Resource Survey Report

Sea Scallop Survey

Mid-Atlantic Bight – Georges Bank

16 May – 21 June 2017

UNOLS R/V *Hugh R. Sharp*

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

Atlantic sea scallops (*Placopecten magellanicus*) in a HabCam image of Elephant Trunk.

Scientists deploy a bottom grab sampler to support additional research on scallops.

A large catch of sea scallops from a fixed monitoring station.

RESOURCE SURVEY REPORT
Catch Summary

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The following charts and station data indicate the distribution of sea scallops during the 2017 Sea Scallop Survey conducted aboard the UNOLS R/V *Hugh R. Sharp*. Additionally, the included appendix describes a sampling system on the scallop cruise where the Northeast Fisheries Science Center, in collaboration with the Woods Hole Oceanographic Institution, deployed a fiber-optic towed vehicle fitted with stereo cameras in the proximity of standard dredge hauls for the entire survey area. 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, 69-link-long, case-hardened sweep chain 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, data are summarized from audited catch files generated from the Fisheries Scientific Computer System. Scallop catch is reported in numbers, bycatch is recorded in liters, and depth in fathoms. Catches are reported in three categories of shell height: less than 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 bycatch is also included.
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Appendix 1

The Northeast Fisheries Science Center collaborated with the Woods Hole Oceanographic Institution to integrate a stereo-optic towed vehicle (HabCam V4), 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 survey legs, HabCam V4 was deployed throughout the scallop strata. Dredge tows would often 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 imaged along a cruise track of approximately 1415nm in the Mid-Atlantic Bight and approximately 1156nm throughout the Great South Channel and Georges Bank. In total, about 8,436,648 image pairs were acquired from both the Mid-Atlantic Bight and Georges Bank.

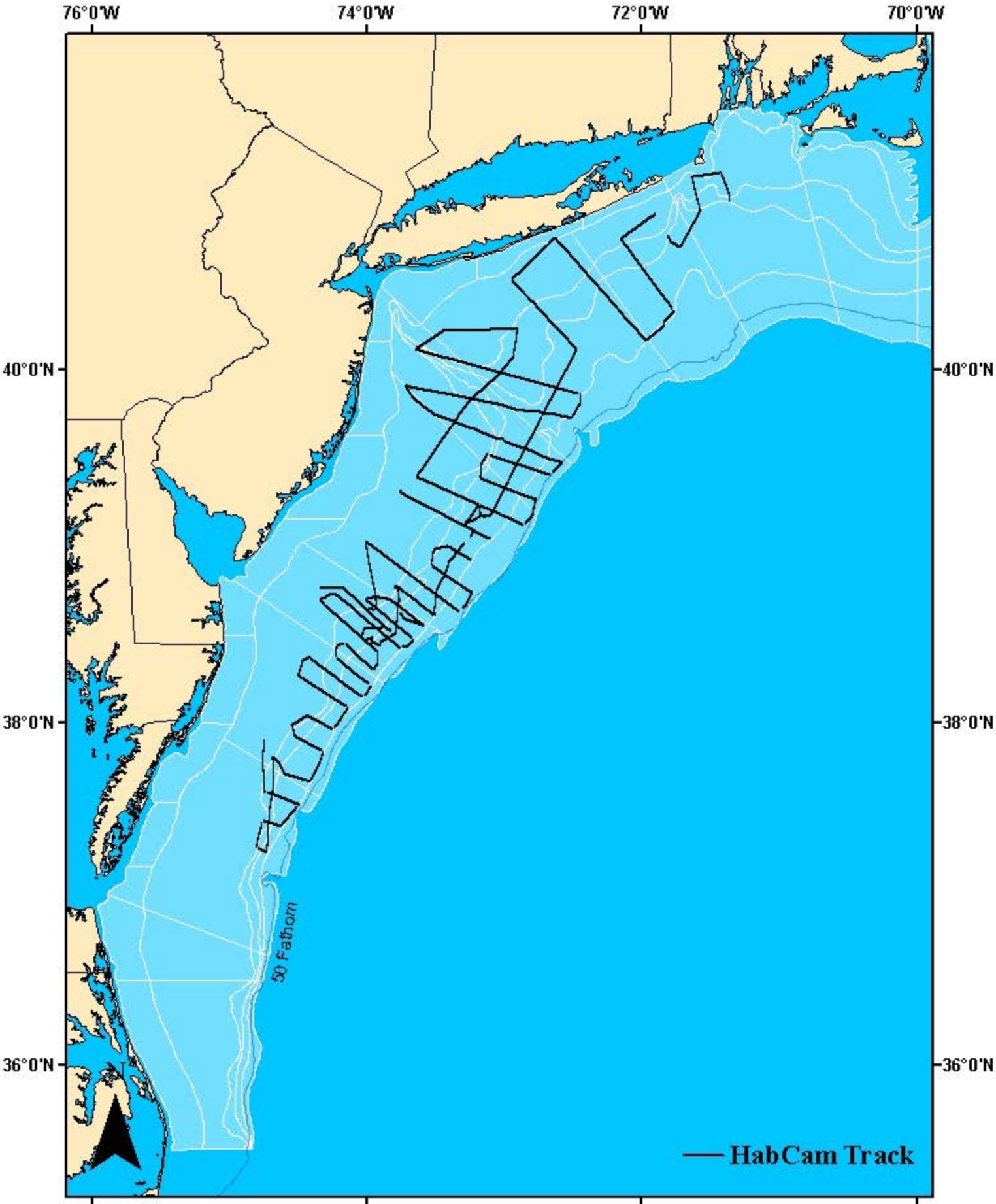

Figure 1. Approximate Mid-Atlantic Bight NOAA HabCam track, as followed by UNOLS R/V *Hugh R. Sharp* during NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

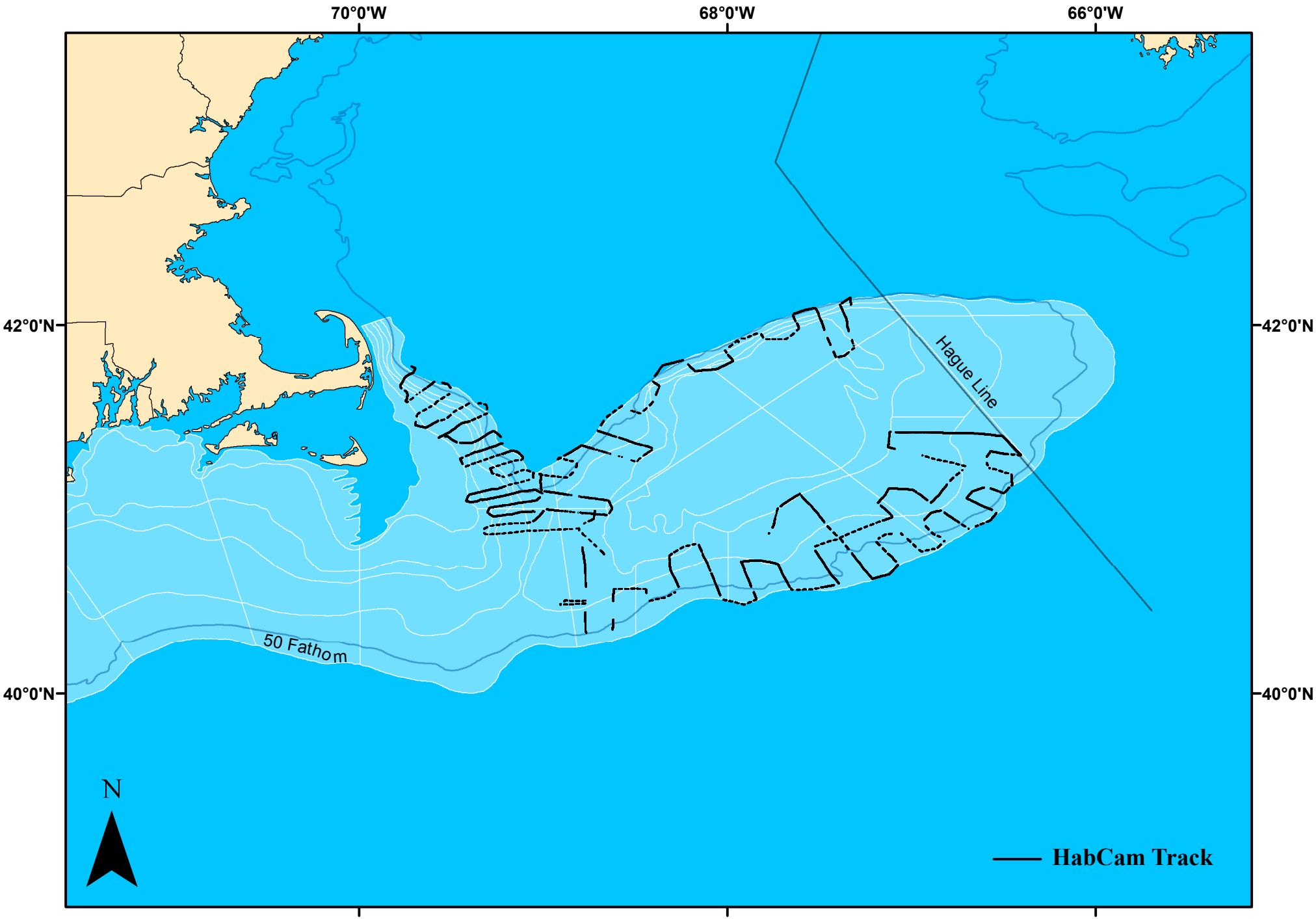

Figure 2. Approximate Georges Bank NOAA HabCam track, as followed by UNOLS R/V*Hugh R. Sharp* during NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

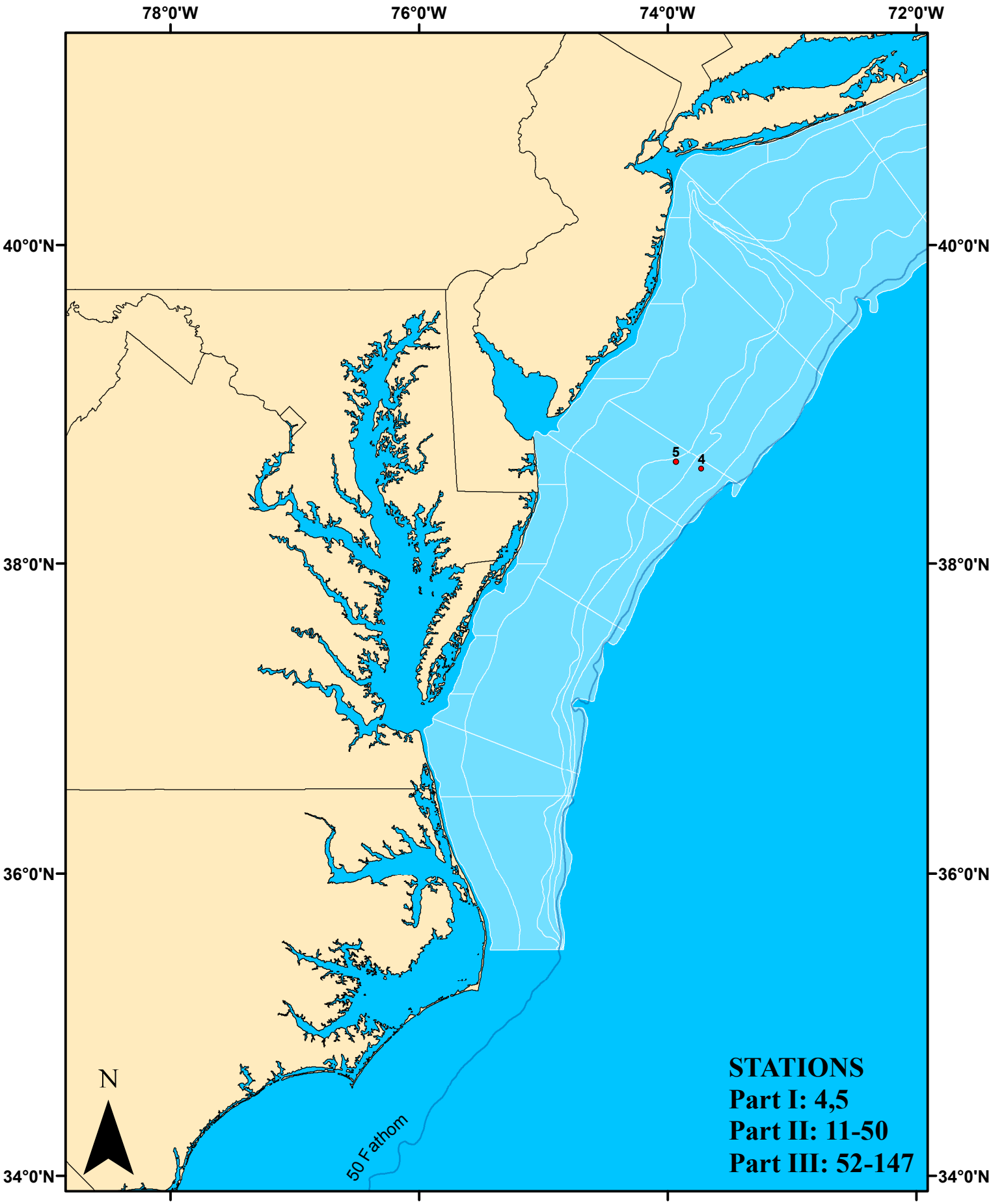

Figure 3. Dredge tows made from UNOLS R/V *Hugh R. Sharp* during NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

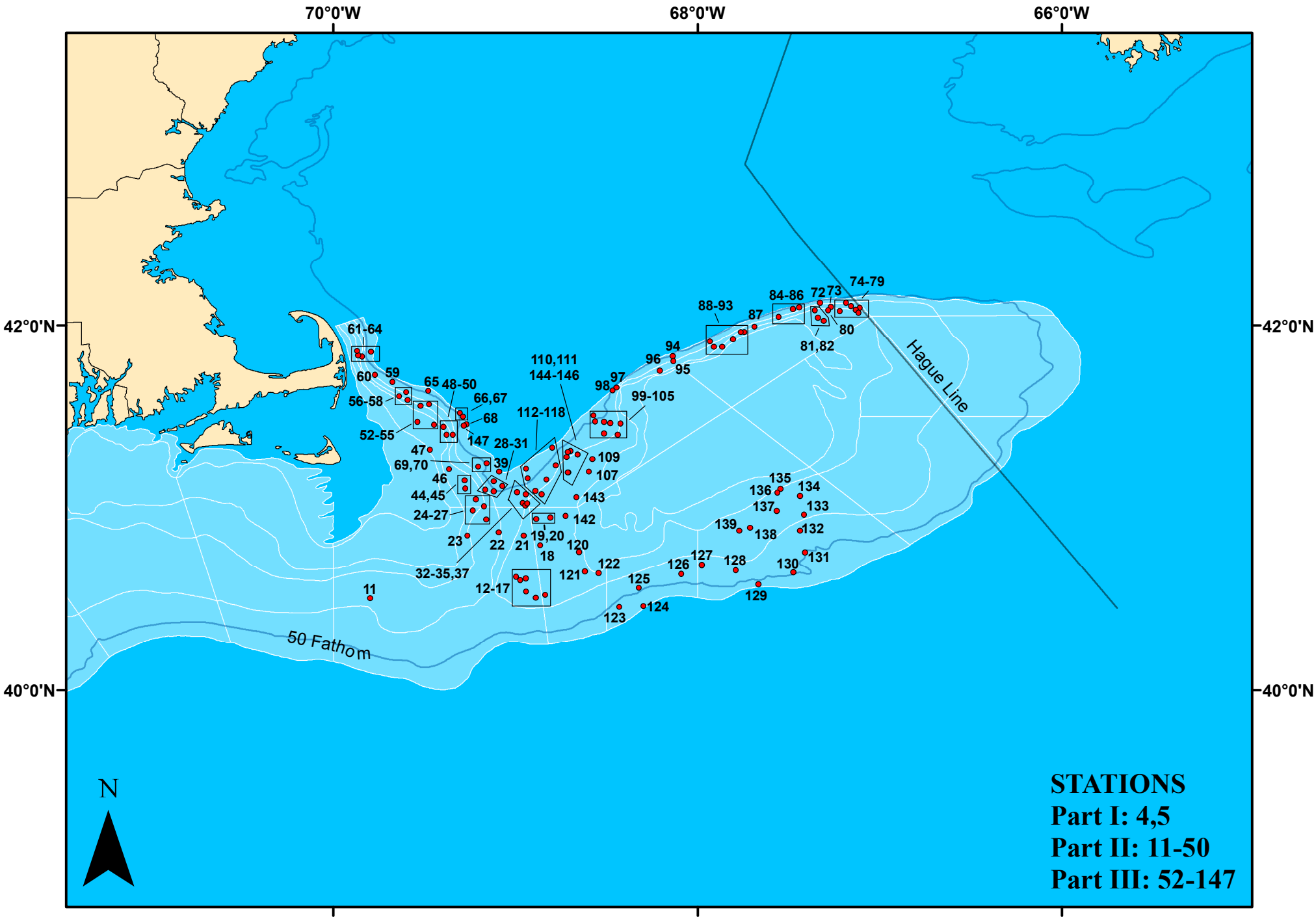

Figure 4. Dredge tows made from UNOLS R/V *Hugh R. Sharp* during NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

Table 1: Catch summary report from NOAA National Marine Fisheries, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

Station	Latutude	Longitude	Lorans TD 1	Lorans TD 2	Heading (Degrees)	Depth (Fathoms)	Total Number of Scallops	Scallops <90mm >40ct	Scallops >90mm <40ct	Scallops ≥100mm <30ct	% Shell Bycatch	% Stone Bycatch	% Inverts Bycatch	Total Volume of Bycatch (Liters)
4	3835.9	7343.7	X26665.3	Y42559.5	336	32.8	1220	106	1114	868	80	15	5	59
5	3838.6	7356.1	X26741.2	Y42579.6	287	27.3	1379	57	1322	1116	10	20	70	469
11	4030	6947.9	W14070.1	Y43483.9	0	39.4	7191	677	6514	3827	75	5	20	0
12	4030.2	6853.3	W13794.8	Y43445.5	259	41	6171	77	6094	5610	50	30	20	87
13	4031.2	6850.1	W13775.7	Y43449.6	228	39.4	43	1	42	41	28	2	70	51
14	4032.2	6856.4	W13802.4	Y43460.3	298	41	76	2	74	73	10	0	90	235
15	4036.6	6856.5	W13786.3	Y43488.0	125	38.8	13	0	13	13	5	0	95	837
16	4036.2	6858.3	W13796.6	Y43486.8	312	38.3	40	2	38	38	10	0	90	368
17	4037.2	6859.6	W13799.2	Y43494.1	169	38.8	60	0	60	59	70	0	30	239
18	4047.5	6851.8	W13720.8	Y43552.1	338	37.2	39	4	35	30	10	0	90	41
19	4056.7	6848.5	W13667.3	Y43605.4	293	40.5	3	0	3	3	70	0	30	51
20	4056.2	6853.1	W13692.1	Y43606.4	26	38.8	0	0	0	0	10	80	10	0
21	4050.6	6857.2	W13735.1	Y43575.6	60	41	42	2	40	37	60	20	20	91
22	4051.7	6905.5	W13772.1	Y43589.6	184	38.8	281	56	225	141	40	20	40	97
23	4050.7	6915.7	W13827.7	Y43592.3	337	30.6	75	31	44	37	30	50	20	465
24	4056	6909.6	W13775.6	Y43620.0	351	36.6	592	321	271	115	25	50	25	787
25	4059	6914	W13785.9	Y43642.8	18	36.1	525	258	267	193	30	55	15	695
26	4100.4	6910.3	W13761.3	Y43647.9	24	32.3	788	410	378	197	10	80	10	690
27	4102.7	6913	W13765.7	Y43664.7	174	34.4	552	262	290	202	15	70	15	469
28	4105.9	6909.9	W13736.6	Y43681.3	172	39.9	218	22	196	176	10	80	10	0
29	4105.3	6907.1	W13724.7	Y43674.9	346	49.8	328	119	209	185	30	60	10	327
30	4108.6	6907.1	W13710.9	Y43695.0	10	56.3	29	3	26	26	10	60	30	386
31	4107	6904.2	W13702.8	Y43682.4	319	54.7	65	21	44	42	5	0	95	570
32	4105	6859.4	W13687.0	Y43665.6	352	51.9	20	0	20	20	5	0	95	782
33	4104.3	6856.6	W13675.9	Y43658.7	340	47	121	15	106	96	10	10	80	368
34	4101.5	6857.6	W13692.6	Y43642.7	11	45.4	314	37	277	271	70	20	10	147
35	4100.7	6856.7	W13691.4	Y43637.0	13	39.4	11	5	6	6	30	60	10	92
37	4101.3	6856	W13685.4	Y43640.0	275	39.9	149	1	148	144	40	50	10	97
39	4111.8	6905.4	W13688.6	Y43712.6	331	68.9	27	2	25	24	55	15	30	66
44	4106.2	6916.5	W13769.3	Y43689.8	19	31.7	2202	1592	610	380	20	70	10	938
45	4108.8	6916.7	W13759.5	Y43706.0	5	27.3	230	50	180	159	5	90	5	690
46	4112.5	6921.8	W13770.7	Y43734.1	4	27.9	793	622	171	121	20	70	10	695
47	4119	6928	W13775.9	Y43780.8	1	17.5	59	57	2	0	15	80	5	557
48	4123.9	6920.5	W13714.7	Y43801.9	346	34.4	104	42	62	61	70	15	15	94
49	4123.9	6922.5	W13725.3	Y43804.2	351	28.4	916	406	510	227	5	90	5	460
50	4126.6	6923.7	W13719.8	Y43821.9	322	28.4	439	260	179	158	10	85	5	373
52	4127.2	6926.7	W13733.2	Y43829.0	238	24.1	33	1	32	32	30	60	10	281
53	4128.2	6932.2	W13758.5	Y43841.7	234	20.2	2	0	2	2	10	80	10	373
54	4133.9	6928.3	W13711.8	Y43871.0	223	37.2	193	31	162	149	20	70	10	782
55	4133.4	6931.2	W13729.8	Y43871.7	222	30.1	299	21	278	270	70	20	10	1205

Table 1 (cont.): Catch summary report from NOAA National Marine Fisheries, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

Station	Latutude	Longitude	Lorans TD 1	Lorans TD 2	Heading (Degrees)	Depth (Fathoms)	Total Number of Scallops	Scallops <90mm >40ct	Scallops >90mm <40ct	Scallops ≥100mm <30ct	% Shell Bycatch	% Stone Bycatch	% Inverts Bycatch	Total Volume of Bycatch (Liters)
56	4135.3	6935.5	W13744.7	Y43888.5	267	32.3	361	326	35	26	10	50	40	506
57	4136.6	6938.2	W13753.7	Y43899.7	269	33.4	476	395	81	70	20	55	25	1159
58	4137.8	6935.8	W13735.0	Y43903.8	299	43.2	469	407	62	61	50	30	20	239
59	4141.3	6940.5	W13745.0	Y43930.8	261	48.7	407	403	4	4	30	60	10	189
60	4143.7	6946.1	W13765.3	Y43952.6	336	42.7	20	13	7	6	80	5	15	189
61	4149.6	6950.4	W13762.3	Y43993.5	9	39.4	31	5	26	26	40	20	40	92
62	4150.1	6951.8	W13767.9	Y43998.4	21	27.3	41	13	28	28	60	20	20	97
63	4151.5	6952	W13762.5	Y44006.9	13	27.9	58	26	32	31	50	30	20	92
64	4151.2	6947.6	W13738.8	Y43998.8	186	61.8	8	4	4	4	90	1	9	143
65	4138.3	6928.6	W13693.3	Y43897.5	128	58.5	56	56	0	0	5	80	15	51
66	4131.1	6918.3	W13670.8	Y43842.2	250	59.1	342	118	224	136	40	20	40	92
67	4129.9	6917.3	W13671.0	Y43833.9	186	57.4	165	45	120	112	60	0	40	143
68	4127.4	6916.1	W13675.8	Y43817.7	261	55.8	5918	761	5157	2240	20	0	80	97
69	4114.5	6909.4	W13697.5	Y43733.1	355	52.5	47	11	36	19	20	0	80	174
70	4113.4	6912.1	W13716.2	Y43729.3	56	49.2	80	6	74	69	20	0	80	331
72	4207.4	6719.7	W12924.6	Y43902.6	307	49.2	260	8	252	247	4	1	95	460
73	4206.1	6716.1	W12916.6	Y43892.5	43	30.6	592	10	582	582	30	20	50	879
74	4207.3	6711	W12889.4	Y43893.0	32	34.4	2	0	2	2	5	5	90	1610
75	4206.3	6709.4	W12888.2	Y43886.5	276	31.7	130	4	126	126	5	5	90	879
76	4205.7	6706.5	W12879.7	Y43880.6	286	29.5	6964	5160	1804	1424	10	10	80	414
77	4205	6707.9	W12889.0	Y43878.6	231	29.5	2600	1399	1201	1017	15	5	80	1201
78	4204.1	6706.9	W12889.7	Y43873.3	194	31.7	2811	1428	1383	1095	60	0	40	984
79	4204.6	6713.1	W12912.2	Y43882.0	222	26.8	868	748	120	108	70	20	10	74
80	4204.8	6717	W12927.1	Y43887.0	237	28.4	136	57	79	75	70	15	15	33
81	4201.3	6718.5	W12951.6	Y43871.4	37	25.2	280	167	113	78	50	25	25	85
82	4202.4	6720.3	W12953.4	Y43878.7	285	29	128	98	30	29	40	50	10	879
83	4204.9	6721.3	W12944.4	Y43892.0	257	27.9	1754	1468	286	192	25	70	5	276
84	4205.8	6726.5	W12961.5	Y43902.0	254	47	46	11	35	35	30	0	70	9
85	4205.4	6728.6	W12972.6	Y43902.3	235	48.7	34	1	33	33	5	0	95	143
86	4202.8	6733.2	W13005.9	Y43894.3	236	36.6	196	90	106	43	5	5	90	51
87	4159.4	6741.1	W13058.0	Y43885.8	223	29.5	7	3	4	4	70	0	30	92
88	4157.6	6744.7	W13083.2	Y43880.5	215	29	1	0	1	1	1	0	99	2502
89	4157.6	6745.7	W13087.7	Y43881.6	230	31.7	1	0	1	1	1	0	99	2024
90	4155.3	6748.2	W13110.7	Y43872.6	228	29.5	0	0	0	0	1	0	99	1858
91	4152.8	6751.9	W13140.0	Y43863.7	250	27.9	0	0	0	0	1	0	99	2024
92	4152.9	6754.6	W13151.7	Y43867.1	226	32.3	16	0	16	16	2	0	98	1306
93	4154.6	6755.9	W13149.0	Y43877.4	242	47	26	2	24	23	95	0	5	115
94	4149.8	6808.2	W13230.1	Y43865.8	244	52.5	69	0	69	69	80	0	20	84
95	4148.2	6807.9	W13236.7	Y43857.0	243	38.8	21	1	20	20	5	0	95	938
96	4145.1	6812.4	W13273.2	Y43845.4	245	33.9	12	1	11	11	5	0	95	386

Table 1 (cont.): Catch summary report from NOAA National Marine Fisheries, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

Station	Latutude	Longitude	Lorans TD 1	Lorans TD 2	Heading (Degrees)	Depth (Fathoms)	Total Number of Scallops	Scallops <90mm >40ct	Scallops >90mm <40ct	Scallops ≥100mm <30ct	% Shell Bycatch	% Stone Bycatch	% Inverts Bycatch	Total Volume of Bycatch (Liters)
97	4139.4	6826.6	W13369.0	Y43830.1	224	50.9	3	0	3	3	2	0	98	230
98	4138.4	6827.9	W13380.1	Y43826.0	228	59.1	4	0	4	4	2	0	98	465
99	4130.3	6834.3	W13449.8	Y43787.8	67	55.2	31	16	15	15	5	20	75	879
100	4128.3	6833.6	W13455.7	Y43775.8	224	53	235	1	234	233	15	5	80	460
101	4128.1	6830.8	W13443.0	Y43771.8	245	51.4	523	0	523	521	19	1	80	235
102	4127.8	6828.7	W13434.2	Y43767.9	15	47.6	6	0	6	6	35	5	60	230
103	4127.7	6825.3	W13418.3	Y43763.8	178	38.8	14	5	9	8	15	5	80	511
104	4124	6826.3	W13440.2	Y43744.0	207	37.2	18	3	15	15	28	2	70	598
105	4124.3	6830.8	W13460.6	Y43750.3	194	45.9	26	0	26	25	70	5	25	235
106	4115.9	6834.6	W13517.0	Y43706.0	192	35	8	0	8	8	15	5	80	143
107	4111.8	6835.7	W13540.5	Y43683.3	199	34.4	1	0	1	1	95	0	5	97
108	4111.4	6842.6	W13576.0	Y43687.6	33	37.7	425	35	390	377	85	5	10	51
109	4117.4	6839.4	W13533.8	Y43719.4	36	39.9	63	9	54	53	80	0	20	36
110	4118.6	6841.8	W13540.2	Y43728.8	228	45.9	37	1	36	35	50	0	50	38
111	4116.5	6843.1	W13556.0	Y43717.9	248	43.2	14	0	14	14	15	0	85	220
112	4119.6	6847.7	W13565.0	Y43740.6	241	61.8	9	0	9	9	50	30	20	189
113	4113.7	6846.8	W13586.6	Y43705.2	230	41	1	0	1	1	1	0	99	2088
114	4109.2	6849.7	W13620.6	Y43681.4	218	46.5	96	2	94	92	2	0	98	1214
115	4104.3	6851.3	W13649.4	Y43653.7	235	40.5	18	4	14	13	60	30	10	92
116	4105.4	6853.4	W13655.2	Y43662.3	220	42.7	116	9	107	102	1	70	29	143
117	4109.6	6855.9	W13649.8	Y43689.9	10	58	39	2	37	37	4	1	95	1196
118	4112.7	6856.4	W13639.0	Y43708.9	215	56.9	3886	82	3804	3774	45	10	45	189
120	4045.2	6839	W13668.0	Y43528.0	275	31.2	23	2	21	21	2	0	98	570
121	4039	6837.1	W13683.5	Y43488.8	105	35	1	0	1	1	2	0	98	1352
122	4038.4	6832.6	W13664.6	Y43482.0	76	35	0	0	0	0	1	0	99	1564
123	4027.2	6825.7	W13675.7	Y43409.4	93	54.1	3	3	0	0	30	0	70	48
124	4027.4	6817.7	W13638.2	Y43405.8	28	59.1	0	0	0	0	19	1	80	5
125	4033.5	6819.3	W13621.9	Y43443.5	30	52.5	14	14	0	0	80	0	20	23
126	4038.2	6805.3	W13539.7	Y43462.4	110	49.2	41	33	8	5	90	5	5	235
127	4041	6758.6	W13498.4	Y43474.4	103	45.9	0	0	0	0	99	0	1	18
128	4039.4	6747.4	W13455.6	Y43458.1	84	43.7	328	132	196	151	80	5	15	115
129	4034.8	6740	W13442.3	Y43427.3	62	55.2	18	17	1	0	35	60	5	373
130	4038.6	6728.4	W13377.7	Y43442.1	82	52.5	950	652	298	30	20	75	5	511
131	4045.2	6724.7	W13334.8	Y43476.7	326	50.9	798	295	503	358	50	5	45	327
132	4052.2	6726.2	W13311.4	Y43516.4	328	45.4	193	133	60	17	40	0	60	48
133	4057.6	6724.9	W13282.6	Y43545.2	324	41	181	109	72	36	60	0	40	235
134	4103.8	6726.3	W13261.3	Y43580.0	316	33.9	33	15	18	9	10	0	90	1894
135	4106.1	6732.7	W13278.3	Y43597.3	145	32.3	11	8	3	1	5	0	95	1168
136	4104.8	6733.7	W13288.3	Y43591.0	145	33.4	0	0	0	0	5	0	95	1950
137	4058.9	6734	W13315.5	Y43558.8	186	37.2	21	2	19	18	10	0	90	984

Table 1 (cont.): Catch summary report from NOAA National Marine Fisheries, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

Station	Latutude	Longitude	Lorans TD 1	Lorans TD 2	Heading (Degrees)	Depth (Fathoms)	Total Number of Scallops	Scallops <90mm >40ct	Scallops >90mm <40ct	Scallops ≥100mm <30ct	% Shell Bycatch	% Stone Bycatch	% Inverts Bycatch	Total Volume of Bycatch (Liters)
138	4053.2	6742.6	W13377.2	Y43533.2	192	37.7	33	15	18	16	5	0	95	1196
139	4052.3	6746.2	W13396.7	Y43530.7	137	36.1	20	1	19	19	5	0	95	1950
142	4057.3	6843.4	W13639.9	Y43604.6	3	38.3	0	0	0	0	25	70	5	97
143	4103.3	6839.9	W13597.7	Y43637.3	7	34.4	3	1	2	2	50	10	40	97
144	4111.4	6842.7	W13576.5	Y43687.7	36	37.2	247	45	202	194	60	10	30	115
145	4117.4	6839.5	W13534.2	Y43719.5	53	41.6	28	5	23	22	70	0	30	51
146	4118.1	6842.7	W13546.9	Y43726.8	34	45.4	56	0	56	56	40	0	60	133
147	4127	6917	W13682.4	Y43816.4	50	52.5	3688	99	3589	2211	30	5	65	143

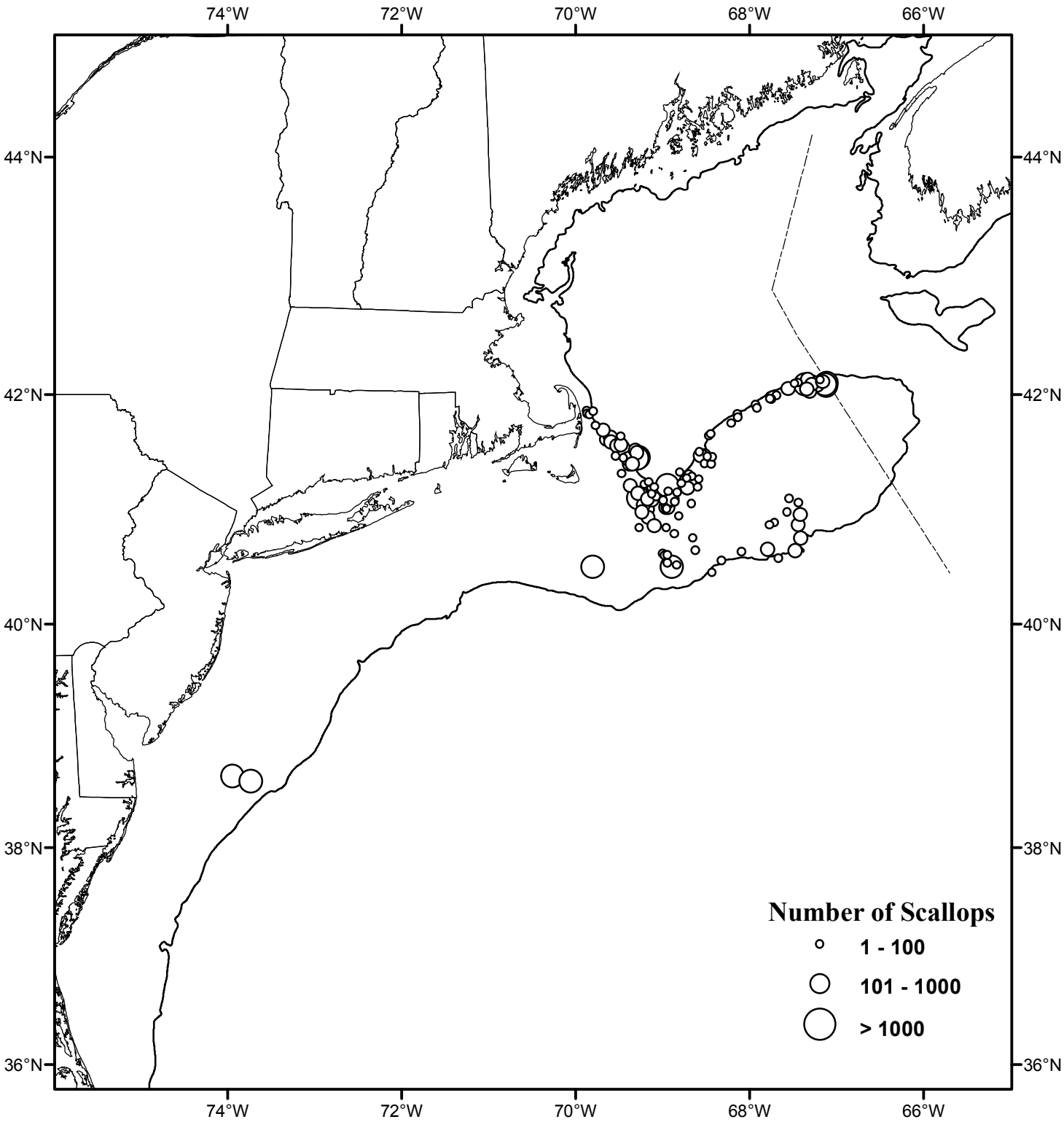

Figure 5. Total number of Atlantic sea scallops per tow from NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

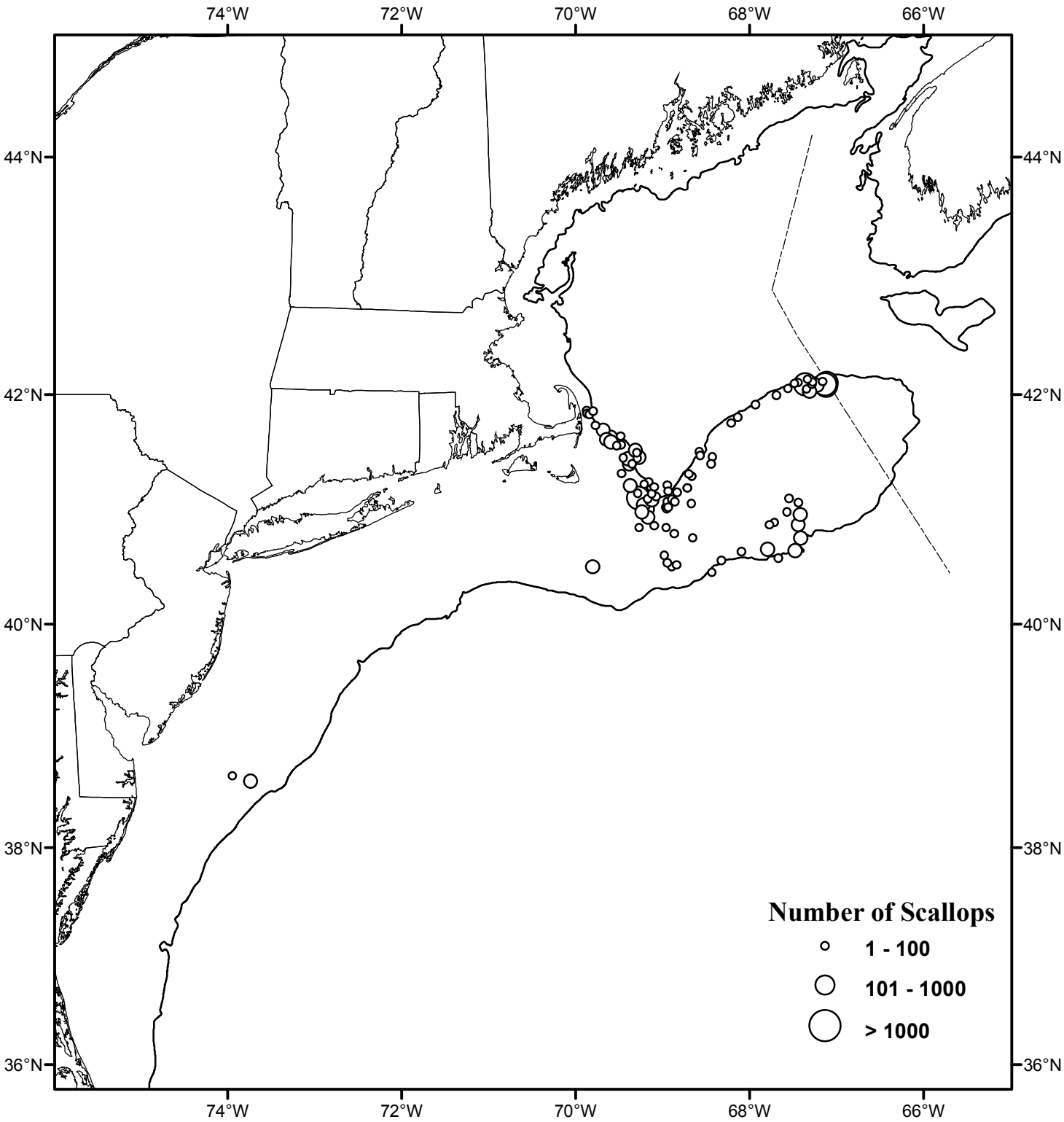

Figure 6. Number of Atlantic sea scallops per tow that are less than 90mm from NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

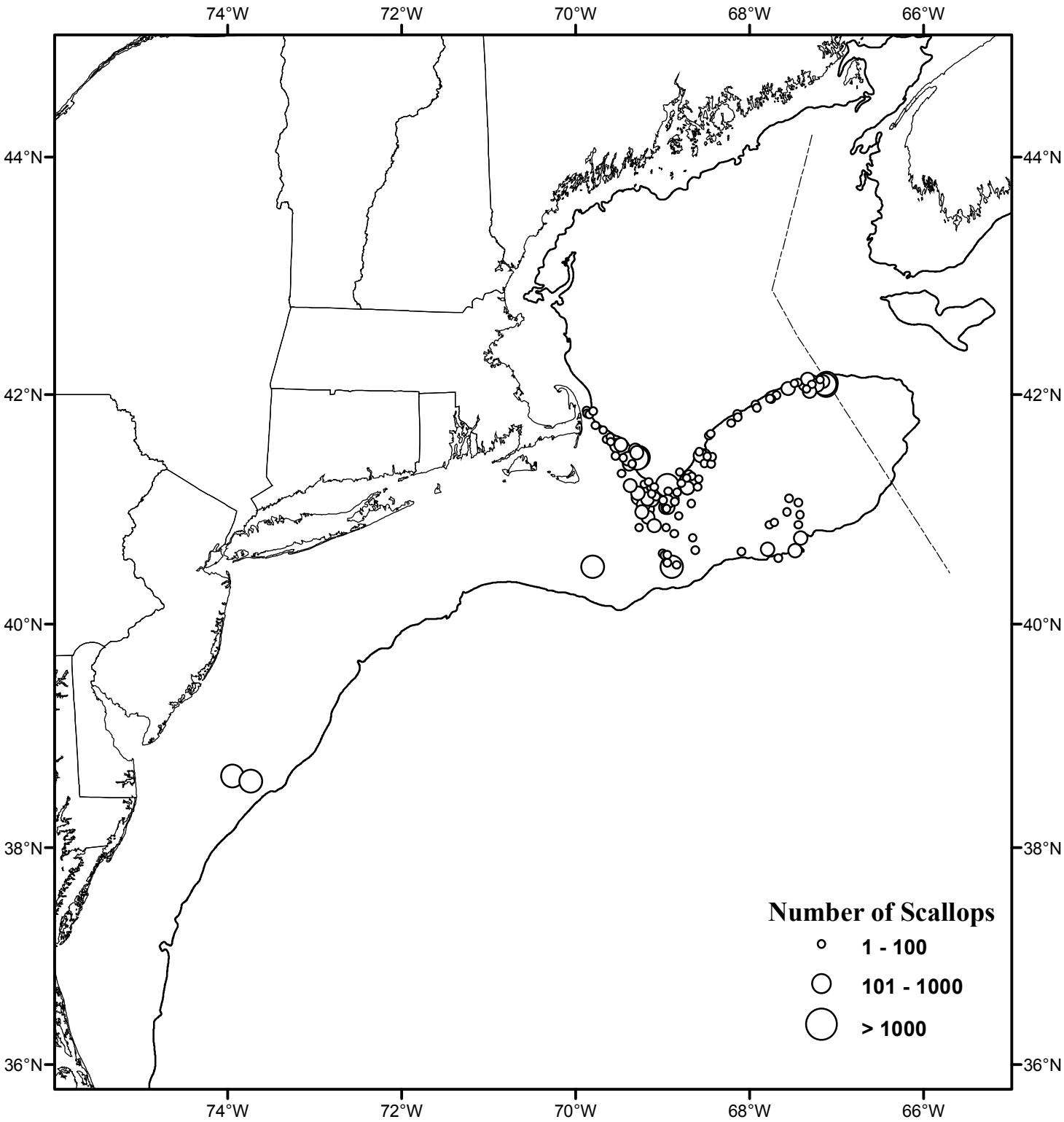

Figure 7. Number of Atlantic sea scallops per tow that are greater than 90mm from NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017

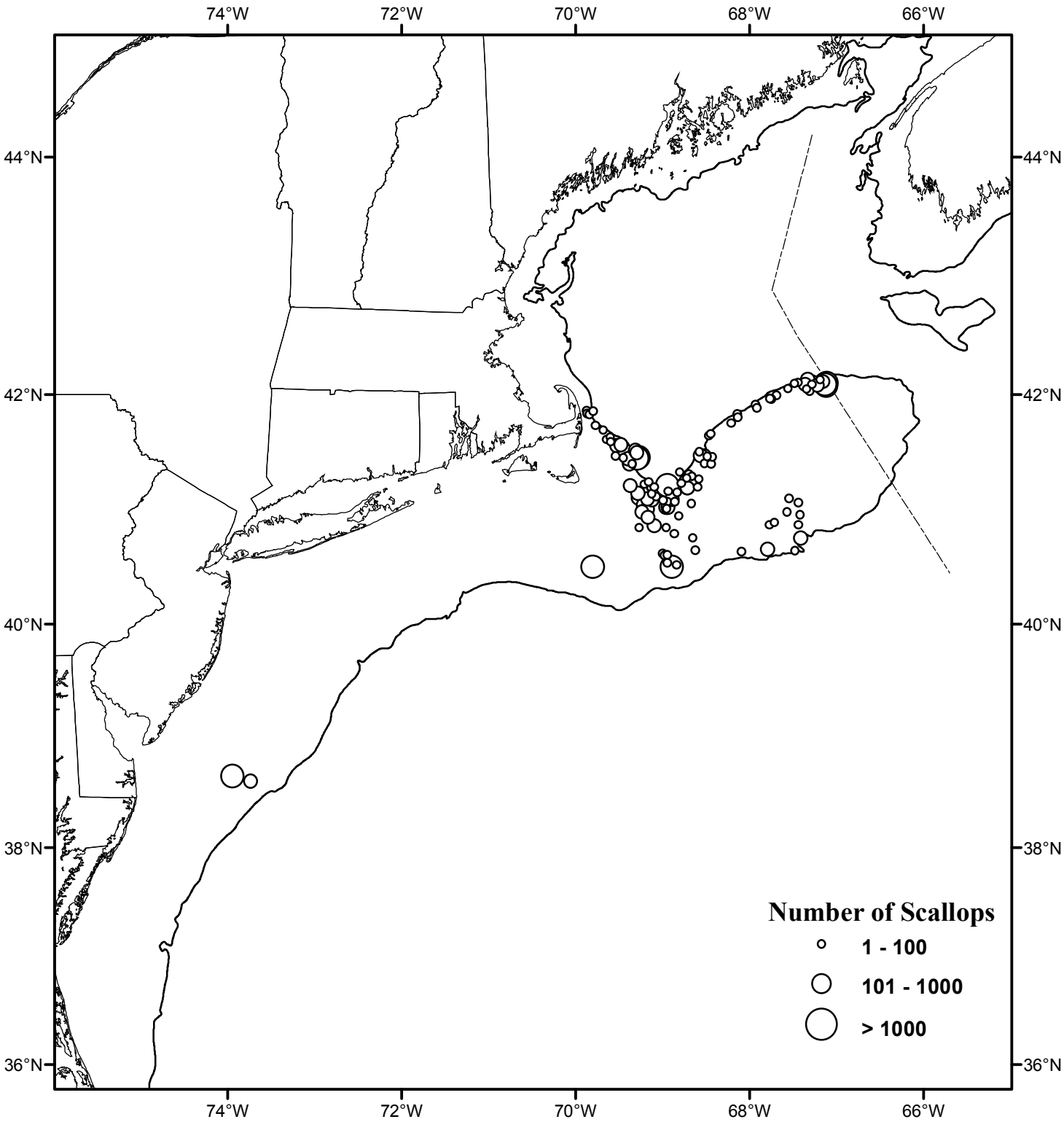

Figure 8. Number of Atlantic sea scallops per tow that are greater than or equal to 100mm from NOAA National Marine Fisheries Service, Northeast Fisheries Science Center's summer sea scallop survey, 16 May - 21 June 2017