Results for the 2010 VIMS/Industry Cooperative Surveys of Georges Bank Closed Area I and the Hudson Canyon Closed Area

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Submitted to:
Sea Scallop Fishing Industry

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The Virginia Institute of Marine Science (VIMS) conducted two sea scallop dredge surveys in the access area of Closed Area I (CAI) and the Hudson Canyon Closed Area (HCCA) during July of 2010. The area surveyed in CAI encompassed the proposed expansion of the access area specified in Amendment 15. These surveys were funded by the Sea Scallop Research Set-Aside Program (RSA). Results from the survey in CAI indicated that exploitable scallop biomass at the time of the survey was 12,160 metric tons or 26.8 million pounds of meats with an average meat count of 10.8 MPP. Results from the survey in HCCA indicated that exploitable scallop biomass at the time of the survey was 14,460 metric tons or 31.8 million pounds of meats with an average meat count of 17.9 MPP. This is more than sufficient for an opening for both areas in 2011 and Framework 22 specifies that for the 2011 fishing year, 1.5 and 1.0 trips are allocated to the CAI and HCCA, respectively.

The survey of CAI was conducted aboard the F/V *Celtic* towing a NMFS 8 foot survey dredge along with a 15 foot Coonamessett Farm Turtle Dredge (CFTD) equipped 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 survey of HCCA was conducted aboard the F/V *Pursuit* towing the same NMFS 8 foot survey dredge in conjunction with a 14 ft. CFTD. While the comparison of catches between the two dredges is informative on a relative basis, for the purposes of this report, we present only the catch data from the CFTD during a 15 minute survey tow at 3.8 kts. with a 3:1 scope. This information is more applicable to what the industry will encounter during the openings.

Catch data in tabular form is shown in Tables 1 and 2. The spatial distribution of scallop catch and observed meat count at each tow is shown in Figures 1-4. In Figure 3, the shell height frequency distribution from the catches by the CFTD is shown for the two areas. The scallops in CAI are clearly dominated by large numbers of older animals (120-140 mm). This is especially true in the southern portion of the area, proposed to be opened by Amendment #15. The scallop population in HCCA is dominated by animals from one year class with a peak around 110 mm. This size generally corresponds to a 10-20 count, however it is important to note that for both areas the opening will occur roughly one year since the data was taken. Scallop size and abundance in both areas has been affected by some levels of growth and mortality since July 2010.

In addition to scallop information we routinely collect data relating to finfish bycatch. During the CAI cruise, we encountered a limited number of yellowtail flounder, *Limanda ferrunginea*. Yellowtail flounder bycatch has the potential to shorten the opening, in the event that the yellowtail TAC is reached before all allocated scallop trips are completed. The spatial distribution of yellowtail bycatch is not shown here, as there were a total of 10 animals caught over the course of the entire survey. We urge industry to participate and monitor the yellowtail situation as it develops, via the yellowtail bycatch avoidance program administered by The School for Marine Science and Technology (SMAST).

A word about twine top configuration

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. Results indicated that there was a significant reduction in yellowtail bycatch 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) During the experiment, both dredges had twine tops with 8.5 meshes on the side and 7 rings to the clubstick.

An additional 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 bycatch. In addition to the spatial strategy for avoiding yellowtail bycatch, gear modifications with respect to twine top configuration can also have a positive impact during the opening of GBCAI and GBCAII in 2011.

Table 1 Catch data for the VIMS/Industry cooperative survey of the access area in Georges Bank Closed Area I during July 2010.

Station	Latitude (degrees)	Latitude (minutes)	Longitude (degrees)	Longitude (minutes	Scallop (baskets)	Scallop (number)	Scallop (lbs.)	Count (MPP)	Yellowtail (number)	Yellowtail (lbs.)
CAI-1	41	24.78	68	30.80	3.5	266.00	29.05	9.16	1	0.86
CAI-2	41	22.20	68	33.39	3.5	252.00	26.82	9.40	1	0.86
CAI-3	41	22.20	68	30.80	1.8	144.00	13.73	10.49	0	0.00
CAI-4	41	19.62	68	38.55	1.75	164.00	12.96	12.65	0	0.00
CAI-5	41	19.62	68	35.97	2.9	211.70	21.09	10.04	0	0.00
CAI-6	41	19.62	68	33.39	3.4	263.50	22.05	11.95	0	0.00
CAI-7	41	19.62	68	30.80	1.5	109.00	11.16	9.77	0	0.00
CAI-8	41	17.03	68	41.14	8.1	481.95	59.75	8.07	0	0.00
CAI-9	41	17.03	68	38.55	4	314.00	29.88	10.51	0	0.00
CAI-10	41	17.03	68	35.97	7.2	662.40	52.10	12.71	1	1.11
CAI-11	41	17.03	68	33.39	0.25	32.00	2.63	12.17	0	0.00
CAI-12	41	17.03	68	30.80	0.1	10.00	0.81	12.32	1	1.11
CAI-13	41	14.45	68	46.30	1.1	80.00	8.97	8.92	0	0.00
CAI-14	41	14.45	68	43.72	2.4	201.60	18.04	11.17	0	0.00
CAI-15	41	14.45	68	41.14	4.5	342.00	33.34	10.26	0	0.00
CAI-16	41	14.45	68	38.55	8.2	811.80	57.33	14.16	0	0.00
CAI-17	41	14.45	68	35.97	10	970.00	74.98	12.94	0	0.00
CAI-18	41	14.45	68	33.39	0.4	41.00	3.39	12.08	0	0.00
CAI-19	41	14.45	68	30.80	0.1	8.00	0.72	11.17	0	0.00
CAI-20	41	11.87	68	48.89	30	2300.00	242.55	9.48	0	0.00
CAI-21	41	11.87	68	46.30	5.1	377.40	39.35	9.59	0	0.00
CAI-22	41	11.87	68	43.72	26.5	3400.83	214.10	15.88	0	0.00
CAI-23	41	11.87	68	41.14	14	1306.67	107.89	12.11	0	0.00
CAI-24	41	11.87	68	38.55	3.1	303.80	28.57	10.63	0	0.00
CAI-25	41	11.87	68	35.97	3	265.50	22.85	11.62	0	0.00
CAI-26	41	11.87	68	33.39	6.75	681.75	49.88	13.67	0	0.00

CAI-27	41	11.87	68	30.80	0.1	1.00	0.09	11.60	0	0.00
CAI-28	41	9.28	68	54.05	1	69.00	7.40	9.32	0	0.00
CAI-29	41	9.28	68	51.47	1.5	112.00	11.80	9.49	0	0.00
CAI-30	41	9.28	68	48.89	3.8	258.40	27.81	9.29	0	0.00
CAI-31	41	9.28	68	46.30	13.4	1451.67	107.38	13.52	0	0.00
CAI-32	41	9.28	68	43.72	19.5	1469.00	111.69	13.15	2	1.58
CAI-33	41	9.28	68	41.14	19.75	2501.67	156.77	15.96	0	0.00
CAI-34	41	9.28	68	38.55	3	252.00	23.11	10.91	0	0.00
CAI-35	41	9.28	68	35.97	3	208.50	19.83	10.52	0	0.00
CAI-36	41	9.28	68	33.39	0.1	11.00	0.92	11.99	0	0.00
CAI-37	41	9.28	68	30.80	8.1	615.60	52.74	11.67	0	0.00
CAI-38	41	6.70	68	56.64	28	2062.67	206.41	9.99	1	1.21
CAI-39	41	6.70	68	54.05	8.1	724.95	58.16	12.46	1	1.31
CAI-40	41	6.70	68	51.47	15	1000.00	103.96	9.62	0	0.00
CAI-41	41	6.70	68	48.89	7.5	648.75	57.30	11.32	0	0.00
CAI-42	41	6.70	68	46.30	34	3218.67	264.80	12.16	0	0.00
CAI-43	41	6.70	68	43.72	15.4	985.60	102.47	9.62	0	0.00
CAI-44	41	6.70	68	41.14	43.5	2595.50	254.63	10.19	0	0.00
CAI-45	41	6.70	68	38.55	3	235.50	20.60	11.43	0	0.00
CAI-46	41	6.70	68	35.97	0.4	31.00	2.79	11.10	0	0.00
CAI-47	41	6.70	68	33.39	0.7	46.00	4.05	11.37	0	0.00
CAI-48	41	6.70	68	30.80	0.1	7.00	0.52	13.51	0	0.00
CAI-49	41	4.12	68	59.22	52.75	3885.92	398.03	9.76	0	0.00
CAI-50	41	4.12	68	56.64	60.5	3791.33	462.13	8.20	0	0.00
CAI-51	41	4.12	68	54.05	34	2062.67	251.07	8.22	0	0.00
CAI-52	41	4.12	68	51.47	19	1282.50	130.41	9.83	0	0.00
CAI-53	41	4.12	68	48.89	9	733.50	66.00	11.11	0	0.00
CAI-54	41	4.12	68	46.30	50	4250.00	375.64	11.31	0	0.00
CAI-55	41	4.12	68	43.72	10.5	819.00	69.58	11.77	0	0.00
CAI-56	41	4.12	68	41.14	4.4	314.60	28.60	11.00	0	0.00

CAI-57	41	4.12	68	38.55	8.3	581.00	53.13	10.94	0	0.00
CAI-58	41	4.12	68	35.97	1.8	130.00	12.27	10.60	0	0.00
CAI-59	41	4.12	68	33.39	0.1	15.00	1.26	11.93	0	0.00
CAI-60	41	4.12	68	30.80	0.1	3.00	0.19	15.83	0	0.00
CAI-61	41	1.53	68	56.64	36.5	2263.00	260.07	8.70	0	0.00
CAI-62	41	1.53	68	54.05	46.9	2923.43	325.32	8.99	0	0.00
CAI-63	41	1.53	68	51.47	63	3465.00	431.41	8.03	0	0.00
CAI-64	41	1.53	68	48.89	0	0.00	0.00		0	0.00
CAI-65	41	1.53	68	46.30	42	2422.00	256.13	9.46	0	0.00
CAI-66	41	1.53	68	43.72	0.1	11.00	0.77	14.29	0	0.00
CAI-67	41	1.53	68	41.14	0	0.00	0.00		0	0.00
CAI-68	41	1.53	68	38.55	0.1	7.00	0.46	15.33	0	0.00
CAI-69	41	1.53	68	35.97	0.1	7.00	0.66	10.54	0	0.00
CAI-70	41	1.53	68	33.39	3.4	277.10	22.33	12.41	0	0.00
CAI-71	41	1.53	68	30.80	23.8	1594.60	147.19	10.83	0	0.00
CAI-72	40	58.95	68	54.05	37	2577.67	271.99	9.48	0	0.00
CAI-73	40	58.95	68	51.47	12.4	868.00	84.85	10.23	0	0.00
CAI-74	40	58.95	68	48.89	15.4	1026.67	105.73	9.71	1	1.21
CAI-75	40	58.95	68	46.30	0.1	12.00	0.96	12.45	0	0.00
CAI-76	40	58.95	68	43.72	0	0.00	0.00		0	0.00
CAI-77	40	58.95	68	41.14	0	0.00	0.00		0	0.00
CAI-78	40	58.95	68	38.55	0	0.00	0.00		0	0.00
CAI-79	40	58.95	68	35.97	0	0.00	0.00		0	0.00
CAI-80	40	58.95	68	33.39	24	1632.00	145.55	11.21	0	0.00
CAI-81	40	58.95	68	30.80	1.85	147.00	10.93	13.45	0	0.00
CAI-82	40	56.37	68	54.05	15.75	1092.00	105.06	10.39	1	0.17
CAI-83	40	56.37	68	51.47	19.4	1286.87	133.36	9.65	0	0.00
CAI-84	40	56.37	68	48.89	48	2800.00	332.53	8.42	0	0.00
CAI-85	40	56.37	68	46.30	0	0.00	0.00		0	0.00

Table 2 Catch data for the VIMS/Industry cooperative survey of the Hudson Canyon Closed Area during July 2010.

Station	Latitude (degrees)	Latitude (minutes)	Longitude (degrees)	Longitude (minutes	Scallop (baskets)	Scallop (number)	Scallop (lbs.)	Count (MPP)
HC-82	38	50.35	73	40.93	10.40	1128.40	86.13	13.10
HC-83	38	50.35	73	36.23	3.90	567.45	32.19	17.63
HC-75	38	53.88	73	36.23	2.50	211.25	18.59	11.36
HC-76	38	53.88	73	31.52	3.60	538.20	28.31	19.01
HC-68	38	57.41	73	31.52	9.70	1120.35	80.19	13.97
HC-61	39	0.94	73	31.52	7.00	941.50	58.38	16.13
HC-62	39	0.94	73	26.82	16.00	2512.00	138.24	18.17
HC-54	39	4.47	73	26.82	23.00	3266.00	195.38	16.72
HC-46	39	8.00	73	26.82	3.30	463.65	26.56	17.46
HC-47	39	8.00	73	22.11	4.75	705.38	38.38	18.38
HC-38	39	11.53	73	22.11	13.25	1815.25	115.61	15.70
HC-31	39	15.06	73	17.40	26.00	4532.67	228.82	19.81
HC-23	39	18.59	73	17.40	38.00	7980.00	356.27	22.40
HC-16	39	22.12	73	12.70	1.20	195.00	11.29	17.27
HC-8	39	25.65	73	12.70	2.00	318.00	17.19	18.50
HC-1	39	29.18	73	7.99	4.00	574.00	35.07	16.37
HC-2	39	29.18	73	3.29	11.00	1881.00	93.92	20.03
HC-3	39	29.18	72	58.58	3.50	498.75	30.56	16.32
HC-4	39	29.18	72	53.87	3.80	558.60	34.31	16.28
HC-5	39	29.18	72	49.17	3.00	523.50	27.82	18.81
HC-6	39	29.18	72	44.46	0.40	64.00	3.42	18.74
HC-7	39	29.18	72	39.76	0.00	0.00	0.00	
HC-15	39	25.65	72	39.76	0.00	0.00	0.00	
HC-14	39	25.65	72	44.46	0.10	2.00	0.10	20.02
HC-13	39	25.65	72	49.17	3.30	546.15	29.84	18.30
HC-12	39	25.65	72	53.87	4.90	798.70	40.69	19.63

HC-11	39	25.65	72	58.58	3.10	488.25	27.98	17.45
HC-10	39	25.65	73	3.29	10.70	1931.35	96.13	20.09
HC-9	39	25.65	73	7.99	2.80	448.00	23.27	19.25
HC-17	39	22.12	73	7.99	6.90	1121.25	62.14	18.04
HC-18	39	22.12	73	3.29	18.20	2614.73	154.57	16.92
HC-19	39	22.12	72	58.58	4.20	588.00	34.80	16.89
HC-20	39	22.12	72	53.87	4.70	712.05	40.77	17.47
HC-21	39	22.12	72	49.17	0.10	7.00	0.43	16.34
HC-22	39	22.12	72	44.46	0.00	0.00	0.00	
HC-30	39	18.59	72	44.46	0.00	0.00	0.00	
HC-29	39	18.59	72	49.17	0.10	21.00	0.97	21.56
HC-28	39	18.59	72	53.87	0.75	102.00	6.05	16.86
HC-27	39	18.59	72	58.58	5.90	911.55	50.70	17.98
HC-26	39	18.59	73	3.29	1.95	232.05	15.75	14.73
HC-25	39	18.59	73	7.99	4.95	799.43	42.51	18.81
HC-24	39	18.59	73	12.70	1.00	114.00	8.21	13.88
HC-32	39	15.06	73	12.70	3.50	544.25	29.79	18.27
HC-33	39	15.06	73	7.99	7.00	1078.00	58.48	18.43
HC-34	39	15.06	73	3.29	3.10	443.30	25.39	17.46
HC-35	39	15.06	72	58.58	0.50	60.00	3.84	15.63
HC-36	39	15.06	72	53.87	0.10	10.00	0.59	17.02
HC-37	39	15.06	72	49.17	0.00	0.00	0.00	
HC-45	39	11.53	72	49.17	0.00	0.00	0.00	
HC-44	39	11.53	72	53.87	0.00	0.00	0.00	
HC-43	39	11.53	72	58.58	1.30	199.00	11.43	17.41
HC-42	39	11.53	73	3.29	1.30	183.00	11.42	16.03
HC-41	39	11.53	73	7.99	1.80	227.00	13.90	16.33
HC-40	39	11.53	73	12.70	1.75	246.00	14.11	17.44
HC-39	39	11.53	73	17.40	4.00	638.00	33.33	19.14
HC-48	39	8.00	73	17.40	7.40	1383.80	64.20	21.55

HC-49	39	8.00	73	12.70	9.20	1541.00	77.28	19.94
HC-50	39	8.00	73	7.99	8.00	1300.00	71.73	18.12
HC-51	39	8.00	73	3.29	2.10	322.00	18.00	17.89
HC-52	39	8.00	72	58.58	0.00	0.00	0.00	
HC-53	39	8.00	72	53.87	0.00	0.00	0.00	
HC-60	39	4.47	72	58.58	0.00	0.00	0.00	
HC-59	39	4.47	73	3.29	0.10	3.00	0.13	22.43
HC-58	39	4.47	73	7.99	5.90	914.50	50.67	18.05
HC-57	39	4.47	73	12.70	1.00	154.00	10.00	15.39
HC-56	39	4.47	73	17.40	4.40	662.20	38.38	17.25
HC-55	39	4.47	73	22.11	6.00	1059.00	56.76	18.66
HC-63	39	0.94	73	22.11	2.30	632.50	41.68	15.17
HC-64	39	0.94	73	17.40	1.30	189.00	11.18	16.90
HC-65	39	0.94	73	12.70	0.95	159.00	10.67	14.90
HC-66	39	0.94	73	7.99	0.25	76.00	3.71	20.50
HC-67	39	0.94	73	3.29	0.00	0.00	0.00	
HC-74	38	57.41	73	3.29	0.30	73.00	3.09	23.60
HC-73	38	57.41	73	7.99	0.10	11.00	0.36	30.55
HC-72	38	57.41	73	12.70	4.00	604.00	34.75	17.38
HC-71	38	57.41	73	17.40	3.30	429.00	27.54	15.58
HC-70	38	57.41	73	22.11	16.40	2607.60	142.70	18.27
HC-69	38	57.41	73	26.82	10.10	1636.20	84.93	19.27
HC-77	38	53.88	73	26.82	12.80	2299.73	116.96	19.66
HC-78	38	53.88	73	22.11	13.00	2695.33	121.44	22.19
HC-79	38	53.88	73	17.40	8.00	1212.00	69.22	17.51
HC-80	38	53.88	73	12.70	0.00	0.00	0.00	
HC-81	38	53.88	73	7.99	0.00	0.00	0.00	
HC-88	38	50.35	73	12.70	0.20	48.00	2.34	20.49
HC-87	38	50.35	73	17.40	0.10	13.00	0.52	25.12
HC-86	38	50.35	73	22.11	8.60	1522.20	75.15	20.26

HC-85	38	50.35	73	26.82	2.00	269.00	16.50	16.30
HC-84	38	50.35	73	31.52	7.00	889.00	48.70	18.25
HC-89	38	46.82	73	26.82	1.10	144.00	8.90	16.17
HC-90	38	46.82	73	22.11	0.10	26.00	1.50	17.36
HC-91	38	46.82	73	17.40	10.00	1823.33	85.99	21.20
HC-94	38	43.29	73	17.40	0.10	5.00	0.28	17.79
HC-93	38	43.29	73	22.11	13.00	2543.67	120.59	21.09
HC-92	38	43.29	73	26.82	11.00	1723.33	92.97	18.54
HC-95	38	39.76	73	26.82	2.20	371.80	19.05	19.51
HC-96	38	39.76	73	22.11	0.00	0.00	0.00	
HC-97	38	36.23	73	26.82	0.10	30.00	1.34	22.38

Figure 1. Spatial representation of sea scallop catch (baskets) encountered during the VIMS/Industry survey of Georges Bank Closed Area I during July of 2010.

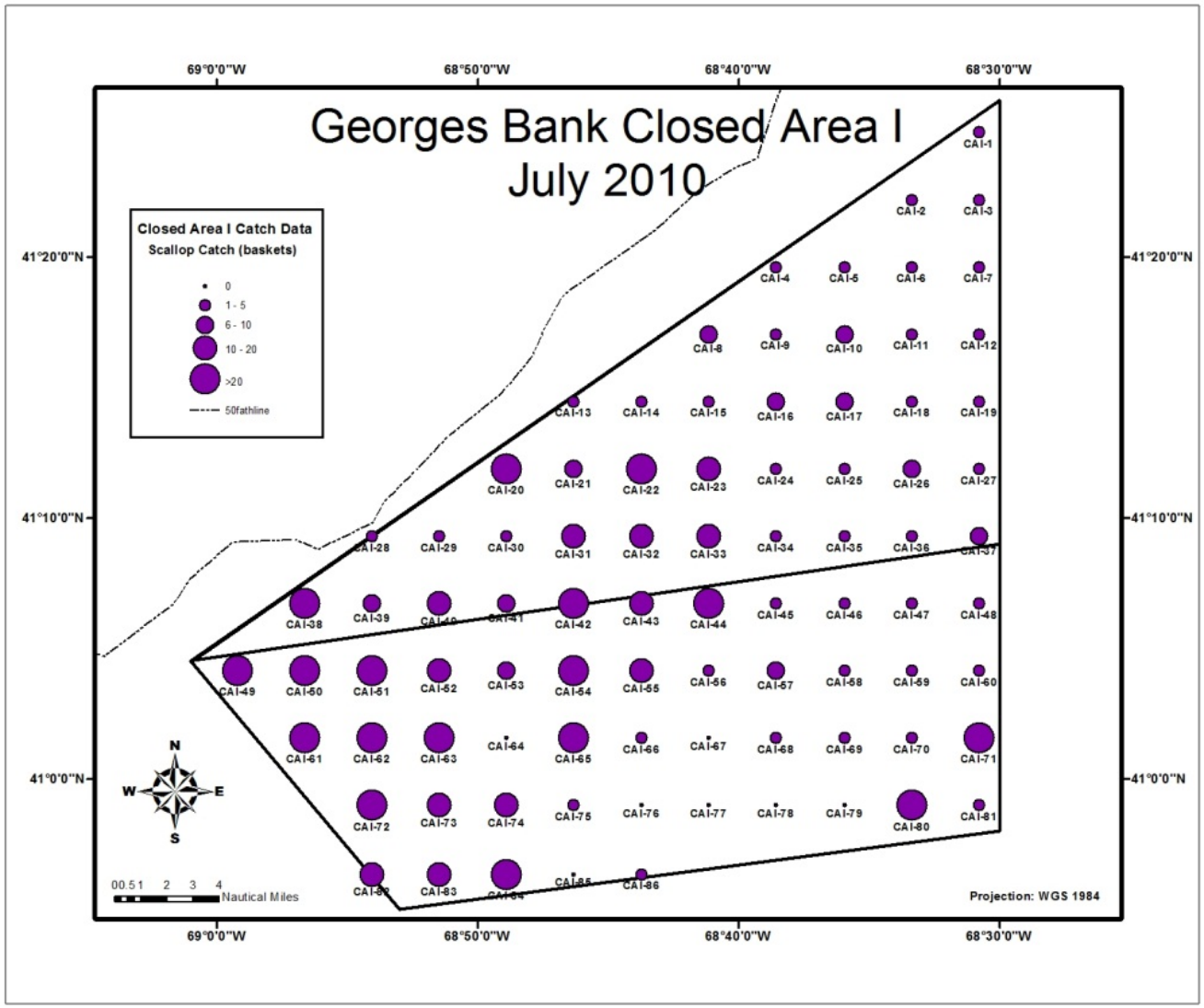

Figure 2. Spatial representation of scallop meat count (MPP) encountered during the VIMS/Industry survey of Georges Bank Closed Area I during July of 2010.

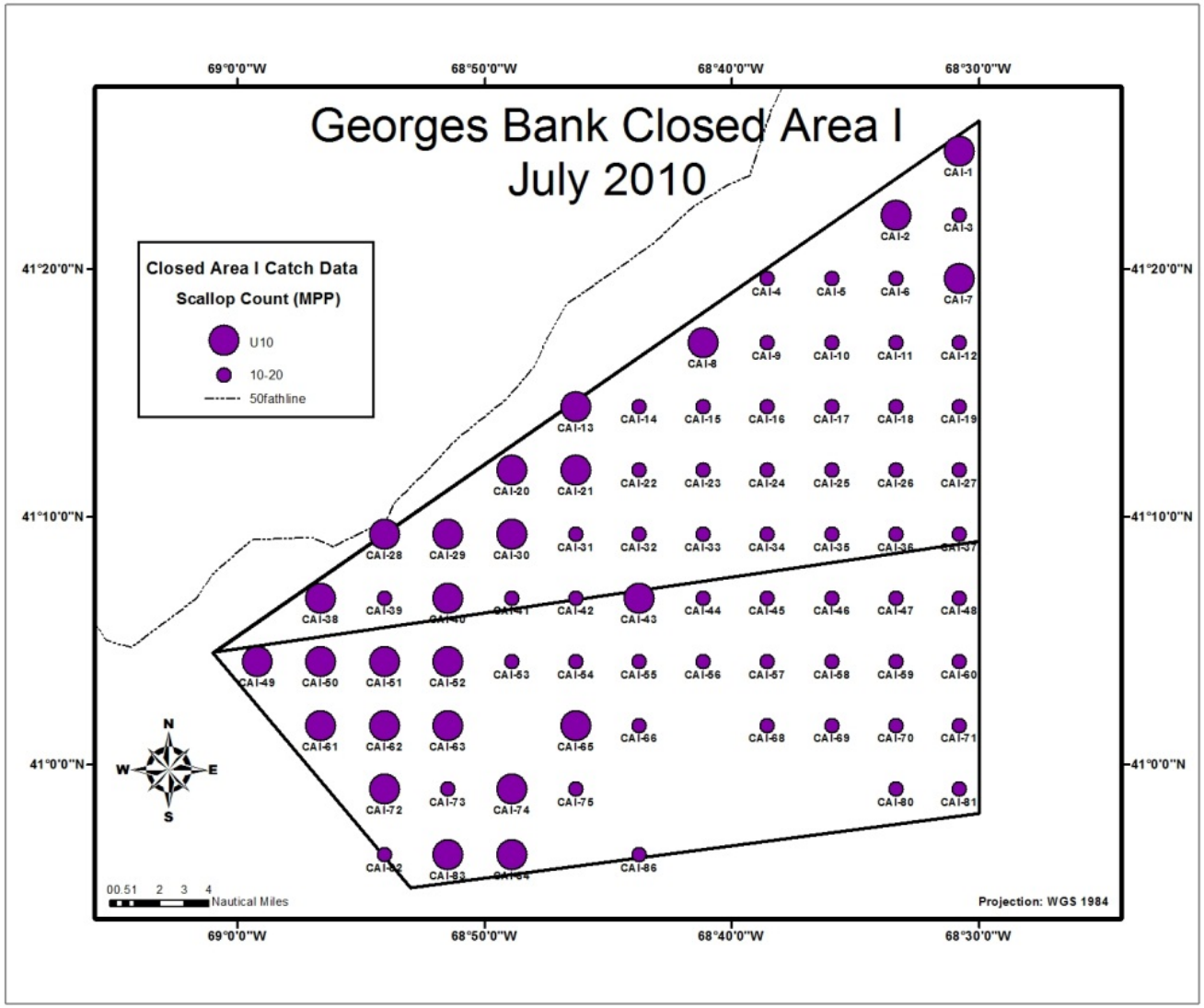

Figure 3. Spatial representation of sea scallop catch (baskets) encountered during the VIMS/Industry survey of the Hudson Canyon Closed Area during July of 2010.

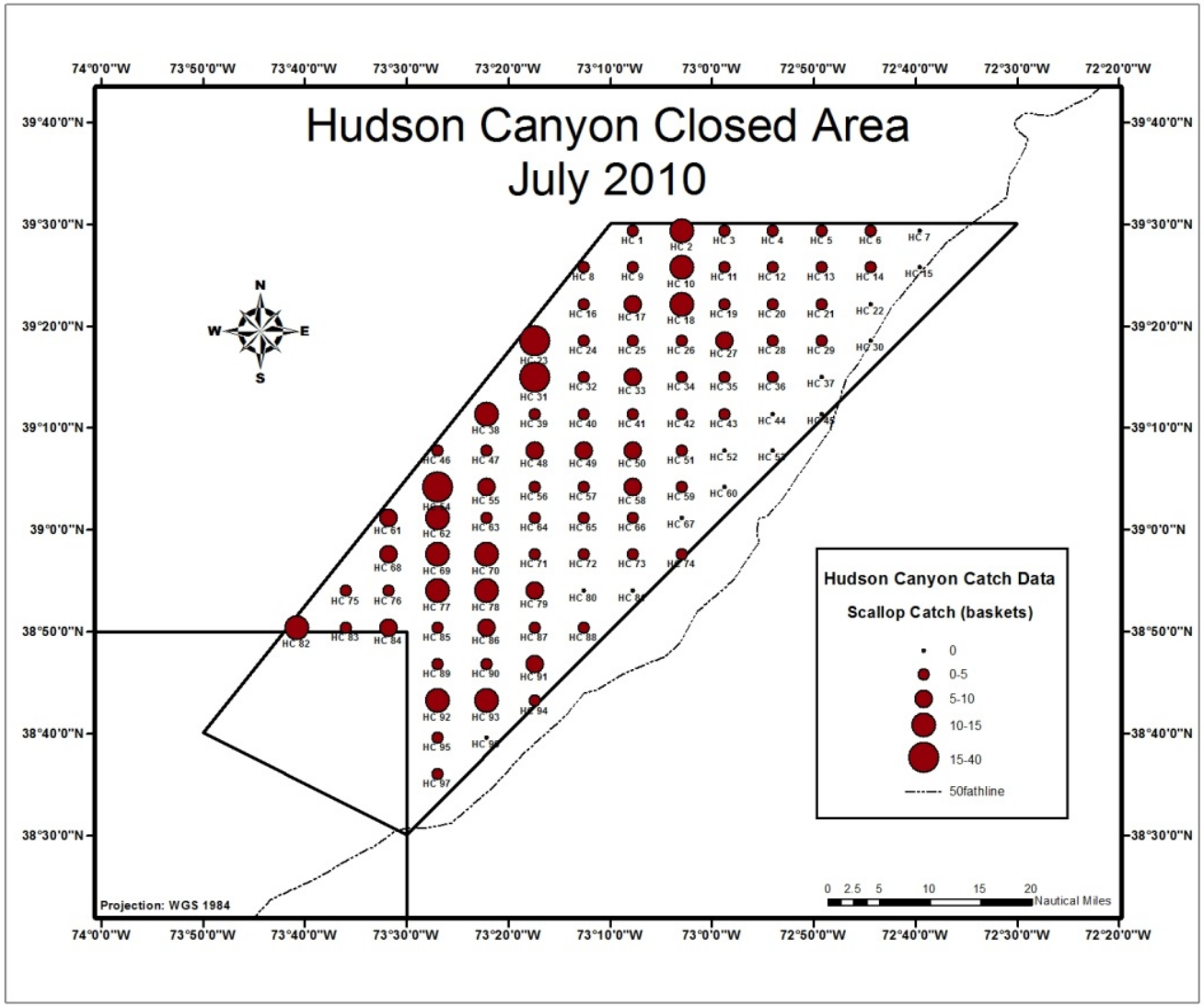

Figure 4. Spatial representation of scallop meat count (MPP) encountered during the VIMS/Industry survey of the Hudson Canyon Closed Area during July of 2010.

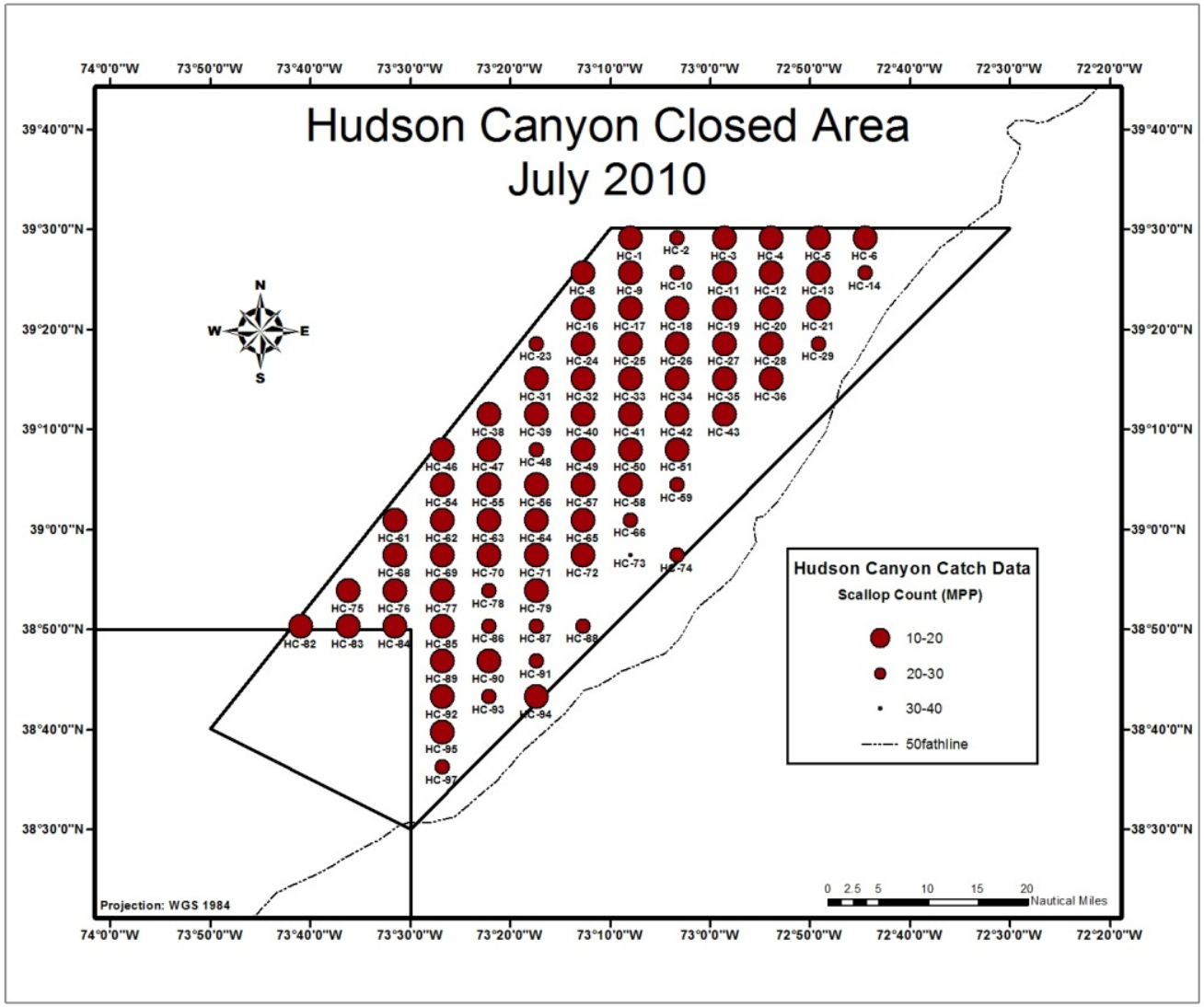

Figure 5. Shell height frequency for scallops captured in the commercial dredge during the VIMS/Industry cooperative survey of Closed Area I (upper panel) and Hudson Canyon Closed Area (lower panel) during July of 2010.