ASMFC Lobster Technical Committee Report

Bob Glenn, Chair

5/2/2016

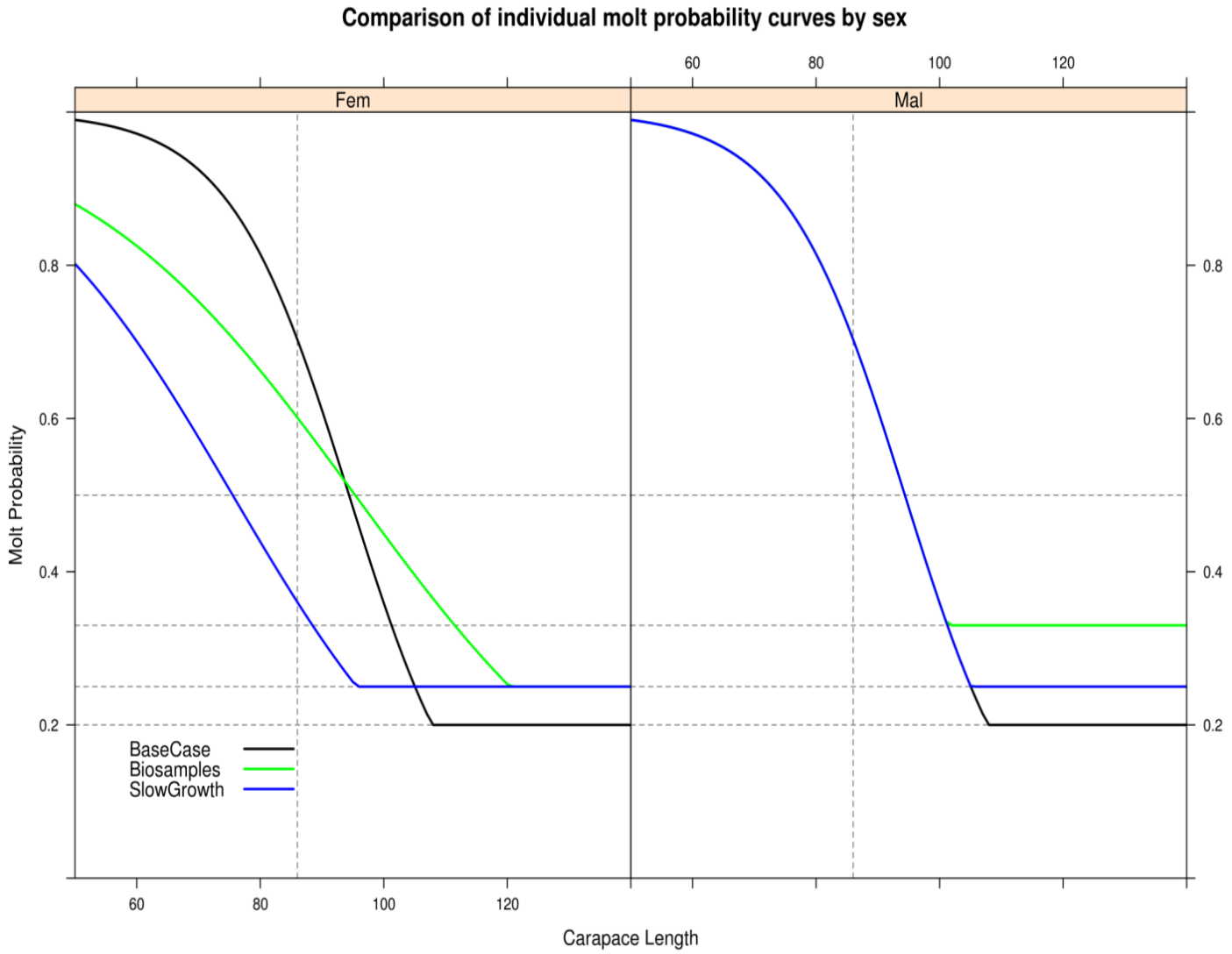
Impacts to Stock from Gauge Size Changes

- TC used the simulation model to analyze the effects of increasing the minimum size on the SNE lobster stock
  - Impact on the stock is highly sensitive growth and natural mortality rates of the unfished portion of the stock
  - Range of growth rates and a range of natural mortality rates were used
  - Biomass = ∑ ((biomass at size x growth rate) – natural mortality))
    - As M increases the benefits of the size increase diminish because an increasing proportion of the stock dies before reaching minimum legal size
    - The benefits of size increase diminish under slower growth rates because the longer it takes for a lobster to grow to minimum legal size the more time M has to work on the stock
  - All simulations assume a constant rate of exploitation based on terminal year of the assessment
  - All simulations assume a **constant rate of recruitment**
    - This is a tenuous assumption given empirical trends in YOY lobster settlement

Impacts to Stock from Gauge Size Changes

- Growth Rates
  - Basecase
    - used in last assessment
    - fastest rate used in simulation
    - Based on tagging data
    - Improbably fast growth of small females/improbably slow for large females
  - Intermediate Growth Model
    - female molt probability calculated based on proportion of sublegal lobster that are egg-bearing
    - Lower end of the growth curve was set 33% molt probability (all females molt at least once every three years)
  - Slow-growth Model
    - Assumes all females reach maturity at 75 mm CL
    - Max intermolt duration of 4 years at 90 mm CL

Impacts to Stock from Gauge Size Changes



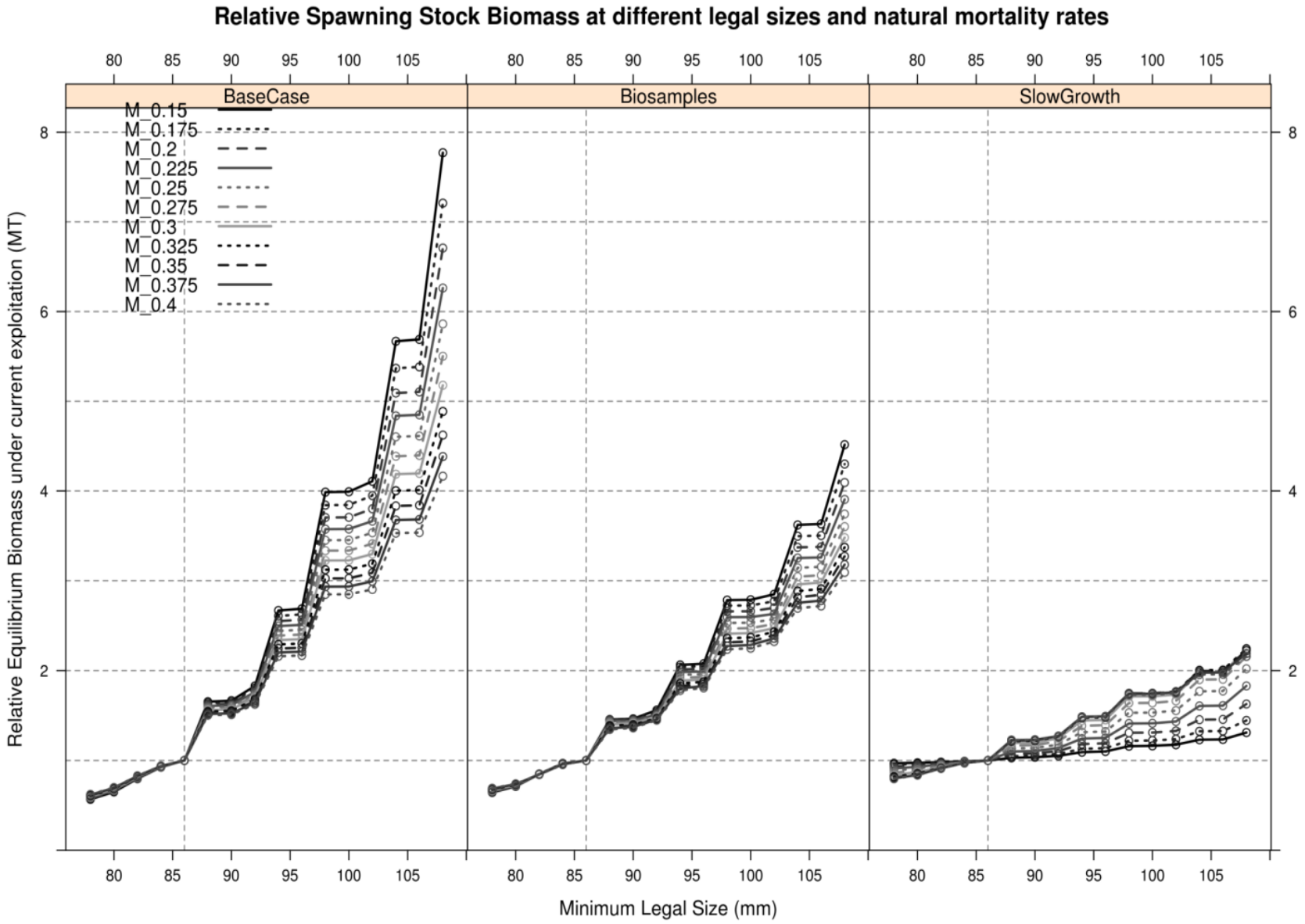
Impacts to Stock from Gauge Size Changes

- Natural mortality – 11 values ranging from 0.15 to 0.4

- Updated likelihood profiles of assessment model support M or **0.24 to 0.27** in recent years

- As M increases the effectiveness of the gauge size change diminish

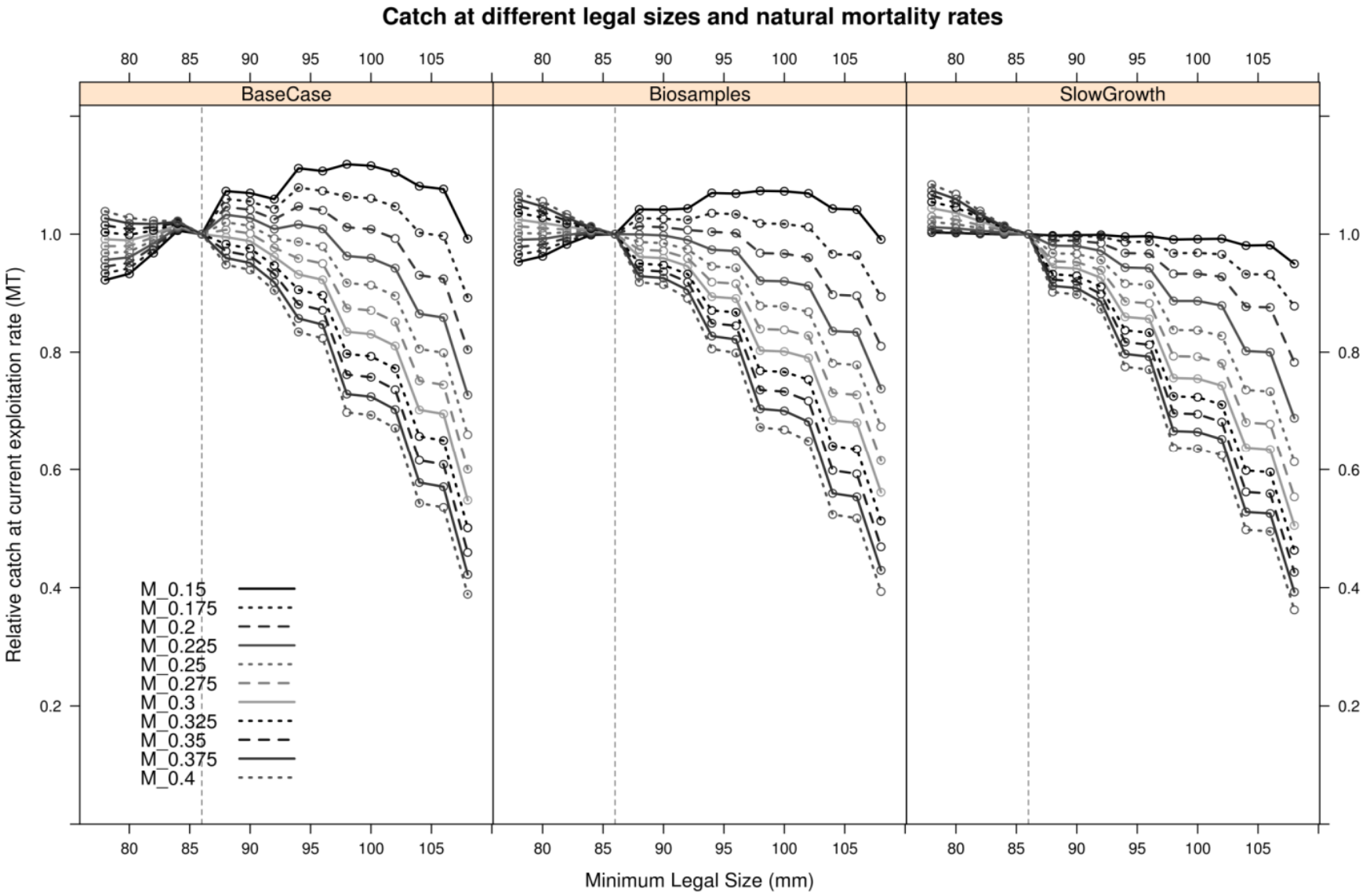
Impacts to Stock from Gauge Size Changes



Impacts to Stock from Gauge Size Changes

- Increasing the minimum size resulted in increased stock biomass under all scenarios
  - Slowing the growth rate or increasing M results in smaller increases in biomass
  - Largest increase in SSB observed in scenarios with fast growth and low M
  - Under slow growth and moderate to high M only minimal increases in SSB were observed even at very large size increases

Impacts to Stock from Gauge Size Changes



Impacts to Stock from Gauge Size Changes

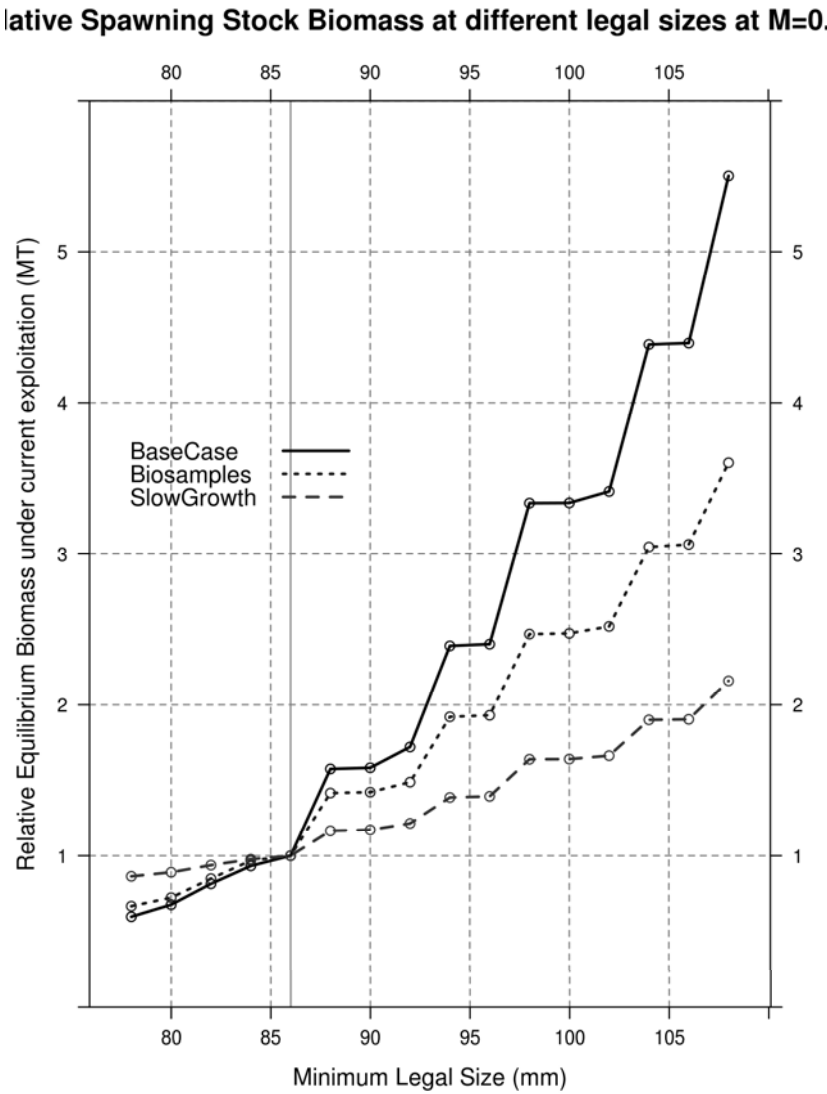
- The effect on catch of increasing the minimum size varied across scenarios

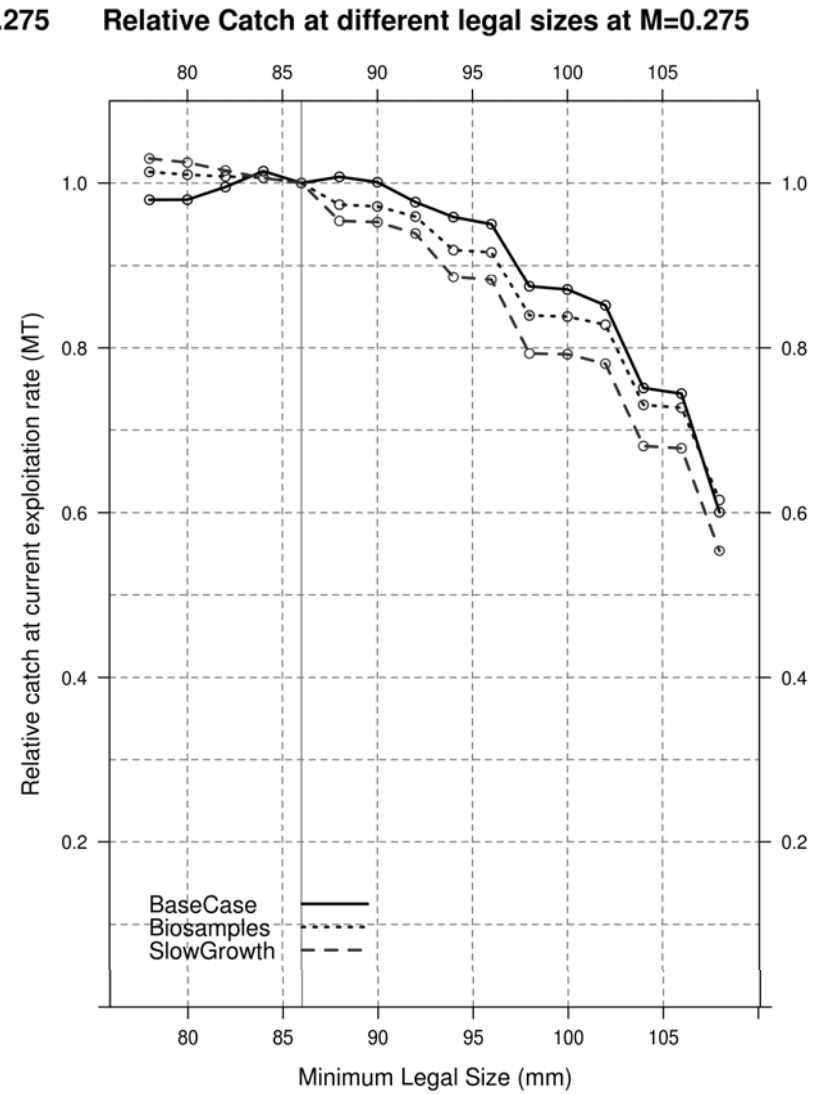
    - Under low natural mortality rates (M < 0.2) increasing the minimum size can increase total yield under the basecase and intermediate growth scenario

    - At the current rate of M (0.275) yield remains fairly stable with increases in minimum size up to 90 mm

    - Long term loss in yield were observed in all growth scenarios with minimum size > 90 mm and M => 0.275

Impacts to Stock from Gauge Size Changes



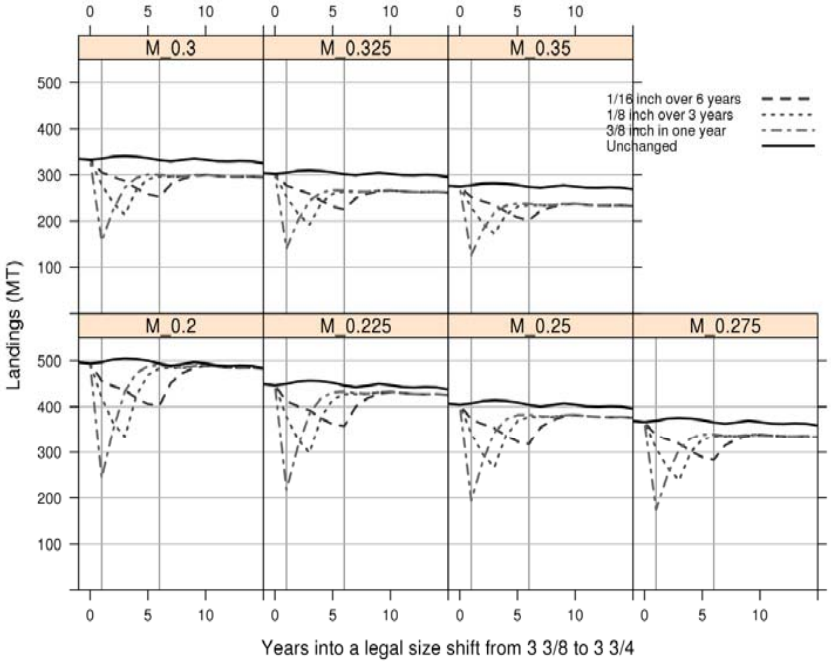


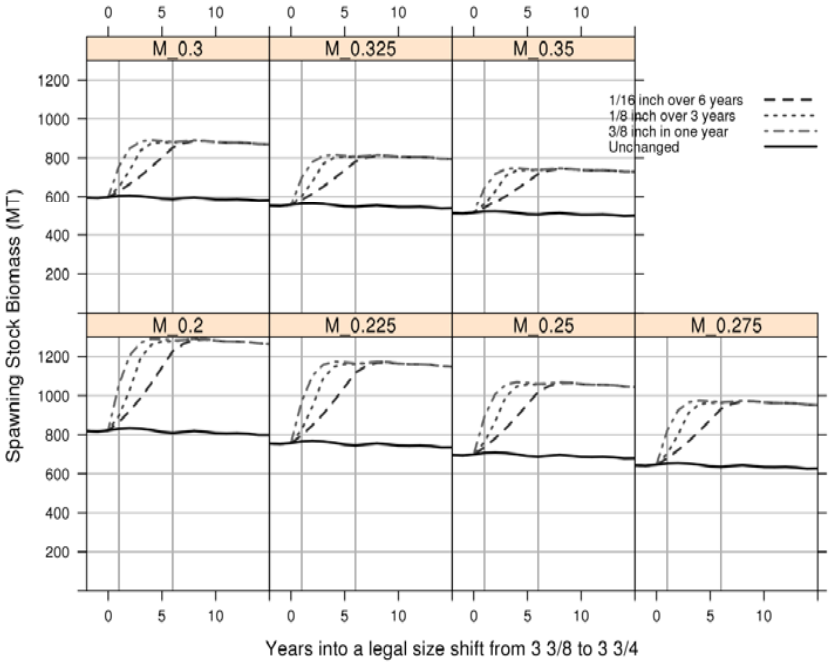
- **Going from 3 3/8" to 3 ¾"**

- Increase by 3/8" in 1 year
  - 50% decline in catch in year 1
  - Equilibrium achieved in year 4
  - Most rapid increase in SSB

- Increase by 3/8" in 3 years
  - Less server drop in catch
  - Equilibrium achieved in year 5
  - Moderate rate of increase in SSB

- Increase by 3/8" in 6 years
  - Gradual decline in catch
  - Equilibrium achieved in 8 years
  - Slowest rate of increasing SSB





Conclusions

- Increase of 5 to 10 mm may result in increased SSB after 20 years
  - Short term changes in catch and biomass will be more dramatic but will reach equilibrium over time

- Benefits of gauge increase are highly sensitive to growth rate and natural mortality rate

- This analysis does not account for spatial variability in the size distribution of the stock
  - Effects of gauge increase likely to be more dramatic inshore

- The assumption of constant recruitment is highly optimistic and is not supported by empirical trends in YOY settlement data

- Analysis also assumes that exploitation rate stays constant, meaning fishermen will not compensate for gauge increase by increasing effort

Conclusions

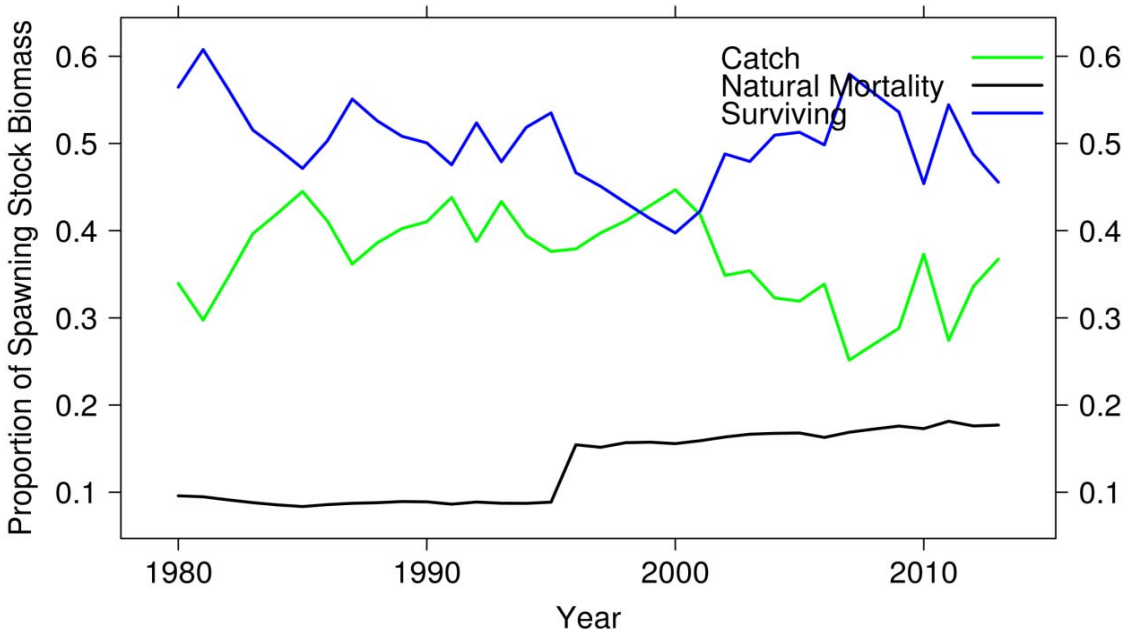
- If recruitment continues to decline projected increases in SSB due to increases in minimum size will not be realized.

- The TC cautions that large reductions in mortality are still required to stabilize the stock.
  - Any increase in the adult population is dependent on favorable environmental conditions

- Changes in the minimum size must be combined with other management measures to realize substantial improvements to the stock

SNE Sources of Mortality and Survival Rates

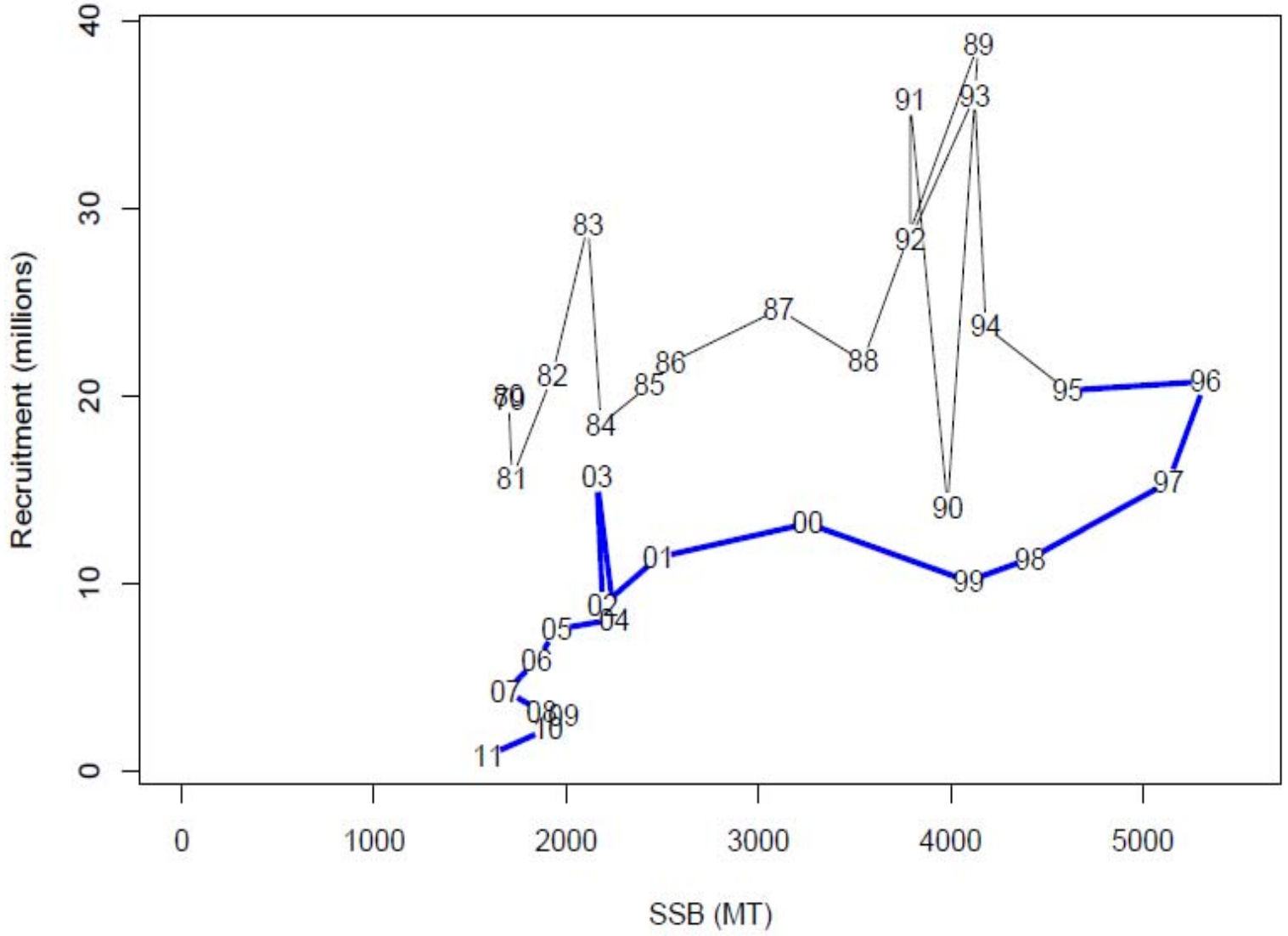
- TC analyzed the relative importance of M and F on the SNE SSB
- M has had a consistent impact on SSB within the two observed regimes
    - M responsible for removing 9% of the SSB from 1980 to 1997, 17% of SSB after 1998
- F is currently removing 35 to 39% of SSB, roughly twice as much SSB than is M
- This suggests that even at elevated levels of M management action can still have positive effects on SSB



Stock-Recruit History

- Recruitment has plummeted over the past decade while SSB has remained fairly constant
- Suggest depensatory mechanisms may be at play
- Recruitment appears to be decoupled from SSB
  - Possible reduced mating success
  - Lower survivorship of early life history stages
  - Increased predation

Stock-Recruit History



Cost/Benefit of Standardized Regulations in SNE

- Benefits
  - Decrease the competitive effects of disparate management measures among LCMAs
  - Minimize the impacts of management related to size selectivity on the population.
  - Ensure that lobsters are equally susceptible to fishing pressure regardless of where they are located in SNE.
  - Simplify the current regulations, leading to enhanced enforcement and compliance.
  - Improve future analysis on the stock condition as scientists would be better able to estimate the effects of the fishery on the lobster population.

Cost/Benefit of Standardized Regulations in SNE

- Cost
  - Ignores the existing population demographics, including spatial trends in size and sex.
  - Create inequities between LCMAs, some of which may be long term due to ontogenetic shifts in lobster habitat use (ie: the movement of lobsters offshore from coastal nursery areas as they get bigger).
  - Portions of the fleet having to make gear modifications, especially to their escape vent size.
  - As the LCMAs are currently defined, standardizing regulations in SNE would have impacts throughout Area 3, including Gulf of Maine and Georges Bank (GOM/GB). Should the Board consider standardizing regulations, it may be necessary to separate the SNE portion of Area 3 from that in GOM/GB.

Cost/Benefit of Standardized Regulations in SNE

- Other consequences
  - Increases in the minimum gauge size would disproportionately impact inshore fishermen who primarily rely on lobsters which have recently recruited into the fishery. In contrast, a decrease in the maximum gauge size would primarily impact Area 3 fishermen whose catch is comprised of larger lobsters.
  - Standardizing biological measures would eliminate the need for permit holders with multi-LCMA trap allocations to declare which Area(s) will be fished. Assuming a fisherman is not limited by his or her trap allocation, uniform regulations (including uniform trap caps) would remove the necessity of the most restrictive rule. This would benefit dual permit holders since they would have greater flexibility in where to fish but it could be a cost to single area permit holders who may experience increased effort moving into their fishing grounds.

Attainability of Recalculated Reference Points

- Given that none of the projections which use the current natural mortality of M=0.285 show the stock reaching an abundance of 22.5 million lobsters, the TC feels it is very unlikely this reference point will be achieved under present environmental conditions.

Inshore/Offshore Tagging Studies

- The TC was asked whether a new tagging study would better illuminate connectivity between the inshore and offshore lobsters stocks in SNE
  - Previous studies show strong evidence of a migration in which adult lobsters make directed seasonal migrations offshore in the fall and return inshore in the spring
  - Benefit from an additional tagging study may be minimal in increasing our knowledge on stock connectivity
  - TC does note a lack of information on growth and size-specific natural mortality in the lobster fishery and believes a tagging study would be useful to address these data gaps.

- TC provided information for two tagging studies
  - SNE Inshore/Offshore connectivity – $248,000
  - GOM/GB connectivity - $107,000

RI SNE Lobster Analysis

- Based on last stock assessment, it is apparent reduction measures will be needed for SNE

- The following analysis is meant to define some potential tools and methodologies that can be used to quantify harvest reductions based on various measures

- Additionally we have conducted some analyses looking at potential spawner-recruit analyses we hope can be used as an alternate view on population dynamics, and could conceivably be used in alternate projections of population responses to management

- Presentation broken in to 3 main categories:
  - Relationship between traps fished and realized exploitation rate
    - Trap reductions are the centerpiece of the existing area 2 plan

  - Technical measures to reduce F and preserve remaining SSB
    - These can be used in conjunction with trap reductions
    - Egg production calculations are an extension of this analysis

  - Alternate stock recruitment relationships
    - This relates to our ability to move from the ad hoc reference points to biologically based points that reflect current conditions of stock productivity
    - Could also be used for alternate projection runs as a new view on potential stock responses to management

- Data used for this analysis was SNE traps fished from stock assessment report
  - To increase years available for analysis, RI data was simulated with a regression for missing years

- Time series of exploitation is taken directly from stock assessment document for SNE area

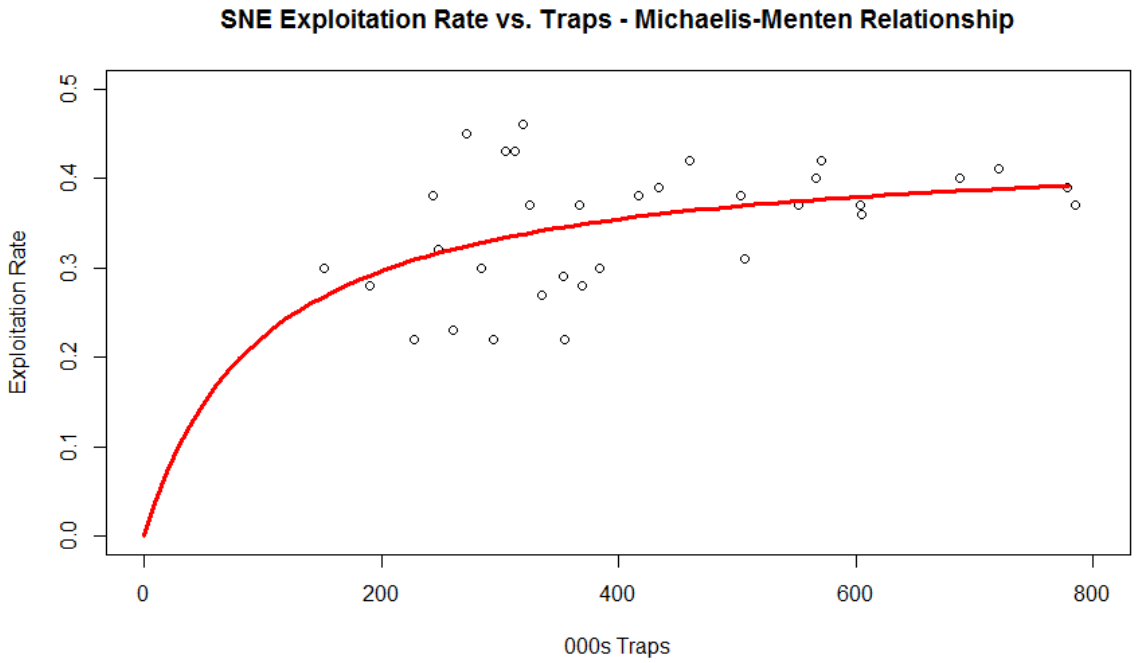
- Based on information available on number of traps versus estimated exploitation rate in SNE, a curve was fit using a non-linear Michaelis-Menten (MM) function

- MM curve was fit with both maximum likelihood estimation and Bayesian techniques in R

- The MM model produces two useful parameters
  - a = maximum rate
  - b= half maximum rate

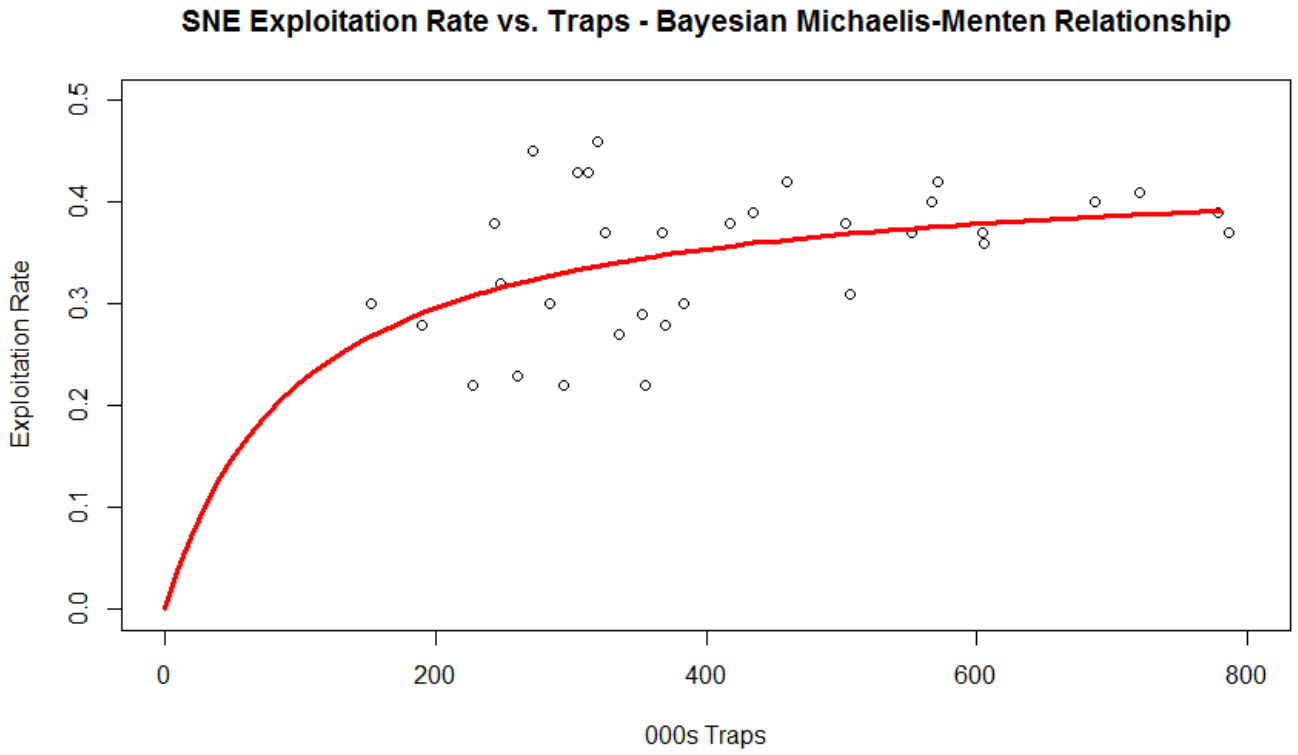
- Model was fit and successfully converged on a solution for both versions

- Predicted MM curve fit to actual data – Maximum Likelihood Version



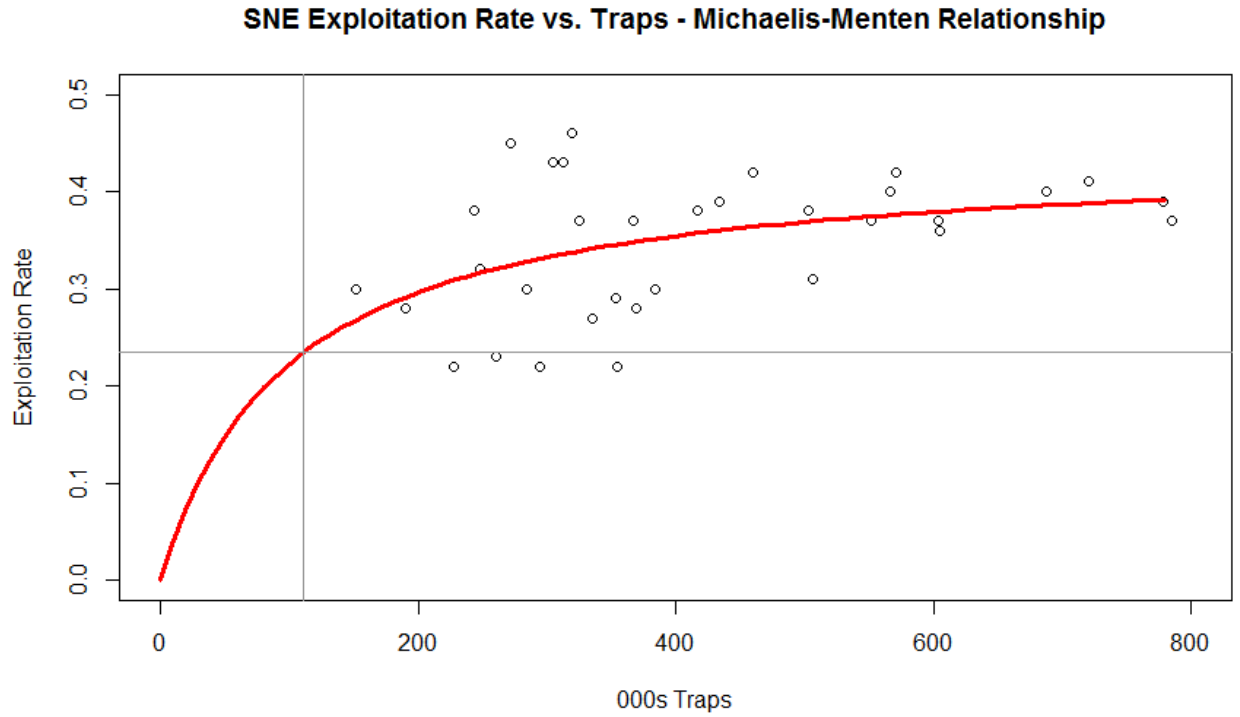
- Estimates:
  - a=0.4404 (exploitation asymptote)
  - b=97.41 (this is number of traps (in thousands) where exploitation is = half of exploitation maximum)

- Predicted MM curve fit to actual data – Bayesian Version



- Estimates:
  - a=0.4402
  - b=97.27

- Predicted MM curve with overlay of trap reduction target
- Target = 110.830 (000s traps), exploitation at this target = 0.23, current exploitation = 0.27



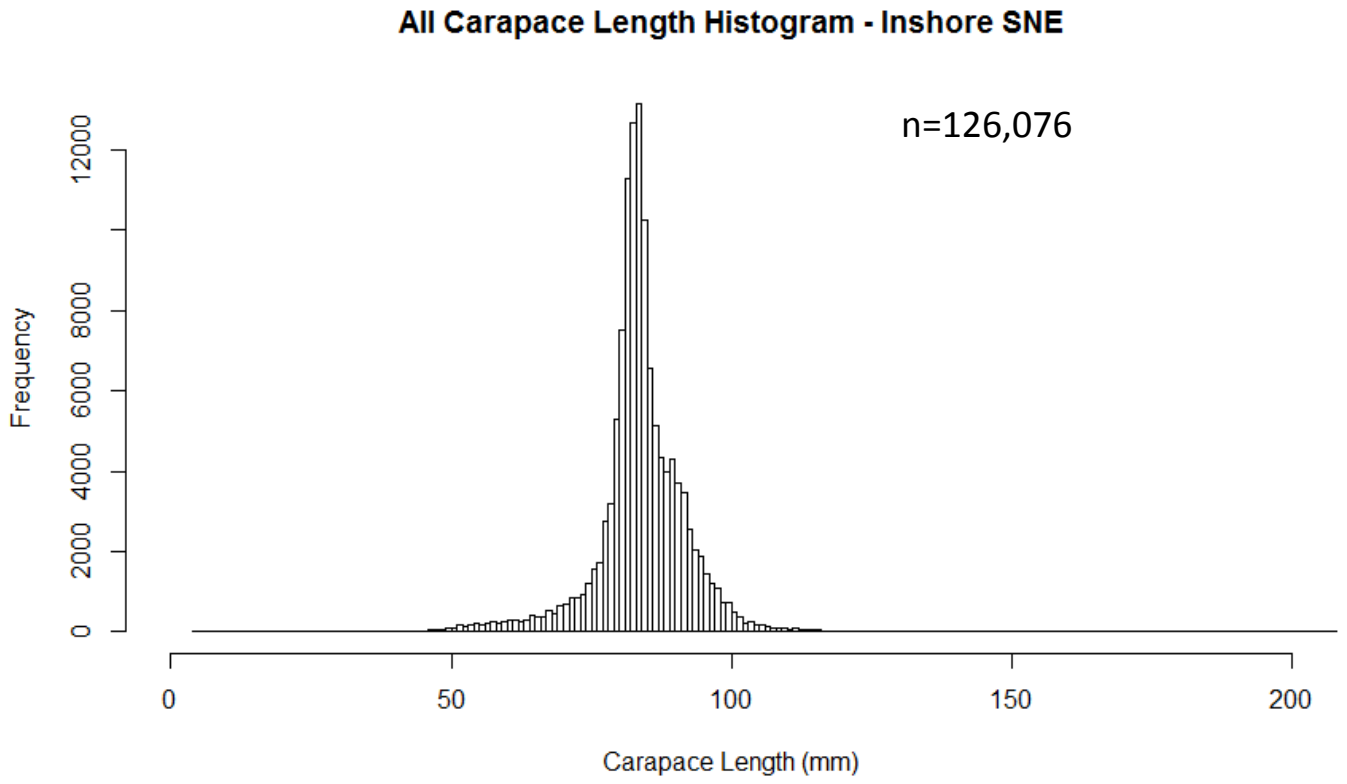
- TC and industry raised questions about the “traps fished” data and its usefulness for this analysis
  - can we find alternate sources that may be better to use for this analysis
- Reduction calculations from trap reductions can be used in combination with other measures to achieve needed harvest reductions

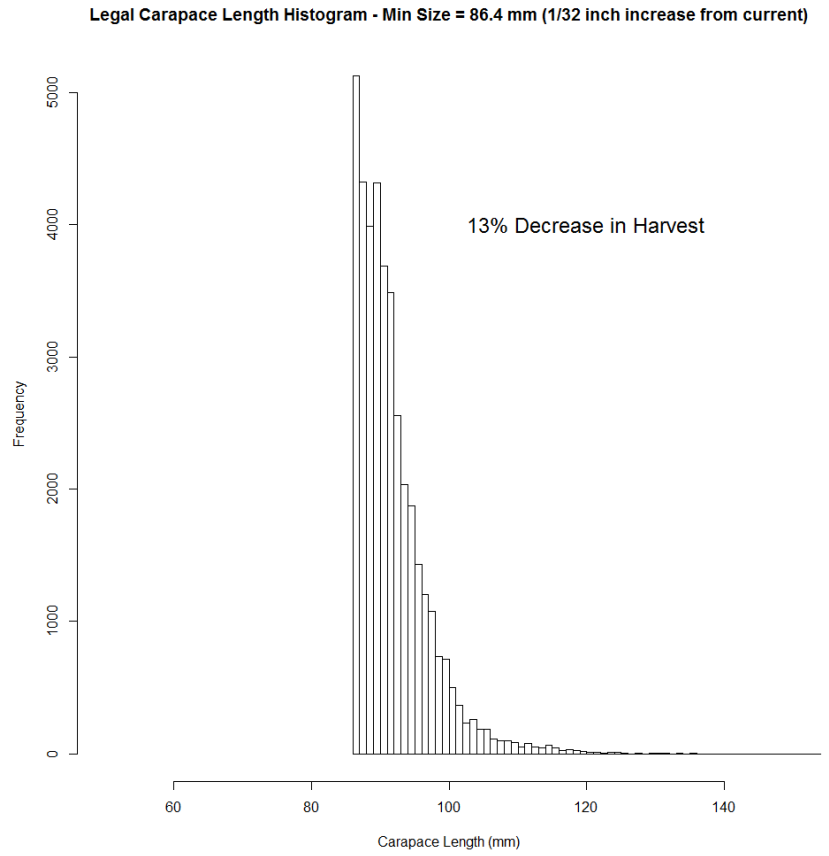
- In addition to existing effort control plan, also looked at instituting gauge size changes

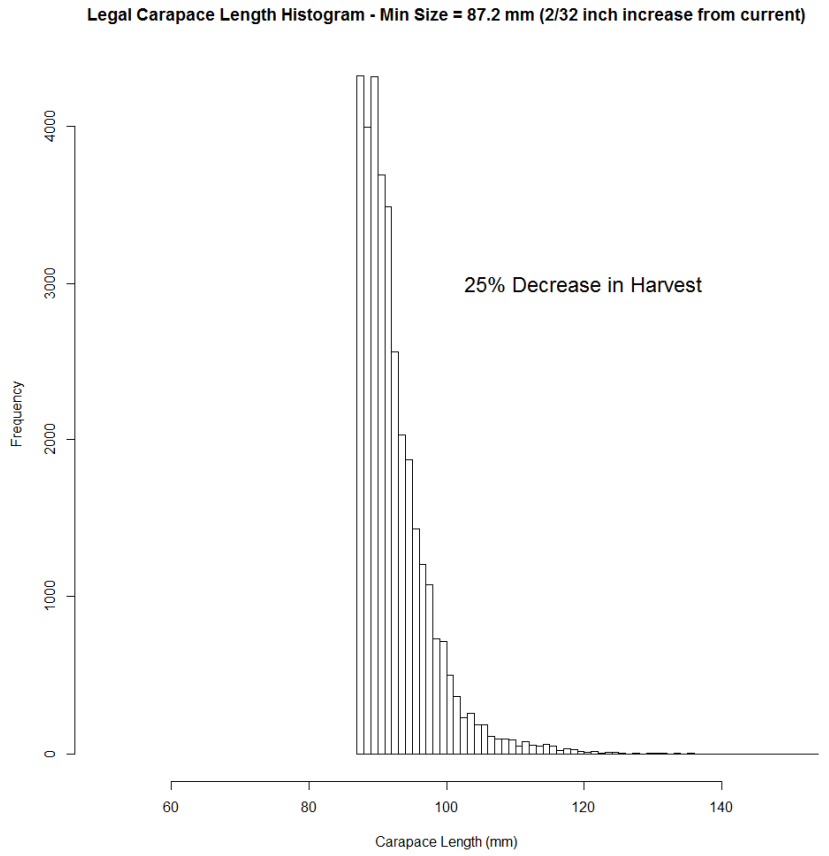
- Used Biosample data from sea and port sampling from SNE only, 2010 – 2012
  - Broke data in to inshore and offshore areas by stat areas
  - Combined state, federal, and AOLA data

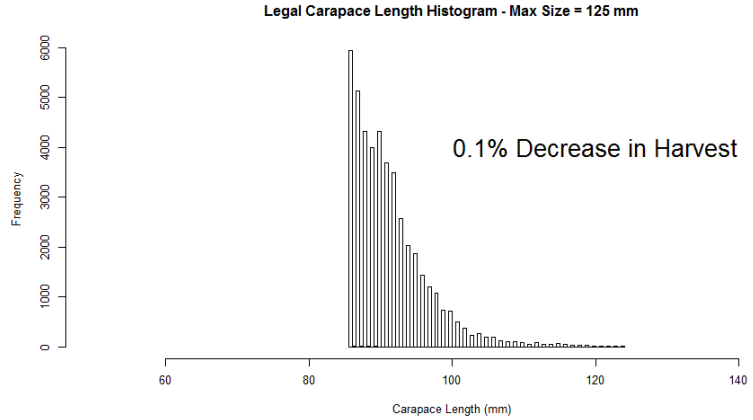
- Generated length frequency distributions which examined options for gauge size changes

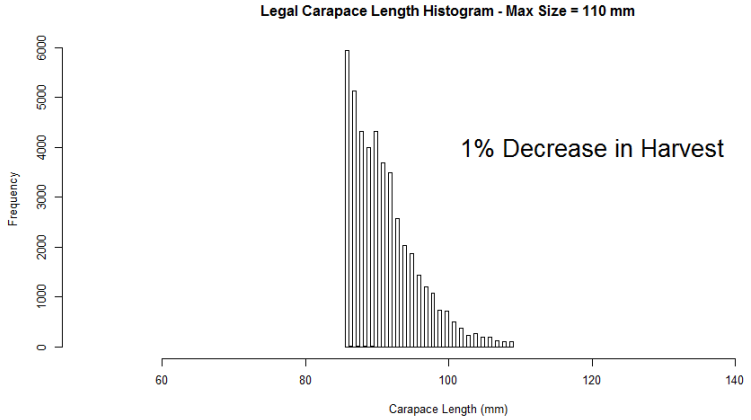
- Will show only the inshore example to save time, full analysis shown in the report

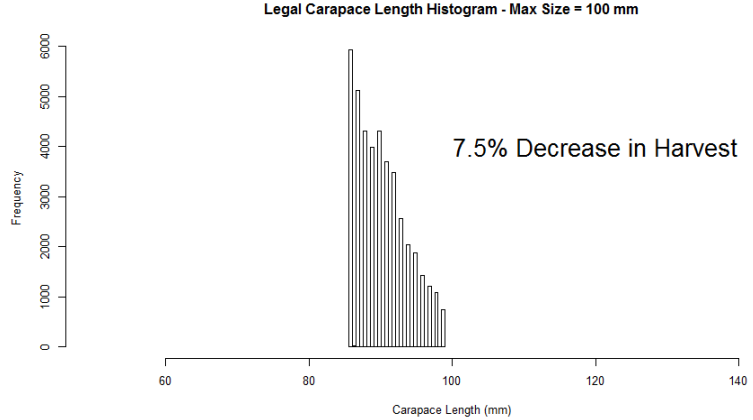



Legal Carapace Length Histogram - Min Size = 86.4 mm (1/32 inch increase from current)
13% Decrease in Harvest
Frequency
0
1000
2000
3000
4000
5000
60
80
100
120
140
Carapace Length (mm)


Legal Carapace Length Histogram - Min Size = 87.2 mm (2/32 inch increase from current)
25% Decrease in Harvest
Frequency
0
1000
2000
3000
4000
60
80
100
120
140
Carapace Length (mm)


Legal Carapace Length Histogram - Max Size = 125 mm
0.1% Decrease in Harvest
Frequency
0
1000
2000
3000
4000
5000
6000
60
80
100
120
140
Carapace Length (mm)


Legal Carapace Length Histogram - Max Size = 110 mm
1% Decrease in Harvest
Frequency
0
1000
2000
3000
4000
5000
6000
60
80
100
120
140
Carapace Length (mm)


Legal Carapace Length Histogram - Max Size = 100 mm
7.5% Decrease in Harvest
Frequency
0
1000
2000
3000
4000
5000
6000
60
80
100
120
140
Carapace Length (mm)

- Minimum size changes can be effective for harvest reductions and potential for egg production but can also be temporary in nature
  - If needed should be done cautiously in phased approach
- Maximum size changes could have lasting protections if set in a meaningful way
- Including these measures with the existing trap reductions scheduled could have a meaningful impact on harvest reductions
- Should update this analysis with more contemporary data before quantifying reductions

- From gauge change exercise, can examine potential for egg production

- Carapace length – fecundity relationships exist in the literature (Estrella and Cadrin 1995 used in assessment)

- Can apply this relationship to females of the newly protected lobsters
  - based on proportions from females in biosample data

Lobster Options – Egg Production

- The TC identified numerous areas where this analysis could be improved:
  - adding in maturity schedule in to the analysis
  - account for the fact that larger females do not produce eggs in each year
  - account for population dynamics of this strategy over time
- These perfections to the original egg production analysis have been developed by RIDEM staff

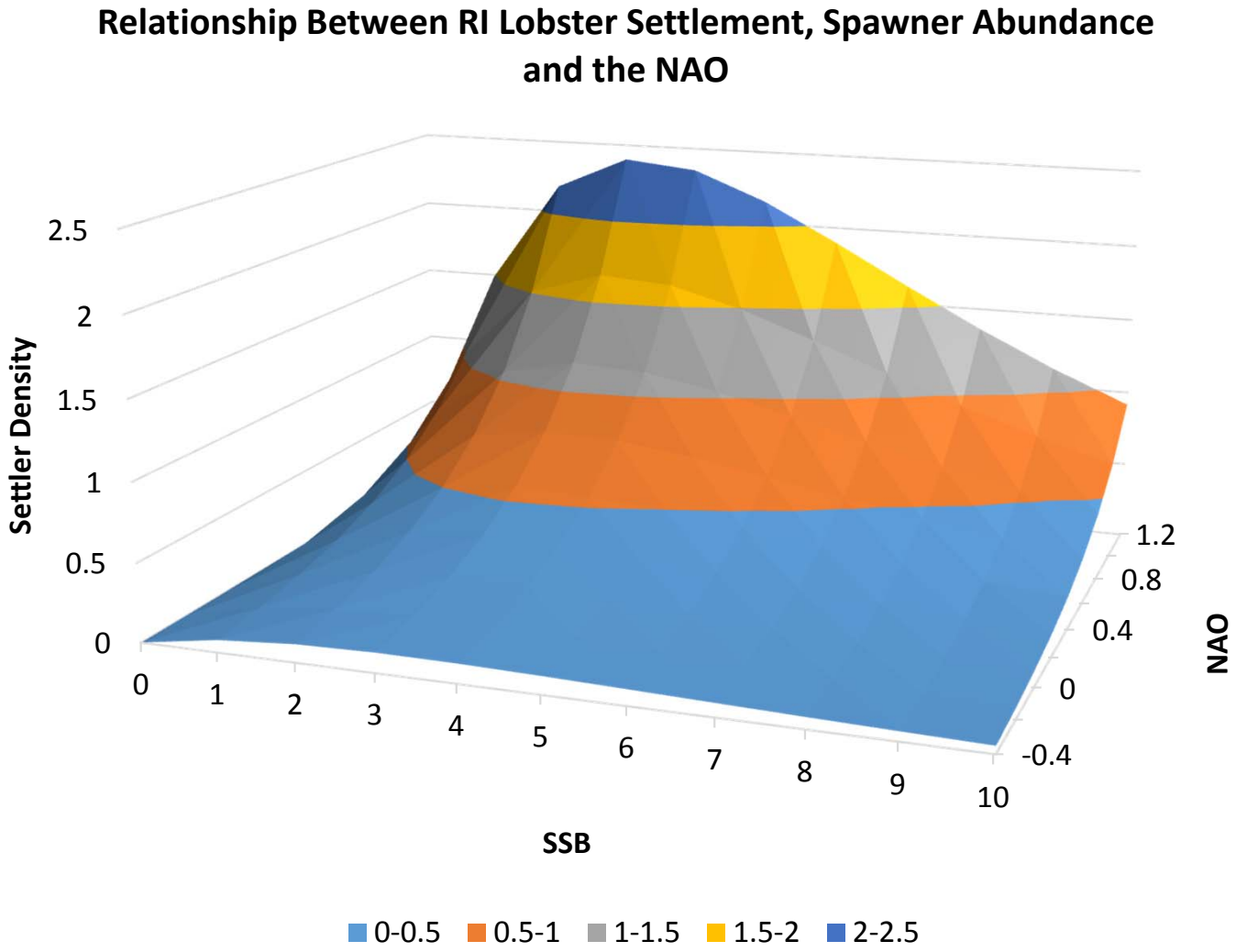
- All 3 of the main ideas offered by the TC have been developed in to a more thorough and realistic egg production analysis

- Initial results, strictly looking at gauge changes show “modest” changes can result in meaningful egg production increases
  - ~40% incr in relative egg production achievable from single gauge adjustment
  - Can be extended to calculate egg prod incr from other management measures

- RIDEM trying to strike a balance between adding realism (and complexity), but not creating new stock assessment

- If Board wishes, updated analysis can be brought to the TC for review

- Ran two sets of analysis, fine scale (based on RI specific data) and large scale (based on assessment info for all SNE)
- Fit Ricker type stock recruit models with and without various environmental and alternate covariates
- Also tested statistical fit of various data lags for stock-recr relationship



- Example of fine scale analysis
- Model fit improved significantly with addition of NAO index

- Appears to be a reasonable relationship between traps fished and exploitation
- Could use model and projected trap reductions to quantify effect of trap reductions and combine with other measures
- Appears that minimum and maximum size changes can produce reductions in harvest and increase eggs produced significantly

- The spawner – recr work does not impact harvest reductions per se, but can be useful for: alt projection information; estimation of brps reflective of stock productivity

- As noted, RIDEM has already improved egg production analysis and can bring forward if warranted

- It will be important to establish management goals so that further development of analytical tools can be oriented to the boards goals

- RIDEM interested in working on this further with the TC

Lobster PDT Report: Potential Objectives for the SNE Stock

May 2, 2016

Introduction

- PDT met via conference call on March 23rd
- Discussed range of management objectives
- Pros and cons of standardizing regulations

Increase SSB

Perpetuate the Fishery

1. Increase SSB

- Requires an 80%-90% reduction in F
- Lead to loss of SNE lobster industry
- Benefits include improved recruitment and higher stock abundance
- Moratorium, quota, narrow slot limit, long season closure

2. Stabilize SSB

- Requires 75% reduction in F
- Large economic and infrastructure losses
- Prevent further declines in abundance
- Quota, gauge size changes, targeted season closures, trip limits, lower trap limits

3. 50% Reduction in F

- “In the middle” objective
- Allow a portion of the fishery to remain
- Slow decline of SNE stock with potential for a few years of improved recruitment
- Gauge size changes, season closures, area closures, quotas, trap reductions

4. Optimize Egg Production

- Take advantage of favorable climate conditions to produce several years of good recruitment
- Leave as many spawners and eggs in the water
- Narrower slot limit
- Don’t want male-only fishery

5. Perpetuate the Fishery

- Socio-economic objective
- Any reduction in F between 10%-40%
- Stock will continue to decline
- Preserve fishery until no longer economically viable
- Trap reductions, gauge size changes, area closures, season closures

6. Improve Knowledge on Mgmt

- Advance knowledge on effectiveness of management tools
- Can be combined with any % reduction
- Implement different tools in different areas and measure their impact on lobster stock
- Concerns about cost, time, and coordination required
- Could apply learnings to inform future management of all stocks

Standardizing Regs

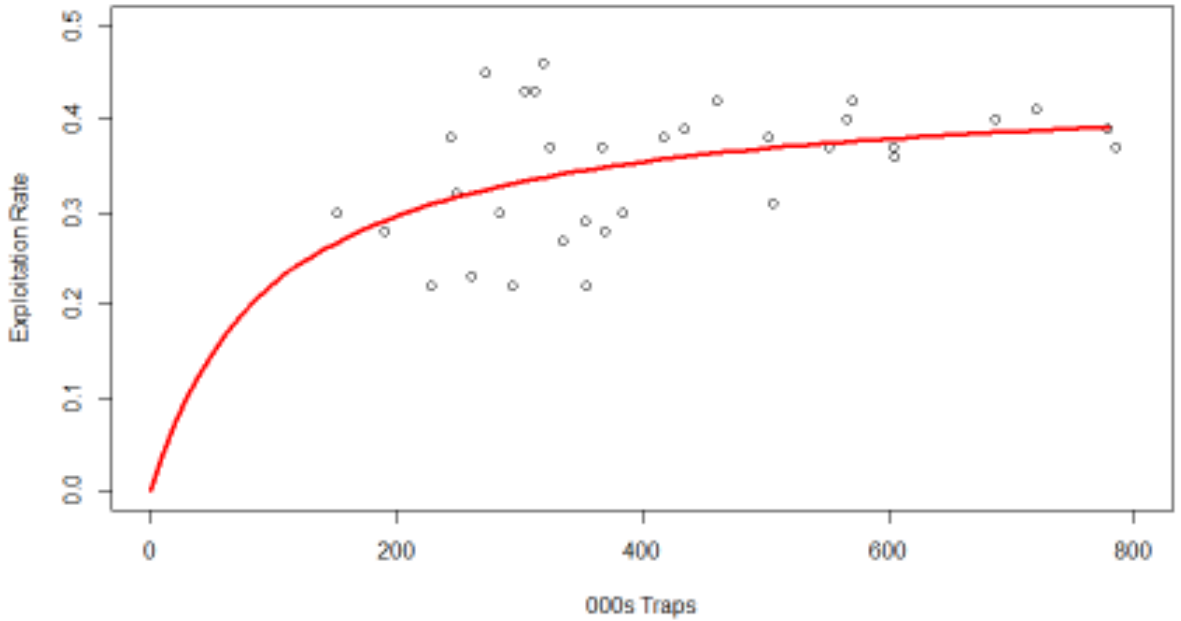
- Standard regs would ease enforcement and reduce uncertainty in stock assessments
- May require splitting LCMA 3 or creating a SNE designation
- Management tools should be used in combination with one another

Closed Seasons

LCMA 4	LCMA 5	LCMA 6
April 30-May 31	Feb. 1-March 31	Sept. 8-Nov. 28

- Closed seasons an effective tool to reduce F
- Closures have greatest benefit in June/July (molt) and July/August (eggs extruded)
- Staggered closures inshore and offshore also effective
- Potential for fishermen to recoup landings

Trap Reductions



- Effectiveness of trap reductions to decrease F is limited and delayed as latent effort removed first
- Used in combination with other mgmt. tools
- Trap reductions could impact Jonah crab

Min Gauge Size

LCMA 3	LCMA 2, 4, 5, 6
$3\,^{17}/_{32}$	$3\,^{3}/_{8}$

- Lobsters contribute to egg production before legally susceptible to harvest
- Should not be sole mgmt. measure used because fishery is dependent on new recruits
- Will increase discards and stress due to handling and temperature fluctuations
- Increases in min size would significantly impact the inshore fishery

Max Gauge Size

LCMA 3	LCMA 2, 4, 5, 6
$6\ ^{3}/_{4}$	$5\ ^{1}/_{4}$

- Lobsters protected in perpetuity
- Uniform max size address concerns about diminished conservation value from diff. regs
- Increase in discards and stress
- Decrease in max size will negatively impact offshore fishermen
- Should not be sole mgmt. measure

V-Notch

- LCMA 6 and state waters of LCMA 4 do not have v-notch requirement
- V-notch protects known spawners but may not significantly reduce exploitation
- Effectiveness dependent on substantial harvest rates and high levels of compliance
- Could create de facto male-only fishery
- Should be combined with other tools

Questions?

LCMT 2

April 6, 2016

20 ppl in attendance including 7 members

- Mandatory reporting for all states
- Submitted letter on water quality and habitat
- No minimum size increase or season closure in Area 2
- Decrease max gauge size to 5” (not unanimous)
- Consider SNE as a mixed crustacean fishery
- Pursue funds for tagging study

LCMT 3

April 8, 2016

9 in attendance (6 members, 3 emails)

- 6” max gauge size (1/4” reduction over 3 years)
- Need to separate SNE from GOM/GB in Area 3
- Expedited & continued trap reduction schedule
  - 2016: 5% (1900 trap cap)
  - 2017: 10% (1715 trap cap)
  - 2018: 10% (1548 trap cap)
  - 2019: no reductions
  - 2020: 5% (1548 trap cap)
  - 2021: 5% (1548 trap cap)
- Letters on trap haul validation and water quality
- Issue of crabbing in SNE and lobster fishing in GB

Ghost Gear

https://vimeo.com/159835048

Postponed Motion

Motion to begin a new addendum to address the declining lobster stock conditions in SNE/MA. The PDT with input from the LCMTs is instructed to explore the following alternatives:

a. Analyzing the plans rebuilding targets & thresholds to account for current environmental conditions;

b. Work to stabilize & increase SSB through changes in management measures;

c. Improve permitting & accountability of SNE/MA lobster fisheries by requesting NMFS consider permit endorsement for Area 3 vessels fishing in SNE (west of 70 longitude);

d. Improve current management & compliance with lowered trap limits of nearshore trap fisheries by proposing a uniform closed season & new trap tag deadlines;

e. Accelerate trap allocation cuts that are already codified for the next 5 years in Areas 2 & 3; and

f. Recognize the SNE/MA trap fishery as a bona fide mixed crustacean fishery & develop strategies & policies that recognizes the multispecies nature of the catch.

Motion made by Mr. McKiernan and seconded by Mr. Gibson. Motion postponed

GOM YOY Indices

2015 Stock Assessment

YOUNG-OF-YEAR INDICES					
	YOY	YOY	YOY	YOY	YOY
Survey	ME 511	ME 512	ME 513 East	ME 513 West	MA 514
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989			1.64		
1990			0.77		
1991			1.54		
1992			1.30		
1993			0.45		
1994			1.61		
1995		0.02	0.66		0.56
1996		0.05	0.47		0.00
1997		0.05	0.46		0.17
1998		0.00	0.14		0.02
1999		0.04	0.65		0.36
2000		0.10	0.13	0.17	0.19
2001		0.43	2.08	1.17	0.38
2002	0.13	0.29	1.38	0.85	0.89
2003	0.22	0.27	1.75	1.22	0.68
2004	0.18	0.36	1.75	0.67	1.20
2005	1.59	1.36	1.77	0.82	0.82
2006	0.58	1.13	0.84	0.82	0.32
2007	0.84	1.34	2.01	1.27	1.22
2008	0.42	0.83	1.08	0.97	0.24
2009	0.69	0.48	1.25	0.45	0.13
2010	0.28	0.72	0.80	0.47	0.45
2011	0.41	1.10	2.33	0.67	0.63
2012	0.53	0.73	1.06	0.22	0.21
2013	0.10	0.20	0.48	0.12	0.09
2008 - 2013 ave	**0.40**	**0.68**	**1.17**	**0.48**	**0.29**
25th	0.15	0.04	0.47	0.68	0.17
median	0.17	0.05	0.77	1.01	0.36
75th	0.19	0.27	1.57	1.18	0.56

2016 TC Update

YOUNG-OF-YEAR INDICES					
	YOY	YOY	YOY	YOY	YOY
Survey	ME 511	ME 512	ME 513 East	ME 513 West	MA 514
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989			1.64		
1990			0.77		
1991			1.54		
1992			1.30		
1993			0.45		
1994			1.61		
1995		0.02	0.66		0.56
1996		0.05	0.47		0.00
1997		0.05	0.46		0.17
1998		0.00	0.14		0.02
1999		0.04	0.65		0.36
2000		0.10	0.13	0.17	0.19
2001		0.43	2.08	1.17	0.38
2002	0.13	0.29	1.38	0.85	0.89
2003	0.22	0.27	1.75	1.22	0.68
2004	0.18	0.36	1.75	0.67	1.20
2005	1.59	1.36	1.77	0.82	0.82
2006	0.58	1.13	0.84	0.82	0.32
2007	0.84	1.34	2.01	1.27	1.22
2008	0.42	0.83	1.08	0.97	0.24
2009	0.69	0.48	1.25	0.45	0.13
2010	0.28	0.72	0.80	0.47	0.45
2011	0.41	1.10	2.33	0.67	0.63
2012	0.53	0.73	1.06	0.22	0.21
2013	0.10	0.20	0.48	0.12	0.09
2014	0.16	0.43	0.83	0.33	0.09
2015*	0.11	0.22	0.43	0.05	0.00
2011 - 2015 ave.	**0.26**	**0.54**	**1.03**	**0.28**	**0.20**
25th	0.15	0.04	0.47	0.68	0.17
median	0.17	0.05	0.77	1.01	0.36
75th	0.19	0.27	1.57	1.18	0.56

* 2015 Maine data are preliminary

Addendum I to the Jonah Crab FMP

American Lobster Management Board

May 2, 2016

Overview

- Timeline
- Review options
  - Issue 1: Non-Trap Bycatch
  - Issue 2: Non-Lobster Trap Bycatch
- Public Comment
- Advisory Panel Report
- Law Enforcement Committee Report
- Consider Final Approval of Addendum I

Timeline

November 2015	Board Initiated Addendum I
February 2016	Board Approved Document for Public Comment
5pm EST April 18, 2016	Public Comment Period Closed
May 2016	Board Considers Final Action

Current Reg. & Concerns

Current Regulation:

"There is a 200 crabs per calendar day, 500 crabs per trip incidental bycatch limit for **non-trap gear**"

Concerns:

-Limit for **non-trap gear** doesn't include all participants

-No limit for **non-lobster trap gear** which could lead to increased effort and trap proliferation

Issue 1: Non-Trap Gear

Year	Total Non-Trap Jonah Crab Landings (lbs)	% of Trips Over Crab Limit
2010	10,815	0.00%
2011	2,986	0.00%
2012	4,099	0.00%
2013	6,081	2.35%
2014	13,221	2.86%

Issue 1: Non-Trap Gear

Option A: Status Quo

200 crabs per calendar day (24 hours) up to 500 crabs for trips 3 days or longer

Option B: Increase Bycatch Limit

1000 crab trip limit for a trip of any length

Option C: Remove Bycatch Limit

No bycatch limit for non-trap gear

Issue 2: Non-Lobster Traps

From May 1, 2013 to August 31, 2015

- 194 trips landed Jonah crab with non-lobster traps
- 60% of trips landed 200 crabs or fewer
- 20% trips landed between 200 and 500 crabs
- 20% trips landed more than 450 crabs

Issue 2: Non-Lobster Traps

"Applies to trips by all vessels hauling traps which do not have a valid lobster tag"

Option A: Status Quo

No bycatch limit; need incidental permit

Option B: Limit of 200/500 Crabs

200 crabs per day (24 hours) up to 500 crabs per trip for trips 3 days or longer

Option C: Limit of 200/1000 Crabs

200 crabs for the first 24 hours, 1000 crabs for trips longer than 24 hours

Option D: Limit of 1000 Crabs

1000 crab limit for a trip of any length

Public Comment

- 7 Letters Received
  - 3 individuals
  - 4 groups (AOLA, MLA, NOAA GARFO, NEFMC)
- 7 Public Hearings Held
  - ME, MA (Gloucester, New Bedford), RI, NY (East Setauket, Montauk), MD
  - Roughly 55 attendees in total

Issue 1: Non-Trap Gear

	Public Hearings	Written Comment	Total
Option A: 200/500 Crab Limit	6	2	**8**
Option B: 1000 Crab Limit	4	3 (w/ 200 crabs per day)	**7**
Option C: No Bycatch Limit	7	1	**8**

Issue 2: Non-Lobster Traps

	Public Hearing	Written Comment	Total
Option A: No Bycatch Limit	6	2	**8**
Option B: 200/500 Crab Limit	9	2	**11**
Option C: 200/1000 Crab Limit	0	2	**2**
Option D: 1000 Crab Limit	1	1	**2**

Other Comments

- Clarification is needed on whether the addendum applies to bycatch landings or a possession limit
- The Jonah crab fishery should adopt LCMAs
- Confusion on the difference between Jonah and rock crab
- Claw landings are an integral part of the Jonah crab fishery
- A claw fishery would jeopardize the resource
- The FMP should be paused until a stock assessment is completed

AP Report

Issue 1: Non-Trap Gear

- Support 1000 crab bycatch allowance per trip (Option B)
- Cap effort w/out restricting harvest of current participants

Issue 2: Non-Lobster Trap Gear

- Support 1000 crab bycatch allowance per trip (Option D)
- Allow current participants to continue business as usual
- Concerns about trap proliferation if fishermen increase effort to meet limit
- Do not support unlimited catch by non-lobster trap gear
- Bycatch limit should be same for both gear types

LEC Report

Issue 1: Non-Trap Gear

- Support current 200 crab per day, 500 crab per trip bycatch limit (Option A)

Issue 2: Non-Lobster Trap Gear

- Support 200 crab per day, 500 crab per trip bycatch limit (Option B)

Comments

- Large bycatch limits could lead to increased effort and gear conflicts
- Increases to the bycatch allowance time and effort required by enforcement to inspect the catch

Summary

1. Non-Trap Bycatch Options	2. Non-Lobster Trap Bycatch Options
A. 200 crabs per calendar day up to 500 crabs for trips 3 days or longer	**A.** No bycatch limit
B. 1000 crabs per trip	**B.** 200 crabs per calendar day up to 500 crabs for trips 3 days or longer
C. No bycatch limit	**C.** 200 crabs per 24 hours up to 1000 crabs for trips longer than 24 hours
	D. 1000 crabs per trip

Offshore Lobster and Jonah Crab Survey

American Lobster Management Board

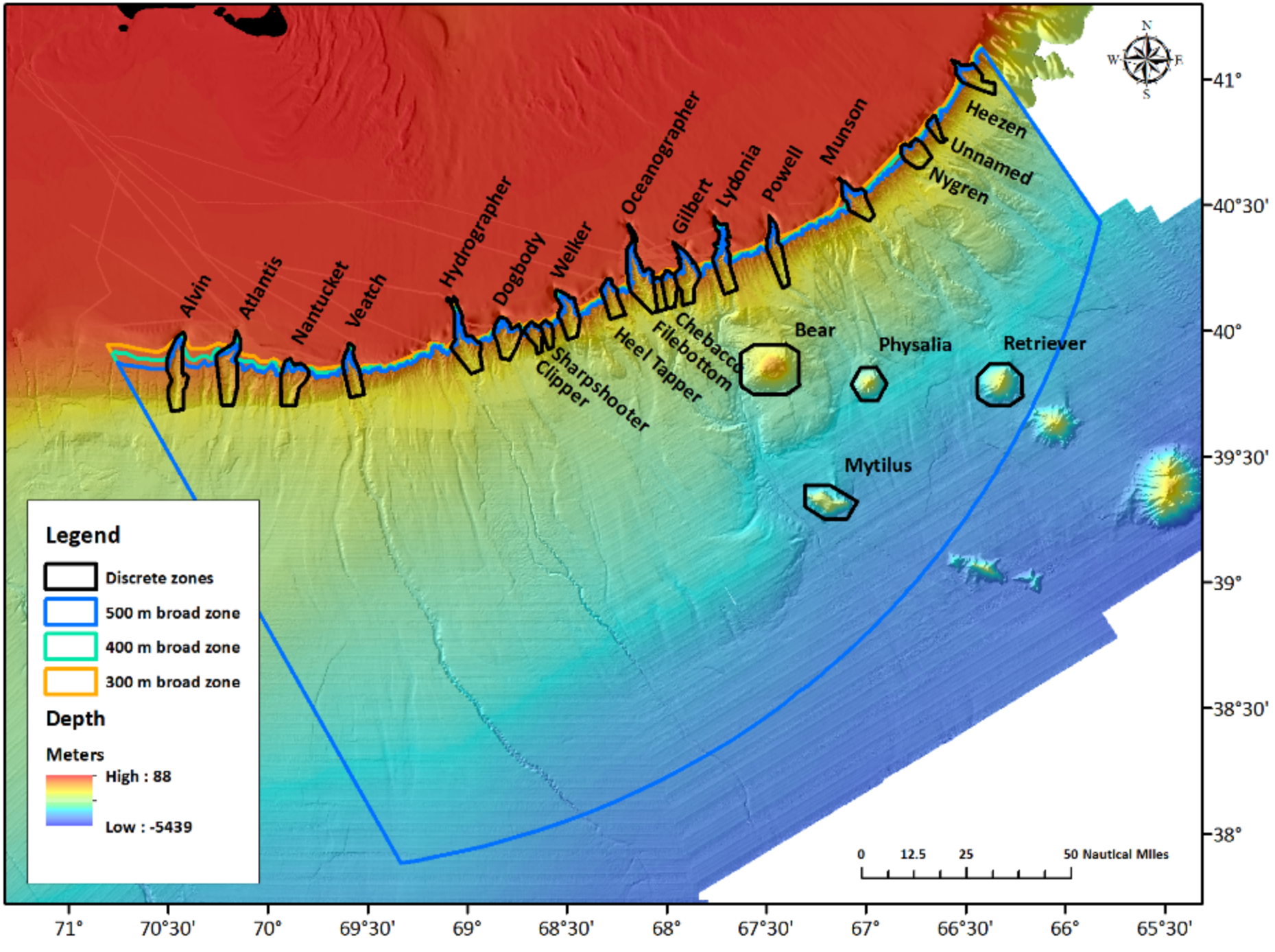
May 2, 2016

Background

- Dec 18, 2015 – ASMFC received a letter from NEFMC requesting data on the distribution of offshore lobster fishing effort
- Related to NEFMC Omnibus Deep-Sea Coral Amendment
  - Looks to protect deep-sea corals
  - Discrete zones and broad regional zones under consideration

NEFMC Deep-Sea Coral

- Coral Amendment may restrict bottom-tending gear
- Unknown how lobster industry will be impacted
  - Lobster is not managed under MSA
  - Councils have authority to protect deep-sea coral
  - Most recent advice from NOAA General Council suggests that lobster traps can be restricted



Map created March 10, 2016, Projection WGS 1984 UTM Zone 19N NEFMC Habitat Plan Development Team

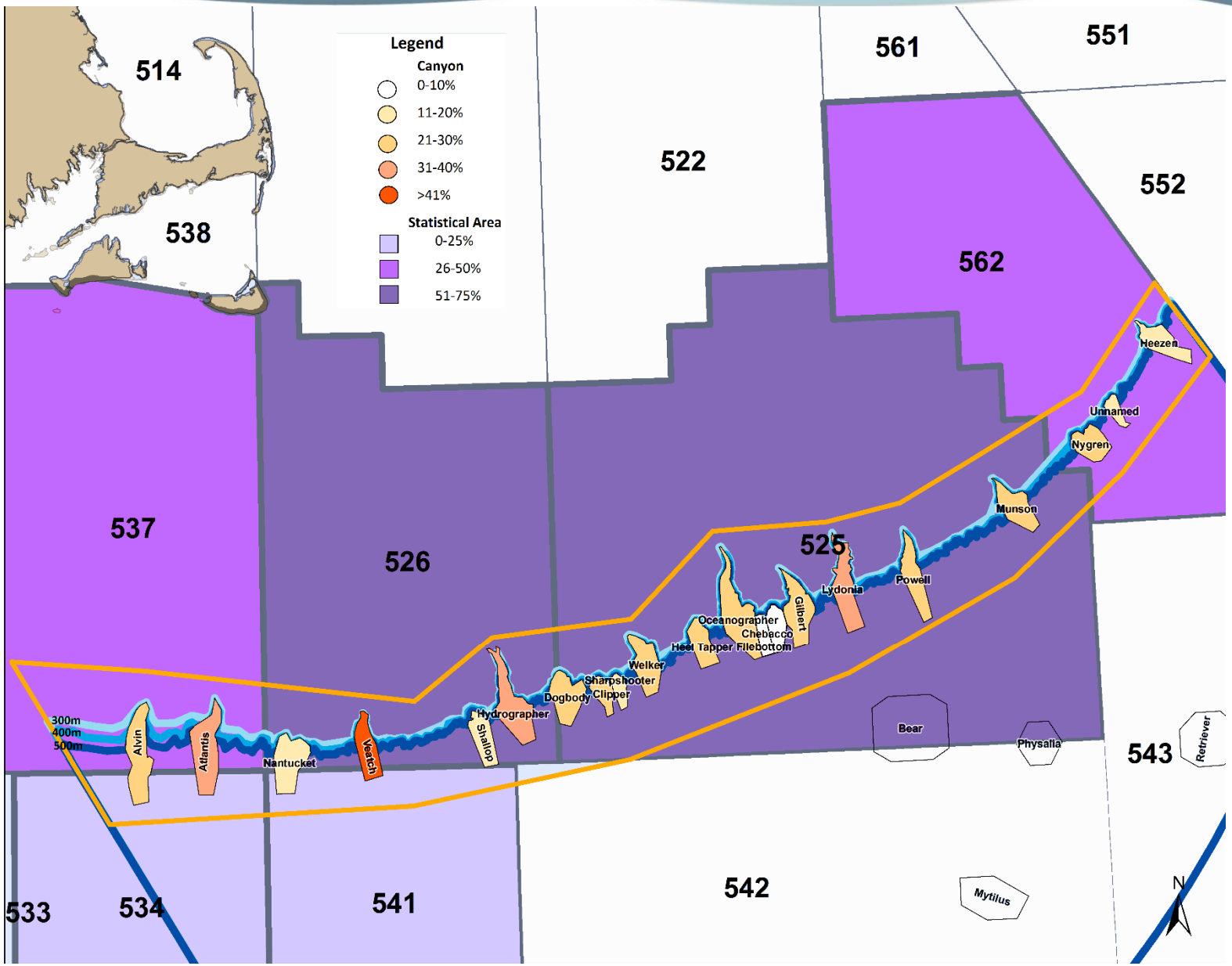
Survey Purpose

- Current data is too coarse to map fishing effort near specific canyons
- Goals:
  - obtain detailed information on fishing locations and revenue near offshore canyons
  - provide a comprehensive picture of potential impacts should lobster traps be proposed as restricted gear
- Summary of responses will be presented to NEFMC PDT and/or Habitat Committee

Survey Response

State on Permit	Response Rate	# Mailed	# Returned	# Applicable
ME	25%	8	2	0
NH	33%	12	4	1
MA	31%	36	11	10
RI	50%	28	14	8
CT	0%	1	0	0
NY	25%	4	1	0
NJ	25%	8	2	0
Total	**35%**	**97**	**34**	**19**

Locations Fished



Depth Fished

- Max depth fished ranged from 220-549m, averaging at 406 m

Depth Category (m)	% Traps Allocated by Depth	% Fishermen Fishing at Depth
<100	17%	47%
100-200	21%	87%
200-300	35%	93%
300-400	23%	73%
>400	4%	27%
# Respondents	15	15

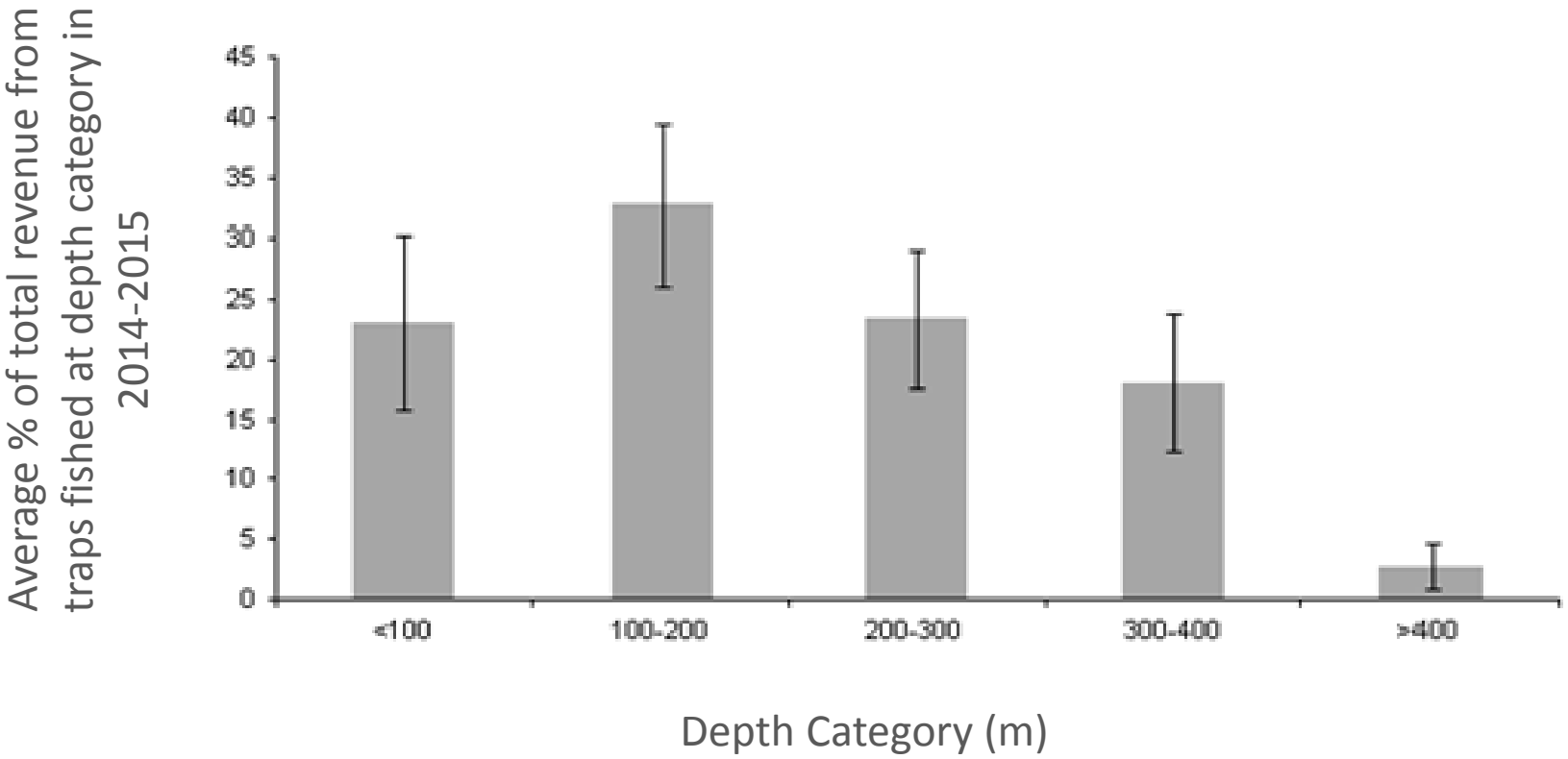
Effort: Trips and Traps

	Total Number of Trips to NEFMC Area		Trap Hauls per Trip
	2014	2015	2014-2015
Average	30	29	1,779
Min	20	15	1,100
Max	49	45	2,600
Total	**570**	**554**	**32,023**
# Respondents	19	19	18

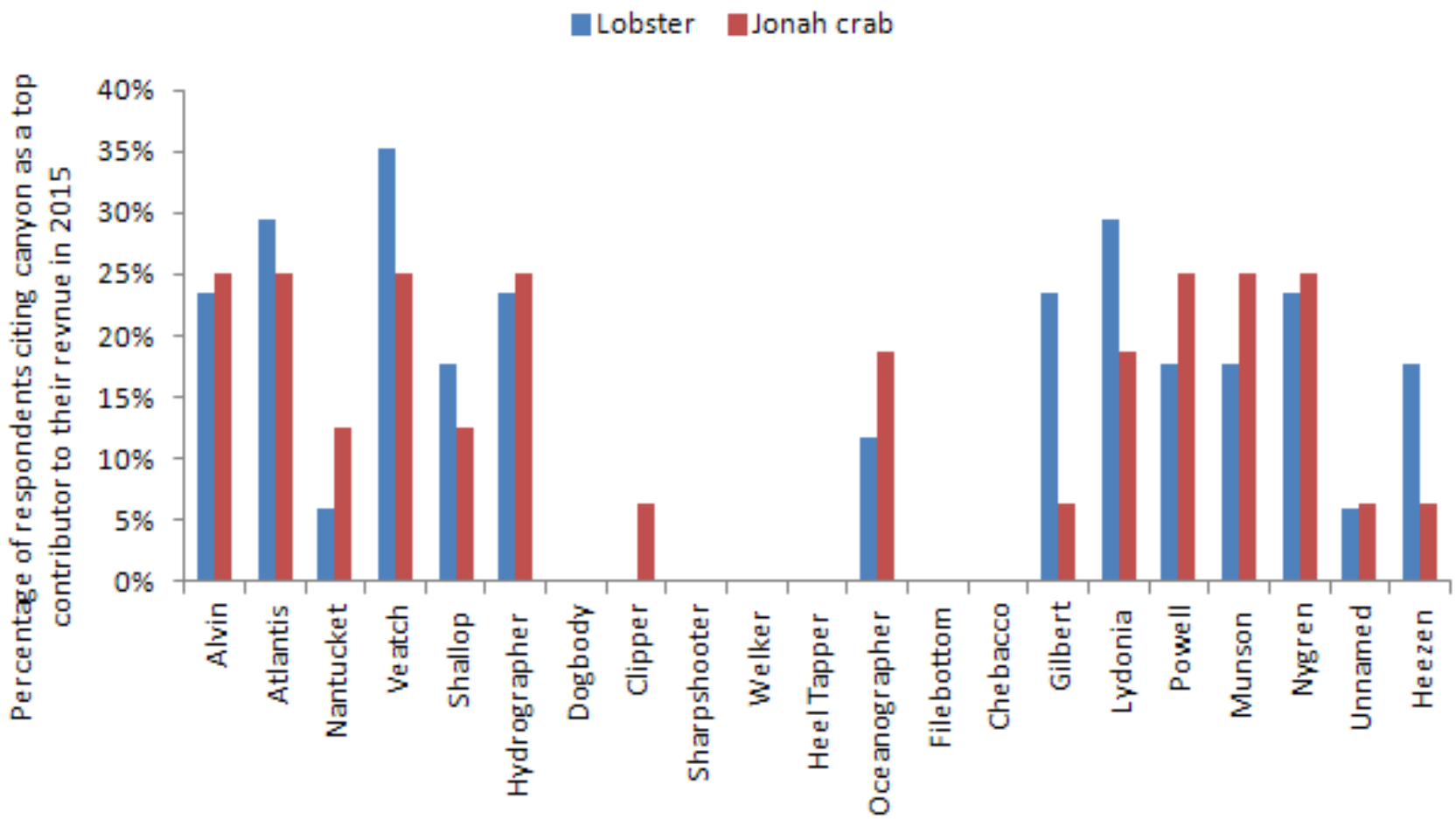
Revenue

	% Revenue from NEFMC Area		Annual Lobster Revenue ($)		Annual Jonah Crab Revenue ($)	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**
Average	**77%**	**79%**	$684,099	$750,489	$195,964	$167,605
Min	35%	37%	$120,000	$75,000	-	-
Max	100%	100%	$1,500,000	$1,800,000	$825,000	$650,000
Total			**11,629,691**	**12,757,974**	**$3,326,664**	**$2,845,774**
# of Respondents	18	18	17	17	17	17

Revenue By Depth

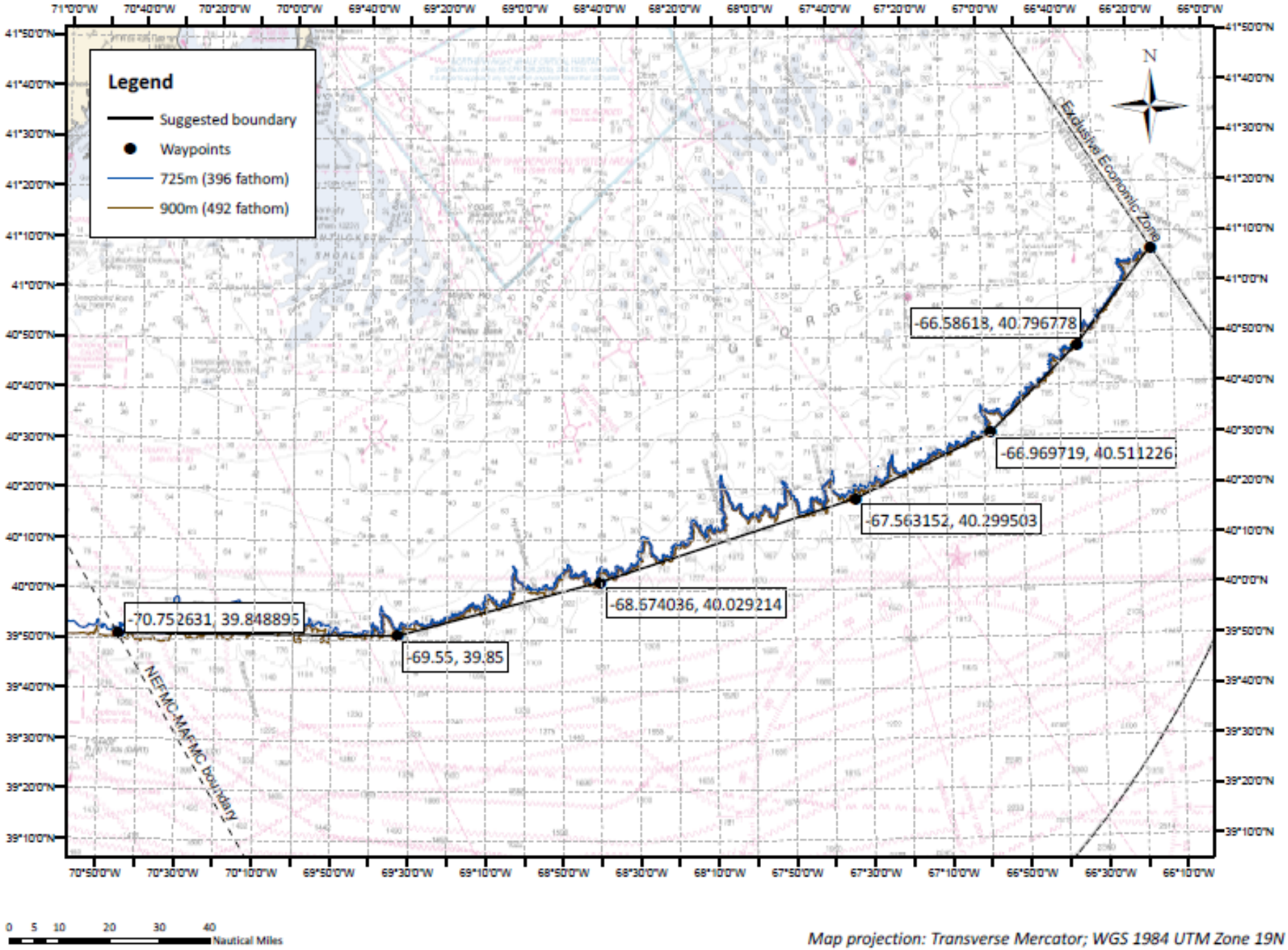


Revenue by Canyon

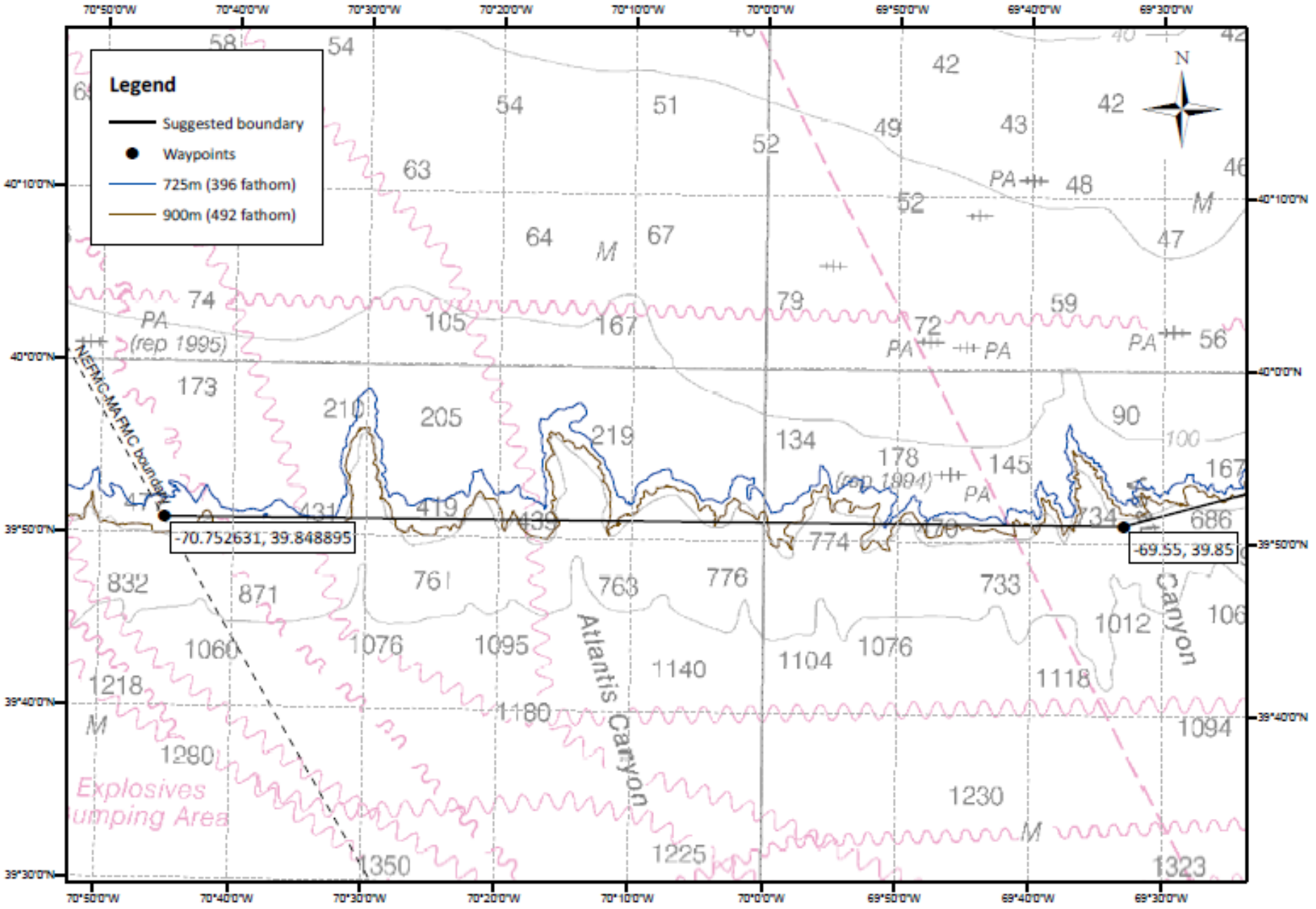


Questions?

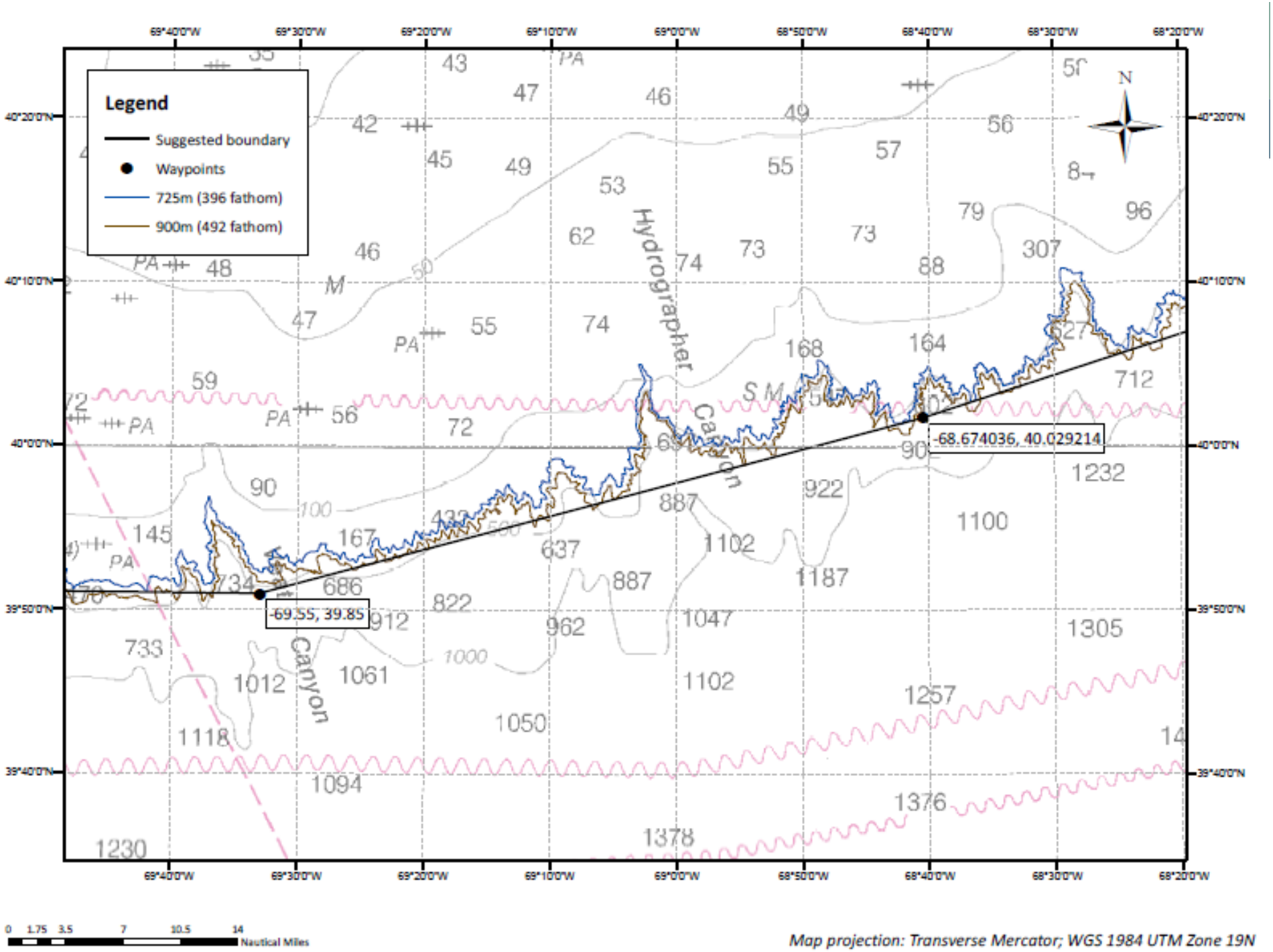
Thank you to Kelly Whitmore, Elizabeth Morrissey, and Robert Glenn from MA DMF for helping draft, collect, and analyze the surveys.

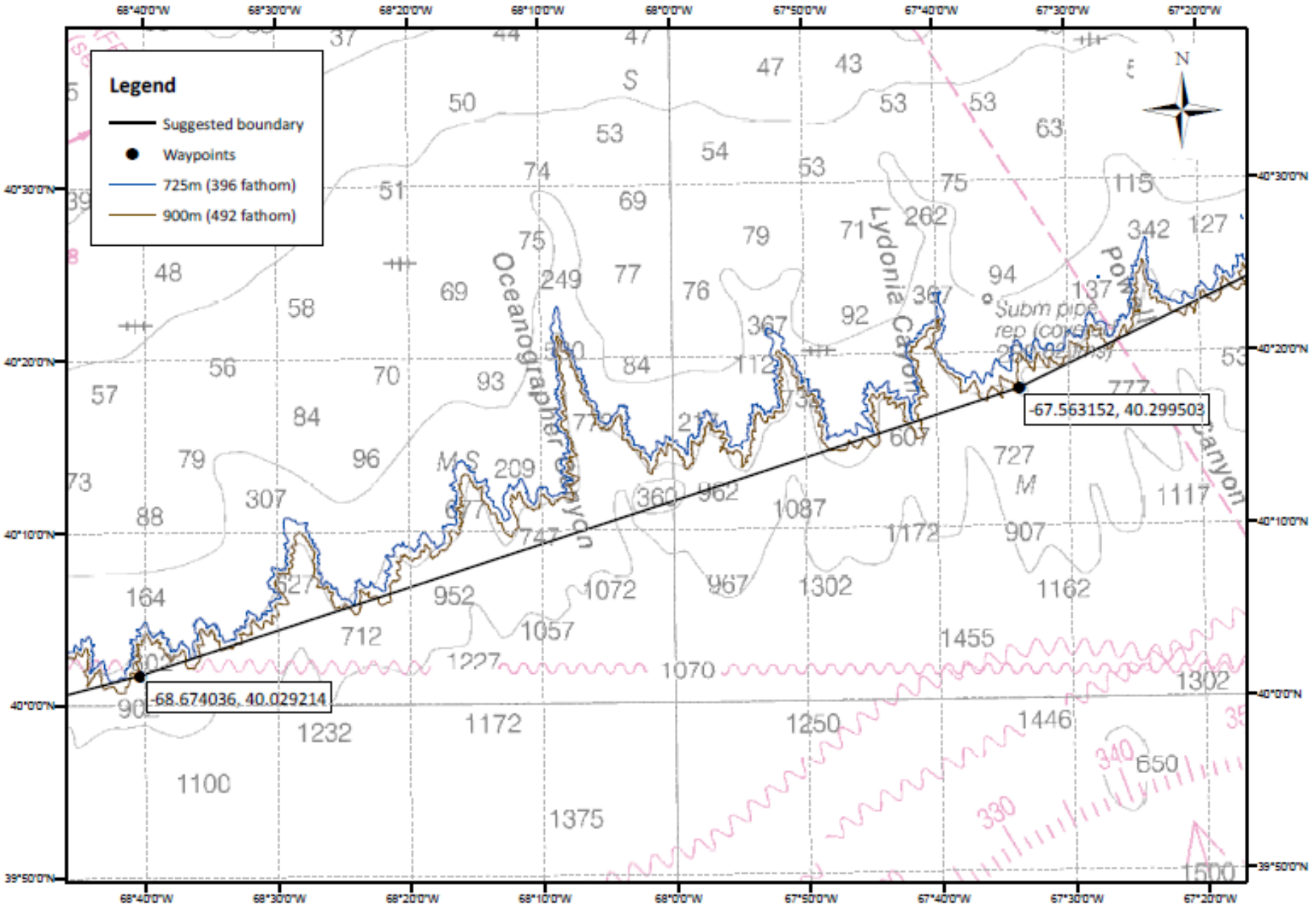


Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N

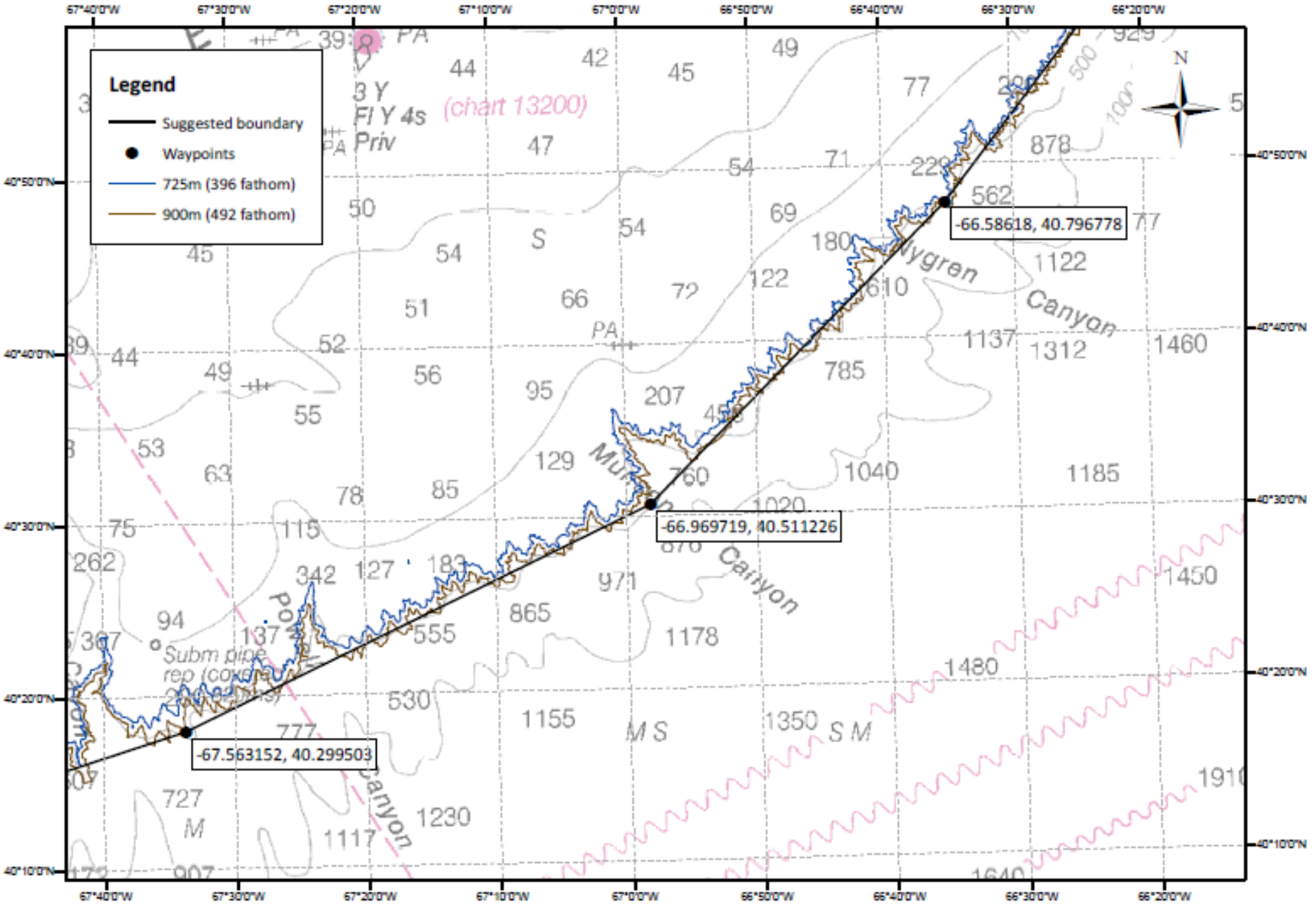


Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N

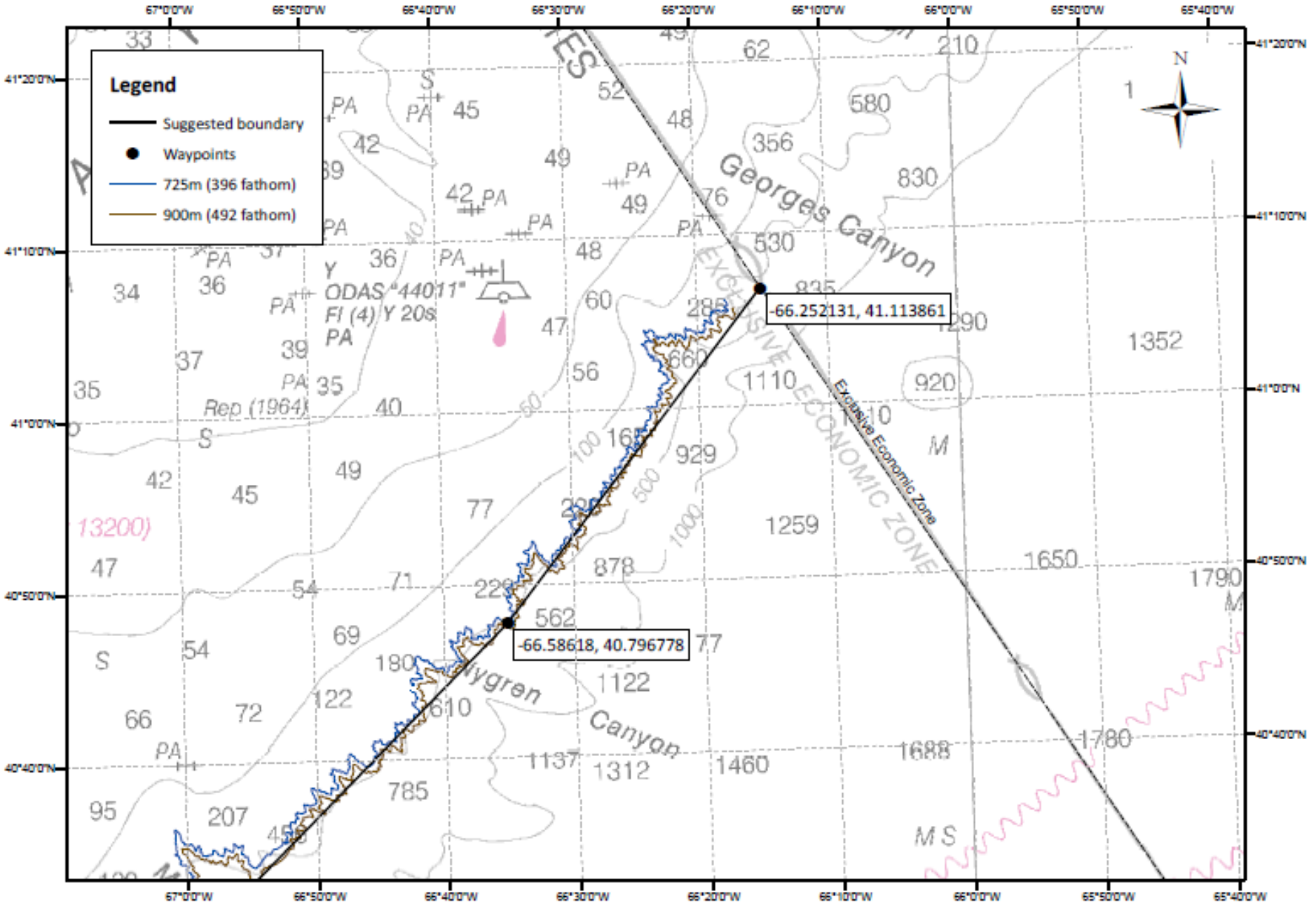

Legend
Suggested boundary
Waypoints
725m (396 fathom)
900m (492 fathom)
-68.674036, 40.029214
-69.55, 39.85
Hydrographer Canyon
Canyon
69°40'0"W
69°30'0"W
69°20'0"W
69°10'0"W
69°0'0"W
68°50'0"W
68°40'0"W
68°30'0"W
68°20'0"W
40°20'0"N
40°10'0"N
40°0'0"N
39°50'0"N
39°40'0"N
0 1.75 3.5 7 10.5 14
Nautical Miles
Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N



Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N



Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N



Map projection: Transverse Mercator; WGS 1984 UTM Zone 19N