



## New England Fishery Management Council

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### **DRAFT MEETING SUMMARY**

#### **Scallop PDT Meeting**

Coonamesett Inn, Falmouth, MA

August 25 and 26, 2015

The Scallop PDT had a two-day meeting on August 25 and 26 in Falmouth, MA to: 1) review preliminary 2015 survey results and combined biomass estimates; 2) discuss observations of parasites in scallop meats; 3) review FY2015 fishery data and other relevant information for developing specification alternatives; 4) review updated analyses for inclusion in the Omnibus Habitat Amendment 2 (OHA2) FEIS; 5) review and discuss draft EA for Amendment 19; 6) review updated price model; and 7) discuss recommendations for 2016 Scallop FMP priorities.

**MEETING ATTENDANCE:** Deirdre Boelke (Chair), Lt. Josh Boyle, Trish Cheney, Dr. Bill DuPaul, Travis Ford, Emily Gilbert, Dr. Demet Haksever, Dr. Dvora Hart, Chad Keith, Emily Keiley, Dr. Min-Yang Lee, Danielle Palmer, Katherine Richardson, and Dr. David Rudders. MaryBeth Tooley Chair of the Scallop Committee attended as well as about 20 members of the public.

#### **KEY OUTCOMES:**

- The PDT reviewed preliminary 2015 scallop survey results. In a nutshell, total biomass increased slightly from 2014 mostly from large year classes observed in 2014 throughout some of GB and throughout the MA.
- The PDT discussed preliminary biomass estimates and potential fishery specification alternatives. The numbers are not final yet, and the PDT is still working on several different methods to combine the estimates. So far access area trips on GB may be unlikely; CA2 south may not be ready and some access in part of NL may be possible, but incidental and discard mortality on smaller year classes in that area could outweigh the benefits of accessing the area in 2016. Access in the Mid-Atlantic access areas is likely, but again it will be complex to provide access and minimize impacts on smaller scallops that were observed throughout most of the areas. The PDT did not discuss open areas in much detail.
- The PDT scheduled a **conference call for Wednesday, September 9** to review updated biomass estimates, an initial projection for FY2016 and beyond, and updated analyses for OHA2 FEIS.

#### **AGENDA ITEM #1: REVIEW PRELIMINARY 2015 SURVEY RESULTS AND COMBINED BIOMASS ESTIMATES**

The PDT reviewed survey results from all available surveys conducted in 2015: VIMS dredge survey of the Mid-Atlantic; SMAST large and small camera broadscale survey of GB and large camera survey results for MA as well as a more detailed survey of CA2 south; Arnie's Habcam V2 of dense seed areas in and around NL including southern flank of GB; and finally the federal NEFSC combined survey including dredge tows on GB and Habcam V4 of both the MA and GB regions. See Figure 1 for a depiction of the areas covered by various survey methods in 2015. Overall, the resource area was very well sampled in 2015 and the PDT has access to

very extensive survey data for biomass and fishery projections for Framework 27. Each presentation is summarized below, and the presentation slides are available with other meeting materials on the Council website for this meeting.

#### VIMS – Dr. David Rudders

The VIMS 2015 survey included over 600 stations on three separate legs between mid-May to late June. Dr. Rudders explained that this year the VIMS dredge survey changed the sampling design from a traditional grid to a stratified random design. It covered the NMFS shellfish strata as well as some additional areas (specifically deeper waters in ETA and Delmarva and both south and west of the shellfish strata in Delmarva). Several new vessels were used in addition to more veteran vessels to this survey, so the survey included some calibration work for the new vessels. Sampling intensity of SH:MW was extended to monitor presence of nematode observed by fishing vessels earlier in the year (about 5,000 samples from all stations with scallops – about 10-15 per station). High spatial and temporal variability in SH:MW relationship primarily based on depth. ??? shows the length frequencies per area. Overall, Dr. Rudders explained that the VIMS dredge survey gained precision by changing the survey design to a random stratified approach.

The PDT discussed that it will be useful to evaluate how much the inshore closure of ETA increased biomass, especially if areas are going to be proposed for closure again in this framework. It was suggested that the 2014 VIMS data could be post stratified to see if biomass increased inshore compared to offshore areas that were open to fishing. The PDT also discussed that survey timing needs to be taken into consideration when discussing potential biomass in these access areas since the fishery was allocated about three trips in the overall area in FY2015 starting on May 1. It was also noted that the commercial dredge was catching relatively large amounts of small scallops; one hypothesis is that the abundance of small scallops is so large that the dredge bag is filling up preventing smaller scallops from escaping. Reducing total tow time may be important for vessels to consider to reduce discard mortality of small scallops in these areas.

Dr. Rudders summarized the major take homes: 1) biomass in MA closed areas appear to be strong and there are very high levels of recruitment (2 year old animals 40-50mm) throughout; 2) adult biomass in open areas was low and the number of 3 year old animals that would be harvestable in FY2016 is low; 3) the areas with highest levels of small scallops co-occur with areas of highest adult biomass; therefore designing access will be complex; and 4) emergence of nematode parasite observed in portions of the MA region. The final estimate of total biomass in all MA areas combined is about 90,000mt.

#### SMAST – Dr. Kevin Stokesbury

Dr. Stokesbury reviewed the results from the 2015 SMAST scallop survey season, which included two RSA funded projects to conduct an intensive survey of CA2 south, as well as a broadscale survey of all open and access areas on GB. In addition, SMAST completed a broadscale survey of the entire MA resource (open and access areas) outside of the RSA program using reserve funds and industry donations. All surveys included a large camera, small camera, as well as a digital still camera. Due to the large number of small scallops known to be present throughout the region this year the PDT requested survey results from all three cameras. Dr. Stokesbury explained that not all stations had images from all three cameras, and some of their gear is beginning to suffer. He added that the digital still camera is a new addition for their survey and they ran into some issues with that technology so more time is needed to process those images before biomass estimates would be available from that camera.

These surveys completed over 2,000 stations on eight separate cruises between May 1 and late June, starting with the GB region first. Dr. Stokesbury compared the survey results from 2014 to 2015 and overall the distribution of scallops on GB is similar and the recruits observed in 2014 were still present in 2015. In terms of the size frequency of observed scallops Dr. Stokesbury explained that there was not much of a difference between the results from the large and small camera in 2014 (mean of 50.8mm from both cameras), but in 2015

the mean size was higher from the small camera compared to the large camera (55.8mm vs. 61.4mm) (Figure 6). Overall the scallops have not grown much in one year, but many are in deeper waters than typical with slower growth rates. The total estimate of biomass from the large camera on GB is about 94,500 mt (20,800mt exploitable) compared to 149,400mt (43,700mt exploitable) based on the small camera estimate.

Next Dr. Stokesbury reviewed the MA survey results, which have not been forwarded to the PDT yet but can be today. To date only the large camera results are complete, and the small camera results are expected to be complete later in the fall. It was explained that recruitment seems to have shifted to deeper waters compared to 2014; in 2014 the size frequency of observed scallops were bimodal, and in 2015 the distribution of scallops clearly dominated by large year class of smaller scallops (50-60mm) (Figure 7). Total biomass from MA estimated at 101,900mt (42,000mt exploitable) from large camera. Dr. Stokesbury compared biomass estimates from the SMAST survey back to 2003 and pointed out that there are more scallops on the ocean floor than has ever been observed (39 billion scallops compared to average of 8 billion for other years) and the biomass is high but the exploitable biomass is almost at its lowest (Figure 8). He commented that it will be a real challenge for the PDT to manage this resource spatially to protect these large numbers of small scallops and balance the pressure to harvest the larger scallops that are also present.

#### ARNIE'S FISHERY – Richard Taylor

Richard Taylor presented preliminary results from surveys conducted with Arnie's Fishery. The survey includes NL and the southern flank of GB to monitor the large recruitment event observed in 2013 and 2014. Heaviest concentrations observed in the middle of the habitat closure in NL, southern part of current scallop access area in NL, and two smaller patches west of NL. *Astropecten* found south of NL, and not in major areas of scallop concentration. But it was discussed that *astropecten* do not typically eat scallops larger than 5mm. Biomass estimates presented for four separate areas in and around NL; over 50,000 mt in NL and about 35,000 my in habitat closure. The southern flank was divided into three areas, and the estimates for these areas are much lower than the biomass estimates near NL, all three areas combined is about 20,000 mt. Mr. Taylor emphasized that the density of scallops in NL is so great over large areas and their growth is slower than usual, probably due to deeper water but he suggested there may be some stunting from crowding. The PDT discussed that some of these scallops will be harvestable to the gear, especially because the density is so high, but the gains in yield would be much higher if the areas was left alone for another year, especially in an area like NL that has high food supply.

A PDT member asked Mr. Taylor to explain how the survey track line is set for the survey; do we know the optimal distance yet. Richard explained that the goal for this survey was to identify the bounds of the small scallop distribution and the overall track line depends on how patchy or dense the scallops are in a certain area. High density areas could be missed if tracks are farther apart, but it would have to be a small concentration to be missed at these coverage levels. Dr. Hart added that overall the survey track for both v2 and v4 this year are relatively dense and there are no areas with low coverage, as was the case in the past for some areas. There were no large concentrations of obvious predators from the habcam results.

The PDT had a long discussion about what areas the results should be divided into. It was agreed that the NEFSC will update a final table with boundaries that will be used for FW27; they are similar to the SAMS areas used last year with some differences. The group also discussed that it is hard to follow where v2 and v4 results are used, and there was a comment from the audience that the potential implications of combining those results should be considered.

#### FEDERAL NEFSC SURVEY – Dredge and Habcam v4- Dr. Dvora Hart

Dr. Dvora Hart explained the 2015 federal survey; which included 165 dredge tows on GB only because VIMS covered the MA, and Habcam v4 in both regions, with higher coverage in areas not covered by Habcam v2. The habcam track this year was more systematic than in previous years based on simulation analyses;

specifically the track primarily goes along the main depth gradient with alternating shorter and longer passes. This survey included the highest coverage level with Habcam technology to date (about 8 million images and 4,000 km long track), not including RSA work with v2 (Figure 4). The MA leg was conducted in late May and GB in June. Dr. Hart explained that images are getting processed faster now and when the ship returns about 1 in 50 images have been processed (one image every 25meters) and preliminary analysis of automated annotations is under way as well. In general the federal survey had similar observations to other surveys, and Dr. Hart noted that adult biomass in CA2 south was below projections, biomass was lower in the HAPC in CA2, and open area exploitable biomass is only moderate. The very large tow observed in 2014 in southwestern GB with over 28,000 scallops had only 100 scallops this year; it is unclear what happened to those scallops.

A member of the audience raised concern about the general survey design of the federal survey, raising issue with the reduced number of dredge tows and concerns about modifying the federal survey based on what areas are funded with RSA. Concerns were raised about whether the design is truly random anymore, and argued that RSA surveys should supplement the federal survey, and not the reverse. Staff explained that those concerns should be addressed to a different group and the PDT is not the appropriate venue for that discussion.

### PRELIMINARY COMBINED ESTIMATES

Dr. Hart combined all the biomass estimates available on one slide for both MA and GB. This year the PDT considered four separate methods for combining the results: 1) simple mean; 2) inverse weighted mean (IVM); 3) modified inverse weighted mean; and 4) a grand model that combines the data into the model first, rather than combine them later. Dr. Hart explained that the IVM weighs the survey method with the lowest standard error more than the others. The issue with this approach is that the habcam estimate is model based and because the model believes all the parameters put in the model are accurate, the standard error is lower. But since we know all the parameters are not as precise and the model thinks the third method sets the error at 10%. The grand method actually combines the data first and produces an estimate using all the data, rather than a combination of individual estimates. The PDT discussed that the forth method needs more work and may not ultimately be ready for FW27, but should be pursued.

The PDT went around and around about the various sub areas that were identified. The preliminary estimates includes some areas that are different from last year and the group agreed that a common file needed to be developed and shared with all the survey groups so the estimates could be comparable. Some concerns were raised about some of the sub-areas getting relatively small, reducing the number of observations per area. The PDT agreed on the final boundaries and estimates will be updated after the meeting to re-combined. Initial estimates were 128,000 – 141,000mt of biomass on GB depending on the method used and about 102,000 – 112,000 mt for the MA.

A member of the audience raised concern about combining the results of v2 and v4 habcam data. Specifically one has a stereo camera (v4) and one does not (v2). Dr. Hart responded that there are no major differences with the mathematics involved in terms of combining the results, but the technology is different and may have different abilities in terms of counting and measuring scallop, but that is the case with all of the survey methods.

### ***AGENDA ITEM #2: DISCUSS OBSERVATIONS OF PARASITES IN SCALLOP MEATS IN THE MID-ATLANTIC***

Day 2 of the meeting began with a presentation from Dr. David Rudders about a parasitic worm found in scallop meats in the MA. Additional work is being done to identify the exact species, but preliminary histology suggests a nematode in the genus *Sulcascaris*, which has been found in many bivalve mollusks. If this is *Sulcascaris sulcata* the life cycle includes an adult stage attached to the esophagus of loggerhead and green turtles, eggs then pass through the GI tract and enter the benthos via turtle feces. Nematode eggs are filtered by

benthic mollusks, larvae develop in mollusk and are then ingested by turtles. VIMS expanded their MA survey to learn more about what the parasite was and where it was located. Ten to fifteen animals were sampled at every station that had scallops and samples were kept with nematodes present. Figure 9 shows where the nematode was observed, mostly in Delmarva and ETA. Intensity seems to increase as a function of decreasing latitude, mostly 1-2 worms observed, but as the stations move south the number increased per animal. There are still many unknowns the PDT discussed such as, does the nematode kill the scallop, unsure how long the nematode stays in the scallop or turtle, if the scallop is shucked does the larvae stay alive, are there any human health concerns, etc. The PDT discussed that the same worm was observed in 2003, coincidentally another year with high recruitment in the MA, which could just be a coincidence. The PDT discussed that there may be ways to increase sampling of turtles through other RSA projects and the PDT will try to reach out to colleagues that work with turtles in the northeast and southeast to learn more about this parasite.

#### ***AGENDA ITEM #3: REVIEW FY2015 FISHERY DATA AND OTHER RELEVANT INFO FOR SPECIFICATIONS***

Staff summarized scallop catch and effort information to help inform future specification alternatives. It was discussed that the projection of catch was overestimated in the last two years and that is likely driven by the LPUE function being too high. Dr. Hart explained that she has some ideas related to estimating projected LPUE better, but they will not be complete in time for this action and would ideally be reviewed at the next assessment first anyway. One idea that could be done this year is to only use recent years of fishery data to inform the model estimate, compared to all years. It was also discussed that some sensitivity analyses could be completed and the PDT could review a handful of runs based on different assumptions of LPUE instead of just one. The PDT discussed that predicting fishing behavior is always a challenge and more recently this is even more complex with the price of fuel staying low and a historically high price differential for larger scallops. These factors affect fishing behavior. The PDT will see if there is more information in the observer data base or trends in trip length to help inform these parameters. One PDT members suggested that with small scallops in such high densities it may be necessary to consider time penalties or measures that reduce incentive to highgrade in access areas.

#### ***AGENDA ITEM #4: REVIEW UPDATED ANALYSES FOR OHA2 FEIS***

Staff reviewed some updated analyses that will ultimately be folded in the FEIS, but more time is needed to complete updated runs to further evaluate the impacts of the reduced habitat impact area proposed on the northern edge.

#### ***AGENDA ITEM #5: REVIEW AND DISCUSS AMENDMENT 19 ALTERNATIVES AND ANALYSES***

Staff reviewed Draft A19 including the description of alternatives, Affected Environment, and draft impacts. The PDT provided input on four specific outstanding issues and recommendations have been included in the current draft of A19. The PDT discussed that if the Council sets specifications for two years at a time it may be possible to build in an automatic review after updated survey results are available to see if adjustments are needed. If they are a separate specification package could be initiated and implemented to replace year 2 of the original specifications. The PDT reviewed some of the preliminary analyses and discussed potential ideas for additional work, mostly related to potential impacts on non-target species.

#### ***AGENDA ITEM #6: REVIEW UPDATED PRICE MODEL***

Dr. Demet Haksever reviewed the updated price model. Annual prices were estimated using the dealer data for 1999-2014 by two meat count categories (U10s and above 10-count) to capture the price differentials between

the small and large scallops. In addition to the meat count, explanatory variables included import prices, landings net of exports, percentage change in the share of total landings of each market size from the previous year and per capita disposable income. The updated model provided a good fit to the actual values of annual prices and explained over 88 percent of the variation in ex-vessel prices by market category during the last 16 years.

***AGENDA ITEM #7: DISCUSS RECOMMENDATIONS FOR 2016 SCALLOP WORK PRIORITIES***

The PDT discussed the range of priorities and did not have much comment. The PDT does recommend that the Council set specifications for two years at a time with a review process after updated survey results are available.

THE NEXT MEETING IS SCHEDULED TO BE A CONFERENCE CALL ON SEPTEMBER 9.

Figure 1 – 2015 dredge surveys (VIMS in MA on top and federal NEFSC dredge survey of GB on bottom)

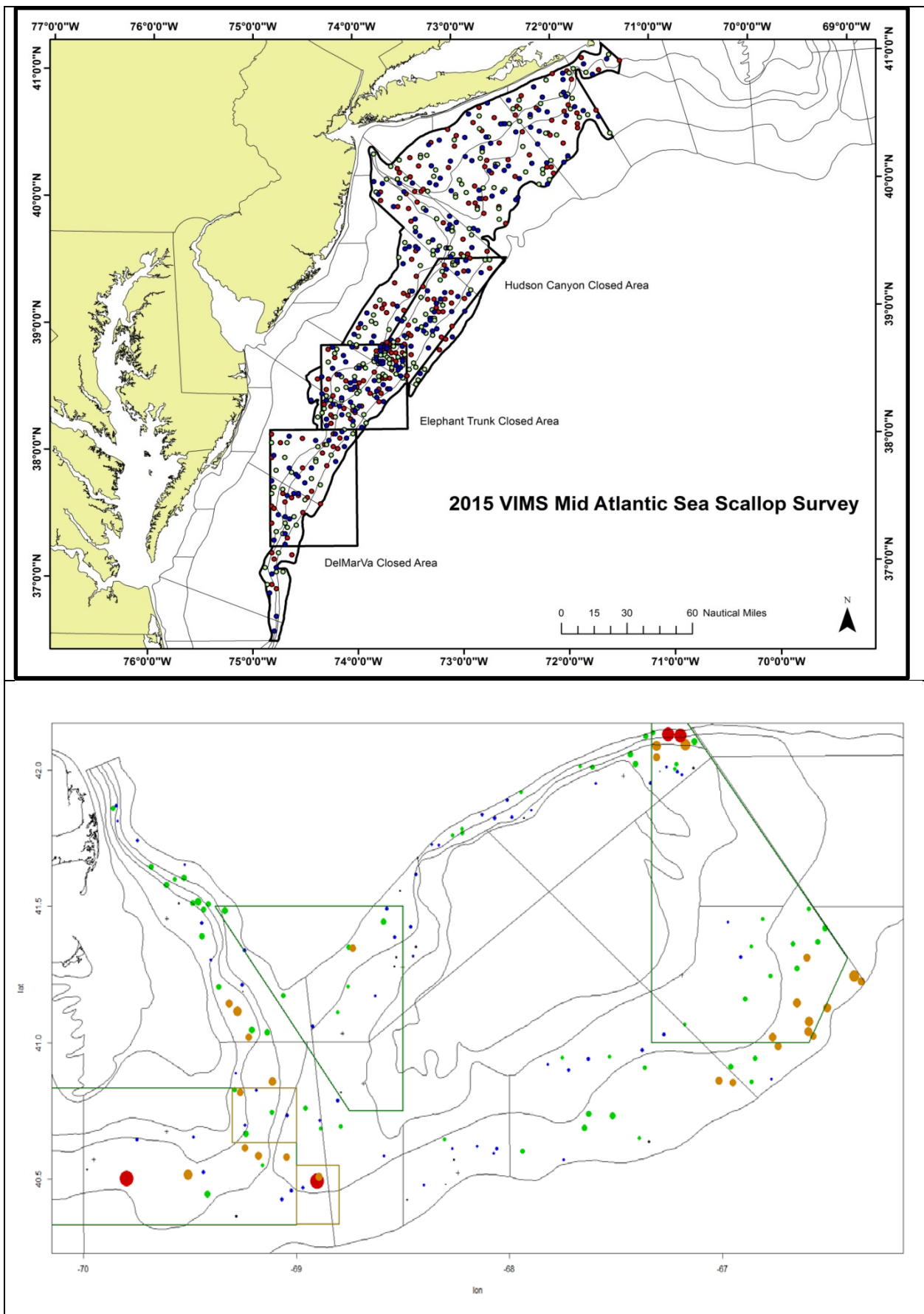


Figure 2 – SMAST survey locations

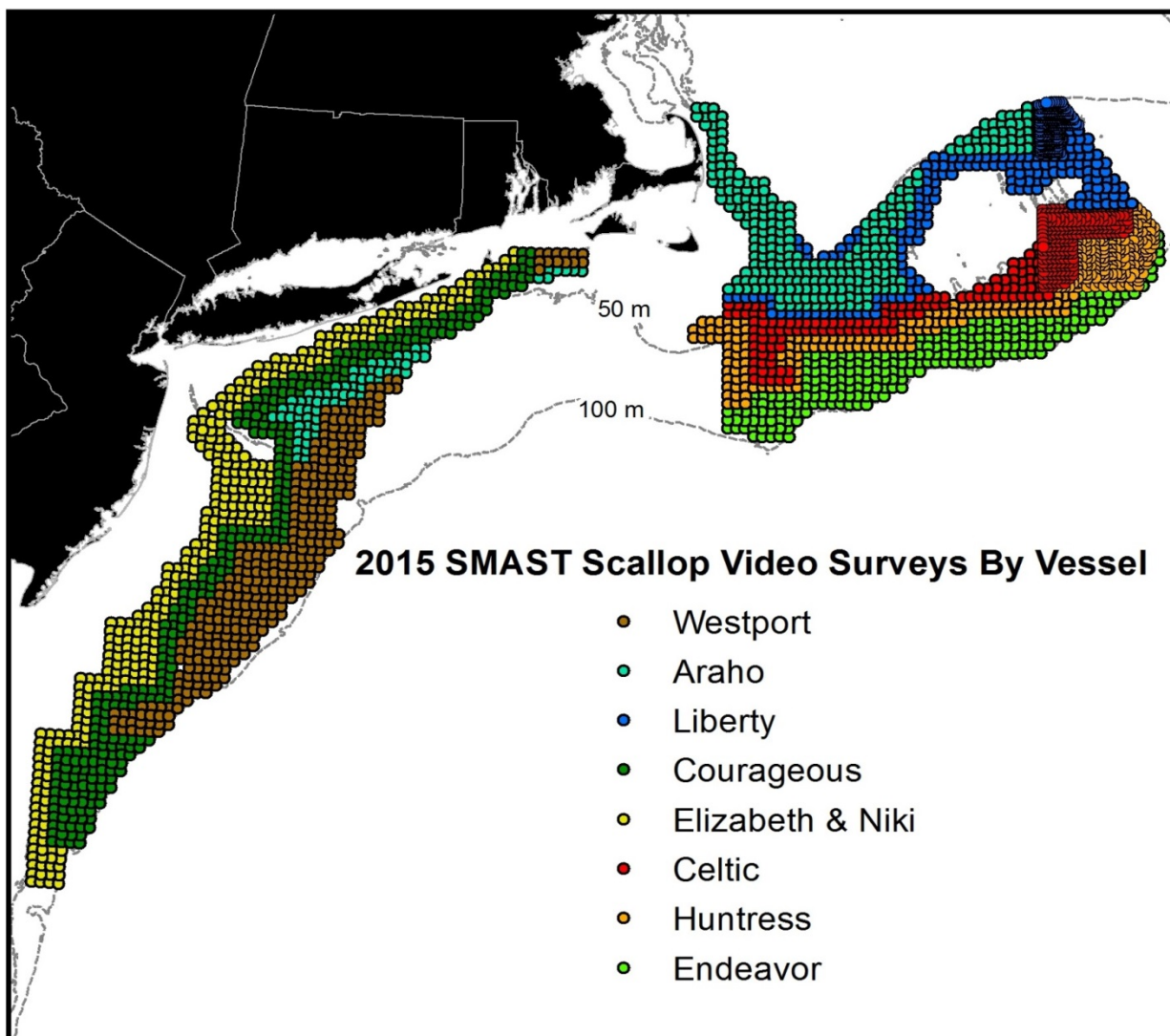




Figure 3 – Survey locations of Habcam v2 (Arnies Fishery) and Habcam v4 (NEFSC)

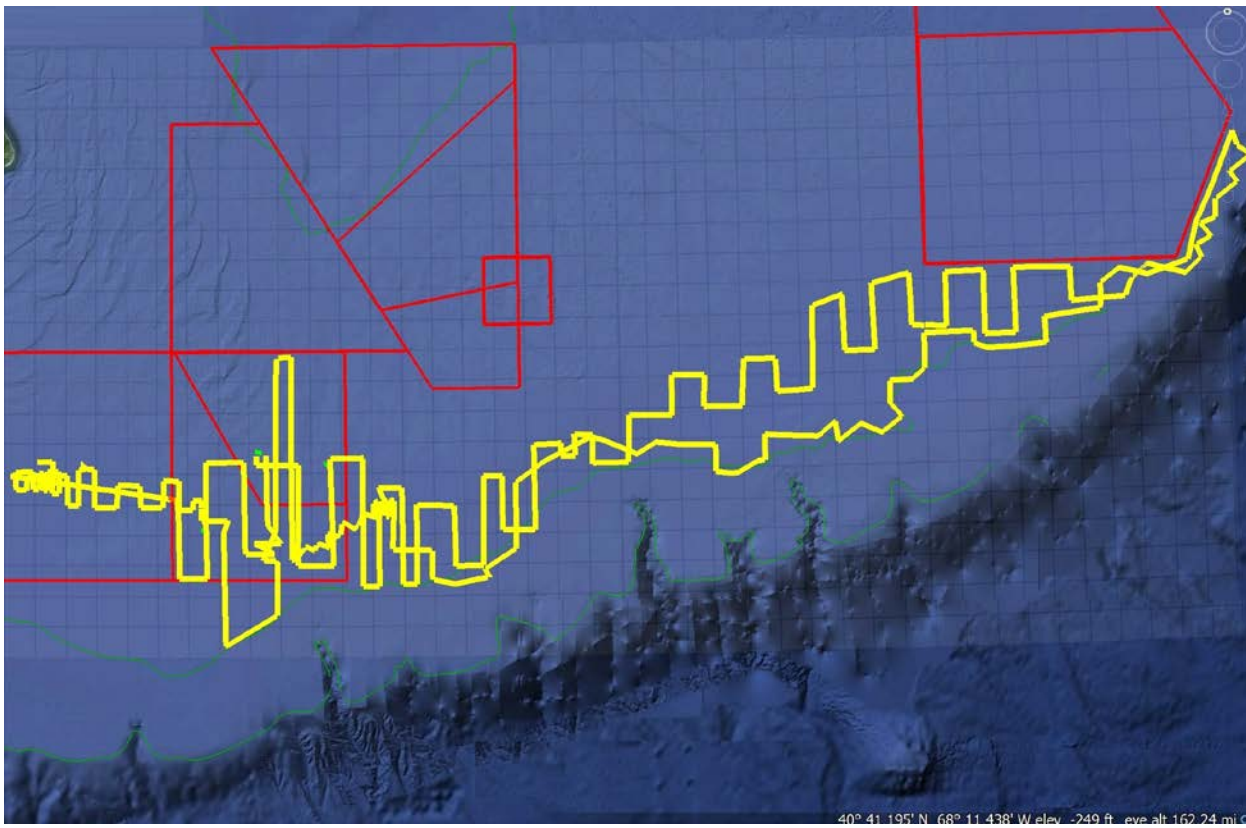


Figure 4 – Habcam coverage of MA and GB with scallop density (note that v2 plot included as well)

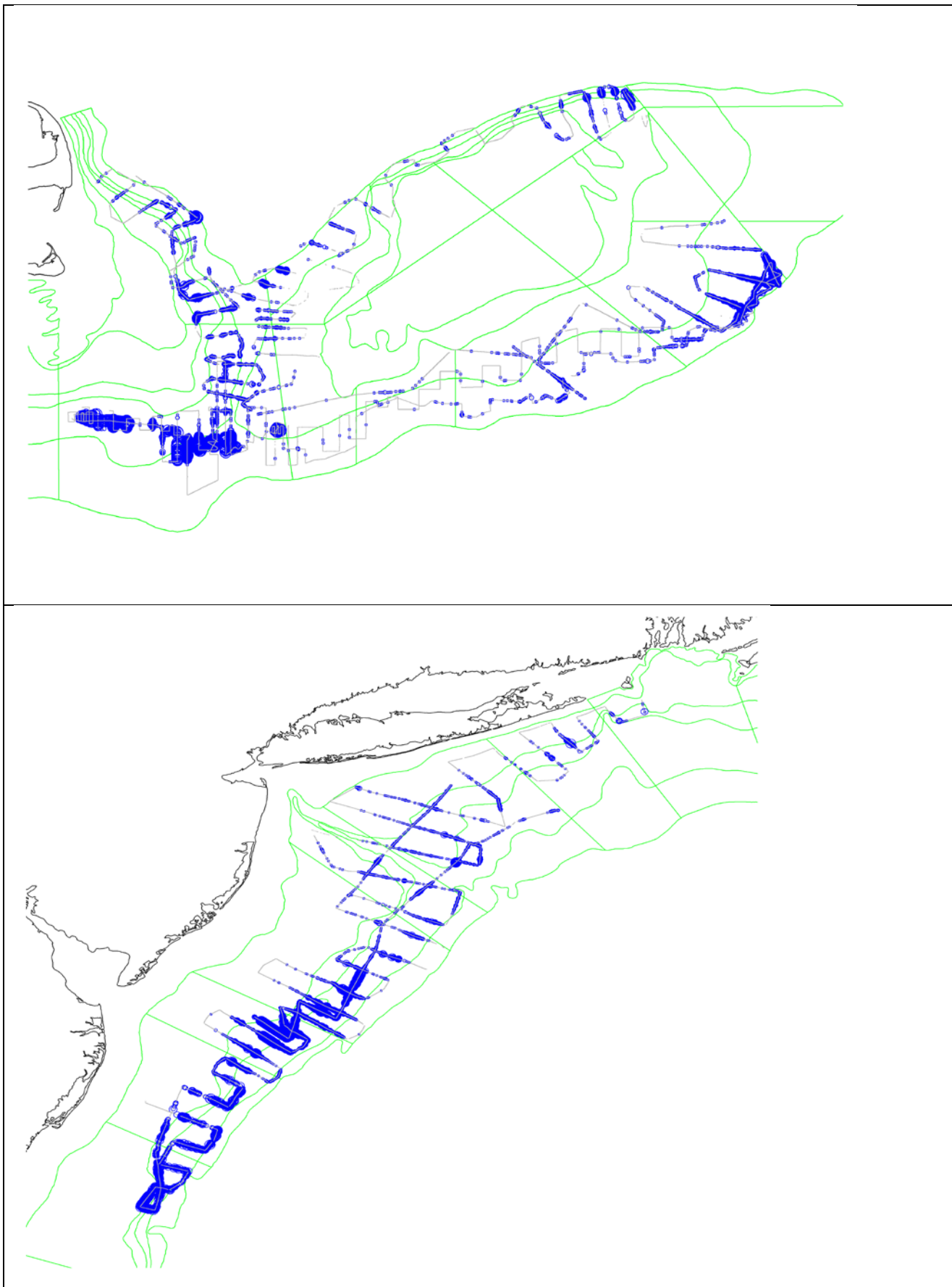


Figure 5 – Length frequencies by area from VIMS dredge survey

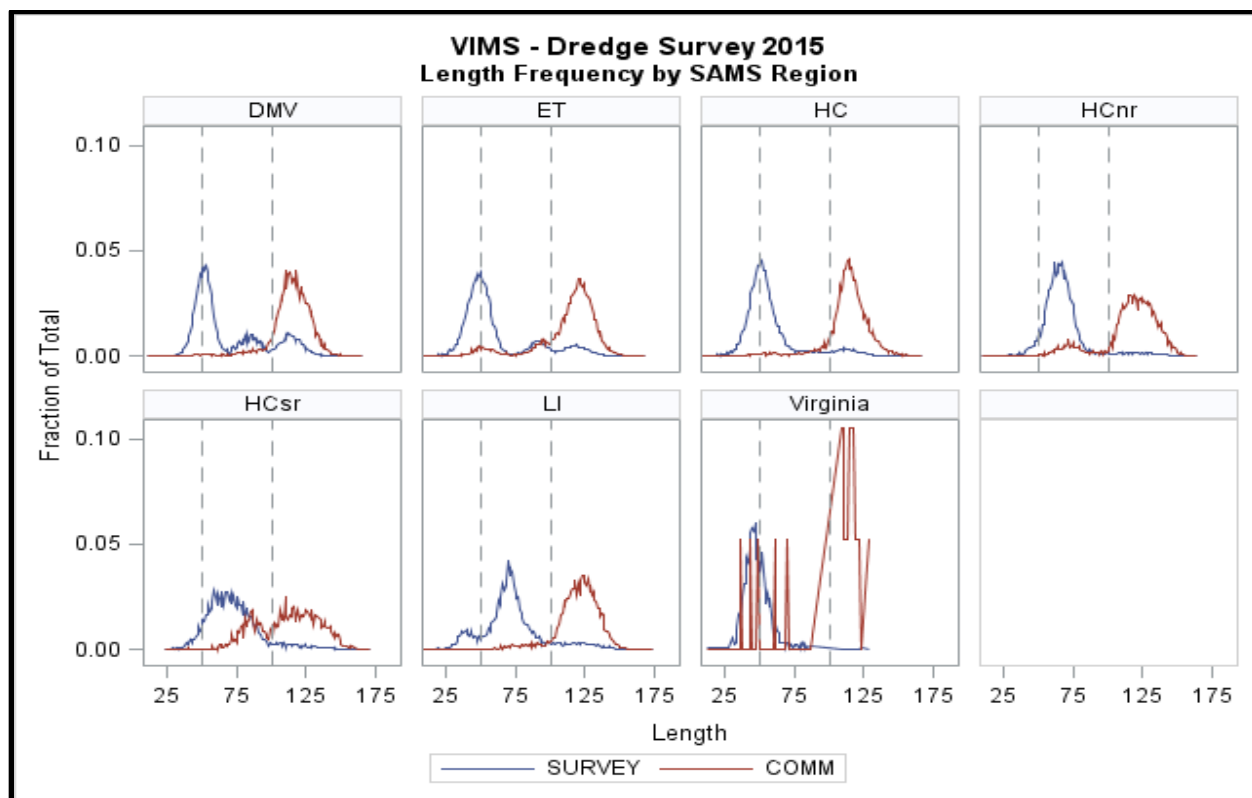


Figure 6 – Distribution of shell heights from SMAST GB surveys in 2014 and 2015 for both large and small cameras

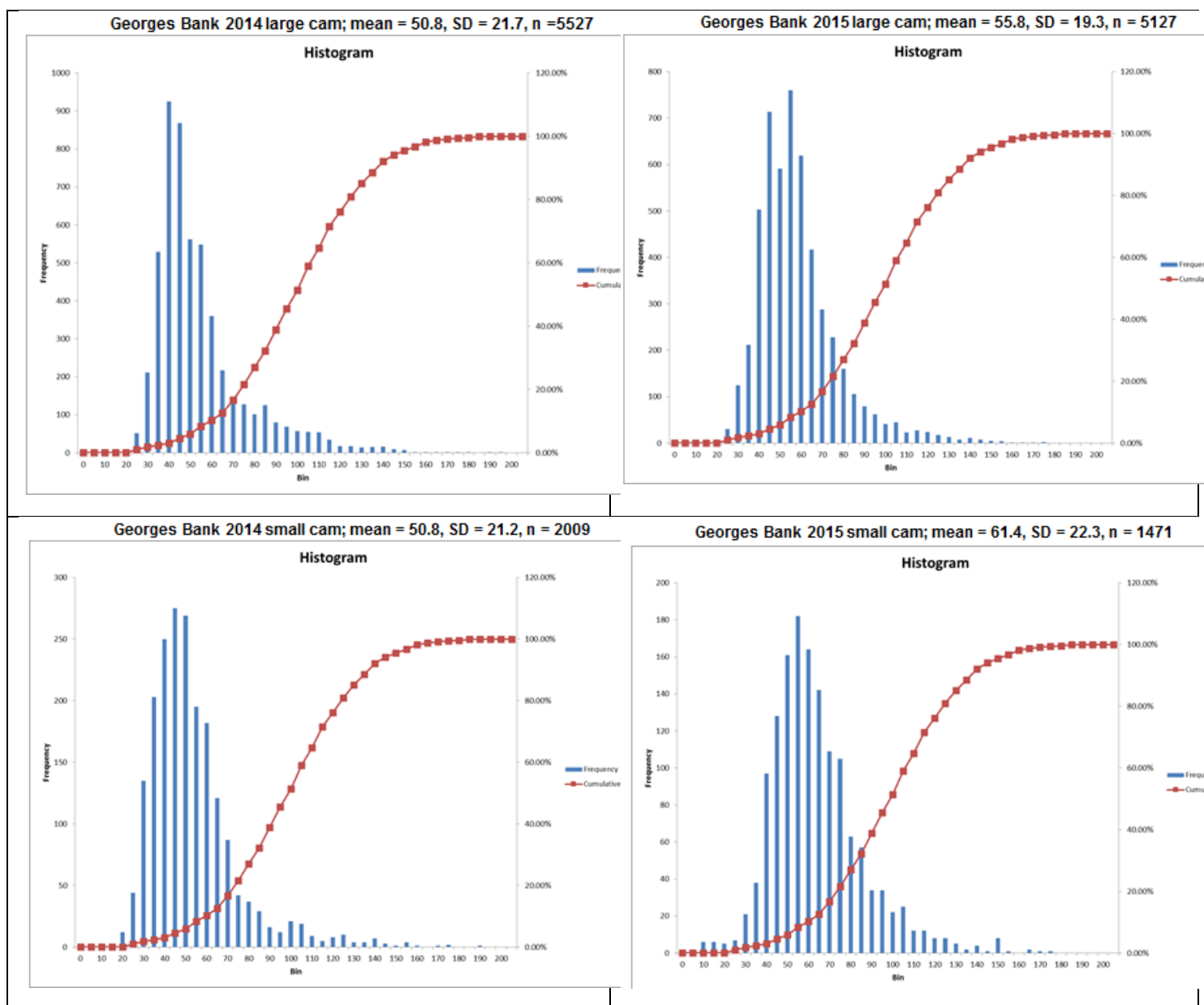


Figure 7 – Distribution of shell heights from SMAST MA surveys in 2014 and 2015 (large camera only)

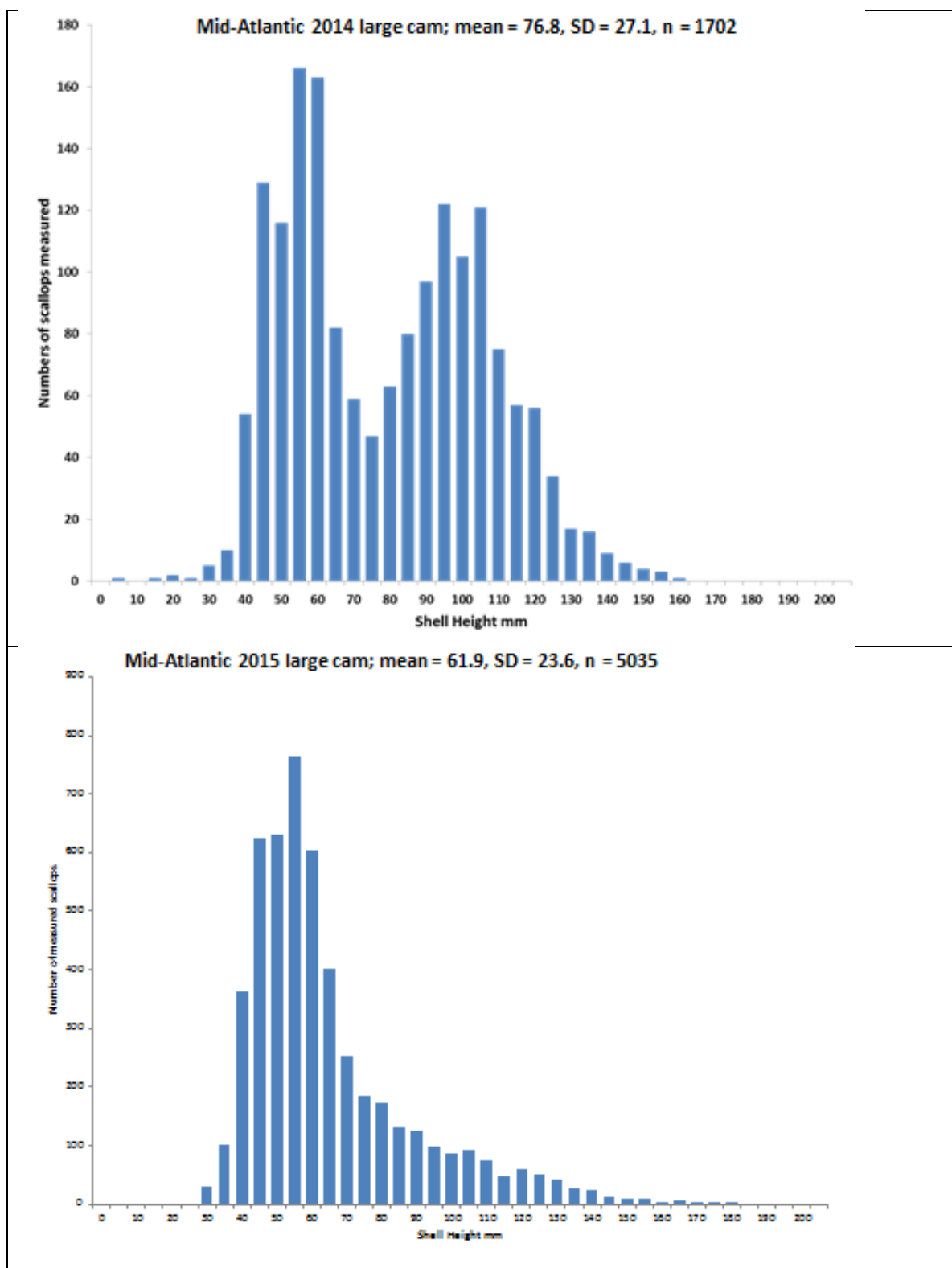


Figure 8 – Total scallop meat weight by area from SMAST survey 2003-2015 (million pounds)

	Georges Bank		Mid-Atlantic		Resource	
	Total	Exploitable	Total	Exploitable	Total	Exploitable
2003	194	147	239	123	434	271
2004	182	142	184	92	365	233
2005	180	131	187	109	367	240
2006	199	165	168	95	367	260
2007	190	154	176	98	365	252
2008	106	73	194	116	300	189
2009	157	108	140	80	298	188
2010	190	143	135	88	325	231
2011	192	139	131	123	323	262
2012	155	108	88	49	243	157
2013						
2014	187	65	133	68	320	133
<b>2015</b>	<b>208</b>	<b>46</b>	<b>235</b>	<b>93</b>	<b>443</b>	<b>139</b>
NMFS estimate SAW 59						
2013	191		102		292	

Figure 9 – Distribution of nematode in sampled scallop during 2015 VIMS survey

