

RESOURCE SURVEY REPORT  
Catch Summary  
NOAA Fisheries Service  
Northeast Fisheries Science Center  
Sea Scallop Survey  
Cape Hatteras -Georges Bank  
13 June – 20 July 2013

**Submitted to:** NOAA, NEFSC

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**Date:** 2013

# Resource Survey Report

## Sea Scallop Survey



Cape Hatteras – Georges Bank

13 June – 20 July 2013

UNOLS R/V *Hugh R. Sharp*

NOAA Fisheries Service

Northeast Fisheries Science Center

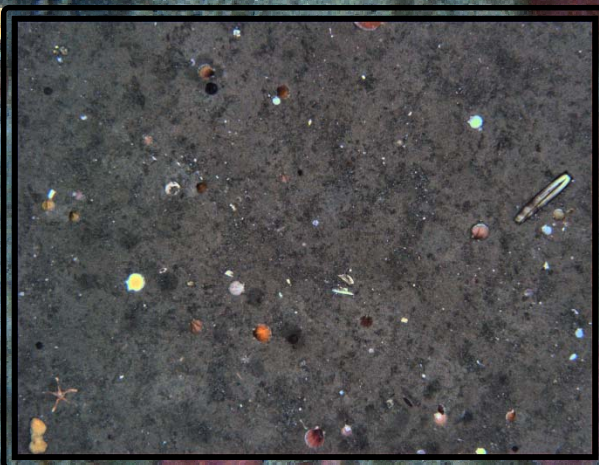
Woods Hole, MA 02543



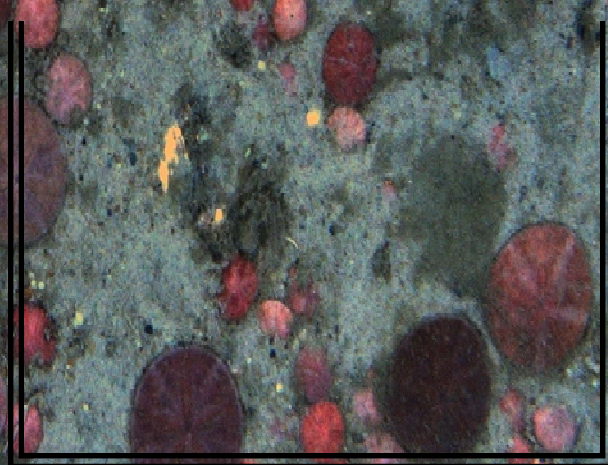
A scientist measuring scallop seed using an electronic measuring board



Retrieval of HabCam V4 by the R/V *Hugh R. Sharp*



Juvenile sea scallops pictured on the seafloor and swimming through the water column



An abundance of sea scallops from a dredge tow just east of the Great South Channel

# RESOURCE SURVEY REPORT

## Catch Summary

NOAA Fisheries Service  
Northeast Fisheries Science Center

### **Sea Scallop Survey**

Cape Hatteras - Georges Bank  
13 June – 20 July 2013

The following field notes, charts, and station data indicate the distribution of sea scallops during the 2013 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. HabCam V4 was towed for approximately 15 days over the course of the three weeks; not all transects were on the same day. The HabCam imaged along a cruise track of approximately 1,345 nm in the Mid-Atlantic Bight (MAB) and about 841 nm on Georges Bank, including the Great South Channel. The total production of paired images was approximately 16 terabytes (TB) for the raw tiff paired images. These data translate into 7,267,485 image pairs; 4,470,775 image pairs were collected in the MAB and south, while 2,796,710 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: A Rough Start but a Successful Leg**

The overall goal for Leg I was to cover the area south of New Jersey with both dredge stations and the HabCam V4 system. Although we were met with a few challenges before the survey even began, Leg I of the annual Sea Scallop Survey was a huge success. Before beginning the survey and during dockside testing, it was determined that the single pass slip ring on the port trawl winch, responsible for holding the fiber optic cable necessary for the HabCam V4 vehicle, was not functioning correctly. With the help of various members from WHOI, and the UNOLS office at WHOI, we were able to acquire a replacement and have it installed without too much delay.

This year, in an effort to upgrade our data collection and storage capabilities for HabCam, we were able to acquire two file servers. These would replace the removable disk drives that were used in the past. Our goal was to collect images directly to a server, with the intention of processing and annotating these images at sea. Although we were not able to annotate images at sea for various reasons, it was a positive step forward and we hope to have two new, and more powerful, servers that will be able to both record and process in real-time for next year's survey.

An interesting observation to note was the presence of large numbers of juvenile scallops in both the Hudson Canyon and Elephant Truck access areas. These high numbers were seen in both dredge tows and also by the scientists while piloting the HabCam V4 vehicle. This is a similar trend to what was seen during the 2012 survey and may be a positive sign for possible strong recruitment events in these areas.

### **Leg II: Small Surprises**

One of the highlights of Leg II was a tow of over 63,000 scallop seed individuals, which occurred just east of the Nantucket Lightship Closed Area at station 131. This catch, weighing 52.92 kg (116.67 lbs), was one of largest tows of spat in NEFSC survey history, and the entire scientific crew was excited to see such outstanding evidence of recruitment in that area. Later, toward the end of the leg, we decided to capitalize on the seed discovery by towing HabCam through the general vicinity of station 131. Not only did the HabCam images provide further visual confirmation on the presence of spat, but they also granted us insight into seed motility and behavior, as there were several images that exhibited active spat up in the water column.

### **Leg III: Bringing it Home**

Leg III found the R/V *Hugh R Sharp* working in the Nantucket Lightship Access Area, the Great South Channel and finally along the northern flank of Georges Bank. Despite

the challenging conditions found in these areas, including large sand waves and boulder fields, the team was able to successfully deploy and pilot the HabCam V4 vehicle without incident. After completing HabCam operations along the northern flank of Georges Bank, it was time to complete the final dredge stations and work our way home. Of note, it was interesting to see juvenile haddock in most of these tows. Although it was only a few in some cases, it remains to be seen if this provides evidence to the existence of a strong year class of these fish.

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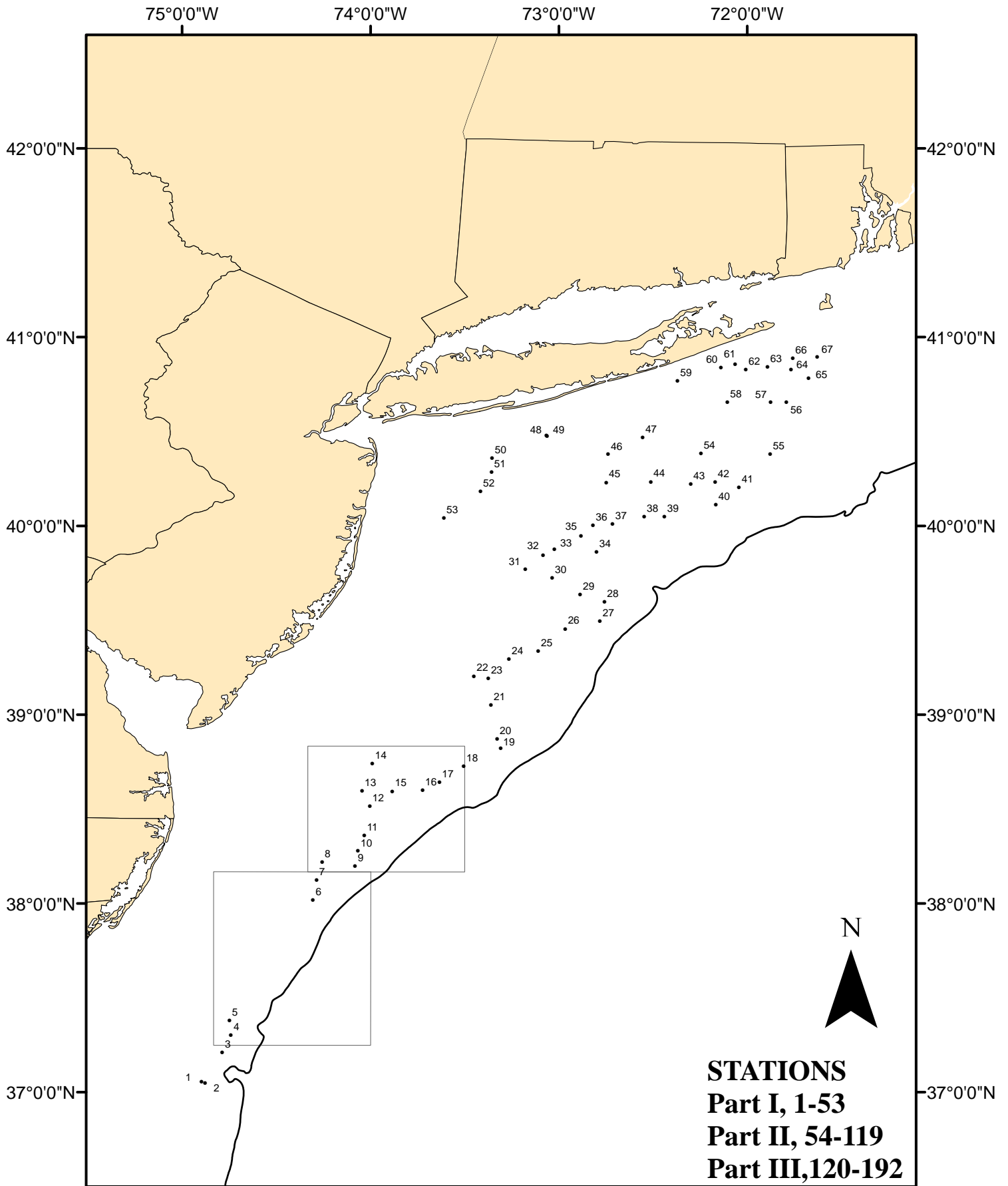


Figure 1. Dredge tows made from UNOLS R/V *Hugh R. Sharp* (12-01), during NOAA Fisheries Service, Northeast Fisheries Center Sea Scallop Survey, 13 June - 20 July 2013

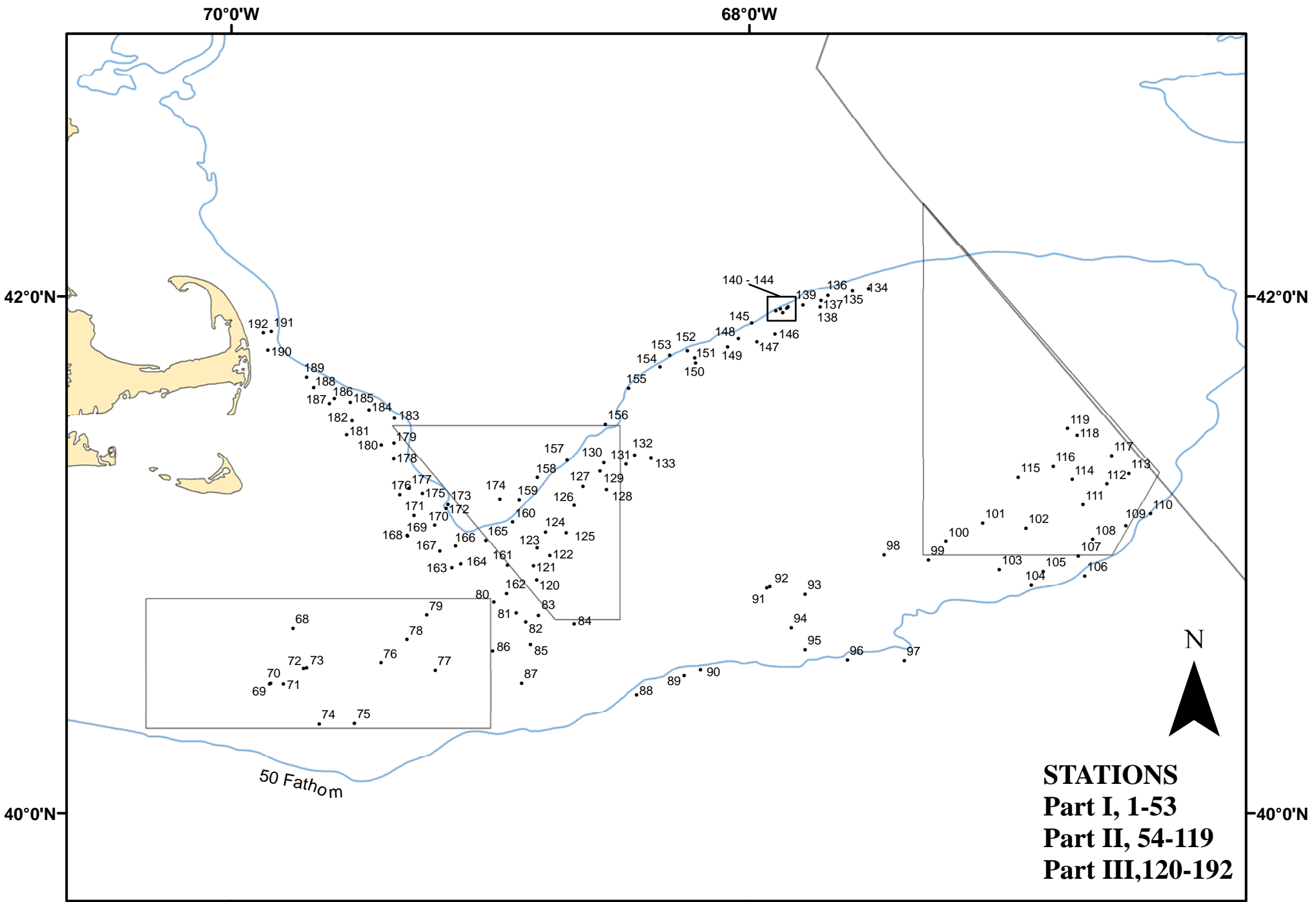


Figure 2. Dredge tows made from UNOLS R/V *Hugh R. Sharp* (12-01), during NOAA Fisheries Service, Northeast Fisheries Center Sea Scallop Survey, 13 June - 20 July 2013



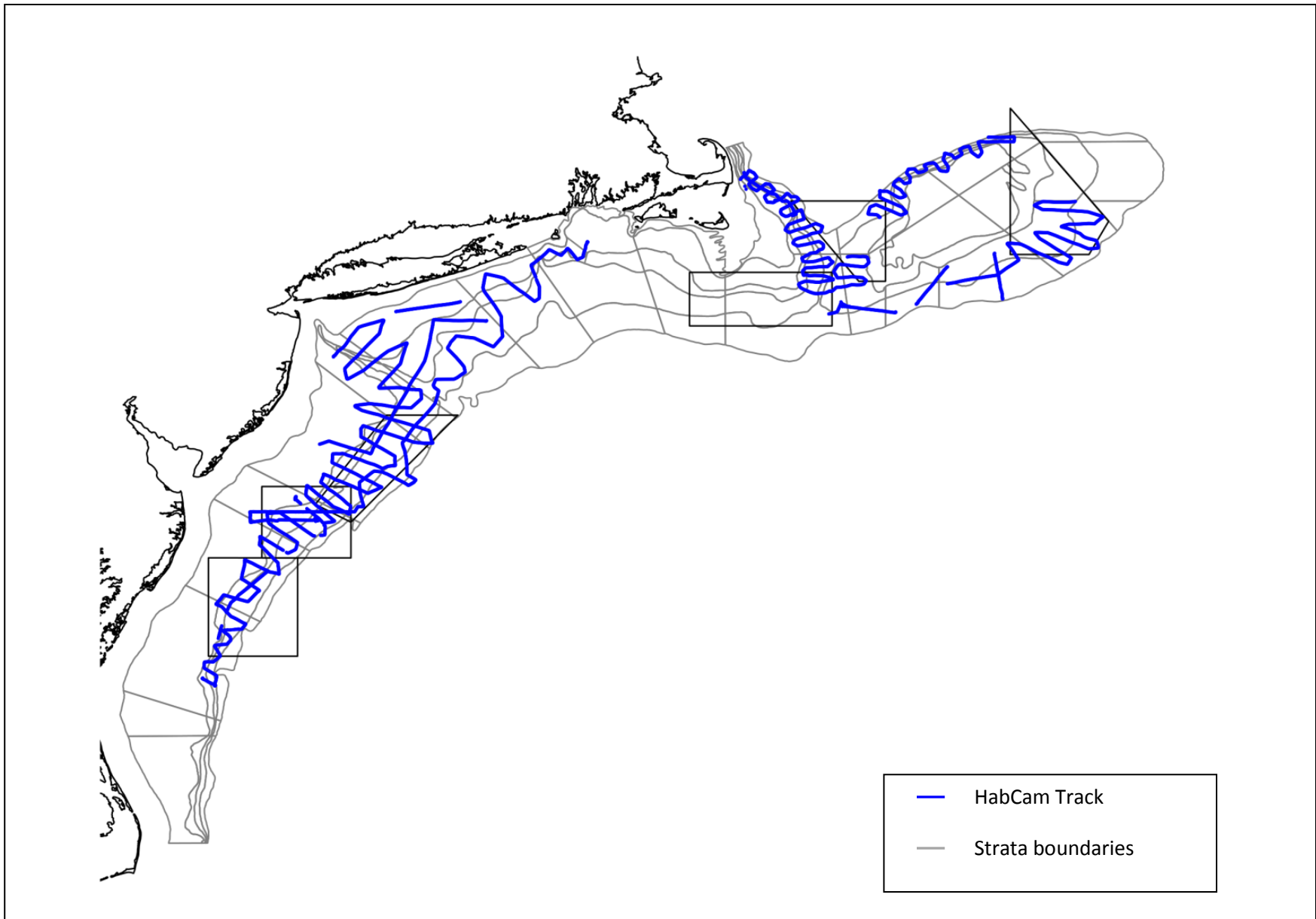


Figure 3: NOAA HabCam track from Mid-Atlantic Bight to Georges Bank, as followed by UNOLS R/V *Hugh R. Sharp* during NOAA Fisheries Service, Northeast Fisheries Science Center Sea Scallop Survey, June 13 – July 20, 2013.

HUGH R. SHARP 2013 SEA SCALLOP SURVEY  
June 17 - July 16

Station	Station Data					Number of Scallops				By-Catch				
	Position		Loran TD's	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total Vol. (lt)	
	Lat.	Long.												heading
0001	3703.3	7453.7	X26906.3	Y41488.9	84	26.2	0	0	0	0	0	0	0	
0002	3702.9	7452.6	X26900.9	Y41486.8	280	28.4	3	3	0	0	20	70	10	276
0003	3712.6	7447.2	X26889.3	Y41600.9	346	32.8	395	337	58	17	30	25	45	104
0004	3718.1	7444.4	X26883.7	Y41664.9	4	31.2	522	335	187	55	70	10	20	58
0005	3722.9	7444.9	X26892.5	Y41715.5	4	31.2	459	457	2	1	80	10	10	161
0006	3801.1	7418.3	X26813.0	Y42163.2	2	31.7	79	16	63	24	60	10	30	92
0007	3807.5	7417.1	X26815.4	Y42232.8	0	24.1	293	211	82	57	80	5	15	161
0008	3813.2	7415.3	X26813.8	Y42295.4	2	24.6	320	42	278	126	40	5	55	115
0009	3811.9	7404.9	X26755.8	Y42292.3	59	39.4	5984	4991	993	566	45	10	45	35
0010	3816.6	7403.9	X26756.3	Y42342.6	23	36.6	23	8	15	11	25	55	20	207
0011	3821.6	7401.9	X26751.7	Y42397.0	14	35.5	330	121	209	88	10	5	85	340
0012	3831.0	7400.2	X26754.5	Y42497.1	2	28.4	209	144	65	49	10	40	50	414
0013	3835.7	7402.6	X26774.9	Y42544.8	4	29.0	515	395	120	20	15	75	10	127
0014	3844.5	7359.4	X26768.9	Y42639.5	352	26.2	85	3	82	66	70	10	20	150
0015	3835.6	7353.0	X26719.1	Y42550.3	3	30.6	281	190	91	51	60	10	30	150
0016	3835.9	7343.4	X26663.6	Y42559.7	330	32.8	2080	1118	962	104	25	10	65	138
0017	3838.4	7338.0	X26634.7	Y42588.7	30	32.8	1704	1488	216	20	15	5	80	138
0018	3843.5	7330.2	X26593.6	Y42644.8	75	37.2	347	246	101	85	70	10	20	58
0019	3849.4	7318.5	X26528.2	Y42709.3	248	42.7	14	8	6	6	10	55	35	184
0020	3852.2	7319.6	X26537.3	Y42736.7	227	38.3	1559	1324	235	186	50	20	30	81
0021	3903.1	7321.6	X26560.0	Y42844.7	184	33.9	195	57	138	134	60	10	30	138
0022	3912.2	7327.0	X26604.7	Y42934.9	183	28.4	150	34	116	65	10	5	85	805
0023	3911.4	7322.4	X26573.8	Y42927.3	207	29.0	100	29	71	33	10	50	40	322
0024	3917.7	7315.8	X26537.3	Y42990.1	201	31.7	39	14	25	19	30	10	60	322
0025	3920.3	7306.5	X26477.8	Y43015.2	191	34.4	157	77	80	65	45	10	45	138
0026	3927.3	7257.9	X26425.5	Y43081.7	215	36.1	261	193	68	56	40	0	60	138
0027	3929.8	7246.8	X26351.2	Y43103.2	197	35.5	853	790	63	49	20	30	50	138
0028	3935.9	7245.4	X26345.2	Y43159.9	203	37.7	150	49	101	71	20	10	70	150
0029	3938.2	7253.2	X26401.7	Y43184.1	220	36.6	181	33	148	126	25	15	60	81
0030	3943.5	7302.1	X26470.0	Y43237.7	212	30.1	149	37	112	80	10	5	85	656
0031	3946.2	7310.6	X26534.4	Y43267.2	359	25.2	125	16	109	81	15	10	75	184
0032	3950.7	7305.0	X26499.4	Y43307.7	16	37.2	2	0	2	2	5	15	80	265
0033	3952.6	7301.4	X26475.3	Y43323.8	330	38.8	25	2	23	22	10	15	75	138
0034	3951.7	7247.9	X26375.0	Y43308.1	258	30.6	139	24	115	111	10	0	90	345
0035	3956.7	7252.9	X26417.0	Y43357.4	247	29.0	120	14	106	102	5	0	95	966
0036	4000.1	7249.1	X26392.1	Y43386.5	93	30.1	143	24	119	101	1	1	98	1150
0037	4000.5	7242.8	X26345.0	Y43386.0	109	32.3	150	56	94	75	3	2	95	552
0038	4003.0	7232.8	X26271.4	Y43401.7	77	34.4	370	231	139	132	45	10	45	115
0039	4002.9	7226.3	X26222.0	Y43396.3	101	36.6	240	139	101	89	60	10	30	115
0040	4006.8	7210.0	X26099.8	Y43418.5	8	38.8	0	0	0	0	10	5	85	184

HUGH R. SHARP 2013 SEA SCALLOP SURVEY  
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Station	Station Data					Bottom Depth (FM)	Temp (F)	Number of Scallops				By-Catch			
	Position		Loran TD's	heading	Depth			Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total Vol. (lt)
	Lat.	Long.													
0041	4012.2	7202.6	X26044.3	Y43458.9	332	36.1	164	64	100	85	7	3	90	92	
0042	4013.8	7210.1	X26102.9	Y43478.7	238	35.0	26	0	26	26	15	5	80	138	
0043	4013.3	7218.0	X26164.3	Y43481.0	289	33.9	28	6	22	21	15	20	65	104	
0044	4014.0	7230.7	X26264.2	Y43498.0	285	33.9	106	3	103	101	15	10	75	196	
0045	4013.8	7244.8	X26374.6	Y43508.3	309	31.2	46	5	41	33	10	25	65	322	
0046	4022.7	7244.2	X26381.3	Y43587.7	55	26.8	347	76	271	155	35	10	55	92	
0047	4028.1	7233.3	X26300.4	Y43624.1	85	25.2	342	94	248	164	20	10	70	276	
0048	4028.7	7303.9	X26550.0	Y43662.4	221	15.9	0	0	0	0	0	0	0	0	
0049	4028.5	7303.7	X26548.0	Y43660.4	244	16.4	105	91	14	8	1	0	99	1196	
0050	4021.5	7321.2	X26673.8	Y43613.2	205	18.0	30	3	27	11	2	0	98	828	
0051	4017.1	7321.4	X26666.4	Y43571.5	173	19.1	70	9	61	38	5	5	90	782	
0052	4011.0	7324.9	X26681.3	Y43515.9	184	20.8	101	36	65	54	7	3	90	184	
0053	4002.6	7336.6	X26752.6	Y43442.1	235	19.7	160	39	121	81	4	2	94	828	
0054	4022.9	7214.7	X26144.5	Y43560.4	15	32.8	35	2	33	31	10	10	80	230	
0055	4022.7	7152.6	X25967.8	Y43537.7	14	39.4	0	0	0	0	5	5	90	23	
0056	4039.3	7147.4	X25931.5	Y43666.5	30	32.3	88	32	56	45	10	5	85	828	
0057	4039.4	7152.5	X25974.2	Y43673.2	360	30.1	282	47	235	187	5	5	90	414	
0058	4039.3	7206.2	X26089.0	Y43688.3	2	27.9	267	20	247	228	15	5	80	127	
0059	4046.0	7222.1	X26232.3	Y43763.1	352	19.1	17	11	6	5	4	1	95	897	
0060	4050.4	7208.4	X26121.6	Y43781.2	8	20.8	2	1	1	0	3	1	96	736	
0061	4051.3	7203.8	X26083.2	Y43782.4	18	20.8	27	15	12	11	4	1	95	483	
0062	4049.6	7200.4	X26051.6	Y43764.4	15	23.0	45	26	19	16	4	1	95	391	
0063	4050.5	7153.4	X25992.4	Y43762.4	16	22.4	78	30	48	45	4	1	95	391	
0064	4049.7	7145.9	X25927.0	Y43746.6	10	29.0	73	9	64	56	8	2	90	92	
0065	4046.9	7140.4	X25877.4	Y43718.0	11	36.1	3	3	0	0	5	1	94	69	
0066	4053.2	7145.4	X25926.4	Y43773.2	354	29.0	43	9	34	32	8	2	90	46	
0067	4053.6	7137.7	X25860.1	Y43766.3	18	29.5	466	34	432	329	20	5	75	92	
0068	4043.0	6945.7	W14012.6	Y43569.3	174	25.7	1	0	1	1	1	1	98	1242	
0069	4030.0	6951.1	W14086.8	Y43486.5	8	38.8	0	0	0	0	0	0	0	0	
0070	4030.2	6950.9	W14085.1	Y43487.7	359	38.8	1920	1920	0	0	15	5	80	2	
0071	4030.0	6947.9	W14070.1	Y43483.9	359	39.4	35707	35702	5	3	1	98	1	58	
0072	4033.5	6943.2	W14033.5	Y43503.8	358	36.1	0	0	0	0	0	0	0	0	
0073	4033.8	6942.5	W14028.8	Y43505.2	318	35.5	24	0	24	24	94	3	3	58	
0074	4020.7	6939.6	W14058.9	Y43414.9	22	39.9	6	1	5	5	94	1	5	1104	
0075	4020.8	6931.4	W14016.9	Y43410.0	20	39.4	3674	3672	2	2	75	10	15	23	
0076	4034.9	6925.3	W13936.3	Y43498.9	23	30.1	173	74	99	98	2	1	97	1472	
0077	4033.2	6912.7	W13879.0	Y43478.3	14	39.4	234	170	64	58	5	90	5	253	
0078	4040.3	6919.3	W13885.9	Y43529.1	22	29.5	508	186	322	290	90	5	5	55	
0079	4046.0	6914.7	W13840.9	Y43561.7	358	27.3	4	2	2	2	3	1	96	736	
0080	4049.1	6859.2	W13751.0	Y43568.1	360	42.1	9	6	3	3	1	1	98	920	

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Station	Station Data					Bottom Temp (F)	Number of Scallops				By-Catch			
	Position		Loran TD's	heading	Depth (FM)		Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts (Percentage)	Total Vol. (lt)
	Lat.	Long.												
0081	4046.5	6853.9	W13735.1	Y43547.6	357	35.5	24	5	19	16	10	67	23	161
0082	4044.3	6851.8	W13733.5	Y43532.4	17	35.5	35	11	24	21	60	20	20	138
0083	4045.9	6848.8	W13712.5	Y43539.9	11	37.2	128	29	99	76	20	60	20	184
0084	4044.0	6840.5	W13680.0	Y43521.8	14	33.9	27	11	16	16	1	1	98	690
0085	4039.1	6850.7	W13748.4	Y43499.3	16	36.1	227	195	32	32	1	1	98	184
0086	4037.6	6859.5	W13797.2	Y43496.5	18	38.3	536	407	129	125	45	5	50	58
0087	4030.2	6852.7	W13791.9	Y43445.1	15	40.5	63589	63569	20	19	94	3	3	92
0088	4027.4	6826.1	W13676.8	Y43410.8	3	53.0	351	347	4	0	65	10	25	138
0089	4031.9	6815.0	W13608.5	Y43431.2	17	54.1	8	8	0	0	75	10	15	46
0090	4033.3	6811.3	W13586.2	Y43437.3	22	53.6	29	29	0	0	80	10	10	138
0091	4052.3	6755.9	W13439.5	Y43537.6	41	33.9	0	0	0	0	0	0	0	0
0092	4052.7	6755.2	W13434.7	Y43539.4	245	34.4	3	0	3	3	1	1	98	483
0093	4050.8	6747.0	W13406.5	Y43522.8	45	37.2	54	11	43	36	10	1	89	46
0094	4043.0	6750.3	W13453.5	Y43480.6	228	22.4	61	15	46	32	95	1	4	127
0095	4038.0	6747.0	W13459.6	Y43449.8	34	44.3	620	516	104	22	90	2	8	46
0096	4035.5	6737.2	W13427.5	Y43429.7	30	53.0	439	435	4	0	95	1	4	150
0097	4035.4	6724.1	W13372.8	Y43421.7	25	56.9	0	0	0	0	0	0	0	0
0098	4100.0	6728.7	W13288.2	Y43561.0	37	37.7	80	36	44	44	5	1	94	1725
0099	4058.8	6718.5	W13250.7	Y43547.3	35	41.6	44	26	18	16	65	5	30	69
0100	4103.0	6714.4	W13215.3	Y43567.0	36	37.2	30	10	20	20	7	2	91	529
0101	4107.3	6705.9	W13161.5	Y43583.9	34	36.1	102	73	29	29	80	5	15	92
0102	4106.1	6655.9	W13127.0	Y43570.5	44	39.9	145	116	29	25	45	10	45	23
0103	4056.6	6702.0	W13193.2	Y43524.4	186	44.3	537	417	120	98	45	10	45	92
0104	4052.9	6654.7	W13180.3	Y43500.1	34	50.3	1730	1669	61	58	70	25	5	943
0105	4056.0	6651.9	W13155.9	Y43514.8	36	48.1	288	267	21	21	90	5	5	184
0106	4055.0	6642.3	W13123.1	Y43503.6	56	54.7	85	85	0	0	80	15	5	1127
0107	4059.7	6643.7	W13107.9	Y43529.0	45	42.1	607	505	102	101	90	5	5	138
0108	4103.5	6640.4	W13078.5	Y43546.6	41	43.7	2040	1917	123	121	90	5	5	46
0109	4106.7	6632.7	W13035.2	Y43558.1	44	53.0	14446	14210	236	188	90	5	5	23
0110	4109.5	6627.0	W13001.4	Y43568.6	32	49.2	495	495	0	0	96	2	2	32
0111	4111.6	6642.6	W13050.5	Y43589.8	59	41.0	181	106	75	69	5	5	90	230
0112	4116.4	6637.1	W13007.7	Y43610.4	37	45.9	552	447	105	100	40	5	55	69
0113	4118.8	6632.1	W12977.9	Y43618.9	60	48.7	915	789	126	123	65	5	30	58
0114	4117.4	6645.2	W13034.0	Y43621.3	254	42.1	135	62	73	66	7	1	92	506
0115	4118.0	6657.6	W13079.6	Y43633.7	58	37.2	45	19	26	25	20	5	75	161
0116	4120.5	6649.5	W13036.2	Y43640.4	58	39.9	54	26	28	28	80	5	15	51
0117	4122.9	6636.1	W12973.8	Y43642.5	52	47.0	181	98	83	68	82	3	15	96
0118	4127.7	6644.0	W12981.2	Y43672.6	55	43.2	67	36	31	30	85	5	10	138
0119	4129.3	6646.2	W12982.1	Y43682.4	80	39.4	37	8	29	29	90	2	8	152
0120	4054.1	6849.2	W13681.5	Y43590.3	273	39.9	234	3	231	220	60	20	20	368

## HUGH R. SHARP 2013 SEA SCALLOP SURVEY

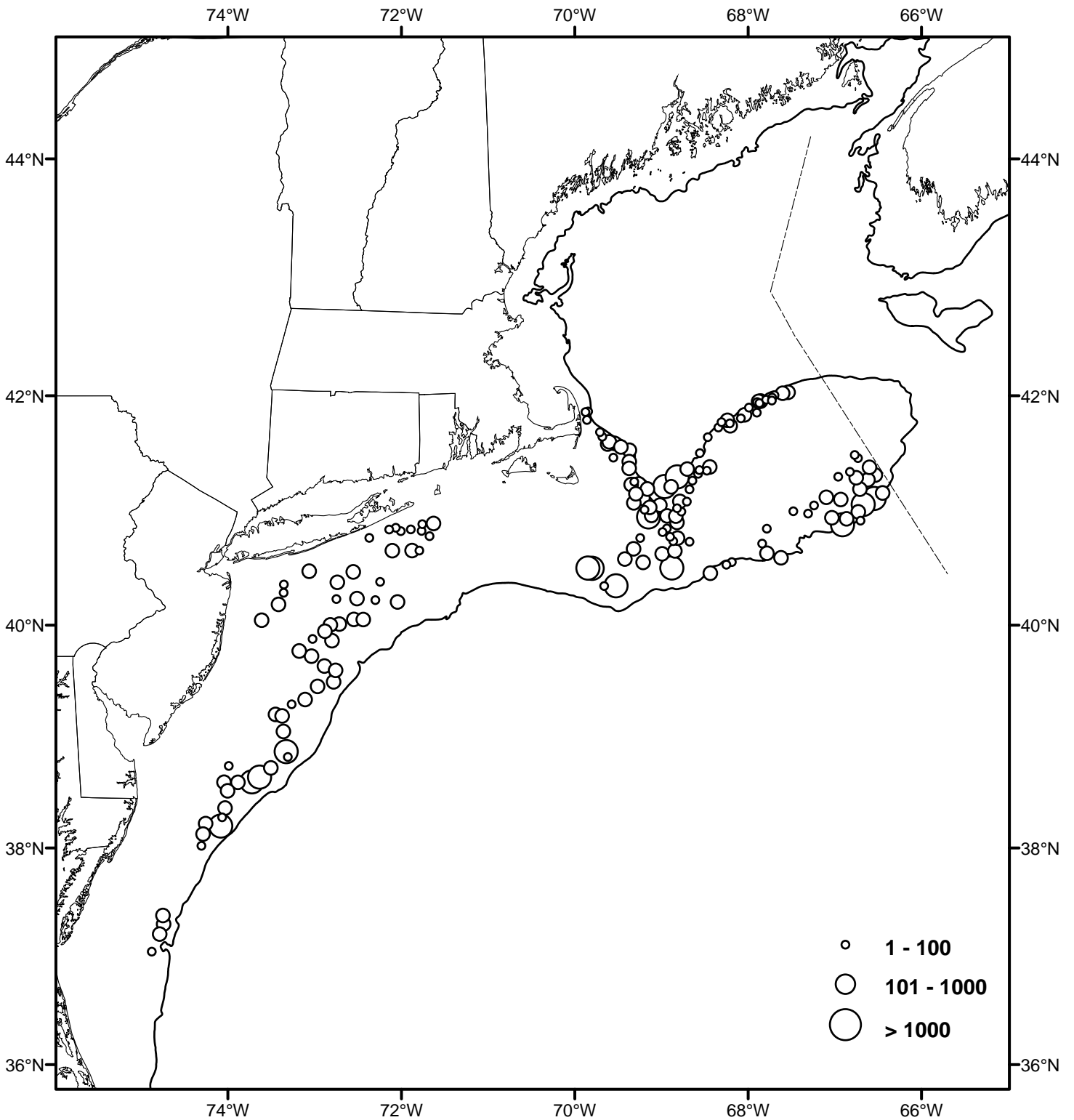
June 17 - July 16

Station	Station Data						Number of Scallops				By-Catch				
	Position		Loran		Depth (FM)	Bottom		Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol. (lt)
	Lat.	Long.	TD's	heading		Temp (F)									
0121	4057.4	6850.0	W13671.8	Y43611.0	194	43.7	176	104	72	31	50	40	10	364	
0122	4059.8	6846.2	W13643.2	Y43622.1	93	35.5	26	9	17	13	75	15	10	104	
0123	4101.6	6849.1	W13649.9	Y43635.5	26	35.0	7	2	5	5	0	5	95	414	
0124	4105.1	6847.2	W13625.8	Y43654.7	36	37.2	162	89	73	46	75	5	20	161	
0125	4105.0	6842.4	W13602.6	Y43649.6	23	33.9	32	9	23	21	20	60	20	299	
0126	4111.4	6840.5	W13565.7	Y43685.6	28	35.0	19	8	11	10	10	10	80	241	
0127	4115.9	6838.5	W13536.0	Y43709.8	30	35.5	99	33	66	48	25	50	25	250	
0128	4115.1	6833.1	W13513.3	Y43699.9	24	31.7	2	0	2	2	1	1	98	1102	
0129	4119.5	6834.6	W13500.9	Y43726.7	2	38.3	42	11	31	28	20	5	75	69	
0130	4121.4	6833.7	W13487.9	Y43736.7	106	41.6	27	8	19	17	20	0	80	42	
0131	4121.1	6828.5	W13464.1	Y43729.8	15	40.5	85	14	71	70	25	0	75	276	
0132	4123.0	6826.5	W13445.8	Y43738.6	6	39.4	121	27	94	93	25	0	75	368	
0133	4122.4	6822.7	W13430.4	Y43731.4	27	33.4	4	0	4	4	1	0	99	1564	
0134	4201.7	6732.3	W13007.8	Y43887.9	91	28.4	212	103	109	79	90	5	5	81	
0135	4201.2	6736.1	W13026.8	Y43889.4	263	29.5	189	96	93	70	90	5	5	46	
0136	4200.2	6741.8	W13056.9	Y43890.6	168	33.9	76	15	61	61	90	5	5	69	
0137	4158.9	6743.4	W13070.8	Y43885.7	241	30.6	12	1	11	11	5	5	90	495	
0138	4157.4	6743.6	W13079.4	Y43878.3	314	26.2	4	2	2	1	10	0	90	713	
0139	4157.9	6747.5	W13094.1	Y43885.1	237	37.2	14	2	12	12	10	0	90	276	
0140	4157.5	6751.0	W13111.9	Y43886.9	212	48.1	0	0	0	0	50	50	0	1	
0141	4157.2	6751.3	W13114.8	Y43885.7	213	47.6	190	55	135	128	70	0	30	104	
0142	4157.0	6752.8	W13122.6	Y43886.3	209	52.5	137	62	75	67	50	0	50	253	
0143	4156.1	6752.2	W13124.5	Y43881.0	317	43.7	84	38	46	44	60	0	40	115	
0144	4156.7	6753.8	W13128.7	Y43885.9	222	54.7	93	34	59	57	5	0	95	368	
0145	4153.8	6759.4	W13169.0	Y43877.1	241	53.6	28	4	24	23	1	0	99	115	
0146	4151.3	6754.0	W13157.1	Y43858.2	178	28.4	35	16	19	14	5	0	95	186	
0147	4149.5	6758.2	W13185.3	Y43853.3	241	30.6	1	0	1	1	1	0	99	851	
0148	4150.1	6802.5	W13202.1	Y43861.1	238	37.7	207	115	92	62	5	0	95	276	
0149	4148.3	6805.0	W13222.7	Y43854.4	258	33.9	25	5	20	19	1	0	99	1150	
0150	4144.5	6812.4	W13276.2	Y43842.2	282	30.1	147	13	134	131	10	0	90	46	
0151	4145.7	6812.6	W13271.2	Y43848.9	242	36.1	40	24	16	13	5	0	95	368	
0152	4147.3	6814.3	W13271.3	Y43859.3	247	50.3	106	53	53	47	1	0	99	276	
0153	4146.3	6818.4	W13295.8	Y43858.5	220	54.1	10	5	5	5	1	0	99	368	
0154	4143.5	6820.6	W13320.1	Y43845.8	245	42.1	37	18	19	16	1	0	99	966	
0155	4138.5	6827.9	W13379.7	Y43826.6	183	60.7	25	17	8	2	5	0	95	345	
0156	4130.3	6833.3	W13444.9	Y43786.8	199	54.7	31	21	10	10	5	40	55	368	
0157	4121.9	6842.1	W13526.8	Y43748.2	233	54.1	724	139	585	549	75	5	20	219	
0158	4117.9	6849.1	W13579.6	Y43732.1	218	58.0	3188	67	3121	2772	0	20	80	92	
0159	4112.7	6853.2	W13622.9	Y43705.7	193	54.1	119	19	100	98	5	0	95	920	
0160	4107.5	6854.8	W13653.3	Y43676.2	193	50.3	1	0	1	0	5	0	95	679	

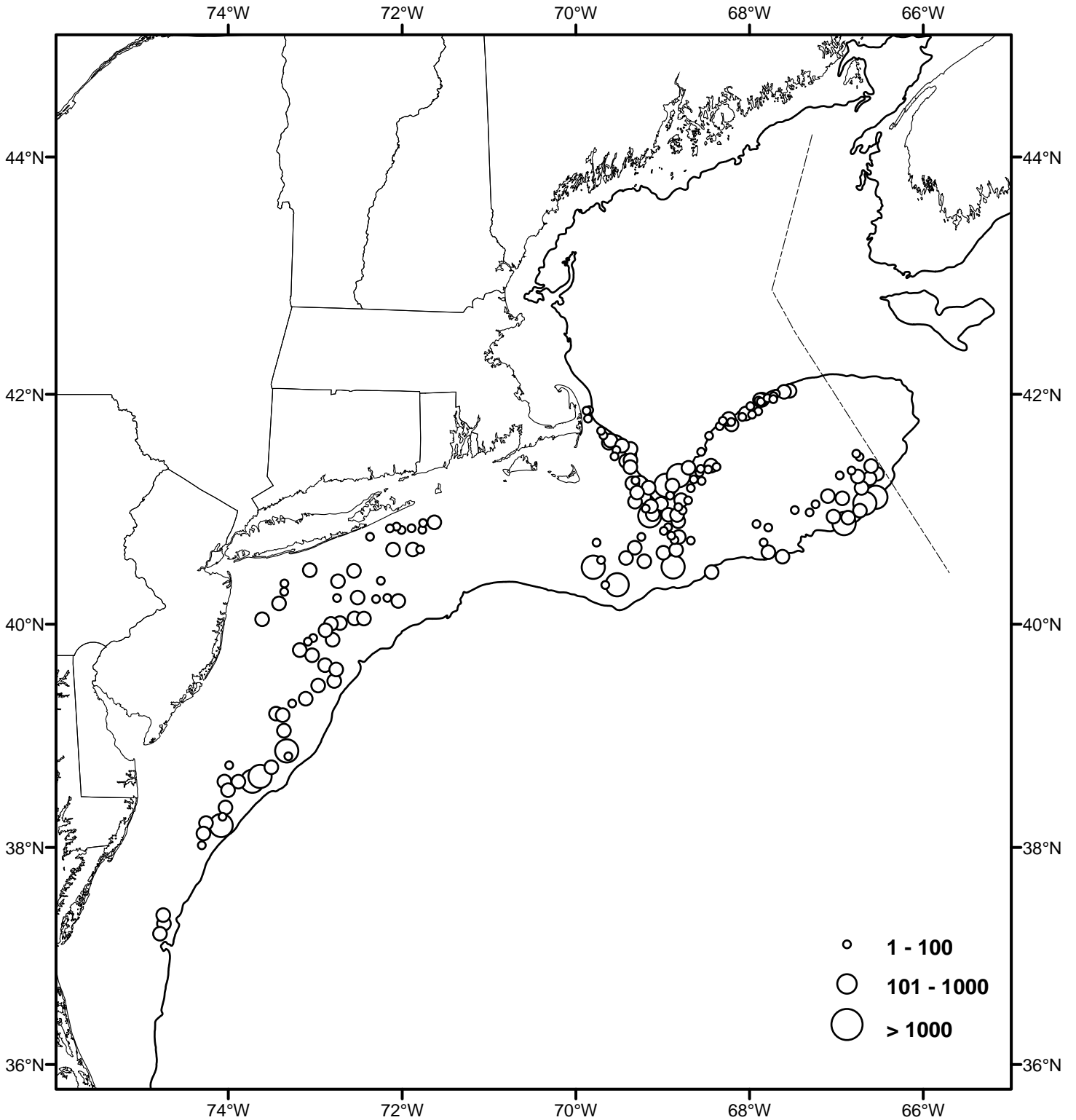
HUGH R. SHARP 2013 SEA SCALLOP SURVEY  
 June 17 - July 16

Station	Station Data					Number of Scallops				By-Catch				
	Position		Loran TD's	heading	Depth (FM)	Bottom Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total Vol. (lt)
	Lat.	Long.												
0161	4057.5	6856.0	W13701.1	Y43616.9	168	42.7	280	116	164	126	25	30	45	69
0162	4051.0	6856.2	W13728.5	Y43577.3	189	36.1	78	21	57	51	15	85	0	230
0163	4057.0	6908.9	W13768.0	Y43625.6	199	36.1	1060	540	520	332	25	50	25	782
0164	4057.8	6906.8	W13754.1	Y43628.6	156	39.9	460	134	326	204	25	50	25	322
0165	4103.2	6901.0	W13702.6	Y43656.2	310	45.9	361	248	113	79	5	20	75	368
0166	4102.0	6908.1	W13743.5	Y43655.7	332	40.5	337	78	259	242	2	95	3	1380
0167	4100.8	6911.7	W13766.8	Y43651.7	319	32.8	80	23	57	43	10	10	80	92
0168	4104.4	6919.2	W13790.8	Y43681.4	58	27.3	0	0	0	0	0	10	90	5
0169	4104.4	6919.1	W13790.3	Y43681.3	26	27.9	376	132	244	191	10	70	20	1380
0170	4106.8	6912.8	W13747.7	Y43689.8	22	30.6	426	6	420	408	25	50	25	874
0171	4109.1	6917.6	W13763.0	Y43708.8	332	26.2	135	25	110	101	12	85	3	368
0172	4110.8	6910.2	W13717.5	Y43711.5	25	51.9	0	0	0	0	100	0	0	1
0173	4111.6	6909.7	W13711.5	Y43715.9	190	54.1	325	27	298	274	40	40	20	104
0174	4112.9	6857.7	W13644.7	Y43711.4	179	58.5	5062	189	4873	2838	80	10	10	150
0175	4114.2	6915.7	W13731.5	Y43738.0	330	40.5	764	78	686	464	20	65	15	207
0176	4113.9	6920.9	W13760.0	Y43741.7	313	30.6	212	36	176	164	15	80	5	920
0177	4115.4	6918.8	W13742.6	Y43748.6	342	35.5	26	7	19	18	75	15	10	173
0178	4122.3	6922.3	W13731.2	Y43794.4	341	28.4	197	50	147	138	15	75	10	357
0179	4125.8	6922.3	W13715.8	Y43815.4	346	31.2	202	93	109	91	15	80	5	771
0180	4125.4	6925.2	W13733.1	Y43816.4	340	21.9	672	0	672	664	10	80	10	1380
0181	4127.9	6933.3	W13765.7	Y43841.3	165	18.0	12	3	9	9	5	70	25	874
0182	4131.2	6932.0	W13744.0	Y43859.5	164	23.5	20	0	20	20	5	90	5	1150
0183	4131.8	6922.2	W13688.5	Y43851.1	193	47.0	814	374	440	214	25	50	25	184
0184	4133.5	6928.1	W13712.5	Y43868.4	174	36.1	370	62	308	284	10	80	10	506
0185	4135.3	6932.4	W13727.8	Y43884.5	141	36.1	455	232	223	84	5	75	20	230
0186	4136.2	6936.1	W13744.0	Y43894.6	330	35.0	397	220	177	121	10	70	20	230
0187	4135.0	6937.2	W13755.4	Y43888.9	339	27.3	414	341	73	52	5	90	5	184
0188	4138.8	6940.9	W13758.7	Y43916.4	327	33.9	87	35	52	48	5	90	5	184
0189	4141.1	6942.5	W13757.1	Y43932.2	354	41.6	52	15	37	37	25	70	5	115
0190	4147.5	6951.5	W13778.3	Y43982.6	346	27.3	82	30	52	49	40	50	10	115
0191	4151.9	6950.7	W13753.2	Y44007.4	5	34.4	64	31	33	29	65	30	5	150
0192	4151.5	6952.5	W13765.3	Y44007.6	197	25.7	7	4	3	3	75	10	15	173
Total							173487	147050	25587	18376				

**NEFSC SEA SCALLOP SURVEY 2013**  
**NOAA Fisheries Service**  
**SEA SCALLOPS - Number/Tow**  
**Less Than 90 mm**



**NEFSC SEA SCALLOP SURVEY 2013**  
**NOAA Fisheries Service**  
**SEA SCALLOPS - Number/Tow**  
**Greater Than or Equal to 90 mm**





**NEFSC SEA SCALLOP SURVEY 2013**  
**NOAA Fisheries Service**  
**SEA SCALLOPS - Number/Tow**  
**Total Number**

