

3-25-2010

Abundance and Distribution of Sea Scallops and Yellowtail Flounder during the 2009 VIMS/ Industry Cooperative Survey of the Nantucket Lightship Closed Area (NLCA)

William D. DuPaul

Virginia Institute of Marine Science

David B. Rudders

Virginia Institute of Marine Science

Follow this and additional works at: <https://scholarworks.wm.edu/reports>



Part of the [Aquaculture and Fisheries Commons](#)

Recommended Citation

DuPaul, W. D., & Rudders, D. B. (2010) Abundance and Distribution of Sea Scallops and Yellowtail Flounder during the 2009 VIMS/ Industry Cooperative Survey of the Nantucket Lightship Closed Area (NLCA). Marine Resource Report No. 2010-2. Virginia Institute of Marine Science, College of William and Mary. <http://dx.doi.org/doi:10.21220/m2-c5be-9z68>

This Report is brought to you for free and open access by W&M ScholarWorks. It has been accepted for inclusion in Reports by an authorized administrator of W&M ScholarWorks. For more information, please contact scholarworks@wm.edu.

**Abundance and Distribution of Sea Scallops and Yellowtail
Flounder during the 2009 VIMS/Industry Cooperative Survey of
the Nantucket Lightship Closed Area (NLCA)**

Submitted to:
Sea Scallop Fishing Industry

William D. DuPaul
David B. Rudders

Marine Advisory Services
Virginia Institute of Marine Science
College of William and Mary
Gloucester Point, VA 23062

VIMS Marine Resource Report No. 2010-2
March 25, 2010

This work is a result of research sponsored by NOAA/National Marine Fisheries Service, Sea Scallop Research Set Aside Program under Grant No. NA09NMF4540133. The views expressed herein do not necessarily reflect the views of any of those organizations.

For additional information please contact: David B. Rudders, Fisheries Specialist, rudders@vims.edu or William D. DuPaul, Professor Emeritus, dupaul@vims.edu.

The Virginia Institute of Marine Science (VIMS) conducted a sea scallop survey in the Nantucket Lightship Closed Area (NCLA) during July 2009. The survey was funded by the Sea Scallop Research Set-Aside Program (RSA). The results of the survey indicated an exploitable scallop biomass of 11,017 metric tons or 25.3 million lbs with an average meat count of 10.1 MPP. This is more than sufficient for an opening in 2010. The survey also encountered a limited number of yellowtail flounder which still may present the possibility that the scallop fishery could prematurely reach the yellowtail TAC during the opening. The survey was conducted aboard the *F/V Celtic* towing a NMFS 8 foot survey dredge along with a 15 foot commercial dredge with a 10 inch diamond mesh twine top with a 1.76 hanging ratio (60 meshes, 34 rings) and 8.5 meshes on the side.

The abundance and distribution of sea scallops and yellowtail flounder are presented in Table 1 and Figures 1- 2. In Figure 3, the shell height frequency distribution is presented. One can easily discern the peak abundance of scallops at 120 mm (4.8 inches) which represent the strong 2003 year class. These scallops will be around 5.5 inches in 2010. The other peak to the right represents older scallops in the area that are reaching their maximum size. This information is based on the catch data obtained from the commercial dredge during a 15 minute tow at 3.8 kts with a 3:1 scope. We present this data so that the scallop industry can target fishing effort to areas where there may be less yellowtail bycatch. We recognize that this data is from the 2009 survey, but may provide some guidance as to the distribution of yellowtail but accurate information as to the distribution and abundance of sea scallops.

VIMS conducted several research trips aboard the *F/V Celtic* within the boundaries of the Georges Bank Access Areas during 2006 and 2007 to test the effects of altering the twine top ratio on finfish bycatch. The results indicated that there was a significant reduction in yellowtail by catch and no loss of scallops when a twine top hanging ratio of 1.76 (60 meshes, 34 rings) was used compared to a 2.64 hanging ratio (90 meshes, 34 rings) Both dredges had twine tops with 8.5 meshes on the side and 7 rings to the clubstick.

Another experiment was conducted using a short twine top (5.5 meshes on the side) with an apron of 13 rings compared with a standard twine top with 8.5 meshes on the side and a 7 ring apron. The results showed that the short twine top configuration caught more yellowtail flounder than the standard configuration. Dredges rigged with short twine tops and high hanging ratios are not useful for the reduction of yellowtail flounder. This is an important consideration for the opening of the NLCA in 2010 flounder bycatch.

Table 1 Catch data for the VIMS/Industry cooperative survey of the access area of Nantucket Lightship Closed Area during July 2009.

| Station | Latitude (degrees) | Latitude (minutes) | Longitude (degrees) | Longitude (minutes) | Scallop (Number) | Scallop (Lbs.) | Count (MPP) | Yellowtail (Number) | Yellowtail (lbs.) | Ratio (YT lbs./1000 lbs. of scallops) |
|---------|--------------------|--------------------|---------------------|---------------------|------------------|----------------|-------------|---------------------|-------------------|---------------------------------------|
| NL-1 | 40 | 49.254 | 69 | 28.392 | 3 | 0.2 | 13.0 | 1 | 0.9 | 3698.7 |
| NL-2 | 40 | 49.254 | 69 | 25.665 | 32 | 3.9 | 8.1 | 3 | 2.7 | 673.7 |
| NL-3 | 40 | 49.254 | 69 | 22.937 | 9 | 0.8 | 10.6 | 2 | 1.8 | 2160.0 |
| NL-4 | 40 | 49.254 | 69 | 20.210 | 42 | 4.3 | 9.7 | 1 | 1.2 | 279.1 |
| NL-5 | 40 | 49.254 | 69 | 17.483 | 6311 | 634.1 | 10.0 | 0 | 0.0 | 0.0 |
| NL-6 | 40 | 49.254 | 69 | 14.756 | 2391 | 226.5 | 10.6 | 0 | 0.0 | 0.0 |
| NL-7 | 40 | 49.254 | 69 | 12.028 | 207 | 18.5 | 11.2 | 0 | 0.0 | 0.0 |
| NL-8 | 40 | 49.254 | 69 | 9.301 | 3247 | 273.8 | 11.9 | 0 | 0.0 | 0.0 |
| NL-9 | 40 | 49.254 | 69 | 6.574 | 1518 | 150.1 | 10.1 | 0 | 0.0 | 0.0 |
| NL-10 | 40 | 49.254 | 69 | 3.846 | 919 | 108.1 | 8.5 | 0 | 0.0 | 0.0 |
| NL-11 | 40 | 49.254 | 69 | 1.119 | 961 | 120.6 | 8.0 | 3 | 2.5 | 21.1 |
| NL-12 | 40 | 47.436 | 69 | 25.665 | 45 | 5.6 | 8.0 | 3 | 2.8 | 491.9 |
| NL-13 | 40 | 47.436 | 69 | 22.937 | 1 | 0.1 | 7.0 | 7 | 7.6 | 53115.3 |
| NL-14 | 40 | 47.436 | 69 | 20.210 | 3705 | 374.7 | 9.9 | 3 | 3.8 | 10.1 |
| NL-15 | 40 | 47.436 | 69 | 17.483 | 1640 | 166.5 | 9.8 | 2 | 1.4 | 8.4 |
| NL-16 | 40 | 47.436 | 69 | 14.756 | 3763 | 326.2 | 11.5 | 0 | 0.0 | 0.0 |
| NL-17 | 40 | 47.436 | 69 | 12.028 | 2288 | 202.4 | 11.3 | 2 | 1.1 | 5.6 |
| NL-18 | 40 | 47.436 | 69 | 9.301 | 3247 | 266.2 | 12.2 | 7 | 8.3 | 31.2 |
| NL-19 | 40 | 47.436 | 69 | 6.574 | 902 | 96.6 | 9.3 | 12 | 11.4 | 118.0 |
| NL-20 | 40 | 47.436 | 69 | 3.846 | 671 | 80.8 | 8.3 | 0 | 0.0 | 0.0 |
| NL-21 | 40 | 47.436 | 69 | 1.119 | 747 | 79.5 | 9.4 | 0 | 0.0 | 0.0 |
| NL-22 | 40 | 45.618 | 69 | 25.665 | 35 | 3.5 | 10.1 | 1 | 0.6 | 167.1 |
| NL-23 | 40 | 45.618 | 69 | 22.937 | 484 | 59.6 | 8.1 | 1 | 0.6 | 9.7 |
| NL-24 | 40 | 45.618 | 69 | 20.210 | 889 | 110.2 | 8.1 | 1 | 1.4 | 12.9 |
| NL-25 | 40 | 45.618 | 69 | 17.483 | 4239 | 370.2 | 11.4 | 2 | 1.8 | 5.0 |
| NL-26 | 40 | 45.618 | 69 | 14.756 | 984 | 73.8 | 13.3 | 3 | 2.9 | 39.2 |
| NL-27 | 40 | 45.618 | 69 | 12.028 | 3376 | 295.4 | 11.4 | 2 | 1.5 | 5.1 |
| NL-28 | 40 | 45.618 | 69 | 9.301 | 2429 | 165.7 | 14.7 | 4 | 3.1 | 18.7 |

| | | | | | | | | | | |
|-------|----|--------|----|--------|------|-------|------|----|------|--------|
| NL-29 | 40 | 45.618 | 69 | 6.574 | 1729 | 178.5 | 9.7 | 4 | 3.7 | 20.7 |
| NL-30 | 40 | 45.618 | 69 | 3.846 | 850 | 111.5 | 7.6 | 1 | 1.1 | 10.0 |
| NL-31 | 40 | 45.618 | 69 | 1.119 | 1634 | 180.7 | 9.0 | 1 | 0.6 | 3.2 |
| NL-32 | 40 | 43.799 | 69 | 22.937 | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 |
| NL-33 | 40 | 43.799 | 69 | 20.210 | 7 | 0.5 | 13.9 | 1 | 0.6 | 1275.8 |
| NL-34 | 40 | 43.799 | 69 | 17.483 | 1112 | 93.8 | 11.8 | 0 | 0.0 | 0.0 |
| NL-35 | 40 | 43.799 | 69 | 14.756 | 917 | 80.0 | 11.5 | 3 | 3.5 | 44.4 |
| NL-36 | 40 | 43.799 | 69 | 12.028 | 1954 | 174.8 | 11.2 | 1 | 0.1 | 0.5 |
| NL-37 | 40 | 43.799 | 69 | 9.301 | 1255 | 120.8 | 10.4 | 13 | 12.6 | 104.4 |
| NL-38 | 40 | 43.799 | 69 | 6.574 | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 |
| NL-38 | 40 | 43.799 | 69 | 6.574 | 744 | 84.0 | 8.9 | 7 | 7.0 | 83.8 |
| NL-39 | 40 | 43.799 | 69 | 3.846 | 791 | 110.5 | 7.2 | 2 | 2.3 | 21.1 |
| NL-40 | 40 | 43.799 | 69 | 1.119 | 2222 | 229.2 | 9.7 | 1 | 0.5 | 2.3 |
| NL-41 | 40 | 41.981 | 69 | 22.937 | 17 | 1.4 | 12.2 | 7 | 8.5 | 6108.0 |
| NL-42 | 40 | 41.981 | 69 | 20.210 | 1120 | 82.1 | 13.6 | 4 | 4.1 | 50.4 |
| NL-43 | 40 | 41.981 | 69 | 17.483 | 1219 | 111.5 | 10.9 | 0 | 0.0 | 0.0 |
| NL-44 | 40 | 41.981 | 69 | 14.756 | 793 | 64.4 | 12.3 | 2 | 2.2 | 34.9 |
| NL-45 | 40 | 41.981 | 69 | 12.028 | 1982 | 157.4 | 12.6 | 0 | 0.0 | 0.0 |
| NL-46 | 40 | 41.981 | 69 | 9.301 | 865 | 87.9 | 9.8 | 3 | 2.2 | 24.8 |
| NL-47 | 40 | 41.981 | 69 | 6.574 | 703 | 79.8 | 8.8 | 3 | 2.6 | 32.6 |
| NL-48 | 40 | 41.981 | 69 | 3.846 | 143 | 20.5 | 6.9 | 0 | 0.0 | 0.0 |
| NL-49 | 40 | 41.981 | 69 | 1.119 | 3416 | 404.4 | 8.4 | 0 | 0.0 | 0.0 |
| NL-50 | 40 | 40.163 | 69 | 20.210 | 813 | 96.8 | 8.4 | 0 | 0.0 | 0.0 |
| NL-51 | 40 | 40.163 | 69 | 17.483 | 5 | 0.4 | 11.7 | 1 | 1.1 | 2618.1 |
| NL-52 | 40 | 40.163 | 69 | 14.756 | 412 | 44.5 | 9.3 | 3 | 3.7 | 84.0 |
| NL-53 | 40 | 40.163 | 69 | 12.028 | 714 | 62.5 | 11.4 | 23 | 20.0 | 319.6 |
| NL-54 | 40 | 40.163 | 69 | 9.301 | 408 | 48.0 | 8.5 | 2 | 2.6 | 54.9 |
| NL-55 | 40 | 40.163 | 69 | 6.574 | 233 | 30.5 | 7.6 | 1 | 1.4 | 46.6 |
| NL-56 | 40 | 40.163 | 69 | 3.846 | 271 | 41.8 | 6.5 | 0 | 0.0 | 0.0 |
| NL-57 | 40 | 40.163 | 69 | 1.119 | 2117 | 287.5 | 7.4 | 0 | 0.0 | 0.0 |
| NL-58 | 40 | 38.345 | 69 | 20.210 | 12 | 1.1 | 11.0 | 1 | 0.1 | 77.4 |
| NL-59 | 40 | 38.345 | 69 | 17.483 | 416 | 54.9 | 7.6 | 1 | 0.9 | 17.1 |

| | | | | | | | | | | |
|-------|----|--------|----|--------|-----|-------|-----|---|-----|-------|
| NL-60 | 40 | 38.345 | 69 | 14.756 | 308 | 39.6 | 7.8 | 2 | 1.2 | 30.8 |
| NL-61 | 40 | 38.345 | 69 | 12.028 | 491 | 69.7 | 7.0 | 6 | 4.7 | 66.9 |
| NL-62 | 40 | 38.345 | 69 | 9.301 | 502 | 59.4 | 8.4 | 4 | 2.8 | 46.4 |
| NL-63 | 40 | 38.345 | 69 | 6.574 | 228 | 30.0 | 7.6 | 1 | 0.1 | 4.0 |
| NL-64 | 40 | 38.345 | 69 | 3.846 | 294 | 33.5 | 8.8 | 0 | 0.0 | 0.0 |
| NL-65 | 40 | 38.345 | 69 | 1.119 | 434 | 53.6 | 8.1 | 2 | 1.2 | 22.8 |
| NL-66 | 40 | 36.527 | 69 | 17.483 | 255 | 27.4 | 9.3 | 8 | 3.8 | 137.1 |
| NL-67 | 40 | 36.527 | 69 | 14.756 | 129 | 16.6 | 7.8 | 2 | 1.8 | 107.6 |
| NL-68 | 40 | 36.527 | 69 | 12.028 | 155 | 19.0 | 8.2 | 3 | 2.4 | 124.1 |
| NL-69 | 40 | 36.527 | 69 | 9.301 | 511 | 70.5 | 7.2 | 5 | 4.0 | 56.6 |
| NL-70 | 40 | 36.527 | 69 | 6.574 | 278 | 32.7 | 8.5 | 0 | 0.0 | 0.0 |
| NL-71 | 40 | 36.527 | 69 | 3.846 | 145 | 18.9 | 7.7 | 0 | 0.0 | 0.0 |
| NL-72 | 40 | 36.527 | 69 | 1.119 | 213 | 27.2 | 7.8 | 1 | 0.6 | 21.3 |
| NL-73 | 40 | 34.708 | 69 | 17.483 | 484 | 69.6 | 7.0 | 0 | 0.0 | 0.0 |
| NL-74 | 40 | 34.708 | 69 | 14.756 | 137 | 20.6 | 6.6 | 1 | 1.7 | 80.3 |
| NL-75 | 40 | 34.708 | 69 | 12.028 | 37 | 5.3 | 6.9 | 0 | 0.0 | 0.0 |
| NL-76 | 40 | 34.708 | 69 | 9.301 | 267 | 34.6 | 7.7 | 1 | 0.9 | 27.1 |
| NL-77 | 40 | 34.708 | 69 | 6.574 | 399 | 56.8 | 7.0 | 0 | 0.0 | 0.0 |
| NL-78 | 40 | 34.708 | 69 | 3.846 | 654 | 104.5 | 6.3 | 0 | 0.0 | 0.0 |
| NL-79 | 40 | 34.708 | 69 | 1.119 | 180 | 27.2 | 6.6 | 0 | 0.0 | 0.0 |
| NL-80 | 40 | 32.890 | 69 | 14.756 | 313 | 50.2 | 6.2 | 1 | 1.0 | 20.4 |
| NL-81 | 40 | 32.890 | 69 | 12.028 | 156 | 23.2 | 6.7 | 0 | 0.0 | 0.0 |
| NL-82 | 40 | 32.890 | 69 | 9.301 | 29 | 3.1 | 9.4 | 0 | 0.0 | 0.0 |
| NL-83 | 40 | 32.890 | 69 | 6.574 | 73 | 10.8 | 6.8 | 1 | 1.3 | 121.9 |
| NL-84 | 40 | 32.890 | 69 | 3.846 | 51 | 7.4 | 6.9 | 0 | 0.0 | 0.0 |
| NL-85 | 40 | 32.890 | 69 | 1.119 | 55 | 7.8 | 7.1 | 0 | 0.0 | 0.0 |
| NL-86 | 40 | 31.072 | 69 | 14.756 | 63 | 9.0 | 7.0 | 1 | 0.5 | 58.1 |
| NL-87 | 40 | 31.072 | 69 | 12.028 | 36 | 5.7 | 6.4 | 0 | 0.0 | 0.0 |
| NL-88 | 40 | 31.072 | 69 | 9.301 | 82 | 12.4 | 6.6 | 0 | 0.0 | 0.0 |
| NL-89 | 40 | 31.072 | 69 | 6.574 | 15 | 2.2 | 6.9 | 1 | 0.6 | 268.1 |
| NL-90 | 40 | 31.072 | 69 | 3.846 | 69 | 8.5 | 8.1 | 1 | 1.5 | 180.8 |
| NL-91 | 40 | 31.072 | 69 | 1.119 | 28 | 4.1 | 6.9 | 2 | 2.0 | 482.4 |

Figure 1. Spatial representation of sea scallop catch encountered during the VIMS/Industry survey of Nantucket Lightship Closed Area during July of 2009.

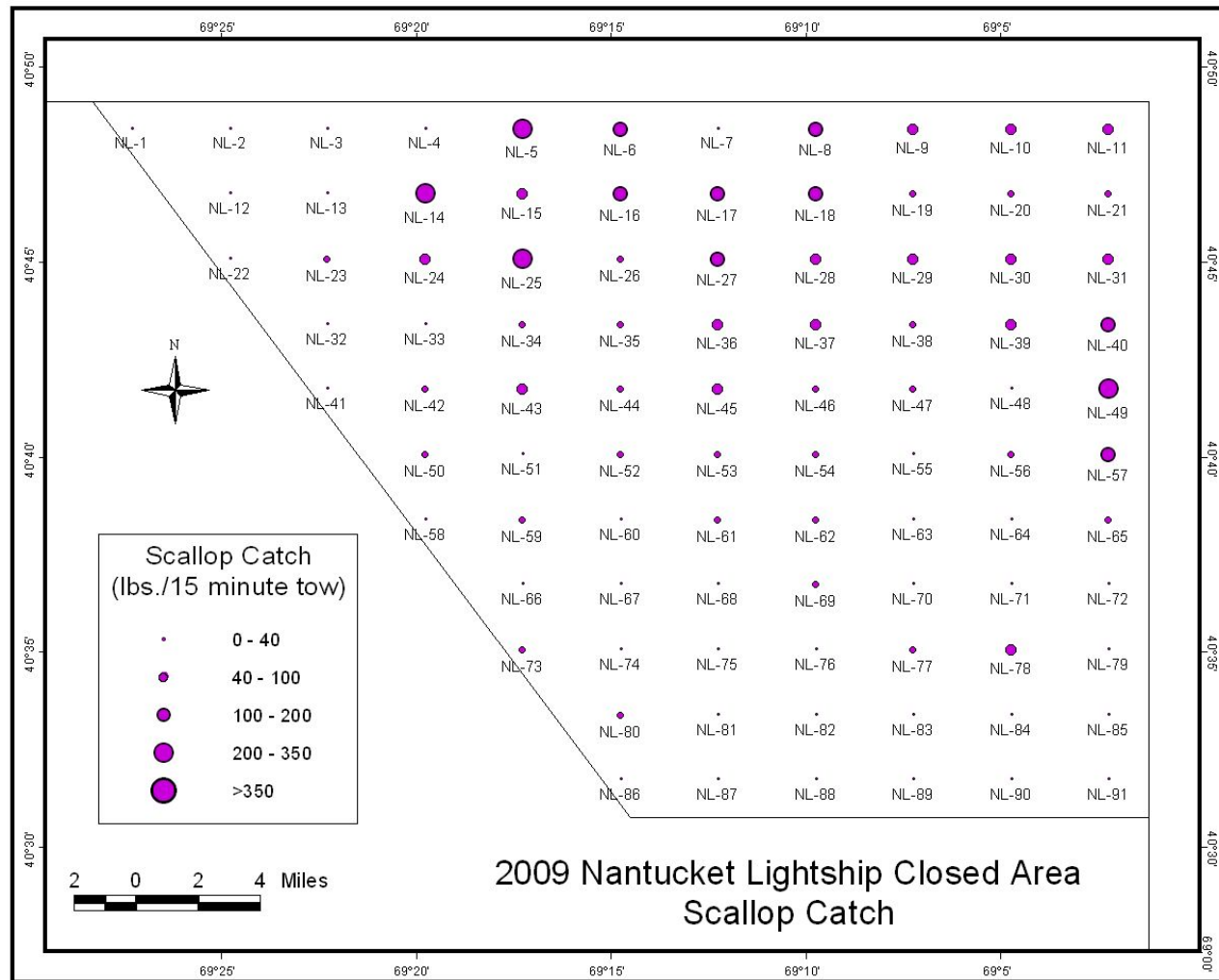


Figure 2 Spatial representation of yellowtail flounder catch encountered during the VIMS/Industry survey of Nantucket Lightship Closed Area during July of 2009.

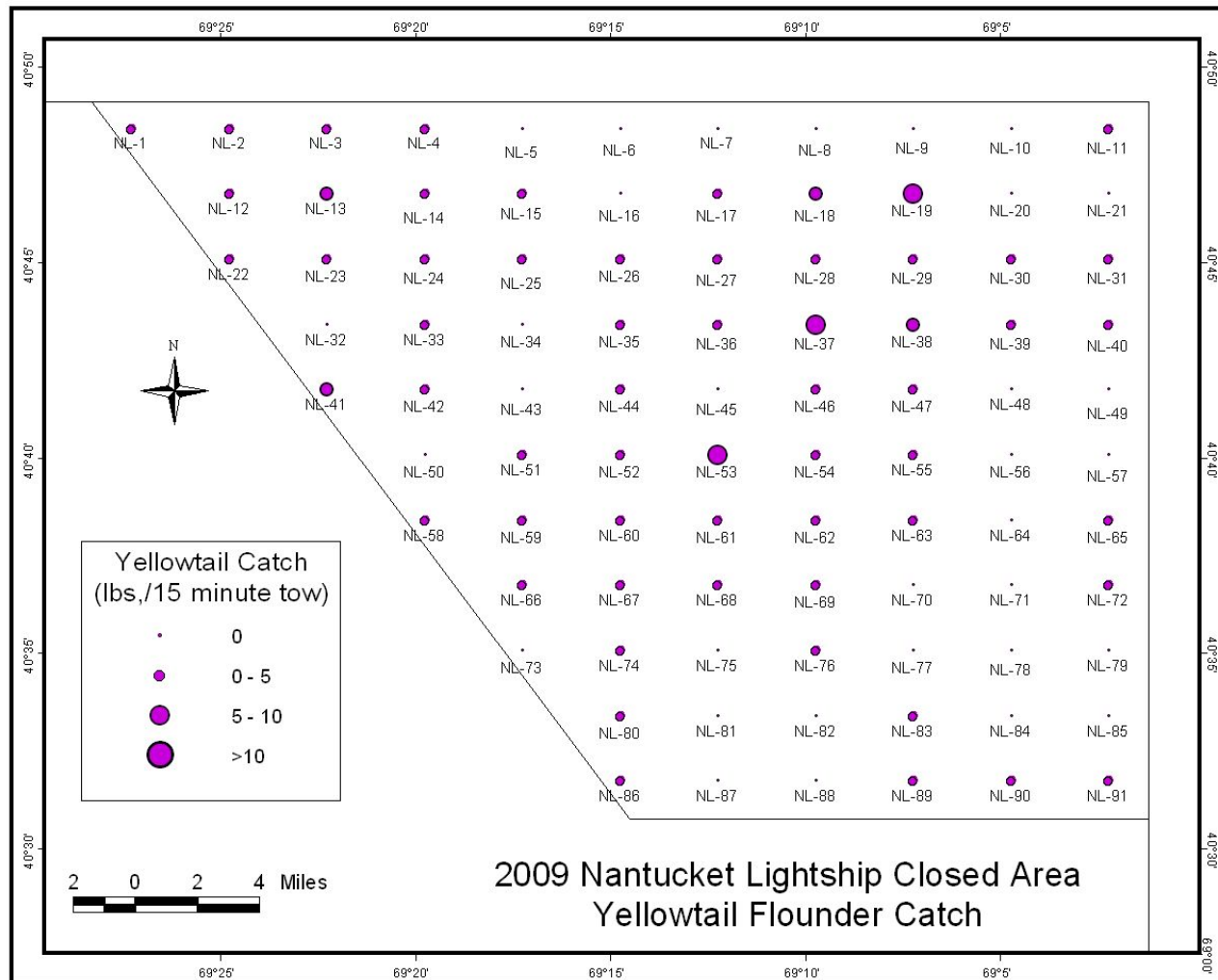


Figure 3. Shell height frequency for scallops captured in the 15 ft. commercial dredge during the VIMS/Industry cooperative survey of the Nantucket Lightship Closed Area during July of 2009.

