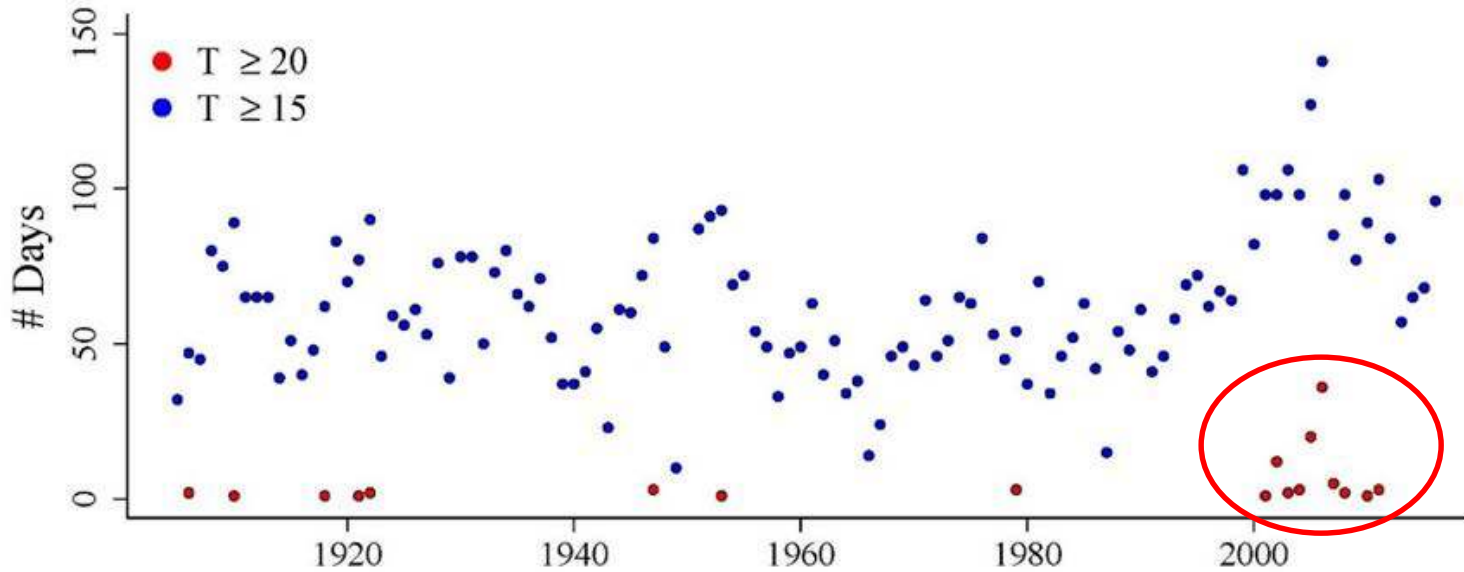
# Gulf of Maine & Georges Bank



- Combined as one stock in 2015 assessment
- Reference period: 1982-2003
- Current effective reference abundance is above the 75<sup>th</sup> percentile
- YOY survey has declined
  - With record high SSB, egg production unlikely to be cause for observed YOY decline



# SST: Boothbay Harbor, ME

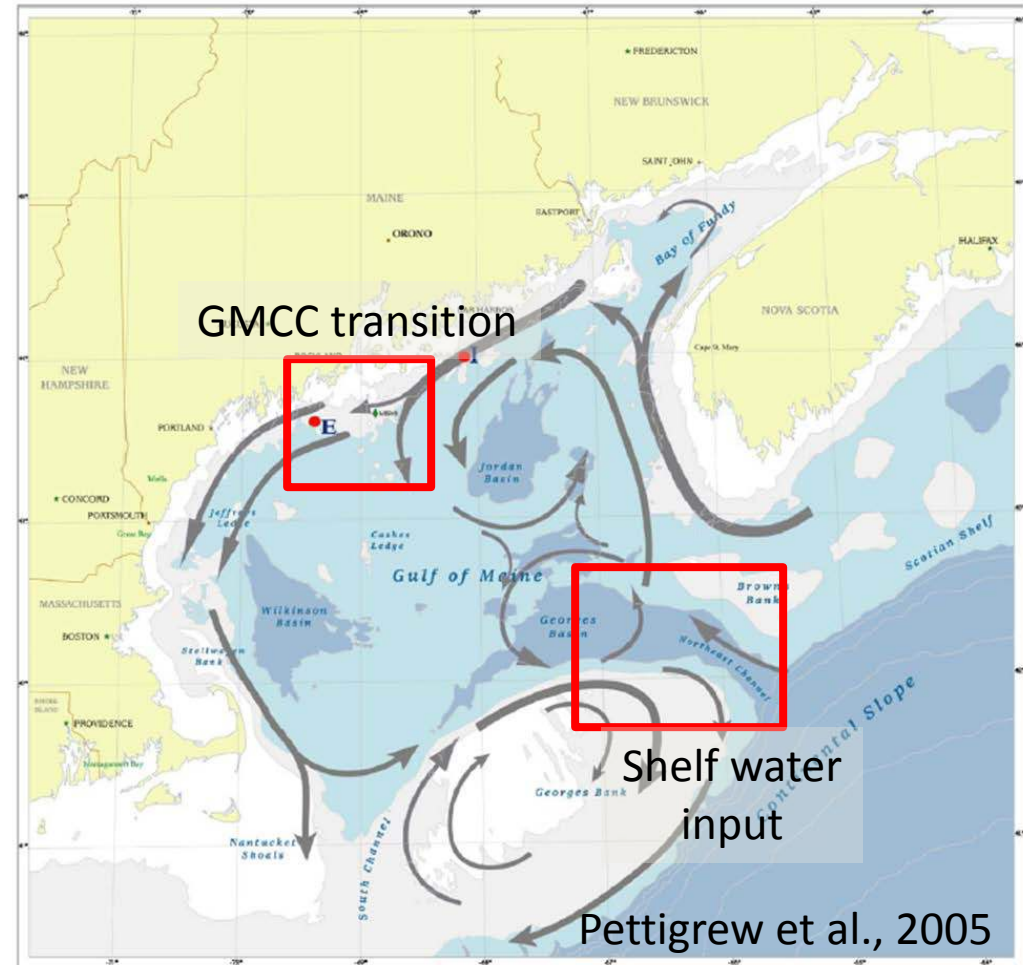


- More years with days over 20°C since 2000

# Oceanography



- Counterclockwise gyre
- Annual variability
  - Deep water sources
  - Gulf of Maine Coastal Current
- Strong correlations between oceanography trends and lobster larval connectivity

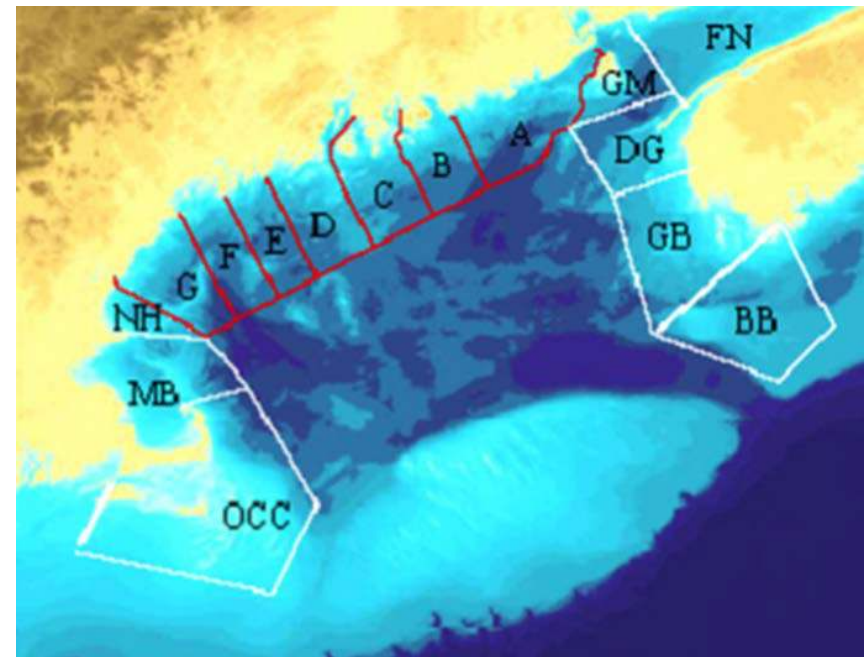


# Connectivity: Larval



- Some areas act as sources or sinks
- Most larvae come from local or adjacent zones
  - Some from multiple and distance sources depending on conditions
- Eastern GOM: source
- Western GOM: sink
- Offshore: variable and uncertain

Management Regions used in models



Xue et al., 2008

# Connectivity: Larval



- Biological Factors
  - Egg production
  - Hatch timing and location
  - Larval development
  - Larval mortality
- Oceanographic Factors
  - Coastal current transport and eddies
  - Drift from wind forcing
  - Stratification

# Connectivity: Tagging



- Many studies completed (1898-present)
- Movement depends on life stage
  - Benthic phase – cryptic, move less
  - Juveniles – limited migrations
  - Mature lobsters – seasonal migrations
- Recaptures depend on commercial effort and reporting compliance
- Often days-at-large are short, so movement not observed

# Connectivity: Tagging

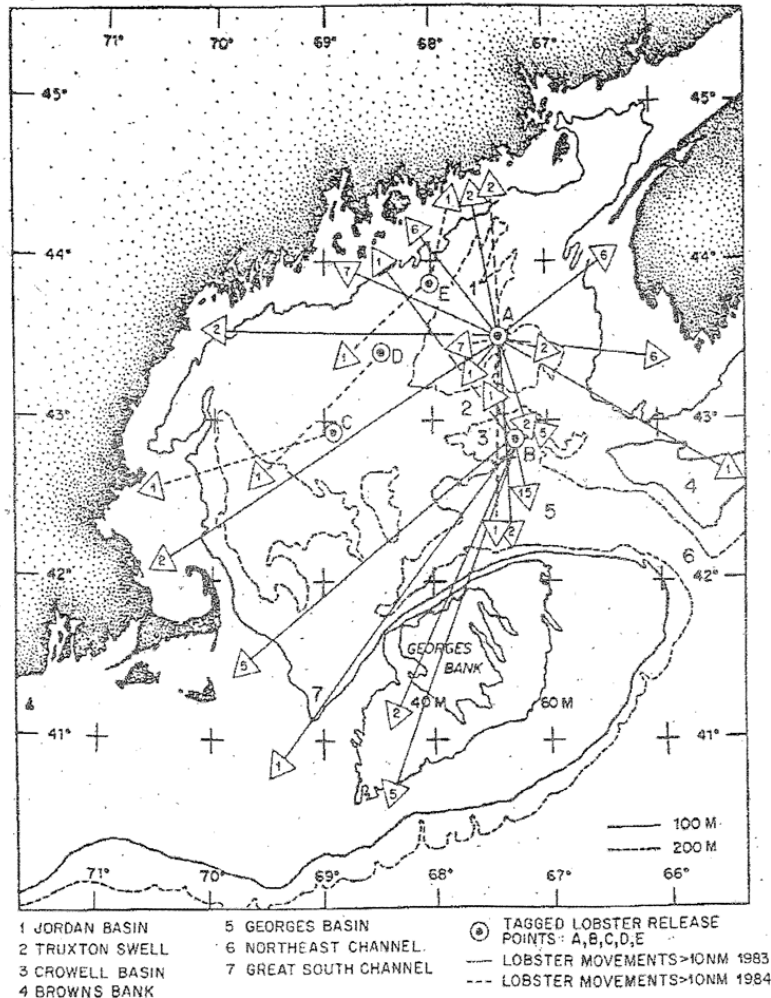


- General SW movement along inshore GOM & to OCC
- Exchange of population between GOM/GBK uncertain from published tagging studies
- Few tagging recaptures between inshore GOM and GBK regions

# Connectivity: Tagging

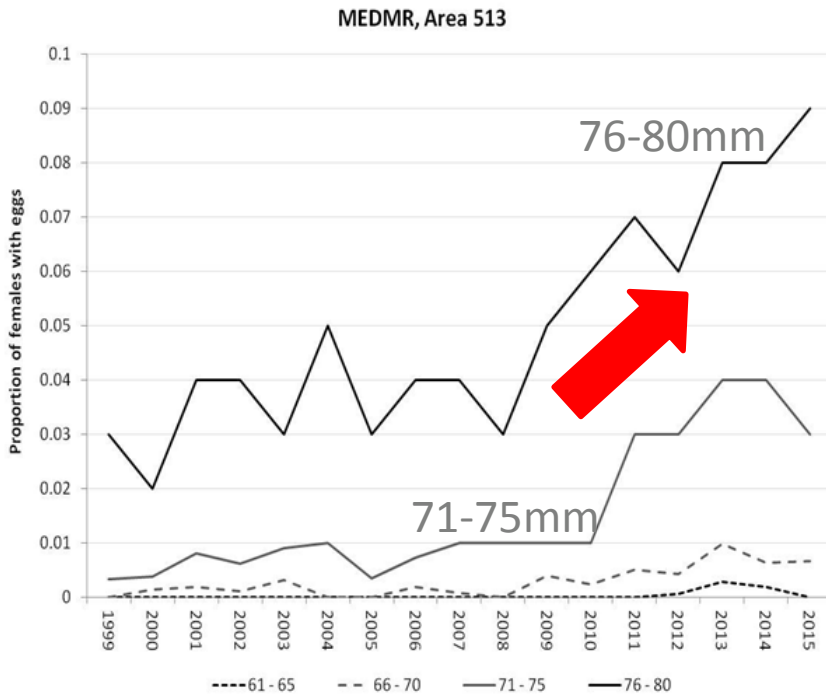


Figure 1. 1983-1984 Results of offshore assessment study.



- 1983 NMFS offshore tagging study
- Only known record of results was in 1985 CFN
- Indicate lobsters from deep GOM travel to Canada, inshore GOM, and GBK
- Just brought to the attention of the TC
- Tagging proposals to replicate study submitted

# Size at Maturity



- Proportion of eggers by size
- Small lobsters with eggs ↑, especially 76-80mm CL
- Observed in all stat areas, but more in western GOM

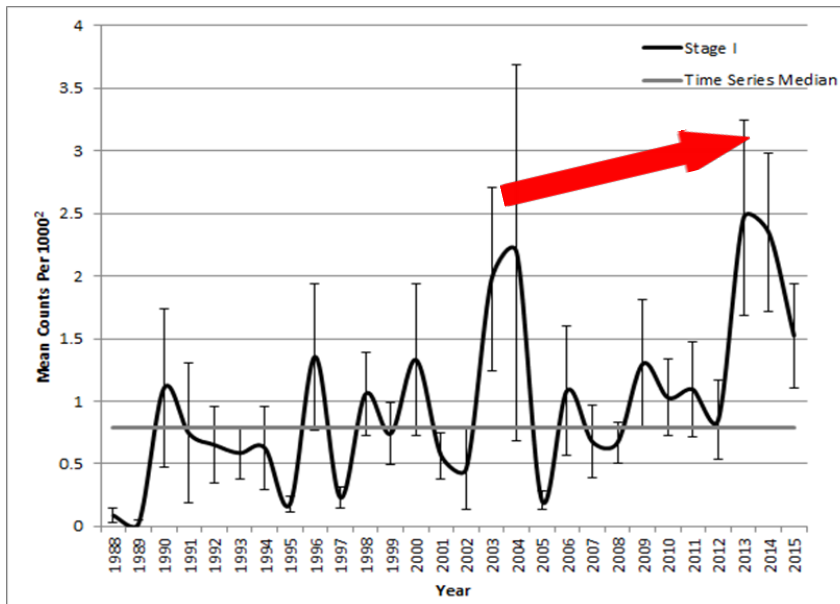


# Changes in Larval Abundance

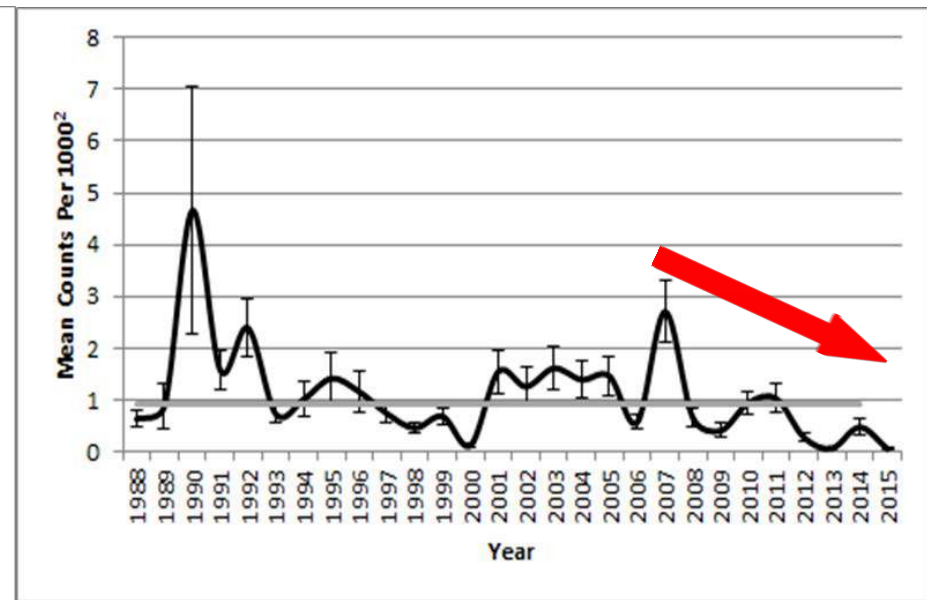


- NH data shows recent  $\uparrow$  in Stage 1 larvae &  $\downarrow$  in Stage 4
- BUT a complex story that needs more investigation

STAGE 1



STAGE 4

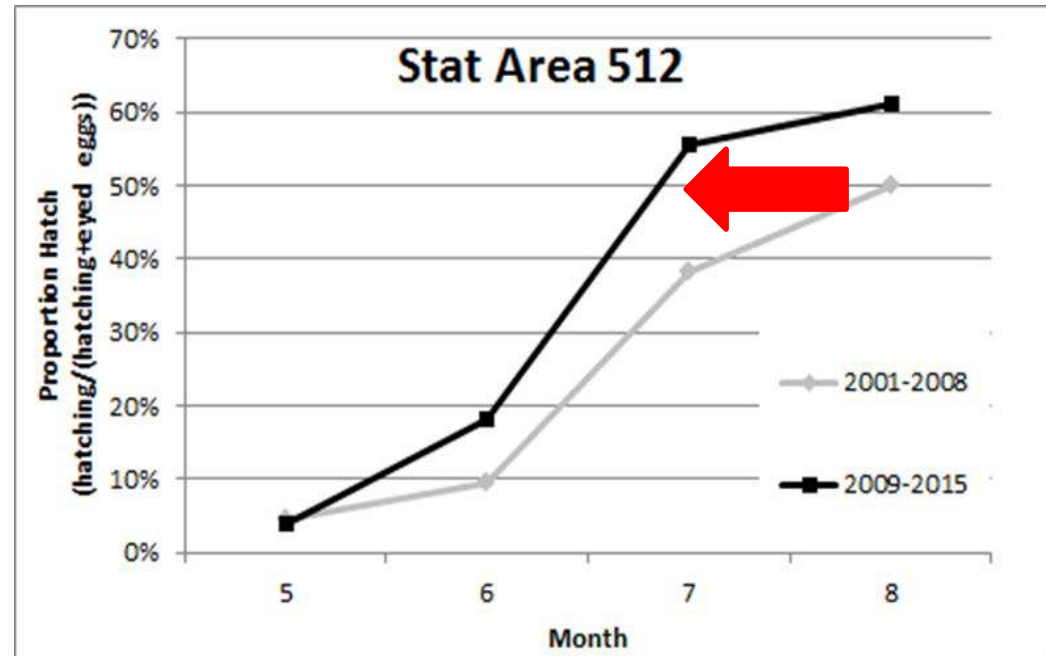


Normandeau Inc. data from Seabrook Nuclear Station, NH

# Timing of Hatch



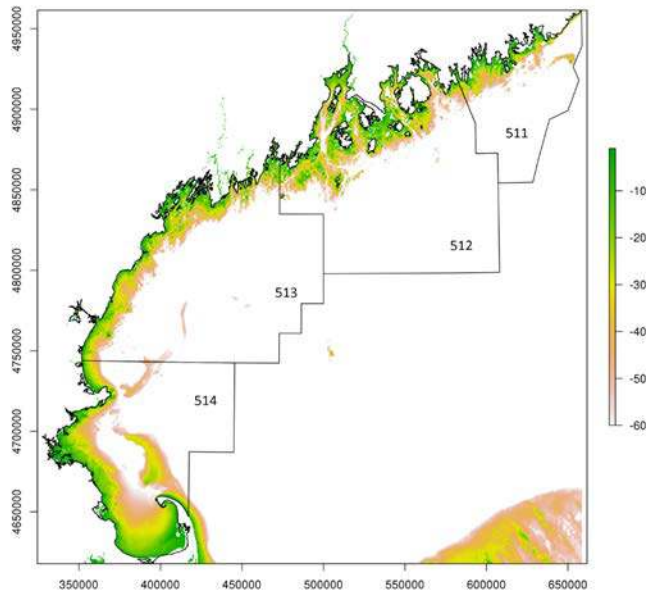
- Earlier hatch observed by sampling programs
- One month earlier



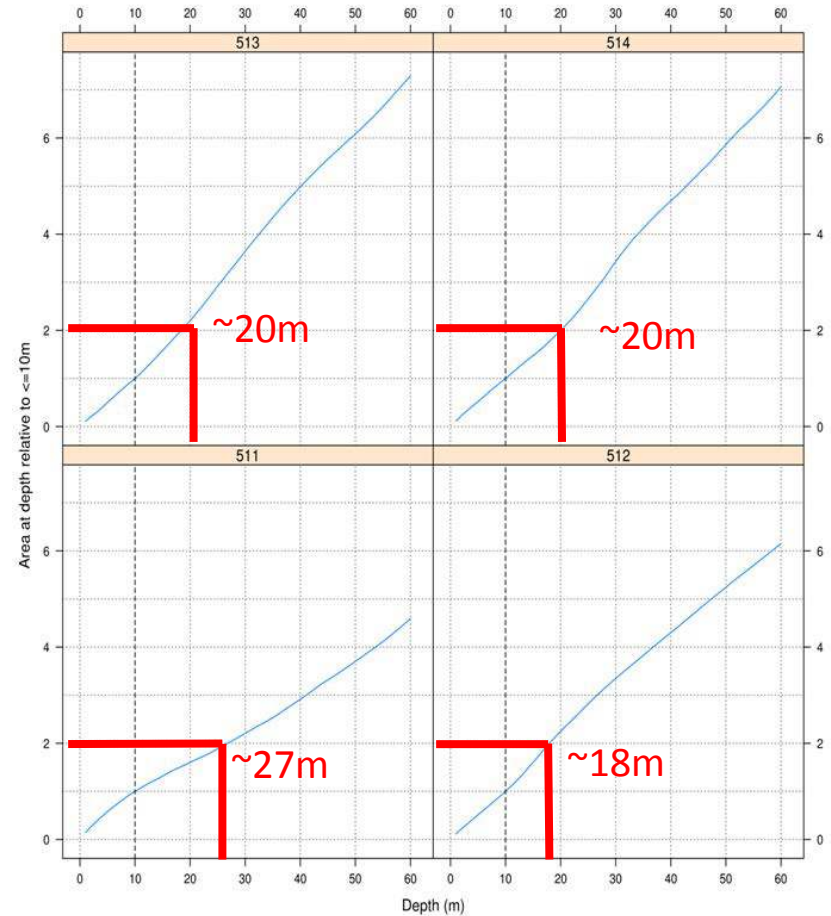
# Expansion of Habitat?



- ↑ in depth expansion unlikely to account for ↓ YOY settlement alone
- More analysis needed

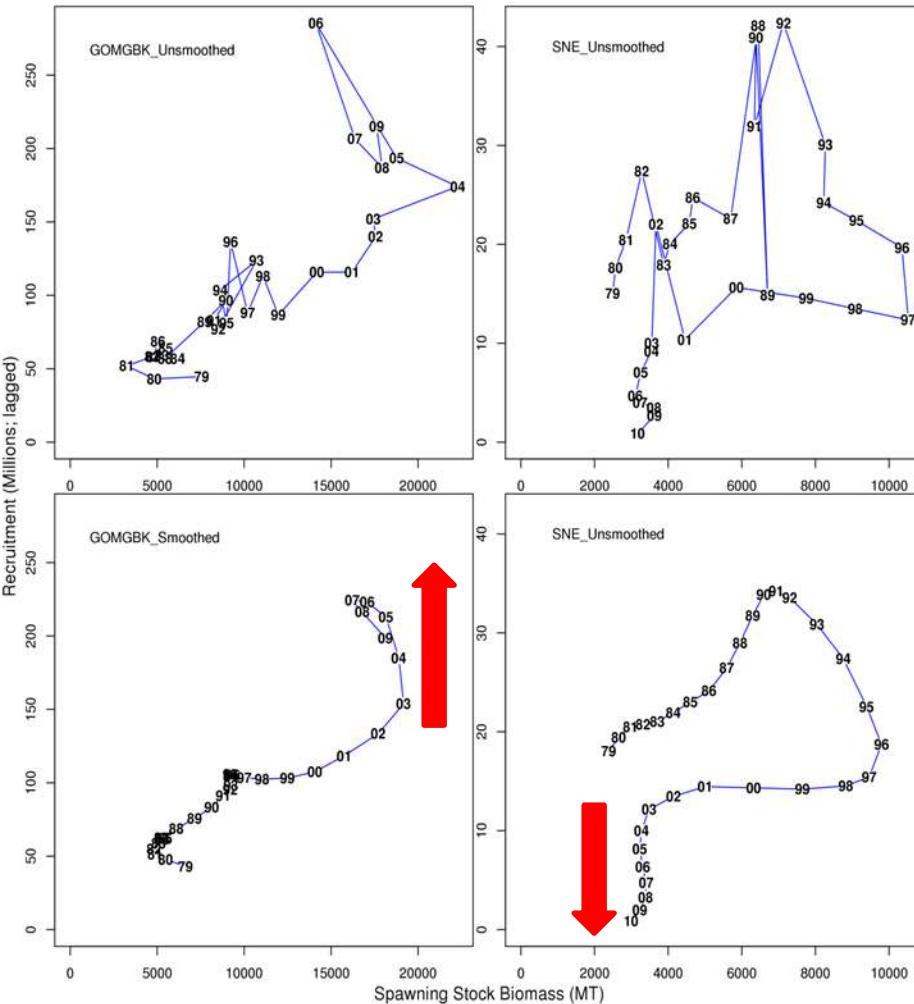


Bathymetry limited by 60m



Available area at depth relative to <10m

# Stock Recruitment Relationship

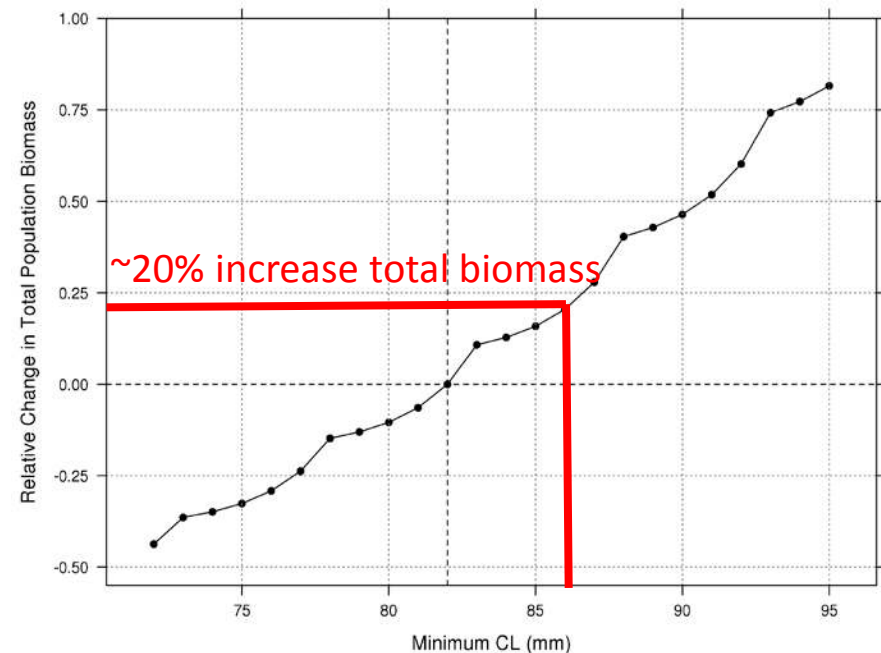
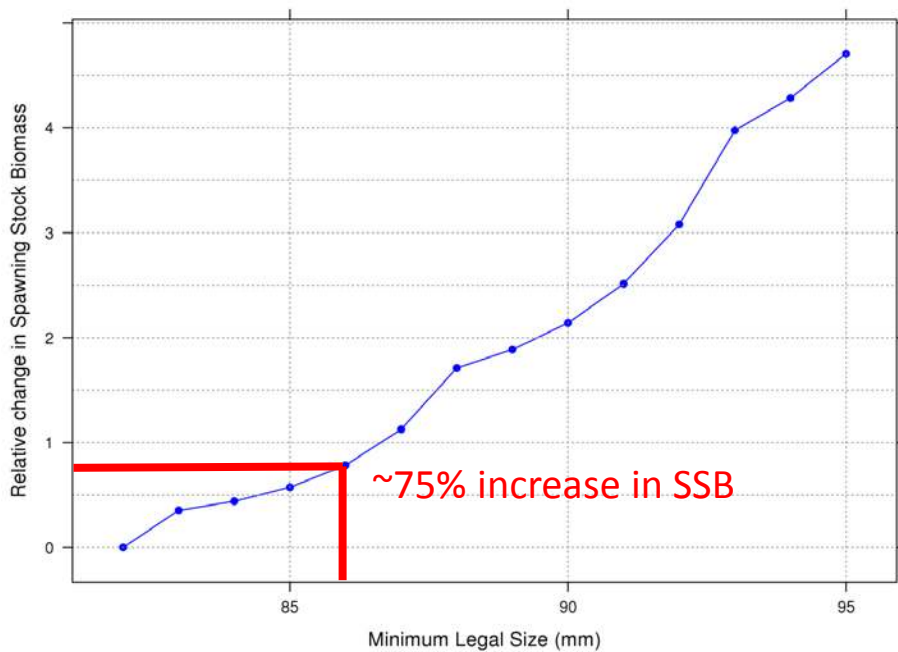


- GOM/GBK
  - 2003-2009
  - ↑ recruitment
  - similar SSB
- SNE
  - 2003-2010
  - ↓ recruitment
  - similar SSB

# Gauge Size Changes



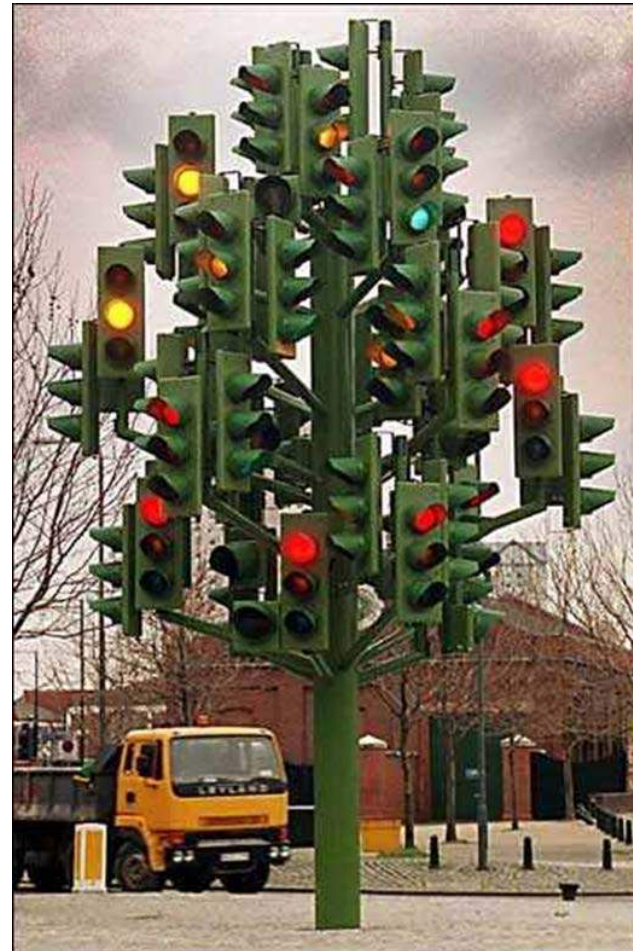
- Larger size = less numbers & same yield
- # mature individuals in population  $\uparrow$
- $\uparrow$  resilience
- BUT we already have record high SSB



# Traffic Light Analysis



- Existing model-free indicators
- TC recommends
  - Develop environmental indicators
  - Monitor existing surveys (VTS and ITS)



# Reference Points



- Current action trigger (Addendum XVI)
  - abundance  $\downarrow$  25<sup>th</sup>
- Reference period
  - 1982-2003
- TC recommends
  - abundance  $\downarrow$  50<sup>th</sup>
  - $\uparrow$  resiliency

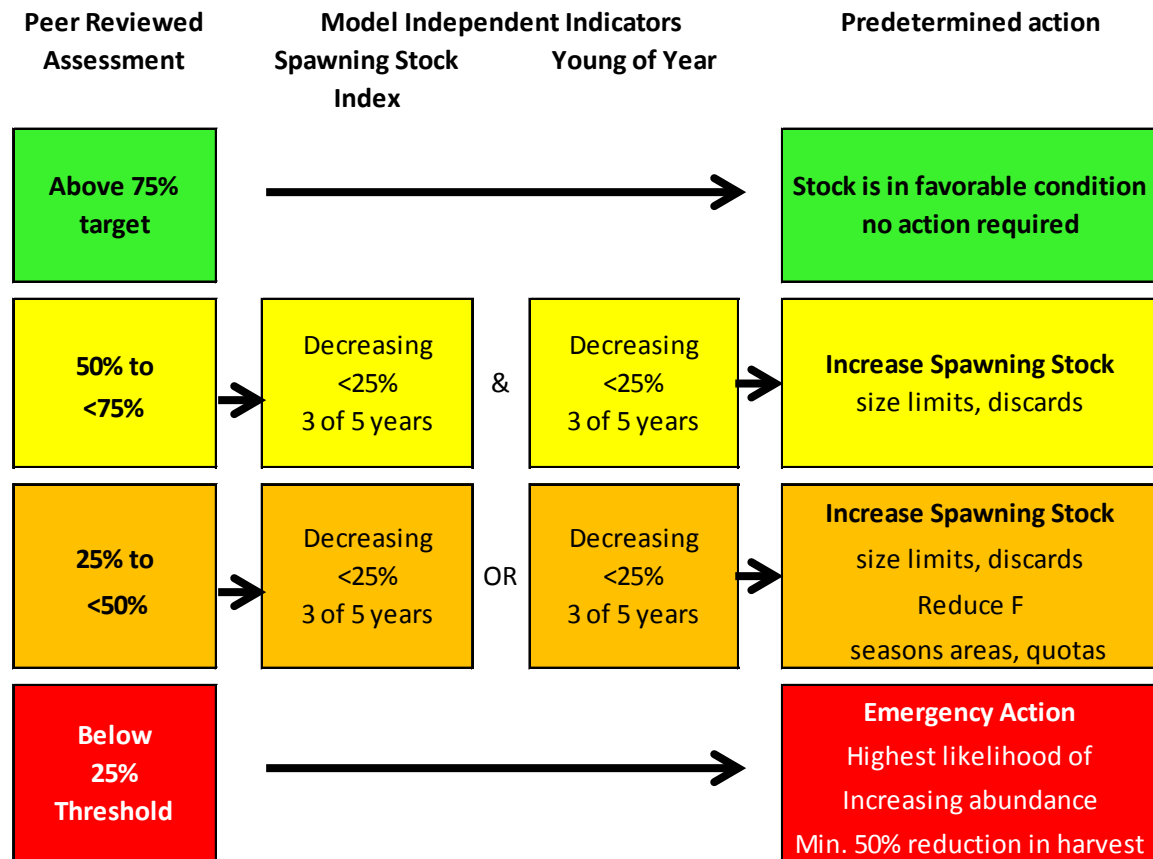


Table 1. from memo M010-034 from TC to Board, April 2010

# Research Needs



- Maturity, growth and age
- Natural mortality
- Environmental influence on life history
- Mating and reproductive success
- Stock connectivity
- Fishery dependent data
- Assessment development
  - Natural mortality
  - Survey data aggregation
  - Incorporate YOY survey
  - Stock recruitment relationship
  - Assessment model language



# Reporting in Lobster Fishery



American Lobster Management Board

January 2017

# Work Group Recommendations



<b>Short Term Recommendations</b>	<b>Intermediate Recommendations</b>	<b>Long Term Recommendations</b>
<ul style="list-style-type: none"><li>• ME 10% harvester reporting only include active commercial harvesters</li><li>• Define inshore vs. nearshore vs. offshore</li></ul>	<ul style="list-style-type: none"><li>• Require, at a minimum, a statistically valid sample of harvester reporting</li><li>• Add data components to harvester reporting</li><li>• Further delineate NMFS stat areas on harvester reports</li></ul>	<ul style="list-style-type: none"><li>• Electronic swipe-card system</li><li>• Incorporate VMS on lobster vessels</li><li>• Electronic fixed-gear VTR for all federal permit holders</li></ul>

# Jonah Crab

## Draft Addendum II



American Lobster Management Board  
January 31, 2017

# Overview



- Issues Considered in Addendum II
  - Claw harvest
  - Bycatch definition
- Public Comment Summary
  - Public hearings
  - Written comment
- LEC Report



# Claws - Statement of Problem



- **Claw fishermen from NY and ME identified following approval of FMP.**
  - These fishermen limited to whole crabs
  - Concerns about equity
- **Potential challenges implementing the regulation in federal waters.**
  - National Standard 4 requires management measures not discriminate between residents of different states

# Claws - Management Options



## **Option A: Status Quo**

- Only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before June 2, 2015 in the states of NJ, DE, MD, and VA

## **Option B: Coastwide Whole Crab Fishery**

- Only whole crabs which meet the minimum size of 4.75" may be retained and sold coastwide.
- Once landed, claws may be detached from the whole crab and sold. There is no minimum size for claws detached at the dock.

# Claws - Management Options



## Option C: Claw Harvest Permitted Coastwide

- Claws may be detached and harvested at sea.
  - If volume < 5 gallons, no minimum claw length
  - If volume >5 gallons, claws must meet 2.75” minimum claw length
- Two claws may be harvested from same crab
- Bycatch limits remain per Addendum I
  - 1000 crabs = 2000 claws
- Fishermen can also harvest whole crabs which meet the 4.75” minimum size
  - Once landed claws can be detached from whole crabs and sold
  - No minimum size for claws detached at the dock

# Bycatch - Statement of Problem



- FMP established 200 crab per day, 500 crab per trip bycatch limit for non-trap gear
- Addendum I increased this to 1,000 crab per trip and expanded it to include non-lobster trap gear
- Increased bycatch limit has raised concerns that the allowance could support a small-scale fishery
- Since no definition of bycatch provided, fishermen could target Jonah crab by landing 1,000 crab per trip and nothing else

# Bycatch - Management Options



## **Option A: Status Quo**

- Under this option, there would be no definition of bycatch in the Jonah crab fishery. Fishermen using non-trap gear and non-lobster trap gear could land Jonah crab up to the bycatch limit without having another species on board.

## **Option B: Bycatch Defined as Percent Composition**

- Under this option, Jonah crab caught under the incidental bycatch limit must comprise at all times during a fishing trip an amount lower, in pounds, than the species the deployed gear is targeting.

# Public Comment Summary



- Held 8 public hearings
  - ME, NH, MA, CT, RI, NY, DE/MD, VA
  - Approximately 40 individual attended
- Received 7 written comments
  - 5 from organizations
  - 2 from individuals

# Public Comment: Claw Harvest



<b>Option</b>	<b>Ind. Written</b>	<b>Group Written</b>	<b>Hearings</b>	<b>Total</b>
<b>A: Status Quo</b>	1	1	0	2
<b>B: Coastwide Whole Crab Fishery</b>	1	2	4	7
<b>C: Claw Harvest Permitted Coastwide</b>	0	2	9	11

# Public Comment: Bycatch Definition



<b>Option</b>	<b>Ind. Written</b>	<b>Group Written</b>	<b>Hearings</b>	<b>Total</b>
<b>A: Status Quo</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>B: Bycatch Defined by Percent Composition</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>7</b>

# LEC Report



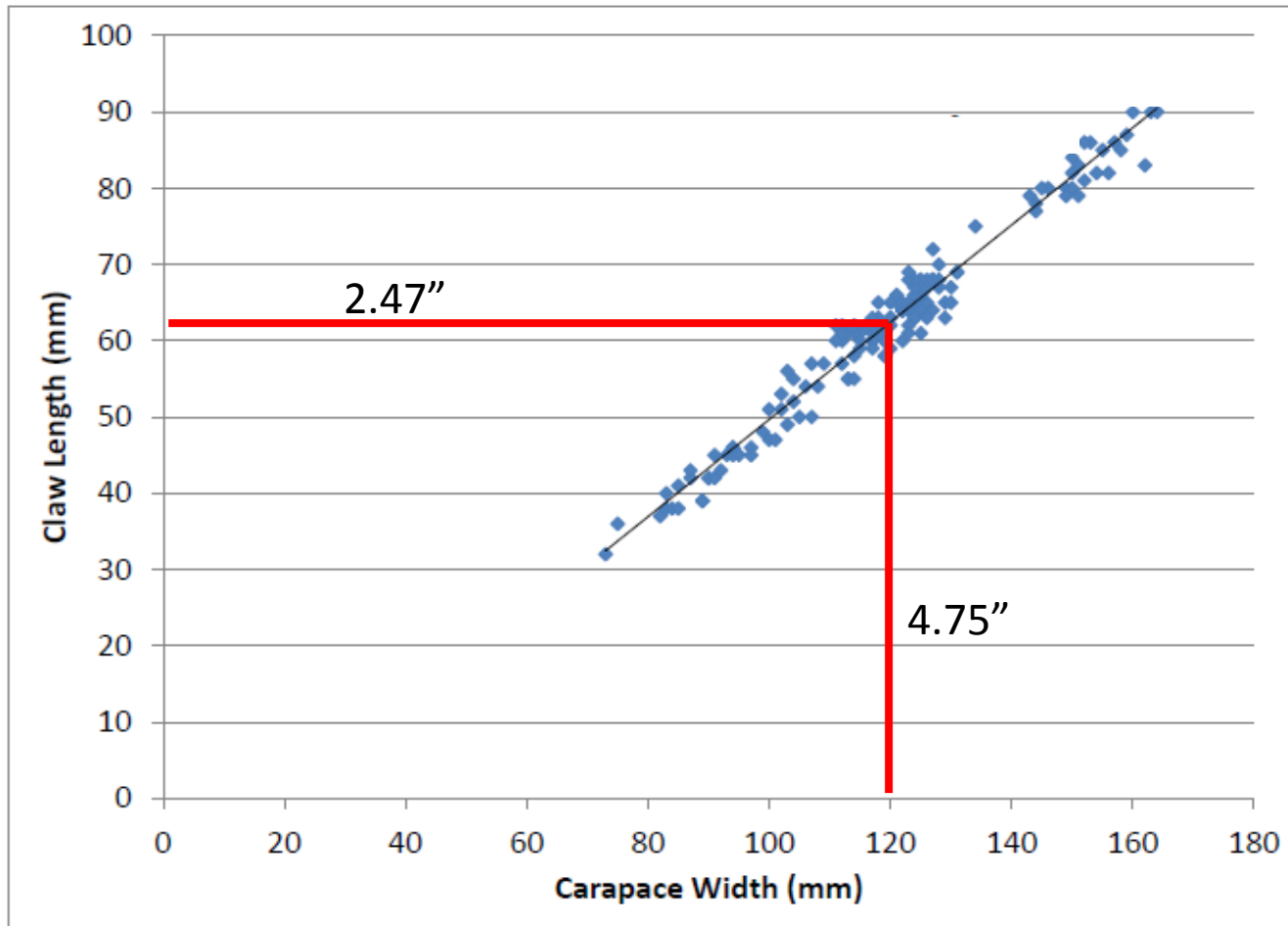
- **Coastwide Whole Crab Fishery**
  - Option B most enforceable; claw harvest could introduce confusing measurement standards
  - Whole crab fishery ensures all harvested crabs meet minimum carapace width with clear legal standards for harvest
  - Creates consistent regulations coastwide
- **Bycatch Defined as Percent Composition**
  - Option B provides a reasonable approach that can be verified by officers
  - Option A is simpler but would require a lower bycatch limit to reflect incidental catch



**Questions?**

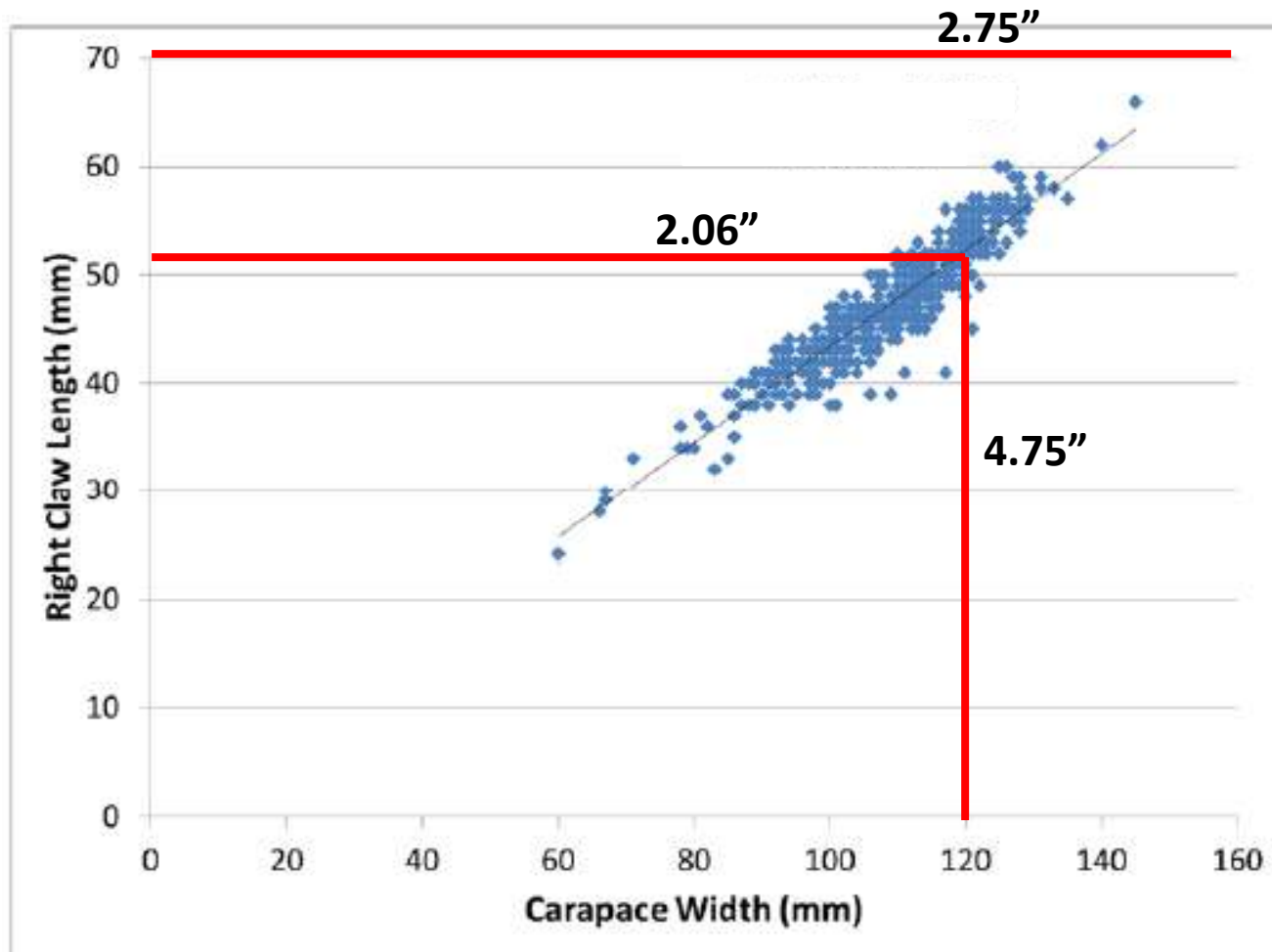


# Male Morphometric Data



A male crab whose carapace width meets the minimum size of 4.75'' would have an expected claw length of 2.47''.

# Female Morphometric Data



100% of female crabs sampled had claw lengths less than 2.75\"



# Potential Fishery Impacts on GOM/GBK by Coral Amendment

Kathleen M. Reardon  
ASMFC Technical Committee  
1/31/2017



# Planned Timeline

- April 2017 – preferred alternatives published for public comment
- June 2017 – Council final vote



# NEFMC Deep Sea Coral Amendment

- Proposed closures
  - Broad areas by depth
    - >300m, >400m, >500m, & 600m)
  - Discrete canyons on the continental shelf
  - Combination of canyons and broad areas
  - Inshore GOM, Jordan Basin & Lindenkohl Knoll
- Identified the lobster trap fishery as potentially highly impacted by closures
- NEFMC used VTRs to assess revenue impact



# Lobster and VTRs

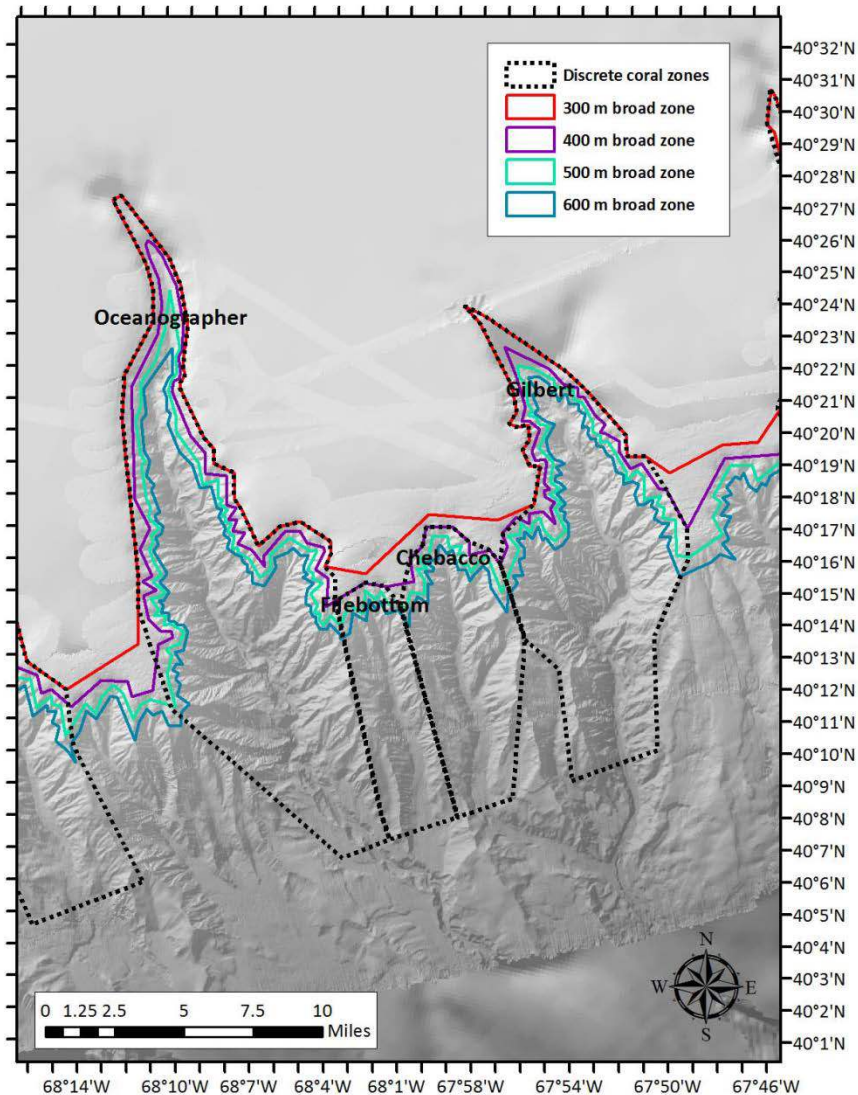
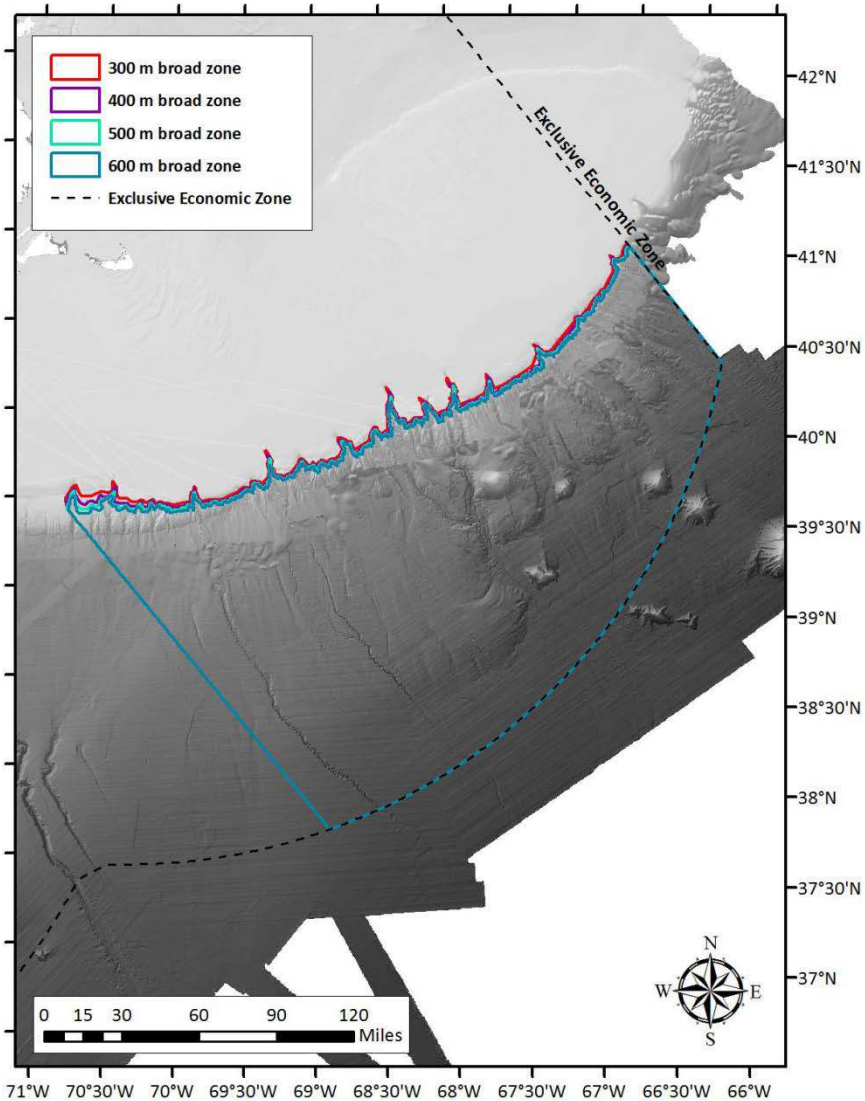
- VTRs are not required for all lobster permits
  - Exemption for lobster only (no other federal permit)
- High % of Area 3 boats submit VTRs
- Small % of Maine boats submit VTRs
- Without full coverage, VTR estimate could be underestimating revenue impact



# Available data (in addition to VTRs)

- LMCA 3
  - Survey completed in 2016 characterizing offshore lobster and Jonah crab trap fisheries
    - Estimated proportion of effort/revenue by depth
    - 35% of permit holders responded
- LMCA 1
  - Maine Dealer Data (trip level reporting)
  - Maine Harvester Data (10% of all licenses)
    - Report distance from shore 0-3, 3-12, >12nm
  - Industry input

# Broad areas and discrete canyons





# Broad areas and discrete canyons

- Proportion of effort and revenue impacted, including National Monument closure

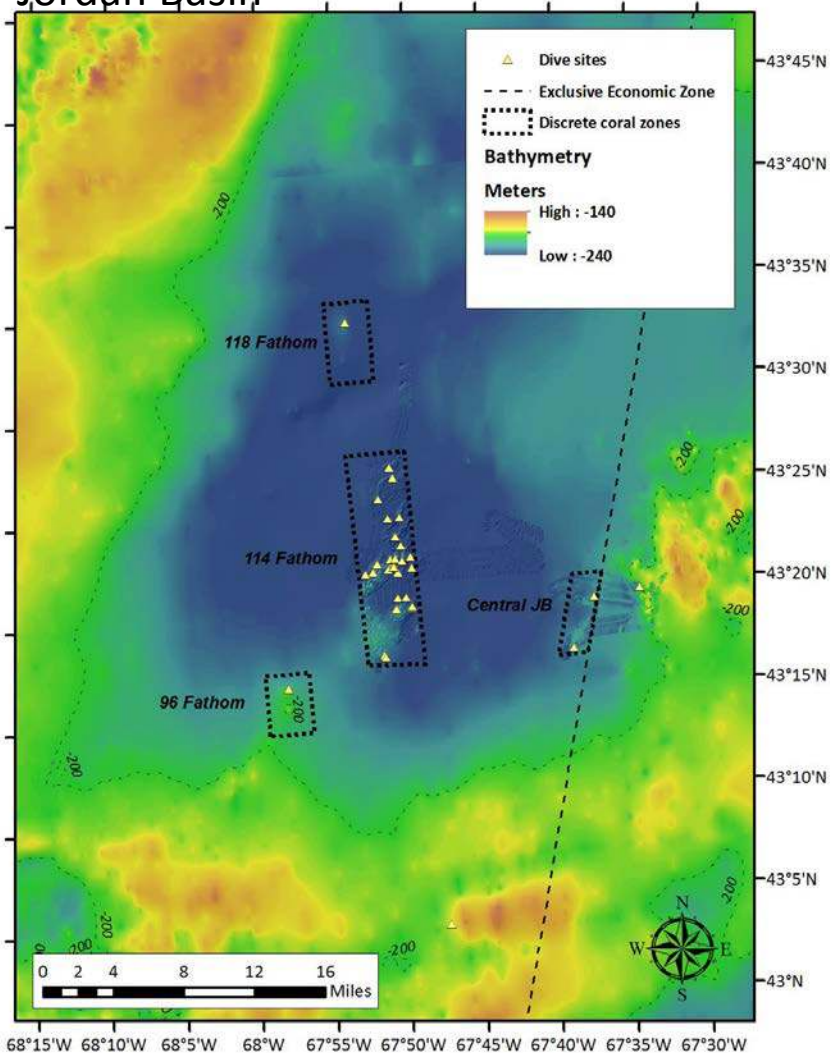
Metric	Weighting	Monument	Discrete		300m plus		400m plus	
			Canyons	300m	Discrete Canyons	400m	Discrete Canyons	
Effort	Unweighted	13.0%	19.1%	32.1%	33.0%	17.3%	21.6%	
	Weighted	14.3%	21.7%	37.4%	38.4%	20.3%	25.2%	
Revenue	Unweighted	12.2%	16.8%	26.8%	27.5%	15.5%	18.7%	
	Weighted	14.3%	19.3%	32.6%	33.4%	18.1%	22.1%	
Revenue	Unweighted	\$2.4	\$3.3	\$5.2	\$5.4	\$3.0	\$3.6	
Value	Weighted	\$2.8	\$3.7	\$6.3	\$6.5	\$3.5	\$4.3	

Minimum

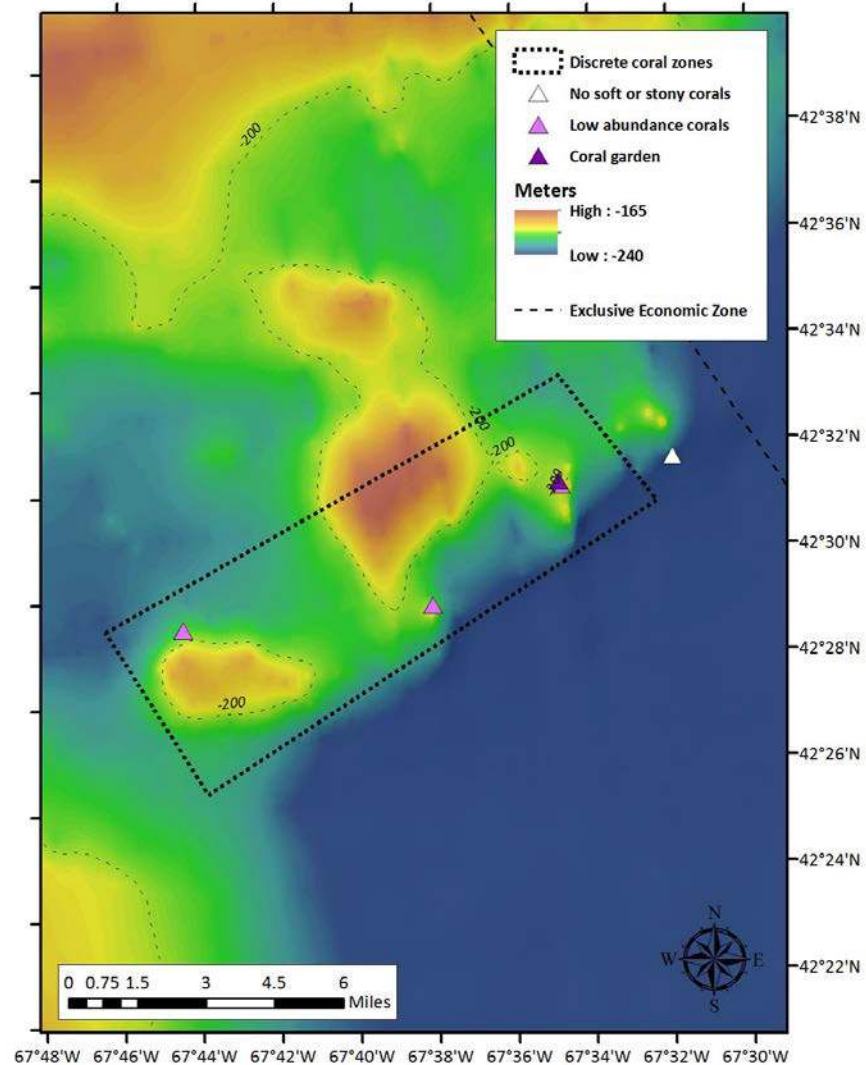
Maximum

# GOM: Area 3

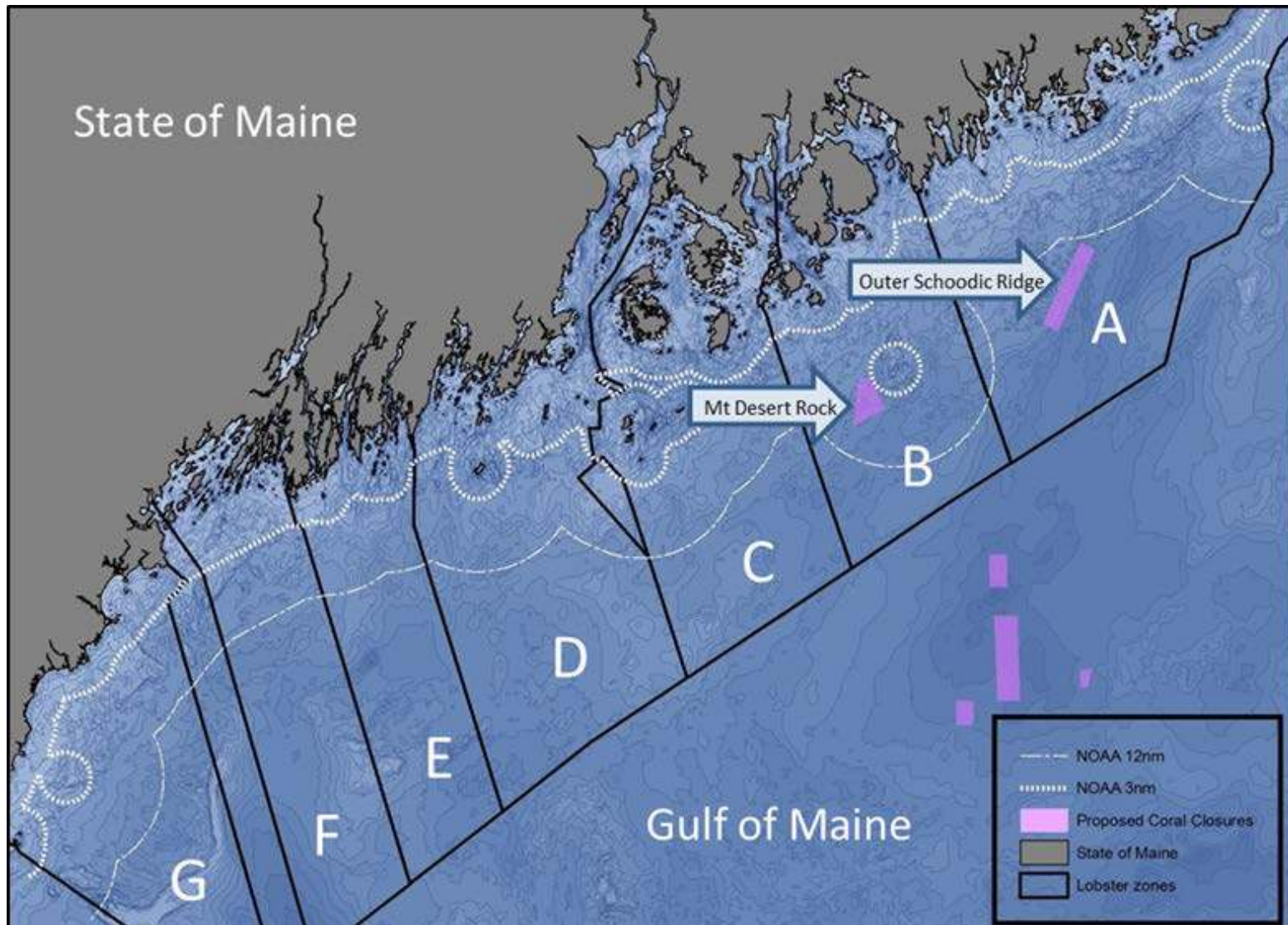
## Jordan Basin



## Lindenkohl Knoll



# Inshore Gulf of Maine

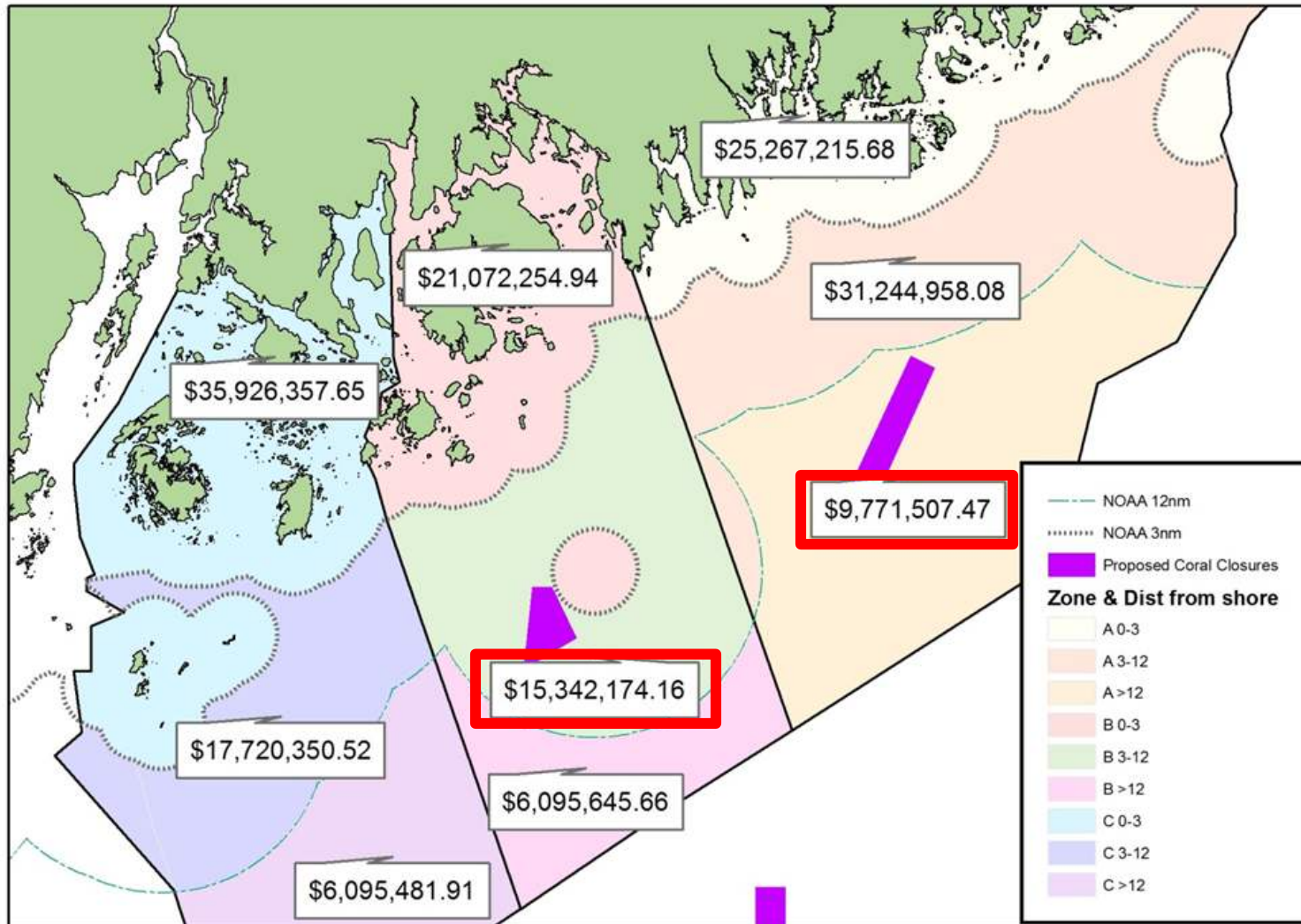




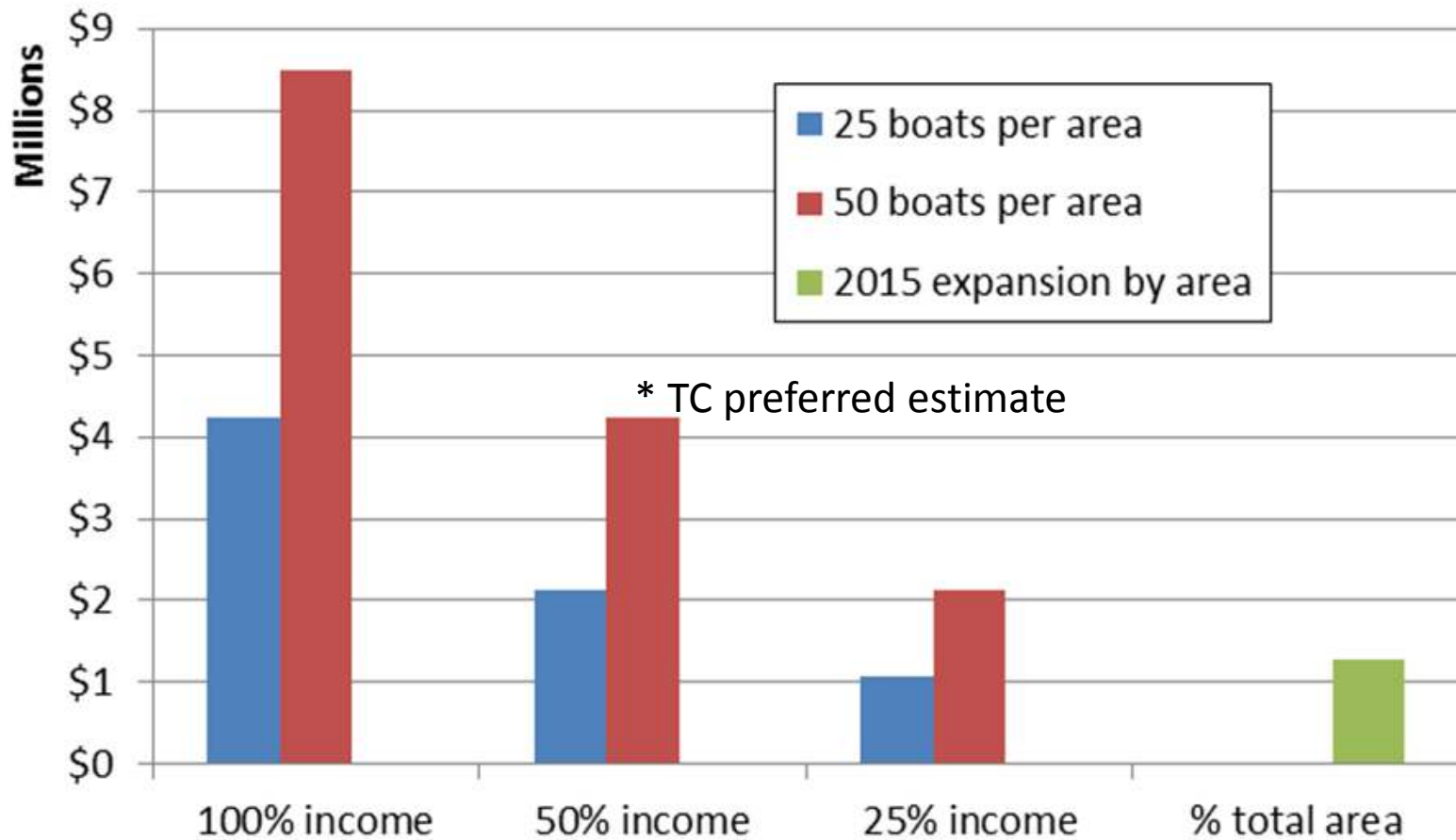
# Inshore Gulf of Maine

- Three approaches to estimate revenue impact
  - Total revenue by distance from shore
  - Combine average value, days fished, boats in area, and % income
  - % total area

# Total 2015 Revenue by distance



# Estimates Comparison



# Sources of uncertainty

- Calculating by % area, assumes equal productivity of habitat
  - Potential underestimate
- Unable to validate industry information
- Does 10% harvester reporting in Maine adequately represent the >3nm fishery?
  - Few reports from offshore
- Data sources have low spatial resolution

# Whale/lobster co-occurrence model

