RESOURCE SURVEY REPORT
Catch Summary
NOAA Fisheries Service
Northeast Fisheries Science Center
Sea Scallop Survey
Mid-Atlantic Bight -Georges Bank
19 May – 24 June 2016

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: 2016

Resource Survey Report

Sea Scallop Survey

Cape Hatteras – Georges Bank

19 May – 24 June 2016

UNOLS R/V *Hugh R. Sharp*

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

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 2016 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 (Figure 3). 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.

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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 four 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. The HabCam imaged along a cruise track of approximately 1.6k km in the Mid-Atlantic Bight (MAB) and approximately 4.2k km throughout the Great South Channel and Georges Bank. The total production of paired images equals approximately 5,800 million image pairs; approximately 1.6 million image pairs were collected in the MAB, while 4.2 million image pairs were collected throughout the Great South Channel and Georges Bank.

Field Notes

In an effort to share some insight and 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 or events that occurred during their respected legs of the survey.

Leg I: Loss and Recovery of HabCam

After a brief delay during staging, the 2016 sea scallop survey aboard the UNOLS R/V *Hugh R. Sharp* got underway on the 19th of May. Once underway and offshore, we successfully tested dredge operations and the FSCS 1.6 system and then deployed HabCam for the initial transect. After towing for approximately eight hours, it became obvious that something had gone terribly wrong. Communications with the HabCam vehicle had been lost and it soon became apparent that the towed vehicle had struck a large object and subsequently been severed from the tow cable. Recovery operations were immediately set in place and we spent the good part of a day using the vessel's multibeam system to map the area where the vehicle was lost. However, because of HabCam's relatively small size, we could not differentiate it from the object HabCam had struck or the surrounding area. After deciding that grappling for the vehicle was not an option, plans were made with the University of Connecticut to use their ROV (remotely operated vehicle), the Kraken2 (K2). The *Hugh R. Sharp* returned 5 days later, with the K2 system aboard and within three hours of arriving on site, HabCam had been located. Using a grapple hook that was placed on HabCam by K2, we were able to successfully retrieve HabCam. After a thorough test of the system, HabCam was back up and running, a true testament to the quality of work by WHOI when designing and building HabCam V4.

Leg II: High Densities Observed with HabCam

With the loss and retrieval of the HabCam vehicle occurring on the first leg, Leg II personnel were subsequently tasked with the monumental mission of securing survey coverage of not only the Mid-Atlantic region, but also Nantucket Lightship and the Great South Channel. Fortunately, after rigorous testing and troubleshooting, we were able to successfully utilize HabCam for a combined cruise track totaling 800 nm, which provided us with the necessary data required for adequate, imagery assessments of those areas. Of particular note in the Mid-Atlantic were very high concentrations of three-year-old scallops in the northwest corner of Elephant Trunk.

As our cruise track progressed to the Northeast, we also saw significant numbers of scallops, often more than 90 individuals in portions of Nantucket Lightship (Figure 1), as well as Closed Area I. In fact, a dredge station in one of those high-density areas of Closed Area I yielded a clean catch of nearly 1,000 kg of scallops in a single, 15-minute tow and had an expanded number of over 3,500 individuals. Overall, Leg II completed an impressive 49 dredge stations, most of which were in the ever-challenging Great South Channel, and productively annotated nearly 36,500 HabCam images for the NEFSC scallop assessment.

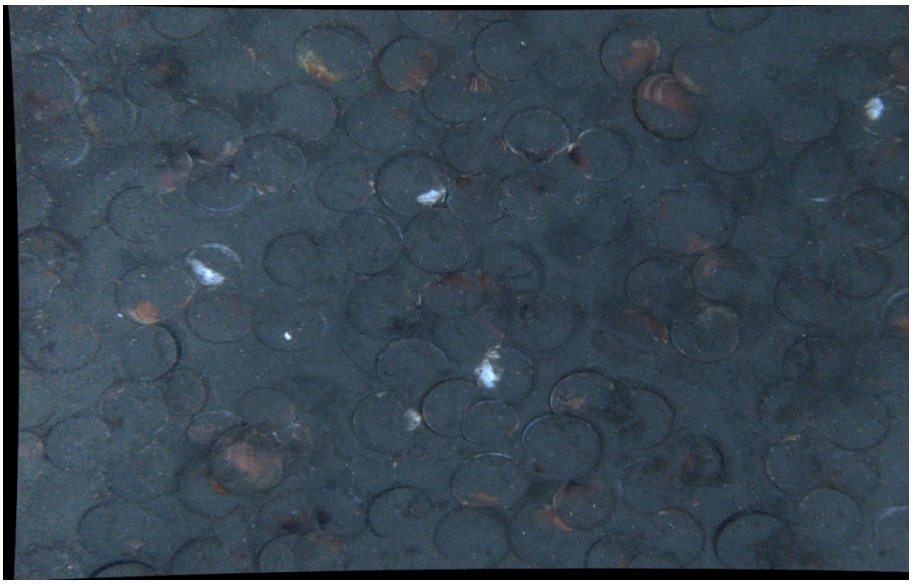

Figure 1. HabCam image of 90+ live scallops in the Nantucket Lightship Closed Area (NLCA)

Leg III: Finishing Strong

Leg III was broken up into two distinct parts, A and B, due to the refueling needs of the ship. Part A covered the southern flank of Georges Bank and much of Little Georges, while Part B focused on the northern flank of the bank as well as the Great South Channel. Despite minor weather setbacks during both parts, we were able to continue working due to the cooperative efforts of both NEFSC personnel and the *Sharp* crew. Over the course of the third leg, we covered approximately 700 nm of HabCam track, collecting 3,102,726 paired images, which the science team worked very hard to annotate while on board. In addition to completing both dredge operations and HabCam work, we also had the opportunity to start a multi-year, paired tow recalibration project to assess the survey's ability to move from 15 minute to 10 minute tows in the future.

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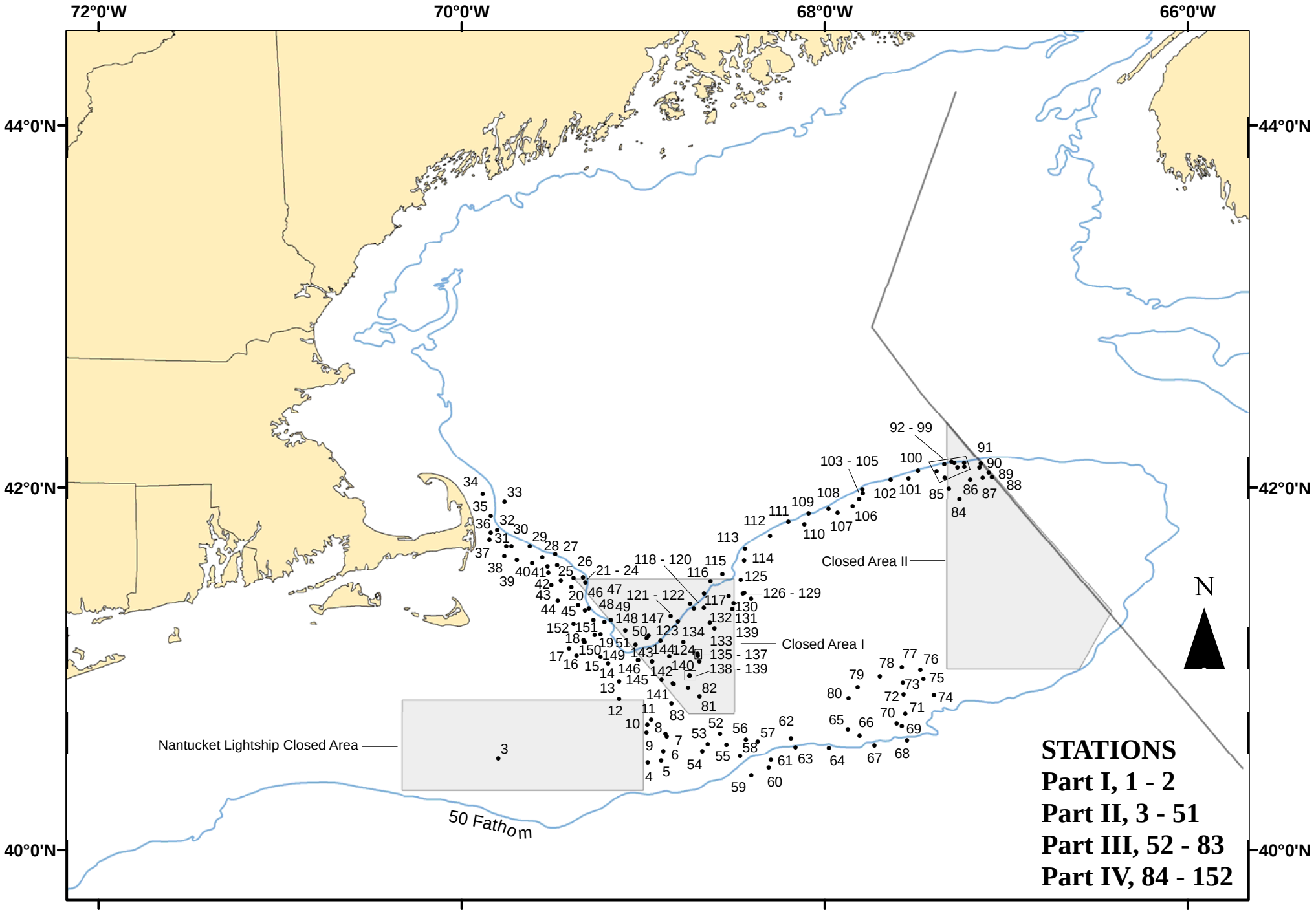

Figure 2. Dredge tows made from UNOLS R/V *Hugh R. Sharp*, during NOAA Fisheries Service, Northeast Fisheries Science Center's Sea Scallop Survey, 19 May - 24 June 2016

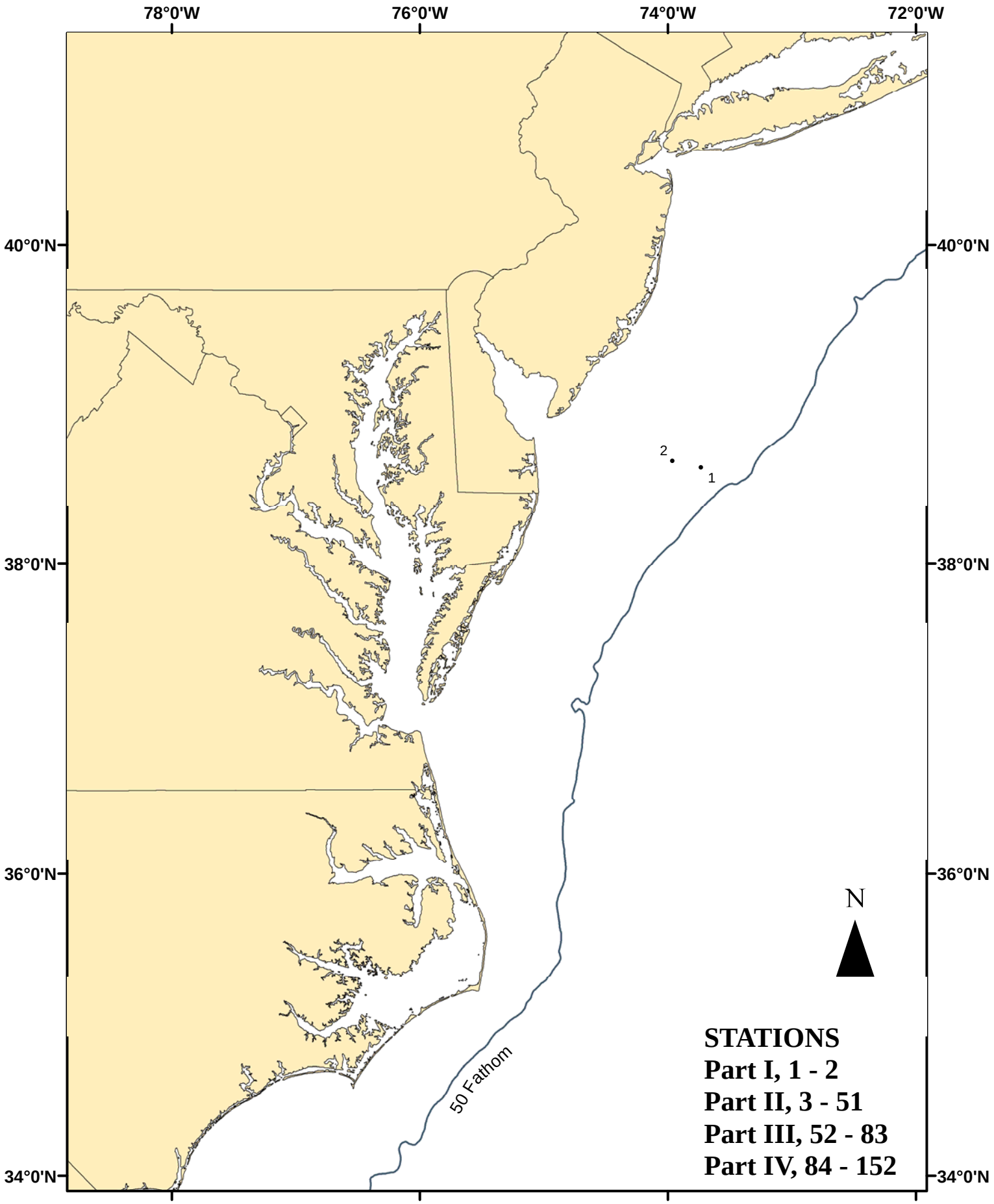

Figure 3. Dredge tows made from UNOLS R/V *Hugh R. Sharp*, during NOAA Fisheries Service, Northeast Fisheries Science Center's Sea Scallop Survey, 19 May - 24 June 2016

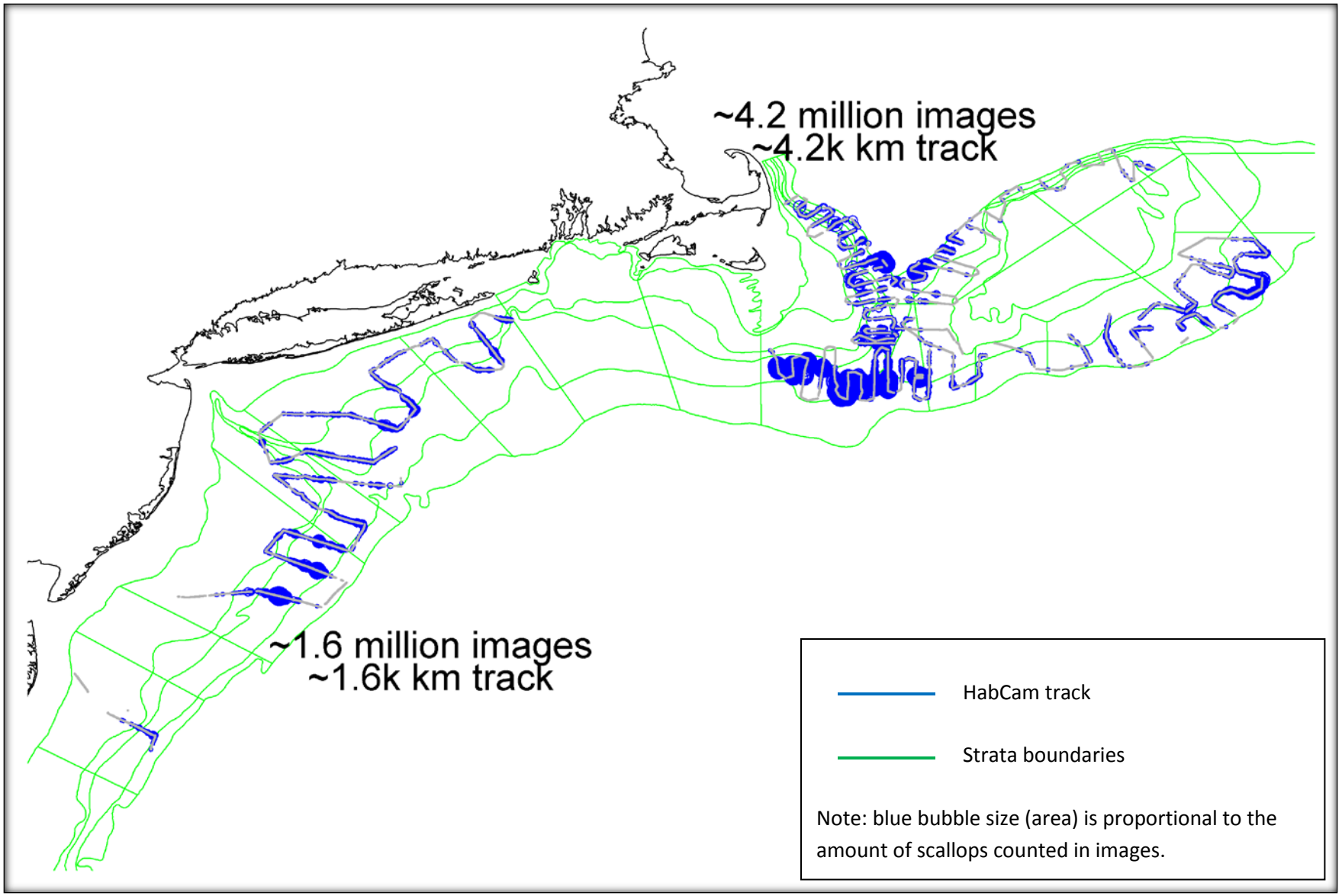

Figure 4. NOAA HabCam track from Mid-Atlantic Bight to Georges Bank, conducted by UNOLS R/V *Hugh R. Sharp* during NOAA Fisheries Service, Northeast Fisheries Science Center's sea scallop survey, 19 May – 24 June 2016.

UNOLS R/V HUGH R. SHARP 2016 SEA SCALLOP SURVEY
20 May – 23 June 2016

Station Data								Number of Scallops				By-Catch			
	Position		Loran				Bottom								
Station	Lat.	Long.	TD's		Heading	Depth (FM)	Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(l)
0001	3836.5	7344.0	X26667.8	Y42565.5	178	33.4		1137	791	346	59	10	85	5	460
0002	3839.0	7357.8	X26751.6	Y42582.7	133	27.3		3225	2448	777	96	10	50	40	552
0003	4030.1	6947.9	W14069.8	Y43484.6	18	39.4		11578	6113	5465	609	75	15	10	3
0004	4028.9	6858.5	W13824.9	Y43440.8	56	42.1		154	53	101	76	75	5	20	46
0005	4029.5	6854.1	W13801.3	Y43441.7	49	41.0		12175	2700	9475	2975	10	10	80	8
0006	4032.5	6853.3	W13786.2	Y43460.0	209	39.4		112	34	78	21	1	1	98	598
0007	4037.6	6852.1	W13761.0	Y43491.0	24	36.6		13	1	12	11	20	20	60	367
0008	4038.4	6852.6	W13760.4	Y43496.4	22	36.6		29	8	21	20	20	20	60	529
0009	4038.8	6858.8	W13789.1	Y43503.5	24	37.2		79	3	76	73	10	10	80	276
0010	4041.4	6858.6	W13778.2	Y43519.7	35	36.1		130	28	102	96	15	5	80	357
0011	4043.2	6857.3	W13764.8	Y43529.9	12	38.8		0	0	0	0	0	0	100	1
0012	4049.9	6907.9	W13791.3	Y43580.5	12	38.8		142	27	115	103	2	96	2	276
0013	4055.7	6907.9	W13768.2	Y43616.6	184	38.8		360	184	176	133	1	94	5	506
0014	4101.8	6911.6	W13762.2	Y43657.8	164	32.3		9	1	8	8	80	10	10	46
0015	4103.9	6914.1	W13766.4	Y43673.2	174	30.6		1761	1329	432	207	30	55	15	5244
0016	4104.4	6922.0	W13805.4	Y43684.2	338	25.2		17	15	2	1	85	5	10	1978
0017	4106.7	6924.5	W13809.0	Y43701.1	1	22.4		13	1	12	10	50	30	20	598
0018	4109.4	6919.7	W13772.7	Y43712.8	12	28.4		6556	4754	1802	810	20	55	25	368
0019	4111.1	6915.9	W13745.7	Y43719.3	22	30.6		4	2	2	2	5	80	15	460
0020	4119.4	6919.2	W13727.5	Y43773.3	336	45.9		41	6	35	33	5	80	15	322
0021	4128.5	6919.1	W13686.8	Y43827.8	154	47.6		69	17	52	48	50	25	25	92
0022	4130.4	6919.8	W13682.0	Y43839.9	153	49.2		270	131	139	95	35	40	25	81
0023	4130.1	6923.0	W13700.4	Y43841.9	166	38.8		111	50	61	56	35	50	15	322
0024	4127.0	6923.7	W13718.0	Y43824.3	331	29.0		656	604	52	43	1	98	1	460
0025	4129.1	6927.2	W13727.4	Y43841.1	356	26.2		33	6	27	23	1	98	1	460
0026	4134.3	6928.4	W13710.5	Y43873.5	321	38.3		398	258	140	102	2	94	4	598
0027	4138.0	6929.1	W13697.4	Y43896.3	295	54.7		318	316	2	0	1	96	3	230
0028	4136.9	6933.3	W13725.4	Y43895.2	334	42.7		110	69	41	38	2	96	2	690
0029	4140.4	6937.5	W13732.5	Y43921.4	147	50.9		87	70	17	15	1	98	1	368
0030	4140.6	6943.5	W13765.0	Y43930.6	291	34.4		226	138	88	61	5	90	5	644
0031	4140.4	6945.2	W13775.4	Y43931.7	316	29.0		391	306	85	71	2	75	23	874
0032	4146.0	6948.2	W13766.6	Y43969.1	153	45.4		15	1	14	14	90	5	5	276
0033	4155.2	6945.8	W13709.5	Y44019.5	319	66.2		41	15	26	23	25	60	15	138
0034	4157.9	6953.0	W13737.7	Y44045.6	297	33.4		171	62	109	99	5	80	15	598
0035	4150.7	6950.4	W13757.1	Y43999.9	159	37.7		33	2	31	31	40	35	25	115
0036	4145.0	6950.3	W13783.1	Y43966.1	170	26.2		31	8	23	22	45	20	35	92
0037	4142.7	6950.8	W13796.5	Y43953.1	142	16.4		2	1	1	1	40	40	20	92
0038	4137.4	6945.9	W13792.9	Y43914.7	138	18.6		61	16	45	45	20	50	30	230
0039	4136.0	6941.7	W13775.8	Y43900.7	201	22.4		98	41	57	51	20	60	20	414
0040	4135.0	6936.7	W13752.7	Y43888.2	137	29.5		1349	1253	96	64	1	98	1	1380

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20 May – 23 June 2016

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Station	Position Lat.	Position 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)
0041	4133.8	6931.6	W13730.2	Y43874.6	296	31.2		122	49	73	54	2	96	2	1150
0042	4131.7	6931.3	W13738.0	Y43861.7	102	28.4		73	30	43	24	2	96	2	736
0043	4127.6	6930.3	W13750.8	Y43835.8	351	22.4		16	5	11	11	8	90	2	598
0044	4122.6	6928.2	W13761.4	Y43803.0	187	18.0		4	0	4	4	45	45	10	368
0045	4121.1	6921.5	W13732.2	Y43786.2	10	29.5		442	332	110	103	5	5	90	46
0046	4120.1	6917.9	W13717.6	Y43776.1	188	50.9		124	15	109	101	5	70	25	230
0047	4116.2	6916.4	W13726.6	Y43750.9	318	44.8		554	457	97	87	30	30	40	115
0048	4115.5	6912.8	W13710.8	Y43742.7	22	50.9		149	41	108	90	60	30	10	35
0049	4116.1	6910.6	W13696.8	Y43744.0	200	53.6		17	5	12	12	60	10	30	23
0050	4110.9	6858.2	W13655.8	Y43699.9	224	57.4		3570	29	3541	3402	65	15	20	225
0051	4108.0	6902.5	W13690.0	Y43686.8	213	56.9		2596	495	2101	1378	60	10	30	58
0052	4038.4	6834.6	W13674.0	Y43483.4	196	33.4		8	3	5	3	2	0	98	598
0053	4034.9	6838.7	W13707.1	Y43464.8	219	37.2		28	2	26	26	2	2	96	552
0054	4032.6	6840.4	W13724.0	Y43451.8	212	38.8		9	1	8	8	9	1	90	552
0055	4034.8	6832.5	W13678.2	Y43460.0	53	21.9		27	2	25	25	3	1	96	644
0056	4036.4	6826.1	W13642.0	Y43465.4	218	42.1		22	0	22	19	9	1	90	368
0057	4035.9	6822.1	W13625.4	Y43459.8	214	45.9		19	19	0	0	50	5	45	161
0058	4031.0	6828.0	W13671.8	Y43433.9	215	50.3		128	124	4	0	75	1	24	115
0059	4024.7	6824.3	W13678.7	Y43393.3	207	57.4		4	3	1	0	3	1	96	161
0060	4027.3	6818.5	W13642.3	Y43405.7	215	58.0		0	0	0	0	3	1	96	9
0061	4029.9	6817.8	W13629.1	Y43420.9	223	55.8		0	0	0	0	75	1	24	46
0062	4036.8	6811.1	W13571.5	Y43457.9	312	50.9		99	85	14	2	90	1	9	276
0063	4034.0	6809.6	W13575.8	Y43440.4	336	53.0		49	48	1	0	90	2	8	322
0064	4033.8	6758.6	W13527.4	Y43432.5	331	53.0		241	225	16	4	45	45	10	1081
0065	4039.9	6752.3	W13475.0	Y43464.0	335	45.9		604	305	299	207	39	1	60	414
0066	4037.8	6748.5	W13466.9	Y43449.6	315	45.9		643	155	488	280	90	0	10	368
0067	4034.6	6743.6	W13458.6	Y43428.3	309	54.1		231	184	47	17	95	0	5	506
0068	4036.3	6732.8	W13405.6	Y43431.7	292	54.7		146	140	6	0	15	0	85	230
0069	4041.0	6734.5	W13393.6	Y43459.3	287	48.7		0	0	0	0	0	0	0	0
0070	4041.9	6736.2	W13397.1	Y43465.4	108	46.5		925	459	466	288	60	15	25	598
0071	4045.1	6733.3	W13371.4	Y43481.6	325			506	184	322	224	40	0	60	230
0072	4051.5	6734.0	W13347.4	Y43517.8	317	41.6		398	373	25	25	5	0	95	460
0073	4055.4	6734.2	W13331.6	Y43539.6	304	39.4		14	10	4	4	10	0	90	230
0074	4051.3	6723.9	W13305.6	Y43509.9	252	47.0		239	159	80	77	65	0	35	276
0075	4056.6	6727.4	W13297.5	Y43541.4	303	41.0		42	18	24	24	5	0	95	276
0076	4059.7	6728.4	W13288.2	Y43559.1	305	38.8		12	2	10	8	2	0	98	1840
0077	4100.5	6734.5	W13310.7	Y43568.0	267	36.1		6	0	6	6	2	0	98	1656
0078	4057.6	6741.7	W13354.4	Y43557.2	255	35.5		29	1	28	27	9	1	90	690
0079	4053.8	6749.1	W13403.0	Y43541.2	255	33.4		12	1	11	11	1	1	98	1702
0080	4050.3	6752.1	W13431.1	Y43523.5	254	37.7		11	1	10	10	1	1	98	1794

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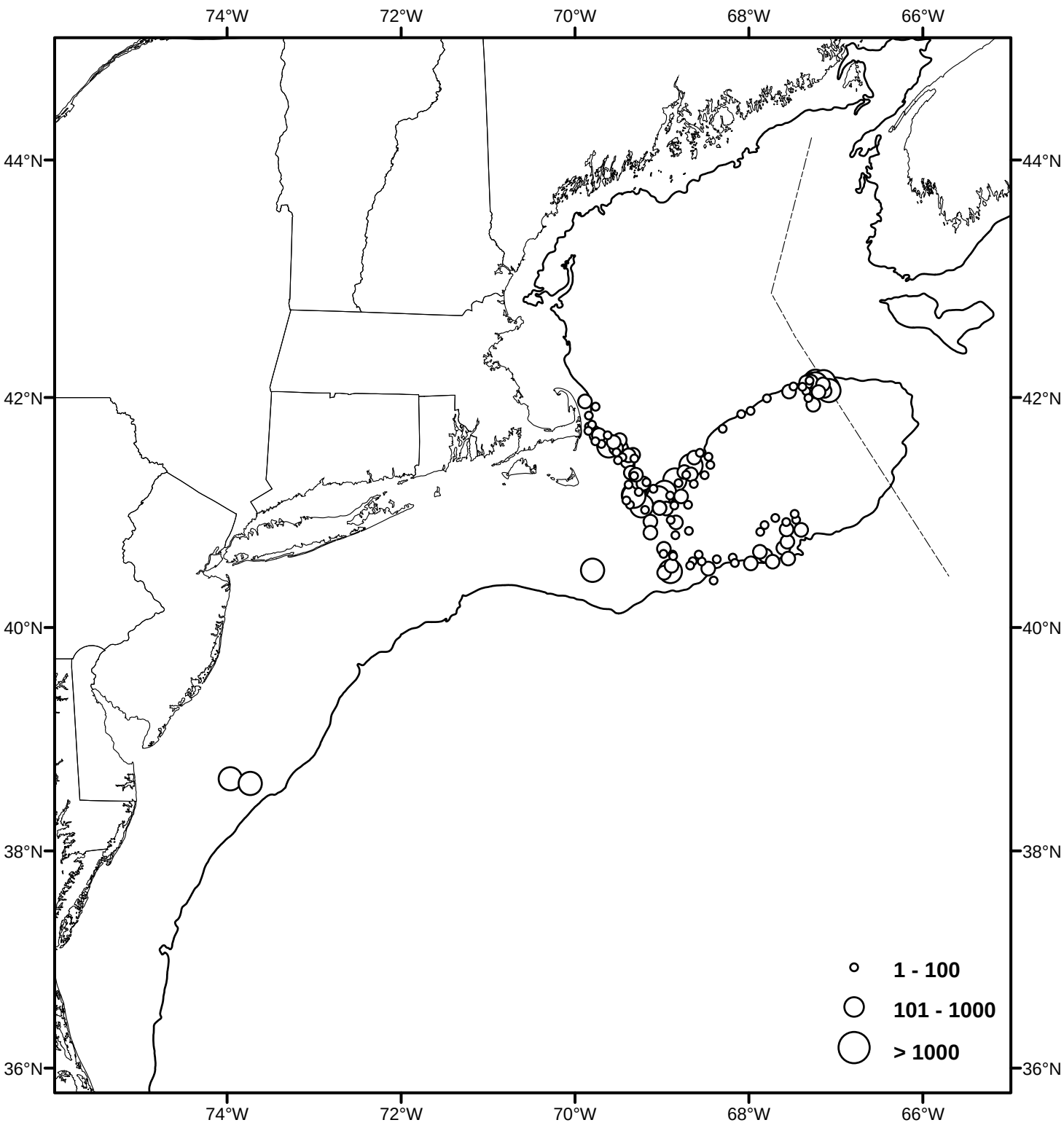
Station	Position Lat.	Position Long.	Loran TD's		Heading	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(l)
0081	4050.8	6841.3	W13656.5	Y43563.7	299	33.9		1	1	0	0	5	0	95	1426
0082	4053.6	6845.1	W13663.5	Y43583.8	324	29.5		0	0	0	0	2	5	93	1610
0083	4048.5	6850.6	W13711.0	Y43557.3	43	37.2		2	1	1	1	5	5	90	230
0084	4156.3	6715.5	W12965.1	Y43843.7	186	32.8		158	145	13	13	85	0	15	1633
0085	4159.6	6718.9	W12962.1	Y43863.4	14	30.1		15	13	2	1	15	0	85	1288
0086	4202.7	6711.9	W12917.2	Y43871.5	86	27.9		140	83	57	45	39	1	60	1012
0087	4203.3	6707.7	W12897.1	Y43870.2	271	27.9		181	169	12	10	65	1	34	1242
0088	4203.5	6704.7	W12884.0	Y43868.1	319	31.2		1165	925	240	205	70	1	29	1196
0089	4205.0	6705.7	W12880.1	Y43876.4	316	29.5		5091	1971	3120	2115	45	1	54	598
0090	4206.7	6708.8	W12883.6	Y43887.8	293	31.2		141	35	106	96	94	1	5	1702
0091	4208.0	6708.4	W12875.2	Y43893.7	300	37.7		1522	237	1285	1080	48	4	48	690
0092	4208.3	6713.9	W12895.9	Y43900.8	224	50.3		2312	75	2237	2112	90	1	9	276
0093	4206.9	6713.9	W12903.3	Y43894.1	168	36.1		1209	88	1121	1055	49	2	49	690
0094	4206.7	6716.1	W12913.4	Y43895.4	180	37.2		1799	39	1760	1760	49	2	49	506
0095	4208.1	6717.2	W12910.5	Y43903.3	226	53.0		636	12	624	597	48	4	48	276
0096	4208.6	6718.1	W12911.6	Y43906.7	237	66.2		35	3	32	30	9	1	90	138
0097	4207.7	6720.4	W12925.9	Y43904.8	248	54.1		107	8	99	93	25	0	75	115
0098	4203.2	6720.3	W12949.2	Y43882.6	278	28.4		89	46	43	37	60	5	35	368
0099	4205.4	6723.0	W12948.9	Y43896.3	278	33.9		71	22	49	45	40	50	10	115
0100	4205.6	6729.2	W12974.1	Y43903.9	245	52.5		20	1	19	18	40	0	60	92
0101	4203.0	6732.3	W13001.0	Y43894.4	227	35.0		121	99	22	20	60	30	10	115
0102	4202.7	6738.2	W13028.1	Y43899.2	235	53.6		51	0	51	50	30	0	70	322
0103	4159.5	6747.5	W13085.8	Y43893.3	214	50.3		38	1	37	36	65	10	25	69
0104	4158.0	6747.4	W13093.2	Y43885.5	203	37.2		16	0	16	16	5	0	95	1610
0105	4156.2	6748.6	W13107.8	Y43877.6	194	32.8		0	0	0	0	5	0	95	2346
0106	4153.7	6750.8	W13130.5	Y43867.2	192	29.0		0	0	0	0	2	0	98	1633
0107	4151.6	6755.7	W13163.3	Y43861.6	209	32.8		3	0	3	2	3	2	95	2622
0108	4153.0	6758.7	W13169.9	Y43872.1	220	47.0		23	5	18	17	9	1	90	14
0109	4151.4	6805.3	W13208.5	Y43871.0	223	58.5		90	24	66	51	10	1	89	46
0110	4147.9	6806.7	W13232.6	Y43854.1	205	34.4		5	0	5	4	1	1	98	1656
0111	4148.7	6812.0	W13253.4	Y43864.2	217	54.1		0	0	0	0	0	0	100	1
0112	4143.8	6818.0	W13306.2	Y43844.6	214	38.3		7	2	5	5	9	1	90	230
0113	4139.7	6826.3	W13366.1	Y43831.4	200	49.8		3	0	3	3	9	1	90	276
0114	4135.9	6826.6	W13385.8	Y43810.8	184	36.6		6	0	6	6	4	1	95	2436
0115	4131.4	6833.8	W13442.2	Y43793.5	191	56.9		23	1	22	21	10	5	85	276
0116	4128.9	6837.7	W13473.0	Y43783.5	190	58.5		826	169	657	513	4	1	95	598
0117	4124.8	6839.9	W13502.8	Y43762.5	159	54.1		2298	58	2240	2145	49	2	49	138
0118	4120.2	6839.9	W13523.7	Y43736.1	191	47.0		241	15	226	222	50	0	50	92
0119	4120.0	6843.2	W13540.8	Y43738.3	174	51.4		51	1	50	50	5	0	95	92
0120	4121.4	6844.5	W13541.0	Y43747.8	222	56.3		305	20	285	193	10	10	80	115

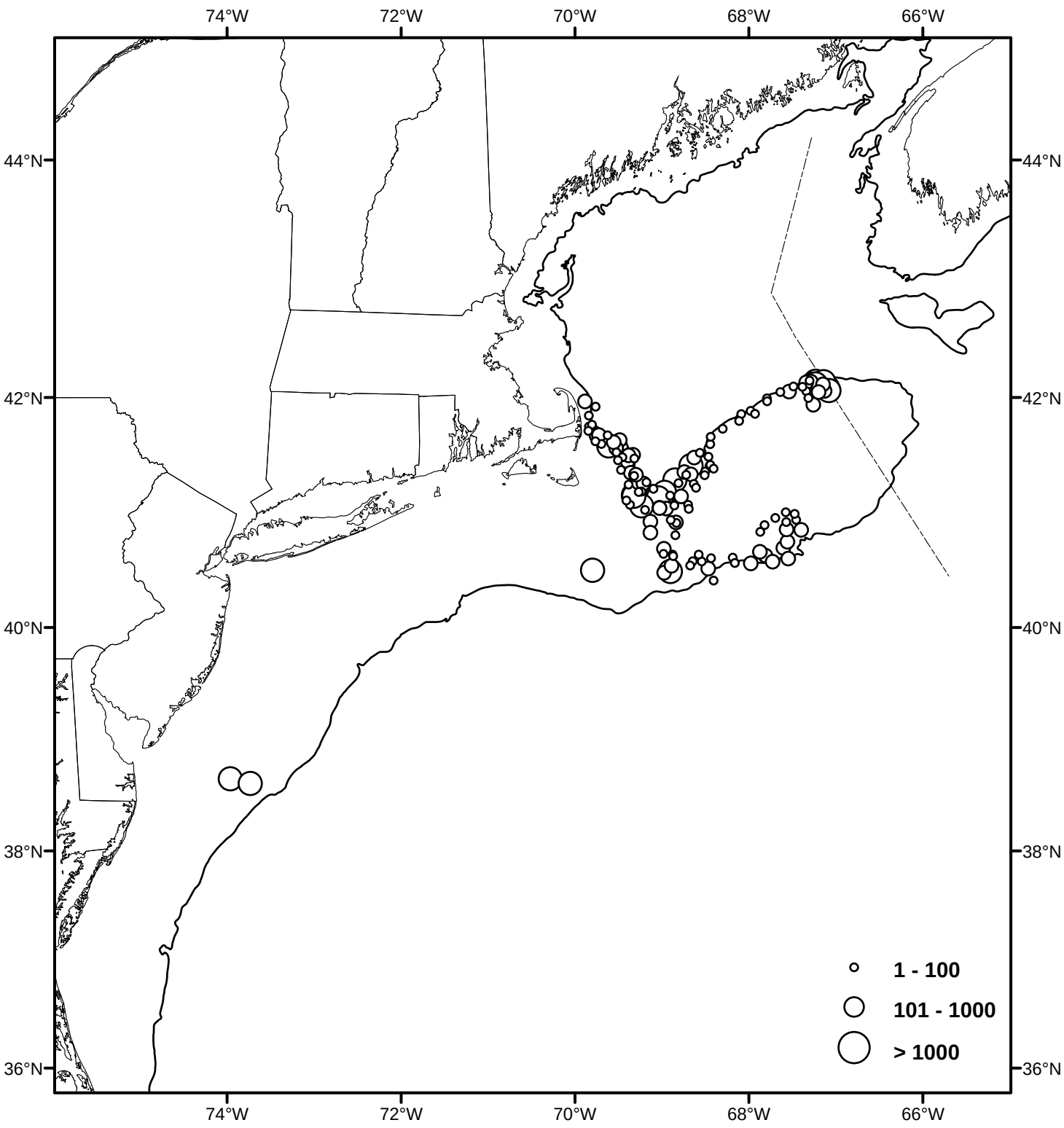
UNOLS R/V HUGH R. SHARP 2016 SEA SCALLOP SURVEY
20 May – 23 June 2016

Station Data								Number of Scallops				By-Catch			
	Position		Loran				Bottom								
Station	Lat.	Long.	TD's		Heading	Depth (FM)	Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(l)
0121	4117.3	6851.0	W13591.7	Y43730.6	228	59.6		4127	45	4082	4059	20	20	60	115
0122	4115.7	6848.5	W13586.3	Y43718.6	169	54.7		56	4	52	49	2	0	98	759
0123	4109.2	6854.3	W13643.5	Y43685.9	349	54.1		28	1	27	26	2	0	98	1541
0124	4104.1	6851.3	W13650.3	Y43652.5	135	39.9		55	29	26	23	10	80	10	368
0125	4129.4	6827.8	W13422.4	Y43775.9	179	45.9		9	2	7	5	10	10	80	230
0126	4125.1	6826.5	W13436.1	Y43750.4	350	41.0		14	1	13	12	10	0	90	322
0127	4123.2	6824.3	W13434.3	Y43737.5	27	37.2		5	0	5	5	1	1	98	2300
0128	4124.8	6827.0	W13439.9	Y43749.2	232	41.0		16	0	16	16	3	1	96	138
0129	4124.1	6831.8	W13466.3	Y43750.2	234	45.9		0	0	0	0	1	98	1	1
0130	4121.8	6830.1	W13468.6	Y43735.4	225	39.9		28	0	28	28	14	1	85	92
0131	4119.8	6830.5	W13479.6	Y43724.4	186	36.1		15	1	14	13	5	0	95	529
0132	4115.2	6837.9	W13536.2	Y43705.2	183	43.2		68	8	60	58	50	10	40	92
0133	4113.3	6836.4	W13537.3	Y43692.7	195	34.4		21	0	21	21	65	0	35	69
0134	4108.8	6846.7	W13607.4	Y43676.2	172	43.2		221	64	157	137	65	5	30	81
0135	4105.0	6842.0	W13600.7	Y43649.3	172	38.3		0	0	0	0	0	0	0	0
0136	4104.4	6841.9	W13602.7	Y43645.6	168	37.2		5	2	3	1	19	1	80	253
0137	4102.3	6841.4	W13609.2	Y43632.7	186	35.5		1	0	1	1	9	1	90	736
0138	4057.7	6844.7	W13644.6	Y43608.1	191	37.7		0	0	0	0	98	1	1	1
0139	4057.8	6844.6	W13643.7	Y43608.6	192	37.7		0	0	0	0	45	45	10	115
0140	4055.2	6850.2	W13681.9	Y43597.8	347	43.7		142	7	135	122	80	1	19	92
0141	4054.9	6849.9	W13681.6	Y43595.7	356	39.4		48	0	48	48	49	2	49	46
0142	4056.5	6853.9	W13694.8	Y43608.9	4	39.9		42	13	29	26	80	1	19	161
0143	4102.5	6857.0	W13685.4	Y43648.2	7	45.4		470	24	446	398	45	45	10	161
0144	4102.5	6857.0	W13685.4	Y43648.2	10	45.9		398	10	388	350	45	45	10	46
0145	4102.9	6901.6	W13706.8	Y43655.0	356	47.0		318	50	268	216	40	40	20	69
0146	4102.7	6901.6	W13707.7	Y43653.7	5	45.4		316	54	262	216	19	80	1	46
0147	4110.2	6858.8	W13661.9	Y43696.3	44	54.1		3979	23	3956	3940	60	0	40	46
0148	4112.7	6905.8	W13686.8	Y43718.5	324	74.4		43	9	34	26	40	0	60	35
0149	4111.3	6914.1	W13735.5	Y43718.6	338	35.5		8	0	8	8	0	100	0	460
0150	4108.9	6919.3	W13772.7	Y43709.3	351	28.4		1782	1296	486	165	30	50	20	230
0151	4108.9	6919.4	W13773.2	Y43709.4	2	28.4		1346	1028	318	138	15	70	15	322
0152	4114.9	6923.0	W13766.8	Y43750.2	2	27.9		47	6	41	40	15	70	15	184
	Total								86533	32770	51553	34454			

NEFSC SEA SCALLOP SURVEY 2016
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Less Than 90 mm



NEFSC SEA SCALLOP SURVEY 2016
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Greater Than or Equal to 90 mm



NEFSC SEA SCALLOP SURVEY 2016
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Total Number