

2021 Scallop Survey Short Report

Prepared by:

Kyle Cassidy and Kevin D.E. Stokesbury



School for Marine Science and Technology (SMAST)
University of Massachusetts Dartmouth

August 27, 2021

Intentionally Blank

DRAFT

1.0 2021 SURVEY BIOMASS ESTIMATES

Table 1. Total biomass estimates from the 2021 SMAST drop camera survey by Scallop Area Management Simulator (SAMS) zones. Stations were 5.6 km apart for the majority of Georges Bank SAMS zones with the exception of CL2-Ext and CL2-Southwest (grey) that were surveyed on a 2.8 km grid. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| SMAST Drop Camera Survey | | | | | | | |
|---|---|--------------|-----------|---------------|-----------------------|--|-------------------|
| Size cutoff for estimates is 40mm, all estimates should use SARC 65 equation | | | | | | | |
| Note: NLS-South = NLS-South-Deep (same area) | | | | | | | |
| GB | NumMil | BmsMT | SE | MeanWt | Avg. Size (mm) | Scallop density (m²) | # Stations |
| CL1-Access | 65 | 1,254 | 634 | 19.2 | 89.3 | 0.05 | 39 |
| CL1-Sliver | 131 | 1,125 | 382 | 8.6 | 69.7 | 0.15 | 29 |
| CL1-South | 3 | 6 | 6 | 1.8 | 47.2 | 0.01 | 8 |
| CL2-North | 246 | 1,886 | 727 | 14.1 | 76.9 | 0.27 | 16 |
| CL2-Southeast | 753 | 9,464 | 2,634 | 12.6 | 82.9 | 0.29 | 85 |
| CL2-Southwest | 608 | 14,724 | 2,578 | 24.2 | 103.5 | 0.59 | 134 |
| CL2-Ext | 1,093 | 18,983 | 2,420 | 17.4 | 92.7 | 0.79 | 179 |
| NLS-North | 83 | 1,830 | 926 | 22.0 | 90.4 | 0.06 | 42 |
| NLS-South | 2,012 | 24,263 | 10,188 | 12.1 | 91.2 | 3.10 | 21 |
| NLS-West | 10 | 202 | 1,658 | 20.4 | 93.0 | 0.01 | 49 |
| NF | 94 | 1,665 | 614 | 17.7 | 90.3 | 0.06 | 54 |
| GSC | <i>See Additional Analyses in Section 4.0</i> | | | | | | |
| SF | 734 | 11,516 | 2,829 | 15.7 | 89.2 | 0.18 | 129 |
| MidAtlantic | <i>Not Funded</i> | | | | | | |

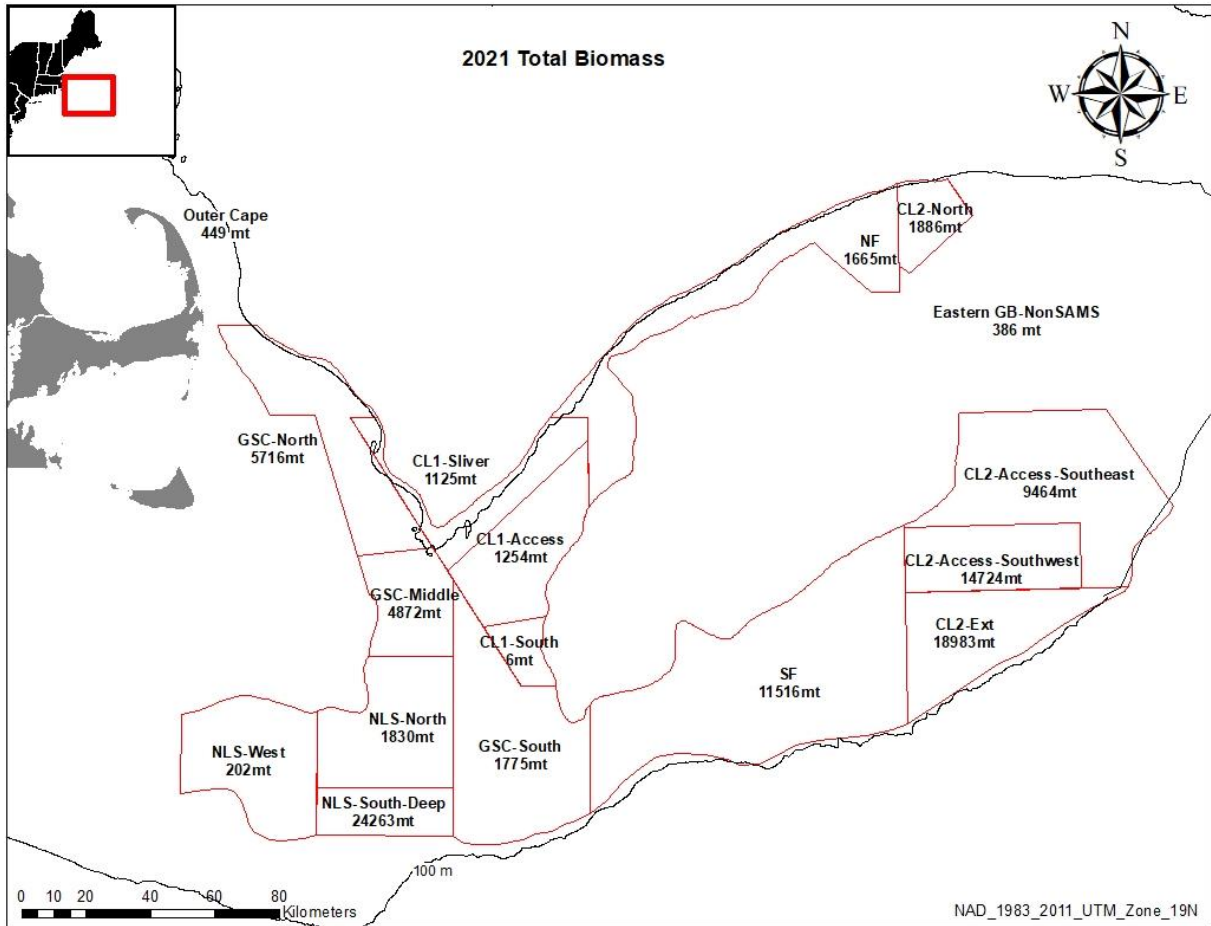


Figure 1. 2021 SMAST Drop Camera survey total biomass estimates in metric tons on Georges Bank by Scallop Area Management Simulator (SAMS) zones.

2.0 FIGURES OF SURVEY COVERAGE

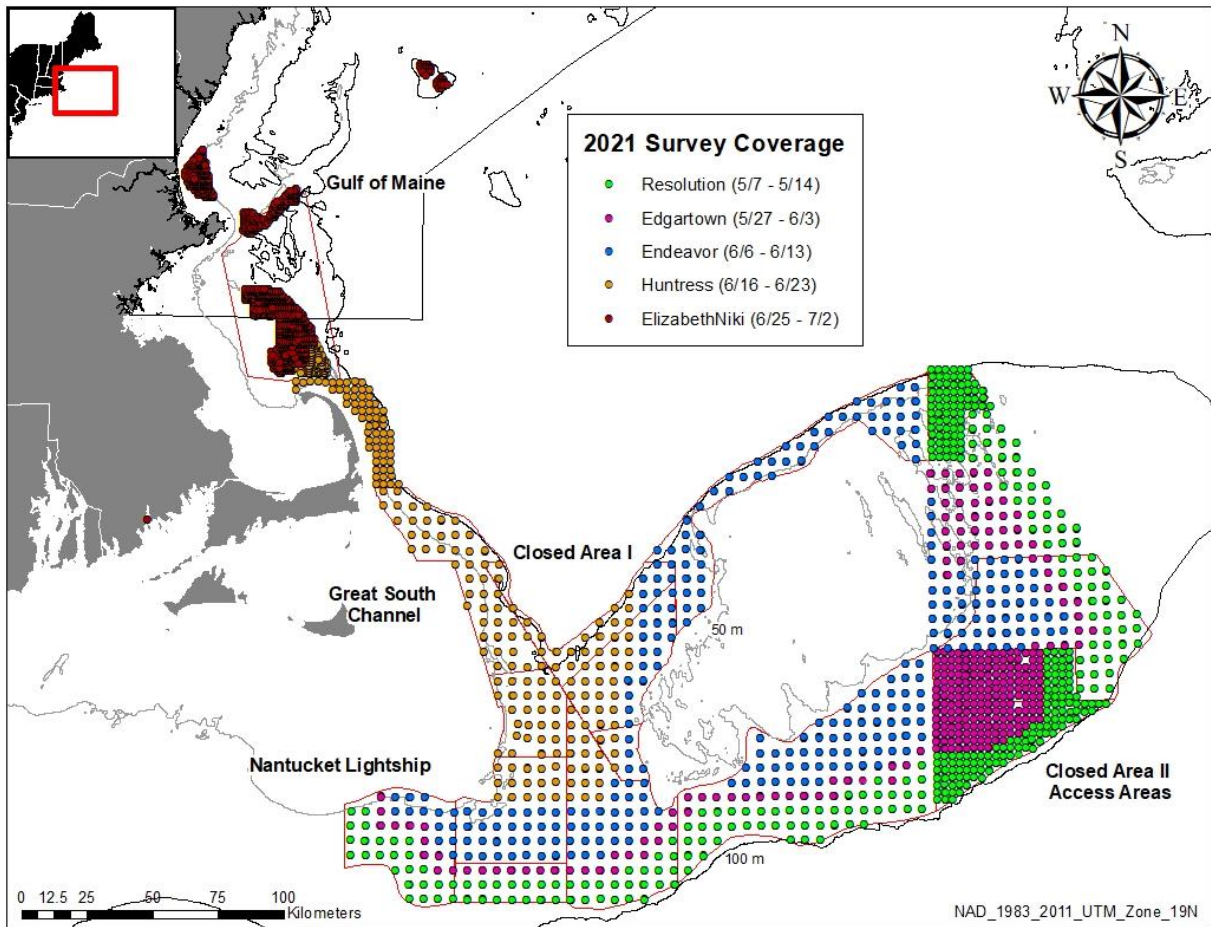


Figure 2. 2021 SMAST Drop Camera survey locations by vessel. Stations were 5.6 km apart with the exceptions of CL2- Southwest, CL2-Extension, and the Outer Cape Cod area.

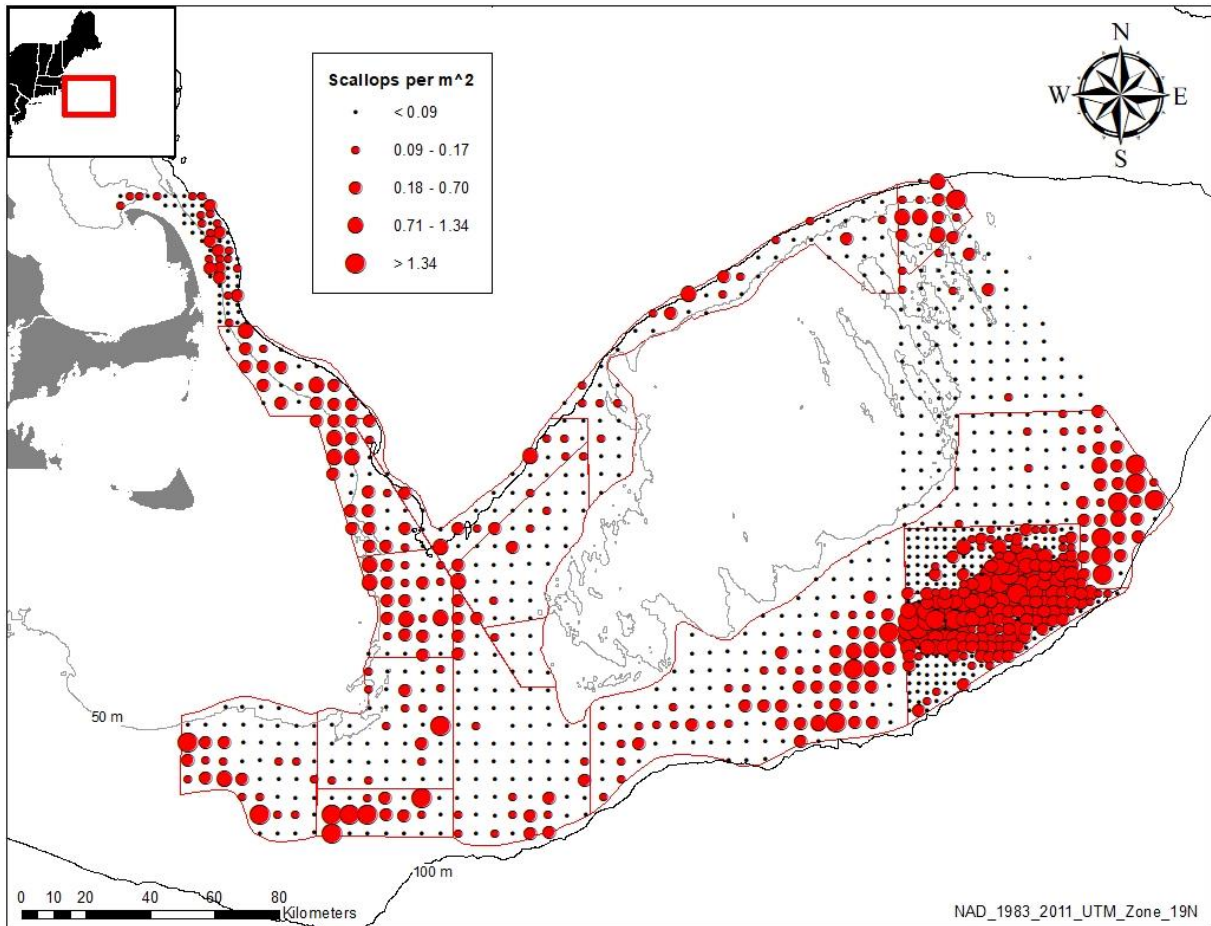


Figure 3. Overall scallop density from the 2021 S Mast Drop Camera survey.

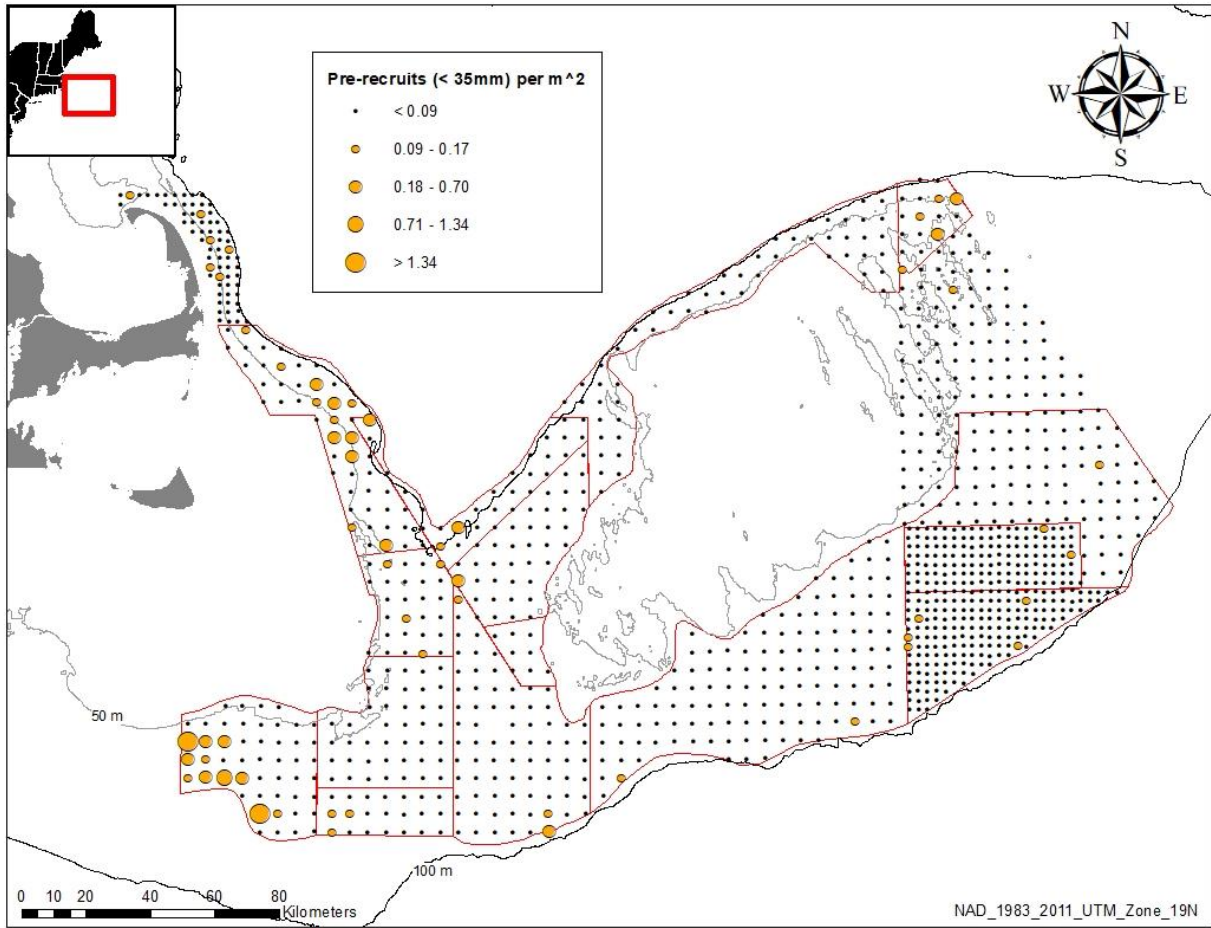


Figure 4. Pre-recruit (< 35 mm) scallop density from the 2021 SMAST Drop Camera survey.

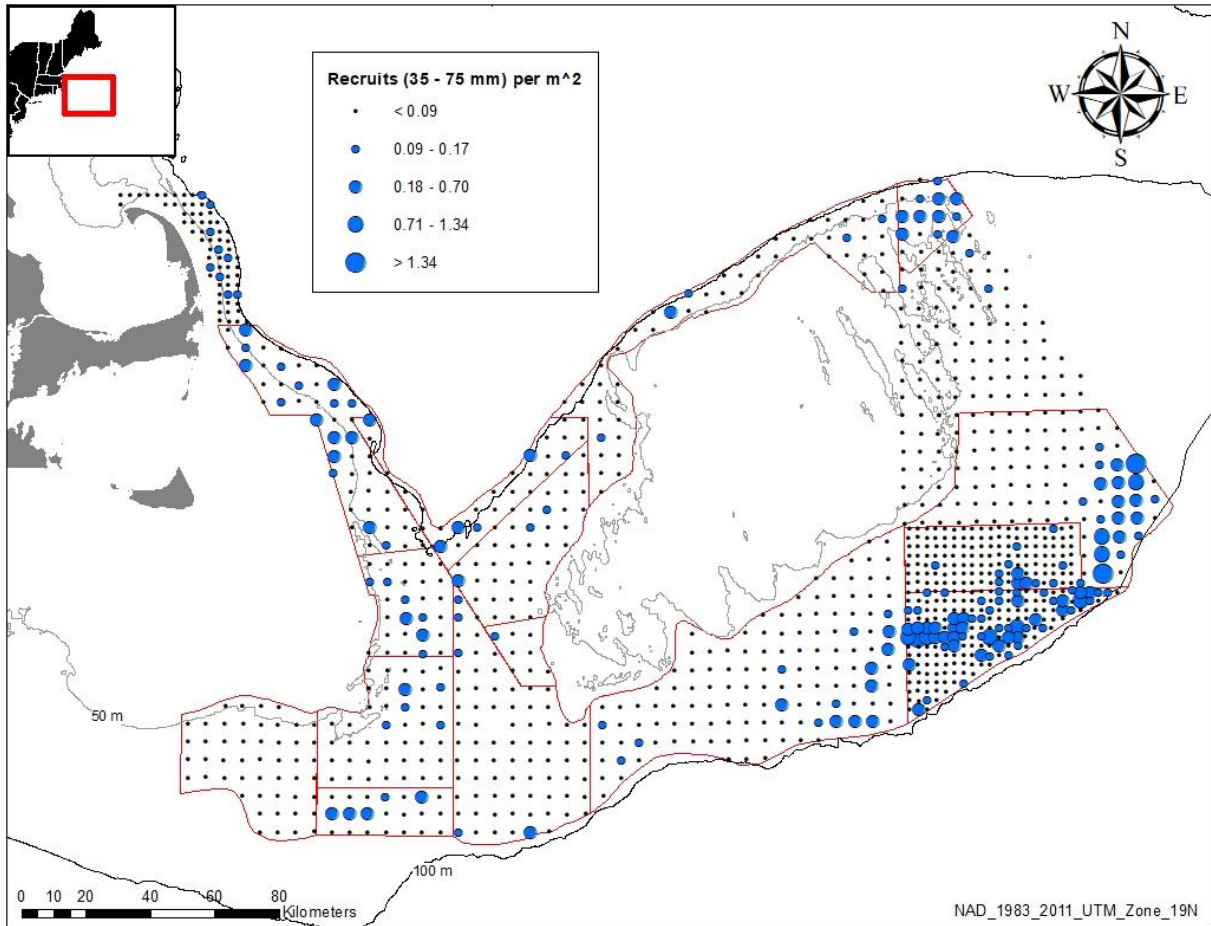


Figure 5. Recruit (35 to 75 mm) scallop density from the 2021 SMAST Drop Camera survey.

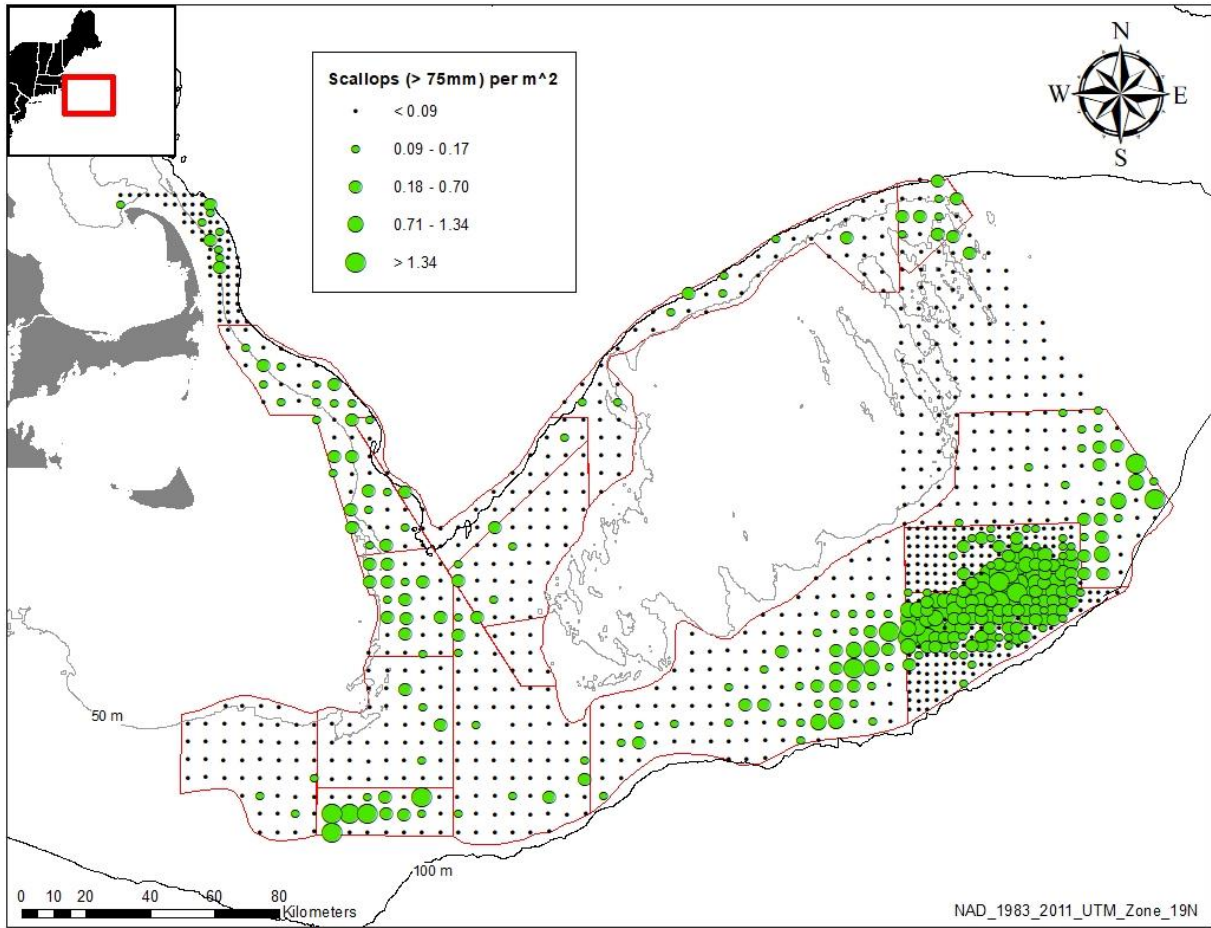


Figure 6. Scallop (> 75 mm) density from the 2021 SMAST Drop Camera survey.

3.0 LENGTH FREQUENCY PLOTS BY SAMS AREA

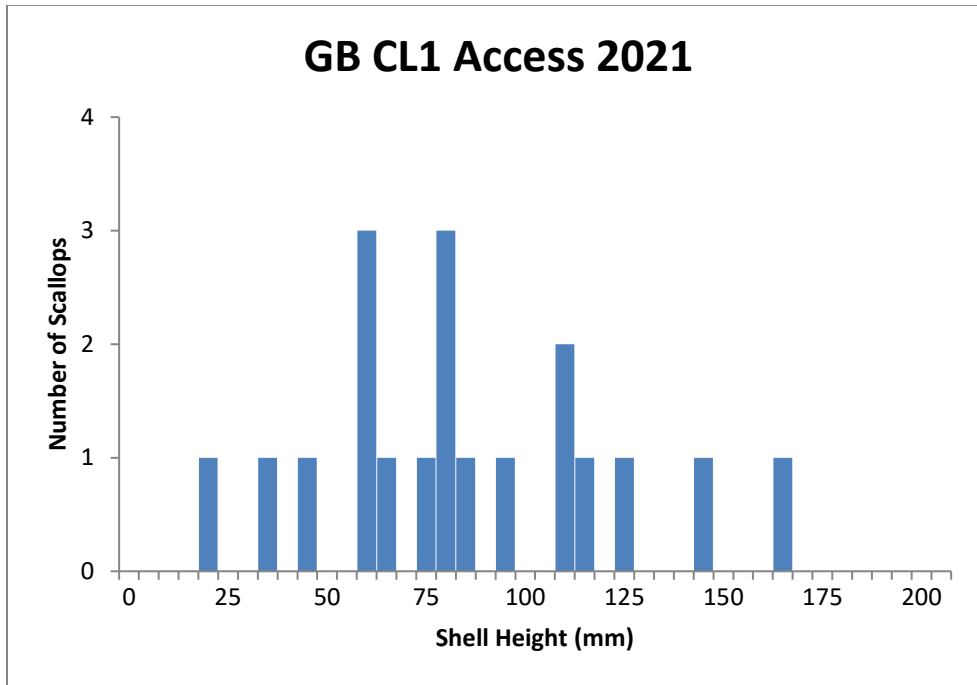


Figure 7. Shell height distribution of scallops in the CL1 Access SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 82.7 mm with 19 scallops measured.

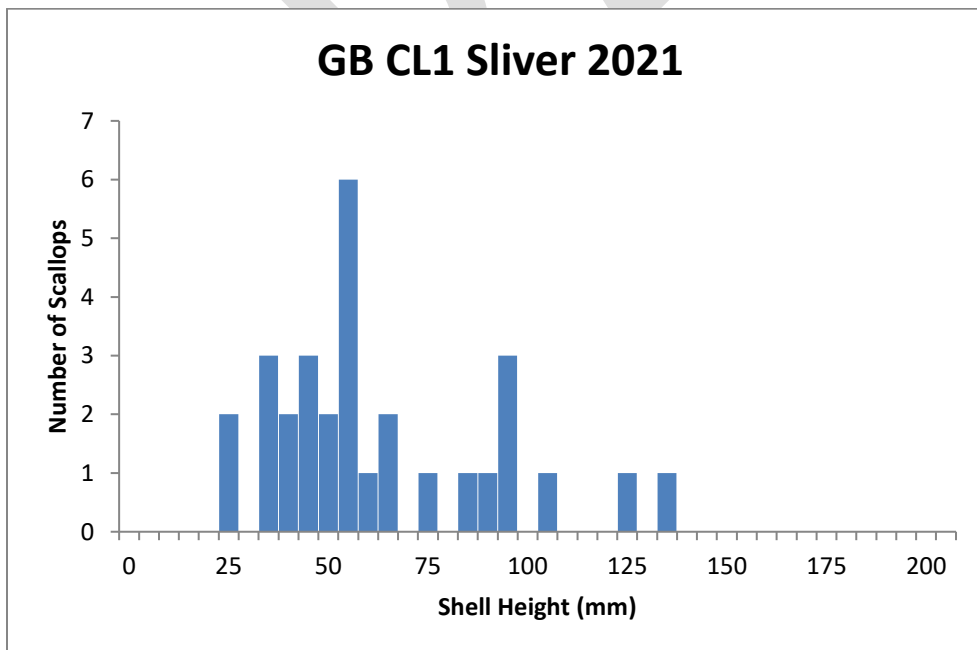


Figure 8. Shell height distribution of scallops in the CL1 Sliver SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 60.8 mm with 30 scallops measured.

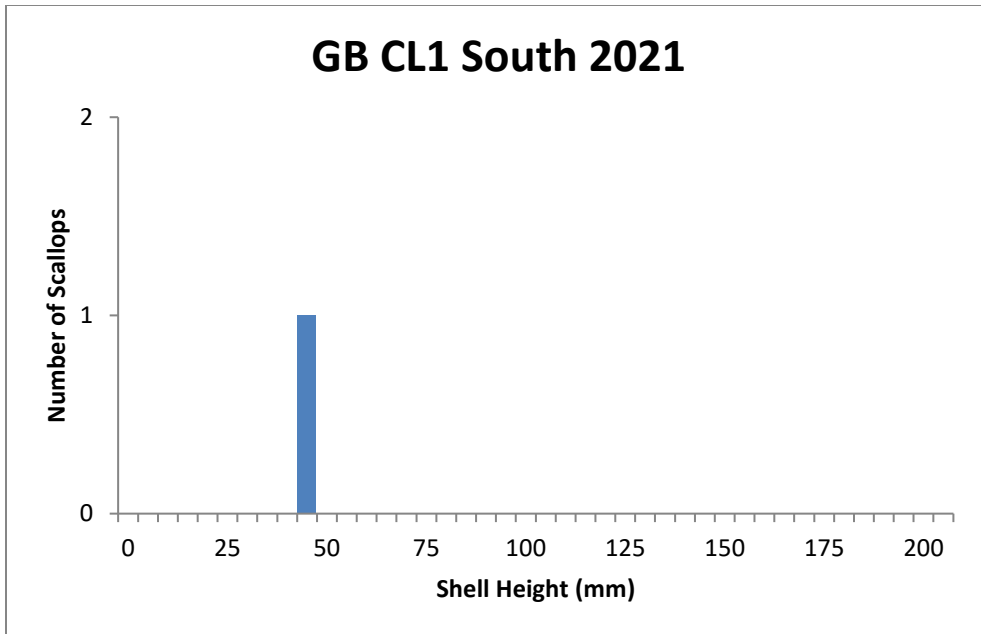


Figure 9. Shell height distribution of scallops in the CL1 South SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 47.7 mm with 1 scallop measured.

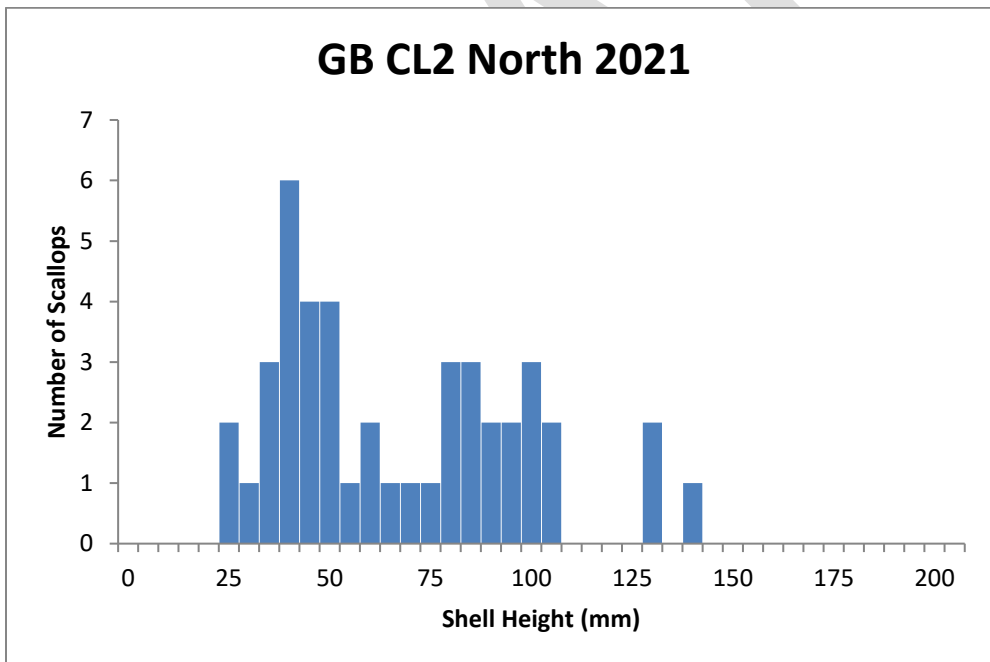


Figure 10. Shell height distribution of scallops in the CL2 North SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 65.1 mm with 44 scallops measured.

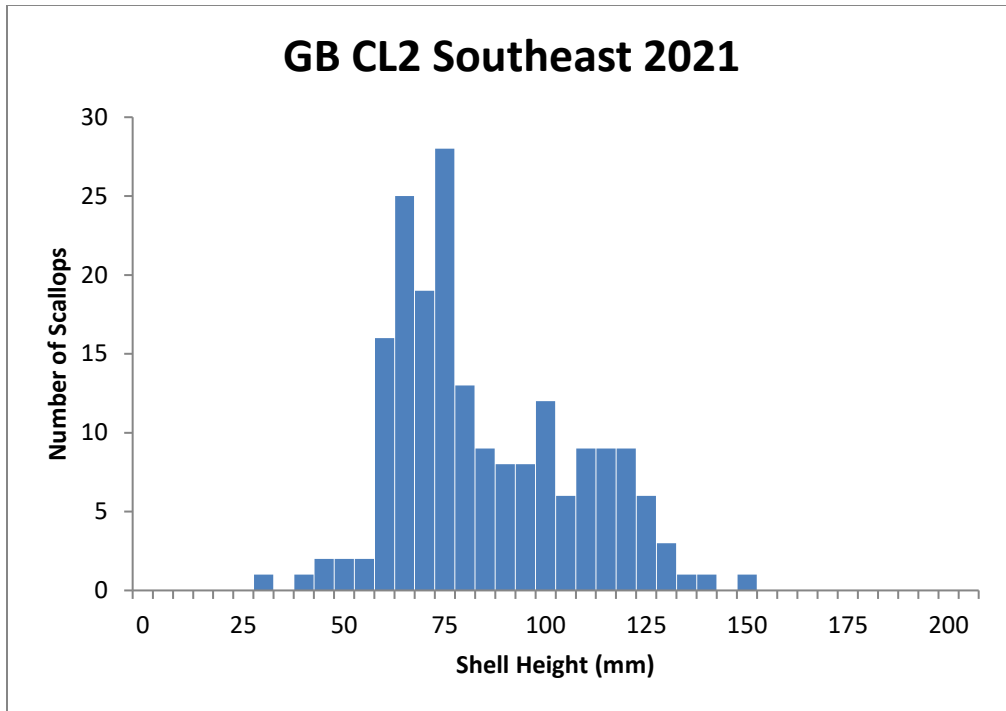


Figure 11. Shell height distribution of scallops in the CL2 Southeast SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 82.3 mm with 191 scallops measured.

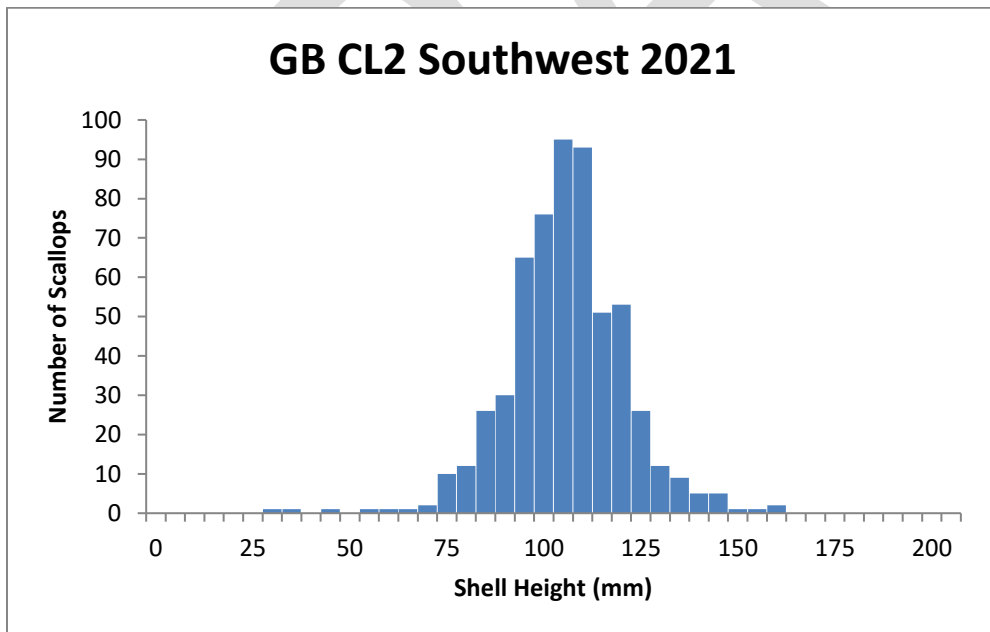


Figure 12. Shell height distribution of scallops in the CL2 Southwest SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 103.2 mm with 580 scallops measured.

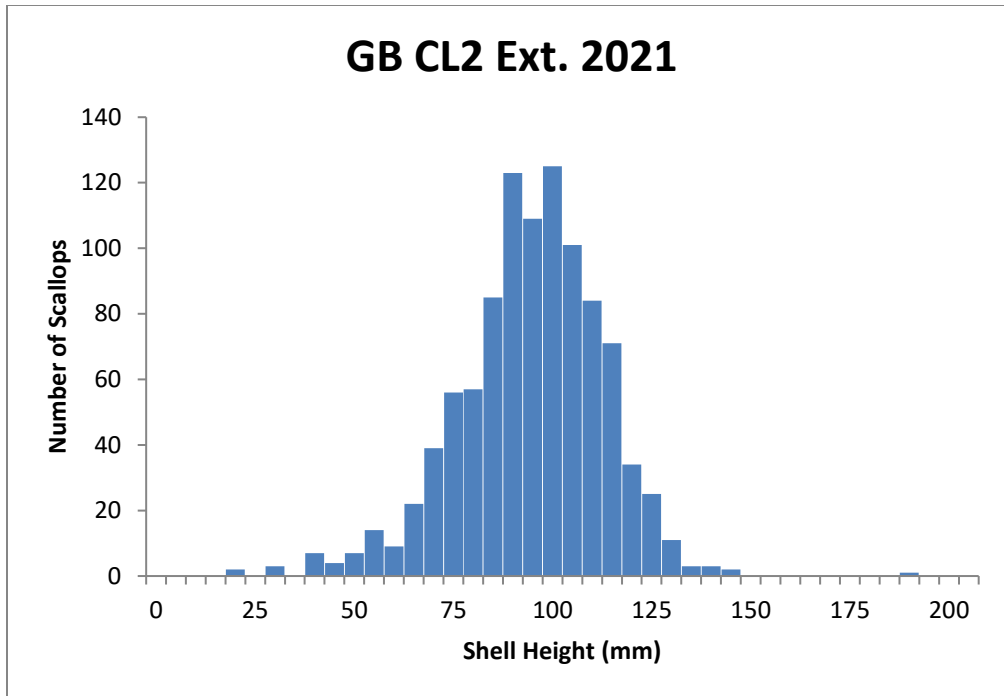


Figure 13. Shell height distribution of scallops in the CL2 Extension SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 92.0 mm with 997 scallops measured.

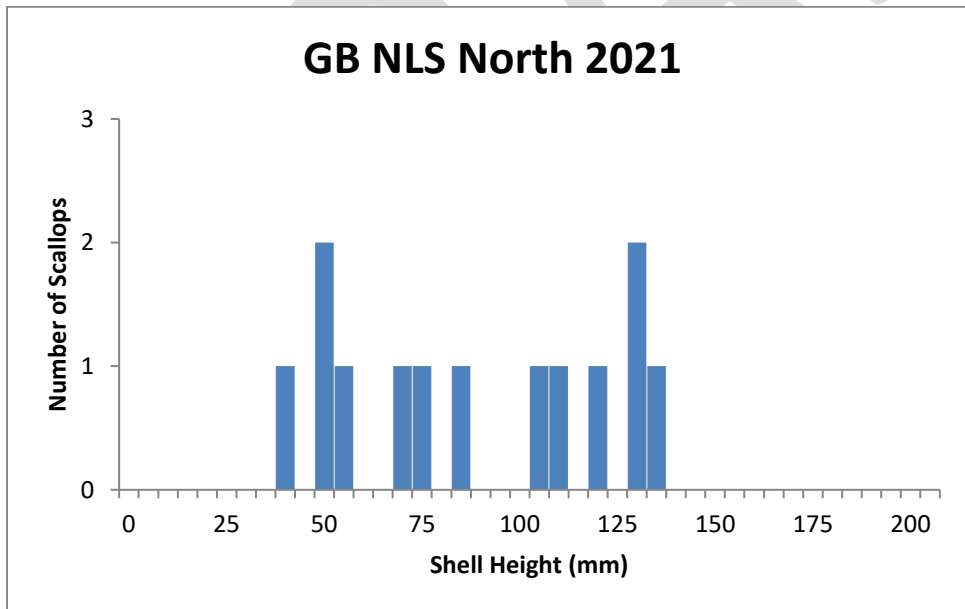


Figure 14. Shell height distribution of scallops in the NLS North SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 86.2 mm with 13 scallops measured.

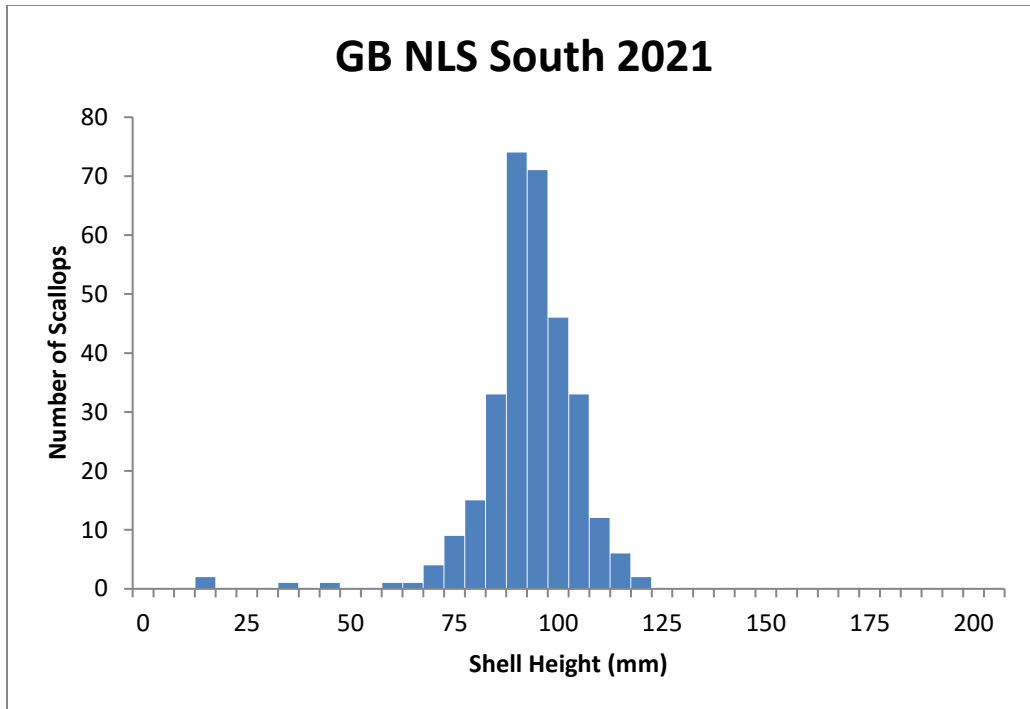


Figure 15. Shell height distribution of scallops in the NLS South SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 90.5 mm with 311 scallops measured.

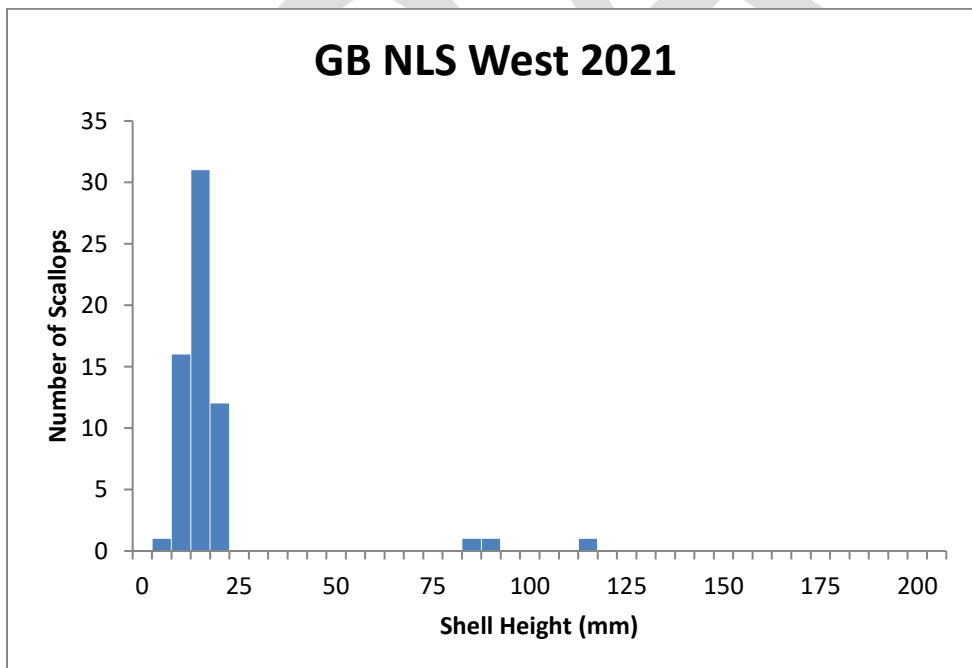


Figure 16. Shell height distribution of scallops in the NLS West SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 15.8 mm with 63 scallops measured.

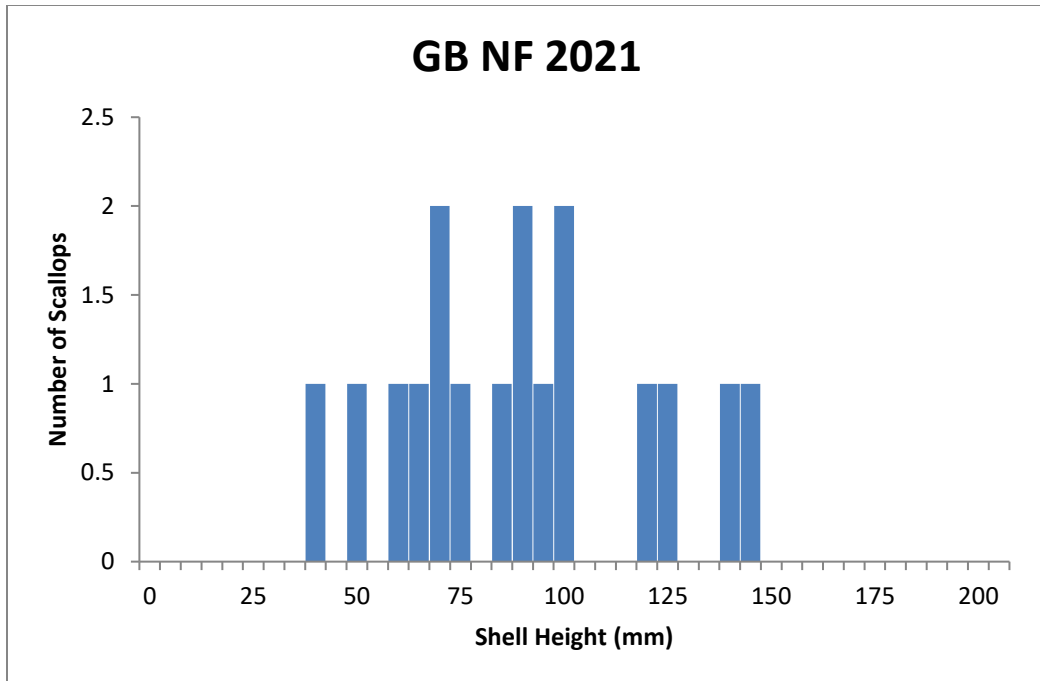


Figure 17. Shell height distribution of scallops in the NF SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 87.3 mm with 17 scallops measured.

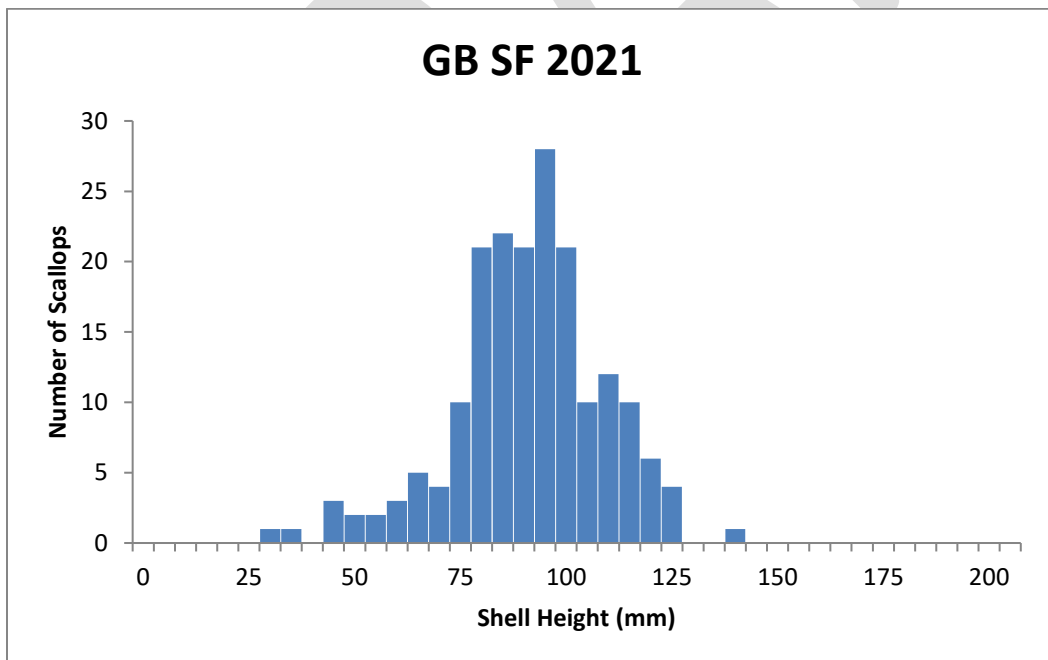


Figure 18. Shell height distribution of scallops in the SF SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 88.6 mm with 187 scallops measured.

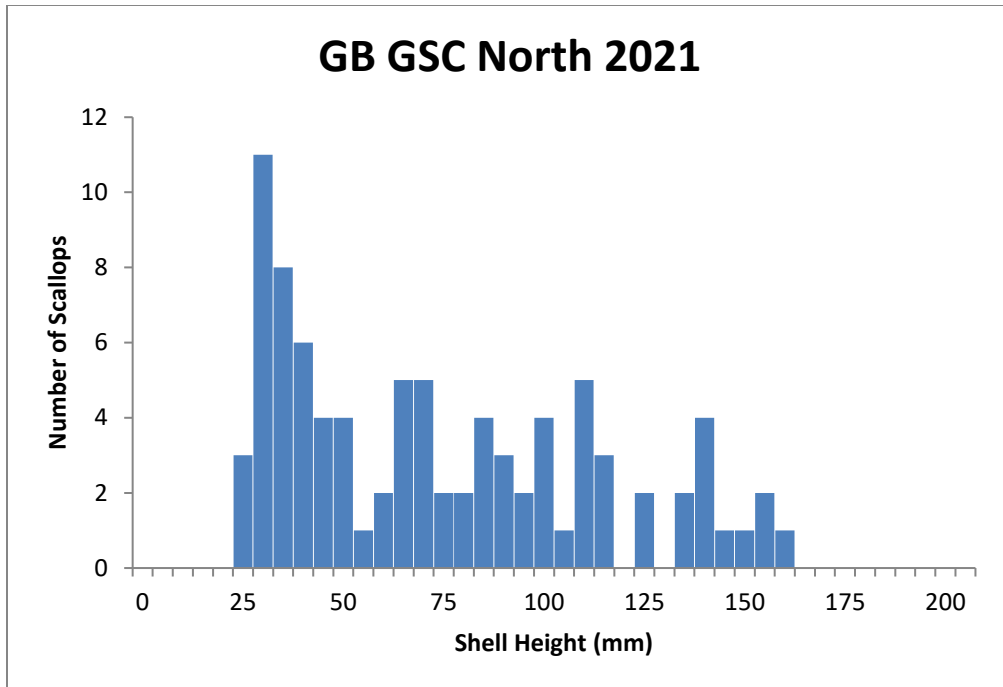


Figure 19. Shell height distribution of scallops in the GSC North SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 71.7 mm with 88 scallops measured.

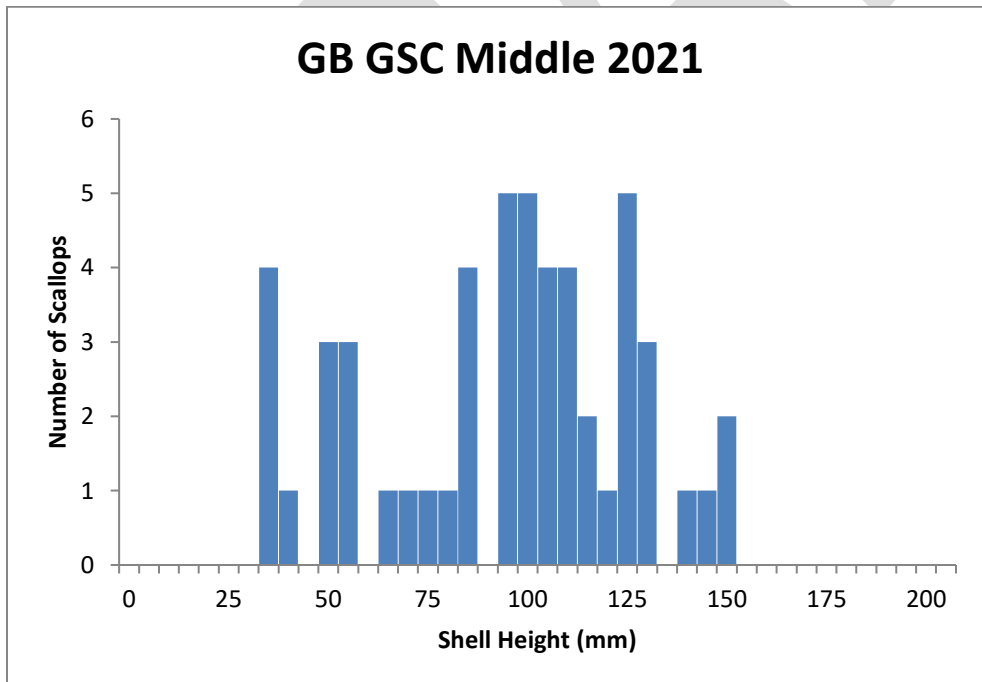


Figure 20. Shell height distribution of scallops in the GSC Middle SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 91.8 mm with 52 scallops measured.

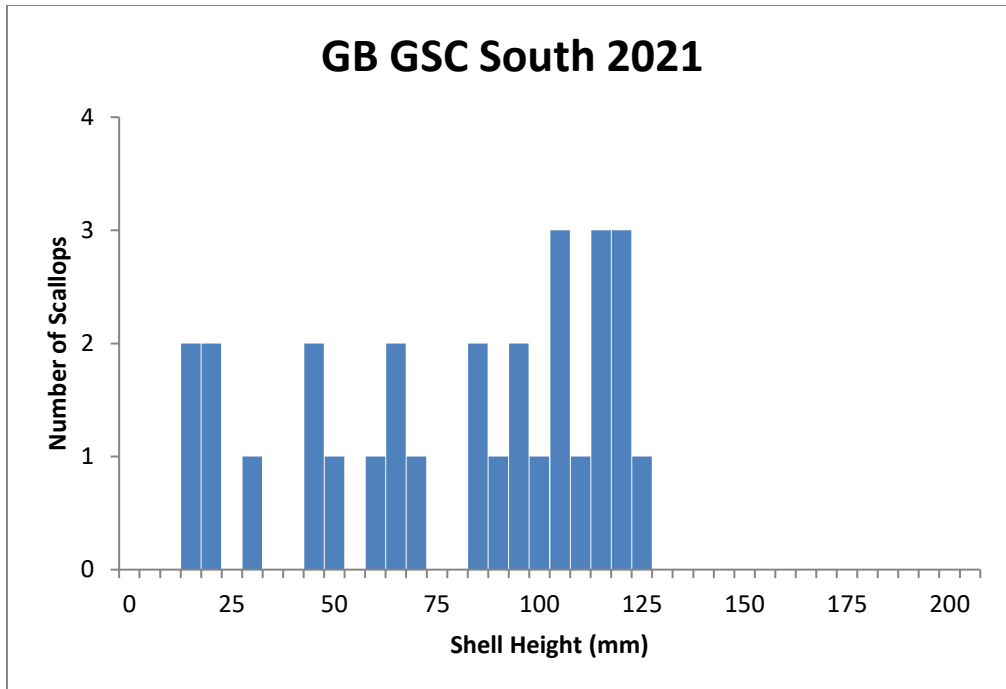


Figure 21. Shell height distribution of scallops in the GSC South SAMS zone from the SMAST Drop Camera survey. The overall average shell height was 76.8 mm with 29 scallops measured.

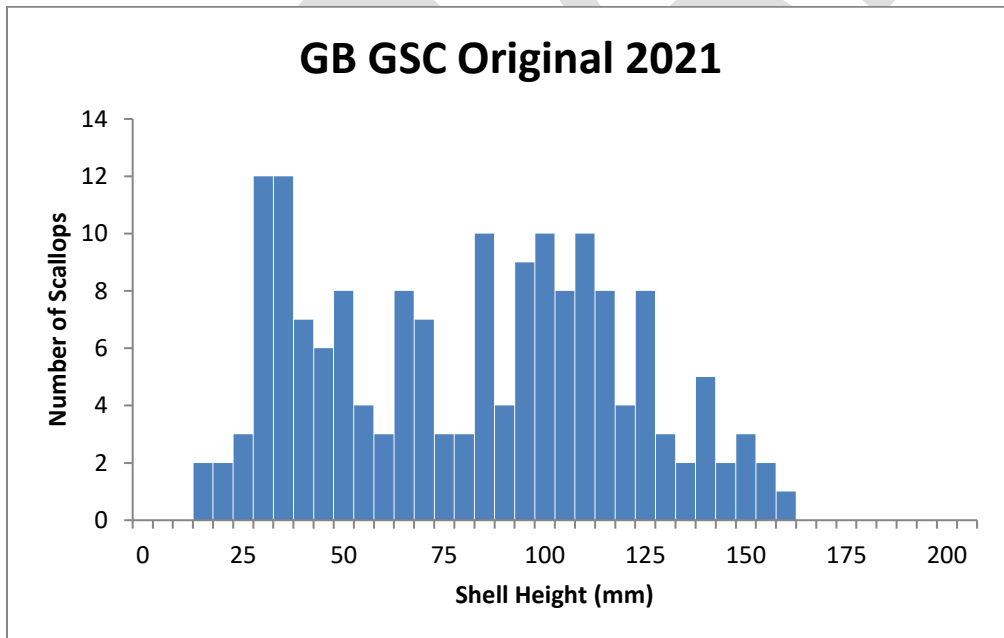


Figure 22. Shell height distribution of scallops in the GSC Original zone from the SMAST Drop Camera survey. The overall average shell height was 78.8 mm with 169 scallops measured.

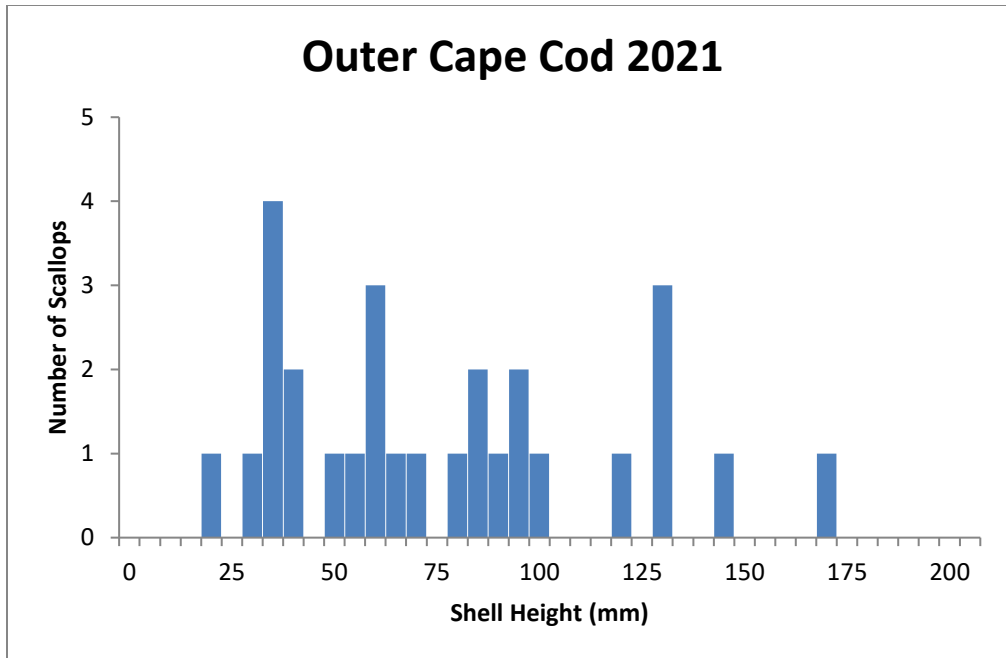


Figure 23. Shell height distribution of scallops in the Outer Cape Cod (Non-SAMS) area from the SMAST Drop Camera survey. The overall average shell height was 74.3 mm with 28 scallops measured.

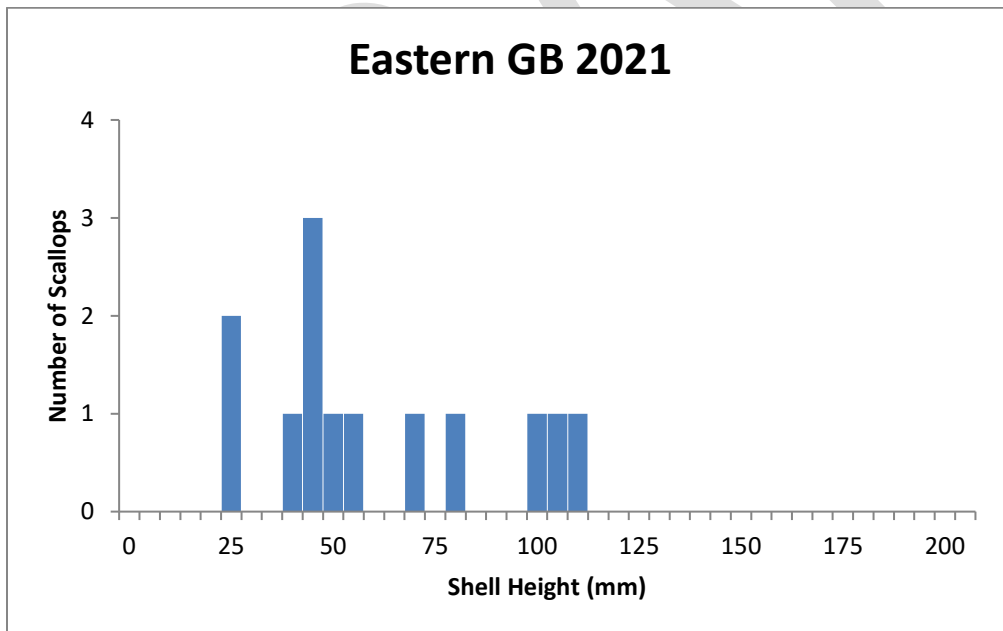


Figure 24. Shell height distribution of scallops in the Eastern Georges Bank (Non-SAMS) area from the SMAST Drop Camera survey. The overall average shell height was 57.8 mm with 13 scallops measured.

4.0 ADDITIONAL ANALYSES

Table 2. Total biomass estimates from the 2021 SMAST drop camera survey in the Great South Channel. Stations were 5.6 km apart for each zone. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| GB | NumMil | BmsMT | SE | MeanWt | Avg. Size (mm) | Scallop density (m²) | # Stations |
|-----------------|---------------|--------------|-----------|---------------|-----------------------|--|-------------------|
| GSC-North | 246 | 5,716 | 1,269 | 23.2 | 90.9 | 0.17 | 47 |
| GSC-Middle | 190 | 4,872 | 1,200 | 25.7 | 98.1 | 0.23 | 27 |
| GSC-South | 103 | 1,775 | 553 | 17.2 | 89.0 | 0.04 | 76 |
| Split GSC Total | 539 | 12,363 | | | | | 150 |
| GSC original | 539 | 12,338 | 1,980 | 22.9 | 93.2 | 0.12 | 150 |

Table 3. Total biomass estimates from the 2021 SMAST drop camera survey in two areas that were outside any SAMS zone. Stations were 2.8 km apart for the Outer Cape Cape area (grey) and 5.6 km apart for the Eastern Georges Bank portion. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| GB | NumMil | BmsMT | SE | MeanWt | Avg. Size (mm) | Scallop density (m²) | # Stations |
|----------------|---------------|--------------|-----------|---------------|-----------------------|--|-------------------|
| Outer Cape Cod | 21 | 449 | 118 | 21.3 | 91.4 | 0.04 | 66 |
| EGB Non-SAMS | 40 | 386 | 226 | 9.8 | 66.9 | 0.01 | 99 |

Table 4. Comparison of the total biomass in metric tons and standard error for the Nantucket Lightship South Deep SAMS zone; estimates are for the SARC 65 Shell Height – Meat Weight equation and an additional equation developed by the Virginia Institute of Marine Science.

| | SARC 65 SH/MW BmsMT (SE) | VIMS SH/MW 2016-2021 BmsMT (SE) |
|-----------|-----------------------------|------------------------------------|
| NLS-South | 24,263 (10,188) | 23,009 (9,662) |

5.0 SPECIAL COMMENTS

Through this year's survey we identified an area as a potential recruitment event with a large amount of seed present in the Nantucket Lightship West SAMS area. The recruitment event identified last year has persisted and seen growth. There also appears to be another small region of pre-recruits in the GSC-North zone.

DRAFT

6.0 EXPLOITABLE BIOMASS ESTIMATES FOR 2021 (CURRENT FY)

Table 5. Exploitable biomass estimates from the 2021 SMAST drop camera survey by Scallop Area Management Simulator (SAMS) zones. Stations were 5.6 km apart for the majority of Georges Bank SAMS zones with the exception of CL2-Ext and CL2-Southwest (grey) that were surveyed on a 2.8 km grid. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| SMAST Drop Camera Survey | | | | |
|---------------------------------|-------------------------|--------------------------|-----------|---------------|
| Georges Bank | NumMill | Exploitable BmsMT | SE | MeanWt |
| CL1-Access | 22 | 864 | 437 | 38.5 |
| CL1-Sliver | 22 | 530 | 180 | 23.5 |
| CL1-South | 0 | 0 | 0 | 1.8 |
| CL2-North | 30 | 919 | 354 | 30.3 |
| CL2-Southeast | 199 | 4,673 | 1,300 | 23.4 |
| CL2-Southwest | 329 | 9,292 | 1,627 | 28.3 |
| CL2-Ext | 410 | 9,513 | 1,213 | 23.2 |
| NLS-North | 35 | 1,328 | 672 | 37.7 |
| NLS-South | 638 | 8,957 | 3,761 | 14.0 |
| NLS-West | 4 | 97 | 799 | 26.2 |
| NF | 33 | 1,062 | 391 | 32.2 |
| GSC | <i>See table below.</i> | | | |
| SF | 235 | 5,061 | 1,243 | 21.6 |
| MidAtlantic | <i>Not Funded</i> | | | |

Table 6. Exploitable biomass estimates from the 2021 SMAST drop camera survey in the Great South Channel. Stations were 5.6 km apart for each zone. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| GB - GSC | NumMil | Exploitable BmsMT | SE | MeanWt |
|-----------------|---------------|--------------------------|-----------|---------------|
| GSC-North | 94 | 4,081 | 906 | 43.5 |
| GSC-Middle | 91 | 3,387 | 834 | 37.1 |
| GSC-South | 41 | 1,046 | 326 | 25.6 |
| Split GSC Total | 226 | 8,514 | | |
| GSC original | 226 | 8,481 | 1,361 | 37.5 |

Table 7. Exploitable biomass estimates from the 2021 SMAST drop camera survey in two areas that were outside any SAMS zone. Stations were 2.8 km apart for the Outer Cape Cod area (grey) and 5.6 km apart for the Eastern Georges Bank portion. Meat weights were estimated following the 65th SARC shell height-meat weight equations.

| GB | NumMil | Exploitable BmsMT | SE | MeanWt |
|----------------|---------------|--------------------------|-----------|---------------|
| Outer Cape Cod | 8 | 324 | 85 | 41.6 |
| EGB Non-SAMS | 7 | 154 | 90 | 21.9 |

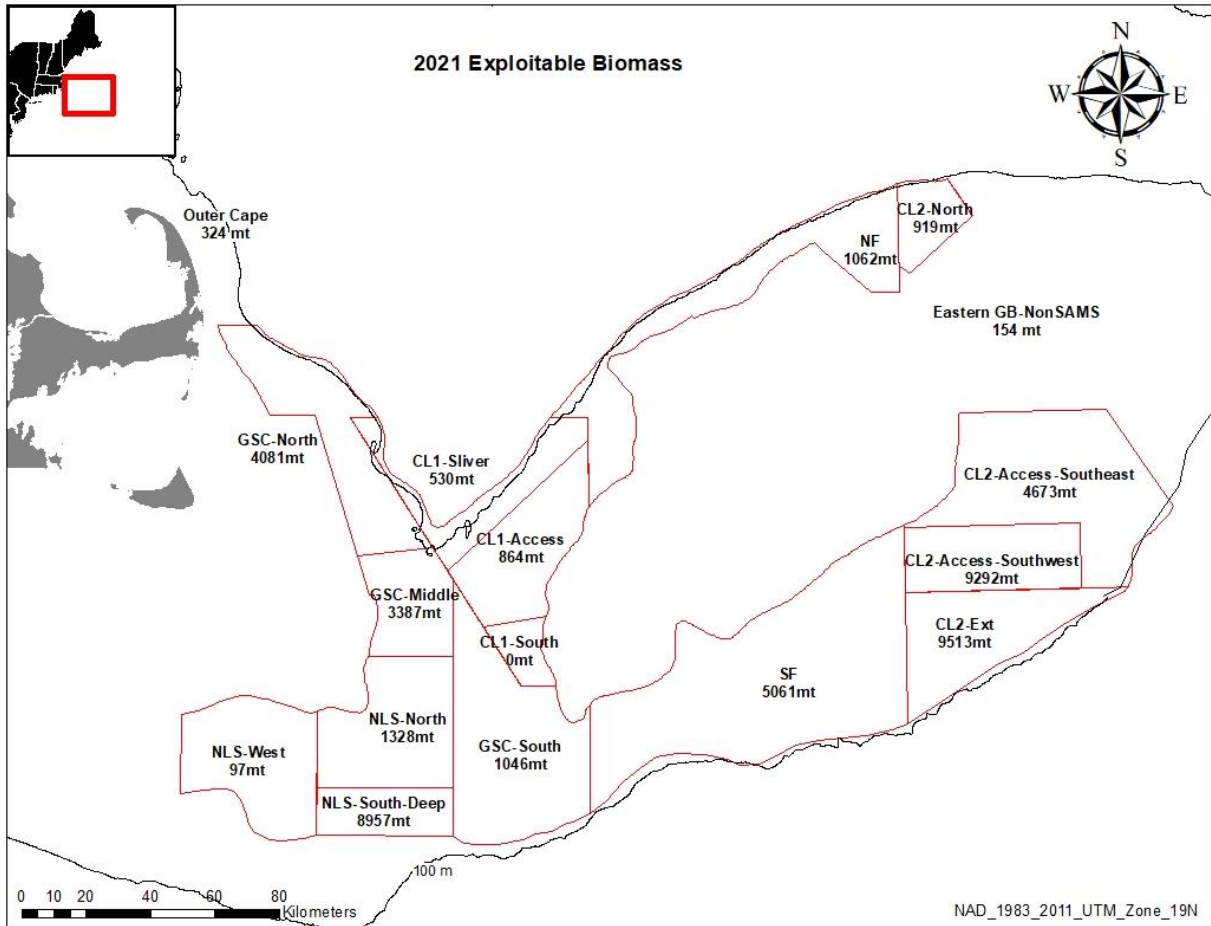


Figure 25. 2021 SMAST Drop Camera survey exploitable biomass estimates in metric tons on Georges Bank by Scallop Area Management Simulator (SAMS) zones.