Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: American Lobster Technical Committee

DATE: April 25, 2016

SUBJECT: TC Follow-Up to February Lobster Board Meeting

The American Lobster Technical Committee (TC) met on March 14th to complete tasks assigned by the American Lobster Management Board (Board) in November 2015 and to address follow-up questions from the February 2016 Board meeting. These included impacts to the stock from gauge size changes, comparative sources of mortality, stock-recruit relationships, the costs and benefits of standardizing regulations in Southern New England (SNE), the attainability of recalculated reference points, and the need for a new comprehensive tagging study. The following report investigates these questions and is organized by issue.

1. Impacts to Stock from Gauge Size Changes

The Lobster Technical Committee was asked to analyze the potential effects of alternative minimum legal sizes on the SNE lobster fishery. Such analyses are highly sensitive to the growth and natural mortality rates of unfished lobsters because the outcomes are based on the net difference between the rate of increase in biomass-at-size due to growth and the rate of loss of biomass-at-size due to natural mortality. Unfortunately, available data on the natural mortality and growth rate of larger lobsters are too sparse to estimate these parameters with confidence. This is particularly true for females whose growth slows after sexual maturity. To address this uncertainty, we ran simulations under varying growth and natural mortality rates and estimated the equilibrium spawning stock biomass and landings under different minimum sizes. The goals of these simulations were to examine the potential effects of changing minimum legal sizes on lobster spawning biomass and landings, and to see if these results were robust to different assumptions about growth and natural mortality.

Simulation configuration

For the population simulations, we used the new stock assessment projection model to examine all combinations of three different growth rates, 11 levels of natural mortality, and different minimum legal sizes between 78 and 108 mm. The three different growth scenarios were selected to encompass reasonable upper and lower growth scenarios and included:

1) The basecase growth model used in the last assessment which is based on tagging data but grows small lobsters faster than is probable, particularly for females, with growth slowing to a 20% annual molt probability at 108 mm (Figures 1 and 2).

2) An intermediate growth model with the same male molt probability curve except the annual molt probability never drops below 33% (Figures 1 and 3). For the female molt probability curve, we examined the proportion of sublegal females that are egg-bearing, as calculated from the biosamples data for the last assessment. Assuming that these females would alternate years between molting and carrying a clutch, we directly calculated molt probabilities for these sublegal females to set the upper end of the curve. The lower end of the curve was set with the assumption that female molt probabilities were stable at 33% starting at 108 mm (ie: after 108 mm, a female should molt roughly once every three years).

3) A slow-growth model based on an assumption that 100% of females had reached sexual maturity (thus molt probability=50%) at 75 mm CL and minimum molt probabilities stabilized at 25% upon reaching 90 mm CL (Figures 1 and 4). Again, the basecase male growth model was used except that annual molt probabilities never dropped below 25%.

A total of 11 natural mortality rates were examined, ranging from M=0.15 to 0.4. Recall that M is assumed to be 0.15 for lobsters under normal circumstances but was increased to 0.285 in the latter years for the SNE stock in the last assessment. Updated likelihood profiles on the assessment model support natural mortality rates in these recent years between 0.24 and 0.27.

Across all simulations, we assumed random variation around a fixed recruitment rate based on the terminal years of the assessment. We used a constant fishery exploitation rate, also calculated from the terminal years of the assessment, but distributed across all legal lobsters. As a result, in situations where sex ratios skew to a higher abundance of males, the fishery compensates by increasing exploitation on males.

For each simulation scenario (combination of growth rate, natural mortality, and minimum legal size), the simulation was allowed to run forward for 20 years under the new growth, natural mortality, and minimum legal size, which allowed the population to reach a new equilibrium. Then the simulation recorded the spawning biomass and landings rate for each sex and converted biomass and landings to a relative measure based on the biomass and landings from simulations with the current minimum legal size for inshore LMAs of 86 mm. Each scenario was repeated 100 times and the results averaged within scenarios.

Results of the simulations are shown relative to current status; a value less than one represents a decrease while a value higher than one indicates an increase. The advantage of plotting results on relative scales is that the resulting patterns are not confounded by differences in magnitude resulting from different growth models and mortality rates and are robust to assumptions of future recruitment rates.

Finally, as an exploratory exercise, we used simulations to examine how changing the minimum legal size temporarily affects landings and spawning stock biomass (SSB). For this, we assume the basecase growth model, fishing mortalities, a range of natural mortality

rates and a shift in legal size from 86 to 95 mm (3 3/8" to 3 3/4") with three different implementation schedules: changing the legal size by 3/8" in the first year, changing by 1/8" each year for three successive years, and changing by 1/16" per year for six successive years. We allowed the model to run for 10 years under the current legal size, then implemented the new legal size and tracked the landings and population SSB over the next 15 years. Each simulation was repeated 100 times with representative random recruitment levels and averaged together.

Simulation results

Under all scenarios, increasing the minimum legal size resulted in increases in the biomass of mature lobsters (Figures 5 and 6). This is expected since, barring density dependent effects, allowing a lobster to stay in the water and grow to a larger size will always result in an increase in the population's biomass. The analyses also illustrated that slowing the growth rates or increasing natural mortality results in smaller increases in biomass with increasing legal size as natural mortality removes more individuals before they reach legal size. Changes in biomass are roughly linear with increasing legal size, approximately doubling at 93 mm, 96 mm, and 108 mm for the basecase, biosamples-based, and slow growth models, respectively (Figures 6, 9).

The general effect of increasing the legal size on catch varied across the scenarios, sometimes increasing or decreasing the net catch (Figures 7 and 8). At the lowest natural mortality rates ($M<0.2$), the basecase and biosample-based growth scenarios suggest that moderate (<10%) increases in landings are possible at larger minimum legal sizes. Landings are fairly stable for moderate increases in legal size around assumed current mortality rates ($M\sim0.275$), dropping by 20% only at legal sizes >98 mm for all growth scenarios (Figures 8 and 9).

Figure 10 illustrates the potential short term and long term impacts on biomass and catch that may result from different implementation schedules for increasing minimum legal size from 86 mm to 95 mm at varying levels of natural mortality. For example, an immediate implementation of the increase, at roughly the current level of natural mortality ($M = 0.275$), would cause landings to immediately decrease by approximately 50%, then require around 6 years for landings to stabilize at a new equilibrium of approximately 80% of current landings. At this same level of M, biomass would increase by slightly less than 50% of current values after 3-4 years. Under the slow implementation schedule, landings decrease slowly over six years, eventually having dropped by 25% in the sixth year, then rebound to the new equilibrium within three years. While the timing and magnitude of short term changes may vary with the different implementation schedules, increasing the minimum legal size would eventually result in new biomass and landings settling into a common trajectory in the long term.

Conclusions

The simulation results suggest that, relative to the continuation of the current gauge size, an increase in minimum size on the order of 5 – 10 mm may result in increased biomass

over time. It is important to note that the projected biomass and landings presented in these figures reflect a long-term equilibrium reached after a 20 year period and the short-term effects resulting from a change in the gauge size may be more dramatic. Specifically, a sudden change in regulations will likely result in sudden changes in both biomass and landings, followed by an eventual stabilization (see Figure 10). Furthermore, it is important to highlight that the relative magnitude of biomass increase depends on both the growth scenario and natural mortality.

We note that the simulation does not account for any shifts in the spatial availability of the resource to the fleet or the effects this may have on the fleet as these larger lobsters tend to migrate further offshore at larger sizes.

The TC also highlights that while these simulations predict increases in biomass as a result of changes in the minimum gauge size, these increases are relative to biomass that would result from no change to the current minimum size. Large reductions in fishing mortality are still required to stabilize the population and any increase in the adult population is dependent on favorable environmental conditions that allow for improved recruitment. Changes in the gauge size must be combined with other management measures to realize substantial improvements to the stock.

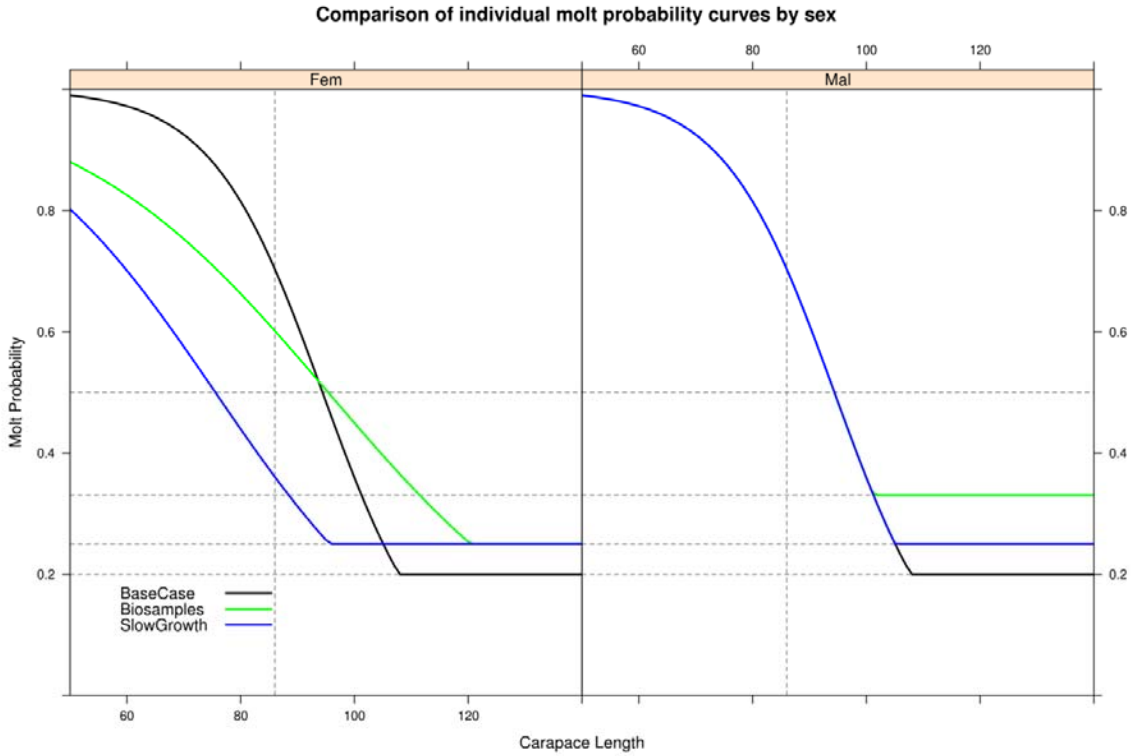

Figure 1. Annual molt probability at-size used in the three different growth scenarios. Dotted vertical line at 86 mm indicates the current minimum legal size for inshore LMA's.

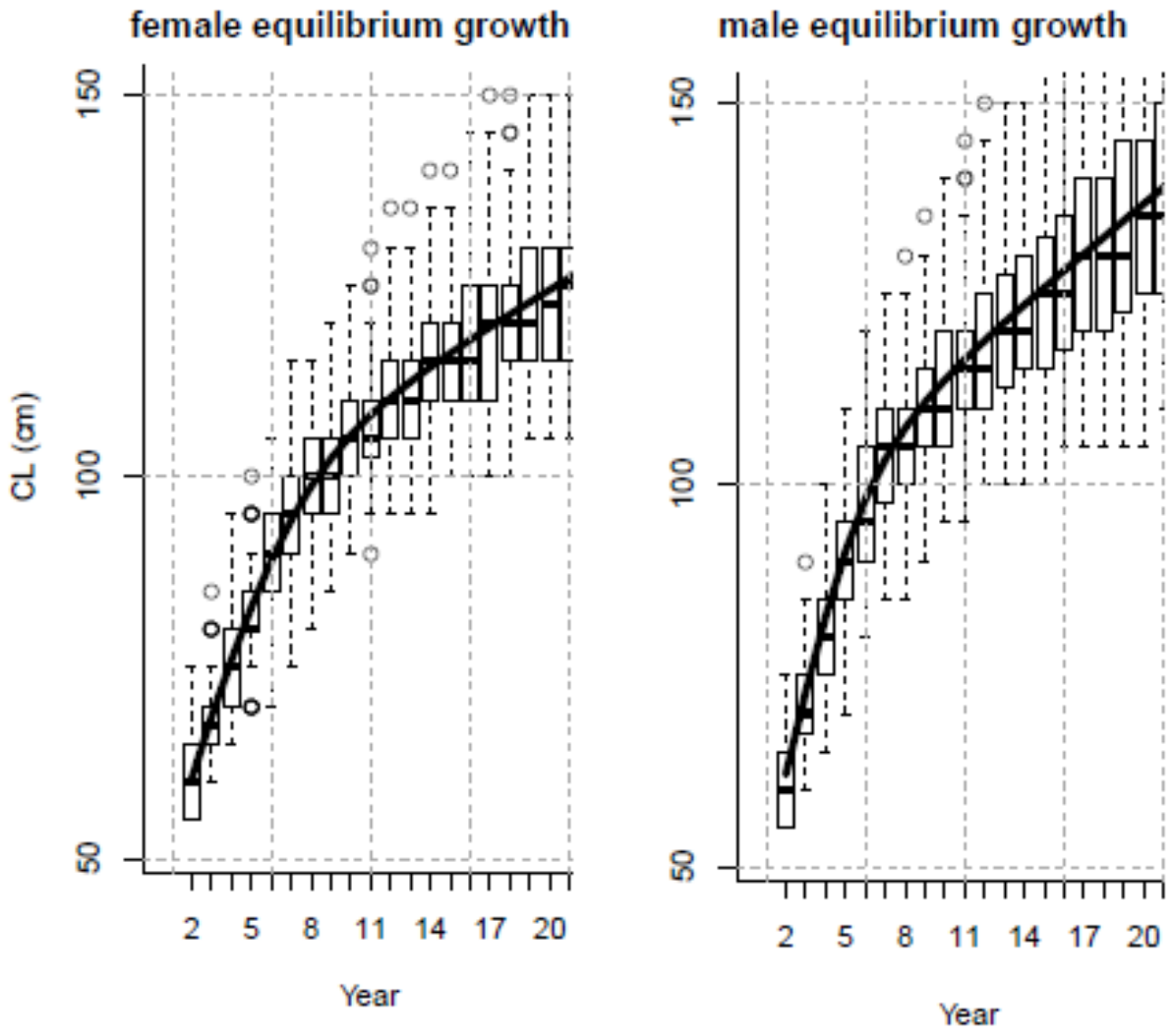

Figure 2. Equilibrium growth curves (length at age in the assessment model) assuming no fishing for the **basecase growth model**. Females reach 100 mm CL after ~ seven to eight years in the model (true age ~ 10-11 years).

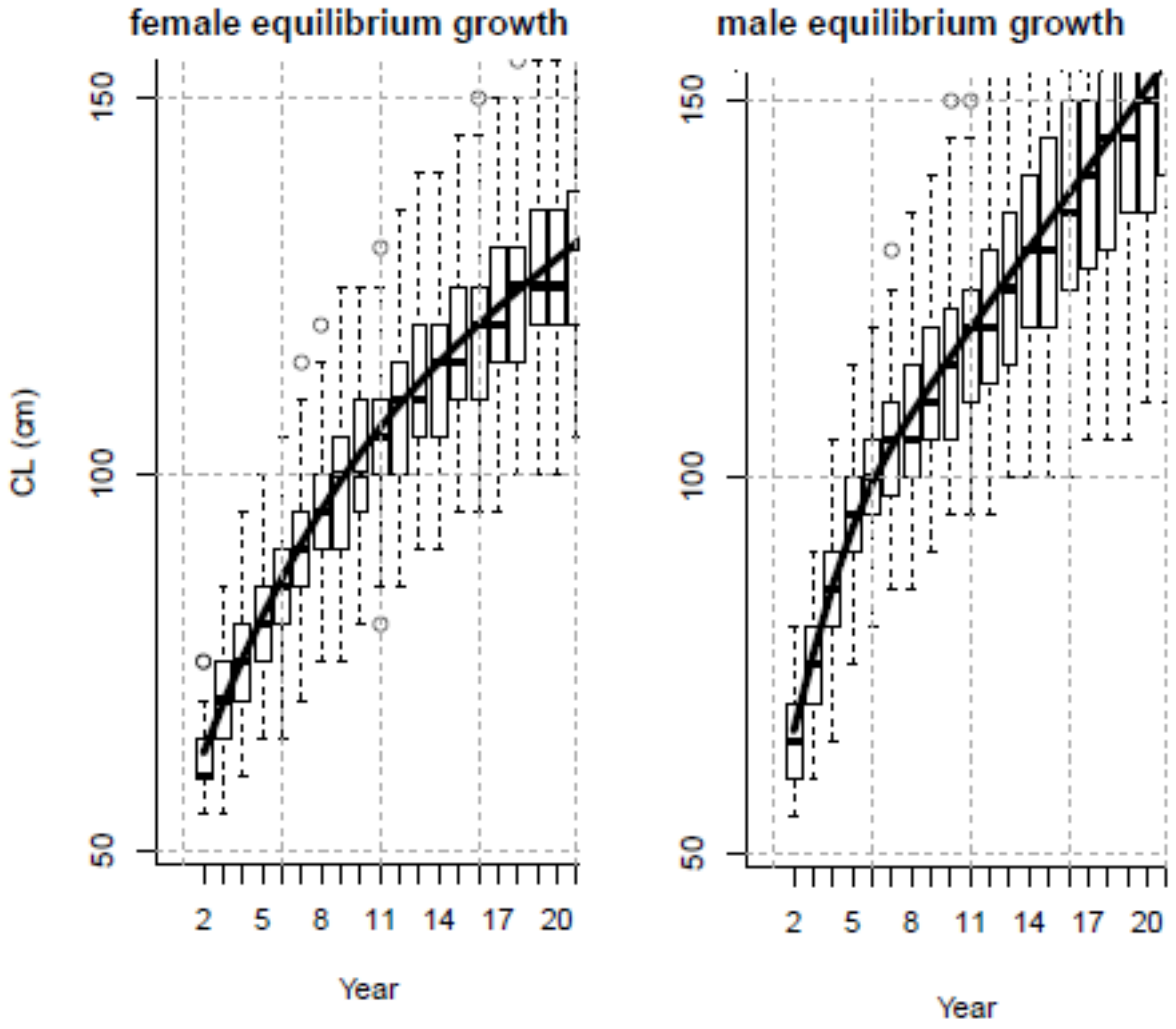

Figure 3. Equilibrium growth curves (length at age in the assessment model) assuming no fishing for the **biosamples growth model**. Females reach 100 mm CL after ~ eight to nine years in the model (true age ~ 11-12 years).

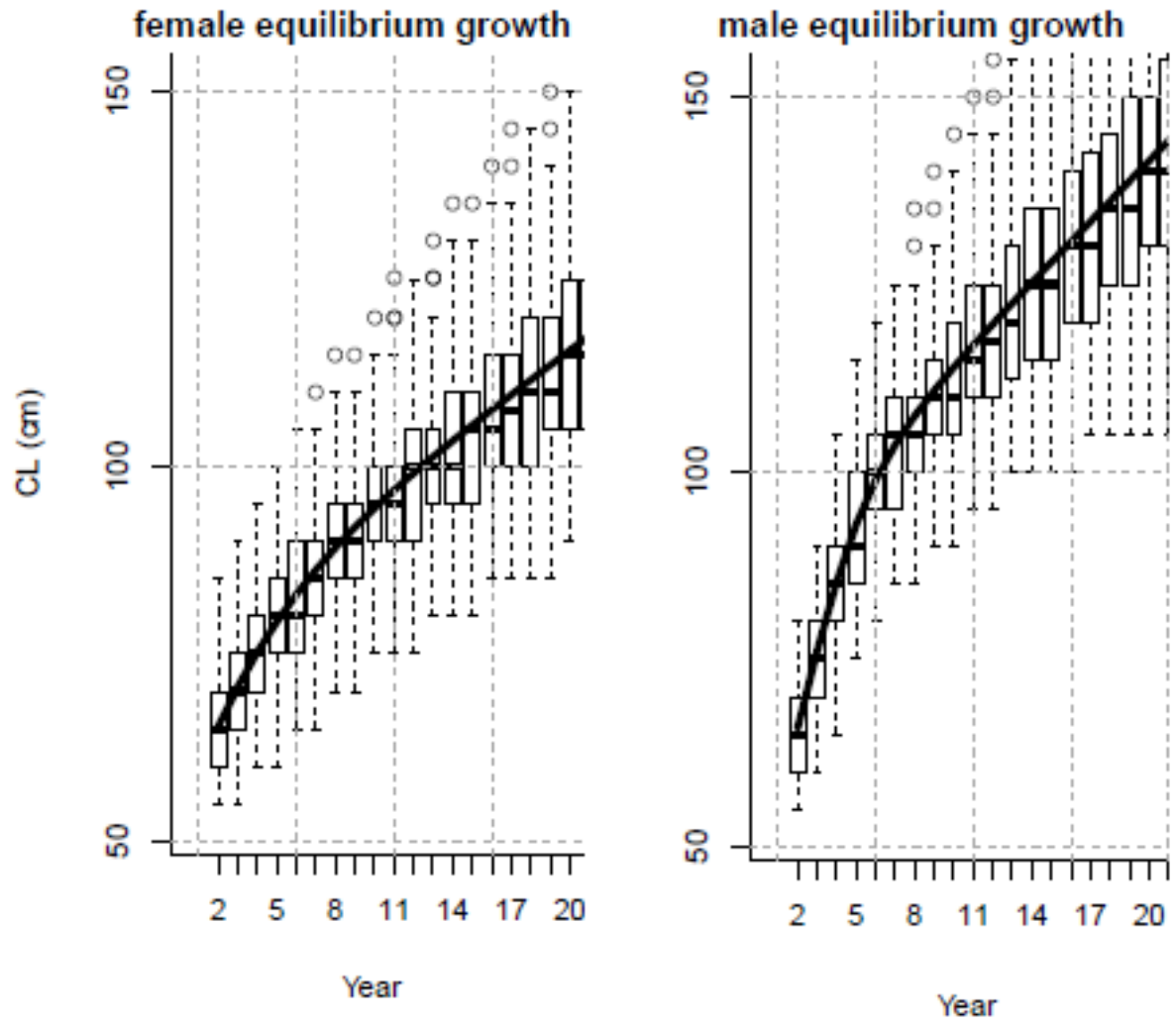

Figure 4. Equilibrium growth curves (length at age in the assessment model) assuming no fishing for the **slow growth model**. Females reach 100 mm CL after ~ 11 to 13 years in the model (true age ~ 14-16 years).

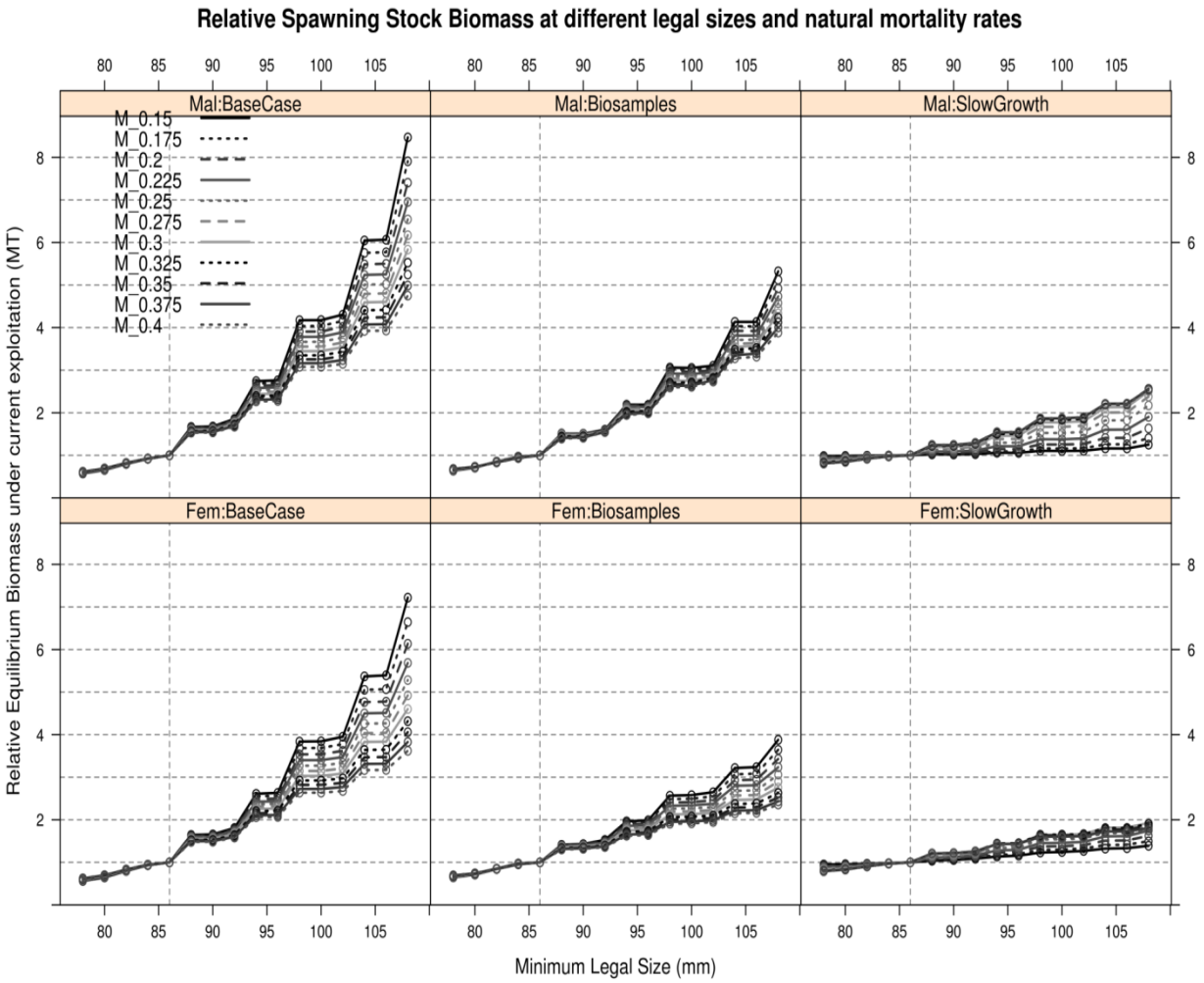

Figure 5. Changes in mature biomass by sex with increasing minimum legal size under different growth and natural mortality scenarios. Growth rates decrease in the panels from left to right with males on the top row and females on the bottom and each line within a panel indicating a given natural mortality rate. Values are relative to the current legal size of 86 mm. For interpretation, values less than one represent a decrease in biomass while values greater than one represent an increase in biomass.

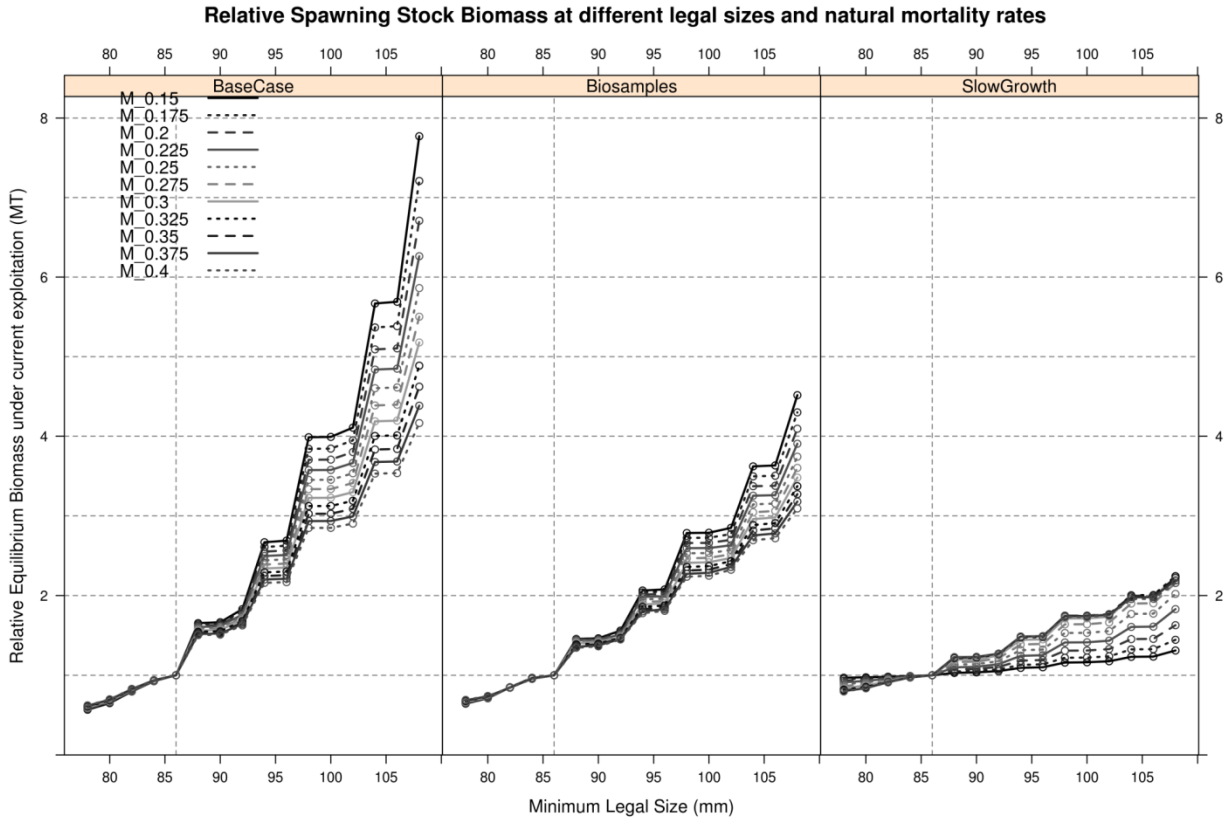

Figure 6. Changes in total biomass (sexes combined) with increasing minimum legal size under different growth and natural mortality scenarios. Growth rates decrease in the panels from left to right with each line within a panel indicating a given natural mortality rate. Values are relative to the current legal size of 86 mm. For interpretation, values less than one represent a decrease in biomass while values greater than one represent an increase in biomass.

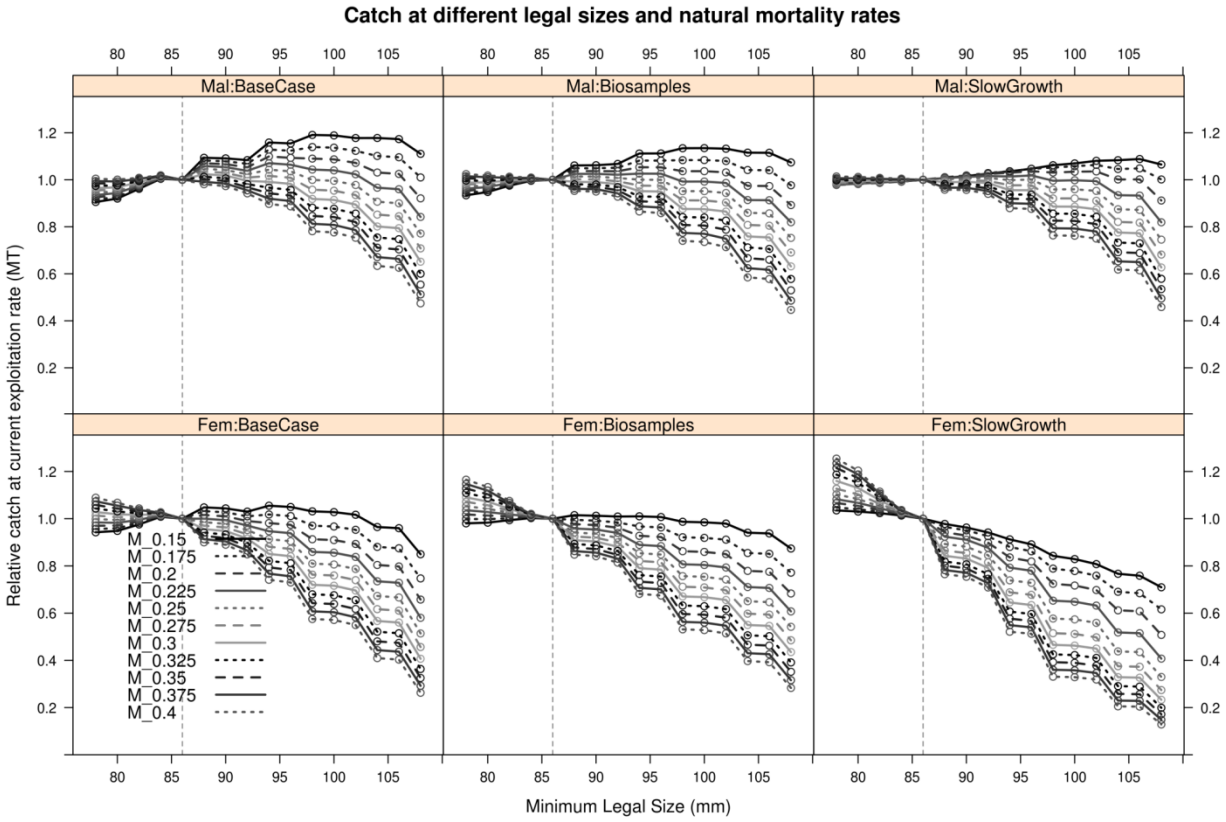

Figure 7. Effects of changing legal size on projected landings by sex for different growth and natural mortality rates. Growth rates decrease in the panels from left to right with males on the top row and females on the bottom and each line indicating a given natural mortality rate. Values are relative to projected landings for a legal size of 86 mm.

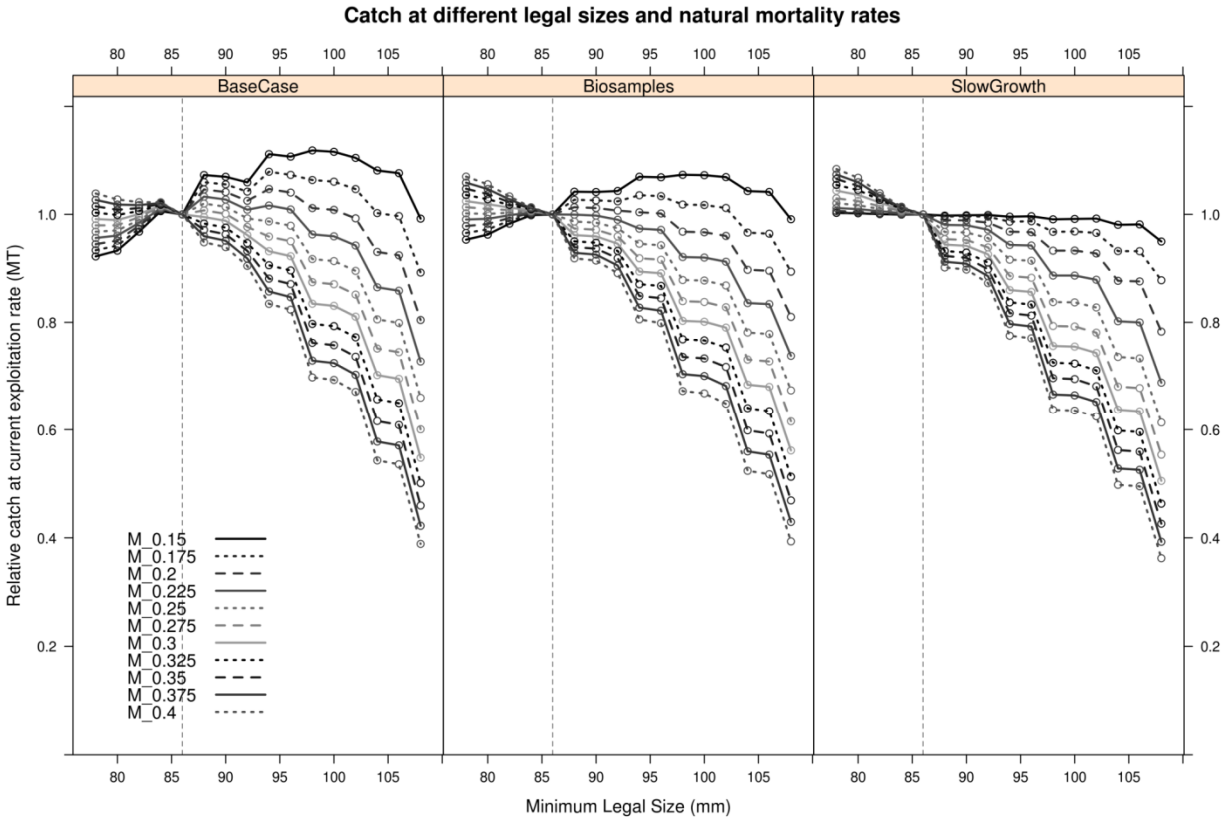

Figure 8. Effects of changing legal size on total projected landings (sexes combined). Growth rates decrease in the panels from left to right with each line indicating a given natural mortality rate. Values are relative to projected landings for a legal size of 86 mm.

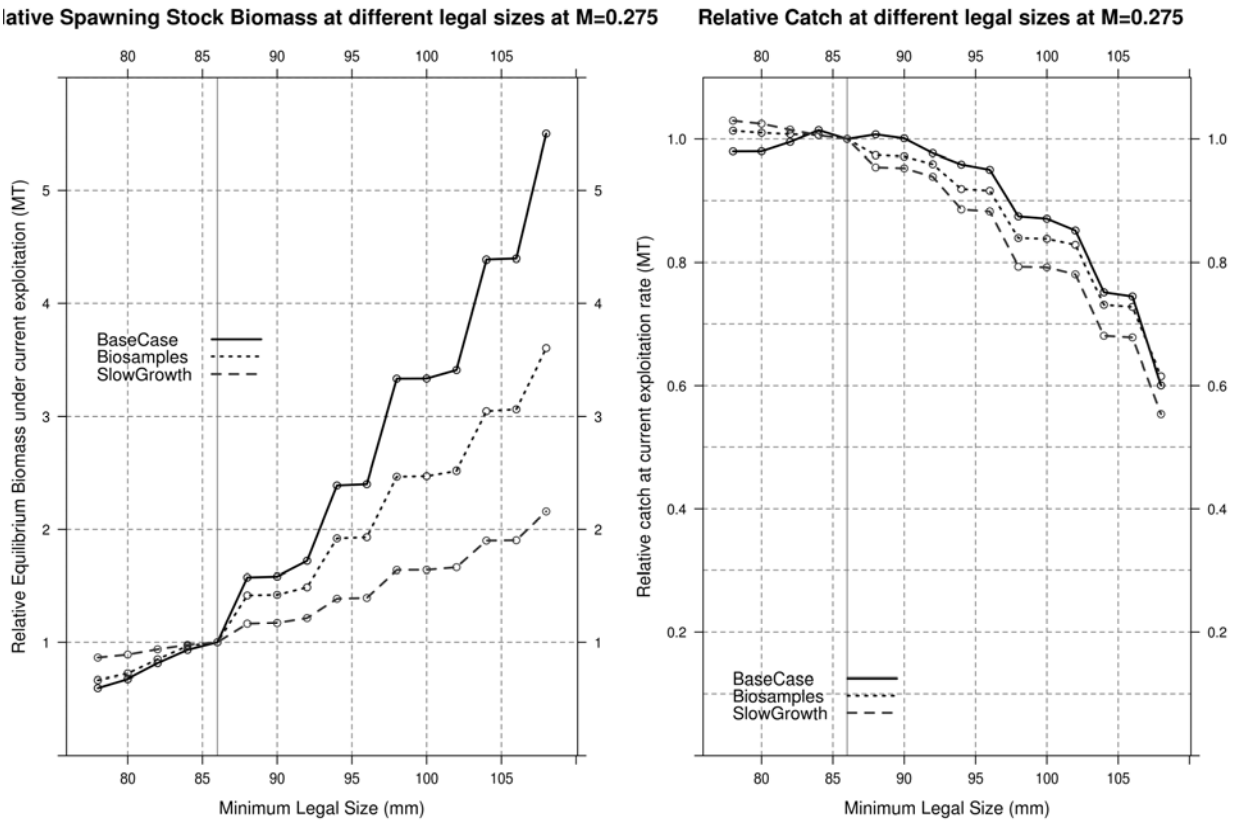

Figure 9. Comparison of changes in total biomass (left) and landings (right) across different growth models assuming a natural mortality of 0.275.

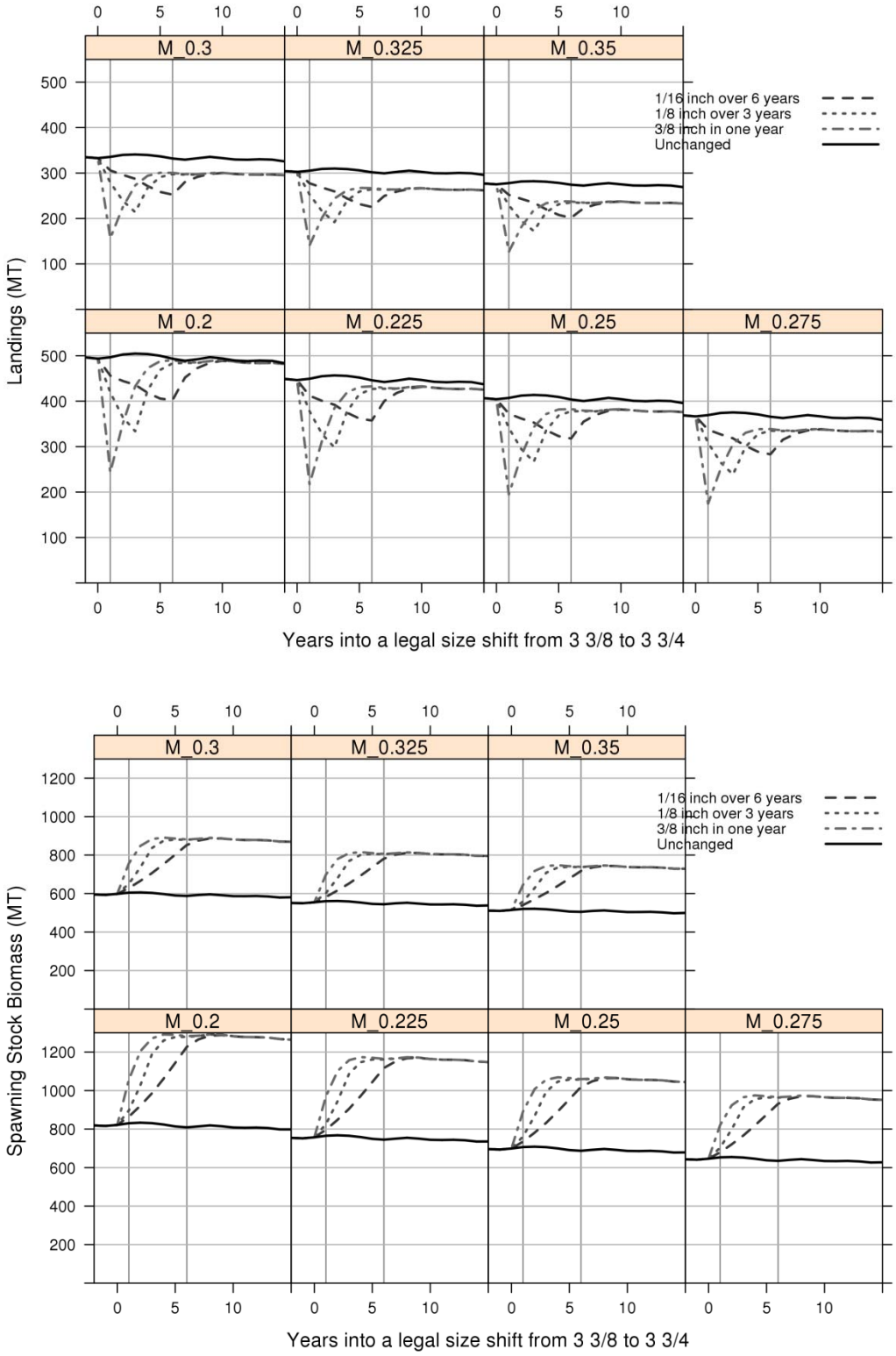

Figure 10. Simulation results illustrating effects of changing minimum legal size on landings and SSB at varying levels of M. Minimum legal size was shifted from 86 mm to 95 mm under three different implementation schedules. Vertical gray lines denote the first and sixth years after initial implementation.

2. SNE Sources of Mortality and Survival Rates

We first calculated the relative importance of natural mortality (M) and fishery extraction (F) on the population SSB (males and females included) using the assessment model output. Loss of SSB from natural mortality was calculated by applying the assumed M to the estimated quarterly length composition to get the numbers of removals by size. We then applied a length-based maturity schedule and length-weight relationship to the removals and summed across lengths and quarters to get annual removal of SSB by weight. For catch effect on SSB, we take the model-predicted quarterly catch-at-size, apply the same maturity schedule and length-weight relationship and sum across size and quarter to get annual removal of SSB. Finally, we calculate surviving SSB using the model-estimated population size and length composition at the end of each year, applying the same maturity schedule and length-weight composition.

Natural mortality has a very consistent impact on SSB within modeled regimes, removing 9% of SSB in the early part of the time series and 17% after the regime shift in the late '90's (Figure 11). Loss of SSB to the fishery varies interannually without trend within modeled regimes (with a slight time lag), accounting for 39% and 35% of SSB in the early and late regimes respectively. The difference in mortality between fishing and natural sources suggests the fishery is currently removing about twice as much SSB from the population annually than natural mortality. This is encouraging as it further suggests that, even at elevated natural mortality rates, management action can still have real effects on spawning stock and egg production.

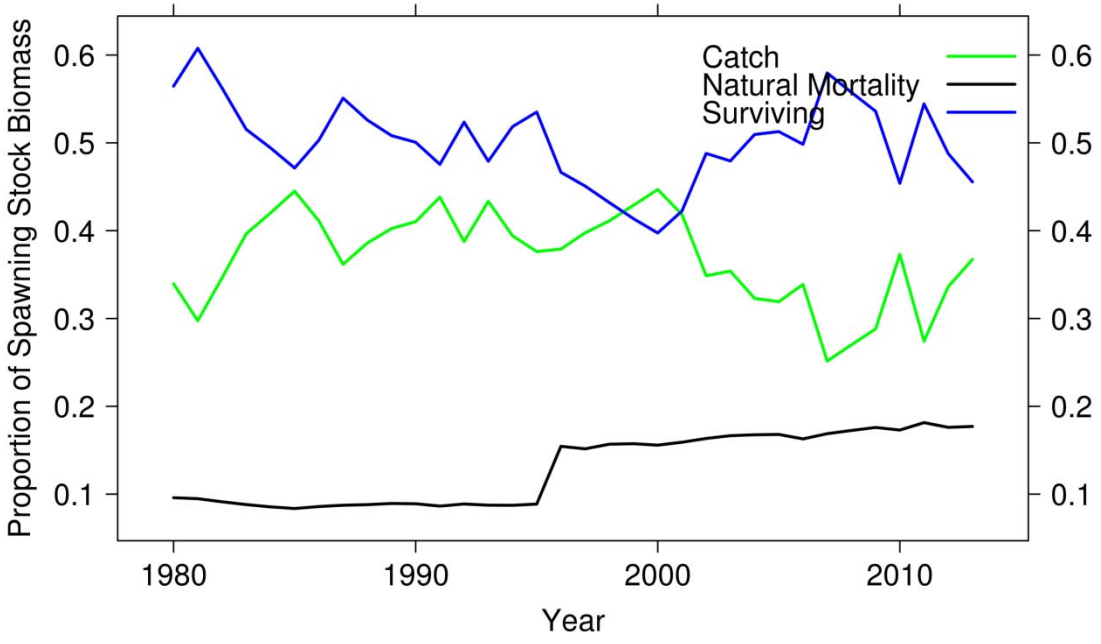

Figure 11. Proportion of SSB surviving or removed by fishing and natural mortality annually.

3. Stock-Recruit History

In the January 19th memo to the Board (re: *Report on TC Tasks from the Nov. 2015 Board Meeting*), the TC presented the model-estimated trajectories of spawning stock biomass and recruitment from 1995 to 2011. Figure 12 shows this same trajectory over an extended time period, from 1979-2011. Analysis of the relationship between SSB and recruits shows recruitment has plummeted over the past decade while SSB remained fairly constant. This suggests depensatory mechanisms may be at play in the SNE lobster stock, such that recruitment drops to very low levels well before SSB reaches zero. Moreover, the resulting rate of recruitment appears to be decoupled from SSB, potentially as a result of reduced mating success, environmentally-mediated changes in survivorship of early life history stages, and/or increased predation.

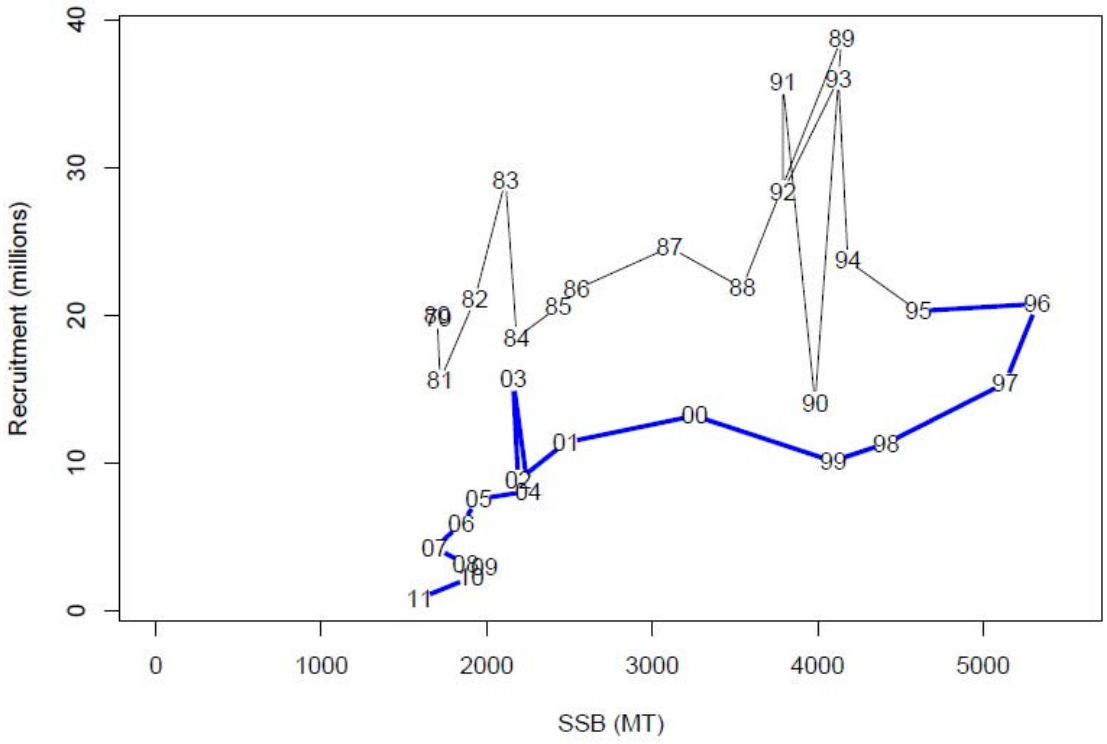

Figure 12: The relationship between model-based spawning stock biomass and recruits from 1979 to 2011. The blue line denotes the trajectory from 1995 – 2011 (recruiting to the model from 1998 to 2014).

4. Costs and Benefits of Standardizing Regulations in SNE

The TC was asked to review the costs and benefits of standardizing regulations across Lobster Conservation Management Areas (LCMAs) in SNE. Overall, the TC felt standardizing regulations would benefit the stock and improve the assessment process but would negatively impact the industry. Furthermore, the TC felt standardizing regulations would create clear winners and losers in the fishery, especially in regards to changes in the minimum and maximum gauge size.

The TC identified three primary benefits to standardizing regulations in SNE. These would largely result in benefits to the stock.

A. Standardizing regulations would decrease the competitive effects of disparate management measures among LCMAs and would minimize the impacts of management related to size selectivity on the population. Moreover, standardizing regulations would ensure lobsters are equally susceptible to fishing pressure regardless of where they are located in SNE.
B. Standardizing biological measures would simplify the current regulations, leading to enhanced enforcement and compliance.
C. Standardizing regulations would improve future analysis on the stock condition as scientists would be better able to estimate the effects of the fishery on the lobster population. Currently, the Stock Assessment Subcommittee must estimate the impact of disparate regulations on the stock by pooling landings from statistical areas to estimate the effects in each LCMA. This introduces uncertainty since the boundaries of the LCMAs and statistical areas do not align. Standardized regulations would eliminate this source of uncertainty and the need to weight the effect of different management measures in future stock assessments.

The TC also identified three costs to standardizing regulations in SNE. These largely result in costs to the fishery.

A. Standardizing biological measures ignores the existing population demographics, including spatial trends in size and sex. This would 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).
B. Standardizing regulations, namely gauge size, would result in portions of the fleet having to make gear modifications, especially to their escape vent size.
C. 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.

There were also two consequences identified by the TC which could result in a mixture of costs and benefits for different sectors of the fishery.

A. 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.
B. 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.

5. Attainability of Recalculated Reference Points

As a follow-up to the analysis presented at the February Board meeting, the TC was asked whether the recalculated reference point of 22.5 million lobsters for the SNE stock is attainable given current environmental conditions (see: TC memo to Board dated January 19, 2016; re: *Report on TC Tasks from the Nov. 2015 Board Meeting*). Given 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.

6. 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. Overall, the TC feels 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 (see: TC memo to Board dated January 19, 2016; re: *Report on TC Tasks from the Nov. 2015 Board Meeting*). As a result, the benefit from an additional tagging study may be minimal in increasing our knowledge on stock connectivity. The 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. As a result, it may be more fruitful to allocate resources towards a tagging study focused on growth, maturity, molt increments by area, and molt frequency by size. Hurdles to implementing a tagging study include cost and need for significant industry participation. A potential budget for a tagging study is included on page 18 of this report.

A proposal for a tagging study in GOM/GB can be found on page 20 of this report. Following the recommendation of the 2015 American Lobster Benchmark Stock Assessment, the Board combined the GOM and GB stock areas into one biological unit. This boundary revision was based on survey data which showed seasonal fluctuations in the abundance of large female lobster between the GOM and GB. While these data suggest the migration of ovigerous females between the two regions, the specific movement patterns of lobster are poorly understood. The proposal seeks to tag 10,000 lobsters between May 2016 and April 2017 in the nearshore and offshore regions of the GOM/GB stock and is an extension of a tagging study that was conducted in 2015. The goals of the project are to improve knowledge on the movement of lobsters in GOM/GB and to collect growth data using experimental and traditional methods. The project would include participation from New Hampshire Fish & Game, Maine Department of Marine Resources, the Atlantic Offshore Lobstermen's Association, MRAG federal lobster observers, and commercial lobstermen. The total budget for this tagging study is $107,251.29.

Draft Budget for a Southern New England Tagging Study

Goal:

To document the inshore/offshore movement of lobsters in one comprehensive study under current climatic conditions.

Overview:

This tagging study would take place over the course of a year, with leadership and heavy participation by MADMF and AOLA. Inshore tagging would take place in the spring and summer while offshore tagging would occur in the late fall and winter. A total of 9,000 lobsters would be tagged in the following locations:

Inshore LCMA2 MA: 1500 tags
Inshore LCMA2 RI: 1500 tags
Mid-Shelf/Dumping Grounds: 1500 tags
Hudson Canyon: 1500 tags
Block Canyon: 1500 tags
Atlantis Canyon: 1500 tags

Industry Compensation:

Participating boats would get $250/$1000 (inshore/offshore) to take a biologist onboard. In addition, the fishermen would be paid for every legal lobster that was tagged and released at $6.00/lb based on the length-weight relationship from the data.

Budget:

Salaries	**Category**	**Annual Total**
MADMF Fisheries Technician 1 (1 year)	*Salary*	$31,200.00
	Fringe	
	Indirect	$10,077.60
MADMF Fisheries Technician 2 (7 months)	*Salary*	$16,800.00
	Fringe	
	Indirect	$5,426.40
AOLA Staff (salaries for assistance with coordinating project)	*Placeholder*	$50,000.00
	Total Salary	$98,000.00
	Total Fringe	$0.00
	Total Indirect	$15,504.00
	Total Salaries	$113,504.00

Equipment & Supplies		
Tags		$15,000.00
Laptop, digital cameras		$2,500.00
Supplies		$1,500.00
	Total	$19,000.00
Travel		
Symposia/Conferences		$2,500.00
Mileage Reimbursements		$750.00
	Total	$3,250.00
Contracts		
Legal Lobsters (3500*2lbs*$6.00)		$60,000.00
Inshore Tagging Sea Days (30 days @ $250.00)		$7,500.00
Offshore Tagging Trips (20 trips @ $1000 per trip)		$20,000.00
Tagging Incentives		$25,000.00
	Total	$112,500.00
	Total Direct	$232,750.00
	Total Indirect & Fringe	$15,504.00
	Grand Total	$248,254.00

Lobster Migration and Growth:
Continuation and Expansion of 2015 Tagging Effort on Georges Bank

New Hampshire Fish &
Game

Maine Department of Marine
Resources

&

Atlantic Offshore Lobstermen's
Association

SUMMARY OF PRIOR WORK

In 2015, New Hampshire Fish and Game (NHF&G) and the Atlantic Offshore Lobstermen's Association (AOLA) were awarded funds from the Atlantic Coastal Cooperative Statistics Program for a project titled: "Improving American Lobster Biological & Catch/Effort Data for Georges Bank, and Characterizing Seasonal Egger Aggregation in Closed Area II (Statistical Areas 561 & 562)" (NA15NMF4740253). The goal of that project was to document a persistent seasonal aggregation of ovigerous female lobsters in eastern portions of Georges Bank, while gathering fishery dependent biological data in the stock region.

Specific Objectives were to:

1. Deploy NOAA certified observers on randomly selected federal lobster vessels to collect biological, catch, effort and bycatch data in SA 561 and 562 on board multi-day trips.
2. Characterize the catch per unit effort and spatial distribution of ovigerous females in SA 561 and 562 via logbooks given to lobster harvesters.
3. Tag large female lobsters as a cost effective way to understand the distribution and movement of mature female lobsters on Georges Bank.

Project Outcomes:

Industry participation: Logbooks were completed by five vessels, who documented trip data from June through December 2015 during a total of 13,047 trap hauls (368 trawl hauls) in the offshore regions of the Georges Bank/Gulf of Maine stock area (henceforth called GBK/GOM). A total of 48,342 lobsters were counted, of which 19,051 were egg-bearing females. Logbooks were reported from statistical areas 464, 465, 512, 561, 562, 522, and 525 (Figure 1).

Observer trips: MRAG Americas (MRAG) was contracted to sea sample and NOAA Fisheries Northeast Fisheries Science Center (NEFSC) agreed to manage the collected data. Five trips were completed between July and October, for a total deployment of 45.6 seadays. MRAG technicians utilized NOAA Standardized Bycatch Reduction Methodology (SBRM) data

collection protocols (www.nefsc.noaa. gov/fsb/SBRM/). These data will permanently reside in the NOAA SBRM database, which is readily available to members of the Atlantic States Marine Fisheries Commission's (ASMFC) Lobster Technical Committee. NHF&G, AOLA, and staff from NEFSC are currently analyzing these data in preparation for a final report due in May of 2016.

Tagging: MRAG technicians tagged 2,674 female lobsters (ovigerous, vnotched, and/or larger than the maximum gauge) during five trips between August and October, 2015. Coonamessett Farm Foundation (CFF) researchers tagged 409 lobsters between August 2015 and March 2016, during Georges Bank scallop dredge bycatch surveys. CFF and AOLA have entered into an agreement to continue this effort during the 2016 fishing year using surplus tags.

Tag returns and outreach: To date, 67 tag recapture records have been reported by industry members, MRAG, and NEFSC NEFOP. We expect fishermen will report additional recaptures in 2016 as fishing pressure within the tagging area increases.

Data analysis: Project participants are currently working on data analysis and final reporting. Analyses and data will be available to the ASMFC's Lobster Technical Committee by June 2016.

NEED FOR ADDITIONAL FUNDING:

The ASMFC's 2015 peer-reviewed American Lobster Stock Assessment proposed revising stock boundaries to combine Georges Bank (GBK) and Gulf of Maine (GOM). This revision was approved by the Lobster Management Board at their fall 2015 meeting. This recommendation was made by the stock assessment committee based primarily on NOAA trawl data analyses that demonstrated seasonal fluctuations of large animal abundances between GOM and GBK, suggesting migration of animals throughout the region. Additionally, model results performed better when the two areas were run as a single broad stock. This newly defined stock area represents greater than 95% of annual lobster landings, valued at more than $500 million per year.

While these findings were sufficient to warrant revision of the stock boundaries, the movement patterns between GBK and GOM are poorly understood. There has been only limited research on migration and connectivity between inshore and offshore areas in this region (see literature review in Appendix A). Gaining a better understanding of movement patterns of lobsters in the GBK/GOM stock is particularly germane given the apparent shift in distribution to areas farther away from the coast, and the fact that settlement has been below average in areas of the GOM for the past three to four years. With rapid warming in the region it is imperative that we better understand population dynamics and growth; both questions are at the foundation of the assessment and paramount to making informed management decisions on a fishery with landings in excess of 150 million pounds.

The 2015 Stock Assessment notes the following items as priority research needs:

1. "There is a need for a comprehensive large scale tagging study to examine stock connectivity between the Gulf of Maine and Georges Bank…What is lacking is a tagging study of lobster in the fall/winter on Georges Bank proper, prior to seasonal migration which occur in the spring."
2. "It is critical to collect updated information on maturity and growth in order to appropriately assign molt probabilities to lobsters in the U. Maine length-based model"

We are seeking $107,251.29 to tag up to 10,000 additional lobsters during the period of May 2016 to April 2017 in nearshore and offshore regions of the newly identified GBK/GOM stock. An additional year of tagging will not only allow for replication and comparison to 2015 findings, but will also bolster the total number of tags deployed and expand tagging efforts to nearshore Gulf of Maine. Tag returns across both 2015 and 2016 projects will allow for documentation of migration activity in both spring and fall as animals move from winter to summer grounds. Recapture rates with this type of tag are inherently low, especially in offshore areas where fishing pressure is low. Past studies in this area show recapture rates that range from seven to 14 percent (Campbell et al., 1984 and Cooper and Uzmann, 1971). The questions that we hope to answer from this study will require a robust tagging effort as recapture rates are known to be low in this area.

The 2015 tagging effort depended on commercial sampling trips with observers in a target area known for a seasonal aggregation of ovigerous females. Only the ovigerous, v-notched, or oversized female lobsters were tagged and the regions of tagging activity were limited to locations of the commercial fleet on Georges Bank. With the combined GBK/GOM stock, we want to address the questions of where the lobsters are migrating to and from throughout the region. In 2016-2017, we will expand tagging efforts on ovigerous, v-notched, and oversized females to include sublegals of both sexes and oversized males. This will be accomplished through dedicated tagging trips in offshore waters and opportunistic tagging by Maine DMR samplers on day trips in nearshore waters of GOM (outside of three miles). The majority of this effort will be fishery dependent, with the exemption of one study area managed by ME DMR that will be targeted using a fishery independent approach.

To conduct fishery independent tagging, ME DMR will charter an eastern Maine vessel to set gear in an area and at a time of year with low commercial fishing pressure. ME DMR staff will tend this gear via day trips from an eastern Maine port. All hauled lobsters, sublegal and legal, will be tagged and discarded. This effort will allow us to target an area outside of the lobster fishing grounds, providing the released tagged lobsters more time and space to migrate before being recaptured in commercial gear.

In addition to tagging, growth information will be gathered on recaptured lobsters. The American Lobster Stock Assessment utilizes a statistical catch at length model. At the heart of this model is a growth matrix, which is based on a set of probabilities that lobsters of a certain length molt into a larger size bin. Our current knowledge of lobster growth, particularly in the

larger size range (> 90 mm carapace length) is severely limited and could lead to inaccurate estimates. In order to accurately model these populations and to better understand the effects of changing regulations (e.g. minimum and maximum gauge size) it's imperative that we attempt to collect accurate growth data that represents the current environment.

This expanded tagging effort provides the opportunity to collect valuable growth information. In nearshore waters it is unrealistic to distribute calipers and logsheets to the entire fleet. Instead, we will request that fishermen take a picture of recaptured tagged lobsters and use image analysis software, such as ImagePro, to estimate carapace length (CL) (Harbiz, 2007 and Rycroft et. al, 2013). Offshore, where the fleet is smaller, fishermen will be given calipers and asked to both measure and photograph recaptured lobsters. Use of both modalities offshore will allow us to compare the image analysis method to direct measurements and estimate measurement error. It is possible that measurement error will be high, therefore a high sample size of recapture measurements is required in order to collect accurate growth information. This is further justification for the large number of tags requested in this proposal.

Finally, we plan to replicate the industry data collection effort conducted in 2015. We feel it is important to gather a second year of data on the spatial distribution and abundance of ovigerous females in and around statistical areas 561 and 562 to compare to 2015 findings and start to evaluate the spatial and temporal persistence of aggregating ovigerous lobsters.

SPECIFIC OBJECTIVES:

1. Tag 10,000 lobsters in the GBK/GOM broad stock during the period of May – November 2016. Tagging will be conducted by ME DMR and MRAG technicians deployed on federally permitted lobster vessels.
2. Involve the lobster industry in collecting growth data via imaging technology and direct measurements.
3. Replicate industry's 2015 ovigerous lobster data collection effort via logbooks given to lobster harvesters in offshore regions of eastern GOM and GBK.

METHODS:

MRAG Tasks: As was the case for the 2015 field work, MRAG will be sub-contracted to provide fully insured and previously trained technicians to tag lobsters on three multi-day offshore lobster trips into GBK and GOM (30 seadays). MRAG Americas is currently the only company certified by NOAA fisheries to conduct sea sampling on federal lobster vessels. They employ four experienced sea samplers who will participate in this project; these are the same individuals that collected biological data and conducted tagging during our previous project. NHF&G will provide MRAG staff with another round of tagging training before tagging trips.

Technicians will be tasked solely with tagging lobsters and collecting associated biological information, with the goal of applying 6,000 tags. The expectation is that technicians will tag 300-350 lobsters per active fishing day (~7 days during a 10 day fishing trip). In 2015, while collecting a full suite of operational and biological data according to the NOAA SBRM protocol,

technicians were able to tag an average of 100 lobsters per day (min = 21, max = 290). The previous tagging was limited to female broodstock, while 2016 tagging will cover all cohorts of discarded catch, including sublegals and oversized males and females.

ME DMR Tasks: ME DMR will deploy technicians to conduct tagging on federally permitted Maine lobster vessels fishing outside of three miles. This effort will be a combination of fishery dependent tagging during sampling trips and fishery independent tagging. The ME DMR staff will complete at least 10 sampling day trips tagging lobsters on federally permitted vessels outside the 3 mile line with a preference for trips furthest from shore. ME DMR will aim to apply 1,000-2,000 tags; only discards will be tagged, as described above.

The fishery independent tagging project will contract one Maine vessel to set up to 200-300 traps in an offshore region of eastern Maine in June 2016 for 4 weeks. The target area will be selected for low seasonal commercial fishing effort, proximity to the port (so day trips can be conducted), and likelihood of catching lobsters of all sizes. The area of interest is located in a nearshore area off of eastern Maine at depths ranging from 95 – 140 fm. The study area will not conflict with whale migration at this time of year (Erin Summers, ME DMR, Personal communications April 1, 2016). The gear will be configured in trawls of at least 20 traps and each trawl will have two end lines. All gear will comply with whale safe regulations. The traps will be hauled 4-6 times on day trips and all lobsters caught will be tagged and discarded. The goal will be to tag 2,000-3,000 lobsters.

Tagging Procedure: Conspicuously colored t-bar tags will be inserted at the dorsal intersection of the abdomen and tail. These tags are capable of remaining intact after a molt, providing growth information as well as movement data. Printed on each tag will be a unique sequential identification number, a phone number, and “AOLA”. For each animal tagged the following data will be collected: date, location, lobster size (CL), sex, egg presence, egg maturity, and v-notch presence. Tagging data will be reported to AOLA for storage.

Growth: To collect growth data, we will use both experimental and traditional methods. We will test the utility of measuring tagged lobster size using image analysis by calibrating CL to a standardized lobster gauge included in photos of recaptured lobsters. We will depend on pictures to estimate CL for recaptures in the nearshore regions. In the offshore areas, volunteers will be outfitted with calipers and asked to both measure and photograph tagged lobsters. Use of both modalities offshore will allow us to estimate measurement error for the image analysis method.

Reward raffles will be used to incentivize industry to report recapture and growth measurements. Each time a fishermen reports a recapture their name will be included in one of two raffles with prizes given out at the end of the project. Recapture reports including growth information will be entered into a higher value raffle than recapture reports alone.

Approximately 16 vessels already have calipers as part of ongoing projects by other parties (primarily in SNE). Recently, MA DMF and AOLA were awarded funds for a 2016 Jonah crab

tagging project which also includes a growth component with industry participation. That project will distribute an additional 22 calipers, although they may be modified for measuring crabs. Given that AOLA is involved in both projects and overlap between the lobster and crab industries, we will leverage the crab project to the extent possible to increase lobster growth reports.

Outreach: To encourage tag returns, AOLA will conduct outreach to all area fishing associations, governmental bodies, and academic researchers via emails, social media sites, Association publications and regional fishing publications, such as Commercial Fisheries News. These efforts will be in conjunction with outreach efforts for the above mentioned Jonah crab tagging project planned for 2016- 2017. The lobster/crab industry has expressed support of these projects and is expected to be active in consistently reporting tag returns, which is vital to the success of a tagging program. Fishermen will be asked to discard animals with tags intact. AOLA will maintain a hotline for tag recapture reports.

COLLABORATIVE APPROACH: NHF&G will provide general Project Supervision and will be the lead on communications with the ASMFC. ME DMR will organize nearshore tagging efforts. AOLA will coordinate offshore tagging and will serve as Project Coordinator, in charge of maintaining the tagging database and recapture hotline.

PERIOD OF PERFORMANCE: Tentatively, May 1, 2016 – April 31, 2017 or one year from when the project funds become available.

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BUDGET: $107,251.29

	Amount	Rate	Total	In Kind
PERSONNEL				
Supervisor, NHF&G	117	$53.67	$6,279.39	
Supervisor, AOLA	30	50		$1,500.00
Coordinator, AOLA	450	$30.00	$12,750.00	
CONTRACTUAL – sea day rates				
MRAG Americas	30	$725.00	$21,750.00	
ME chartered Vessel	8	$6,250.00	$50,000.00	
SUPPLIES				
Anchor T-Bar Tags	10,000	$0.64	$6,400.00	
Tagging Guns and needles	3	$100.00	$300.00	
Carrera Digital Calipers – 8”	15	$30.00	$450.00	
Shipping Handling			$100.00	
INDUSTRY				
Raffle rewards			$8,000.00	
TRAVEL				
Hotel	6	$70.00	$420.00	
Per Diem	6	$74.00	$444.00	
Mileage	258	$0.44	$113.52	
ME Indirect			$244.38	
TOTAL			$107,251.29	$1,500.00

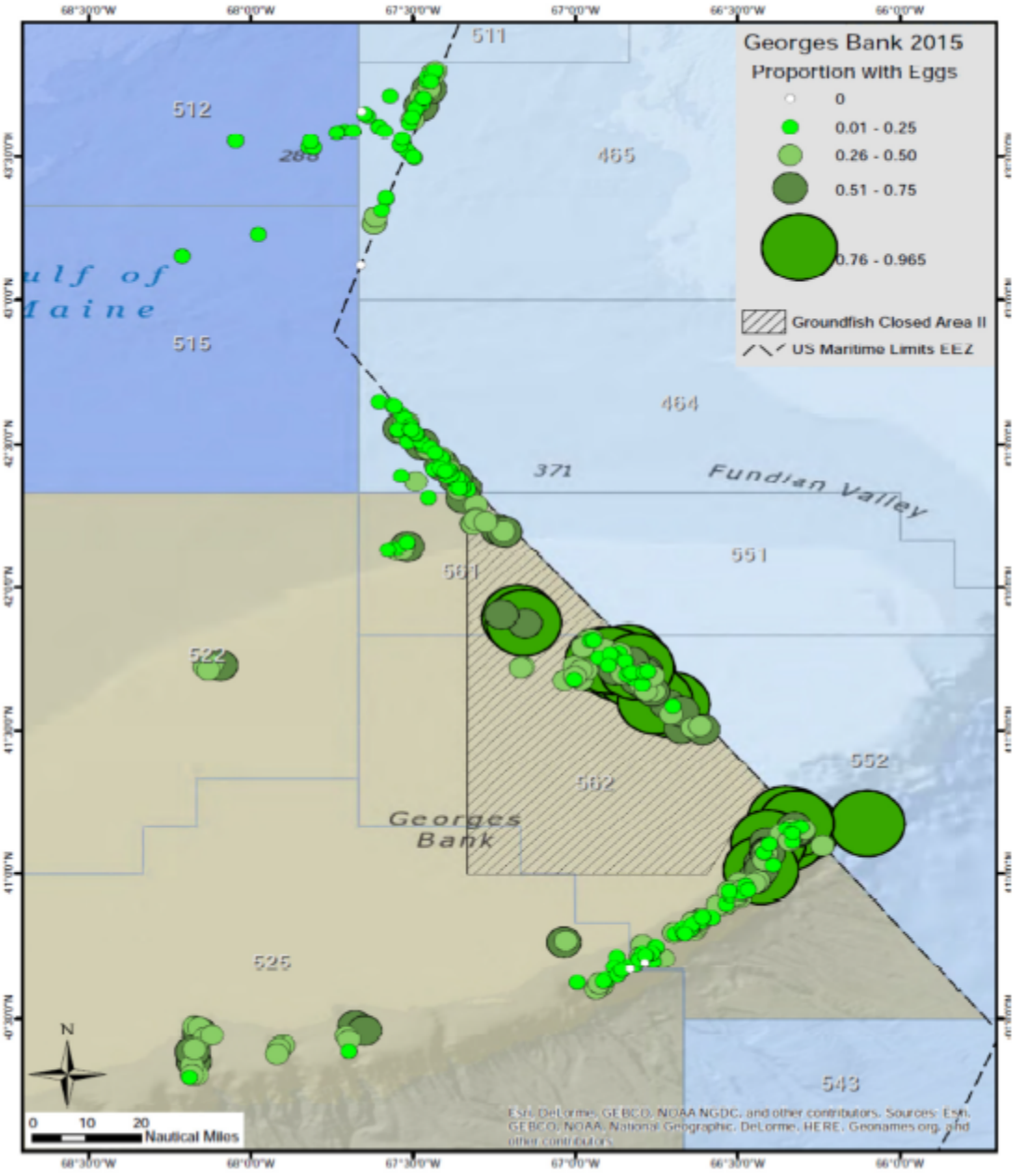

Figure 1. Proportion of total catch that were egg bearing lobsters reported from industry logbooks in Statistical Areas 464, 465, 512, 561, 562, 522, and 525 in 2015.

Appendix A – Literature Review - originally included in ASSCP grant proposal for 2015 funded research

Closed Area II hosts a seasonal lobster fishing fleet of approximately 20-25 large fixed gear vessels (generally 70+ feet in length), fishing 20,000 to 30,000 traps annually and worth over $4 million. The CA II fleet represents close to one third of the active Lobster Conservation Management Area 3 (LCMA 3) vessels, with approximately one half of the fleet home ported in New Hampshire, the balance split between Massachusetts and Rhode Island. This fleet has been active on Georges Bank for over 30 years. During the last 20 years, there has been very limited mobile gear fishing in large portions of CA II. Lobster harvesters have made substantial investments during this period in vessels, gear, and permits to access the area.

The lobster fleet has historically fished in the study area from June through October, which coincides with the period when the lobster migrate to the shoal waters of Georges Bank. As noted in the NEFMC's Draft Habitat Omnibus Amendment II environmental impact statement (HOA2 DEIS), ovigerous females are present in this area in high numbers, as high as 80% of the haul, July-December of each year (HOA2 DEIS, Volume 3, page 622). These data are supported by the Vessel Trip Reports, with high discard rates reported by offshore lobster vessels in CA II July through September (Figure 1). Most of these females are large (3-8 lbs.), have large egg masses, and would be expected to release their eggs in late fall. These are some of the most fecund individuals in the lobster population, possessing large eggs, which should generally improve larval survival (Attard and Hudon, 1987). Work done by Smith and Howell (1987) showed that monthly incidence of major damage or immediate mortality on lobster from the trawl fishery varied seasonally with values as high as 14% were observed.

In addition to the lack of knowledge regarding the spatial distribution of egg bearing females in offshore waters, there's also a lack of biological sampling in this area for American lobster. The current level of biological sampling in offshore waters is inadequate and the lobster SAS is forced to characterize landings from a very large area on a limited number of samples. This is specifically worrying in the Georges Bank stock area, given its high proportion of offshore waters/offshore fishing compared to the other stock areas. Furthermore, the ACCSP Biological Review Panel ranked lobster in the upper 25 percentile based on sampling priority and sampling adequacy. Increased biological sampling for lobster received the highest priority ranking (5 out of 5) from ASFMC, and a high ranking (3 out of 5) from NOAA NMFS, with current sampling levels marked as inadequate. These data will be used in future stock assessments and all the biological data will be uploaded into the ACCSP data warehouse.

If a resource of this geographical size and magnitude is to be managed as a sustainable fishery, then it is imperative that regional populations are closely monitored and that we gain a better understanding of the distribution of egg bearing females. Protection of egg bearing females is at the foundation of the lobster management pyramid (ASMFC, 2006; ASMFC, 2009), and it's critical to provide protection to areas with known aggregations of these animals. Data collected under this proposal will provide important biological and catch per unit effort (CPUE) data for an offshore fishery that's currently under sampled. Furthermore, the proposed work will

provide a better picture of the spatial distribution of egg bearing females within SA 561 and 562. The proposed work will provide managers with baseline data to properly assess the impacts of opening CA II to mobile gear, as well as providing much needed data to the stock assessment in an area that is currently deficient.

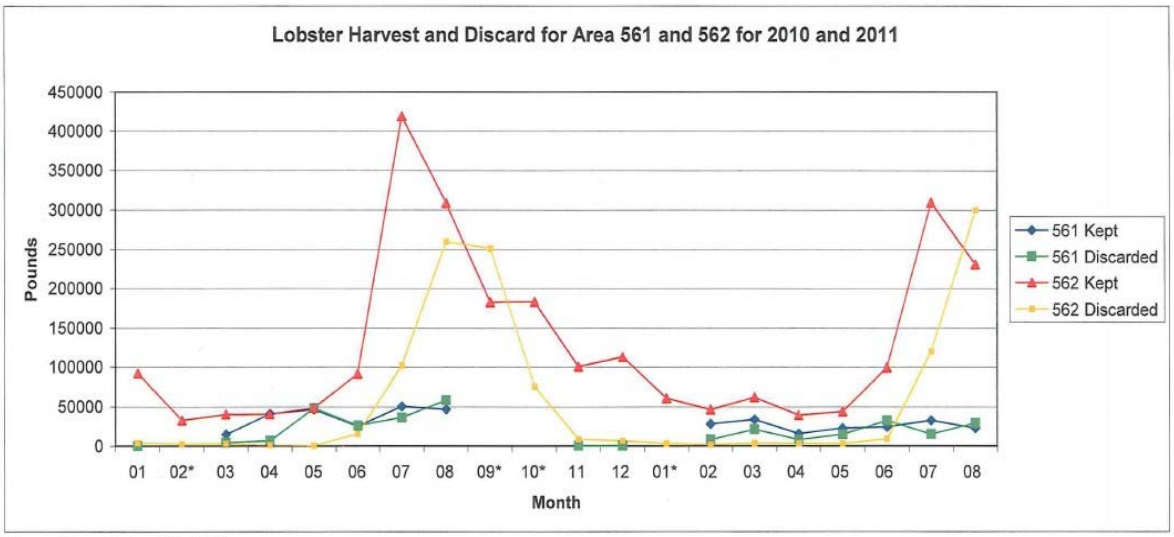

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Figure 1. Kept and discarded lobster from federal vessel trip reports for Statistical Areas 561 and 562, January 2010 - August 2011. Figure from NH FG's letter to NEFMC dated January 26, 2012.

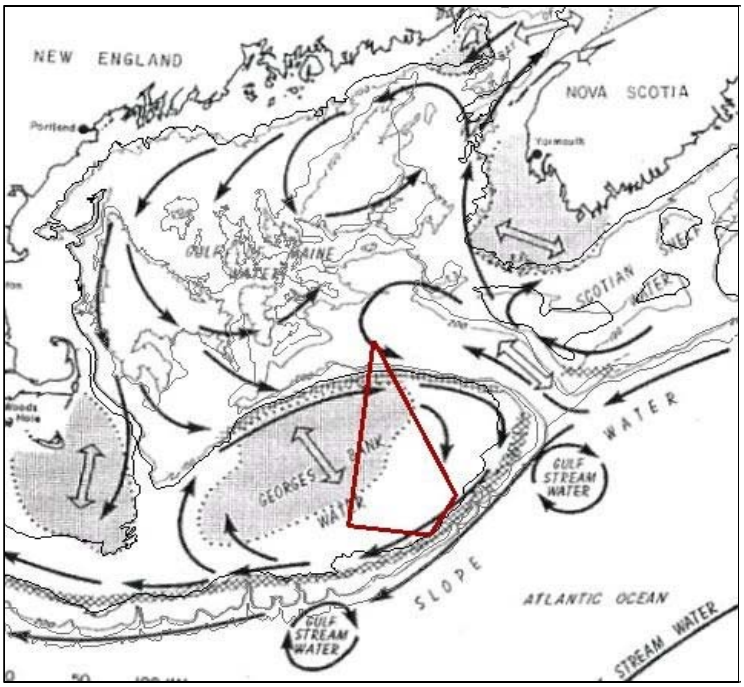

Figure 2. Map taken from NEFMC HOA2 draft environmental impact statement, with Closed Area II superimposed.

Connectivity: The density and persistence of ovigerous females in this area occurs annually, suggesting importance of this area to egg brooding and/or egg release. Given the location of this area and the circular currents that persist in the Gulf of Maine, lobster in this area could be supplying larvae to Georges Bank, as well as inshore fisheries in the Gulf of Maine and/or Southern New England (Figure 2). In view of the declining settlement rates in inshore areas (Wahle et. al, 2013; Figure 3), it is extremely important to characterize location, size composition, and catch rates of egg bearing lobster in the CA II, which will prompt a greater understanding of their potential recruitment contribution to inshore fisheries.

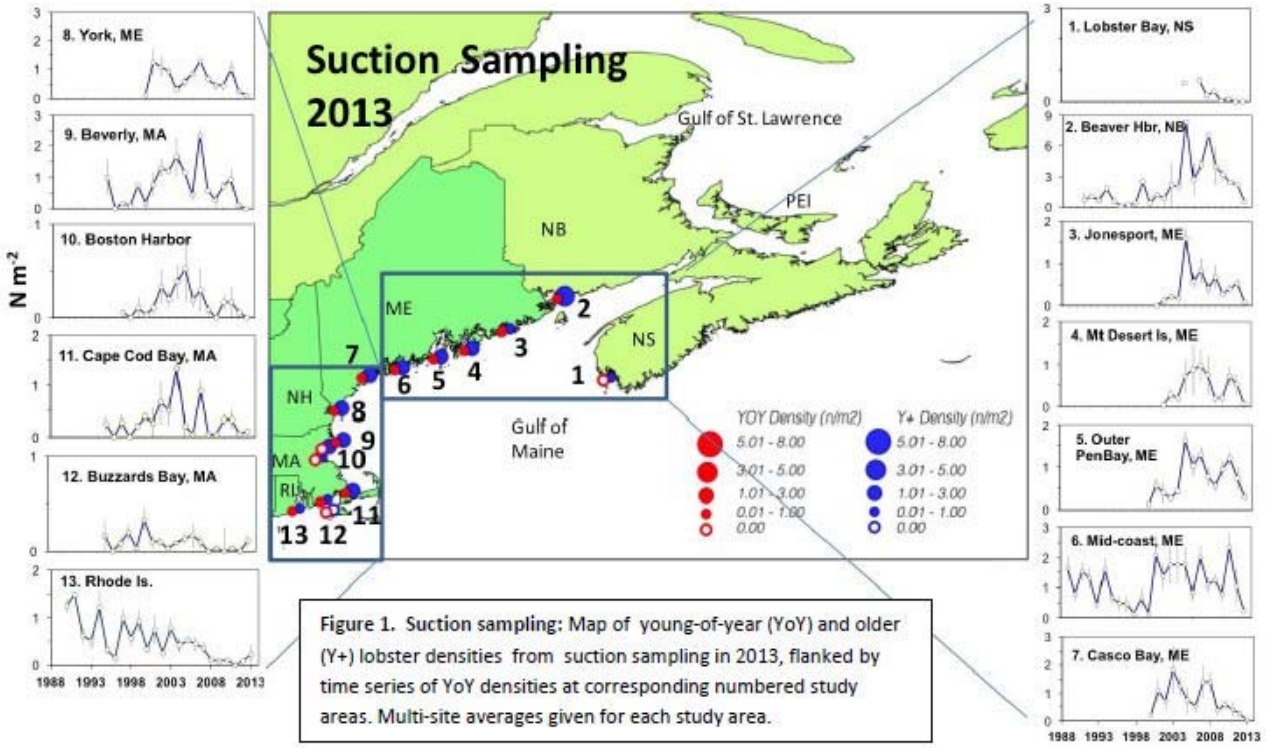

Figure 1. Suction sampling: Map of young-of-year (YoY) and older (Y+) lobster densities from suction sampling in 2013, flanked by time series of YoY densities at corresponding numbered study areas. Multi-site averages given for each study area.

Figure 3. Atlantic Lobster Sustainability Index (ALSI) data, originally published in the 2013 ALSI Annual Report, courtesy of Rick Wahle.

While the scientific community has yet to definitively conclude the interconnectivity of inshore and offshore lobster populations, the body of literature does support the hypothesis that migration and larval transport connect regional lobster populations. We note the following papers and conclusions, as example. Cowan and Watson (2007) show that ovigerous lobster, particularly large females, move offshore to optimize temperature degree days and reduce temperature variability when brooding eggs. Tagging studies show that inshore ovigerous lobster migrate to deeper water in the winter (Campbell, 1986) and offshore lobster migrate inshore in the summer (Cooper and Uzmann 1971). Watson (unpublished, 2007) in collaboration with AOLA did related tagging work showing that ovigerous lobster reside in deep water in the winter and move to shallower water in the summer. He found that offshore eggers move more than inshore and that larger lobster (>90mm CL) moved much farther than

smaller ones. Data collected by AOLA members since 2001, show that most of the female egg bearing lobster within CA II are greater than 90 mm carapace length (CL). Watson (unpublished, 2009) also found evidence for brooding-site fidelity, although this work was not done on Georges Bank. He also tracked lobster movement from inshore New Hampshire to offshore Gulf of Maine.

In regard to larval transport, a number of studies potentially link the inshore and offshore lobster stocks. Work by Canadians in the 1980s and 1990s document larval lobster in the waters above Georges and Browns Bank in the summer and suggest that ovigerous females release larvae from shoal areas (Harding, et. Al, 2003 review). From drifter work they inferred that larvae released offshore would be transported inshore (as described by Hare, 2005). Harding and colleagues (1983) found that oceanographic data (wind, tidal forces, seasonal surface circulations and occasional plumes escaping the northern edge of Georges Bank) and the ability of later stage larvae to conduct directional swimming support a high level of offshore to inshore connectivity and suggest that the Gulf of Maine, inclusive of Georges Bank, could be considered a single lobster recruitment system with larvae expected to move counterclockwise. Lawrence and Trites (1983) modeling surface oil from Georges/Brown Bank region in the summer found frequent impacts on coastlines of southwestern Nova Scotia and Bay of Fundy.

Incze, Xie and colleagues have published a series of papers related to modeling larval dispersal and population connectivity in the Gulf of Maine (Incze and Naime, 2000; Incze, et al., 2006, Xue et al., 2008; Incze, et. al, 2010). Their work suggests that recruitment can be a very local event, but there is potential for long distance dispersal, especially when females hatch eggs farther from shore. Modeling work by Fogarty (1998) of the NOAA Fisheries Northeast Fisheries Science Center found that even relatively low levels of larval transport from offshore to inshore could explain resilience of the inshore population despite high levels of fishing mortality. Hare (2005) of the NOAA's National Ocean Service, advocates for the "precautionary approach", noting that offshore larval supply need be considered when managing inshore lobster fisheries.

South of Cape Cod, Katz et al. (1994) sampled larvae along an offshore-inshore transect (Hydrographers Canyon to Rhode Island waters) and found a gradient of stages with a greater proportion of earlier stage lobster larvae offshore and later stage lobster larvae inshore, suggesting hatching offshore and transport inshore. Further, Crivello et al. (2005) used genetic methods to link Long Island Sound larval lobster to female lobster from Hudson Canyon, suggesting that up to 45% of the larvae in Long Island Sound came from Hudson Canyon females. There is also morphometric evidence from throughout the region supporting mixing of inshore and offshore stocks (Harding et al., 1993; Cadrin, 1995). Documenting aggregations of egg bearing females is a critical step in understanding the eventual location of settlement.

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Southern New England Lobster Analyses

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Jason McNamee, Chief Marine Resource Management

April 25, 2016

Introduction

Based on the last stock assessment, it is apparent that reduction measures will be needed for the Southern New England (SNE) lobster stock area. The following analysis is meant to define some potential tools and methodologies that can be used to quantify harvest reductions based on various measures such as the existing effort control plan as well as potential changes to minimum and maximum gauge sizes. In addition to the harvest reduction methodologies, Rhode Island Department of Environmental Management (RIDEM) has conducted analyses looking at potential spawner-recruit analyses. These analyses can be used as an alternate view on population dynamics, and could conceivably be used in alternate projections of population responses to management efforts. The RIDEM report is broken into 3 main categories: Effort control measures quantified through the relationship between traps fished and realized exploitation rate, gauge size change analyses proposed as technical management measures to reduce exploitation and preserve remaining SSB (with a link towards increasing egg production), and alternate stock recruitment relationships.

Effort Control Analysis

The use of lobster trap reductions are the centerpiece of the existing Area 2 effort control plan. To this point the potential effect of this plan has not been quantified as to its relationship to exploitation rates in the lobster fishery. Based on information available on number of traps fished through time versus estimated exploitation rate through time in SNE, a model was built to define this relationship (exploitation vs effort). The model can then be used to predict exploitation rates across different trap reduction scenarios.

The model created is a curve that was fit using a non-linear Michaelis-Menten (MM) function. The model in our context is defined as:

$$Expl = \frac{a * Traps_i}{b + Traps_i}$$

Where Expl = exploitation rate, a = asymptotic maximum exploitation rate, b = half maximum rate, and $Traps_i$ = traps fished in year i.

This is an attractive model to use for this exercise because the model is parsimonious and its parameters are meaningful by way of the information needed to use the model as a tool for management. The MM curve was fit under two procedures to test the robustness of the parameter estimates. It was fit with both maximum likelihood estimation and Bayesian techniques using R statistical software (R Core Team 2016).

The data used for the analysis was taken directly from the benchmark stock assessment document (ASMFC 2015). The data on traps fished by year can be found in Table 3.2.3.2 of the assessment document. A total of 33 years were used in the analysis. In some of these years, there is no RI data available, so a regression analysis was used to determine the additional traps that would be contributed by RI relative to the other states, and the total traps fished represented in the table was increased by this amount in years with missing RI data. The exploitation rate by year data was taken from Table 6.3.4.1 from the assessment document. For the Bayesian portion of the analysis, the prior information used can be found in Table 1. The Bayesian analysis was also run in R, but also used BUGS software (through the r2openbugs package) for the gibbs sampling. For the Bayesian procedure, two chains were run, one starting from low initial parameter values and one starting high, the gibbs sampler was run for 50,000

iterations with a 5,000 iteration burn in, and also used a thinning interval of 5 to correct for autocorrelation.

The model was fit and successfully converged on a solution for both versions tested. Parameter estimates can be found in Table 2 and model diagnostics can be found in Figures 1 and 2 for both procedures. The results of both models can be found in Figures 3 and 4.

The model results indicate that there is a reasonable relationship between traps fished and the resultant exploitation. We also see that the current number of traps fished is entering the area of accelerated exploitation rate reduction, so additional trap reductions based on the effort control plan will begin to decrease the exploitation rate being experienced by this stock, according to this model. Table 2b shows some examples of model predicted results in exploitation levels versus trap levels.

There are important comments and caveats associated with this exercise. Some questions were raised about the "traps fished" data and its usefulness for this analysis. Alternate trap metrics may be found that might better represent the intent of this analysis. This can be extended if further exploration of this analysis is desired, but there is still some value contained in the existing analysis. If the assumption that not all traps are fished equally by fishermen remains distributed across the fishery in the same way as it has been historically, this analysis can still be a useful predictor of exploitation for a given trap level. Another important assumption for the predictive portion of the analysis is that trap fishing behavior doesn't change through time but remains constant moving forward. There are some external drivers behind these assumptions like the economics of the fishery that may validate these assumptions, but factors like these are very difficult to test given the data collected from the fishery.

Another important way to think about this analysis is that it does not need to be taken as the sole tool to achieve all of the needed reductions in the fishery. Reduction calculations from trap reductions can be used in combination with other measures to achieve needed harvest reductions, thereby spreading the mechanisms to achieve goals in the fishery across multiple techniques.

Table 1 – Prior information used for the Bayesian version of the Michaelis-Menten model. Note: Distribution arguments per BUGS software specification, not R software specification.

Parameter	**Prior**
A	Normal (0.44, 0.01)
B	Normal (97, 0.01)
tau*	Gamma (0.001, 0.001)

* error parameter for the exploitation information. Normal distribution arguments are mean and precision and the gamma distribution arguments are shape and rate.

Table 2 – Mean parameter estimates for the maximum likelihood (MLE) and Bayesian estimation procedures.

Parameter	**MLE**	**Bayesian**
a	0.4404	0.4402
b	97.41	97.27

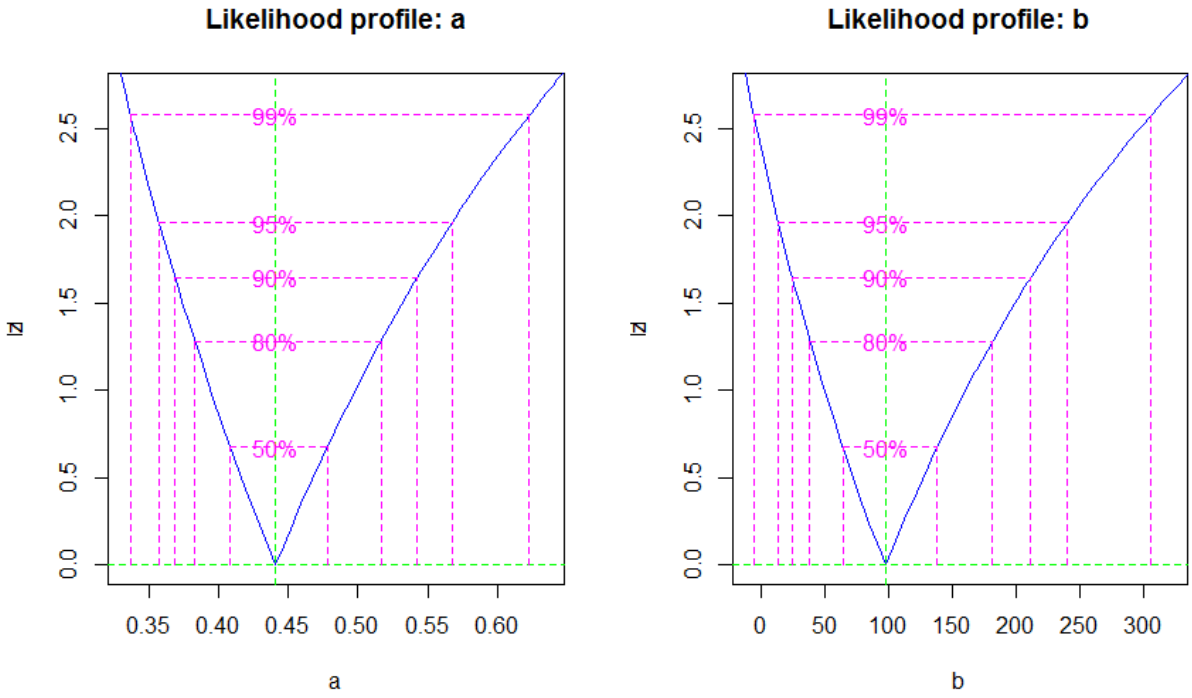

Figure 1 – Model diagnostics by parameter for the MLE MM model showing good convergence on a solution.

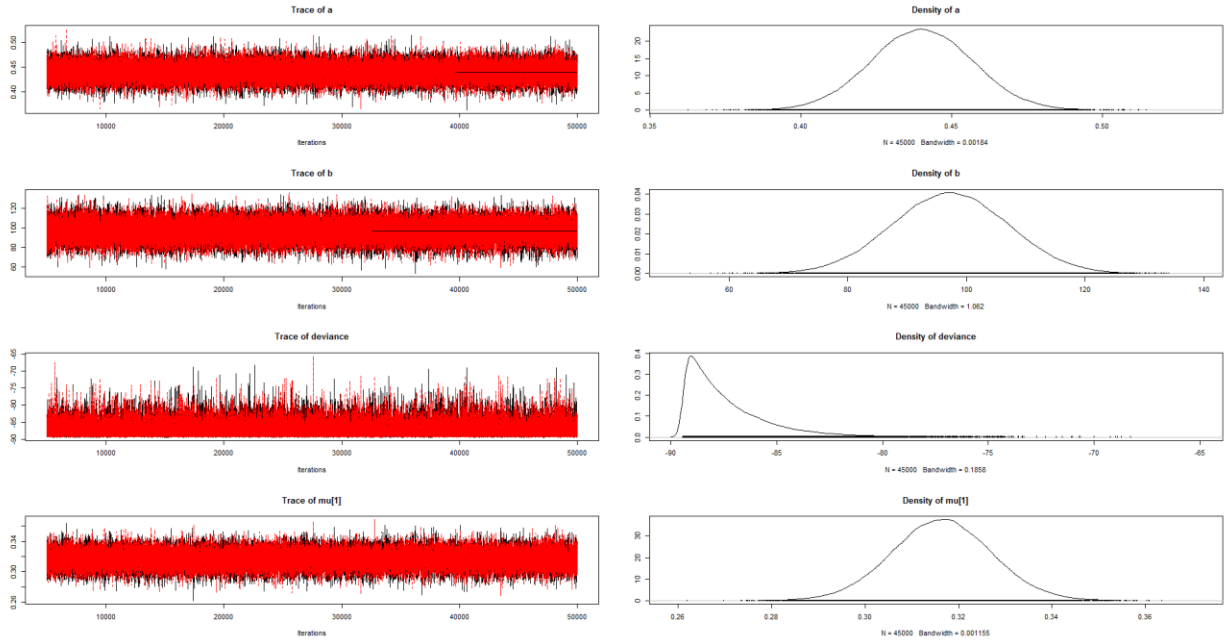

Figure 2a – Sample of model diagnostics by estimated parameter for the Bayesian MM model showing good convergence on a solution. The above are trace and density plots for each estimated parameter. Full diagnostics can be produced upon request, shortened for report purposes. Note: mu[1] = first estimated exploitation rate.

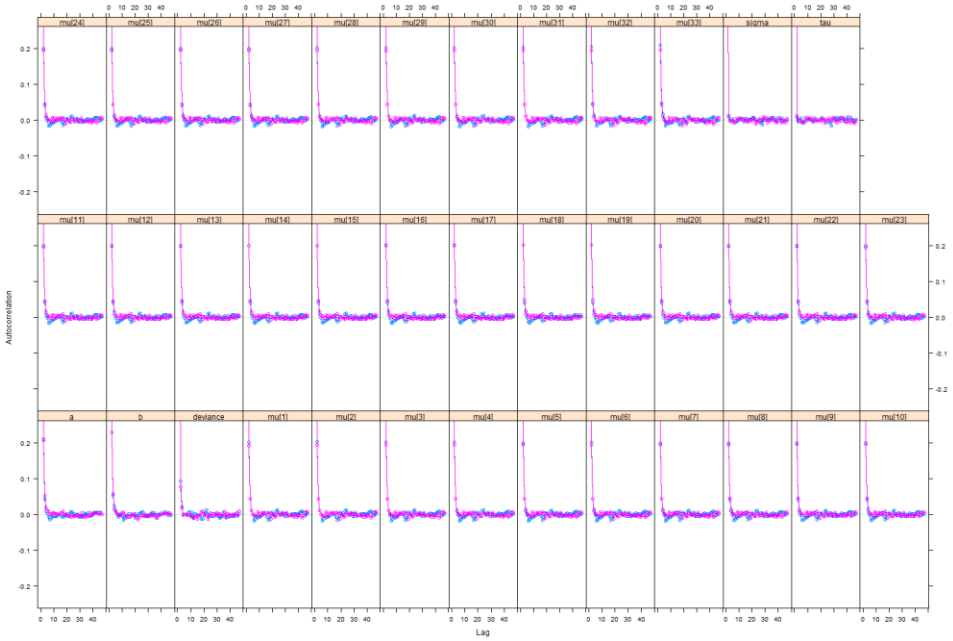

Figure 2b – Sample of model diagnostics by estimated parameter for the Bayesian MM model showing lack of autocorrelation in samples.

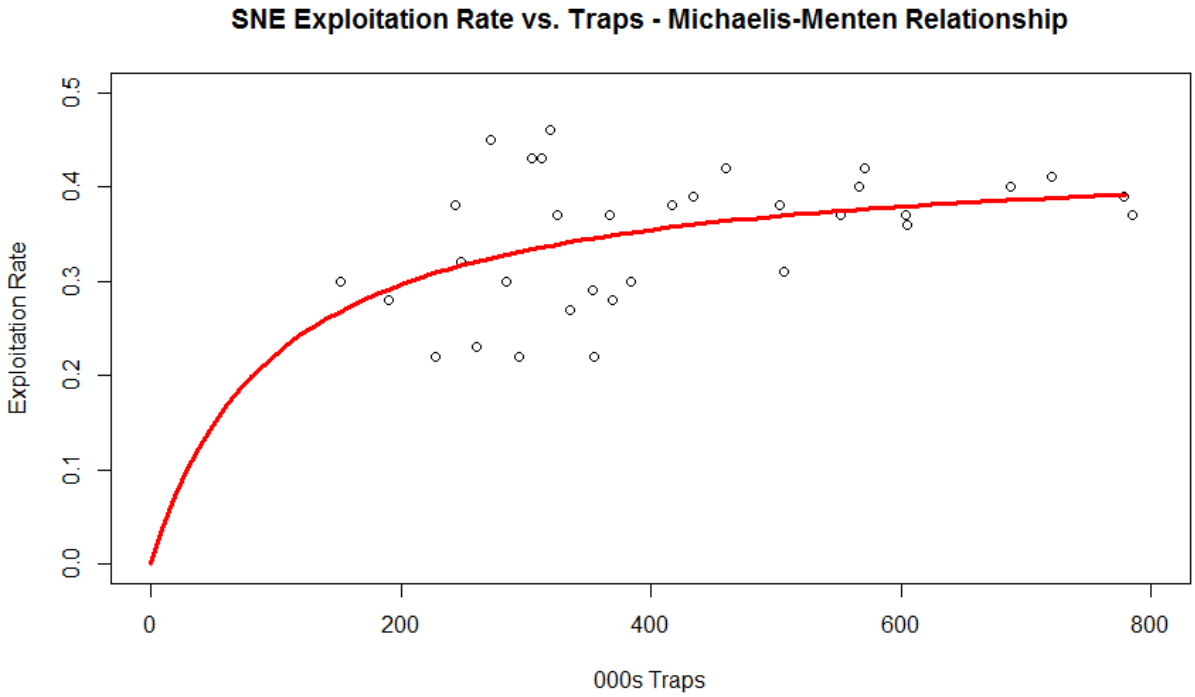

Figure 3 – Model estimated (red line) versus observed values (open circles) for the MLE procedure.

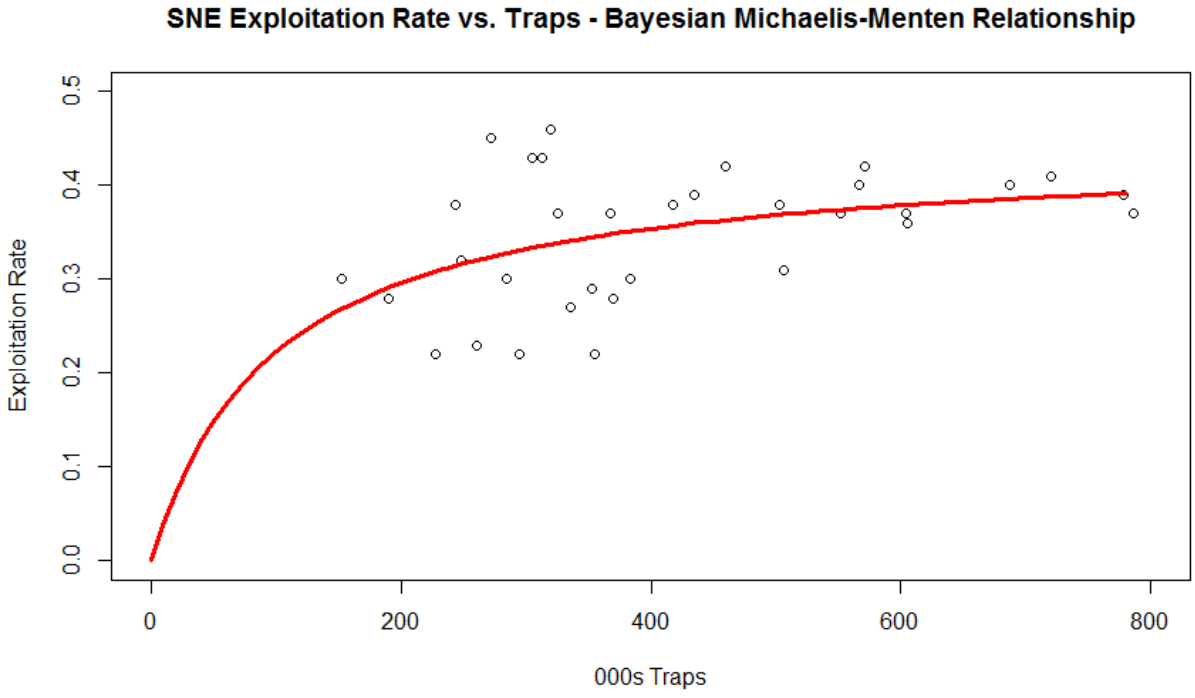

Figure 4 – Model estimated (red line) versus observed values (open circles) for the Bayesian procedure.

Gauge Size Change Analysis

In addition to the existing effort control plan, the analysis was also extended to look at instituting gauge size changes on the fishery. This was accomplished by using available biosample data from sea and port sampling from SNE from the years of 2010 – 2012. The data set used was a combined set of state, federal, and Atlantic Offshore Lobsterman's Association biosample data. This biosample data was stratified into inshore and offshore areas by stat areas (inshore areas = 538, 539, 611, 612, 614; offshore areas = 533, 537, 613, 615, 616, 621, 622, 623, 626, 632). This stratification was done to recognize that these two strata have been under significantly different gauge sizes for a number of years and therefore most likely have differing population size characteristics.

From the biosample data a set of length frequency distributions were generated. These distributions were assumed to represent the population of lobsters that are in the inshore and offshore areas, and that the proportions at length were the same as that existing in the overall population in these areas. Using this data under these assumptions, options for gauge size changes were examined. In other words, if a new gauge size were applied to the population in the inshore and offshore areas, it is assumed that this could be simulated by removing the length frequency distribution below this new minimum size, and the difference between the existing distribution and the new distribution would represent lobsters that were now protected from harvest. An important consideration for this analysis is that it represents a snapshot of a reduction in a single year and does not recognize the dynamics in subsequent years such as protected lobsters growing in to the new minimum gauge size or the compounding of lobsters above a new maximum gauge size. As a result, estimated decreases in catch from an increase in the minimum legal size represent an upper bound on actual landings decreases.

The first set of analyses examined minimum gauge size increases inshore and offshore. The existing minimum gauge sizes were examined and only data greater than the existing minimum gauge size was used in the analysis (inshore > 85.6 mm carapace length; offshore > 88.9 mm carapace length). The results of two 1/32 inch gauge increases from the current minimum gauge size in each area is shown in Table 3. For the inshore area there are significant harvest reductions achieved from these minimum gauge increases. Significant reductions are also achieved for the offshore areas, however the magnitude of the reductions in harvest are lower relative to the inshore areas.

The next set of analyses examined maximum gauge sizes inshore and offshore. As above, the existing minimum gauge sizes were examined and only data greater than the existing minimum gauge size was used in the analysis (inshore > 85.6 mm carapace length; offshore > 88.9 mm carapace length). The distributions in these two areas were examined to determine the maximum size at which lobsters are observed in the biosample data, and different maximum gauge sizes beginning at these observed maximum sizes were examined. The results of four maximum gauge decreases in each area are shown in Table 4. For the inshore area there are harvest reductions achieved from these maximum gauge sizes as you approach 110 mm. Reductions in harvest are also achieved for the offshore areas, and the magnitude of the reductions in harvest are higher relative to the inshore areas at higher maximum gauge sizes.

Regarding the analysis above, minimum size changes can be temporary in nature as the lobsters will eventually grow into the new minimum gauge size range and therefore become susceptible to harvest again, and they also can migrate into areas with differing gauge sizes and so can become susceptible to harvest even within a single season. Despite these temporary aspects, they can produce protections for sub legal lobsters. If these approaches are needed, they should be done cautiously and in a phased approach. Maximum size changes could have lasting protections if set in a meaningful way. If the gauge is set to protect a significant part of the population this portion of the population remains protected and can compound through time as new lobsters grow in to this protected size range. Including these types of protection measures with the existing trap reductions scheduled could have a meaningful impact on harvest reductions and could set the stage for improving the lobster population if favorable recruitment conditions occur. One important note for this analysis is that it was using available biosample data that is dated at this point. The analysis should be updated with more contemporary data before quantifying reductions. Additionally, accounting for the dynamics over time is also an important extension of this analysis to show the short term and long term ramifications of instituting one or more of these gauge size change measures.

As an extension of the gauge size methods, the population that becomes protected can be quantified and scaled up to the full population size based on the stock assessment information (ASMFC 2015). Once the population is scaled up, the number of these lobsters that are female can be determined, and using a length egg relationship (i.e. Estrella and Cadrin 1995), the additional number of eggs that can be produced due to these protections can be calculated. The underlying assumption with this type of analysis would be to maximize the number of eggs produced so that when recruitment conditions were favorable, a large recruitment event could occur which could lead to the rebuilding of the population. Without favorable recruitment conditions however, rebuilding could be stalled or delayed.

A cursory example was produced for the TC illustrating this analysis. The TC identified numerous areas where this analysis could be improved. These were items such as adding in the maturity schedule in to the analysis, accounting for the fact that larger females do not produce eggs in each year, and to better account for the population dynamics of this strategy over time. These perfections to the original analysis will be produced for a subsequent document, and could be distributed to the TC at a later date for review.

Table 3 – Minimum gauge size reductions in harvest calculations for inshore and offshore areas. Note: current gauge sizes in inshore areas is 85.6 mm carapace length, and in offshore areas is 88.9 mm carapace length.

Area	**Increase from current gauge by 0.8 mm (1/32”)**	**Increase from current gauge by 1.6 mm (1/16”)**
Inshore	13% decrease in harvest	25% decrease in harvest
Offshore	8% decrease in harvest	15% decrease in harvest

Table 4 – Maximum gauge size reductions in harvest for inshore and offshore areas. Note: current min gauge sizes in inshore areas is 85.6 mm carapace length, and in offshore areas is 88.9 mm carapace length. Current maximum gauge sizes are 133.4 mm inshore and 171.5 mm offshore.

Maximum gauge size	**Inshore**	**Offshore**
110 mm	1%	7%
125 mm	0.1%	2%
130 mm	0%	1%
140 mm	0%	0.5%

Recruitment Analyses

In recent years, southern New England (SNE) American lobster recruitment has begun to decouple from spawning stock biomass estimates, indicating that external factors are contributing to the decline in recruit abundances. For further details regarding the decoupling, please refer to the January 19, 2016 American Lobster Technical Committee (TC) memorandum. To investigate potential influences on the stock-recruitment relationship for SNE, the TC has incorporated a number of environmental variables into the traditional stock recruitment functions. Given the influence of spatial scale on lobster stock-recruitment relationships (Chang et al. 2015), analyses were performed on both a fine scale using Rhode Island data, and over the larger SNE region with information from the 2015 ASMFC Peer Reviewed Stock Assessment (ASMFC 2015).

A. Fine Scale Analysis

The fine scale analysis examined the relationship between mature (males and females ≥ 73mm) lobster abundance, representing spawning stock biomass (SSB) and settler (young of the year) information, used to represent recruitment. SSB data was used from the Rhode Island Department of Environmental Management (RI DEM) Fish and Wildlife Spring Trawl survey. Settler density information was obtained from the American Lobster Settlement Index (ALSI) sampling program. A log-transformed Ricker model was used to describe the relationship between SSB and settlers, with parameters estimated using linear least squares. The model was tested with both the original function and including the North Atlantic Oscillation (NAO) Index. The NAO represents the pressure difference between the Icelandic Low and the Azores High pressure systems. The NAO has been found to correlate with changes in the oceanographic environment and marine species prevalence in the North Atlantic (Drinkwater et al. 2003), and specifically lobster recruitment (Ehrhardt and Fitchett, 2010). We incorporated the NAO to test the hypothesis of the prevailing phase of the NAO influencing the strength of the westerly winds of the northeast U.S. continental shelf (Oviatt et al. 2015), and ultimately impacting larval transport and survival to the settler

stage (Katz et al. 1994). The original and environmentally explicit Ricker functions, respectively, were:

$$\ln(\frac{R_t}{S_t}) = \ln(\alpha) - \beta S_t$$

$$\ln(\frac{R_t}{S_t}) = \ln(\alpha) - \beta S_t + \gamma C$$

where S represents SSB, R represents settler densities, C indicates the NAO index, and α, β, and γ are estimated parameters. The α parameter represents recruitment productivity, β indicates the degree of density-dependent or compensatory response, and γ is the coefficient associated with the environmental parameter. In the fine scale analysis, including the NAO index improved model fitness (R^2=0.78), compared to the traditional function without an environmental component (R^2=0.47). In the environmentally-explicit Ricker model, positive NAO years (stronger westerly winds) resulted in increased settler recruitment at given SSB levels, whereas during the negative phase years (weaker westerlies), recruitment levels decreased.

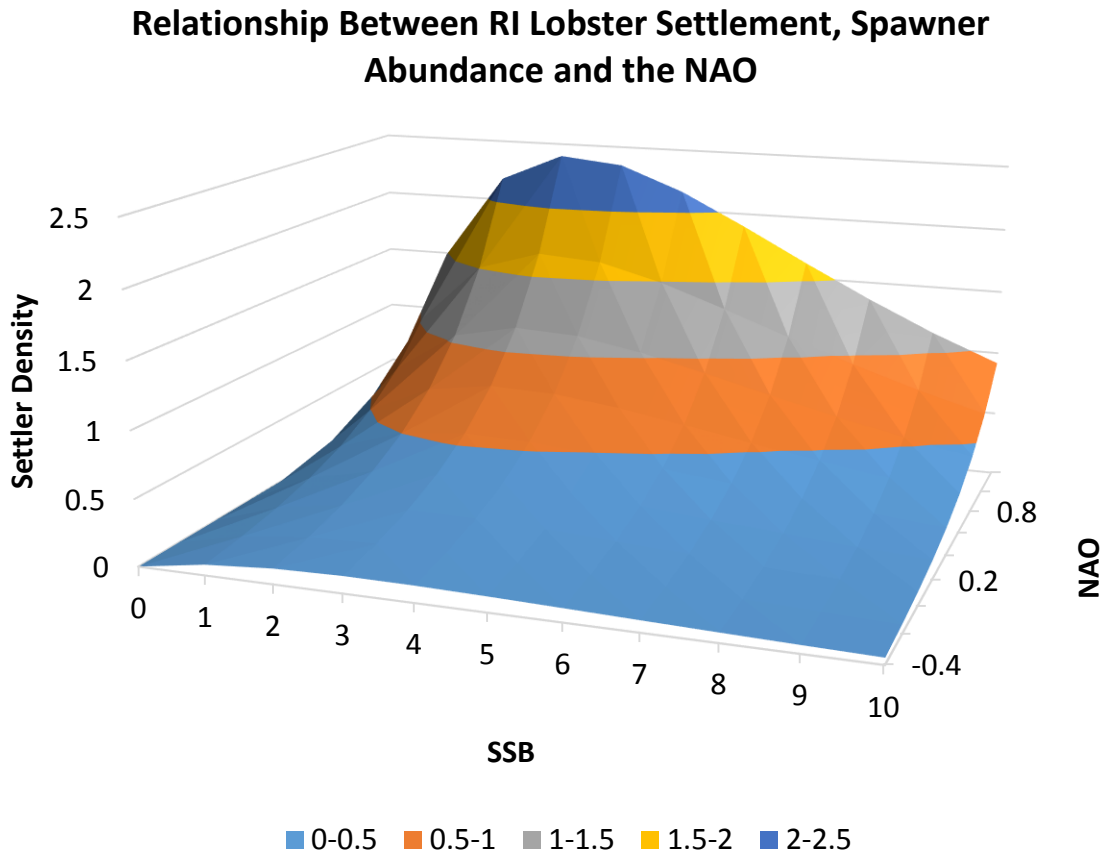

Figure 5 - Fine Scale (RI) stock-recruitment relationship with the NAO incorporated. Coloration indicates 0.5 intervals of settler density.

B. Fine Scale Analysis

Stock-recruitment functions with environmental components were also constructed for the overall SNE region to provide a more holistic view of the environment's influence on SNE recruitment. Recruitment and SSB data were obtained from the 2015 ASMFC Stock Assessment (ASMFC 2015, Table 6.3.4.1). SSB was represented as the predicted female biomass (mt) from the assessment model, and the sum of male and female recruit abundance represented total recruitment. Prior to environmental analyses, stock-recruitment functions were tested to identify the influence of lagged recruitment. Recruitment lags were tested from 0 to 4 years using both the traditional Ricker and Beverton-Holt models:

$$\text{Ricker: } R = \alpha S e^{-\beta S}$$

$$\text{Beverton- Holt: } R = \frac{\alpha S}{1+\beta S}$$

where parameters are as indicated in the fine scale analysis. For the broad scale analysis, models were fit with maximum likelihood estimation assuming a Gamma-distributed error structure, R~Gamma (shape, mean/shape). Using the relative scoring system Akaike information criterion (AIC), varying the lag in recruitment changed model fitness, with a lag of 4 years having the best fit (Figure 6). Additionally, within a given lag test, the Ricker and Beverton-Holt models fit equally well.

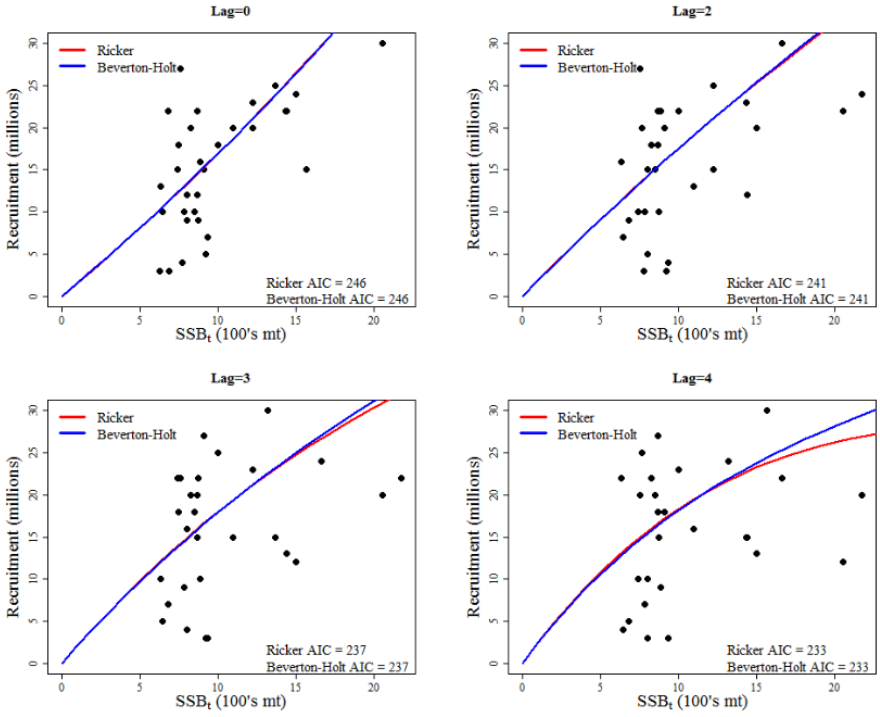

Figure 6 - Ricker and Beverton-Holt models tested on SNE SSB and recruitment data with varying recruitment lags (0-4 years).

While a 4-year lag on recruitment was the best fitting for both Ricker and Beverton Holt models, a 3-year recruitment lag was used for the environmental component of this work to

maintain consistency with work performed previously by Wahle et al. (2009). The environmental Ricker and Beverton-Holt models were:

$$R_{t+3} = \alpha S_t e^{-\beta S_t + \gamma E_t}$$
$$R_{t+3} = \frac{\alpha S_t e^{-\gamma E_t}}{1 + \beta S_t}$$

with parameters as defined in previous sections. Temperature was tested to see if warm/cool water provided unfavorable/favorable SSB conditions and successful recruitment. Sea temperature data were used from the University of Rhode Island Graduate School of Oceanography Fish Trawl Survey. Surface and bottom mean temperatures were derived for both August and September to represent temperature during the larval stage. Winter NAO indices were obtained from NCAR Hurrell calculations to test the same hypothesis as presented in the fine scale analysis. Winter months were used because these months often represent the year's prevailing phase (Marshall et al. 2001). The Atlantic Multidecadal Oscillation (AMO) index was tested using similar theory as with the GSO Trawl temperature data: to see if such temperature influences are linked to the North Atlantic Ocean's temperature signal (Nye et al. 2014). Percent of lobster catch with shell disease was used to see if diseased adults correlated with poor recruitment. Shell disease information was incorporated from the observations during Rhode Island Sea and Port Sampling. When testing these covariates, there was little difference between the Ricker and Beverton-Holt models; however, shell disease prevalence improved model fitness the most (Table 5). Incorporating shell disease into S-R function revealed that increased prevalence decreased recruitment per SSB (Figure 7).

Table 5 - AIC values for SNE S-R models using different environmental covariates. Lower values indicate better fitting models.

Environmental Covariate	Ricker	Beverton-Holt
Surface Temperature - August	237.5	238.1
Surface Temperature - September	238.3	238.4
Bottom Temperature - August	236.7	236.9
Bottom Temperature - September	238.9	238.9
Winter (DJF) NAO	238.0	238.1
AMO	224.1	224.3
Shell Disease Prevalence	**217.1**	**217.4**

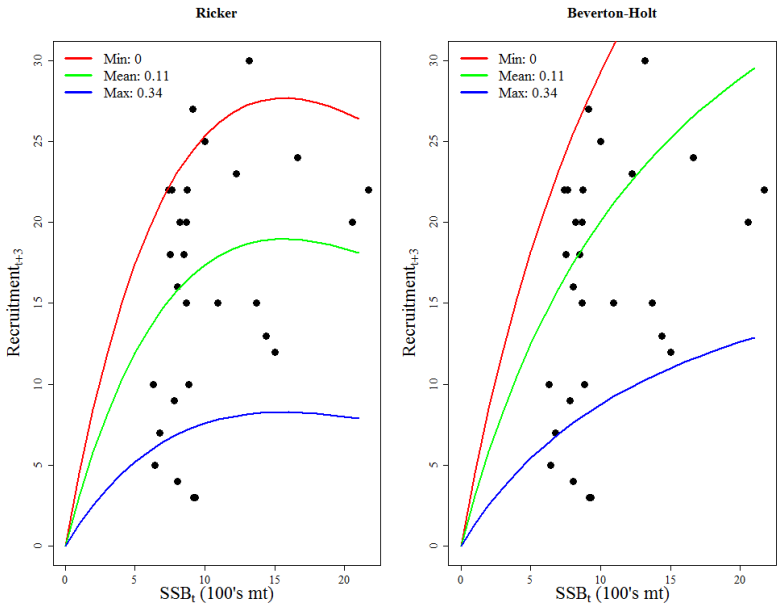

Figure 7 - Spawning stock biomass (SSB) and lagged Recruitment fitted with Ricker and Beverton-Holt functions incorporating shell disease. The projected fits use the minimum (red), mean (green), and maximum (blue) annual shell disease prevalence values over the time series.

C. Summary and Future Work

Including environmental variables appears to enhance model fitness and prediction capabilities for recruitment. However, the environmental covariates must be further investigated to avoid autocorrelation between ecologically unrelated time series that lack a strong hypothesis or underlying mechanism linking the two. Thus, the hypotheses for environmental influences on the stock recruitment relationship will be further developed *a priori* to analyses. Additionally, the correlations and model residuals between SSB and recruitment and the covariates, as well as the lobster and environmental time series data themselves (Table 6, Figure 8) will be deeply examined to avoid identifying spurious ecological relations.

Table 6 - Correlation coefficients (r), between the environment covariates and both SSB and lagged recruitment. Stars (*) indicate significant correlations (p<0.05).

$Covariate_t$	SSB_t	$Recruitment_{t+3}$
Surface Temperature - August	-0.01	-0.18
Surface Temperature - September	-0.02	-0.18
Bottom Temperature - August	0.28	0.44
Bottom Temperature - September	0.03	-0.06
Winter (DJF) NAO	0.18	0.35
AMO	-0.16	-0.62*
Shell Disease Prevalence	-0.47*	-0.74*

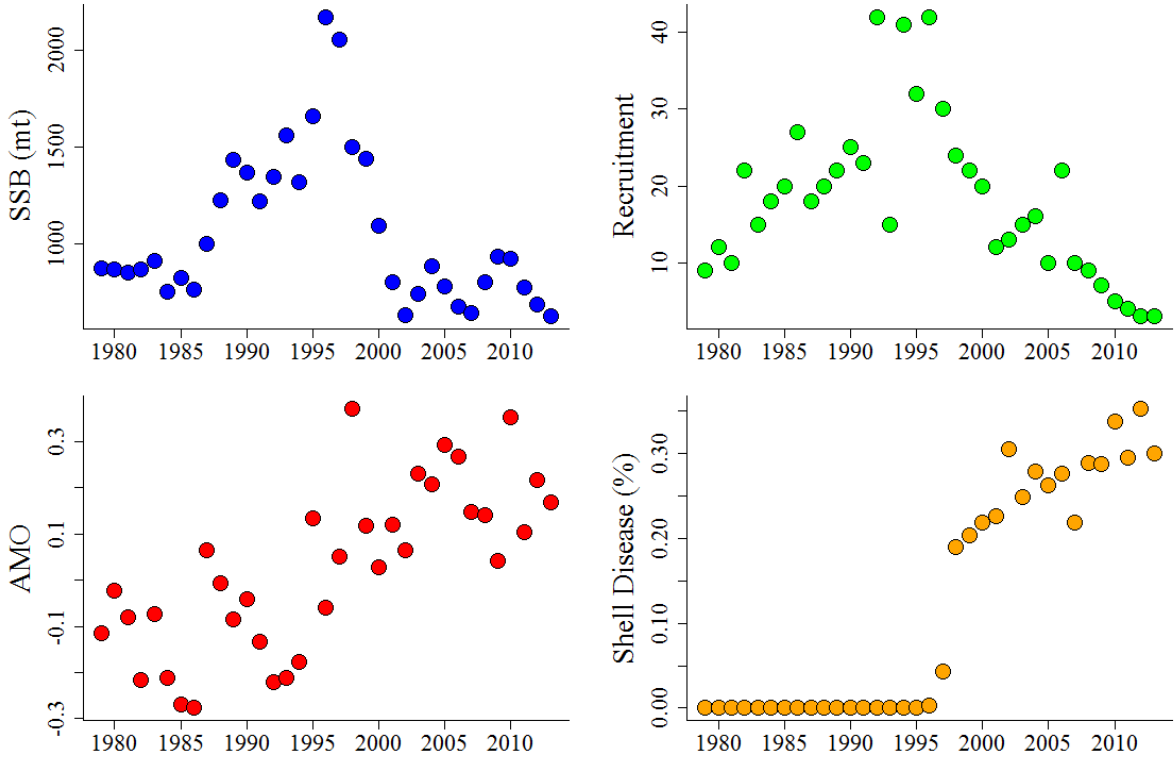

Figure 8 - Time series of SSB and recruitment (top left and right, respectively) compared to the AMO Index (bottom left) and Shell Disease Prevalence (bottom right).

Some of the covariates chosen must be further investigated to properly identify the mechanistic link. For example, while incorporating the NAO improved the model fitness and suggests large scale climate forces influencing lobster recruitment processes, additional tests need to be conducted to verify the NAO-lobster settlement hypothesis by examining wind speeds and directions (either from buoy data or modeled data sources) during the

months of larval presence. Similarly, the stock-recruitment models will be tested with other data that may better represent the environments influence on recruitment (e.g., days of the year with temperature exceeding lethal limits).

The scale of the analysis and life stages chosen to represent recruitment have significant influences on model fitness and outcomes. Models regarding the SNE region as a whole will be further developed in hopes of providing tools for management at the stock level and identifying broad scale oceanographic impacts on stock-recruitment dynamics. The stock-recruitment models themselves will be evaluated to determine if other components, such as a non-zero origin intercept, should be incorporated. Such model adjustments would allow for testing impacts of population depensation and possible external sources of recruitment from adjacent areas, such as Georges Bank (e.g., positive y-intercept).

Conclusion

There appears to be a reasonable relationship between traps fished and exploitation rate given the analysis done for this report. Since there is already a trap reduction schedule, this relationship could be used along with the projected trap reductions to quantify the effect of trap reductions for use in harvest reduction strategies. It also appears that minimum and maximum size changes can produce reductions in harvest which could lead to increased egg production. These approaches can be combined to achieve a robust reduction in harvest in an effort to protect the lobster population, and set up the conditions conducive for population rebuilding. It will be important to account for interactions of combining multiple management measures together. This technique is done routinely in ASMFC strategies used for finfish, and the interaction of multiple approaches can be accounted for by adding a simple interaction term when combining approaches. An example of this would be to combine a maximum gauge size with trap reductions. Here we state that:
Maximum size = red1; Trap reduction = red2; and these two reductions can be combined through the equation:
Full reduction = (red1 + red2)-(red1*red2)

As is evident from this analysis and as seen in the Gulf of Maine, the spatial scale of recruitment analyses impacts the results of relationships between spawners and recruits. This analysis shows that environmental or additional covariates can improve spawner – recruit relationships, but these covariates must be selected *a priori* and should be chosen so that a plausible mechanistic link can be identified as to why this covariate influences recruitment. Using this strategy will prevent the perception of data mining and the development of spurious relationships. The spawner – recruit work performed in this report does not impact harvest reductions per se, but can be useful for alternate projection information or for direct estimation of biological reference points consistent with the assessment model and reflective of current stock productivity.

These approaches have been reviewed by the ASMFC Lobster Technical Committee and some improvements to, and alternative data sources for, these analyses have been identified. If warranted and desired by the ASMFC Lobster Board (Board), the RIDEM commits to continuing to work on these approaches with the Lobster TC and perfect where possible as the Board looks to construct a management strategy for SNE lobsters. Some work to strengthen the egg production portions of the work has already begun, as well as methods to incorporate dynamics

into minimum and maximum gauge size changes. This work will continue, and additional elements can be added to help the Board moving forward.

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MEMORANDUM

TO: American Lobster Management Board

FROM: Megan Ware, FMP Coordinator

DATE: April 25, 2016

SUBJECT: Public Comment on Draft Addendum I to the Jonah Crab FMP

The following pages represent a summary of all public comment received by ASMFC by April 18, 2016 at 5:00 p.m. (closing deadline) on Draft Addendum I to the Jonah Crab Fishery Management Plan.

A total of 7 written comments were received during the public comment period. 4 of those comments were from the following groups and organization: Atlantic Offshore Lobstermen's Association, Massachusetts Lobstermen's Association, National Marine Fisheries Service, and New England Fishery Management Council. Individual written comments were submitted by Mid-Atlantic commercial fishermen. A summary of the written comment is provided (page 2) and individual comment letters follow this memo. In the heading of the summary tables, the following abbreviations are used:

- "I" stands for individuals in favor
- "G" stands for groups in favor

Seven public hearings were held in the following states: Maine, Massachusetts (New Bedford and Gloucester), Rhode Island, New York (East Setauket and Montauk), and Maryland. In total, approximately 55 individuals attended the public hearings. A brief summary of the comments received at the public hearings is provided (page 3), followed by detailed summaries for each hearing (pages 4-10). Summaries of the public hearings were also included in the Briefing materials. The only change to the public hearing summary has been a clarification to the NEFMC comment on Issue 2.

Written Comment Summary

ISSUE 1: INCIDENTAL BYCATCH BY NON-TRAP GEAR (*Section 3.0)*

Option	Description	I	G	Total
A	Status Quo	0	2	2
B	Incidental Bycatch Limit of 1,000 Crab per Trip	0	3	3
C	Remove the Incidental Bycatch Limit for Non-Trap Gear	0	1	1

Four groups and zero individuals commented on Issue 1. One group preferred Options A and B, reasoning that it does not support an unlimited amount of incidental Jonah crab catch. Another group chose Option A, concerned about a potential increase in Jonah crab exploitation as a "targeted bycatch." A third group commented that concerns for the potential proliferation of fishing effort by non-trap permit holders are unsupported in Draft Addendum 1, and chose to support Options B and C. Lastly, a group noted that they preferred Option B with the addition of a 200 crab daily limit. They reasoned that this modification, coupled with Issue 2 Option C, would allow for a consistent bycatch limit across gear types to reduce enforcement burden and promote equitability.

ISSUE 2: INCIDENTAL BYCATCH LIMIT FOR NON-LOBSTER TRAPS *(Section 3.0)*

Option	Description	I	G	Total
A	Status Quo	2	0	2
B	Incidental Bycatch Limit of 200 Crab per Day, 500 Crab per Trip	0	2	2
C	Incidental Bycatch Limit of 200 Crab per Day, 1,000 Crab per Trip	0	2	2
D	Incidental Bycatch Limit of 1,000 Crab per Trip	0	1	1

Three groups and two individuals commented on Issue 2. One group preferred Options B, C, and D, unsupportive of unlimited incidental Jonah crab catch. Concerned over a potential increase in exploitation, another group chose Option B. The third group chose Option C coupled with a modified Issue 1 Option B, supporting a consistent bycatch limit regulation across gear types.

Both individuals commented in favor of Option A, supporting no incidental bycatch limit for non-lobster trap gear.

GENERAL COMMENTS:

- A claw fishery should be allowed, especially in the southern states.
- A claw fishery may jeopardize the health of the resource, confuse the mortality estimate, and make the minimum size limit difficult to enforce.
- The existing catch limit for non-trap permit holders may conflict with the Atlantic Coastal Fisheries Cooperative Management Act, placing unnecessary regulatory and enforcement burdens on some permit holders (Magnuson-Stevens standards 6 and 7).
- There should be no differential treatment of lobster trap and non-trap permit holders in the Jonah crab fishery.
- The Jonah Crab FMP should be paused until a coastwide stock assessment has been completed.
- Delaware fishermen do not believe that managing Jonah crab with lobster is in their best interest, due to the small lobster fishery in Delaware denying its fishermen full utilization of the Jonah crab resource.
- Jonah crab and lobster harvest are highly correlated.
- Full time permits should only be issued to existing lobstermen.
- This amendment is eliminating small fishermen so the fishery can be controlled by larger corporations.

Public Hearing Summary

Issue 1: Incidental Bycatch for Non-Trap Gear

Comments were split between maintaining the current bycatch allowance of 200 crab per day, 500 crab per trip (Option A) and eliminating the bycatch limit for non-trap gear (Option C). Individuals from Rhode Island and Maryland supported eliminating the bycatch limit for non-trap gear highlighting that landings from these gears represent less than 1% of total harvest in the fishery. Several individuals commented there is no need to limit a portion of the fishery that makes up such a small percentage of total harvest when landings by the majority of the fishery (lobster permit holders) are not limited. The majority of New York fishermen supported the current bycatch limit, commenting that this is an adequate level of bycatch and would prevent non-directed fishermen from targeting Jonah crab. One NY fishermen supported the 1,000 crab limit per trip (Option B), stating it is a reasonable allowance for a fishermen to make a living. Comments at the Massachusetts public hearings were split between all three options, with fishermen giving similar justifications as stated above.

Issue 2: Incidental Bycatch Limit for Non-Lobster Traps

Comments were split between maintaining no bycatch limit for non-lobster traps (Option A) and establishing a bycatch allowance of 200 crab per day, 500 crab per trip (Option B). Individuals from Rhode Island and Maryland supported no bycatch limit for non-lobster trap gear, citing the small portion of landings from these gears. Maryland fishermen also did not feel that the stock was in decline and in need of restrictive management measures. New York fishermen supported the establishment of a 200 crab per day, 500 crab per trip bycatch limit as they felt this was an adequate level of bycatch which would prevent increased effort in the fishery. Comments from Massachusetts were again split between the various options, with similar justifications given as described above. A common theme among all public hearings was the fact that, whatever the bycatch limit, it should be consistent among non-trap gear and non-lobster trap gear. Moreover, people were not in favor of different bycatch limits for non-trap gear and non-lobster trap gear.

Jonah Crab Draft Addendum I Public Hearing

Portland, ME
March 17, 2016
6 Participants

ASMFC: Megan Ware (staff), Terry Stockwell (ME Commissioner)

Attendees: Peter Roberts (lobsterman), Maria Jacob (NEFMC), Kathleen Reardon (ME DMR), Katherine Thompson (ME DMR)

Issue 1: Non-Trap Bycatch Limit

Participants did not have any comments on this issue.

Issue 2: Non-Lobster Trap Bycatch Limit

Participants did not have any comments on this issue.

Other Comments:

One participant noted the confusion between Jonah crab and rock crab in Maine as the local name for *Cancer borealis* is rock crab. He highlighted the need for education in Maine so fishermen know which species is being impacted.

Jonah Crab Draft Addendum I Public Hearing

Gloucester, MA
March 15, 2016; 6:00 pm
6 Participants

ASMFC: Megan Ware (staff)

Attendees: Arthur Sawyer (MLA), Tom Nies (NEFMC), Alli Murphy (NOAA), Tracy Pugh (MA DMF), Michelle Bachman (NEFMC)

Issue 1: Non-Trap Bycatch Limit

- One participant was in favor of maintaining the current bycatch limit of 200 crab per day, 500 crab per trip (Option A). He stated that he was not in favor of an expansion of the Jonah crab fishery since the large increase in the number of boats landing Jonah crab is likely not sustainable. He noted that down the road, a stock assessment may put limits on the fishery so there should be no increase in the bycatch limit at the present time.
- NEFMC supports bycatch options that allow all current catch rates. NEFMC does not support the status quo as it constrains trips by current fishermen. NEFMC does not believe that fishing by non-trap permit holders will jeopardize the Jonah crab stock. Likewise, NEFMC does not believe that a large increase in fishing effort is likely given significant gear changes are required to catch crab (ie: bait and a holding tank). The Council is concerned that Draft Addendum I does not meet the requirements of ACFCMA, specifically Standards 6 and 7, as they believe management actions are not needed in the non-trap fishery since it is such a small portion of Jonah crab landings and effort is not increasing.

Issue 2: Non-Lobster Trap Bycatch Limit

- One participant was in favor of a bycatch limit of 200 crab per day, 500 crab per trip (Option B). He was not in favor of options that allowed expansion in the Jonah crab fishery.
- NEFMC does not support the differential treatment of non-trap and trap fisheries.

Other Comments:

- NEFMC is concerned that the Jonah crab claw fishery will jeopardize the resource. The Council supports landing Jonah crabs whole and is concerned that the claw fishery compromises the 4 ¾ minimum size.

Jonah Crab Draft Addendum I Public Hearing

New Bedford, MA
March 14, 2015
22 Participants

ASMFC: Megan Ware (Staff), Dan McKiernan (Commissioner), Bill Adler (Commissioner), Bob Glenn (TC Chair), David Borden (Lobster Board Chair)

Attendees: Grant Moore (AOLA), Alan Dean (Claws RNC), Ali Murphy (NMFS), Pete Burns (NMFS), Jan Horecky (NBCC), David Soares (NBCC), Michelle Bachman (NEFMC), Marc Palomdo (fisherman), Quinn RW (AOLA), Peter Wakam (Palomdo Fisher Corp), Ron Swolomo (FSF), Craig Weedon (MD DNR), Bill Dub (NOAA), Theresa Burnham (MA DMF), Noelle Olsen (UMES), Derek Perry (MA DMF), Captain Pat Moran (MA LEC)

Issue 1: Non-Trap Bycatch Limit

- Two participants were in favor of eliminating the Jonah crab bycatch limit for non-trap gear (Option C). Participants cited the low Jonah crab catch by non-trap gear (0.07% of total pounds landed in the fishery) as evidence that there is no need for a bycatch limit. They felt a limit would just add burden to enforcement officers on the docks. One participant noted that while scallop dredges do not land Jonah crab, their current catch rates are higher than the 200/500 limit. He is in favor of fishermen being able to land as many Jonah crab as they can.
- Two fishermen were in favor of a 1000 crab bycatch limit (Option B).
- One participant expressed concern that without a bycatch limit, there is the possibility for increased directed effort.

Issue 2: Non-Lobster Trap Bycatch Limit

- Two participants were in favor of a bycatch limit of 200 crab per day, 500 crab per trip (Option B).
- One participant was in favor on maintaining no bycatch limit for non-lobster trap gear (Option A). He cited the low catch levels as evidence that there is currently no need for a bycatch limit. He also stated that in order to make a profit on Jonah crab you need volume and these small traps do not have that capacity.

Other Comments:

- One participant asked for clarification in the document to highlight the addendum applies to bycatch landings and not a catch or possession limit.

Jonah Crab Draft Addendum I Public Hearing

Rhode Island
March 16, 2016; 6:00 pm
6 Participants

ASMFC: Megan Ware (staff), David Borden (Lobster Board Chair)

Attendees: John Moran (Athearn Marine), Jerry C. (RIFA), Scott Olszewski (RI DEM), Conor McManus (RI DEM)

Issue 1: Non-Trap Bycatch Limit

- One participant was in favor of eliminating the bycatch limit for non-trap gear (Option C) since landing are such a small portion of the fishery. He stated that until landings by non-trap gear exceed 10% of total landings in the fishery, there should be no limits on their harvest or on the number of participants. He does not think it is appropriate for 99% of people who land Jonah crabs (ie: those with lobster permits) to have no limit imposed on them and for the Board to state that they are trying to cap effort in the fishery. He noted that the number of lobster trap tags available and the amount fished are considerably different and this could allow for expansion in the Jonah crab fishery.

Issue 2: Non-Lobster Trap Bycatch Limit

- One participant was in favor of maintaining no bycatch limit for non-lobster trap gear (Option A). He stated that until landings by non-lobster trap gear exceed 10% of total landings in the fishery, there should be no limits on their harvest or on the number of participants.

Jonah Crab Draft Addendum I Public Hearing Summary

East Setauket, NY
April 6, 2016 – 6:30 pm
4 Attendees

ASMFC: James Gilmore (ASMFC Commissioner), Emerson Hasbrook (ASMFC Commissioner), Kim McKown (ASMFC Lobster TC)
Attendees: John Aldridge

Issue 1: Bycatch by non-trap gear

- Mr. Aldridge would support any of the options.

Issue 2: Bycatch by non-lobster trap gear

- Mr. Aldridge would support any of the options.

Other Issues:

- Mr. Aldridge indicated that prohibition of landing and sale of claws would be very detrimental to his business. It's an important fishery in the summer time when the whole crabs don't survive without refrigeration. He could deal with a claw size limit. He recommended that we review how the State of Florida implements the claw size limit on the stone crab fishery. He mentioned that FL has a gauge to measure the claws, and suggested we look into it. He would like to be able to harvest both claws from the crab, which is allowed in the FL stone crab fishery.
- Mr. Aldridge fishes for Jonah crab with crab pots, which have modified heads that limit the number of lobsters caught and are also not as tall as lobster pots. It's critical for his business that these pots be included in any rules for the fishery.

Jonah Crab Draft Addendum I Public Hearing Summary

Montauk, NY
April 14, 2016 – 5:00 pm
8 Attendees

ASMFC: Rachel Sysak (ASMFC Jonah Crab PDT), Kim McKown (ASMFC Lobster TC)

Attendees: Chuck Mallinson, Vincent Dam, Thomas Eckardt, Brian Rade, James Auteri, Anthony Sosenski

Issue 1: Bycatch by non-trap gear

- The majority of the fishermen supported the status quo (200 crab per day/ 500 crab per trip). They felt this was an adequate amount for bycatch but would prevent non-directed fishermen from targeting Jonah crab. If the harvest and sale of claws are permitted, they would support a 400 claw per day or 1,000 per trip bycatch limit (2 claws per crab).
- One fisherman supported 1,000 crab per day. He felt this was a reasonable amount of bycatch for a fisherman to make a living.

Issue 2: Bycatch by non-lobster trap gear

- All the fishermen supported Option B - 200 crab per day/ 500 crab per trip. In general they felt this was adequate amount for bycatch but would prevent non-directed fishermen from targeting Jonah crab.

Other Issues:

- All the fishermen rely on the harvest and sale of claws. Both directed pot fishermen and gillnetters have difficulty keeping whole crabs alive in the summer, and rely on the harvest of claws. In addition, many crabs have recently molted in the summer and are not readily salable, but the claws are.
- Gillnetters are unable to harvest whole crabs. Jonah crab clamp down on gill nets, making it difficult to impossible to remove them without removing their claws. Gillnet fishermen remove the claws from the crabs and throw the live crabs back in the water. The gillnetters feel there should be a 400 claw per day/1,000 claw per trip bycatch limit.
- Most of the Jonah crab fishery takes place in Federal waters. There was some concern/questions about how the Federal and State permitting would be worked out.
- There was a lot of discussion about the number of black sea bass the fishermen have been seeing. They feel they should be able to get a larger bycatch of black sea bass to make up for the fact the lobster stock has declined.

Jonah Crab Draft Addendum I Public Hearing

Ocean City, MD
April 4, 2016; 2:00 pm
9 Participants

ASMFC: Megan Ware (staff)

Attendees: JC Banks (commercial-fishing.org), Craig Weedon (MDNR), Stephen Yunns (fishermen), Mark Hill (fishermen), Noelle Olsen (UMES), Brad Steven (UMES), Jimmy Holm (fishermen), Steve Ellis (NOAA)

Issue 1: Non-Trap Bycatch Limit

- Three participants were in favor of eliminating the Jonah crab bycatch limit for non-trap gear (Option C). The participants stated that there is no need to limit a portion of the fishery that makes up less than 1% of total landings when landings by the majority of the fishery (lobster permit holders) are not limited.

Issue 2: Non-Lobster Trap Bycatch Limit

- Three participants were in favor of maintaining no bycatch limit for non-lobster trap gear (Option A). They again felt that there was no need to limit a portion of the fishery that only makes up 1% of total landings. They also did not feel that there was any concern about the stock status which would precipitate the need to limit bycatch landings. If the stock was in trouble, the participants felt measures to limit catch by lobster permit holders would be more effective.
- One participant felt the term 'bycatch' is not appropriate to this category as he targets Jonah crab with conch pots. If his catch were limited by this addendum, he would be required to obtain a lobster permit to continue harvesting Jonah crabs at his current rates. The current price of a MD lobster permit is $25,000 which is cost prohibitive.

Other Comments

- Participants stated they are concerned that Jonah crab effort from New England will migrate down to Maryland and suggested the Jonah crab fishery adopt the Management Areas in the lobster fishery. They also felt that since Maryland fishermen land such a small portion of Jonah crab catch, the regulations should be focused on states such as Massachusetts and Rhode Island, who are the primary contributors to harvest.
- Attendees noted the continued confusion between rock crabs and Jonah crabs and the need for clarification between the two species.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 31 2016

Mr. Robert Beal
Atlantic States Marine Fisheries Commission
1050 N. Highland St, Suite A-N
Arlington, VA 22201

Dear Bob:

Thank you for accepting comment on draft Addendum I to the Interstate Fishery Management Plan for Jonah Crab. The clear and concise addendum contains options for non-trap gear and non-lobster trap gear ranging from a small daily/trip limit up to an unlimited amount of incidental catch.

I do not support allowing an unlimited amount of incidental Jonah crab catch. I contend that specifying incidental catch limits at appropriate levels will ensure that incidental fisheries can continue their current practices while providing some protection for the stock. The draft Addendum contains several alternatives for non-trap and non-lobster trap gear that are consistent with the goals and objectives of the Jonah Crab Plan and that are supported by the data in the document. I look forward to the discussion of this issue at the May Commission Meeting and am interested in comments from our state partners and the public on this issue.

Thank you for the opportunity to comment on draft Addendum I. If you have any questions, please contact Allison Murphy at (978) 281-9122 or allison.murphy@noaa.gov.

Sincerely,

John K. Bullard
Regional Administrator

cc: David Borden, ASMFC Lobster Board Chair
Megan Ware, ASMFC Fishery Management Plan Coordinator

ATLANTIC OFFSHORE LOBSTERMEN'S ASSOCIATION

Grant Moore, President
exec@offshorelobster.org

David Borden, Executive Director
dborden@offshorelobster.org

March 30, 2016

Megan Ware
Atlantic States Marine Fisheries Commission
1050 N. Highland St. Suite 200 A-N
Arlington, VA 22201

Dear Megan,

I write as representative of the Atlantic Offshore Lobstermen's Association (AOLA) to provide comments toward "Draft Addendum I to the Jonah Crab Fishery Management Plan for Public Comment."

The Association supports an incidental bycatch limit of 200 crab per day, 1000 crab per multiday trip for both mobile (non-trap) and non-lobster trap gear categories. This support is in line with Draft Addendum I Issue 1, Option B with the addition of 200 count daily limit and Issue 2, Option C as written.

The Association feels this limit will effectively cap landings of Jonah crab while ensuring that current participants across all gear type can retain crabs at or above their historic incidental landings amounts, as evidenced by the data provide by NOAA NMFS GARFO and NEFMC. Further, having a bycatch limit that is consistent across gear types will simplify and reduce enforcement burden and promote equitability.

Thank you for the opportunity to comment.

Sincerely,

David Borden
Executive Director

Massachusetts Lobstermen's Association, Inc.
8 Otis Place ~ Scituate, MA 02066
Bus. (781) 545-6984 Fax. (781) 545-7837

April 4, 2016

Megan Ware
Atlantic States Marine Fisheries Commission
1050 N. Highland St. Suite 200A-N
Arlington, VA 22201

Via - Email: mware@asmfc.org

RE: Jonah Crab Draft Addendum I

Dear Ms. Ware,

On behalf of its 1800 members, the Massachusetts Lobstermen's Association (MLA) respectfully submits this letter of comment on the Jonah Crab Draft Addendum I to the Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fishery Management Plan (FMP) for Jonah Crab.

Established in 1963, the MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. The MLA continues to work conscientiously through the management process with the MA Division of Marine Fisheries and the Atlantic States Marine Fisheries to ensure the continued sustainability and profitability of all the resources in which our fishermen are engaged in.

Currently under the Jonah Crab Fisheries Management Plan there is a 200 crab per calendar day, 500 crab per trip incidental bycatch limit for non-trap gear, which the MLA supported. We are extremely concerned about the potential for an increase in the exploitation of the Jonah Crab as a "targeted bycatch" which after the data sets were reviewed indicated as highly probable.

The MLA submits the follow options as preferred on the two issues at hand.

ISSUE 1: INCIDENTAL BYCATCH BY NON-TRAP GEAR This section proposes to replace the "Incidental Bycatch limit for non-trap gear" in Section 5.1 of the Jonah Crab FMP.

Option A: Status Quo Under this option, the incidental bycatch limit for non-trap gear would remain at 200 crab per calendar day, up to 500 crab per trip.

ISSUE 2: INCIDENTAL BYCATCH LIMIT FOR NON-LOBSTER TRAPS The following options would apply to trips by all vessels hauling traps which do not have a valid lobster tag. These include, but are not limited to, fish pots, whelk pots, and crab pots.

Option B: Incidental Bycatch Limit of 200 Crab per Day, 500 Crab per Trip Under this option, the incidental bycatch limit by all vessels hauling traps that do not have a valid lobster tag would be 200 crab per day, up to 500 crab per trip, for trips three days or longer.

We sincerely hope and trust that you, the Atlantic States Marine Fisheries Commission, will weigh all the alternatives and options and will make informed and pragmatic recommendations to continue to allow the continued success of the newly emerging Jonah Crab fishery. The commercial lobstermen have supplemented the incomes in areas were the lobster stocks have declined due to environmental issues and in others were there is an abundance of crabs. We look forward to continuing to work with the Commissions Jonah Crab Section through the management process.

Sincerely,
Beth Casoni
Executive Director

New England Fishery Management Council
50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116
E.F. "Terry" Stockwell III, *Chairman* | Thomas A. Nies, *Executive Director*

April 18, 2016

Mr. Robert E. Beal
Executive Director
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201

RE: Comment on Draft Addendum I to the Jonah Crab FMP

Dear Bob:

I am writing to address the options within Draft Addendum I to the Jonah Crab FMP that pertain to non-trap permit holders using fixed and mobile gear to harvest Jonah crab. The New England Fishery Management Council (NEFMC, Council) prefers the options that allow non-trap permit holders to harvest an incidental catch of Jonah crab with catch limits that are not lower than the existing catch rates. The rationale provided for catch limits is the potential for a proliferation of fishing effort by non-trap permit holders. There is no information provided in Draft Addendum I to support this concern. At the Lobster Board meeting in November 2015, Council representative Terry Stockwell voted to support the addition of Options B and C to Draft Addendum I. These options would increase or remove the existing catch limit for non-trap permit holders. Options B and C are under consideration based on concerns raised by the Council representative that the current limit of 200 crabs per calendar day, up to 500 crabs per trip would constrain some vessels (Refer to Table 17).

Recent dealer-reported landings information indicate that non-trap permit holders harvest only a small percentage of the total Jonah crab landings on average from 2010 to 2014 (Refer to Tables 2, 6, 9, 12, and 15). Therefore, it is extremely unlikely that fishing effort by non-trap permit holders would jeopardize the health of the Jonah crab resource through incidental harvest. These non-trap permit holders are primarily targeting groundfish and other NEFMC-managed species, and Jonah crab landings do not constitute the larger portions of their catch (Refer to Tables 1, 5, 8,11, and 14). This further suggests that a large increase in fishing effort by non-trap permit holders is unlikely, because it would require a drastic change in fishing behavior.

In addition, the market demand for live Jonah crabs makes it operationally infeasible for non-trap permit holders to successfully target Jonah crabs and produce landings higher than the existing catch rates for two reasons. First, Jonah crabs harvested in large quantities require bait. Second, Jonah crabs must be landed live and therefore must be kept in a holding tank, which would require extensive vessel modifications.

Furthermore, the Council does not support differential treatment between trap and non-trap permit holders. To be clear, the NEFMC recognizes the value of a precautionary cap on fishing effort before it becomes excessive. This should be done consistently for all segments of the fishery based on evidence of the relative risk they impose. A precautionary cap should not

jeopardize the viability of existing fisheries that are not excessive and where the evidence indicates a low likelihood of effort increasing. While fishing effort of lobster trap permit holders increased sharply prior to the August 2015 Jonah Crab FMP, effort of non-trap permit holders did not. Indeed, perhaps we are mistaken, but it is our understanding that some states are not currently regulating the use of lobster traps to catch Jonah crab by fishermen that do not possess lobster permits. Therefore, the NEFMC does not support restrictions that constrain the non-trap permit holders, while there are no explicit measures constraining the lobster trap fishery.

The Council remains concerned that the existing catch limit for non-trap permit holders may conflict with the Atlantic Coastal Fisheries Cooperative Management Act. This statute requires regulations in Federal waters to be consistent with the ten national standards established in the Magnuson-Stevens Fishery Conservation and Management Act. This includes National Standards 6 and 7, which require that management measures consider impacts to all permit holders that harvest Jonah crab and minimize cost by avoiding unnecessary regulatory and enforcement burdens. The information provided indicates that management actions are not necessary (Refer to tables 1-17) for the non-trap fishery, since it constitutes only a small part of the catch and there is no evidence that effort is increasing substantially.

Additionally, the NEFMC would like to take this opportunity to provide feedback on the Jonah crab claw fishery, also discussed during the Lobster Board meeting on February 2, 2016. The Council is concerned that a claw fishery for Jonah crab may jeopardize the health of the Jonah crab resource and may not align with the Jonah Crab FMP's stated goals to promote conservation and reduce the likelihood of recruitment failure of Jonah crabs.

Since there is insufficient information on the biology and abundance of Jonah crab, the NEFMC supports landing Jonah crabs whole and, if practical, with the claws removed at the dock. If Jonah crab is landed whole, the fishing mortality estimate would be more precise given that resource assessments would assume 100 percent mortality for all crabs harvested. If not landed whole, an assumption on fishing mortality will apply to the claw fishery. The Council is also concerned that the Jonah crab minimum size limit, a biological measure to reduce the likelihood of recruitment failure, may be difficult to enforce if only claws are landed. The same may be true of establishing a claw size limit, since there seems to be little if any information available that establishes a quantifiable correlation between claw length and carapace length.

The New England Council appreciates this opportunity to submit comments on ASMFC's Draft Addendum I to the Jonah Crab FMP. Please let me know if you have questions.

Sincerely,

Thomas A. Nies

Thomas A. Nies
Executive Director

Attachment

Attachment

Jonah Crab Data (dealer data, and permit data used to verify unknown gear types)

The information provided below has been revised from the preliminary data submitted to the ASMFC at its November 2015 Lobster Board Meeting. The revisions are minor, but improve upon the data provided; these revisions are highlighted in the footnotes section of the document.

Table 1: Species Landed on non-trap trips that landed Jonah crab (2014)

NESPP3	Species Name	Landings (lbs)	Value of Landings ($)
12	Monkfish, tails	46,749	98,915
81	Cod	32,409	63,866
120	Winter Fl.	28,747	38,741
367	Winter Skate	27,462	24,009
123	Yellowtail Fl.	26,416	31,351
147	Haddock	23,331	37,641
153	White Hake	19,335	28,288
240	Redfish	19,275	13,071
269	Pollock	18,715	17,648
727	Lobster	18,713	87,813
711	Jonah Crab	13,221	5,290
124	Am. Plaice Fl.	9,885	16,240
121	Summer Fl.	9,003	25,592
366	Little Skate	9,000	810
11	Monkfish	6,236	4,586
122	Witch Fl.	6,192	14,719
365	Skates (not specified)	4,490	5,736
801	Loligo Squid	2,087	2,088
152	Red Hake	943	161
329	Scup	816	286
509	Silver Hake	708	545
188	John Dory	650	715
96	Cusk	545	616
352	Spiny Dogfish	385	113
127	Other Species Landed	1,210	2,813
	Total	326,523[1]	521,653[1]

[1] One record believed to be misreported as hook and line was included as an unknown gear type (999/020) in the previous data provided in November 2015 to the ASMFC. This record was likely was not hook and line and is believed to be trap activity, so it was removed from the revised table. Total landings for this record made up less than 100 pounds of the Jonah crab landings by non-trap permit holders.

Table 2: 2014 Jonah Crab Landings for Non-Trap Vessels, by State

State	Number of Permits[2]	Number of Trips	Jonah Crab Landings (lbs)	Value of Landings ($)
MA	5	18	5,433	1,107
CT, NJ, and NY	6	24	442	536
RI	6	70	7,346	3,647
Total	17	113	13,221	5,290
Total Landings (trap and non-trap)[3]			**17,148,496**	**13,406,007**
Percentage of Total Landings			**0.077%**	**0.039%**

Table 3: Number of non-trap vessels landing Jonah crab in 2014

Gear Code	Gear Type	Number of Permits[2]	Jonah Crab Landings (lbs)	Value of Landings
50	Bottom Otter Trawl	11	6,187	1,629
100	Gillnets	3	233	258
999	Unknown Gear Type[1]	3	6,801	3,403
		Total	13,221[1]	5,290[1]

Note (Table 3): Gear code 999 (unknown gear) are landings by permit holders with non-trap and trap lobster permits, along with other permits. The landings from those trips are shown below in Table 4. These values are included in the tables above, because in other years (i.e. 2013, the permits landing with gear code 999 also have permits that include bluefish, herring, dogfish, fluke, tilefish, squid, mackerel, and other species confirmed in the landings), the landings include groundfish, which is not permitted on lobster trap trips. This information is used to make the inference that gear code 999 is non-trap gear when the permit data indicates that the permit holder holds non-trap permit, or non-trap lobster and trap lobster permits.

Table 4: Species Landed on trips with lobster trap and gear code 999/Unknown (2014)

Species	Landings (lbs)	Value of Landings ($)
Jonah Crab	6801	3403
Lobster	191	1146
Grand Total	6992	4549

[2] The previous data provided in November 2015 to the ASMFC has been revised. A higher number of permits for 2010-2014 was provided, which included duplicative permit numbers in the records. This information was corrected to report on the number of distinct permit number that landed Jonah crabs from 2010-2014. The landings by weight and value of those landings are accurate and remain unchanged.

[3] This information is new, and was not provided in the previous version of the data to the ASMFC in November 2015.

Table 5: Species Landed on non-trap trips that landed Jonah crab (2013)

NESPP3	Species Name	Landings (lbs)	Value of Landings ($)
12	Monkfish, tails	75,964	130,601
121	Summer Flounder	28,143	81,639
367	Winter Skate	26,228	13,710
509	Silver Hake	22,203	21,600
365	Skates (not specified)	18,045	11,558
153	White Hake	15,719	26,770
269	Pollock	13,630	23,698
11	Monkfish	11,472	5,911
240	Redfish	11,419	7,813
123	Yellowtail Fl.	10,111	16,393
124	Am. Plaice Fl.	9,838	15,019
711	Jonah Crab	6,081	3,828
727	Lobster	4,588	16,198
352	Spiny Dogfish	3,430	636
329	Scup	2,678	2,181
122	Witch Fl.	2,153	5,956
81	Cod	2,145	6,212
366	Little Skate	1,560	1,560
152	Red Hake	1,509	976
147	Haddock	1,506	3,180
51	Butterfish	1,115	879
801	Loligo Squid	1,072	1,984
351	Smooth Dogfish	976	723
800	Sea Scallops	475	4,867
335	Black Sea Bass	414	1,643
188	John Dory	349	417
341	Sea Robin	306	68
23	Bluefish	242	156
120	Winter Fl.	175	354
	Other Species Landed[4]	416	734
	Total	**273,962**	**407,264**

[4] Smaller landings are grouped together as “other species landed” in this revised table.

Table 6: 2013 Jonah Crab Landings for Non-Trap Vessels, by State

State	Number of Permits	Number of Trips	Jonah Crab Landings (lbs)	Value of Landings ($)
MA	5	17	1,880	887
NJ&NY	7	36	529	696
CT&RI	10	36	3,672	2,245
Total	22	89	6,081	3,828
Total Landings (trap+non-trap)			**16,252,001**	**13,090,878**
Percentage of Total Landings			**0.037%**	**0.029%**

Table 7: Number of non-trap vessels landing Jonah crab in 2013

Gear Code	Gear Type	Number of Permits	Jonah Crab Landings (lbs)	Value of Landings ($)
50	Bottom Otter Trawl	16	2,604	1,720
100&999	Gillnets & Unknown Gear	7	3,477	2,108
	Total		6,081	3,828

Table 8: Species Landed on non-trap trips that landed Jonah crab (2012)

NESPP3	Species Name	Landings (lbs)	Value of Landings ($)
269	Pollock	104,171	89,090
153	White Hake	59,708	90,262
221	Menhaden	47,950	4,795
12	Monkfish, tails	46,241	127,497
240	Redfish	38,310	24,933
329	Scup	21,579	13,397
124	Am. Plaice Fl.	20,074	27,040
121	Summer Fl.	17,916	47,273
727	Lobster	10,798	45,101
152	Red Hake	10,260	5,752
122	Witch Fl.	5,800	9,118
367	Winter Skate	5,411	4,266
123	Yellowtail Fl.	4,297	5,011
352	Spiny Dogfish	4,250	728
711	Jonah Crab	4,099	2,959
81	Cod	3,701	10,883
509	Silver Hake	3,052	2,209
23	Bluefish	2,826	2,796
11	Monkfish	1,774	2,278
147	Haddock	1,542	3,685
365	Skates (not specified)	1,278	861
801	Loligo Squid	607	995
366	Little Skate	600	48
335	Black Sea Bass	549	2,004
188	John Dory	525	546
712	Rock Crab	445	312
51	Butterfish	314	409
344	Other Species Landed[3]	742	1,488
	Total	418,819	526,206

Table 9: 2012 Jonah Crab Landings for Non-Trap Vessels, by State

State	Number of Permits	Number of Trips	Jonah Crab Landings (lbs)	Value of Landings ($)
MA	4	18	2,119	1,297
NJ	3	7	98	151
NY	4	15	545	550
RI	3	5	1,337	961
Total	14	45	4,099	2,959
Total Landings (trap and non-trap)			**12,051,457**	**8,510,600**
Percentage of Total Landings			**0.034%**	**0.035%**

Table 10: Number of non-trap vessels landing Jonah crab in 2012

Gear Code	Gear Type	Number of Permits	Jonah Crab Landings (lbs)	Value of Landings ($)
050	Bottom Otter Trawl	10	2,838	1,869
	Gillnets, Seine, and Unknown Gear	4	1,261	1,090
	Total	14	4,099	2,959

Table 11: Species Landed on non-trap trips that landed Jonah crab (2011)

NESPP3	Species Name	Landings (lbs)	Value of Landings ($)
121	Summer Fl.	63,475	135,329
12	Monkfish, tails	61,877	182,829
120	Winter Fl.	47,670	94,253
352	Spiny Dogfish	30,735	7,122
329	Scup	22,804	12,488
23	Bluefish	19,226	10,024
366	Little Skate	17,933	1,829
122	Witch Fl.	17,241	27,893
147	Haddock	16,569	24,581
81	Cod	16,272	28,043
365	Skates (not specified)	15,787	12,941
153	White Hake	15,087	19,235
124	Am. Plaice Fl.	14,047	18,772
123	Yellowtail Fl.	12,090	15,859
269	Pollock	11,583	8,745
240	Redfish	6,975	4,389
351	Smooth Dogfish	6,690	2,004
367	Winter Skate	6,561	7,842
727	Lobster	4,599	18,887
800	Sea Scallop	3,624	36,479
711	Jonah Crab	2,986	2,056
509	Silver Hake	1,656	1,265
335	Black Sea Bass	1,111	5,781
801	Loligo Squid	814	1,238
	Other Species Landed	2,251	2,206
	Total	**419,663**	**682,090**

Table 12: 2011 Jonah Crab Landings for Non-Trap Vessels, by State

State	Number of Permits	Number of Trips	Jonah Crab Landings (lbs)	Value of Landings ($)
CT, RI & NY	11	30	1,590	1,041
MA	6	15	884	438
NJ	6	17	512	577
Total	23	62	2,986	2,056
Total Landings (trap and non-trap)			**9,439,984**	**5,795,899**
Percent of Total Landings			**0.03%**	**0.04%**

Table 13: Number of non-trap vessels landing Jonah crab in 2011

Gear Code	Gear Type	Number of Permits	Jonah Crab Landings (lbs)	Value of Landings ($)
50	Bottom Otter Trawl	20	2,609	1,625
52	Scallop Otter Trawl	1	44	56
100	Gillnets	2	333	375
	Total	23	2,986	2,056

Table 14: Species Landed on non-trap trips that landed Jonah crab (2010)

NESPP3	Species Name	Landings (lbs)	Value of Landings ($)
366	Little Skate	320,650	29,305
801	Loligo Squid	91,784	93,124
121	Summer Fl.	64,840	134,775
12	Monkfish, tail	47,978	148,266
509	Silver Hake	43,193	20,506
124	Am. Plaice Fl.	33,709	39,487
81	Cod	33,328	61,199
153	White Hake	28,858	43,615
329	Scup	28,550	16,724
367	Winter Skate	19,230	18,260
123	Yellowtail Fl.	17,202	24,061
710	Red Crab	15,204	459
147	Haddock	13,839	14,028
365	Skates (not specified)	13,509	6,878
269	Pollock	12,165	14,716
711	Jonah Crab	10,815	3,822
240	Redfish	9,916	5,542
122	Witch Fl.	8,856	22,607
51	Butterfish	6,510	4,837
152	Red Hake	4,719	1,495
120	Winter Fl.	4,423	8,034
727	Lobster	4,266	17,402
352	Spiny Dogfish	2,812	422
446	Golden Tilefish	1,423	2,507
212	Atl. Mackerel	1,004	535
23	Bluefish	855	571
335	Black Sea Bass	557	1,611
800	Sea Scallop	234	1,711
341	Sea Robin	215	52
116	Congor Eel	210	115
188	John Dory	188	190
159	Atl. Halibut	179	1,052
96	Cusk	172	168
125	Sand Dab Fl.	138	60
	Other Species Landed	253	323
	Total	**841,784**	**738,459**

Table 15: 2010 Jonah Crab Landings for Non-Trap Vessels, by State

State	Number of Permits	Number of trips	Jonah Crab Landings (lbs)	Value of Landings ($)
ME & MA	5	13	5,228	998
NJ & NY	4	8	100	61
RI	12	66	5,487	2,763
Total	21	87	10,815	3,822
Total Landings (trap+non-trap)			**10,115,808**	**5,332,742**
Percentage of Total Landings			**0.11%**	**0.07%**

Table 16: Number of non-trap vessels landing Jonah crab in 2010

Gear Code	Gear Type	Number of Permits	Jonah Crab Landings (lbs)	Value of Landings ($)
50	Bottom Otter Trawl	18	8,845	2,831
54	Ruhle Trawl (bottom)	1	52	26
100	Gillnets	1	12	12
999	Unknown Gear	1	1,906	953
		Total	10,815	3,822

Table 17: Number of trips affected by the ASMFC crab limit for non-trap gear, based on number of days fished in prior years (2010-2014)

Year	Minimum # of days fished	Maximum Number of days fished	Average Number of days fished	Number of Trips Constrained by Atlantic States Marine Fisheries Commission trip limit	Percentage of trips constrained by crab limit
2010	0.1	9.54	1.15	0/293	0.00%
2011	0.04	9.6	1.18	0/324	0.00%
2012	0.04	9.4	1.27	0/192	0.00%
2013	0.1	8.83	1.18	4/170	2.35%
2014	0.13	10.48	1.23	4/140	2.86%

Note (Table 17): This spreadsheet is based on data provided by NOAA Fisheries. This is also based on the assumption that one crab = 1 pound (same assumption used by the ASMFC).

Delaware Fisherman do not believe that managing the Jonah Crab, in a manner that is geared toward compatibility with the lobster industry, is in our best interest. The state of Delaware has a very small lobster fishery. The Interstate Fishery Management Plan for Jonah Crabs denies full utilization of the resource to DE and the United States Industry.

In Delaware we feel that if the New England States, such as Mass. or R.I. are overfishing Jonah Crabs, then it is their responsibility to correct their management practices in state. Delaware, without question, does not have a problem with overfishing Jonah Crabs, nor do we have a problem with too many lobster pots in our state waters. DNREC is completely capable of managing Jonah Crabs, and all crab (Cancer) fisheries within our state waters in a positive and sustainable manner.

As it stands, our only way to keep from being nearly eliminated from the fishery is to support option A: status quo of the incidental bycatch limit for non-lobster traps. The Mid-Atlantic states, especially those of the Delmarva Peninsula, should not be lumped into a Fishery Management Plan for Jonah Crab with the New England states. The IFMP for Jonah crabs should be put on hold until a completed stock assessment has been done for all states.

Stuart Potter

DE Fisherman

Comments on Jonah Crab

My husband has harvested Jonah crab claws from the Mid-Atlantic canyons since 1974. Jonah crabs are a by-catch in the lobster fishery. They only sell claws as there is no room on the boats for whole live crabs with lobsters. Plus many of the crabs survive.

We beleive only lobstermen have caught Jonah crabs. My husband has conched and gillnetted. He has seen rock and calicoe crabs, but not Jonah crabs in that gear. Any Mid-Atlantic fisherman reporting Jonah crabs anywhere but the canyons is mistaken.

Full time permits should only go to exisitng lobstermen. Otherwise, people who probably have caught some other species will rig up to go after Jonah crabs.

We want only a claw fishery, not whole crabs. We want to preserve this resource and the small boat fishermen who harvest them.

-Beverly Lynch

To asmfc I want to first say that what you are doing is completely wrong and will have no affect on the fishery. putting controls on 2% of the catch effort is stupid. If you were really worried about fishery controls would be put in place across the whole fishery.
I do not have a lobster permit but I
I have been recording my catchs for a couple years but have been catching Jonahs for many years with pots and scallops dredges. The only reason I started reporting because nmfs enforcement wrote me a ticket for not reporting in my vtr logs.

This started as a bycatch fishery for me the same as it did for everyone else. Over the years I've developed a very good market and a way how to catch them with pots but not lobster pots. I made a trawl pot that catches Jonah's and very few lobsters. My pots have escape vents.

I qualified for the control date but don't not have a federal lobster permit. I have a state lobster permit. I was told that asmfc want to limit the number of crabs that I can catch. I have no problem with that as long as everyone has same catch limits. I think they should limit the number of pots for all fishermen.
I have invested alot of money in pots since I was told that I qualified for control date. I have restaurants and fish houses that are need crabs. This has turned into a real fishery for.me not just a bycaych.

The southern areas need to be allowed to claw the crabs since we have been doing it that was for ever. We don't have pickers set up yet may be down the road. I think this is being put in place to keep smaller boat out of fishery. It does not make sense to kill a crab and throw it away, when you can take claws off and they grow back

I do not have a federal lobster permit. I'm have to spend $25000.00, To buy a lobster permit to stay in fishery. I would not mind spending money if lobster population were in good shape and no being treated to be shut down and more trap limits.
Would you spend $25000.00 plus for a permit to catch lobster when you only want to catch Jonah crabs?????

All This amendments is doing is pushing the small fishermen out of a fishery, so it can be controlled by a few larger corporations the same way the small fishermen in the scallop fishery were pushed out.

Please let me go to work and be on the same playing field as everyone else. Controlling 2% of catch effort is not going to anything to help fishery
This amendment is discriminating against the smaller boat without a lobster permit. I don't want to catch lobsters
I vote for unlimited catch quotas for boats that qualified and don't have a lobster permit.
Thank you
Fv Allison
Permit# 149870
Oceancity md
James Hahn
Po box 124

Vienna MD 21869
4103104296

Characterization of the offshore American lobster and Jonah crab trap fishery in Lobster Management Area 3 in and around the Southern New England and Georges Bank canyons

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Background

The Atlantic States Marine Fisheries (ASMFC) initiated a mail survey to collect information on the extent and value of the offshore American lobster and Jonah crab trap fishery occurring in and around the deep-water canyons in Southern New England (Lobster Conservation Management Area 3). The purpose of this survey was to characterize the canyon fishery, as current lobster and Jonah crab trip reports include data only to the broad level of NMFS statistical area. Information on the distribution of effort, fishing patterns, and value of harvest in and around the canyons was requested by the New England Fishery Management Council (NEFMC) as they draft an Omnibus Deep-Sea Coral Amendment to modify several Fishery Management Plans. The Amendment may establish discrete deep-sea coral protective zones, as well as broad deep-sea coral regions along the edge of the continental shelf from the Alvin canyon to the Exclusive Economic Zone (i.e. Hague Line). A region identified as the NEFMC Area of Interest encompasses 21 Southern New England/Georges Bank canyons (Figure 1). The NEFMC is expected to debate potential gear restrictions within the Area of Interest. As such, the comprehensive data collected through this survey provided an important context on the American lobster and Jonah crab trap fisheries occurring in this unique region.

Methods

In February 2016, a cover letter and survey (Appendix A), and postage-paid self-addressed return envelope were mailed to all 97 commercial lobster 2015 permit holders who designated fishing Lobster Conservation and Management Area (LCMA) 3. Generally, the survey inquired about fishing locations, effort, and value of lobster and Jonah crab landings within the NEFMC Area of Interest in and around the canyons from 2014 to 2015. Fishermen were asked to specify canyons, depths, and seasons fished and how effort and revenue were allocated across those variables. Nautical charts identifying the proposed NEFMC Area of Interest and discrete canyons within it were included with the survey for clarification. Respondents were informed that confidential data would be protected and an individual fisherman's data would not be shared. Optional demographic data were collected at the end of the survey including vessel name, permit, and homeport. Respondents were also asked to share comments about the survey and/or topic.

Results

A total of 34 surveys were returned within five weeks of the mailing date, for an overall response rate of 35%. Response rates were favorable across states (by state on permit) (Table 1). Of the 34 surveys returned, 19 (56%) represented vessels that fished traps in the NEFMC Area of Interest in 2014-2015 (Table 1). After removal of vessels that reported having fished only Area 2 (n=2), fished Area 3 but not near the canyons (n=11), or did not fish traps (n=2) the response rate for vessels fishing traps within the Area of Interest was 20% of the total mailed (19 of 97), or 23% of the pertinent fishermen pool (19 of 82).

The 19 respondents that fished traps within the Area of Interest for lobster and/or Jonah crab in 2014-2015 hailed from the states of Massachusetts, New Hampshire, or Rhode Island (Table 1). Each of these respondents provided detailed information on fishing practices and revenue generated from within the LCMA 3 canyons region. Nearly all (95%) of those fishing within the Area of Interest reported trips and catches using the NMFS Fishing Vessel Trip Reports (VTR) (n=19). At the time of the survey, 79% of individuals fishing the Area of Interest were aware that

the NEFMC was considering development of an Amendment to several Fishery Management Plans to protect deep sea corals in the region.

Table 1. ASMFC survey response rates by state.

State on Permit	Response Rate	n Mailed	n Returned	n 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		97	34	19

Locations Fished

All six of the NMFS statistical reporting areas (SRAs 525, 526, 534, 537, 541, and 562) that span the NEFMC Area of Interest were fished in 2014-2015 (Figure 1). A majority of fishermen (74%, n=19) fished in SRA 525, which encompassed the highest number of canyons (12 of 21 canyons), and SRA 526 (63%, n=19), which encompassed Veatch Canyon, the canyon fished by most respondents (see text below, and Figure 1). Fewer fishermen (16%) reported fishing in SRAs 534 and 541, the only statistical areas that do not overlap entire canyons (or canyon heads) (Figure 1). Fishermen often fished in more than one statistical area *per trip*; 68% reported this at least once in 2014-2015 (n=19). Additionally, differences in statistical areas fished by home port were noted. Vessels from Massachusetts fished in all six statistical areas within the NEFMC Area of Interest, while those from Rhode Island fished in three (SRAs 525, 526 and 537), and New Hampshire in two (SRAs 525 and 526) (Figure 2).

All but two of the 21 canyons situated within the NEFMC Area of Interest were fished in 2014-2015 by respondents (Figure 1 and Figure 3). Individual fishermen set traps in anywhere from two to ten discrete canyons (average 4.4 ± 0.5 SE canyons) in 2014-2015. Veatch canyon was fished by the most (42%) respondents, followed by Hydrographer (37%), Atlantis (32%), Alvin, Gilbert, Lydonia, Oceanographer (each 26%), and Clipper, Dogbody, Heel Tapper, Munson, Nygren, Powell, and Welker (each 21%). Fewer reported fishing Heezen, Nantucket, Shallop,

Sharpshooter, and Unnamed canyons (each 16%) (Figure 1 and Figure 3). Chebacco and Filebottom canyons were the only canyons not fished by those who responded (Figure 1 and Figure 3). Most canyons were fished by several fishermen regardless of vessel origin and the only evident regional difference was that Rhode Island fishermen were less likely to transit to the canyons furthest east (Nygren, Unnamed, and Heezen) (Figure 3).

All fishermen reported fishing between canyons as well in and around them (n=19). A majority (84%) reported that they most often set traps both at the heads of canyons and between canyons, while the remaining 16% were split evenly as to whether they most often fish at the heads of the canyons, between canyons, or neither (i.e. set on a loran line).

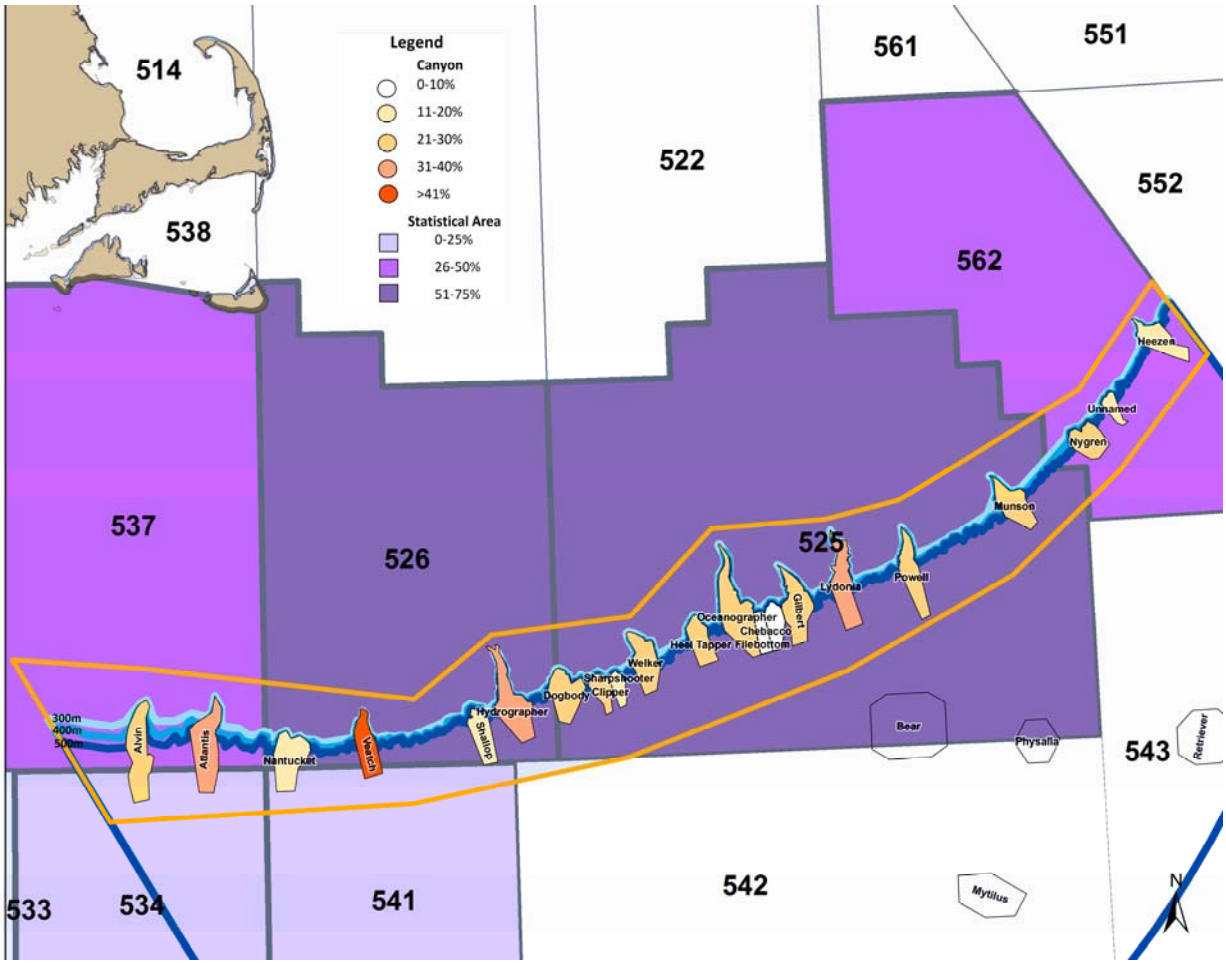


Figure 1. Comparative fishing effort by canyon and by NMFS statistical reporting area within the NEFMC Area of Interest (orange line) as the percentage of respondents citing the canyon(s) or statistical area(s) fished for lobster and/or Jonah crab in 2014-2015. For canyons, the darker the color orange, the more frequently the canyon was named. For statistical area, the darker the color purple, the more frequently the statistical area was named. Depth contours at 200 m, 400 m, and 500 m within the NEFMC Area of Interest are indicated in shades of blue.

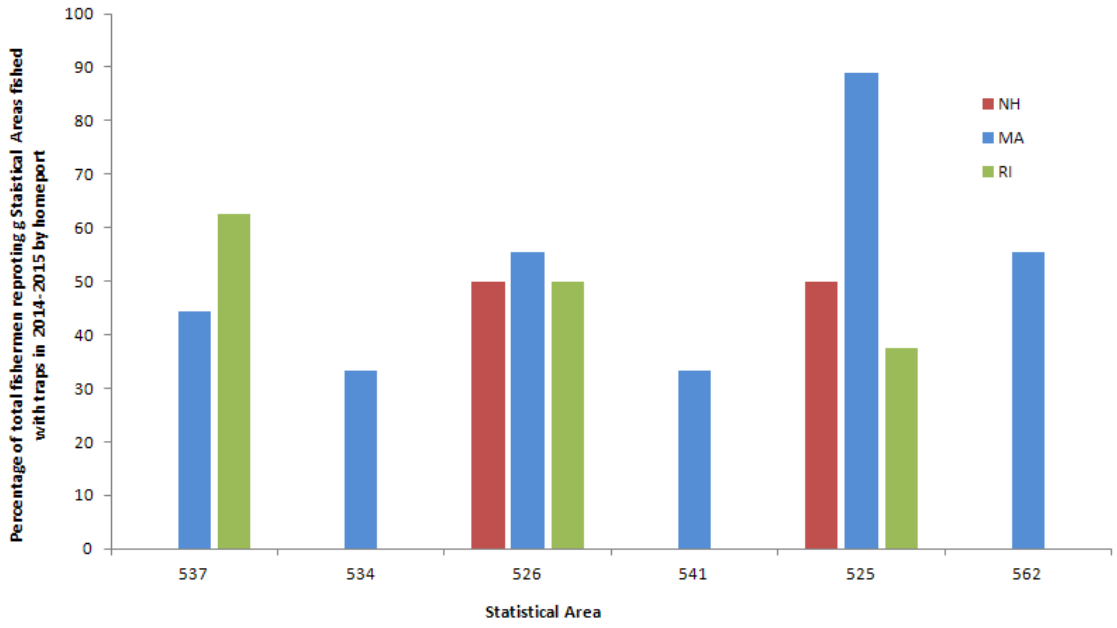


Figure 2. Percentage of fishermen reporting NMFS statistical area fished (within the NEFMC Area of Interest) in 2014-2015 by state/homeport. Statistical areas are listed in west to east orientation (L-R).

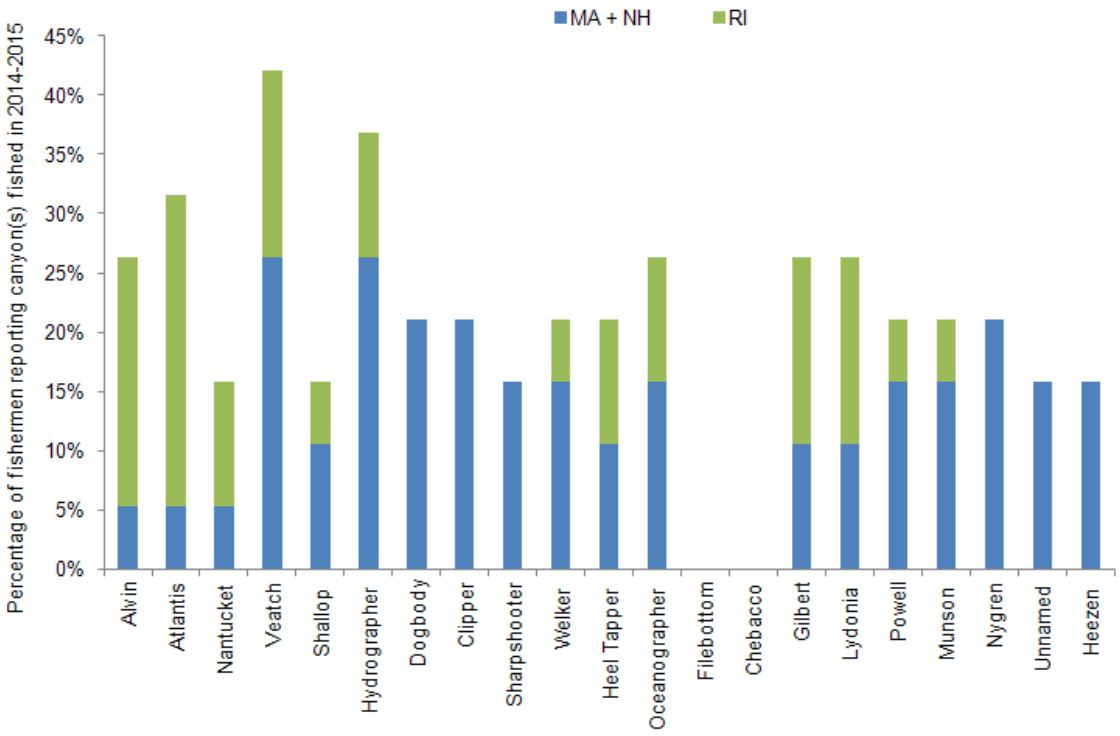


Figure 3. Percentage of fishermen reporting individual canyon(s) fished (within the NEFMC Area of Interest) in 2014-2015 by state/homeport. Massachusetts and New Hampshire fishermen were combined to preserve confidentiality (NH <3 respondents). Canyons are listed in west to east orientation (L-R).

Depth Fished

All canyon fishermen reported the maximum depth at which they fished traps (for lobster and/or Jonah crab) in 2014-2015. This was an open-ended response and consistently reported in fathoms, which were converted to meters. Maximum depth fished per fisherman ranged from 220 to 549 meters (120 to 300 fathoms), with an average of 406 meters ± 22 SE (222 fathoms). Cumulatively, 100% of fishermen set their deepest traps in water 200+ meters deep, 76% in 300+ meters, and 48% 400+ meters of water (n=19) (Table 2). Of the 48% of fishermen with traps set in over 400 meters of water, 14% of them set traps deeper than 500 meters.

Nearly half of (47%) respondents fished traps in deepest waters across two or more seasons, with all seasons represented (n=19). Winter (January to March) was the season most commonly named for deep trap sets (74% of responses), followed by spring (April to June; 42%), and fall (September to December; 32%). Traps were least likely to be set in the deepest waters during the summer (July to August) (named in 11% of responses).

Fishermen also indicated how trap allocation varied by depth within the NEFMC Area of Interest. On average, 96% of an individual's traps were fished from 0 to 400 meters (0 to 219 fathoms) (Table 2 and Figure 4). Of the five depth categories provided, the most traps (35%) were allocated to 200-300 meters (109-164 fathoms). Only 4% of an individual's traps were set deeper than 400 meters (Table 2). Although fewer traps were apportioned to this deepest stratum, over a quarter (27%) of fishermen reported fishing traps over 400 meters depth (Table 2), thus the overall total traps fished in this stratum may be considerable (n=15).

Fishermen reported variable fishing patterns when asked to explain (open-ended response) their trawl configurations by depth during a single trip, e.g. whether they fished a consistent depth along the shelf or if depth fished varied across canyons. A majority of fishermen (42%) described setting traps at both consistent and varied depths along the shelf and across canyons within a trip (n=19). Patterns were often broadly illustrated and changed with areas fished but area was not well specified. Several fishermen (21%) indicated that fishing patterns changed seasonally, and as a result were unable to specify practices made during a single trip. Another 26% of fishermen reported fishing a range of depths, but did not indicate within canyons or

along the shelf. A small percentage (11%) reported fishing on specific depth contour lines, or on a specific loran line across many depths (5%). As reported earlier, a majority of fishermen set traps both in and between canyons. Several comments indicated that individuals fish in proximity to each other, and that they maintain organization of trap sets in and around the canyons by working with each other's fishing patterns.

Table 2. Allocation of fishing effort and revenue in the NEFMC Area of Interest in 2014-2015 by depth category.

Depth category (meters)	Max. depth fished by % fishermen	Ave. % traps allocated by depth	% Fishermen fishing at depth	Ave % revenue by depth	% Fishermen with revenue at depth
<100	0	17	47	23	67
100-200	0	21	87	33	87
200-300	26	35	93	23	67
300-400	32	23	73	18	53
>400	42	4	27	3	13
n Respondents	19	15	15	15	15

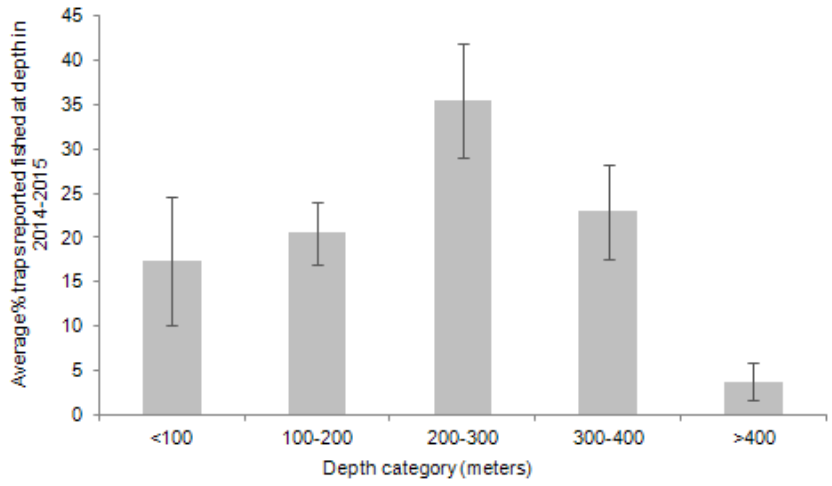


Figure 4. Average allocation of total traps fished per depth category per fisherman, within the Area of Interest in 2014-2015 (n = 15).

Effort: Trips and Traps

The average annual number of trips made by each fisherman to the NEFMC Area of Interest in 2014-2015 was 30 ± SE 1.3 (2014-2015 median = 29, n=19) with a fairly wide range of trips per year, from 15 to 49 (Table 3). Total number of trips to the Area of Interest in 2014-2015 for the 19 vessels was 1,124. The average number of traps hauled *per trip* in 2014-2015 was 1,779 ± SE

106 (median 1,614; range of 1,100 to 2,600 traps, n=18) and did not differ by homeport state (unpaired t-test p = 0.26) (Table 3). The total number of traps hauled *per trip* among the 18 respondents/vessels was over 32,000, with three individuals noting that their reported trap hauls did not include re-hauls per trip. Individual traps tended to be set at least twice within a single trip for 86% of respondents. Over the next five years, the majority (76%) of fishermen expect that their fishing effort in the NEFMC Area of Interest will not change significantly (n=19). Some (19%) expect their effort to increase, and one (5%) anticipates that it will decrease over the next five years.

Most (74%) fishermen stated that there was no seasonal difference as to when they had the highest number of traps in the water in the NEFMC Area of Interest (n=19). Of the 26% whose trap totals varied by season, most reported setting the highest number of traps across several seasons. Trap totals were commonly higher in summer (July to September), followed by fall (October to December), and spring (January to March). No one reported having the highest number of traps in the water in winter (January to March), which is also when traps were reported to be set deepest. It is expected that this pattern will persist as the majority (74%) of fishermen did not expect their fishing effort in the NEFMC Area of Interest to change substantially over the next five years (n=19). Of the minority, 21% expected their fishing effort to increase substantially, and 5% expected it to decrease over the next five year.

Revenue

There was a high dependence on the NEFMC Area of Interest for revenue for all who fished within the Area. In 2014, 77% ± 5 SE (median = 82%, range 35-100%) of an individual's lobster and Jonah crab revenue came from the Area of Interest, and in 2015 that figure increased to 79% ± 5 SE (median = 85%, range 37-100%, n=18) (Table 3). The average combined revenue *per trip* from lobster and Jonah crab harvest within the NEFMC Area of Interest in 2014-2015 was $32,514 (median $31,841, n=19) with a range of $9,000 to $85,000 reported per trip per fisherman (Table 3). There was an overall 8%, or $2,595, increase in combined revenue per trip from 2014 to 2015 (Table 3).

Revenues for 2014-2015 were described as typical (63%) or higher (16%) than normal for the majority of fishermen (n=19). Several (21%) stated they did not have a characteristic earning with which to compare. No one reported that revenues in 2014-2015 were lower than normal. Accordingly, revenues generated from lobster and Jonah crab catches in and around the canyons over the past five years have steadily increased (37%) or remained constant (32%) for most. Others noted that combined revenue changed without pattern (26%) over that time frame, or for one, steadily decreased (5%) (n=19).

When breaking down earnings within the NEFMC Area of Interest by fishery, 88% of fishermen reported higher revenue from lobster than from Jonah crab (n=17). For these individuals, the value of lobster was on average six (in 2014) to eight (in 2015) times higher than for Jonah crab. For the two vessels (12%) reporting higher Jonah crab revenue than lobster, Jonah crab value was about three times that of lobster in 2014 and 2015 (figures not disclosed, <3 respondents). The average *annual* revenue from **lobster** fishing in the NEFMC Area of Interest in 2014-2015 was $717,284 ± SE $106,491 (median $665,400, range $75,000 to $1.8 million, n=17). Annual earnings from lobster increased by an average of 10% or $66,370 from 2014 to 2015 (Table 3). Total lobster revenue from the NEFMC Area of Interest for the fourteen individuals who responded to the survey was $11.6 million in 2014 and $12.8 million in 2015 (Table 3).

The average *annual* revenue from **Jonah crab** fishing in the NEFMC Area of Interest in 2014-2015 was $182,784 ± SE $55,868 (median $97,000, range $0 to $825,000, n=17). Earnings from Jonah crab were highly variable among respondents but similar from year to year within respondents. Total average annual revenue from Jonah crab decreased by 15% or $28,360 from 2014 to 2015 (Table 3). Total Jonah crab revenue from the NEFMC Area of Interest for the 17 individuals who responded was $3.3 million in 2014 and $2.9 million in 2015 (Table 3).

Table 3. Effort and revenue statistics for lobster and Jonah crab fishing within the NEFMC Area of Interest in 2014 and 2015, reported by fishermen.

	Trap hauls per trip	Total Number Trips to Area		% Revenue from Area of Interest		Per Trip Revenue (USD)		Annual Revenue (USD) Lobster		Annual Revenue (USD) Jonah Crab	
	2014-2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Average	1,779	30	29	77	79	$ 31,251	$ 33,846	$ 684,099	$ 750,469	$ 195,964	$ 167,605
SE	106	2.0	1.8	5.1	4.9	$ 3,549	$ 4,121	$ 99,733	$ 115,348	$ 63,418	$ 52,541
Median	1,614	28	30	82	85	$ 31,841	$ 31,650	$ 628,289	$ 734,468	$ 100,000	$ 94,830
Min	1,100	20	15	35	37	$ 10,000	$ 9,000	$ 120,000	$ 75,000	$ -	$ -
Max	2,600	49	45	100	100	$ 75,000	$ 85,000	$ 1,500,000	$ 1,800,000	$ 825,000	$ 650,000
n Respondents	18	19	19	18	18	19	18	17	17	17	17
Sum of Reported	32,023	570	554					$11,629,691	$12,757,974	$3,328,664	$2,845,774

Fishermen identified how revenue from lobster and Jonah crab varied by depth within the NEFMC Area of Interest. On average, 97% of an individual's revenue came from traps fished from 0 to 400 meters (0 to 219 fathoms; n=15) (Figure 5). Of the five depth categories provided, the highest average revenue (33% of total) came from 100-200 meters, which differed from where the most traps were allocated (200-300 meters) (Table 2, Figure 4, and Figure 5). On average, only 3% of an individual's revenue came from traps fished deeper than 400 meters (Table 2, Figure 5). Individual fishermen reported anywhere from one to four depth categories (average = 3 ± 0.3 SE) that contributed to their combined revenue (n=15). Overall, 87% of fisherman reported that revenue came from traps fished in the 100-200 meter range, and only 13% reported revenue coming from the deepest depth stratum (>400 meters) (Table 2).

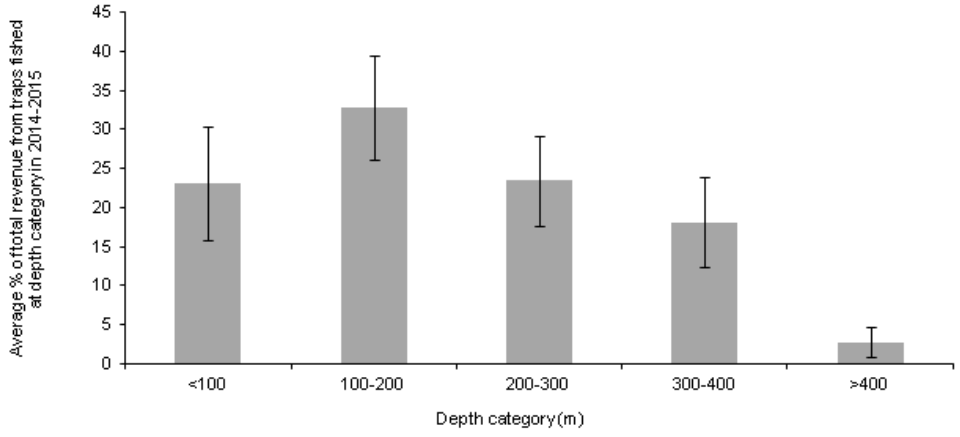


Figure 5. Average allocation of revenue of lobster and crab per depth category per fisherman, within the Area of Interest in 2014-2015 (n = 15).

The top three individual canyons that contributed most to fishermen's **lobster** revenue from within the NEFMC Area of Interest were Veatch (35%), Lydonia (29%), and Atlantis (29%) canyons (n=17) (Figure 6 and Figure 7). For Jonah crab, seven individual canyons were named equally as top contributors to fishermen's **Jonah crab** revenue. These included Alvin, Atlantis, Veatch, Hydrographer, Powell, Munson, and Nygren canyons (n=16) (Figure 6 and Figure 8). The two vessels that reported greater revenue from Jonah crab than lobster named all canyons as most important to their combined revenues. For both lobster and Jonah crab, canyons distributed to the west and east were generally identified as important contributors more frequently than those centered in the NEFMC Area of Interest (Figure 6, Figure 7, and Figure 8).

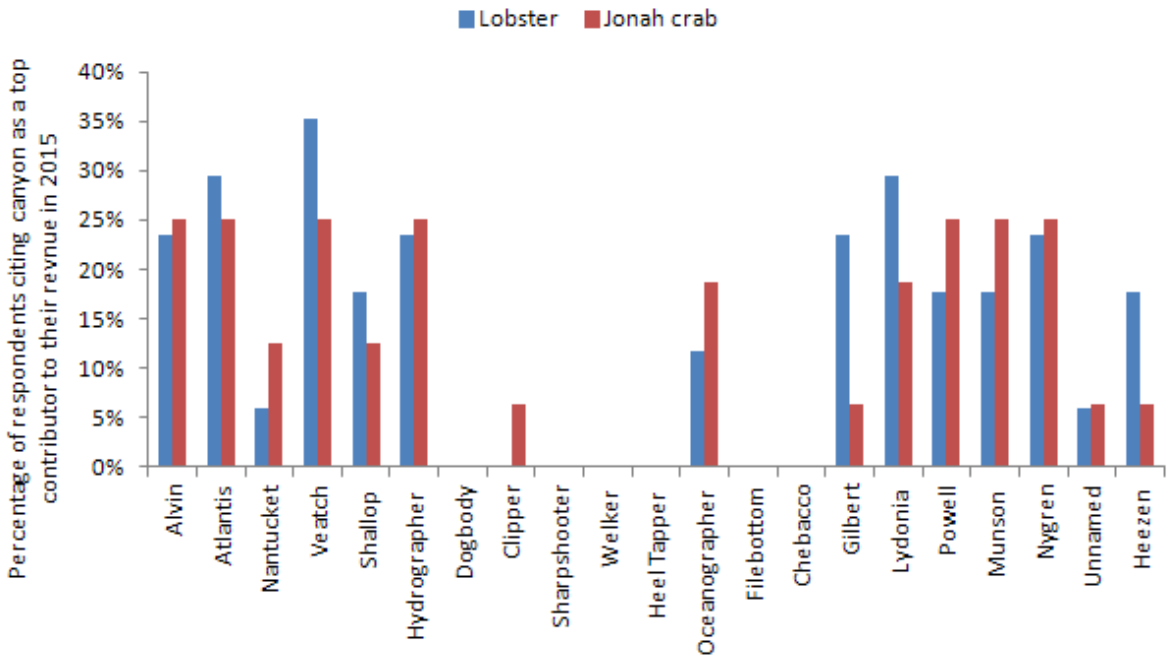


Figure 6. Importance of individual canyons as reported by the percentage of fishermen (lobster n=17; Jonah crab n=16) citing each of the top three that contributed most to their revenue from catches of lobster (blue) and Jonah crab (red) within the NEFMC Area of Interest in 2015. Canyons are listed in west to east orientation (L-R).

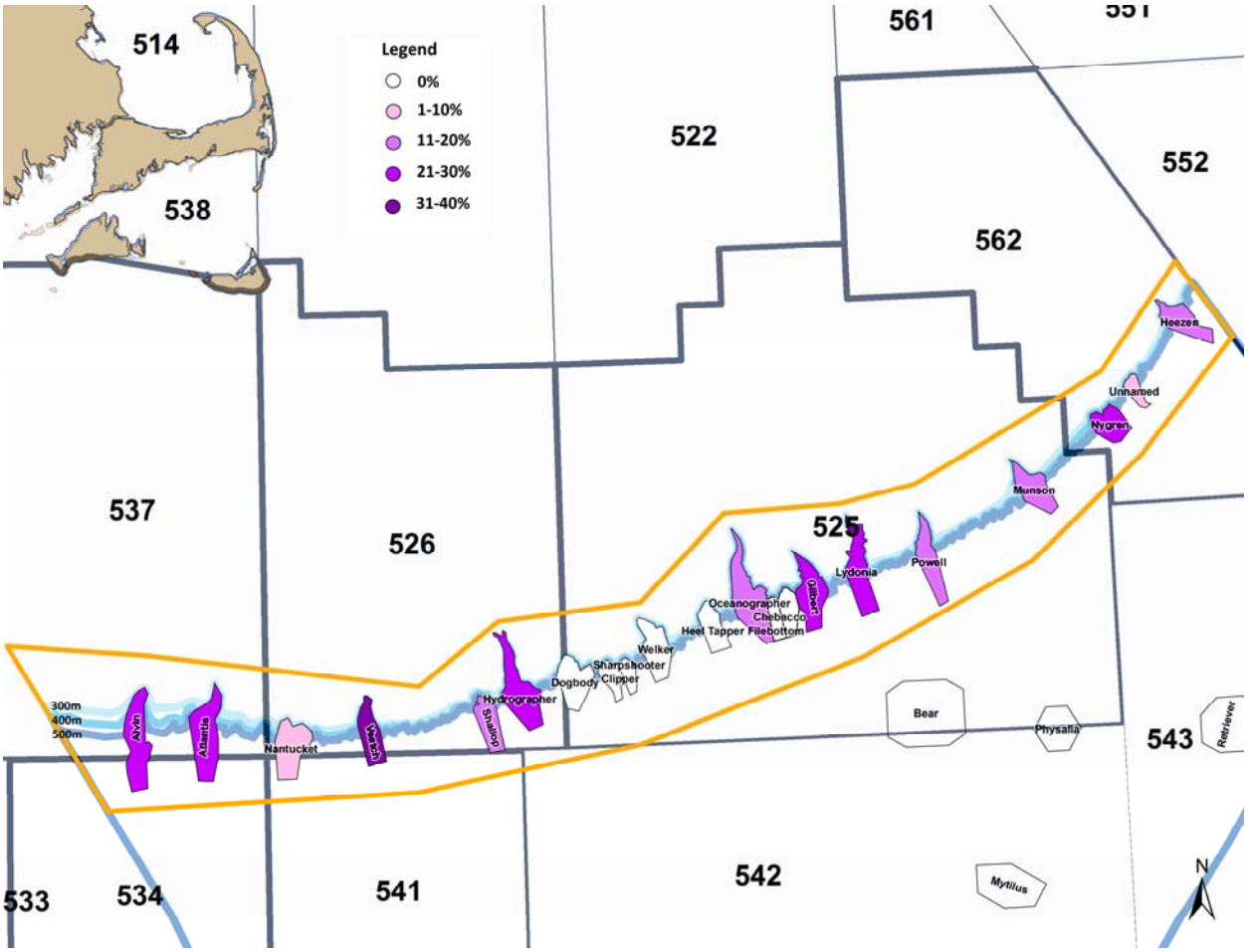


Figure 7. Importance of individual canyons to fishermen's revenue from **American lobster**, reported as the percentage of fishermen citing each as one of the top three that contributed most to their earnings from within the NEFMC Area of Interest in 2015. Canyons are listed in west to east orientation (L-R).

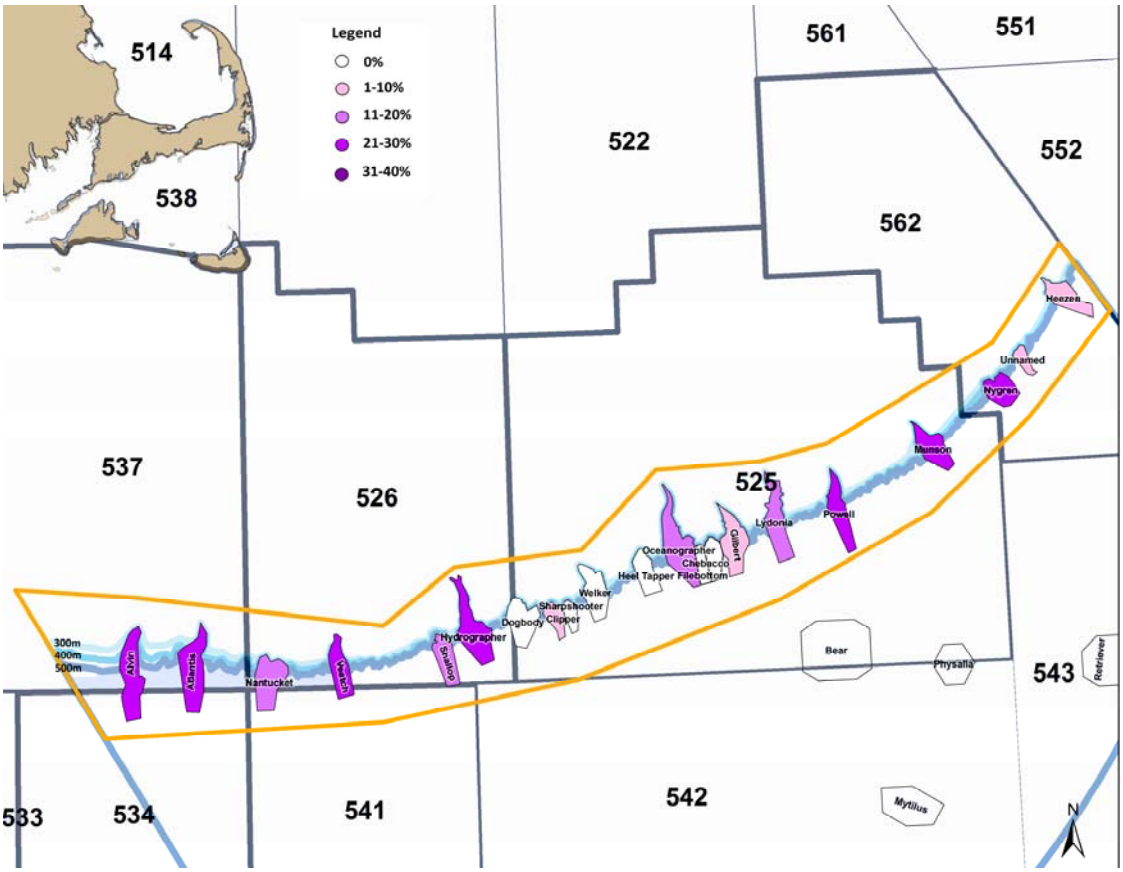
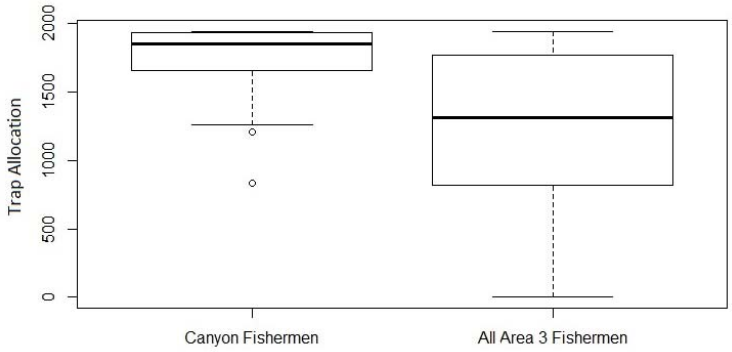


Figure 8. Importance of individual canyons to fishermen's revenue from **Jonah crab**, reported as the percentage of fishermen citing each as one of the top three that contributed most to their earnings from within the NEFMC Area of Interest in 2015. Canyons are listed in west to east orientation (L-R).

Conclusions

Nineteen lobstermen provided unique and comprehensive descriptions of trap fishing practices in and around the Georges Bank and Southern New England canyons in Lobster Conservation Management Area 3. Trap allocations for the 19 survey respondents that fished the NEFMC Area of Interest were around 40% higher than trap allocations for the LCMA 3 non-respondents (Figure 9). This indicated that fishing practices characterized by respondents were representative of those who utilize the area most, and considered 'high-liners' of the LCMA 3 lobster fleet.



	Canyon Fishermen	All Area 3 Fishermen
Min	832	2
Quartile1	1662	816
Median	1852	1317
Quartile 3	1933.25	1772
Max	1945	1945
n	18	93

Figure 9. Trap allocations of (left) LCMA 3 fishermen with 2015 permits who responded to the survey and reported fishing traps within the NEFMC Area of Interest ('Canyon Fishermen'), and of (right) LCMA (Area) 3 fishermen with 2015 permits who did not respond to the survey ('All Area 3 Fishermen'). Line within the box indicates median, box indicated first and third quartiles, and error bars indicate minimum and maximum values.

The self-reported data revealed that the fishery occurs year round in and between at least 19 of the 21 canyons within the NEFMC Area of Interest, from Alvin canyon in the west to Heezen canyon in the east. Characteristics of the fleet included high effort in terms of number of trips and traps hauled per trip, wide geographic spread of canyons that are most important to overall revenue, and a range of depths that are regularly fished. Depth of fishing in and around the canyons is best characterized as variable, with the highest allocation of traps in less than 400 meters (219 fathoms) of water. However, this summation should be applied cautiously, as more than a quarter of respondents fished at least some traps in waters deeper than 400 meters. Seasonally, most traps were fished from spring to fall and were set at the deepest water depths in winter.

High earnings were a hallmark of this relatively small but active fleet. The reliance of the NEFMC Area of Interest on the fleet's bottom line was evident, as an average of 78% of an individual's total revenue came from the canyons area. Total combined value of lobster and Jonah crab landings from within the NEFMC Area of Interest for the nineteen respondents alone was $30.6 million from 2014 to 2015.

Data on canyon-area lobster and Jonah crab fishing are unlikely to be obtained elsewhere, as effort and landings data are collected only to the course level of Lobster Management (statistical) Area, which extends well beyond the NEFMC Area of Interest. Survey respondents' submission

of highly detailed and sensitive information conveyed the importance of the NEFMC Area of Interest to individual businesses practices as well as to the Southern New England lobster industry as a whole.

Acknowledgments

The ASMFC would like to thank all survey participants for their willingness to contribute to the survey and for their submission of highly detailed fishing information.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JUN 11 2014

MEMORANDUM FOR: Executive Directors, Regional Fishery Management Councils
Chairs, Regional Fishery Management Councils
NMFS Regional Administrators
Director, Office of Sustainable Fisheries

FROM: Buck Sutter, Director
Office of Habitat Conservation

SUBJECT: Protection of Deep-Sea Corals from Physical Damage by Fishing Gear under the MSA Deep Sea Coral Discretionary Authority

The attached informational document was developed by the NMFS Office of Habitat Conservation and reviewed by NOAA General Counsel, the Office of Sustainable Fisheries, and the NMFS Regional Offices. The purpose of the document is to provide options and information for NMFS Regional Offices and the regional fishery management councils as they implement the discretionary provisions for deep-sea coral protection included in the Magnuson-Stevens Fishery Conservation and Management Act Section 303(b)(2). These provisions provide that any fishery management plan (FMP) which is prepared by any Council or the Secretary, with respect to any fishery, may:

A) designate zones where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear;

B) designate such zones in areas where deep sea corals are identified under section 408 [the Deep Sea Coral Research and Technology Program], to protect deep sea corals from physical damage from fishing gear or to prevent loss or damage to such fishing gear from interactions with deep sea corals, after considering long-term sustainable uses of fishery resources in such areas. 16 U.S.C. § 1853(b)(2)(A)-(B).

The information included in this document is consistent with NOAA policies established in its *Strategic Plan for Deep-Sea Coral and Sponge Ecosystems*.

We hope this information is useful to you as you consider mechanisms for the protection of deep-sea corals.

Please contact Dr. Tom Hourigan (Tom.Hourigan@noaa.gov) in my Office with any questions or if you would like further information about the Deep Sea Coral Research and Technology Program.

Protection of Deep-Sea Corals from Physical Damage by Fishing Gear under the MSA Deep Sea Coral Discretionary Authority

Purpose

The National Oceanic and Atmospheric Administration (NOAA) is a steward of the nation's living marine resources. This document will assist NOAA offices and the regional fishery management councils (Councils)[1] when developing protective measures for deep-sea corals under section 303(b)(2)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).[2] Section 303(b)(2) provides that any fishery management plan (FMP) which is prepared by any Council or the Secretary, with respect to any fishery, may:

A) designate zones where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear;

B) designate such zones in areas where deep sea corals are identified under section 408 [the Deep Sea Coral Research and Technology Program], to protect deep sea corals from physical damage from fishing gear or to prevent loss or damage to such fishing gear from interactions with deep sea corals, after considering long-term sustainable uses of fishery resources in such areas. 16 U.S.C. § 1853(b)(2)(A)-(B).

We encourage use of this discretionary authority to advance the agency's and Councils' conservation objectives. NOAA's Strategic Plan for Deep-Sea Coral and Sponge Ecosystems seeks to ensure that fisheries that may interact with known and likely deep-sea coral ecosystems are identified and monitored and that such ecosystems are protected from the impacts of fishing gear (see Figure 1).[3] This document is consistent with those policy goals.

[1] Hereafter, "Council" includes NOAA's National Marine Fisheries Service (NMFS), when it prepares fishery management plans or amendments under MSA sections 304(c) (Secretarial plans) and (g) (Atlantic highly migratory species plans).

[2] This document supercedes NMFS Office of Habitat Conservation's Essential Fish Habitat and Deep-sea Coral Authorities White Paper (Feb. 2010).

[3] NOAA 2010. *NOAA Strategic Plan for Deep-Sea Coral and Sponge Ecosystems: Research, Management, and International Cooperation.* Silver Spring, MD: NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 11. 67 pp. http://coris.noaa.gov/activities/deepsea_coral/ Deep-sea sponge habitats can play similar ecological roles and face similar threats as deep-sea coral habitats, but they are outside the scope of the discretionary authority and thus not addressed in this document.

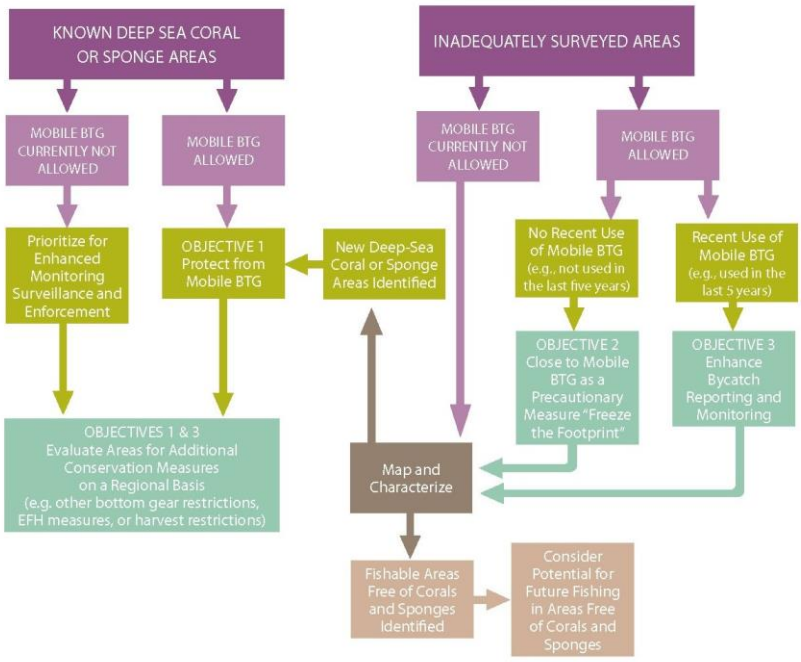


Figure 1: NOAA's precautionary approach to manage bottom-tending gear, especially mobile bottom-tending gear and other adverse impacts of fishing on deep-sea coral and sponge ecosystems, as described in NOAA's Strategic Plan for Deep-Sea Coral and Sponge Ecosystems.

Scope

This document focuses on the use of MSA section 303(b)(2)(B) discretionary authority to minimize physical damage from fishing gear to deep-sea corals identified by the Deep Sea Coral Research and Technology Program. Such measures would also prevent loss or damage to gear from interactions with deep-sea corals. In addition to the discretionary authority, other MSA provisions may be relevant to deep-sea corals. *See* Other MSA Provisions (explaining mandatory requirements for essential fish habitat and bycatch).

What are considered Deep-Sea Corals?

There is strong scientific consensus on the taxa that are considered "corals"[4] but less consensus on what is considered "deep sea." For the purposes of this document and the implementation of the MSA, NOAA has defined the term "deep-sea corals" as azooxanthellate corals (i.e., corals that do not depend upon symbiotic algae and light for energy) generally occurring at depths below 50 meters.[5] Of particular ecological importance and conservation concern are "structure-

[4] Cairns, S.D. 2007. Deep-water corals: an overview with special reference to diversity and distribution of deep-water scleractinian corals. *Bulletin of Marine Science*, 81(3): 311-322.

[5] *See NOAA Strategic Plan for Deep-Sea Coral and Sponge Ecosystems*, *supra* note 3; *1st Report to*

forming deep-sea corals," those colonial deep-sea coral species that provide vertical structure above the seafloor that can be utilized by other species[6] and are most likely to be damaged by interactions with fishing gear. Structure-forming deep-sea corals include both branching stony corals that form a structural framework (e.g., *Lophelia pertusa*) as well as individual colonies of corals, such as gorgonians and other octocorals, black corals, gold corals, and lace corals (Table 1). These are often referred to as habitat-forming deep-sea, deep-water, or cold-water corals.

Class	Subclass	Order	Common Name	Additional Information
Anthozoa—corals, sea anemones, sea pens	Hexacorallia	Scleractinia	Stony corals	A few species form deep-water reef-like structures known as bioherms, coral banks, or lithoherms.
		Zoantharia	Gold corals	Only a few zoanthids in the family Parazoanthidae (e.g., genus *Kulamanamana & Savalia*) form rigid skeletons.
		Antipatharia	Black corals	Many branching forms. Certain species harvested for jewelry in Hawaii.
	Octocorallia	Alcyonacea*	True soft corals	Most are not major structure-forming species.
		Gorgonacea	Gorgonians, sea fans, sea whips	Many branching forms. At least 12 families contain major structure-forming species.
		Pennatulacea	Sea pens	Unlike other species, sea pens are found on soft sediments. Contribution as habitat and to biodiversity is not well understood.
Hydrozoa—hydroids and hydromedusae	Hydroidolina	Anthoathecata (Family Stylasteridae)	Stylasterids or lace corals	Can form branching colonies. May be confused with stony corals but the resemblance is superficial.

*Gorgonians are included by many taxonomists in the Order Alcyonacea.

Table 1: Major deep-sea coral groups (phylum Cnidaria)[7]

Congress on Implementation of the Deep Sea Coral Research and Technology Program, *infra* note 7; and *The State of Deep Coral Ecosystems of the United States* (NOAA 2007).

[6] Lumsden SE, Hourigan TF, Bruckner AW, Dorr G (eds.) 2007. *The State of Deep Coral Ecosystems of the United States.* NOAA Technical Memorandum CRCP-3. Silver Spring MD.

[7] NOAA 2008. *1st Report to Congress on the Implementation of the Deep Sea Coral Research and Technology Program*. http://www.nmfs.noaa.gov/habitat/2010_deepcoralreport.pdf.

What is the role of the Deep Sea Coral Research and Technology Program (DSCRTP)?

The DSCRTP was established under MSA section 408 to identify and map locations of deep-sea corals, monitor activity in locations where deep-sea corals are known or likely to occur, and submit information to the Councils. Section 408 also authorizes the program to conduct research, develop technologies or methods designed to assist fishery participants in reducing interactions between gear and deep-sea corals, and engage in other activities.[8] The program integrates expertise and resources available across NOAA to provide scientific information needed to conserve and manage deep-sea coral ecosystems.[9]

Upon request, the DSCRTP has been providing available information on deep-sea corals to some Councils and Regions to assist them with management initiatives. The DSCRTP is also compiling a database of information on known deep-sea coral locations. The database and its records are undergoing peer review and then, consistent with MSA confidentiality requirements, will be made publicly available through a U.S. Geological Survey web site, OBIS-USA.gov, and through a NOAA web application. The records of deep-sea coral locations are also being used to identify areas likely to contain deep-sea corals using scientific modeling approaches coupled with new field research. In addition, the Program will continue to work with Councils and other partners to develop an updated list of known areas with major structure-forming deep-sea coral aggregations for inclusion in the Program's statutorily required biennial report to Congress on efforts to identify, monitor, and protect deep-sea corals.

The DSCRTP may present a Council with research on, and known locations of, deep-sea coral areas and areas with expected habitat suitable to support deep-sea corals. Should a Council or other organization have information on the location or bycatch of deep-sea corals, it may provide that information to the DSCRTP. If the DSCRTP concurs with that information, it may submit the information to the Council as an area that the Council could consider for protection under the deep-sea corals discretionary authority. The DSCRTP, in consultation with the appropriate Council(s), will periodically review any new information available on deep-sea coral areas and propose revisions and/or amendments to these areas as warranted. If possible, the DSCRTP will schedule such reviews to coincide with a Council's existing essential fish habitat review schedule to maximize efficiency and effectiveness.

As explained below, under the deep-sea coral discretionary authority, a Council may adopt measures that restrict or prohibit fishing or fishing gear. NOAA may provide recommendations to assist Councils in identifying deep-sea coral zones and potential protective actions. These recommendations are in line with MSA section 408, described above, which provides, among other things, that the DSCRTP develop methods designed to assist fishing industry participants in reducing interactions between fishing gear and deep sea corals. The DSCRTP may provide recommendations to a Council for the initial incorporation of deep-sea coral information into an

[8] *See* 16 U.S.C. § 1884.

[9] See http://coralreef.noaa.gov/deepseacorals/noaasrole/research_technology/ for further information.

FMP and for any subsequent modification to fishery management actions. If applicable, NOAA may also provide recommendations for protection of deep-sea corals identified as EFH, including recommendations for designating deep-sea corals as habitat areas of particular concern (HAPCs). In making recommendations, the DSCRTP will coordinate with the appropriate NOAA office(s).

Deep-Sea Coral Discretionary Authority

This section addresses designating deep-sea coral zones and adopting protective measures in an FMP, FMP amendment or omnibus amendment that applies to several FMPs. Such measures must be consistent with the National Standards, other MSA provisions and other applicable law. When using the discretionary authority, an FMP/amendment should clearly state the purpose, need and rationale for the action; be supported by the factual record, including environmental, economic and social impact analyses; and cite to the authority. Example citation: "The purpose of this action is to protect deep-sea corals from physical damage from fishing gear as authorized by section 303(b)(2)(B) of the Magnuson-Stevens Fishery Conservation and Management Act."

Designating Deep-Sea Coral Zones

When designating deep-sea coral zones, the following parameters and considerations apply:

1. The authority may only be used for deep-sea coral areas identified by the DSCRTP.
2. Deep-sea coral zones may only be designated within the U.S. Exclusive Economic Zone (EEZ) and within the geographical range of a fishery managed under an FMP. A Council may develop protective measures for such zones that apply to any fishing, not just that managed under the applicable FMP.[10] Thus, measures may apply to fishing that is managed under a different federal FMP or to state-regulated fishing that is authorized in the EEZ.
3. A Council should coordinate with potentially affected Councils, state commissions, and states to ensure that it has sufficient information to support the need for its action and to analyze impacts of the action on other fisheries.[11]

[10] There may be instances where deep-sea corals extend from the EEZ into state waters. While a Council cannot designate the state waters portion as a deep-sea coral zone under MSA section 303(b)(2)(B), it could describe the deep-sea corals in its FMP. A Council could also explore whether protective measures should be applied to federal permittees when fishing near the deep-sea corals in state waters. However, there would have to be a conservation and management need under the MSA for such action. Should this scenario arise, please consult NOAA General Counsel for further guidance.

[11] *See* 16 U.S.C. § 1853(a)(9) (requiring FMP to have a fishery impact statement addressing likely effects on and possible mitigation measures for participants in fisheries in adjacent areas under the authority of another Council, after consultation with that Council and representatives of the fisheries' participants). Often, a Council will consult directly with other Councils when developing an action that might affect their fisheries. In addition, where a fishery extends beyond the geographical area of authority of any one Council, the Secretary may designate a Council to prepare an FMP/amendment or require that the

4. Long-term sustainable uses of fishery resources in the deep-sea coral areas must be considered. This consideration informs but does not limit the scope of protective measures that a Council may adopt.
5. Deep-sea coral zones and protective measures may be adopted even if there are no vessels currently fishing at or near the areas or there is no indication that current fishing activities are causing physical damage to deep-sea corals.
6. To ensure the effectiveness of protective measures, deep-sea coral zones may include, as necessary, additional areas beyond the exact locations of the deep-sea corals.

Areas considered as priorities for protective measures should be identified on a case-by-case basis considering the following ecological factors and other factors as appropriate:[12]

- the size of the reef or coral aggregation, or density of structure-forming deep-sea corals;
- the occurrence of rare species;
- the importance of the ecological function provided by the deep-sea corals as habitat;
- the extent to which the area is sensitive to human-induced environmental degradation;
- the likelihood of occurrence of deep-sea corals in unsurveyed areas based on the results of coral habitat suitability models or similar methods.

Protective Measures

Within the designated deep-sea coral zones, there are various options available for protecting the corals from physical damage from fishing gear, including but not limited to:[13]

1. Restrictions on the location where fishing may occur. If a closure to all fishing is being considered, it must comply with requirements at MSA section 303(b)(2)(C),[14] which include establishing a timetable for review of the closed area's performance. This review should be conducted in consultation with the DSCRTP. Given the additional

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FMP/amendment be jointly prepared. *Id*. § 1854(f)(1).

[12] *See NOAA Strategic Plan for Deep-Sea Coral and Sponge Ecosystems, supra* note 3.

[13] *See supra* page 1 (quoting authority for fishing and gear restrictions under 16 U.S.C. § 1853(b)(2)(A)).

[14] With respect to any closure of an area to all fishing, an FMP/amendment must ensure the closure: "(i) is based on the best scientific information available; (ii) includes criteria to assess the conservation benefit of the closed area; (iii) establishes a timetable for review of the closed area's performance that is consistent with the purposes of the closed area; and (iv) is based on an assessment of the benefits and impacts of the closure, including its size, in relation to other management measures (either alone or in combination with such measures), including the benefits and impacts of limiting access to: users of the area, overall fishing activity, fishery science, and fishery and marine conservation." 16 U.S.C. § 1853(b)(2)(C).

requirements and process, a Council may want to consider whether targeted gear restrictions, as opposed to a full fishing closure, would provide sufficient protection.

2. Restrictions on fishing by specified types of vessels or vessels with specified types and quantities of gear. These could include, for example, limits on the use of specified fishing-related equipment, required equipment modifications to minimize interactions with deep-sea coral communities, prohibitions on the use of explosives and chemicals, prohibitions on anchoring or setting equipment, and prohibitions on fishing activities that cause damage to deep-sea corals.
3. Proactive protection by freezing the footprint of current fishing activities of specified types of vessels or vessels with specified types and quantities of gear to protect known or expected locations of deep-sea corals.
4. Limits on the harvest or bycatch of species of deep-sea coral that provide structural habitat for other species, assemblages, or communities.

Other MSA Provisions

The deep-sea coral authority is discretionary, but there are other mandatory requirements that may be applicable, including MSA provisions on essential fish habitat and bycatch.

Essential Fish Habitat (EFH)

MSA section 303(a)(7) requires that an FMP describe and identify EFH for the fishery, minimize to the extent practicable adverse effects caused by fishing, and identify other actions to encourage the conservation and enhancement of the EFH. Federal action agencies must consult with NOAA on activities that may adversely affect EFH, and NOAA provides non-binding conservation recommendations to the agencies through that process.[15] If a deep-sea coral area is EFH (e.g., essential for spawning, breeding, feeding or growth to maturity of fish managed under an FMP),[16] then it must be identified as such and the above requirements apply.

For deep-sea corals identified through the DSCRTP, the Council may also adopt additional measures under the deep-sea coral discretionary authority. Unlike the EFH requirements, the discretionary authority does not require a showing that corals are habitat for federally-managed fish or that current fishing activities are causing physical damage. The discretionary authority has no required consultation process for non-fishing activities that may affect deep-sea corals. However, there may be avenues for providing non-binding recommendations to conserve or protect corals through other processes under the MSA (*see e.g.*, section 305(b)(3)(A)), National Environmental Policy Act, Fish and Wildlife Coordination Act, and other authorities.

[15] *See* 16 U.S.C. § 1855(b) and 50 C.F.R. § 600.905 *et seq.* (setting forth EFH consultation requirements and guidance).

[16] EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. § 1802(10). *See also* EFH Guidelines at 50 C.F.R. § 600.810 *et seq.*

Bycatch Requirements

National Standard 9 of the MSA requires that conservation and management measures minimize bycatch and to the extent bycatch cannot be avoided, minimize bycatch mortality.[17] The MSA defines "bycatch" as fish that are harvested in a fishery but that are not sold or kept for personal use.[18] Because deep-sea corals fall under the statutory definition of "fish,"[19] the MSA bycatch provisions are applicable to them.

When analyzing proposed conservation and management measures, if a Council has information that bycatch of deep-sea corals may occur, it should address the above bycatch requirements regardless of whether the DSCRTP has identified the resources as deep-sea coral areas. For deep-sea corals identified through the DSCRTP, a Council may adopt additional measures under the deep-sea coral discretionary authority. Designation of appropriate deep-sea coral zones that prohibit the use of bottom-contact fishing gears is likely to be among the most effective approaches to minimize bycatch of deep-sea corals.

[17] 16 U.S.C. § 1851(a)(9). *See also id.* § 1853(a)(11) and 50 C.F.R. § 600.350 (NS 9 Guidelines).

[18] 16 U.S.C. § 1802(2) and 50 C.F.R. § 600.350(a)(2)(c). *See also Managing the Nation's Bycatch: Priorities, Programs and Actions for the National Marine Fisheries Service* (NMFS 2008) (including as "bycatch" the discarded catch of any living marine resource plus retained incidental catch and unobserved mortality due to a direct encounter with fishing gear).

[19] *See* 16 U.S.C. § 1802(12) (defining "fish" as "finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds").

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: Doug Grout, Commission Chair

DATE: April 20, 2016

SUBJECT: National Monument Proposal in the Atlantic Ocean

In September 2015, the Obama Administration announced it is considering protecting waters off the coast of New England, through the use of the Antiquities Act. If enacted, this would create the first national monument in the Atlantic Ocean. The proposal identifies the New England Coral Canyons and Seamounts Area as a region under consideration but does not give specifics on the exact boundaries or water depths being evaluated. Nor does the proposal provide a potential time frame on a decision. On March 25, 2016, the White House Council on Environmental Quality announced that Cashes Ledge, in the Gulf of Maine, will not be designated as a national monument; however, the area southeast of Cape Cod is still under consideration.

The Antiquities Act gives the President authority to create national monuments on federal lands which contain "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest"[1]. The Act specifies that the President, in creating a national monument, reserves "the smallest area compatible with the proper care and management of the objects to be protected"[2]. Since 1906, roughly 130 monuments have been created on land and in the water. Critics of the Antiquities Act highlight there is no requirement for an environmental review or public participation when designating a monument[3]. Others contend the Act is vague on the size requirements and establishment criteria for national monuments, allowing presidents to create large monuments for areas which are not under imminent threat[4]. Those that support the Antiquities Act argue presidents from both parties have used the act to expeditiously preserve resources for future generations[5].

It is currently unclear what fishing activities or gear types might be limited if a national monument is established off the coast of New England. Given that there is significant lobster fishing effort in the offshore canyons, the American Lobster Management Board may want to discuss how to proceed, in light of the limited information we have on the national monument proposal.

[1] Antiquities Act of 1906 (P.L. 59-209, 34 Stat. 225)
[2] P.L. 59-209, 34 Stat. 225
[3] Vincent, C and K. Alexander. July 20, 2010. National Monuments and the Antiquities Act. Congressional Research Service, R41330.
[4] Vincent and Alexander, 2010.
[5] Ibid.

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: David Borden, Chairman Lobster Board

DATE: April 25, 2016

SUBJECT: Commission Position on Offshore Monument

The Obama Administration is currently considering, per the request of several environmental organizations, the creation of a National Monument (Monument) in the New England Canyons and Seamounts Area via the Antiquities' Act, which may or may not eventually include Cashes Ledge in the Gulf of Maine. While little information has been provided on the specific boundaries under consideration or on what fishing activities may or may not be prohibited, the action could have significant negative impacts on the lobster and crab, fisheries managed by the Commission. Chairman Grout, has arranged for the leadership of the Commission to meet with representatives of the President's Office on Environmental Quality (CEQ) on May 4, 2016 so that we have an opportunity to comment on the issue.

Of key interest to the Commission is the offshore lobster fishery which we manage in conjunction with our partners in NOAA fisheries. There are currently 132 Area 3 lobster permit holders. Each of these fishermen could be negatively affected by the designation of a Monument, either through the direct prohibition of fishing in the area, or by the displacement of effort into adjacent fishing grounds. The economic impacts of a potential Monument designation would undoubtedly be significant, as lobster and Jonah crab revenue from the SNE area alone are estimated to be $38 million. These economic impacts would be felt coast wide as the fishing fleets working in and around the canyons hail from ports across New England and the Mid-Atlantic (Table 1).

Table 1: Federal permit holders by state. Fishing Year 2016 NOAA GARFO permit holder information.

State	# Area 3 Permit Holders	# Area 3 Trap Allocation
ME	10	4,665
NH	19	25,514
MA	47	48,701
RI	38	41,288
CT & NY	5	5257
NJ, DE, MD, & VA	13	11,443

There is also the potential for negative impacts to the lobster stock. The 2015 Benchmark Stock Assessment found Georges Bank/Gulf of Maine (GOM/GB) stock to be healthy and at record abundance. Therefore closing any portion of GOM/GB stock area to lobster fishing could displace

effort into the Southern New England (SNE) stock, which is currently depleted and experiencing recruitment failure. This redirection of effort could cause further resource depletion in SNE and hinder management actions in the area. Given the potential for large impacts on the lobster and crab fishery and the stocks, I believe it is appropriate and important for the American Lobster Management Board to collectively take a position on the Monument issue, and offer suggestions on ways to mitigate its potential impact should the Administration choose to move forward on the issue.

Notwithstanding the points above, I believe there are other important compelling considerations at risk in this decision that may affect the States. A large number of the States represented on the Commission have major interests in finfish, pelagic longline, squid, and red crab fisheries or have sizable recreational fisheries that persue pelagic fisheries along the edge of the shelf. Although the States do not directly manage a number of these fisheries, they do have a vital interest in the decision.

All of these fisheries could be directly affected by a closure or indirectly affected by a redirection of effort. For example, a prohibition on squid fishing in proximity of offshore canyons would most certainly result in a redirection of effort to near shore New England and Mid-Atlantic waters by the offshore squid fleet. A prohibition on red crab fishing would result in a redirection into the lobster fishery since all of the red crab vessels have lobster and Jonah crab permits. The red crab fishery alone is valued in excess of $15 million and employs over 150 individuals in New Bedford, MA. Canyon closures could force fishermen into neighboring shallower waters that are inhabited by higher densities of endangered right whale and other protected species. A Cashes Ledge closure alone would surely would displace gear into other GOM areas utilized by higher densities of Right and Humpback whales. These are just a few examples of the potential impacts on the recreational and commercial community.

In recognition of the above concerns, I recommend that the Lobster Board formalize a position/guidance on this issue, and forward the recommendation to the Executive Committee, for consideration and action. Any position adopted by the Executive Committee would therefore be communicated to the office of CEQ at the May 4, 2016 meeting as a formal Commission position.

National Monuments and the Antiquities Act

Carol Hardy Vincent
Specialist in Natural Resources Policy

Kristina Alexander
Legislative Attorney

July 20, 2010

Congressional Research Service
7-5700
www.crs.gov
R41330

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

The Antiquities Act of 1906 authorizes the President to create national monuments on federal lands that contain historic landmarks, historic and prehistoric structures, or other objects of historic or scientific interest. The President is to reserve "the smallest area compatible with the proper care and management of the objects to be protected." The act was designed to protect federal lands and resources quickly, and Presidents have proclaimed about 130 monuments. Congress has modified many of these proclamations and has abolished some monuments. Congress also has created monuments under its own authority.

Presidential establishment of monuments sometimes has been contentious—for example, President Franklin Roosevelt's creation of the Jackson Hole National Monument in Wyoming (1943); President Carter's massive Alaskan withdrawals (1978); and President Clinton's establishment of 19 monuments and enlargement of three others (1996-2001). The Obama Administration's consideration of areas for possible monument designation has renewed controversy over the Antiquities Act.

Issues have included the size of the areas and types of resources protected; the effects of monument designation on land uses; the level and types of threats to the areas; the inclusion of nonfederal lands within monument boundaries; the act's limited process compared with the public participation and environmental review aspects of other laws; and the agency managing the monument.

Opponents have sought to revoke or limit the President's authority to proclaim monuments. Congress is currently considering proposals to preclude the President from unilaterally creating monuments in particular states, and to impose environmental studies and public input procedures, among other changes. Monument supporters favor the act in its present form, asserting that the public and the courts have upheld monument designations and that many past designations that initially were controversial have come to be supported. They contend that the President needs continued authority to promptly protect valuable resources on federal lands that may be threatened.

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Introduction

Presidential establishment of national monuments under the Antiquities Act of 1906 (16 U.S.C. §§ 431-433) has protected valuable sites, but also has been contentious. Litigation and legislation related to the law have been pursued throughout its history. To give one historical example, displeasure with President Franklin Roosevelt's proclaiming of the Jackson Hole National Monument in Wyoming in 1943 prompted litigation on the extent of presidential authority under the Antiquities Act, and led to a 1950 law prohibiting future establishment of national monuments in Wyoming unless Congress made the designation.[1] As another example, President Carter's establishment of monuments in Alaska in 1978 also was challenged in the courts and led to a statutory requirement for congressional approval of land withdrawals[2] in Alaska larger than 5,000 acres.[3] President Clinton's proclamation of the Grand Staircase-Escalante National Monument in 1996 triggered several lawsuits, a law authorizing land exchanges,[4] and proposals to amend or revoke presidential authority under the Antiquities Act. President George W. Bush's designation of a marine national monument in 2009 led to a legal challenge claiming that fishing rights had been lost. To date, no court challenges have succeeded. Additionally, initial opposition to some monument designations has turned to support over time. Some controversial monuments later were enlarged and redesignated as national parks by Congress, and today are popular parks with substantial economic benefit to the surrounding communities. For instance, the Grand Canyon National Monument, proclaimed in 1908 and the subject of a legal challenge, is now a world-famous national park.

Various issues regarding presidentially created monuments have generated controversy, lawsuits, and legislative proposals to limit the President's authority. Issues include the size of the areas and types of resources protected, the level and types of threats to the areas, the inclusion of nonfederal lands within monument boundaries, restrictions on land uses that may result, the manner in which the monuments were created, and the selection of the managing agency. Recent Congresses have considered, but not enacted, bills to restrict the President's authority to create monuments and to establish a process for input into monument decisions. Monument supporters assert that changes to the Antiquities Act are neither warranted nor desirable. They believe that the act serves an important purpose in preserving resources for future generations. Additionally, courts have supported presidential actions. The Obama Administration's interest in exploring areas for national monument designation has renewed controversies and legislative efforts in the 111th Congress to restrict the President's authority to proclaim national monuments.

The Antiquities Act of 1906

The Antiquities Act of 1906 authorizes the President to proclaim national monuments on federal lands that contain "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest." The President is to reserve "the smallest area compatible with the

[1] 16 U.S.C. § 431a.

[2] A withdrawal is an action that restricts the use or disposition of public lands.

[3] This provision was enacted as part of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), P.L. 96-487; see 16 U.S.C. § 3213.

[4] P.L. 105-335.

proper care and management of the objects to be protected."[5] Congress subsequently limited the President's authority by requiring congressional authorization for extensions or establishment of monuments in Wyoming,[6] and by making withdrawals in Alaska exceeding 5,000 acres subject to congressional approval.[7]

The Antiquities Act was a response to concerns over theft from and destruction of archaeological sites and was designed to provide an expeditious means to protect federal lands and resources. President Theodore Roosevelt used the authority in 1906 to establish Devil's Tower in Wyoming as the first national monument. Fifteen of the 19 Presidents[8] since 1906 have created 128 monuments in total, including the Grand Canyon, Grand Teton, Zion, Olympic, the Statue of Liberty, and the Chesapeake and Ohio Canal.[9] President Franklin Roosevelt used his authority the most often—on 28 occasions. President George W. Bush proclaimed the most monument acreage, virtually all in marine areas. Many areas initially designated as national monuments were later made into national parks.

Monuments vary widely in size. While about half of the presidential monument proclamations involved less than 5,000 acres, they have ranged from less than 1 to about 89 million acres.[10]

Congress, too, may create national monuments on federal lands, and has done so on many occasions. Supporters of congressional, rather than presidential, action note that Congress has unlimited authority to craft legislation to suit a particular area, and is not restricted by the Antiquities Act. For instance, Congress could allow more land uses than are typical for national monuments created by the President, such as by allowing new commercial development, and could choose to provide additional protections. Some observers believe that legislation (as opposed to presidential action) is more likely to involve the input of local and other citizens.

Congress also has modified monuments (including those created by the President), for instance, by changing their boundaries. Congress has abolished some monuments outright and converted others into different protective designations, such as national parks. Almost half of the current national parks were first designated as national monuments.[11]

[5] 16 U.S.C. § 431.

[6] 16 U.S.C. § 431a.

[7] 16 U.S.C. § 3213.

[8] Since 1906, the Presidents who have not used this authority are Richard M. Nixon, Ronald Reagan, George H. W. Bush, and Barack Obama.

[9] Monuments created by Presidents from 1906 through 2006 are listed chronologically on the website of the National Park Service at http://www.nps.gov/archeology/sites/antiquities/MonumentsList.htm.

[10] The African Burial Ground National Monument, established by President George W. Bush in 2006 in New York City, is 0.345 acres. The Papahanaumokuakea Marine National Monument, proclaimed by President George W. Bush, is approximately 89 million acres in the Pacific Ocean. The largest national monument proclaimed on land was the Wrangell-St. Elias National Monument in Alaska, with 10.95 million acres. It was redesignated as a national park and national preserve two years after it was proclaimed.

[11] See the list of monuments created by Presidents from 1906 through 2006 on the website of the National Park Service at http://www.nps.gov/archeology/sites/antiquities/MonumentsList.htm.

Monument Issues and Controversies

Presidential authority to create monuments has generated concern among some Members of Congress, state and local officials, user groups, and others. Controversies in Congress are focused on a perceived lack of consistency between the Antiquities Act and the policies established in other laws, especially the land withdrawal provisions of the Federal Land Policy and Management Act of 1976 (FLPMA),[12] the environmental reviews required by the National Environmental Policy Act (NEPA),[13] and the public participation requirements of NEPA, FLPMA, and other laws. Criticism also has been expressed by those who oppose restrictions on land uses, both extractive (e.g., mining) and recreational (e.g., off-road vehicle use), as a result of monument proclamations. Critics also have challenged the size of the areas and types of resources that would be protected.

Among the monument measures considered during recent Congresses were bills to impose restrictions on presidential authority, such as those to limit the size or duration of withdrawals; to prohibit or restrict withdrawals in particular states; to encourage public participation in the monument designation process; to revoke the President's authority to designate monuments or require congressional approval of some or all monument designations; or to promote presidential creation of monuments in accordance with certain federal land management and environmental laws. Measures also were introduced to change land uses within monuments and to alter monument boundaries.

Supporters of the Antiquities Act assert that changes to the act are neither warranted nor desirable. They contend that previous Congresses that focused on this issue were correct in not repealing the Antiquities Act. They note that Presidents of both parties have used the authority for over a century to protect valuable federal lands and resources expeditiously, and they defend the President's ability to take prompt action to protect areas that may be vulnerable to looting, vandalism, commercial development, and other permanent changes. While the Secretary of the Interior can make temporary emergency withdrawals of BLM lands,[14] there is no comparable authority with respect to national forest lands or other federal lands. Defenders also note that some past designations that initially were contentious have come to be widely supported over time. They contend that large segments of the public support land protection, such as through monument designations, for the recreational, preservation, and economic benefits that such designations often bring.

A primary objection to national monuments is that the declaration changes the property from being federal land available for multiple uses to being a national monument with possible restricted uses. The legal challenge to the Grand Teton National Monument was premised on the state's loss of revenue from taxes and grazing fees.[15] Courts have found that, for monuments established under the Antiquities Act, agencies are afforded broad rights to protect the resources of the site, and that the loss of income is not a legal basis to reject a monument designation.[16] The

[12] 43 U.S.C. § 1701 *et seq*. This law applies primarily to the lands managed by the Bureau of Land Management and actions taken by the Secretary of the Interior, although some provisions also apply to the lands managed by the Forest Service and the Secretary of Agriculture.

[13] 42 U.S.C. § 4321 *et seq*.

[14] 43 U.S.C. § 1714.

[15] *Wyoming v. Franke*, 58 F. Supp. 890 (D. Wyo. 1945).

[16] *Wyoming v. Franke*, 58 F. Supp. 890 (D. Wyo. 1945).

broad rights to protect monument resources at the time of creation can include obtaining water rights.[17]

Monument Size

In establishing a national monument, the President is required by the Antiquities Act to reserve "the smallest area compatible with the proper care and management of the objects to be protected."[18] Many monuments have been quite small, but several Presidents have established large monuments. Examples of large monuments include Katmai, established in 1918 with 1.1 million acres; Glacier Bay, created in 1925 with 1.4 million acres; most of the Alaska monuments proclaimed in 1978, the largest being Wrangell-St. Elias, with nearly 11 million acres; and Grand Staircase-Escalante, established in 1996 with 1.7 million acres. Most recently, President George W. Bush established large marine monuments, namely the Papahanaumokuakea Marine National Monument, with approximately 89 million acres; the Marianas Trench Marine National Monument, with 60.9 million acres; the Pacific Remote Islands Marine National Monument, with 55.6 million acres; and the Rose Atoll Marine National Monument, with 8.6 million acres.[19] The Bush Administration claimed that the latter three areas formed the largest protected ocean area in the world.[20]

Critics assert that large monuments violate the Antiquities Act, in that the President's authority regarding size was intended to be narrow and limited. They charge that Congress intended the act to protect specific items of interest, especially archaeological sites and the small areas surrounding them. They support this view with the legislative history of the act, in which proposals to limit a withdrawal to 320 or 640 acres were mentioned but not enacted. They contend that some of the monument designations were greater than needed to protect particular objects of value, and that the law was not intended to protect large swaths of land or ocean.

Defenders observe that the Antiquities Act gives the President discretion to determine the acreage necessary to ensure protection of the resources in question, which can be a particular archaeological site or larger features or resources. The Grand Canyon, for example, originally was a national monument measuring 0.8 million acres; President Theodore Roosevelt determined that this large size was necessary to protect the "object" in question—the canyon. Defenders also note that after considering the issue in the early 1900s, Congress deliberately rejected proposals to restrict the President's authority to set the size of the withdrawal. Further, they assert that preserving objects of interest may require withdrawal of sizeable tracts of surrounding land to preserve the integrity of the objects and the interactions and relationships among them.

The courts have deferred to the President's judgment as to the proper size for a monument. For example, the lawsuit challenging the Grand Sequoia National Monument was based in part on the

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[17] *Cappaert v. United States*, 426 U.S. 128 (1976) (regarding Death Valley National Monument); *High Country Citizens' Alliance v. Norton*, 448 F. Supp. 2d 1235 (D. Colo. 2006) (referring to Black Canyon of the Gunnison National Monument).

[18] 16 U.S.C. § 431.

[19] All monument sizes listed are approximate. Also, the sizes of marine monuments typically have been identified in square miles, rather than acres. A square mile is equal to 640 acres.

[20] For information on protection of ocean areas, including current issues, programs, and administrative and congressional action, see CRS Report RL32154, *Marine Protected Areas: An Overview*, by Harold F. Upton and Eugene H. Buck.

monument's size (327,769 acres) not being "the smallest area compatible with proper care and management," as required by the act.[21] The court found no factual basis for the argument that the size did not meet the standards of the act.

Establishment Criteria

Under the Antiquities Act, the President can establish monuments on federal land containing "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest."[22] Some proclamations have identified particular objects needing protection, while others have referred more generally to scenic, scientific, or educational features of interest.

Presidents sometimes have cited threats to resources (e.g., natural and cultural) to support establishing monuments, although imminent threat is not expressly required by the Antiquities Act. In his remarks designating the Grand Staircase-Escalante National Monument, for instance, President Clinton expressed concern about work underway for a large coal mining operation that, he asserted, could damage resources in the area. Sometimes the noted threats appear less immediate, as for the lands included in the Grand Canyon-Parashant Monument (proclaimed January 11, 2000) which "could be increasingly threatened by potential mineral development," according to the Administration.[23] In other cases, threats were reported by the press or private organizations. For instance, the National Trust for Historic Preservation had identified the (subsequently proclaimed) President Lincoln and Soldiers' Home National Monument as one of the country's most endangered historic properties.

Presidential creation of monuments in the absence of immediate threats to resources troubles those who believe that the law is intended to protect objects that are in immediate peril of permanent harm. They contend that Presidents have established monuments to support environmental causes, limit development, and score political gains, among other reasons. Those who contest those charges note that the Antiquities Act lacks a requirement that objects be immediately threatened or endangered. Others cite the pervasive dangers of development and growth, looting, and vandalism as sufficient grounds for contemporary presidential action.

Some critics charge that, because the original purpose of the act was to protect specific objects, particularly objects of antiquity such as cliff dwellings, pueblos, and other archeological ruins (hence the name "Antiquities Act"), Presidents have used the act for excessively broad purposes, such as general conservation, recreation, scenic protection, or protection of living organisms. These purposes, they contend, are more appropriate for a national park or other designation established by Congress. Supporters of current presidential authority counter that the act does not limit the President to protecting ancient relics, and maintain that "other objects of historic or scientific interest" is broad wording that grants considerable discretion to the President.

Courts, including the U.S. Supreme Court, have upheld under the Antiquities Act both the designation of particular monuments and the President's authority to create monuments. In a decision addressing one of the first national monuments proclaimed—the Grand Canyon—the Supreme Court upheld the President's authority under Antiquities Act.[24] The Court found that the

[21] *Tulare County v. Bush*, 306 F.3d 1138, 1142 (D.C. Cir. 2002).

[22] 16 U.S.C. § 431.

[23] The White House, Office of the Press Secretary, *Grand Canyon-Parashant National Monument*, January 11, 2000.

[24] *Cameron v. United States*, 252 U.S. 450 (1920).

act gave the President the authority to preserve lands with cultural or scientific interest.[25] Since then, courts have given great deference to this presidential authority, holding that courts have only a limited review of a presidential proclamation provided that it states the natural or historic interest and that the area is the minimum amount needed to protect those interests.[26] The courts also have ruled that the act may protect natural wonders and wilderness values.[27]

Inclusion of Nonfederal Lands

It is an unresolved issue whether the Antiquities Act allows the President to declare a national monument on lands not owned by the federal government. To date, no presidential declaration of a monument has converted private property to federal property. However, some private inholdings occur within national monuments.

The Antiquities Act initially states that it applies to lands *owned or controlled* by the federal government. However, it also states that, where the objects to be preserved are on privately owned lands, the property "may be relinquished to the Government."[28] It is not clear whether relinquishment is voluntary or may include condemnation. Courts have only discussed the issue as a side matter to the dispute they were resolving. In two such cases, the courts have indicated that relinquishment should be interpreted as a voluntary surrender of property. The more recent decision, in 2008, stated that the Antiquities Act "does not authorize government officials forcibly to take private property to provide such care or to enter private land."[29] In 1978, the Supreme Court described the Antiquities Act as applying solely to federal property: "A reservation under the Antiquities Act thus means no more than that the land is shifted from one federal use, and perhaps from one federal managing agency, to another."[30]

In some cases, nonfederal lands are contained within the outer boundaries of a monument, although the ownership does not change by the monument designation. This inclusion is a source of controversy. The Clinton Administration indicated that the monument designation does not apply to nonfederal lands. The Solicitor of the Department of the Interior (DOI) asserted this view in 1999 testimony before Congress, stating that the Antiquities Act applies only to federal lands and that monument designations cannot bring state or private lands into federal ownership.[31] Some monument proclamations have stated that nonfederal lands will become part of the monument if the federal government acquires title to the lands from the current owners.[32]

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[25] Ibid., p. 455.

[26] *Tulare County v. Bush*, 306 F.3d 1138, 1142 (D.C. Cir. 2002) (regarding Giant Sequoia National Monument).

[27] *Mountain States Legal Foundation v. Bush*, 306 F.3d 1132, 1138 (D.C. Cir. 2002) (regarding six monuments in four states).

[28] 16 U.S.C. § 431.

[29] *Buono v. Kempthorne*, 527 F.3d 758 (9th Cir. 2008).

[30] *California v. U.S.*, 436 U.S. 32, 40 (1978) (regarding Channel Islands National Monument).

[31] Testimony of John D. Leshy, at House Committee on Resources, Subcommittee on National Parks and Public Lands, hearings on *H.R. 1487, The National Monument NEPA Compliance Act*, 106th Cong., 1st sess., June 17, 1999, p. 53 and p. 55.

[32] Nearly all of President Clinton's monument proclamations had such a provision. See, for example, the monument proclamations for the Agua Fria, Canyons of the Ancients, Sonoran Desert, and Upper Missouri River Breaks National Monuments. These monument proclamations are on the website of the BLM, under the respective monument listings, at http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/monuments.html.

Some, however, note that, while private or state-owned lands are technically not part of the monument, development of such land located within monuments is difficult because such development might be incompatible with the purposes for which the monument was created or constrained by management of the surrounding federal lands.[33] Monument supporters note that if state or private landowners within a monument fear or experience difficulties, they can pursue land exchanges with the federal government. Some monument proclamations have authorized land exchanges to further the protective purposes of the monument.[34]

Effects on Land Use

The overriding management goal for all monuments is protection of the objects described in the proclamations. Monument designation can limit or prohibit land uses, such as development or recreational uses. Limitations or prohibitions may be included in the proclamations themselves, accompanying administration statements, management plans developed by the agencies to govern monument lands, agency policies, or other sources. Some use issues may not arise for particular monuments given their distinctive characteristics, for instance, their small size or water-based nature. In general, existing uses of the land that are not precluded by the proclamations, and do not conflict with the purposes of the monument, may continue.

Monument proclamations since 1996 typically have had protections for valid existing rights[35] for land uses, but the extent to which designations may affect existing rights is not always clear. A common concern is that monument designation potentially could result in new constraints on development of existing mineral and energy leases, claims, and permits. There are fears that mineral activities may have to adhere to a higher standard of environmental review, and will have a higher cost of mitigation, to ensure compatibility with the monument designation.

Most of these monument proclamations have barred *new* mineral leases, mining claims, prospecting or exploration activities, and oil, gas, and geothermal leases, subject to valid existing rights. This has been accomplished by language to withdraw the lands within the monuments from entry, location, selection, sale, leasing, or other disposition under the public land laws, mining laws, and mineral and geothermal leasing laws.

Another concern is whether commercial timber cutting will be restricted as a result of designation. For instance, future timber production was expressly precluded in the Giant Sequoia National Monument proclaimed by President Clinton in 2000, although certain current logging contracts could be implemented. In many other cases, the proclamations have implied, through a general prohibition against removing any "feature" of the monuments, that timber cutting is precluded.[36] Some assert that restrictions are needed to protect the environmental, scenic, and

[33] See, for example, *Wilkenson v. Department of the Interior*, 634 F. Supp. 1265 (D. Col. 1986) (federal government could not completely restrict travel on a pre-existing right of way through a national monument).

[34] President Clinton's monument proclamations typically contained such a provision. See, for example, the monument proclamations for the Agua Fria, Canyons of the Ancients, Sonoran Desert, and Upper Missouri River Breaks National Monuments. These monument proclamations are on the website of the BLM, under the respective monument listings, at http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/monuments.html.

[35] The term *valid* has been interpreted by the Supreme Court in the context of a mine within a national monument as meaning there were valuable, workable deposits of ore present. *Cameron v. United States*, 252 U.S. 450 (1920).

[36] President Clinton's monument proclamations typically contained such a provision. See, for example, the monument proclamations for the Agua Fria, Canyons of the Ancients, Sonoran Desert, and Upper Missouri River Breaks National Monuments. These monument proclamations are on the website of the BLM, under the respective monument listings, (continued...)

recreational attributes of forests. Logging supporters assert that forests can be used sustainably and that concerns raised by environmentalists as grounds for limiting commercial timber operations do not reflect modern forestry practices.

Using motorized and mechanized vehicles off-road, except for emergency or authorized purposes, is prohibited under the proclamations for many newer monuments, particularly those issued by President Clinton. Whether to allow vehicular travel on designated routes or in designated areas, or to close routes or areas to vehicular use in those monuments where such use is not expressly prohibited, typically is addressed when drafting the management plan for each monument. In some cases, off-road vehicle use was prohibited before the monument designations; some of the prohibitions may not have been fully implemented. In other areas that have become monuments, off-road vehicles had been allowed, at least in some places.

Other concerns have included the possible effects of monument designation on hunting, fishing, and grazing. Some proclamations have restricted such activities to protect monument resources, and monument management plans may result in additional restrictions. For instance, proclamations for some marine monuments established by President George W. Bush have restricted or prohibited commercial and recreational fishing. Provisions on grazing have been controversial in some cases, with some asserting that grazing has been unnecessarily curtailed while others claim that grazing has not been sufficiently limited to prevent ecological damage.

States and counties frequently have viewed restrictions on federal lands in their jurisdictions as threats to economic development. They maintain that local communities are hurt by the loss of jobs and tax revenues that result from prohibiting/restricting future mineral exploration, timber development, or other activities. Some believe that limitations on energy exploration could leave the United States more dependent on foreign oil.

Advocates of creating monuments claim that economic benefits resulting from designation, including increased tourism, recreation, and the relocation of businesses and people, may exceed the benefits of traditional economic development. Others allege that the public interest value of continued environmental protection outweighs any temporary economic benefit that could have resulted from development. Some maintain that development is insufficiently limited by monument designation, through the preservation of valid existing rights for particular uses, such as mining, and that the restrictions on future use should be tighter. Areas need to be left intact for future generations, they contend.

"Consistency" of Antiquities Act with NEPA and FLPMA

The Federal Land Policy and Management Act of 1976 (FLPMA) authorizes the Secretary of the Interior to make certain land withdrawals under specified procedures. In enacting FLPMA, Congress not only limited the ability of the Interior Secretary to make withdrawals, but repealed much of the express and implied withdrawal authority previously granted to the President by several earlier laws.

(...continued)

at http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/monuments.html.

Critics of the Antiquities Act maintain that the act is inconsistent with FLPMA's intent of restoring control of public land withdrawals to Congress. They assert that Congress is the appropriate body to make and implement land withdrawal policy and that Congress intended to review and retain veto control over all executive withdrawals exceeding 5,000 acres. On the other hand, in enacting FLPMA, Congress did not explicitly repeal or amend the Antiquities Act, despite extensive consideration of all executive withdrawal authorities. Supporters of the act assert that it was the clear intent of Congress to retain presidential withdrawal authority under the Antiquities Act.

Similarly, critics note that monuments have been proclaimed without the environmental studies required of agencies for "major federal actions" under NEPA, or the review of a public purpose and opportunity for public participation that FLPMA provides. However, neither NEPA[37] nor FLPMA applies to the actions of a President (as opposed to an action of an agency), and the Antiquities Act is silent as to the procedures a President must follow to proclaim a new monument. Some want to add procedures for environmental review and public participation to the monument designation process so that significant withdrawals (with resulting effects on existing uses) would not be made without scientific, economic, and public input.

Others counter that such changes would impair the ability of the President to take action quickly to protect objects and lands, thereby avoiding possible damage to the resources.[38] They assert that participation requirements are not needed in law because Presidents typically consult with government officials and the public before establishing monuments. Some believe that NEPA requirements are unnecessary for monument designation because once monuments are created, detailed management plans are developed in accordance with NEPA.

Monument Management

Although most monuments are managed by the National Park Service (NPS), both Congress and the President have created monuments managed by other agencies. For example, in 1996 President Clinton created the Grand Staircase-Escalante National Monument and assigned its management to BLM, the first such area administered by BLM. President Clinton subsequently established additional monuments under BLM or other agency management. Also, President George W. Bush selected the Fish and Wildlife Service (FWS), the National Oceanic and Atmospheric Administration in the Department of Commerce, and other agencies to manage marine monuments. In most cases, the monuments were assigned to be managed by the agency that had responsibility for the area before the designation, although that was not always the case. For example, although the area within the Minidoka Internment National Monument was managed by the Bureau of Reclamation before designation, the proclamation designating the monument changed the management authority to the NPS.

The President's authority to choose a management agency other than NPS has been questioned. Before 1933, monuments were managed by different agencies, but in that year President Franklin Roosevelt consolidated management of national monuments in the NPS. Following the 1933

[37] See *Alaska v. Carter*, 462 F. Supp. 1155 (D. Alaska 1978) (NEPA does not apply to presidential proclamation under the Antiquities Act).

[38] The status quo of BLM-managed lands could be maintained, because § 204(e) of FLPMA (43 U.S.C. 1714(e)) authorizes the Secretary to temporarily withdraw BLM lands for a period of up to two years. Comparable authority does not exist with respect to lands managed by other agencies.

consolidation, until 1978 no presidentially created monuments were managed by an agency other than the NPS. In 1978, two of the Alaska monuments created by President Carter were directed to be managed by the Forest Service, part of the U.S. Department of Agriculture, and two were managed by FWS. Assigning management to the Forest Service was controversial, and the two monuments were ultimately given statutory direction for Forest Service management.[39]

The Supreme Court has suggested that it is entirely proper to switch management of federal lands among federal agencies. As noted earlier, in its decision regarding the Channel Islands National Monument, the Court said that the Antiquities Act could mean that the "land is shifted from one federal use, and perhaps from one federal managing agency, to another."[40] A 1980 opinion from the Office of Legal Counsel (Department of Justice) appears to indicate that the President may have some flexibility in choosing the managers of post-1933 monuments.[41] Others also assert that the authority of the President under the Antiquities Act carries with it discretion to choose the managing agency. Some critics contend that management by an agency other than the NPS is an illegal transfer of the current functions of the NPS. Others counter that establishing a new monument under another agency would not constitute a reorganization because management of current NPS units, and the general authority of the NPS to manage monuments, would be unaffected. Even if placing management authority under a department other than the DOI might constitute a reorganization, the President nevertheless might be able to move a function of the NPS to other DOI agencies under congressionally approved authority allowing transfers of functions within DOI.[42]

Administration Activity

Most Presidents since 1906 have used the authority in the Antiquities Act to establish or expand national monuments. Recently, an Obama Administration evaluation of whether to designate or expand national monuments has been controversial. The controversy began in February 2010, when an administration "internal draft" document regarding possible national monuments was obtained by some Members of Congress.[43]

The internal draft document identifies 13 sites for possible new monument designations and one monument for possible expansion.[44] The areas are in nine states: Arizona, California, Colorado, Montana, Nevada, New Mexico, Oregon, Utah, and Washington. The document also identifies three areas in Alaska and Wyoming as worthy of protection, but as ineligible for monument designation because of the restrictions in law on the President's authority in those states.

[39] The two monuments were given statutory approval as part of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), P.L. 96-487.

[40] *California v. United States*, 436 U.S. 32, 40 (1978).

[41] 4B Op. Off. Legal Counsel 396 (February 8, 1980).

[42] Reorganization Plan No. 3 of 1950. The plan is available on the web at http://www.law.cornell.edu/uscode/search/display.html?terms=reorganization%20plan%20no.%203%20of%201950&url=/uscode/html/uscode05a/usc_sup_05_5_10_sq4notes.html.

[43] E&E News PM, *Document Shows Obama Admin Exploring 14 New Monuments*, February 18, 2010.

[44] See *Prospective Conservation Designation: National Monument Designations Under the Antiquities Act* (undated), internal draft, available online at http://robbishop.house.gov/UploadedFiles/states_for_designation.pdf.

Concerns have centered on whether the Administration was planning to designate national monuments without input from Congress, local and state governments, residents of the affected areas, and the general public. Fear that the Administration had not intended to consult on its monument considerations originated with the notation on the document that it was "not for release." Other concerns have echoed the traditional conflicts regarding the establishment of monuments—effects on land uses, monument size, and the type of objects protected.

The Administration subsequently expressed an intent to use a collaborative process in evaluating areas for monument status. The Secretary of the Interior stated an interest in working with land users, local governments, governors, and Congress with regard to using and protecting federal lands.[45] Others noted that the Administration's intent to collaborate had been expressed on the "internal draft" itself, which states at the outset that areas identified "may be good candidates for National Monument designation under the Antiquities Act; however, further evaluations should be completed prior to any final decision, including an assessment of public and Congressional support."[46] Still others noted that agency draft documents typically are not available for release.

Legislative Activity

Given the recurring controversies over presidential establishment of national monuments, recent Congresses have evaluated whether to abolish, limit, or retain unchanged the President's authority to establish monuments under the Antiquities Act. Legislation to require congressional approval of presidential recommendations for national monuments has been considered over the past decade or so. Some bills have sought to amend the Antiquities Act to make presidential designations of monuments exceeding a certain size, such as 5,000 or 50,000 acres, ineffective unless approved by Congress within two years.[47] Some measures proposed to establish a process for public input into presidential monument designations and to require presidential monument designation to comply with NEPA and/or with monument management plans to be developed in accordance with NEPA.[48]

The recent actions of the Obama Administration, together with long-running controversies over presidential authority to establish national monuments, has spurred the introduction in the 111th Congress of monument bills, especially to restrict the President's authority. For instance, several pending House and Senate bills would prohibit the President from establishing or expanding national monuments in particular states.[49]

Other legislation in the 111th Congress has focused on the authority and procedures for monument designation more generally. H.R. 4996, H.R. 5135, and S. 472 have similar language to amend the Antiquities Act to require the President to obtain congressional approval and certify compliance with NEPA before establishing a monument. The bills also would prohibit the

[45] E&E News PM, *Obama Admin Has 'No Secret Agenda' on Monuments—Salazar*, February 22, 2010.

[46] *Prospective Conservation Designation: National Monument Designations Under the Antiquities Act* (undated), internal draft, available online at http://robbishop.house.gov/UploadedFiles/states_for_designation.pdf.

[47] See, for example, H.R. 2386 (108th Congress); H.R. 1127 (105th Congress); and S. 477 (105th Congress).

[48] See, for example, H.R. 2386 (108th Congress); H.R. 1487 (106th Congress); and S. 691 (105th Congress).

[49] See H.R. 4814 (Arizona); H.R. 4703 (California); H.R. 4716 (Colorado); H.R. 4754 (Montana); H.R. 4675/S. 3041 (Nevada); H.R. 5135 (Oregon); and H.R. 4651/S. 3016 (Utah).

Secretary of the Interior from implementing restrictions on public use of a national monument until after a period for public input and congressional approval.[50]

Still another bill, H.R. 5580, would require that prior to proclaiming a national monument, the President is to provide the proposed language of the proclamation to Congress, the governor of the affected state(s), and officials of local and tribal governments. After the issuance of the proclamation, the Secretary of the Interior would be required to seek public input on the monument designation through hearings (unless waived) and comment. Within one year of the issuance of the monument proclamation, the President would be required to submit a report to Congress containing certain information, such as the economic impact of the designation on communities within the boundaries of the monument; the impact on the nation's energy security; the impact on interests, rights, and uses associated with the lands; the record of any hearings; and written public comments. Monument proclamations would be ineffective unless approved by an act of Congress within two years. The bill provides guidance on how the lands are to be managed following the proclamation but until congressional approval, namely that any restrictions on interests, rights, and uses will be "narrowly tailored and essential to the proper care and management of he objects to be protected." Any such restrictions imposed as a result of the proclamation become ineffective after two years unless the monument is approved by Congress. Further, if Congress does not approve the monument, the President would be restricted from issuing a monument proclamation that is "substantially similar" to it.

Three pending House measures would direct the Secretary of the Interior to provide the House with information on the Administration's actions regarding the potential designation of national monuments. These "resolutions of inquiry"—H.Res. 1238, H.Res. 1254, and H.Res. 1406—were referred to the House Committee on Natural Resources. Two of the resolutions were reported by the committee and placed on the House calendar. H.Res. 1254 was reported without recommendation on May 11, 2010, and H.Res. 1406 was reported favorably on June 23, 2010. Both resolutions would direct that no later than 14 days after adoption by the House, the Secretary is to transmit all DOI documents, maps, records, communications, and other information after July 1, 2009, relating to the Administration's internal draft regarding areas for potential monument consideration.[51] H.Res. 1254 also directs that the Secretary provide additional information, such as lists of invitees to, and attendees at, meetings related to the potential designation of national monuments.

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[50] H.R. 5135 has an additional provision to prohibit the President from establishing or expanding national monuments in Oregon.

[51] For information on the use of resolutions of inquiry, including on committee and House action and the frequency and outcome of their use, see CRS Report R40879, *Resolutions of Inquiry: An Analysis of Their Use in the House, 1947-2009*, by Christopher M. Davis.

Massachusetts Lobstermen's Association, Inc.
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April 20, 2016

David Borden
Chairman, Lobster Board
Atlantic States Marine Fisheries Commission
1050 N. Highland St., Suite 200 A-N
Arlington, VA 22201

Dear Chairman Borden,

RE: Southern New England

The Massachusetts Lobstermen's Association respectfully submits our comments to you regarding the future of the Southern New England (SNE) lobster stock habitat, Area 2 and Area 3 potential future management and the continued evolution of commercial lobster and crab fishing. Presently, the MLA has members fishing in Southern New England, Area 2 and Area 3 for both lobster and Jonah Crabs and we are hopeful to keep them doing so while managers continue to explore all other avenues to help the lobster stocks rebound.

We recognize the complexity and unprecedented challenges fisheries managers are faced with today regarding the SNE lobster stock as no other stock has ever maintained exploitation while collapsing. Nevertheless, fishermen in SNE, Area 2, are also faced with an unprecedented 50% trap reduction plan being implemented this year and will continue to be reduced over the next 5 years causing further difficulty in trying to staying whole with their business.

Over the past several months Fisheries Managers and fishermen have been meeting at Lobster Conservation Management Team meetings, lobster Advisory Panel meetings and at the Technical Committee meetings to discuss the dilemma in SNE. Throughout these meetings fishermen have continued to ask that more research be done on the many other environmental factors plaguing the water quality in SNE. Fisheries Managers must give the entire ecosystem health further consideration, deliberation and evaluation before more burdensome management is implemented on the already stressed industry when fishing has never been the primary culprit to the collapse.

As the habitat quality continues to decline in SNE, so does the essential lobster habitat for settlement. Given the sensitivity of lobster at its earliest stages of life and the unique habitat requirements for larval settlement, we strongly encourage a complete habitat evaluation on kelp forests, eel grass, algae blooms, water toxicity and the effects of water run off these non fishing industries related factors continue to have serious negative impacts on the essential near shore habitats.

Many Area 2 fishermen are currently working hard to stay whole in their businesses as the current 50% reduction plan has begun, given the limited pool of available tags and the complexity between transferring state and federal permits, the MLA strongly opposes any further expediting management reductions or restrictions in SNE without a specific end goal.

During the recent meetings between fisheries managers and fishermen it was clearly stated, to the fishermen, that with or without fishing there was no guarantee the lobster stock would return. Again, what is the goal here? We ask that you let the current 50% reduction plan in place, continue to be implemented as prescribed to give it time to work.

Lastly, the lobster industries fishing practices in SNE have experienced limited evolution as fishermen have now entered the limited fishery for Jonah Crab and Conch/Whelk. Fishermen have clearly stated that they too want to see the return of a healthy lobster stock in SNE.

In closing, we are committed to keeping our fishermen fishing while pursuing alternative ecological measures to manage the rebuilding of a healthy habitat in Southern New England.

Thank you for your time and consideration of our concerns. Should you have any further questions please feel free to call me.

Sincerely,

Beth Casoni

Executive Director

Massachusetts Lobstermen's Association, Inc.
8 Otis Place ~ Scituate, MA 02066
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April 22, 2016

David Borden
Chairman, Lobster Board
Atlantic States Marine Fisheries Commission
1050 N. Highland St., Suite 200 A-N
Arlington, VA 22201

Dear Chairman Borden,

On behalf of its 1800 members, the Massachusetts Lobstermen's Association (MLA) respectfully submits this letter in support of Point Lobster Company, Point Pleasant NJ efforts to standardize the legal minimum size for New Jersey dealer possession regulation to 3 ¼" from the 3 3/8" to sustain the markets demands and to keep intact the infrastructure necessary to support the commercial fishing industry.

Established in 1963, the MLA is a member-driven organization that accepts and supports the interdependence of species conservation and the members' collective economic interests. The membership of the MLA is comprised of fishermen, seafood dealers/processors and other shoreside businesses from Maryland to Canada. The MLA continues to work conscientiously through the management process with the Division of Marine Fisheries and the Atlantic States Marine Fisheries to ensure the continued sustainability and profitability of the resources in which our fishermen are engaged in.

The MLA supports this much needed change to the possession regulation as stated in the comments submitted by Point Lobster Company; "The total number of lobster imported into NJ far exceeds the number of lobsters landed. The time has come for NJ to standardize the minimum size of lobster, specifically for dealers. The current legal size of 3 3/8" is used as an arbitrary management tool for the NJ fishery. The size of 3 3/8" was established as a *management* tool, specifically to "increase protection to American lobster broodstock"[1] and was implemented to manage the fishing efforts within N.J. It should not be a problem for enforcement to measure lobsters coming solely from the NJ fishery. The state of Massachusetts has three minimum sizes for their fishery and they are the second largest producer of domestic lobsters. This illustrates that it is easily possible to enforce an additional gauge size. Additionally, there are shipping documents that can be used to trace the origin of each load of lobsters."

We recognize fisheries managers are faced with unprecedented challenges on how best to rebuild the Southern New England Lobster Stock while many businesses are treading water to stay whole, be it fishermen lobster dealers/ processors and or shoreside businesses . We are asking all the fisheries managers to help keep the current businesses that depend upon the American Lobster whole and open for business.

Sincerely,
Beth Casoni
Executive Director

[1] "Environmental Assessment of American Lobster Broodstock Protection Regulation" Weiher Ph.D. 28 Feb 2006

LANNY DELLINGER
CHAIRMAN, LOBSTER CONSERVATION MANAGEMENT TEAM 2

April 5, 2016

American Lobster Board
Atlantic States Marine Fisheries Commission
1050 N. Highland St., Suite 200 A-N
Arlington, VA 22201

Dear Chairman David Borden,

On behalf of the commercial lobstermen of Southern New England's waters, the Lobster Conservation Management Teams of LCMAs 2 and 3 are recommending that the water quality of lobster habitats be reviewed and analyzed in the management process of significantly impaired stocks. In special recognition of the record low abundance and recruitment of the lobster stock in Southern New England, we feel that this additional habitat assessment should be considered in future fishery management models.

Our fisheries will only be as healthy as their habitats allow. Current stock assessments, however, excessively rely on the harvesting practices of fishermen and do little to assess the quality of the habitat in which these resources are expected to grow and thrive. Without a comprehensive review of all those who directly influence the marine habitat, even the most responsible and well-informed policies regulating fishing efforts will fall far short of the goal to promote and protect the Atlantic coastal fishery resources.

There are serious, well-documented issues in the Southern New England lobster stock, among other stocks that

have been struggling to thrive despite management interventions. At this juncture, it appears that other variables are having greater impacts on the health of our fishery than the standard commercial fishing efforts routinely analyzed in the existing management models. We strongly encourage your special consideration in identifying additional routes for incorporating water quality into the dynamic modeling systems that inform the management of this severely impaired fishery. To maintain the status quo and disregard other mechanisms impacting our resources would be a disservice to the greater public good and a deficiency in the mission to promote and protect these resources. It is our hope that by implementing these recommendations, our fisheries will be more effectively managed for long-term sustainability and the long-term benefit of all.

Sincerely,

Lanny Dellinger, LCMA 2 Chair

Rhode Island
Department of Environmental Management

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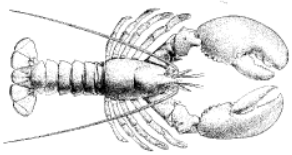

ASMFC Lobster Conservation Management Area 2

A meeting of the ASMFC Lobster Conservation Management Team for Area 2 was held on April 6, 2016 in Narragansett, RI. There were 20 people in attendance including 7 members of the LCMT 2, staff from RIDEM Marine Fisheries, MA Division of Marine Fisheries and members of the ASMFC Lobster Management Board. (See attached attendance sheet)

The first order of business was for the LCMT members to verify the membership list. Due to the duration between LCMT 2 meeting, staff wanted to verify active participants and alternates on the Team.

The purpose and goal of the meeting of the LCMT was to provide the team an early opportunity to determine a direction to go in the management process and afford the group the ability to understand the updated Stock Assessment and Technical Committee reports on the Management Boards task list. The Chair of the Technical Committee as well as technical staff from Rhode Island and Massachusetts answered questions of the Team related to the January 19, 2016 Memorandum to the American Lobster Management Board from the Lobster Technical Committee.

The first item that the LCMT addressed was the Item 4. Of the memorandum, Review Statement of Problem in Addendum XVII. Section 2.1.3 of Addendum XVII outlined management challenges in the lobster fishery resulting from limitations in the quality and quantity of biological and fisheries data. The TC identified three data deficiencies of the lobster fishery. Of most concern to the team is landings and effort information.

A. Landings and Effort Data – The SNE lobster fishery which occurs in federal waters is poorly characterized and the trip level reporting in some states is poor. Motion by A. Eagles to create mandatory reporting for all states. Second by B. McElroy. All in favor.

L. Dellinger submitted a paper for Team review on behalf of the commercial lobstermen of SNE recommending the review of water quality and lobster habitat in the southern New England stock area. (Attachment).
Motion by W. McElroy to submit the Water Quality and Habitat paper to the Lobster Management Board. Second by A. Eagles. All in favor.

The Chairmen of the Lobster Technical Committee, Bob Glenn from MADMF started discussion for the Team by reviewing the updated Lobster Stock Assessment. Noting the Committee's awareness of all of the environmental factors that have contributed to low stock abundance. Questions were answered regarding fishery dependent, independent, and settlement survey sources of data. After these discussions the Team stated that Area 2 is running out of options and that the other areas in the SNE stock unit need to implement addition measures to "catch up" to the sacrifices Area 2 has made in trap limits and subsequent trap reduction plans.

J. McNamee from RI Marine Fisheries gave a presentation on work that he and addition RI Marine staff gave to the TC at their last meeting which focuses on the relationship between traps and exploitation. Showing that trap reduction will eventually have a positive effect on exploitation rates. Although the analysis is not perfect it is a tool that can be used by technical staff and Managers to address some of the TC's concerns mentioned in the January memo to the Board. After the presentation team members expressed concern about the disconnect between the assessment which uses information through 2013 and a conservative trap reduction plan which has just started this year and which the benefits have yet to be realized. J. McNamee continued his presentation which looked at the benefits of increase egg production from minimum and maximum size changes.

Motion by A. Eagles to have no minimum size increase in LCMA 2. Second by M. Grimshaw. All in favor.

The Team revisited Item 4 of the January TC memo. The Team recommends to the Board the importance of the collection of addition biological information. The Atlantic Offshore Lobstermen's Association, the Rhode Island Lobstermen's Association and Industry members agreed to seek funds through their respective organizations to support the tagging study outlined by R. Glenn, MADMF.

Board Motion d. from February Management Board Meeting summary.
d. Improve current management and compliance with lower trap limits of nearshore trap fisheries by proposing a uniform closed season and new trap tag deadlines.
Although this motion was postponed the Team asked for clarification on its intent. After discussion of the effects of misaligned dates when fishing activity begins and trap tag start dates, the team discussed the evolution of a mixed crustacean fishery where management effect as they pertain to the lobster fishery would now potentially affect the newly adopted FMP for Jonah Crab.

Motion by G. Mataronas for the Management Board to begin to consider the SNE lobster fishery as a mixed species fishery co-prosecuted with the Jonah crab fishery.
Second by A. Eagles. All in favor.

Motion by A. Eagles for the Management Board to not consider any closed season in the state or federal waters portion of LCMA 2 in order to pursue the mixed lobster and Jonah crab harvest. Second by B. McElroy. All in favor.

Maximum Size discussions. Upon review of the analysis done by RI Marine Fisheries and the potential egg production from the cumulative effect of preserving the spawning stock, the team discussed possible maximum size options.
Motion by A. Eagles to decrease the state and federal portion of LCMA 2 maximum size from the current 5 ¼ inch CL to a 5" CL. Second by G. Mataronas. 3 in favor, 2 opposed, 1 abstention.

Meeting adjourned at 9:15 pm

Area 3 LCMT Meeting Minutes

Attendance: Dan McKiernan, David Borden, Grant Moore, Roy Campanale, Marc Palombo, David Spencer, Tracy Pugh, Alan Eagles, Lanny Dellinger.
E-mails from: Rob Burcaw, Peter Brown, Jim Violet

Tracy Pugh provided an overview of the latest stock assessment and projections.

Management measures in response to the assessment;

Expedited trap reduction schedule

The current program calls for 5 years of reductions @ 5% each year starting in 2016. The trap cap associated with each year reduces from 1900 to 1548 in the final year.

The LCMT agreed to expedite the trap reduction schedule from a 5 year program to a 3 year program throughout Area 3

2016 fishing year 5 %
2017 fishing year 10%
2018 fishing year10%

Trap cap schedule
2016 fishing year 1900
2017 fishing year 1715
2018 fishing year 1548

There was discussion regarding support for a higher trap cap number. The LCMT did not address this and pointed out that NMFS will soon be releasing their proposed rule on this and other issues. There will be opportunities to comment on a higher trap cap than is currently adopted by ASMFC

Continued trap reductions:

The LCMT approved continuing trap reductions beyond the schedule mentioned above throughout Area 3. There will be one year of no trap reductions between the end of the expedited trap reductions mentioned above and the initiation of the additional trap reductions. The reductions would be for two years @ 5% each year. These reductions would not reduce the trap cap as do the previous trap reductions. The trap cap will remain at 1548 (or whatever the trap cap may be) throughout the two years of reductions and beyond.

Max size reduction (SNE only)

The LCMT discussed this at length and is proposing a 6" max size for the SNE portion of Area 3, to be phased in over 3 years (1/4" reduction per year). Due to the much larger size structure of the offshore lobster resources south of Hudson Canyon, the LCMT felt a 6" maximum gauge size would be appropriate for all Area 3 participants in SNE. It is important to note that Area 3 has a significant higher minimum size than the rest of SNE.

RIDEM is finishing up their work on this issue early this week and will provide us with their numbers. I will forward this along as soon as I get it and will reach out to all after we have a chance to review.

In order to have a differing max size in SNE, a line would become necessary separating SNE from GB and the GOM. It would likely create a SNE endorsement that could be elected annually. This will require NMFS approval.

The LCMT identified two issues that need attention if a SNE only max size were to be implemented.

1. There is a significant difference in size structure in the canyons south of Hudson. A max size that might seem appropriate for most of SNE could have dramatic consequences for the fishery in the southern portion.

2. The second issue concerns the historical fishing pattern in the crab fishery. Some fishermen for many years have fished for crab (with very minimal lobster retention) in SNE and fished for lobster in GB. A max size suitable for SNE would have significant impact on the lobstering in GB. In order to have a smaller maximum size in SNE there will need to be a way to accommodate historical crab fishing patterns without triggering the smaller SNE max size on these businesses when lobstering in GB or the GOM.

I would recommend a committee be convened to look into ways that could accommodate these historical fishing practices.

The LCMT agreed to send a letter to ASMFC in strong support of creating a trap haul validation system as soon as possible and want to be involved in helping to create such a system. There was widespread agreement that as we invest more and more in the reduction of traps, it becomes increasingly important to insure that there is full compliance in the number of traps fished.

The LCMT also agreed to send a letter to ASMFC requesting that they do everything they can to help determine water quality issues that maybe having a negative impact on the near shore lobster resource particularly Narragansett Bay.

April 21, 2016

Atlantic States Marine Fisheries Council & American Lobster Management Board,

Based on the ASMFC September 2015 American Lobster Stock Assessment and the recent collapse of our stock, it is apparent that the New York fishery will not be able to fill the statewide demand for lobsters. It is also apparent that NY will not be able to depend on other Southern Atlantic Fisheries as those stocks have collapsed as well.

The best option based on sustainability and the most recent stock assessment is the Gulf of Maine. There is a limitation on our ability to import Gulf of Maine lobsters because of the disparity in legal sizes. All North American lobsters are sized for legal minimums on the boat at time of capture. It becomes costly and time sensitive to resize lobsters once they are landed and sold to dealers. Resizing also subjects the lobsters to additional handling and increases both mortality and waste. Most out of state dealers will resize orders for a larger minimum by eye; without the use of any gauge, thus missing many of the sizes that are closest to the NY legal minimum. This exposes NY businesses to incredible liability and virtually demands the wasteful resizing of imported product.

The total number of lobster imported into NY far exceeds the number of lobsters landed. The time has come for NY to standardize the minimum size of lobster, specifically for dealers. The current legal size of 3 3/8" is used as an arbitrary management tool for the NY fishery. The size of 3 3/8" was established as a *management* tool, specifically to "increase protection to American lobster broodstock"[1] and was implemented to manage the fishing efforts within NY. It should not be a problem for enforcement to measure lobsters coming solely from the NY fishery. The state of Massachusetts has three minimum sizes for their fishery and they are the second largest producer of domestic lobsters. This illustrates that it is easily possible to enforce an additional gauge size. Additionally, there are shipping documents that can be used to trace the origin of each load of lobsters.

Please consider standardizing the legal minimum size for Atlantic States dealers possession to 3 ¼". This would help to sustain a long established New York industry without causing further detriment to our fishery. Please accept this letter as my public comment for the Spring Meeting on May 2, 2016.

Sincerely, Paul Salke

Sunrise Lobster Company

Brookhaven, NY

Est 1980

[1] "Environmental Assessment of American Lobster Broodstock Protection Regulation" Weiher Ph.D. 28 Feb 2006

April 20, 2016

Atlantic States Marine Fisheries Council & American Lobster Management Board,

Point Lobster Company has been located in Point Pleasant Beach, NJ since 1981. We are primarily a wholesale lobster company that operates under NMF Dealer permit #1852. We are a FDA registered and state inspected facility. In addition to offloading NJ lobsters, we also import from CT, RI, MA, NH, ME and Canada.

Based on the ASMFC September 2015 American Lobster Stock Assessment and the recent collapse of our stock, it is apparent that the NJ fishery will not be able to fill the statewide demand for lobsters. It is also apparent that NJ will not be able to depend on other Southern Atlantic Fisheries as those stocks have collapsed as well.

The best option based on sustainability and the most recent stock assessment is the Gulf of Maine. There is a limitation on our ability to import Gulf of Maine lobsters because of the disparity in legal sizes. All North American lobsters are sized for legal minimums on the boat at time of capture. It becomes costly and time sensitive to resize lobsters once they are landed and sold to dealers. Resizing also subjects the lobsters to additional handling and increases both mortality and waste. Most out of state dealers will resize orders for a larger minimum by eye; without the use of any gauge, thus missing many of the sizes that are closest to the NJ legal minimum. This exposes NJ businesses to incredible liability and virtually demands the wasteful resizing of imported product.

The total number of lobster imported into NJ far exceeds the number of lobsters landed. The time has come for NJ to standardize the minimum size of lobster, specifically for dealers. The current legal size of 3 3/8" is used as an arbitrary management tool for the NJ fishery. The size of 3 3/8" was established as a *management* tool, specifically to "increase protection to American lobster broodstock"[1] and was implemented to manage the fishing efforts within N.J. It should not be a problem for enforcement to measure lobsters coming solely from the NJ fishery. The state of Massachusetts has three minimum sizes for their fishery and they are the second largest producer of domestic lobsters. This illustrates that it is easily possible to enforce an additional gauge size. Additionally, there are shipping documents that can be used to trace the origin of each load of lobsters.

The sustainable fisheries topic is certainly one that cannot be avoided any longer. Customers are now demanding to know where their products are coming from. Some customers do not want products that are being harvested from an unsustainable source. The state of NJ must make an effort to bring the most sustainable products to market. That option is currently Gulf of Maine. It has been suggested that we buy from other states that currently have the same minimum size as NJ. That option limits us to buy from states that are also suffering from stock collapse. This is not a sustainable option.

Finally, some customers have discontinued and minimized their use of lobsters simply because they cannot get the size they want. Many restaurants want the smallest size possible because they are used as a promotional item on the menu. Others have been fined for possession of lobsters that were legally harvested out of state but do not make the legal NJ minimum size. Those include, but are not limited to: Point Lobster Co, Restaurant Depot, and Shop Rite. I do not believe this was the intention of N.J.A.C 7:25-14.13 Size *of lobster taken.*

If we cannot buy a sustainable product at good price we may not be able to maintain the infrastructure needed to provide for the remaining boats in the NJ industry. A smaller size for dealers will not devalue the price to the NJ fishermen simply because there is a demand for the sizes they catch. Please consider standardizing the legal minimum size for New Jersey dealer possession to 3 ¼". This would help to sustain a long established New Jersey industry without causing further detriment to our fishery.

Sincerely, John W. Godwin. Representing Point Lobster Company, Point Pleasant NJ

[1] "Environmental Assessment of American Lobster Broodstock Protection Regulation" Weiher Ph.D. 28 Feb 2006