RESOURCE SURVEY REPORT
Catch Summary
NOAA Fisheries Service
Northeast Fisheries Science Center
Sea Scallop Survey
Mid-Atlantic Bight -Georges Bank
16 May – 21 June 2015

Submitted to: NOAA, NEFSC

For further information, contact Robert Johnston (508-495-2061), NOAA Fisheries Service, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543.

Date: 2015

Resource Survey Report

Sea Scallop Survey

Cape Hatteras – Georges Bank

16 May – 21 June 2015

UNOLS R/V *Hugh R. Sharp*

NOAA Fisheries Service
Northeast Fisheries Science Center
Woods Hole, MA 02543

A large catch of sea scallops (*Placopecten magellanicus)* from the northern edge of Georges Bank

The R/V *Hugh R. Sharp* departs Woods Hole

A view of both the dredge and HabCam on the back deck

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The following charts and station data indicate the distribution of sea scallops during the 2015 sea scallop survey conducted aboard the UNOLS R/V *Hugh R. Sharp*. Additionally, there is an appendix that describes a concurrent sampling system deployed during the scallop cruise where the NEFSC, in collaboration with the Woods Hole Oceanographic Institute (WHOI), deployed a fiber optic towed vehicle fitted with stereo cameras in proximity to standard dredge hauls for the entire survey area (Appendix 1). For the dredging portion of the survey, fifteen-minute tows were made at a speed of 3.8 knots using a modified 8-foot, New Bedford-type scallop dredge. The dredge was equipped with a 5/8 inch case hardened sweep chain 69 links long, and a 2-inch ring chain bag lined with 1-1/2 inch mesh webbing to retain small scallops. The dredge frame was outfitted with a set of roller wheels on the neck. In six key rocky strata on Georges Bank, a set of rock chains was added to the dredge. For statistical purposes, stations were randomly selected and therefore were not always on or near scallop concentrations.

In this report, scallop catch is reported in numbers, by-catch is recorded in liters, depth in fathoms, and bottom temperature in degrees Fahrenheit. Bottom temperature is included at selected stations because it is an environmental factor which influences sea scallop growth rates and spawning time. Catches are reported in three categories of shell height: less than or equal to 90 mm (greater than 40 count), greater than 90 mm (less than 40 count), and greater than or equal to 100 mm (less than 30 count). The percent composition of by-catch is also given.

The data are now summarized from audited catch files generated from the Fisheries Scientific Computer System (FSCS).

For further information, contact Robert Johnston (508-495-2061), NOAA Fisheries Service, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543. To view this report, go to the Ecosystems Surveys Branch website at:

http://www.nefsc.noaa.gov/femad/ecosurvey/mainpage/

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Appendix 1

National Marine Fisheries Service's Northeast Fisheries Science Center collaborated with the Woods Hole Oceanographic Institute (WHOI) to integrate a stereo-optic towed vehicle, which was designed to collect paired images of the sea floor for the purpose of enumerating sea scallops and other commercially important groundfish (yellowtail flounder, winter flounder, skates, etc.).

During the three legs of the survey, NOAA HabCam V4 was deployed concurrently throughout the scallop strata. Usually, dredge tows would be conducted in one direction through an area and then, after turning the vessel around, a HabCam V4 transect would be conducted through the same area. During the 2015 season our research partner, Virginia Institute of Marine Science (VIMS) conducted a dredge survey of the Mid-Atlantic Bight (MAB), the same area leg I of the NMFS sea scallop survey would cover. Therefore, only HabCam operations were conducted during leg 1, allowing HabCam to cover more area in the MAB. Legs II and III were conducted in a similar fashion to years past, deploying both HabCam and conducting dredging operations throughout the scallop strata. Over the course of the three legs, HabCam imaged along a cruise track of approximately 2,212 km in the Mid-Atlantic Bight (MAB) and 2,422 km on Georges Bank, including the Great South Channel. The total production of paired images equals approximately 9.2 million image pairs; 4.4 million image pairs were collected in the MAB, while 4.8 million image pairs were collected on Georges Bank.

Field Notes

In an effort to share some of the natural history observations made during the scallop survey, we have requested that the Chief Scientists on each part of the cruise comment on some of the more interesting catches that were brought aboard UNOLS R/V *Hugh R. Sharp*.

Leg I: HabCam operations in the MAB

Leg I of the 2015 sea scallop survey was a bit different than in years past. Since our research partner, Virginia Institute of Marine Science (VIMS), was conducting a full dredge survey of the Mid-Atlantic Bight (MAB) and leg I would be covering the same area, it was decided the first leg would be HabCam operations only. After the completion of leg I, dredging operations, along with HabCam, would resume during legs II and III. The R/V *Hugh R. Sharp* left the dock on Saturday May 16th to begin the 2015 sea scallop survey. Testing of both the dredge and HabCam systems begin shortly after departure just outside of Delaware Bay. With all systems go, the HabCam vehicle was left in the water to begin our first transect southward towards the Delmarva region. However, five hours into operations we began to experience some problems until finally there was an entire system failure and the vehicle was retrieved. With the vehicle safely on deck, a full inspection was carried out where it was discovered that the main components bottle, containing all of the electronics, had developed a leak. The bottle was subsequently drained, flushed with fresh water and given a full alcohol rinse. Finally, the bottle was quickly baked in the *Sharp's* oven to remove any remaining moisture. It was a job well done by the entire crew to rescue the bottle and the vehicle was able to complete the rest of the survey without any malfunctions.

The 2015 season saw the introduction of an upgraded 10 gigabit Ethernet switch that connected the acquisition computer, DIXON, to the two servers. This upgrade paid huge dividends in that it increased our recording and processing speeds by a factor of 10, allowing us to both process and capture images at the same time. Secondarily, this gave us instant access to the processed images for annotation purposes. The result is that we walked off the ship with 85% (60,000) of the images annotated by the end of the six week survey, saving us a lot of time once we returned to shore.

Leg II: A scare with "Dixon"

After the successful completion of leg I, leg II was set to resume both HabCam and dredging operations. However, the scientists and crew would have to face another issue at sea when the acquisition computer, named Dixon, failed mid shift. After a reset was unsuccessful bringing the computer back, plans were set in place to replace Dixon with its backup, aptly named Dixon2. Although Dixon2 was initially unstable because it had been configured with an earlier version of the operating software, the members of the science crew, crew of the vessel and with shore side support from our partners at Woods Hole Oceanographic Institute (WHOI), were able to successfully configure Dixon2, allowing HabCam to be deployed once again. This was a great learning experience for all and once again proved that these issues could be handled at sea without causing major

delays to the survey. The remainder of the cruise went smoothly, with both HabCam and dredging operations being completed successfully.

Leg III: Business as Usual

Before starting our cruise track in the Great South Channel, we first took the opportunity to calibrate an Ultra Short Baseline (USBL), which is both a system and instrument used to determine the location of a mobile, underwater object by means of highly accurate, acoustic positioning. After attaching a transponder directly to HabCam and using the multibeam capabilities of the *Sharp*, the USBL system was eventually used to determine the location of the deployed vehicle.

Leg III also completed the remainder of the Georges Bank dredge stations, as well as a HabCam track that totaled nearly 375 nm. Scientific operations ran very smoothly and all scientists on board worked extremely hard to continue annotating HabCam images for use in the NEFSC scallop stock assessment.

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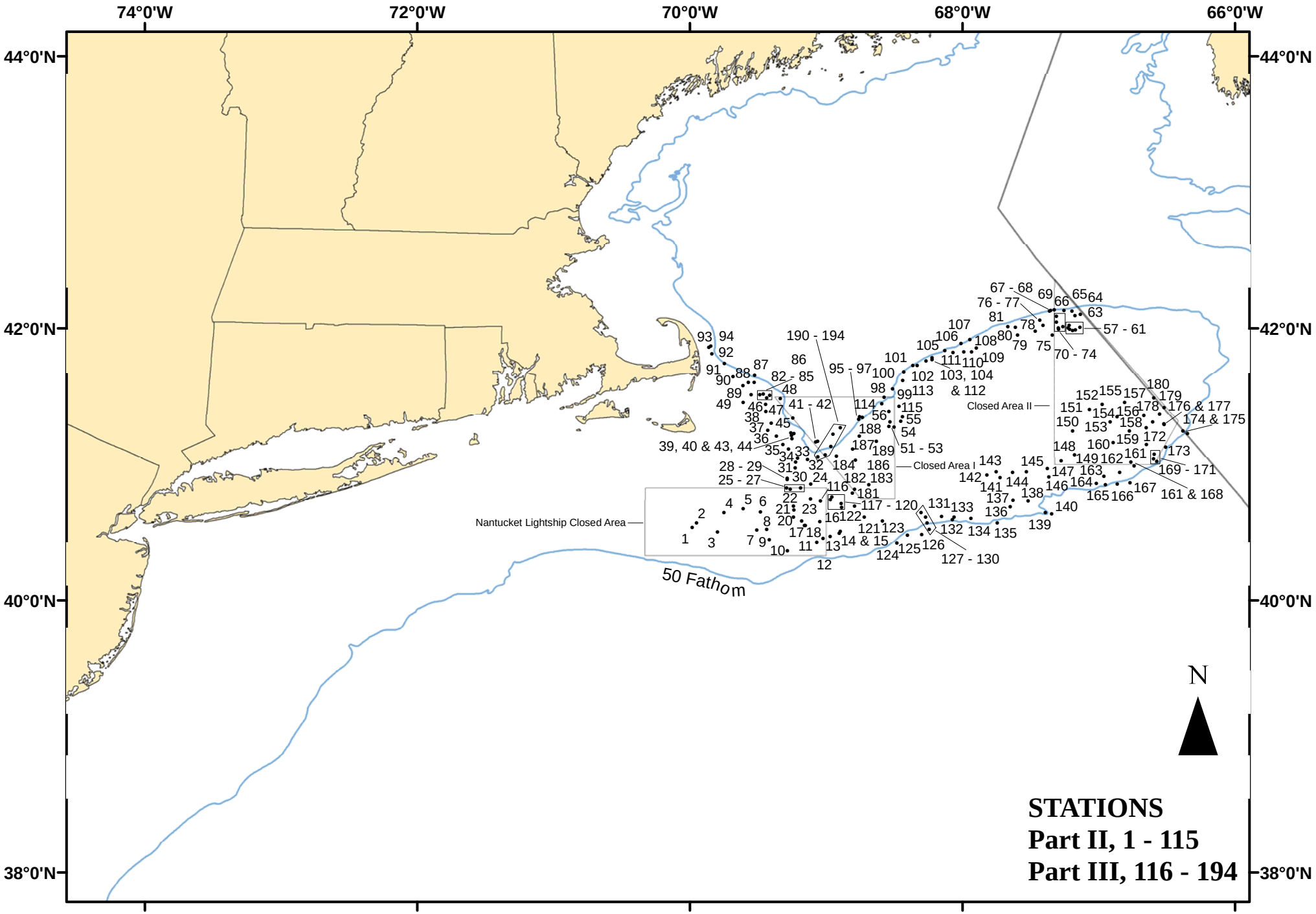

Figure 1. Dredge tows made from UNOLS R/V *Hugh R. Sharp*, during NOAA Fisheries Service, Northeast Fisheries Science Center's Sea Scallop Survey, 16 May - 21 June 2015.

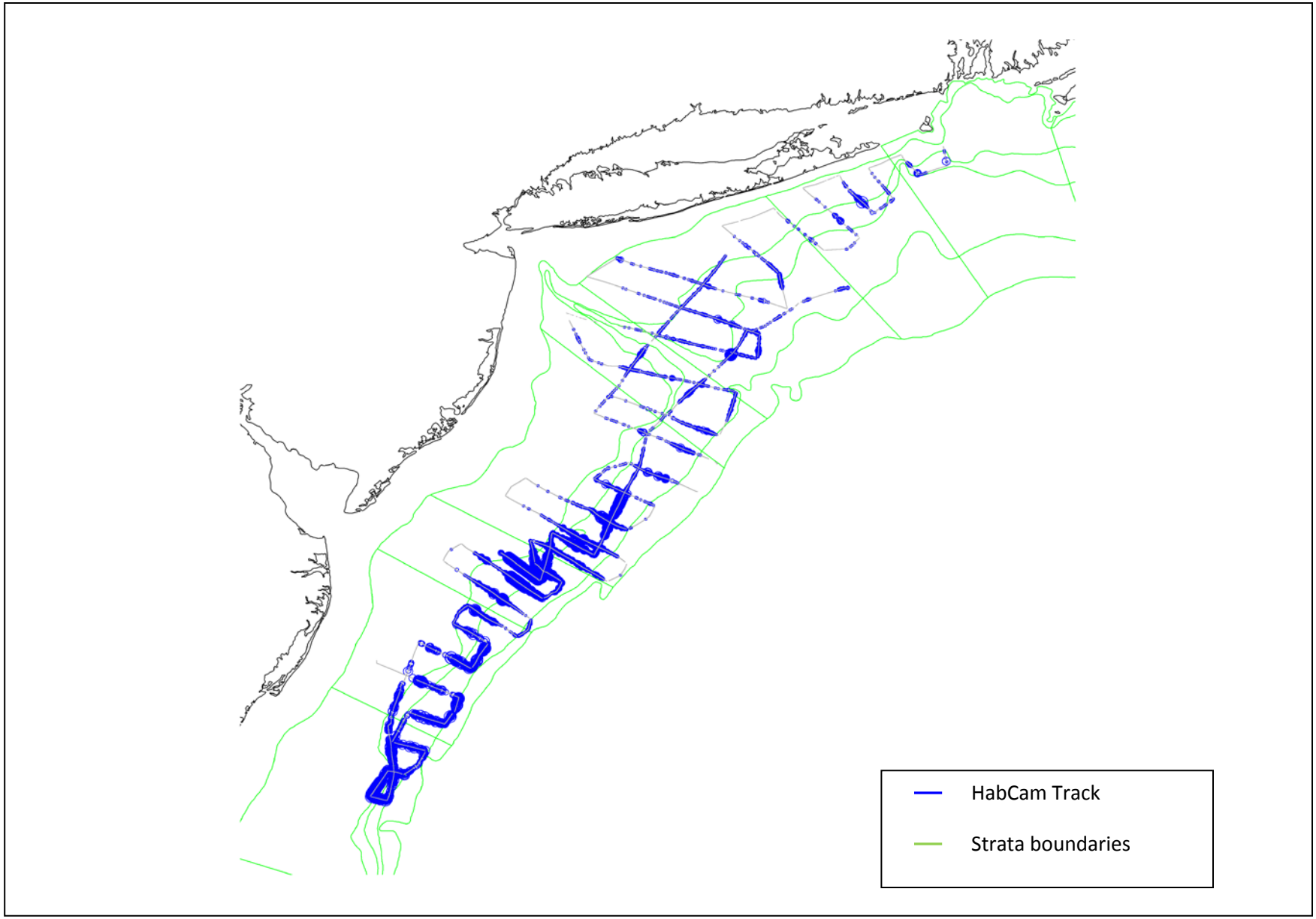

Figure 2: NOAA HabCam track through the Mid-Atlantic Bight, conducted by UNOLS R/V *Hugh R. Sharp* during NOAA Fisheries Service, Northeast Fisheries Science Center's Sea Scallop Survey, 16 May – 21 June 2015.

Figure 3: NOAA HabCam track on Georges Bank, conducted by UNOLS R/V *Hugh R. Sharp* during NOAA Fisheries Service, Northeast Fisheries Science Center's Sea Scallop Survey, 16 May – 21 June 2015.

UNOLS R/V HUGH R. SHARP 2015 SEA SCALLOP SURVEY
16 May – 21 June 2015

Station Data								Number of Scallops				By-Catch			
Station	Position Lat.	Long.	Loran TD's		Heading	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(L)
0001	4032.0	6958.9	W14121.1	Y43506.4	214	35.5	51.1	2	2	0	0	50	35	15	6
0002	4034.2	6957.1	W14104.1	Y43520.0	270	33.9		0	0	0	0	98	0	2	1
0003	4030.1	6947.8	W14069.2	Y43484.5	344	38.8		23465	23427	38	0	75	20	5	10
0004	4038.7	6944.9	W14023.9	Y43540.0	93	30.6	45.1	46	36	10	6	50	45	5	186
0005	4040.4	6936.6	W13974.4	Y43544.2	79	27.3		0	0	0	0	20	20	60	1886
0006	4039.1	6928.9	W13939.4	Y43529.2	106	29.5		4	0	4	4	10	10	80	2070
0007	4031.4	6926.1	W13953.0	Y43476.6	236	32.8	45.1	38	5	33	16	15	5	80	828
0008	4030.9	6930.5	W13977.2	Y43476.6	125	34.4		2533	1104	1429	271	70	15	15	414
0009	4026.6	6925.0	W13964.5	Y43444.2	109	37.2		823	731	92	35	40	55	5	299
0010	4021.8	6916.9	W13940.9	Y43407.2	122	44.3	47.9	5	4	1	1	20	30	50	23
0011	4025.5	6904.1	W13864.7	Y43422.8	36	45.4		126	125	1	1	40	20	40	12
0012	4027.4	6901.3	W13844.1	Y43433.1	27	43.2		90	76	14	4	40	10	50	35
0013	4028.1	6858.2	W13826.4	Y43435.5	80	42.1	45.0	49	41	8	1	45	5	50	46
0014	4029.5	6854.1	W13801.3	Y43441.7	35	41.0		19026	16776	2250	342	5	5	90	20
0015	4030.5	6853.7	W13795.7	Y43447.7	348	40.5		1101	422	679	197	15	5	80	92
0016	4034.8	6902.7	W13823.5	Y43481.2	300	37.7	44.9	629	200	429	292	5	5	90	368
0017	4033.1	6909.0	W13861.0	Y43475.0	237	39.4		0	0	0	0	0	0	100	1
0018	4033.0	6909.5	W13863.8	Y43474.7	91	40.5		78	34	44	17	10	5	85	690
0019	4035.1	6910.7	W13862.0	Y43489.0	254	40.5		760	112	648	270	5	5	90	874
0020	4036.7	6914.3	W13874.1	Y43502.0	274	31.7	44.8	528	21	507	361	5	10	85	1472
0021	4039.9	6914.2	W13861.6	Y43522.5	20	33.4		195	5	190	175	10	15	75	966
0022	4041.7	6914.4	W13855.8	Y43534.1	302	32.3		15	2	13	10	10	5	85	920
0023	4044.6	6906.9	W13807.0	Y43546.4	13	38.8	45.0	114	9	105	86	40	20	40	828
0024	4051.4	6906.7	W13779.3	Y43588.8	350	42.7		1458	657	801	123	40	55	5	345
0025	4049.5	6911.2	W13809.5	Y43580.8	4	37.2		12	2	10	9	35	25	40	299
0026	4049.0	6915.7	W13834.3	Y43581.6	32	33.9	46.0	880	732	148	67	50	40	10	357
0027	4049.6	6917.4	W13840.7	Y43586.9	305	30.6		59	7	52	51	30	50	20	621
0028	4053.9	6917.1	W13822.3	Y43613.8	16	26.2		0	0	0	0	0	0	100	0
0029	4053.2	6917.1	W13825.0	Y43609.4	11	27.9		3	0	3	3	2	96	2	690
0030	4058.3	6913.5	W13786.2	Y43637.9	226	36.1	45.7	73	20	53	45	3	95	2	460
0031	4101.1	6913.4	W13774.3	Y43655.2	38	35.5		631	335	296	204	15	75	10	368
0032	4102.2	6908.2	W13743.2	Y43657.0	218	39.9	46.0	332	130	202	164	5	85	10	276
0033	4102.8	6912.5	W13762.7	Y43664.9	292	31.2		718	453	265	150	5	90	5	322
0034	4106.8	6916.5	W13766.8	Y43693.5	339	30.6		4831	4516	315	159	50	45	5	460
0035	4108.6	6919.0	W13772.4	Y43707.2	3	30.1	44.0	2371	2005	366	198	45	45	10	391
0036	4112.3	6921.8	W13771.5	Y43732.9	359	30.1		250	152	98	84	40	50	10	230
0037	4114.9	6925.7	W13781.1	Y43753.1	186	23.5		0	0	0	0	0	100	0	46
0038	4118.2	6924.2	W13759.1	Y43771.6	359	25.2	43.1	2	0	2	2	15	5	80	460
0039	4112.7	6915.2	W13735.3	Y43728.3	311	37.2		29	7	22	22	3	95	2	230
0040	4111.2	6915.0	W13740.6	Y43718.9	356	33.4		1	1	0	0	5	90	5	138
0041	4109.7	6904.6	W13693.5	Y43699.1	11	61.2	40.7	0	0	0	0	1	98	1	1
0042	4110.3	6903.7	W13686.3	Y43701.9	320	59.1		224	94	130	88	50	25	25	24
0043	4113.6	6914.1	W13725.7	Y43732.6	220	44.3		0	0	0	0	0	0	100	0
0044	4113.9	6915.5	W13731.7	Y43735.9	85	39.4		3	1	2	2	75	25	0	4
0045	4120.3	6914.6	W13699.4	Y43773.6	343	58.0		48	5	43	39	40	5	55	368
0046	4123.3	6926.5	W13749.3	Y43805.3	12	20.8	45.1	120	0	120	119	60	25	15	276
0047	4126.3	6926.6	W13736.6	Y43823.5	174	24.1		15	0	15	15	5	80	15	230
0048	4129.1	6920.1	W13689.4	Y43832.5	16	47.0		250	23	227	214	15	50	35	851
0049	4127.3	6936.5	W13785.8	Y43841.5	180	17.0		0	0	0	0	45	45	10	92

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Station Data								Number of Scallops				By-Catch			
Station	Position Lat.	Long.	Loran TD's		Heading	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(L)
0050	4130.6	6933.0	W13752.2	Y43857.2	204	21.9		1	0	1	1	25	70	5	69
0051	4116.5	6830.1	W13492.6	Y43705.1	193	31.7	48.6	0	0	0	0	3	1	96	897
0052	4116.7	6832.4	W13502.8	Y43708.5	201	33.9		2	0	2	2	5	5	90	1610
0053	4118.8	6831.9	W13490.9	Y43720.0	177	36.1		1	1	0	0	5	10	85	621
0054	4119.0	6827.1	W13466.9	Y43716.5	177	35.0	47.6	4	1	3	3	5	5	90	184
0055	4121.1	6826.4	W13454.0	Y43727.7	198	37.2		2	0	2	1	5	5	90	460
0056	4123.3	6832.3	W13472.4	Y43746.1	197	44.3		22	0	22	22	5	0	95	92
0057	4200.4	6708.2	W12914.2	Y43856.6	304	30.6		2	0	2	2	55	40	5	598
0058	4159.2	6710.2	W12928.5	Y43852.7	304	31.2	49.0	0	0	0	0	1	1	98	1
0059	4158.9	6711.5	W12935.3	Y43852.5	303	29.0		10	1	9	4	75	5	20	276
0060	4159.6	6712.7	W12936.6	Y43857.1	332	30.1		30	4	26	20	85	10	5	690
0061	4200.2	6713.4	W12936.4	Y43860.8	334	27.9	48.9	42	8	34	29	40	35	25	598
0062	4201.3	6713.0	W12929.0	Y43865.8	329	29.5		108	37	71	59	50	25	25	759
0063	4205.6	6710.4	W12895.9	Y43884.1	296	28.4		1164	42	1122	1062	50	25	25	759
0064	4206.2	6708.0	W12883.1	Y43884.6	324	30.1	46.9	366	120	246	207	50	25	25	736
0065	4207.5	6711.8	W12891.6	Y43894.8	294	42.1		4666	2106	2560	2369	50	25	25	345
0066	4207.8	6715.3	W12904.3	Y43899.9	97	48.1		3265	208	3057	3031	60	20	20	322
0067	4207.7	6721.2	W12929.2	Y43905.6	234	57.4	43.4	0	0	0	0	0	0	0	0
0068	4207.4	6721.6	W12932.5	Y43904.6	104	54.7		300	59	241	127	40	20	40	35
0069	4208.2	6719.5	W12919.5	Y43906.3	113	60.7		112	9	103	86	60	10	30	184
0070	4205.4	6718.5	W12930.2	Y43891.6	154	28.4		720	39	681	668	10	5	85	138
0071	4202.8	6718.6	W12944.2	Y43878.9	170	28.4	49.0	392	30	362	330	70	5	25	736
0072	4200.7	6715.7	W12943.2	Y43865.6	293	26.2		4	0	4	3	85	12	3	644
0073	4200.2	6717.7	W12954.1	Y43865.2	215	25.2		0	0	0	0	100	0	0	1
0074	4159.7	6717.6	W12956.2	Y43862.6	236	25.7		1	1	0	0	80	10	10	1518
0075	4157.1	6720.3	W12980.9	Y43852.5	18	31.7	49.9	23	12	11	10	70	20	10	1564
0076	4201.3	6724.5	W12976.7	Y43877.6	318	26.2		198	24	174	135	25	60	15	782
0077	4203.4	6725.9	W12971.6	Y43889.5	312	29.0		193	12	181	162	30	65	5	460
0078	4158.7	6727.9	W13004.6	Y43868.3	120	23.0	47.1	0	0	0	0	80	19	1	920
0079	4157.0	6735.7	W13046.9	Y43867.9	158	26.2		8	1	7	5	75	20	5	403
0080	4200.5	6736.6	W13032.6	Y43886.5	143	29.5		73	9	64	56	35	50	15	506
0081	4200.8	6740.0	W13045.9	Y43891.6	201	36.1	47.0	30	5	25	17	10	5	85	173
0082	4130.5	6924.8	W13708.3	Y43846.5	103	33.9	40.5	338	218	120	88	20	60	20	414
0083	4129.3	6926.2	W13721.2	Y43841.0	120	28.4		211	104	107	75	25	50	25	552
0084	4130.7	6929.1	W13730.5	Y43853.0	132	25.7		135	36	99	71	25	60	15	1242
0085	4131.0	6927.6	W13721.1	Y43852.9	350	30.6	42.9	870	643	227	140	25	50	25	460
0086	4136.2	6931.6	W13719.3	Y43888.9	341	41.6		330	117	213	153	15	70	15	552
0087	4139.2	6931.5	W13705.0	Y43906.5	341	56.3		55	52	3	3	15	70	15	138
0088	4136.0	6934.2	W13734.4	Y43891.0	331	41.0	40.3	149	90	59	49	45	5	50	92
0089	4134.6	6936.6	W13753.9	Y43885.7	73	27.9		424	203	221	194	15	80	5	828
0090	4138.7	6940.9	W13759.1	Y43915.8	275	33.9		775	663	112	89	10	85	5	920
0091	4144.5	6944.8	W13754.3	Y43955.5	208	52.5	40.1	29	12	17	16	15	75	10	460
0092	4148.8	6950.3	W13765.4	Y43988.6	196	42.1		5	2	3	2	20	60	20	36
0093	4151.5	6951.6	W13760.2	Y44006.3	345	30.6		118	61	57	44	50	5	45	69
0094	4152.1	6950.7	W13752.2	Y44008.6	343	35.5	41.0	79	61	18	14	45	5	50	69
0095	4119.8	6845.7	W13554.1	Y43739.7	5	56.9		0	0	0	0	0	0	100	1
0096	4121.0	6845.2	W13546.3	Y43746.2	213	59.1		205	115	90	70	65	25	10	96
0097	4120.8	6844.0	W13541.2	Y43743.8	207	54.7		1485	1392	93	63	20	5	75	161
0098	4129.5	6834.4	W13454.0	Y43783.4	343	53.6	41.3	53	22	31	22	2	8	90	460

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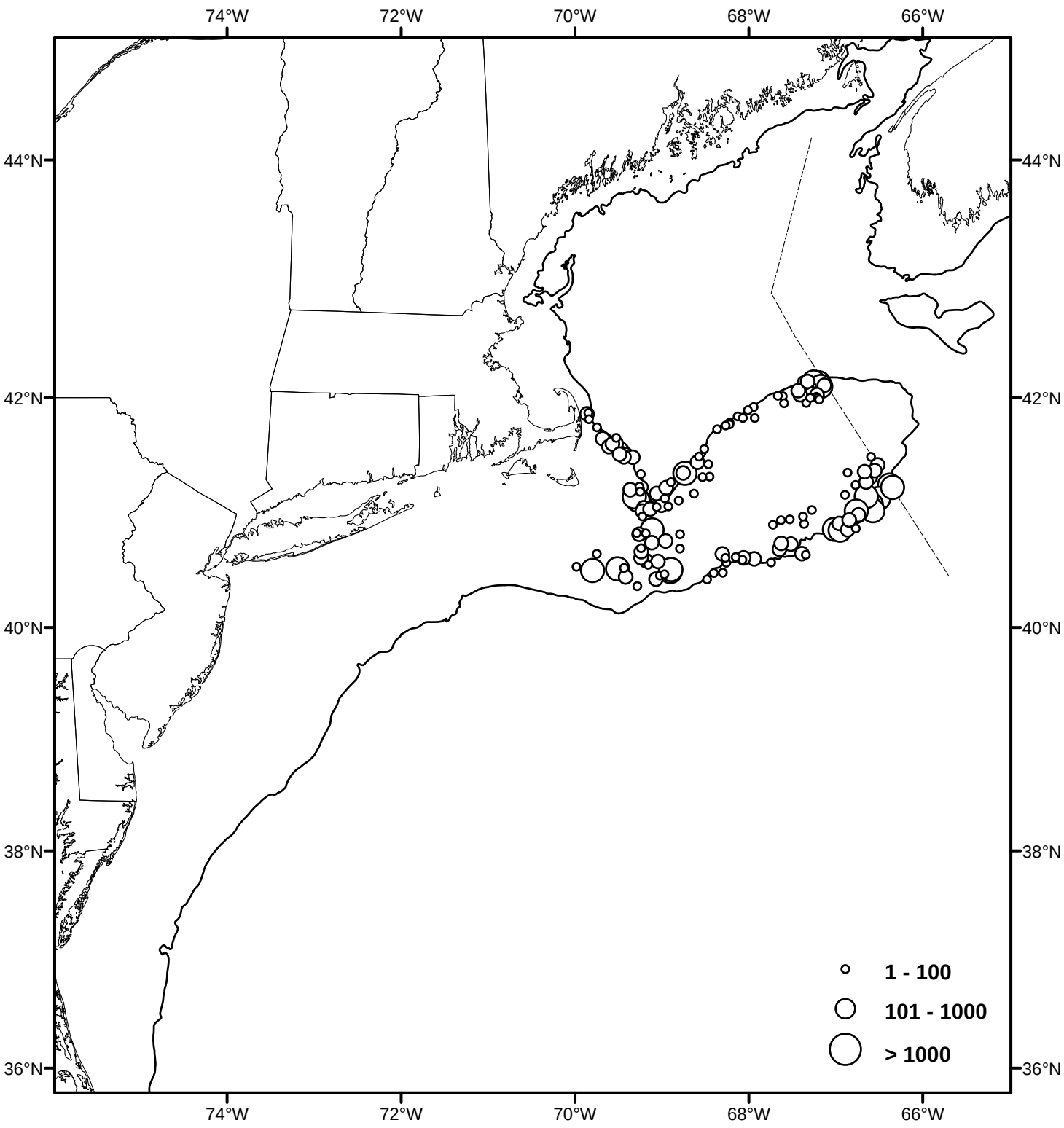
0099	4133.4	6830.7	W13417.6	Y43801.3	334	53.0		3	1	2	1	0	25	75	460
0100	4140.6	6825.8	W13359.3	Y43835.8	198	56.9		2	0	2	2	0	10	90	23
0101	4143.6	6821.8	W13325.4	Y43847.7	39	48.1	44.4	12	3	9	9	35	5	60	414
0102	4143.5	6819.8	W13316.3	Y43844.9	12	41.0		7	0	7	7	3	7	90	1817
0103	4145.5	6816.0	W13288.3	Y43851.5	67	44.8		41	5	36	28	15	5	80	345
0104	4147.0	6813.3	W13268.0	Y43856.6	244	45.4	48.5	88	37	51	20	25	0	75	230
0105	4150.2	6807.7	W13225.7	Y43867.4	224	55.8		40	18	22	21	10	20	70	460
0106	4153.4	6800.6	W13176.6	Y43876.3	230	55.2		38	9	29	23	15	35	50	230
0107	4155.0	6756.7	W13150.6	Y43880.3	298	52.5	41.7	79	11	68	57	10	30	60	299
0108	4151.2	6753.8	W13156.7	Y43857.5	34	26.8		3	0	3	3	5	20	75	138
0109	4149.4	6755.9	W13175.4	Y43850.3	204	27.9		2	1	1	1	5	5	90	230
0110	4149.6	6759.4	W13190.3	Y43855.1	180	31.2	44.9	15	0	15	14	5	5	90	2254
0111	4149.4	6804.1	W13213.0	Y43859.2	215	37.7		21	1	20	20	2	0	98	1932
0112	4146.1	6813.3	W13272.5	Y43851.8	197	39.9		73	18	55	40	15	5	80	276
0113	4137.0	6826.3	W13379.1	Y43816.6	192	34.4	49.1	10	0	10	10	10	1	89	322
0114	4126.6	6835.4	W13472.4	Y43768.1	292	52.5		193	35	158	153	10	5	85	460
0115	4125.5	6827.9	W13441.0	Y43754.1	316	43.7		16	3	13	12	65	5	30	184
0116	4043.8	6902.5	W13788.2	Y43537.8	21	39.9	47.3	31	0	31	28	5	5	90	1179
0117	4044.4	6858.1	W13764.0	Y43538.0	21	38.3		0	0	0	0	0	0	0	0
0118	4045.5	6857.4	W13756.3	Y43544.3	209	38.8		147	13	134	89	5	5	90	276
0119	4042.8	6853.4	W13747.2	Y43524.3	212	37.2		11	0	11	10	4	1	95	552
0120	4041.0	6853.1	W13752.7	Y43512.9	208	37.2	47.9	33	0	33	32	5	5	90	690
0121	4041.5	6847.5	W13723.6	Y43511.8	232	36.6		58	1	57	55	8	2	90	391
0122	4036.6	6843.2	W13721.9	Y43478.4	26	33.4		0	0	0	0	0	0	100	0
0123	4035.0	6835.2	W13690.1	Y43463.1	7	37.7	47.0	5	0	5	5	15	5	80	322
0124	4025.3	6828.8	W13697.3	Y43399.6	10	53.6		8	6	2	0	30	10	60	46
0125	4028.7	6824.1	W13662.6	Y43417.5	46	53.0		15	13	2	0	25	20	55	115
0126	4028.8	6817.9	W13633.8	Y43414.4	45	56.3	50.5	1	1	0	0	25	5	70	12
0127	4031.3	6814.6	W13609.0	Y43427.4	2	55.2		0	0	0	0	35	5	60	23
0128	4034.1	6815.5	W13602.2	Y43444.7	18	51.9		14	14	0	0	35	15	50	23
0129	4036.6	6816.1	W13595.1	Y43460.0	5	48.7	46.3	10	9	1	1	50	0	50	92
0130	4038.7	6818.2	W13596.3	Y43473.9	296	44.3		100	78	22	7	30	10	60	127
0131	4037.1	6809.1	W13561.2	Y43458.4	7	50.9		50	48	2	1	75	5	20	92
0132	4035.6	6804.4	W13546.1	Y43446.6	18	51.9	45.9	59	56	3	1	70	10	20	161
0133	4036.7	6803.6	W13538.1	Y43452.6	19	50.3		115	103	12	1	70	5	25	368
0134	4036.1	6756.3	W13508.0	Y43444.5	11	49.8		252	71	181	49	40	50	10	1288
0135	4034.2	6744.6	W13464.5	Y43426.5	316	55.2	50.5	64	58	6	1	70	15	15	322
0136	4041.2	6738.9	W13411.5	Y43463.1	336	42.1		670	526	144	58	90	1	9	35
0137	4044.2	6737.7	W13394.0	Y43479.3	312	43.2		509	263	246	80	75	5	20	138
0138	4043.9	6731.0	W13366.7	Y43473.4	339		45.3	956	750	206	67	25	5	70	414
0139	4038.8	6723.4	W13355.9	Y43440.4	26	51.4		186	177	9	1	50	15	35	184
0140	4038.2	6720.7	W13347.2	Y43435.5	26	53.6		9	6	3	0	35	5	60	207
0141	4054.0	6743.4	W13377.2	Y43538.3	188	36.6	47.2	18	1	17	15	25	0	75	598
0142	4055.2	6749.2	W13397.5	Y43549.2	38	32.8		3	0	3	3	20	0	80	828
0143	4056.7	6745.1	W13373.1	Y43554.6	50	32.8		40	0	40	37	25	0	75	690
0144	4056.4	6737.8	W13342.7	Y43547.7	348	37.7	47.5	36	5	31	26	5	5	90	368
0145	4056.8	6731.7	W13314.8	Y43545.6	2	38.8		49	3	46	41	5	5	90	368

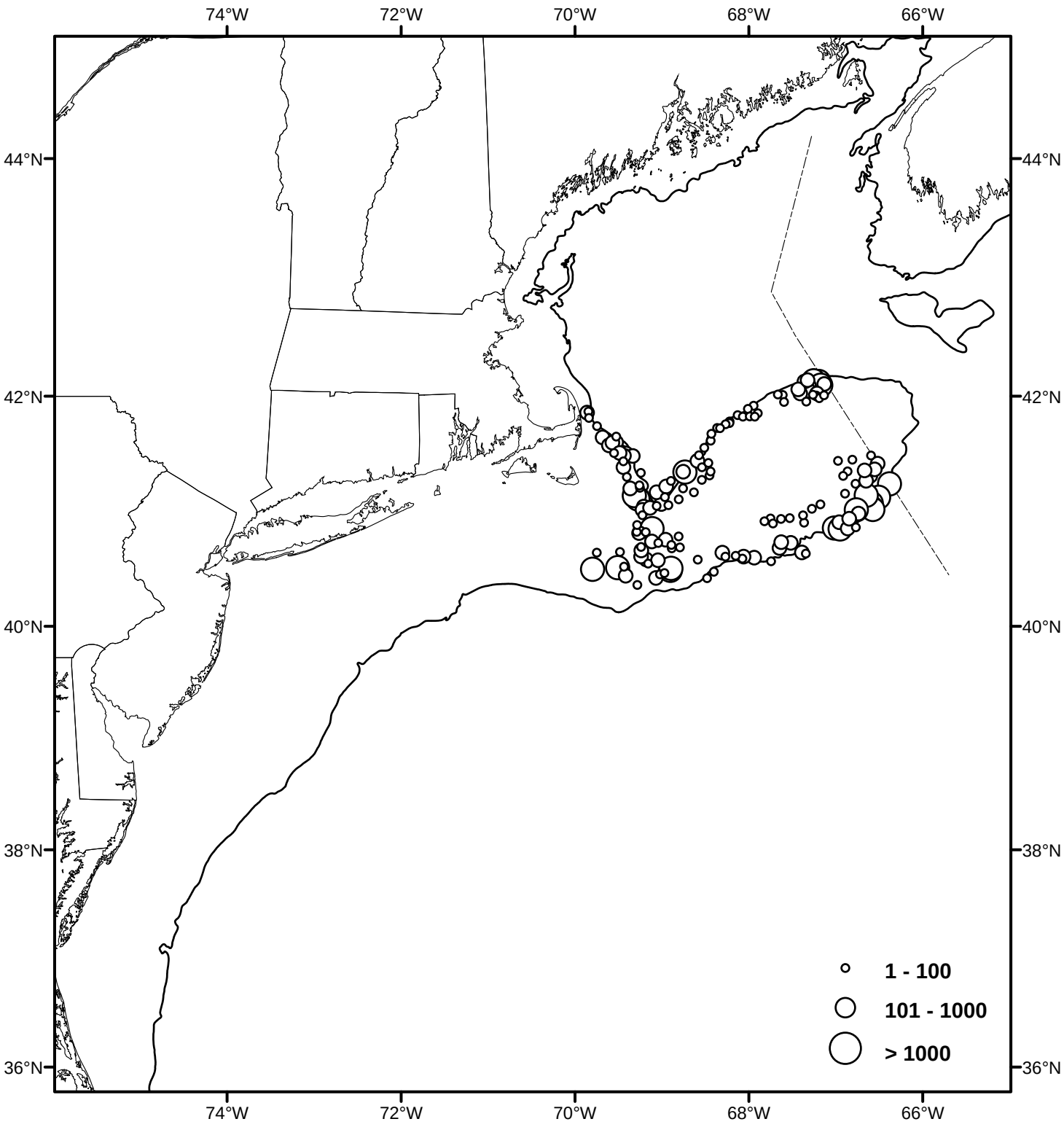
UNOLS R/V HUGH R. SHARP 2015 SEA SCALLOP SURVEY
16 May – 21 June 2015

Station Data								Number of Scallops				By-Catch			
Station	Position Lat.	Long.	Loran TD's		Heading	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(L)
0146	4054.4	6721.9	W13284.0	Y43525.6	1	44.3		61	6	55	48	2	3	95	46
0147	4058.3	6722.6	W13270.0	Y43547.4	13	41.0	47.4	32	2	30	28	5	5	90	46
0148	4101.7	6716.5	W13229.7	Y43561.5	50	38.3		25	2	23	22	5	5	90	184
0149	4104.0	6710.6	W13195.3	Y43569.7	70	36.1		40	0	40	36	5	5	90	184
0150	4114.9	6711.4	W13149.4	Y43628.1	107	31.2	49.4	0	0	0	0	1	0	99	1410
0151	4124.1	6704.0	W13076.7	Y43670.2	114	33.4		0	0	0	0	0	0	0	0
0152	4126.6	6658.5	W13042.9	Y43678.6	264	36.6		2	0	2	2	1	0	99	368
0153	4118.8	6654.9	W13065.2	Y43635.8	113	38.8	46.7	19	0	19	19	15	0	85	161
0154	4121.1	6651.9	W13042.8	Y43645.3	99	39.4		21	1	20	19	40	0	60	127
0155	4127.2	6648.6	W13001.3	Y43673.7	103	40.5		23	0	23	23	35	0	65	138
0156	4121.6	6640.1	W12995.0	Y43638.9	286	45.4	47.0	117	1	116	115	55	10	35	46
0157	4118.8	6636.2	W12993.3	Y43621.9	122	48.1		602	17	585	572	70	0	30	92
0158	4116.3	6639.1	W13015.7	Y43611.3	100	45.9		218	4	214	206	50	0	50	92
0159	4114.7	6646.5	W13051.4	Y43608.5	111	41.0	45.9	74	1	73	69	50	0	50	115
0160	4109.6	6653.6	W13102.2	Y43587.2	209	40.5		94	3	91	85	60	0	40	104
0161	4101.1	6645.8	W13109.8	Y43537.6	310	43.7		1181	173	1008	831	75	5	20	46
0162	4056.5	6650.7	W13149.0	Y43516.6	344	48.1	44.4	166	64	102	47	75	5	20	276
0163	4054.7	6657.7	W13184.4	Y43511.5	319	47.6		259	35	224	112	80	5	15	230
0164	4051.6	6701.0	W13210.8	Y43497.0	321	49.8		1524	972	552	128	90	5	5	552
0165	4051.1	6657.0	W13197.1	Y43491.9	110	51.4	45.8	1445	1327	118	8	80	10	10	920
0166	4051.4	6651.8	W13175.4	Y43490.4	116	53.6		237	230	7	0	5	5	90	460
0167	4052.0	6646.2	W13151.1	Y43490.2	322	55.8		18	15	3	0	1	1	98	736
0168	4059.2	6644.4	W13112.8	Y43526.8	336	43.2	44.3	799	131	668	374	15	5	80	46
0169	4101.3	6634.4	W13065.5	Y43531.5	345	49.2		2157	2124	33	0	45	20	35	69
0170	4102.4	6635.8	W13065.9	Y43538.0	346	48.1		2810	2405	405	90	60	10	30	35
0171	4104.6	6635.5	W13055.0	Y43549.1	343	48.1		4172	3852	320	88	70	5	25	46
0172	4108.7	6639.0	W13049.9	Y43572.5	345	45.4		1701	573	1128	960	70	0	30	46
0173	4107.7	6630.5	W13022.5	Y43561.7	11	53.0		5683	5647	36	0	70	0	30	46
0174	4113.5	6620.9	W12961.0	Y43584.6	355	57.4		3093	3093	0	0	50	0	50	69
0175	4114.6	6622.9	W12963.2	Y43591.5	359	52.5		11638	11556	82	10	75	0	25	23
0176	4117.6	6631.1	W12979.7	Y43612.2	337	50.9		0	0	0	0	0	0	0	0
0177	4117.8	6631.2	W12979.2	Y43613.3	1	50.9		0	0	0	0				
0178	4122.1	6633.2	W12966.7	Y43636.3	310	50.9		320	156	164	118	80	5	15	1104
0179	4125.1	6631.1	W12944.9	Y43649.7	324	50.9		417	198	219	95	80	5	15	920
0180	4129.4	6635.7	W12941.7	Y43674.6	349	46.5		58	7	51	41	90	5	5	738
0181	4047.2	6848.4	W13705.4	Y43547.5	219	36.6		25	0	25	22	10	75	15	92
0182	4049.0	6847.4	W13693.3	Y43557.7	240	33.4		1	1	0	0	5	0	95	736
0183	4051.0	6841.2	W13655.2	Y43564.8	314	35.0		0	0	0	0	5	0	95	460
0184	4103.6	6855.4	W13672.8	Y43653.3	53	41.6		42	9	33	32	20	70	10	368
0186	4102.0	6847.0	W13637.9	Y43636.0	163	36.6		0	0	0	0	4	95	1	736
0187	4106.6	6848.3	W13624.8	Y43664.6	216	39.4		31	4	27	26	10	75	15	92
0188	4112.3	6845.4	W13585.8	Y43695.6	268	38.8		34	0	34	34	5	5	90	368
0189	4110.2	6837.8	W13557.7	Y43676.0	314	33.9		7	2	5	3	20	5	75	46
0190	4116.2	6853.7	W13610.1	Y43726.9	9	59.6		62	37	25	22	80	0	20	46
0191	4113.3	6857.0	W13639.4	Y43713.0	6	57.4		186	84	102	101	90	0	10	46
0192	4107.8	6857.9	W13667.6	Y43681.0	46	55.2		10	2	8	8	1	0	99	1932
0193	4104.2	6900.4	W13695.4	Y43661.7	178	49.8		693	447	246	210	5	70	25	460
0194	4103.2	6903.6	W13715.7	Y43658.7	195	46.5		17	1	16	16	25	60	15	466
Total								123143	94318	27473	18290				

NEFSC SEA SCALLOP SURVEY 2015
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Less Than 90 mm



NEFSC SEA SCALLOP SURVEY 2015
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Greater Than or Equal to 90 mm



NEFSC SEA SCALLOP SURVEY 2015
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Total Number