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William D. DuPaul  
*Virginia Institute of Marine Science*

David B. Rudders  
*Virginia Institute of Marine Science*

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

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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

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

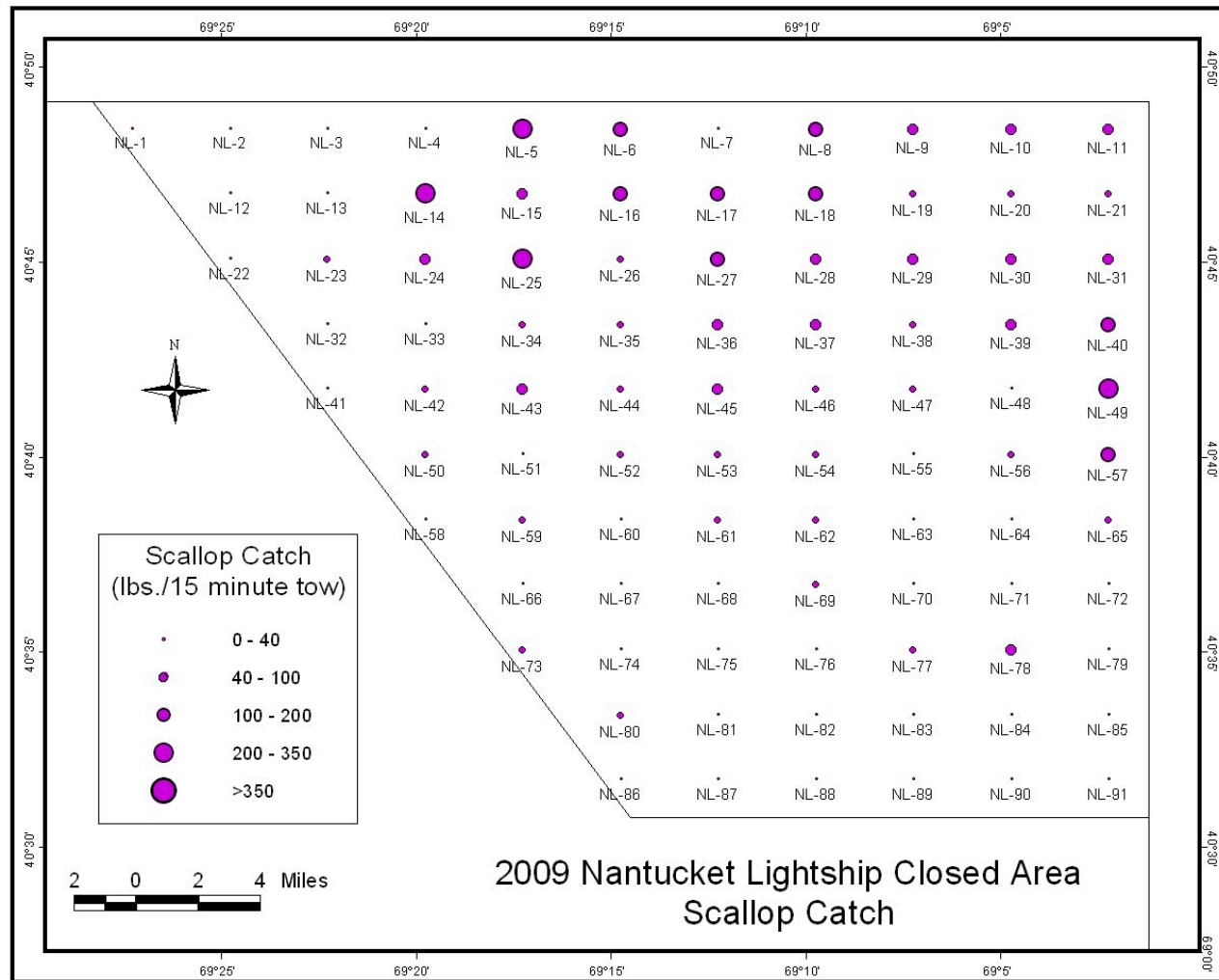
**Table 1** Catch data for the VIMS/Industry cooperative survey of the access area of Nantucket Lightship Closed Area during July 2009.

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

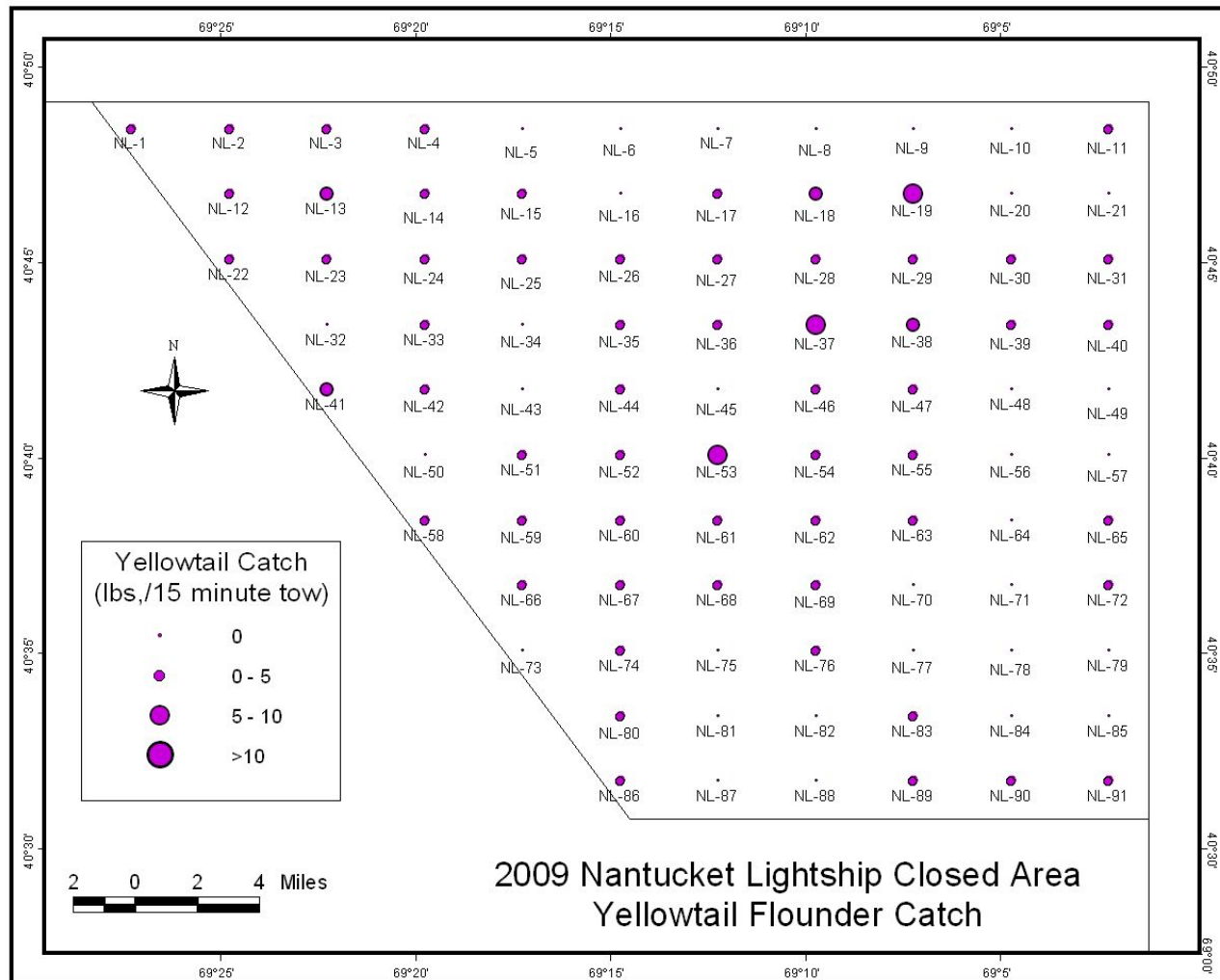
NL-29	40	45.618	69	6.574	1729	178.5	9.7	4	3.7	20.7
NL-30	40	45.618	69	3.846	850	111.5	7.6	1	1.1	10.0
NL-31	40	45.618	69	1.119	1634	180.7	9.0	1	0.6	3.2
NL-32	40	43.799	69	22.937	0	0.0	0.0	0	0.0	0.0
NL-33	40	43.799	69	20.210	7	0.5	13.9	1	0.6	1275.8
NL-34	40	43.799	69	17.483	1112	93.8	11.8	0	0.0	0.0
NL-35	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.

