RESOURCE SURVEY REPORT
Catch Summary
NOAA Fisheries Service
Northeast Fisheries Science Center
Sea Scallop Survey
Cape Hatteras -Georges Bank
1 June – 7 July 2012

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: 2012

Resource Survey Report

Sea Scallop Survey

Cape Hatteras – Georges Bank

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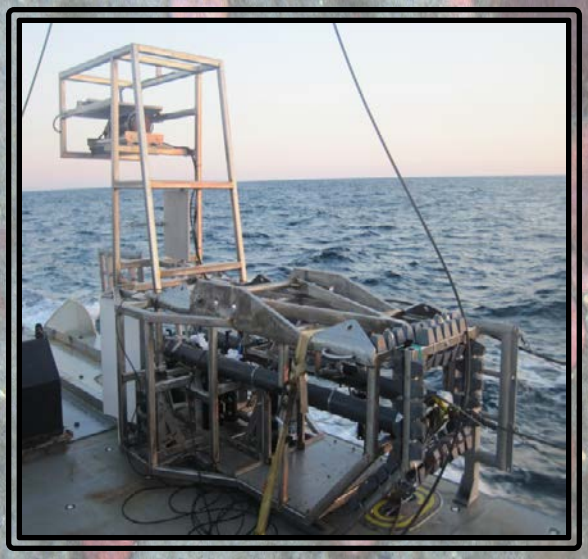
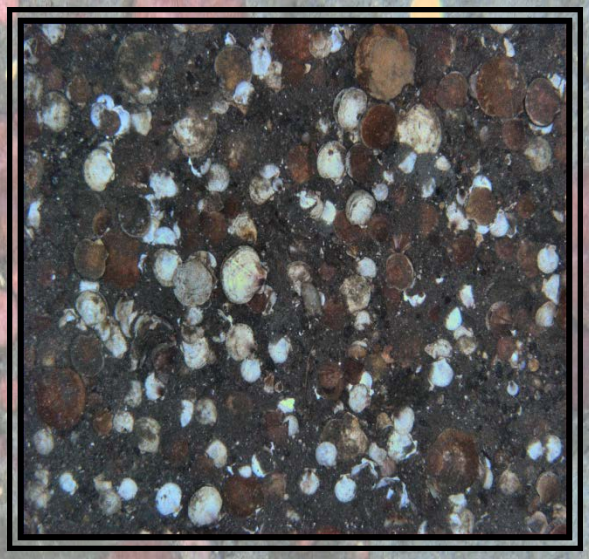
UNOLS R/V *Hugh R. Sharp*

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



HabCam V4: NMFS' new stereo-camera towed vehicle which photographs the seafloor



A scallop bed in the Great South Channel

Two flounders resting among Three scallops on the seafloor

An abundance of scallops from a dredge tow on Georges Bank

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The following field notes, charts, and station data indicate the distribution of sea scallops during the 2012 sea scallop survey conducted aboard the UNOLS R/V *Hugh R. Sharp*. Additionally, there is an appendix that describes gear testing conducted during the scallop cruise where the NEFSC, in collaboration with the Woods Hole Oceanographic Institute (WHOI), tested and deployed a fiber optic towed vehicle fitted with stereo cameras in proximity to standard dredge hauls (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 test the efficacy of 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 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 transect would be conducted through the same area. HabCam 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 2,287 km in the Mid-Atlantic Bight (MAB) and about 1,606 km on Georges Bank, including the Great South Channel. The total production of paired images was approximately 34.5 terabytes (TB) for just the raw tiff paired images. These data translate into roughly 7,474,000 image pairs; 4,548,000 image pairs were collected in the MAB and south, while 2,926,000 image pairs were collected on Georges Bank.

Field Notes

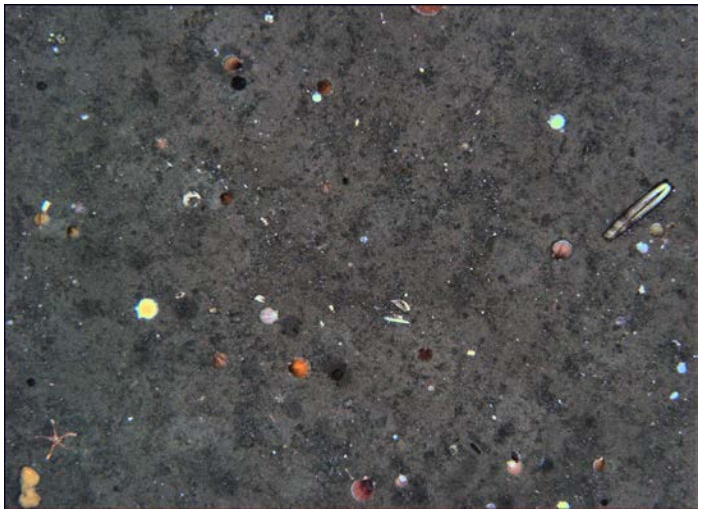
In an effort to share some of the natural history observations made during the scallop survey, we have requested that the Chief Scientists on each leg of the cruise comment on some of the more interesting catches that were brought aboard UNOLS R/V *Hugh R. Sharp*.

Off to a Good Start

Leg I of the annual, dual-sampling, standardized sea scallop dredge and stereo-optic camera system survey was a huge success. We initially conducted a series of system-testing deployments right off Lewes, DE with some of the key programmers and engineers aboard; these deployments were crucial to ironing out any last minute bugs before we dropped off those particular scientists and began the survey.

The crew of the R/V *Hugh R. Sharp* was just as instrumental to the success of both this leg and the overall cruise. The mission for Leg I was to occupy the area south of New Jersey with the dredge gear and HabCam system. To facilitate the efficiency of concurrent deployments, the vessel crew and leadership had built an improved retrieval platform on the port quarter of the stern. This remodeled ramp provided a safer method of at-sea setting and retrieval than had been previously conducted when using deck-mounted, Pullmaster winches. Since HabCam was a new method of conducting scallop surveys for the Ecosystems Surveys Branch, everyone took a while to adjust to the new dynamic between dredging and towing the HabCam system. However, this project is a clear example of how an academic agency (WHOI) can partner with NOAA Fisheries to develop and test a new, cutting-edge sampling tool and, at the completion of the testing phase, eventually turn the system over to the government.

The highlight from the dredge portion of the survey was the strong signal of recruit and pre-recruit catches in the lower portion of the Hudson Canyon Access area, as well as in the old Elephant Trunk closed area.



Scallop seed, which were evident
in both dredge catches and HabCam images

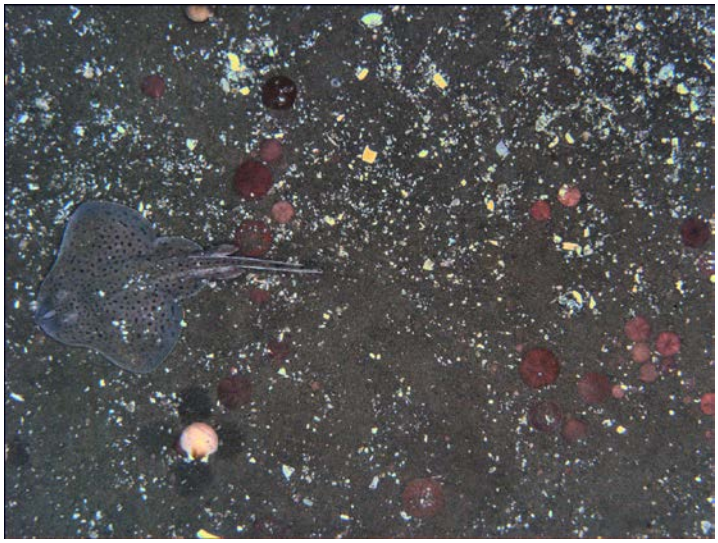
I think the biggest surprise was seeing the spatial relationship of the organisms to both each other and the small micro-habitats, which were all viewable from the V4, pilot-seat video monitors onboard the *Sharp*. One does not get a sense of the spatial distribution of organisms when sorting through dredge tows. On the other hand, there is something very satisfying about sorting through the catch, and then later viewing what that tow looks like on the video screen.

An Unexpected Sight

While on a HabCam transect towards the northern edge of Georges Bank, the R/V *Sharp* command thought there had been a sighting of a lifeboat on the horizon. After getting closer and finally hailing the vessel on the radio, it was determined to be a transoceanic rowboat named the *Caouanne*. The pilot of the *Caouanne* was a French adventurer, who was trying to row from Chatham to France. After making sure he was uninjured or in need of assistance, we bid farewell and left him to continue on with his journey. We eventually learned that, due to high winds and bad currents, he ended the voyage only nine days later by landing in Nova Scotia. It was definitely an interesting highlight to a memorable Leg II.

HabCam Images: The Eyes Have It

During the cruise, all members of the science party took turns at annotating images, as well as piloting the HabCam vehicle during transects. Everyone agreed that, even as the images were being captured at a rapid rate of ten stereo pairs per second, people were still able to pick out and identify fish and skates. We were also able get a close-up look at the natural camouflage these organisms have perfected to remain nearly invisible on the seafloor.



Despite the rapid image rate, organisms like this skate, as well as a swimming scallop (bottom left), tended to be recognized easily on the video monitors

Mission Accomplished

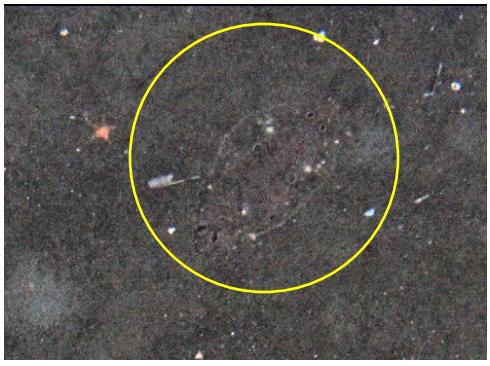
Leg III had the task of completing the final sections of NEFSC's first Scallop/HabCam hybrid survey. The working areas included the outer Cape through the Great South Channel, Closed Area I, Nantucket Lightship Closed area, as well as the southern edge of Georges Bank out to the Canadian border in Closed Area II. The survey did not go into Canada this year; instead, the focus was on ensuring proper coverage of the remaining survey area with both the standard survey dredge and NOAA's HabCam V4 camera system. Sand waves posed a challenge for both sampling tools in some areas. Flying the vehicle over one to ten meter sand waves was certainly a challenge, as was sorting through the large bags of sand captured by the dredge. The crew did an excellent job of boat handling, though, and they were always able to find a place to tow, despite the sometimes difficult bottom conditions.

We were able to cover a lot of ground and complete many dredge tows by swapping back and forth between the dredge and the HabCam. Normal operations would include towing the HabCam for one to two days, or 100-200 nm at a time, and then changing to dredge mode to complete a series of tows that usually lasted for another one to two days. Dredge tows were generally made in areas where we had recently been working with the HabCam. This allowed us to complete whole areas of the survey at once, ensuring that they were fully covered with both devices.

Swapping back and forth between the dredge and HabCam operations also provided an interesting perspective to scientists on board. We would spend a day or two taking images in an area, seeing pictures of organisms in their natural habitats, and then go back to working with the dredge and bring various organisms up on a deck to get a closer look. It was definitely exciting to have that direct comparison between the images and the physical samples. Because we had that comparison, it also helped us in becoming better image analysts.

One of the things that was the most fascinating about the images this year was seeing camouflage techniques by various organisms. Goosefish and different flounder species were the most impressive with the ability to nearly disappear into their surroundings. The images below show a goosefish and a four-spot flounder doing their best to be invisible.

A camouflaged goosefish (*Lophius americanus*) on a scallop-barren seafloor



A fourspot flounder (*Hippoglossina oblonga*) camouflaged on the sandy bottom

Overall, the survey this year was a tremendous success. Not only did we complete over 200 planned dredge tows, but we now have a nearly continuous set of images from Delmarva to the Northeast Peak and all of the scallop grounds in between. This information will allow scallop statisticians to look at population estimates for both the dredge survey and also by assessing the HabCam images. There is also a tremendous amount of other information to be discovered within the HabCam images - information that scientists everywhere can use to get a better look at exactly what's happening at the bottom of the sea. Now, with one year under our belt, we're taking what we've learned and working to prepare for next year, so that we can continue to have success as we develop the new survey design.

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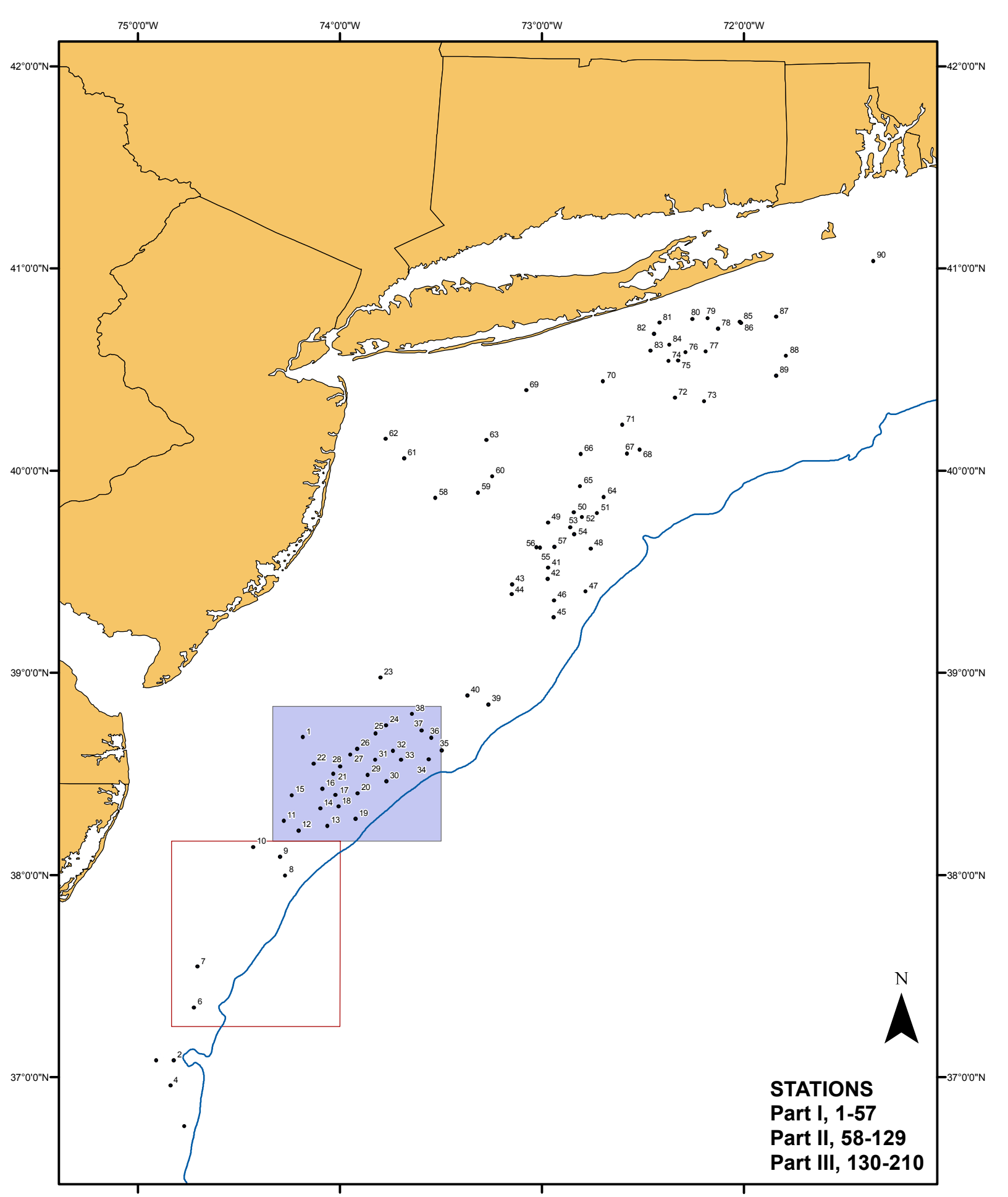

Figure 1. Dredge tows made from UNOLS R/V *Hugh R. Sharp* (12-01) , during NOAA Fisheries Service, Northeast Fisheries Science Center Sea Scallop Survey, June 1 - July 7, 2012

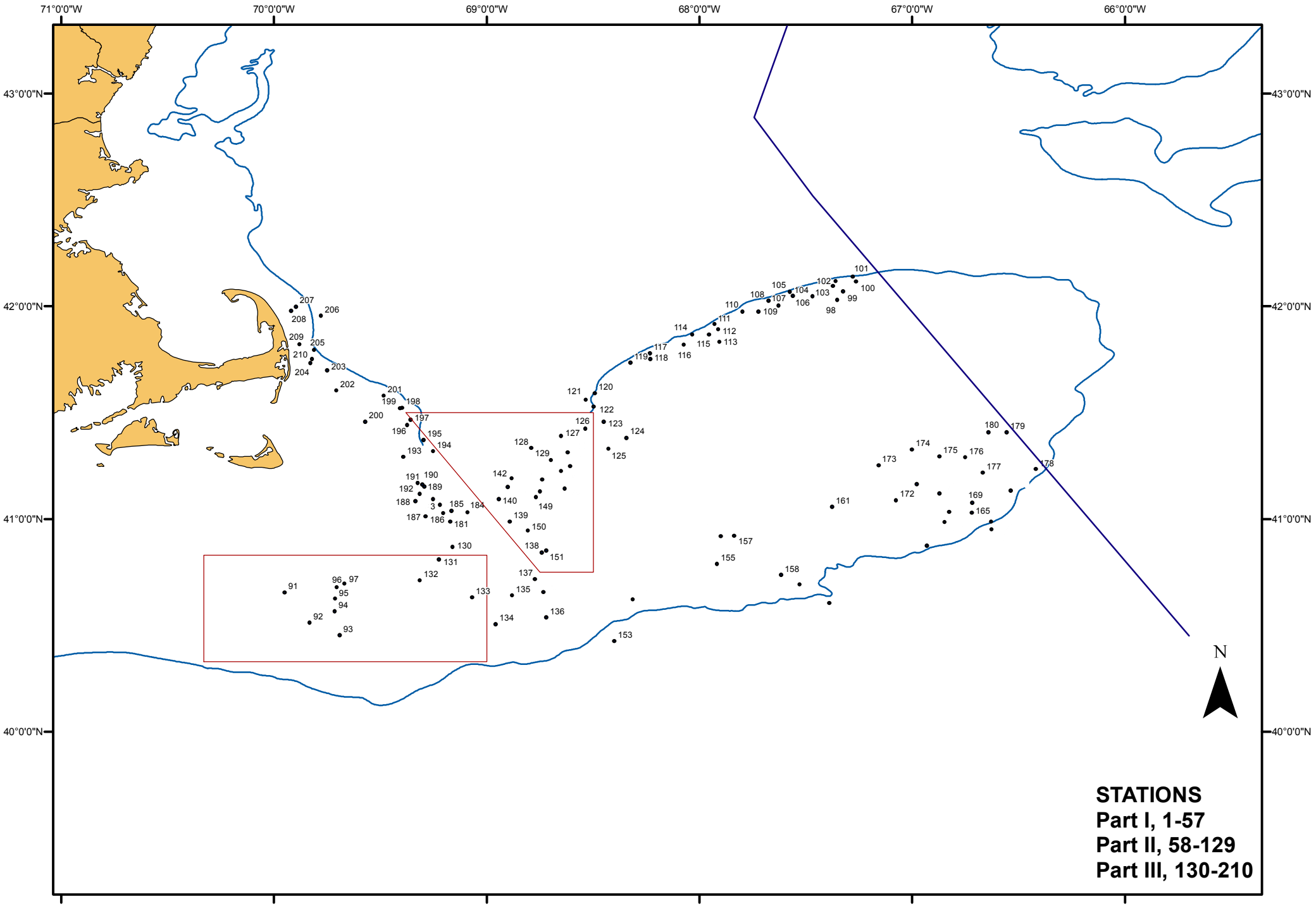

Figure 2. Dredge tows made from UNOLS R/V *Hugh R. Sharp* (12-01) , during NOAA Fisheries Service, Northeast Fisheries Science Center Sea Scallop Survey, June 1 - July 7, 2012

Map 2 of 2

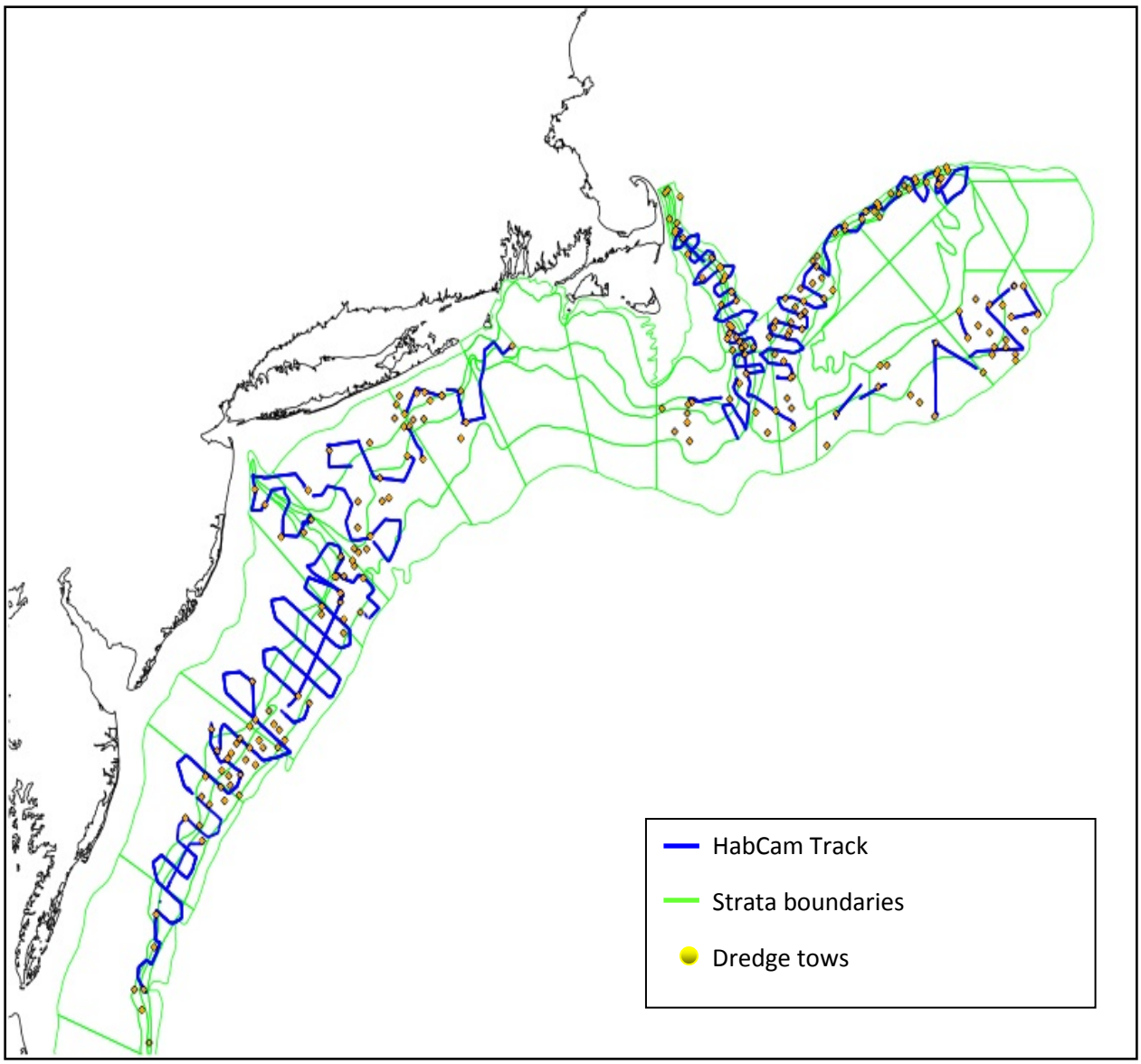

Figure 3: NOAA HabCam track from Mid-Atlantic Bight to Georges Bank, as followed by UNOLS R/V *Hugh R. Sharp* during NOAA Fisheries Service, Northeast Fisheries Science Center Sea Scallop Survey, June 1 – July 7, 2012.

HUGH R. SHARP 2012 SEA SCALLOP SURVEY
01 June - 07 July 2012

Station Data								Number of Scallops				By-Catch			
	Position		Loran TD's				Bottom								
Station	Lat.	Long.			heading	Depth (FM)	Temp (F)	Total No.	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone (Percentage)	Inverts	Total Vol.(lt)
0001	3840.8	7410.9	X26830.7	Y42593.5	186	24.6		165	84	81	51	70	10	20	311
0002	3704.9	7449.2	X26888.3	Y41514.9	168	31.2		3	3	0	0	5	90	5	610
0003	3645.2	7446.1	X26850.9	Y41314.3	360	39.4		0	0	0	0	5	5	90	242
0004	3657.4	7450.2	X26883.3	Y41433.2	346	32.3		128	128	0	0	10	75	15	253
0005	3704.8	7454.4	X26911.4	Y41503.5	22	27.9		408	408	0	0	10	85	5	322
0006	3720.4	7443.2	X26881.2	Y41691.6	14	31.7		56	54	2	0	10	85	5	276
0007	3732.6	7442.2	X26893.2	Y41824.4	354	27.9		302	289	13	13	25	70	5	414
0008	3759.7	7416.1	X26799.7	Y42151.0	156	37.2		87	49	38	32	5	1	94	322
0009	3805.3	7417.7	X26815.6	Y42208.6	223	29.0		63	18	45	38	29	70	1	368
0010	3808.1	7425.6	X26861.3	Y42229.8	246	24.6		10	7	3	2	5	90	5	702
0011	3816.0	7416.5	X26824.3	Y42324.1	238	27.9		382	299	83	79	10	85	5	644
0012	3813.0	7412.2	X26796.7	Y42296.4	159	33.9		33	4	29	28	5	15	80	334
0013	3814.4	7403.6	X26751.9	Y42319.8	220	36.6		3081	2942	139	101	85	10	5	230
0014	3819.5	7405.7	X26770.0	Y42371.5	126	34.4		245	165	80	71	5	85	10	460
0015	3823.5	7414.2	X26822.7	Y42406.3	200	30.1		150	109	41	38	30	0	70	184
0016	3825.5	7405.2	X26775.3	Y42435.2	232	32.8		100	36	64	57	20	0	80	92
0017	3823.6	7401.2	X26750.4	Y42418.6	234	33.4		31	13	18	17	10	0	90	276
0018	3820.1	7400.4	X26741.4	Y42382.6	207	36.1		1	0	1	1	20	0	80	276
0019	3816.5	7355.3	X26708.9	Y42349.7	184	38.8		329	317	12	6	20	40	40	414
0020	3824.1	7354.6	X26714.0	Y42429.4	174	35.0		830	196	634	526	60	0	40	207
0021	3829.9	7401.8	X26762.2	Y42484.3	234	27.9		2549	2498	51	43	70	0	30	92
0022	3832.9	7407.7	X26800.1	Y42511.6	127	27.3		315	284	31	30	25	50	25	230
0023	3858.5	7347.9	X26719.5	Y42790.7	282	24.6		52	25	27	26	10	0	90	414
0024	3844.3	7346.2	X26690.1	Y42644.6	128	27.9		220	112	108	101	20	20	60	322
0025	3841.9	7349.2	X26704.9	Y42618.1	177	27.3		859	808	51	45	85	10	5	230
0026	3837.4	7354.8	X26732.0	Y42567.9	134	27.3		73	14	59	58	15	0	85	207
0027	3835.6	7356.8	X26741.2	Y42547.7	242	27.9		56	39	17	16	5	15	80	138
0028	3832.0	7359.8	X26753.6	Y42507.9	212	26.8		5601	5555	46	45	5	90	5	426
0029	3829.6	7351.6	X26703.6	Y42488.9	41	33.9		3268	3144	124	94	90	5	5	127
0030	3827.7	7346.1	X26670.0	Y42473.4	13	36.6		36	31	5	4	10	0	90	299
0031	3834.1	7349.4	X26696.4	Y42537.1	312	32.8		1621	1446	175	153	6	90	4	311
0032	3836.7	7344.1	X26668.6	Y42567.5	140	32.3		8106	7994	112	71	85	10	5	115
0033	3834.0	7341.8	X26652.2	Y42541.3	35	34.4		1856	1780	76	41	30	60	10	460
0034	3834.1	7333.5	X26604.0	Y42547.8	268	38.8		16	13	3	2	25	50	25	414
0035	3836.8	7329.6	X26583.7	Y42577.5	23	40.5		266	65	201	201	5	90	5	575
0036	3840.6	7332.7	X26605.6	Y42614.1	270	36.1		1034	851	183	74	20	60	20	230
0037	3842.7	7335.7	X26625.6	Y42633.8	57	35.5		987	940	47	24	30	60	10	506
0038	3847.6	7338.5	X26647.9	Y42682.3	55	30.6		1215	1076	139	121	30	50	20	414
0039	3850.5	7315.9	X26513.2	Y42721.2	31	44.3		9	7	2	1	20	20	60	35
0040	3853.2	7322.1	X26553.6	Y42745.7	22	35.5		1890	1103	787	355	15	70	15	184

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	Position		Loran TD's			Depth	Bottom Temp	Total	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total
Station	Lat.	Long.			heading	(FM)	(F)	No.				(Percentage)			Vol.(lt)
0041	3931.1	7258.1	X26430.0	Y43118.0	124	33.4		419	166	253	230	2	8	90	99
0042	3927.7	7258.2	X26427.9	Y43085.6	196	37.2		184	71	113	70	45	5	50	230
0043	3926.1	7308.8	X26498.8	Y43071.8	239	32.3		404	327	77	74	10	10	80	828
0044	3923.2	7308.9	X26496.6	Y43043.6	138	35.0		162	34	128	100	10	10	80	506
0045	3916.4	7256.5	X26408.3	Y42977.2	13	38.8		317	21	296	277	10	20	70	276
0046	3921.3	7256.3	X26410.3	Y43024.1	3	41.0		463	78	385	293	20	0	80	35
0047	3924.0	7247.0	X26349.3	Y43048.7	56	41.6		8	4	4	1	20	0	80	161
0048	3936.7	7245.4	X26345.7	Y43167.4	118	38.3		40	11	29	22	5	75	20	345
0049	3944.4	7258.1	X26442.3	Y43244.6	42	37.2		402	180	222	205	10	75	15	495
0050	3947.5	7250.4	X26389.5	Y43270.2	66	38.3		3	0	3	3	5	0	95	207
0051	3947.3	7243.5	X26339.3	Y43265.1	254	32.3		140	6	134	122	20	0	80	92
0052	3946.1	7248.0	X26371.0	Y43256.1	223	39.4		2	1	1	1	10	0	90	127
0053	3943.1	7251.5	X26393.7	Y43229.5	131	39.9		1	0	1	0	3	0	97	230
0054	3941.1	7250.3	X26383.4	Y43210.3	188	39.9		10	3	7	5	10	0	90	265
0055	3937.2	7301.5	X26459.3	Y43177.3	106	36.6		71	5	66	63	15	0	85	184
0056	3937.1	7300.5	X26452.1	Y43176.0	273	36.6		114	5	109	92	10	0	90	782
0057	3937.3	7256.2	X26422.1	Y43176.5	57	35.5		175	19	156	91	10	0	90	1012
0058	3951.8	7331.6	X26695.1	Y43331.9	247	19.7	51.96	58	24	34	28	10	0	90	506
0059	3953.4	7318.9	X26605.1	Y43341.0	234	26.8		459	69	390	327	10	80	10	253
0060	3958.2	7314.7	X26581.6	Y43385.1	215	35.0		9	0	9	9	10	0	90	299
0061	4003.6	7340.9	X26786.7	Y43454.9	200	18.6	52.68	660	658	2	2	10	0	90	230
0062	4009.3	7346.4	X26840.6	Y43515.9	351	17.0	46.99	316	316	0	0	10	0	90	552
0063	4008.9	7316.4	X26612.2	Y43488.9	330	22.4		158	37	121	117	10	10	80	506
0064	3952.1	7241.5	X26328.3	Y43308.3	223	33.4		153	9	144	127	15	0	85	506
0065	3955.2	7248.5	X26382.7	Y43340.8	227	30.6		126	17	109	108	10	0	90	1265
0066	4004.8	7248.4	X26391.9	Y43429.3	238	29.0		41	10	31	26	5	0	95	1725
0067	4005.0	7234.7	X26287.4	Y43421.0	240	31.7	46.33	303	115	188	155	40	0	60	299
0068	4006.1	7230.9	X26259.2	Y43428.1	46	32.3		112	16	96	82	10	5	85	437
0069	4023.7	7304.6	X26546.4	Y43617.3	26	21.9	52.95	306	243	63	56	5	0	95	598
0070	4026.5	7241.7	X26366.5	Y43618.9	241	24.6		165	39	126	58	20	0	80	552
0071	4013.5	7236.0	X26305.3	Y43498.1	102	31.7		44	3	41	41	10	0	90	230
0072	4021.5	7220.5	X26189.9	Y43554.0	93	31.7	46.36	456	236	220	172	40	0	60	368
0073	4020.5	7211.7	X26118.9	Y43537.2	92	33.4		131	4	127	122	8	0	92	345
0074	4032.5	7222.3	X26215.6	Y43650.0	82	26.2		58	19	39	13	25	0	75	529
0075	4032.6	7219.5	X26192.6	Y43647.7	82	27.3		183	62	121	32	20	0	80	840
0076	4035.0	7217.3	X26177.0	Y43665.5	50	27.3	48.20	73	9	64	27	15	0	85	322
0077	4035.3	7211.2	X26126.7	Y43661.0	32	29.0		69	21	48	25	10	10	80	253
0078	4042.1	7207.7	X26104.7	Y43713.0	328	25.2		51	10	41	24	10	20	70	966
0079	4045.2	7210.7	X26134.0	Y43742.0	262	24.6	48.70	8	3	5	3	2	3	95	2254
0080	4044.9	7215.2	X26171.9	Y43745.2	66	23.5		90	58	32	27	10	15	75	828

HUGH R. SHARP 2012 SEA SCALLOP SURVEY
01 June - 07 July 2012

Station Data								Number of Scallops				By-Catch			
	Position		Loran			Depth	Bottom Temp	Total	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total
Station	Lat.	Long.	TD's		heading	(FM)	(F)	No.				(Percentage)			Vol.(lt)
0081	4043.8	7225.0	X26253.5	Y43748.5	248	21.3		43	26	17	16	10	10	80	1449
0082	4040.6	7226.7	X26263.0	Y43723.7	137	20.2	49.53	132	98	34	31	5	0	95	875
0083	4035.5	7227.7	X26264.1	Y43681.6	95	22.4		495	405	90	67	5	0	95	782
0084	4037.3	7222.1	X26219.8	Y43690.3	71	24.1		322	148	174	109	5	10	85	736
0085	4044.1	7201.1	X26051.1	Y43721.1	168	25.7	49.33	0	0	0	0	0	0	0	0
0086	4043.7	7200.8	X26048.1	Y43717.6	316	25.2		217	63	154	124	20	0	80	256
0087	4045.6	7150.4	X25961.6	Y43720.0	239	27.3		127	51	76	56	40	0	60	35
0088	4034.0	7147.4	X25928.9	Y43624.2	115	36.6	45.43	1	0	1	1	15	5	80	230
0089	4028.1	7150.4	X25951.4	Y43579.7	78	37.7		0	0	0	0	5	20	75	265
0090	4102.2	7121.5	X25727.6	Y43809.5	231	24.6		51	8	43	32	10	0	90	368
0091	4039.1	6957.0	W14086.5	Y43553.2	56	29.0	50.47	2	0	2	2	5	0	95	46
0092	4030.6	6949.8	W14078.0	Y43489.5	122	38.8		0	0	0	0	0	10	90	5
0093	4027.1	6941.4	W14046.4	Y43459.4	90	39.4		2	1	1	1	40	0	60	10
0094	4033.9	6942.7	W14029.5	Y43506.1	308	35.5	50.27	191	0	200	200	35	0	65	150
0095	4037.4	6942.7	W14017.0	Y43529.5	96	31.7		0	0	0	0	40	0	60	69
0096	4040.7	6942.2	W14002.5	Y43551.0	50	27.3		1	0	1	0	5	0	95	1380
0097	4041.6	6940.0	W13987.7	Y43555.0	76	26.8	51.26	0	0	0	0	5	0	95	2116
0098	4201.7	6721.0	W12960.0	Y43876.0	37	28.4	53.13	1642	392	1250	1158	90	0	10	483
0099	4204.1	6719.5	W12941.1	Y43886.2	152	28.4		1384	20	1364	1354	30	0	70	276
0100	4206.8	6715.8	W12911.6	Y43895.6	42	39.4		1960	39	1921	1892	30	60	10	276
0101	4208.2	6716.7	W12907.9	Y43903.3	304	53.6	44.37	195	7	188	166	10	10	80	69
0102	4207.0	6721.5	W12934.2	Y43902.5	304	45.9		858	4	854	838	40	0	60	69
0103	4205.6	6722.3	W12944.9	Y43896.5	305	33.9		456	13	443	436	20	10	70	46
0104	4202.7	6728.0	W12984.2	Y43888.3	217	29.5	45.52	329	18	311	297	80	10	10	138
0105	4204.0	6734.4	W13004.8	Y43901.6	125	56.9		75	1	74	73	10	0	90	414
0106	4202.8	6733.6	W13007.7	Y43894.8	3	39.4		162	2	160	160	20	0	80	276
0107	4200.1	6737.6	W13039.1	Y43885.5	64	29.0	51.24	441	103	338	310	20	60	20	242
0108	4201.4	6740.5	W13045.0	Y43895.2	53	44.3		165	30	135	123	20	15	65	161
0109	4158.4	6743.3	W13072.9	Y43883.1	228	29.5		3	0	3	3	5	0	95	1001
0110	4158.4	6747.8	W13092.9	Y43888.0	257	42.1	49.75	78	7	71	66	25	0	75	161
0111	4154.8	6755.7	W13147.0	Y43878.2	248	48.1		234	70	164	130	25	5	70	138
0112	4153.4	6754.7	W13149.6	Y43869.8	260	34.4		19	2	17	17	20	0	80	173
0113	4149.9	6754.3	W13165.6	Y43851.2	302	25.2	52.27	32	14	18	14	80	0	20	69
0114	4151.9	6757.3	W13169.1	Y43864.9	302	35.0		76	15	61	55	15	0	85	115
0115	4151.9	6802.0	W13190.7	Y43870.0	336	49.2		512	71	441	340	10	0	90	207
0116	4149.0	6804.3	W13215.9	Y43857.3	86	36.6	45.88	15	0	15	15	15	20	65	276
0117	4146.6	6813.9	W13272.9	Y43855.1	37	45.4		60	19	41	29	5	0	95	36
0118	4145.0	6813.8	W13280.3	Y43846.4	78	35.5		36	6	30	30	60	0	40	46
0119	4144.1	6819.4	W13311.4	Y43847.8	49	43.2	50.36	5	1	4	4	5	0	95	1610
0120	4135.4	6829.4	W13401.8	Y43811.1	214	56.3		28	23	5	5	5	0	95	1058

HUGH R. SHARP 2012 SEA SCALLOP SURVEY
01 June - 07 July 2012

Station Data								Number of Scallops				By-Catch			
	Position		Loran TD's			Depth	Bottom Temp	Total	<90mm >40ct	>90mm <40ct	>100mm <30ct	Shell	Stone	Inverts	Total
Station	Lat.	Long.			heading	(FM)	(F)	No.				(Percentage)			Vol.(lt)
0121	4133.6	6831.9	W13422.5	Y43803.8	52	62.3		10	0	10	10	5	5	90	138
0122	4131.6	6829.8	W13421.7	Y43790.3	24	50.9	44.28	15	1	14	13	5	35	60	345
0123	4127.4	6826.9	W13427.4	Y43763.8	11	42.1		22	3	19	16	5	0	95	851
0124	4122.7	6820.6	W13419.0	Y43731.1	52	33.9		902	427	475	373	50	25	25	207
0125	4119.6	6825.6	W13457.0	Y43718.4	6	34.4	53.47	6	3	3	3	2	0	98	2001
0126	4125.3	6832.1	W13462.3	Y43757.3	34	48.1		390	87	303	281	10	0	90	115
0127	4123.3	6838.9	W13504.7	Y43752.9	217	53.0		159	42	117	94	30	5	65	138
0128	4119.9	6847.4	W13562.2	Y43742.1	151	61.8	43.65	92	10	82	52	95	0	5	115
0129	4116.5	6841.8	W13549.6	Y43716.6	197	41.0		63	10	53	52	75	0	25	161
0130	4052.1	6909.5	W13790.7	Y43595.6	283	31.7	53.64	1143	423	720	441	20	75	5	276
0131	4048.4	6913.4	W13825.0	Y43575.8	289	33.9		382	37	345	335	10	20	70	138
0132	4042.5	6918.7	W13874.5	Y43542.8	48	24.6		48	19	29	20	80	5	15	34
0133	4037.8	6904.1	W13819.1	Y43501.2	89	40.5	52.32	213	33	180	171	50	5	45	115
0134	4030.2	6857.4	W13814.7	Y43448.3	135	41.0		2	0	2	2	15	10	75	92
0135	4038.4	6852.7	W13760.8	Y43496.5	194	36.6		89	21	68	57	25	25	50	322
0136	4032.1	6843.2	W13739.2	Y43450.6	180	38.3	52.30	4	1	3	3	25	25	50	230
0137	4042.9	6846.4	W13712.8	Y43519.6	199	35.0		104	22	82	81	50	25	25	414
0138	4050.5	6844.5	W13673.2	Y43564.5	271	37.2		13	4	9	8	5	5	90	552
0139	4059.2	6853.4	W13681.2	Y43624.9	167	38.3	55.06	214	122	92	66	50	30	20	598
0140	4105.6	6856.5	W13669.9	Y43666.4	188	47.6		0	0	0	0	100	0	0	1
0141	4109.0	6854.0	W13642.9	Y43684.4	227	53.6		15	2	13	13	2	3	95	1288
0142	4111.3	6852.9	W13627.5	Y43697.0	255	53.6	45.32	161	31	130	117	3	2	95	1288
0143	4111.0	6844.3	W13586.1	Y43686.9	351	36.6		79	28	51	39	10	5	85	230
0144	4113.3	6838.9	W13549.5	Y43695.1	5	35.5		39	11	28	24	25	5	70	184
0145	4118.6	6837.1	W13517.1	Y43724.1	2	39.9	49.15	158	28	130	95	25	50	25	184
0146	4114.8	6836.4	W13530.7	Y43701.4	36	35.0		137	91	46	36	50	5	45	46
0147	4108.5	6837.9	W13565.6	Y43666.1	156	33.9		36	19	17	17	25	5	70	92
0148	4107.7	6844.9	W13603.3	Y43668.0	148	37.7	53.74	78	9	69	65	5	70	25	184
0149	4106.1	6846.0	W13615.6	Y43659.5	119	38.3		243	109	134	112	70	15	15	506
0150	4056.6	6848.3	W13666.8	Y43604.6	189	41.0		234	14	220	218	25	25	50	184
0151	4051.0	6843.2	W13664.8	Y43566.4	253	35.5	53.78	1	1	0	0	5	5	90	1242
0152	4039.3	6843.9	W13714.8	Y43495.6	2	33.4		45	11	34	32	3	2	95	460
0153	4025.5	6824.0	W13674.3	Y43398.0	20	56.3		4	4	0	0	4	1	95	184
0154	4037.2	6818.7	W13604.6	Y43465.3	185	45.4		1	1	0	0	35	15	50	322
0155	4047.2	6754.9	W13456.4	Y43507.7	11	39.4	51.66	28	0	28	27	45	10	45	184
0156	4055.0	6754.0	W13419.6	Y43551.6	192	32.8		13	0	13	13	10	10	80	1104
0157	4055.2	6750.1	W13401.4	Y43549.9	354	32.3		4	1	3	3	1	1	98	1196
0158	4044.1	6736.9	W13390.9	Y43478.2	51	43.7	50.43	43	12	31	31	40	50	10	598
0159	4041.4	6731.7	W13380.0	Y43459.8	35	49.2		86	75	11	11	25	50	25	644
0160	4036.2	6723.3	W13366.2	Y43425.8	95	56.3		3	3	0	0	25	25	50	46

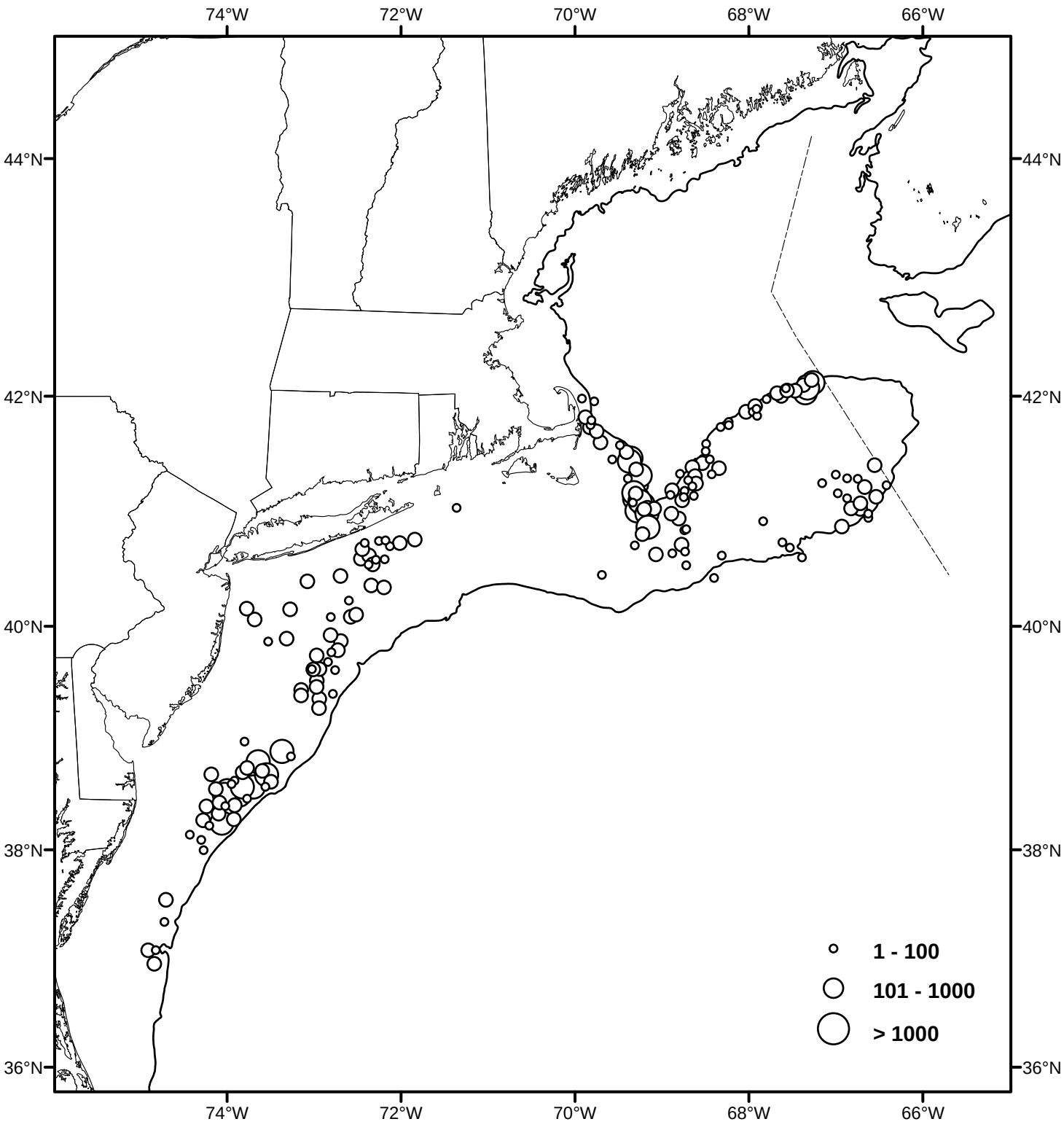
HUGH R. SHARP 2012 SEA SCALLOP SURVEY
01 June - 07 July 2012

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.(lt)
0161	4103.4	6722.5	W13247.1	Y43575.0	293	36.1	51.19	7	0	7	6	3	2	95	1518
0162	4052.4	6655.9	W13187.2	Y43498.1	71	50.9		146	127	19	19	80	15	5	1288
0163	4059.0	6650.7	W13138.1	Y43529.8	75	43.2		378	0	378	368	90	5	5	184
0164	4101.9	6649.5	W13120.6	Y43544.2	355	41.0	48.49	241	12	229	228	60	10	30	138
0165	4101.6	6643.1	W13097.2	Y43538.5	344	42.7		423	5	418	396	25	10	65	184
0166	4056.9	6637.6	W13096.9	Y43510.7	336	55.2		5	4	1	0	95	2	3	782
0167	4059.2	6637.6	W13086.9	Y43522.6	23	48.1	49.24	3	2	1	1	90	5	5	138
0168	4107.9	6632.2	W13027.9	Y43563.8	324	51.4		194	37	157	73	25	10	65	138
0169	4104.5	6643.1	W13084.4	Y43553.6	218	42.7		230	37	193	184	25	25	50	92
0170	4107.2	6652.2	W13107.5	Y43573.7	3	39.4	49.71	72	18	54	53	50	25	25	92
0171	4109.8	6658.7	W13121.5	Y43591.9	126	37.7		69	6	63	57	50	25	25	92
0172	4105.2	6704.5	W13165.3	Y43571.8	122	37.2		69	0	69	68	50	25	25	92
0173	4115.0	6709.5	W13141.2	Y43627.2	212	33.4	51.80	3	1	2	2	80	10	10	414
0174	4119.5	6700.1	W13082.6	Y43643.4	264	36.1		7	1	6	6	5	2	93	460
0175	4117.5	6652.2	W13060.7	Y43627.0	87	38.8		71	2	69	68	5	5	90	230
0176	4117.3	6644.9	W13033.3	Y43620.6	338	42.1	48.76	89	3	86	83	3	2	95	460
0177	4113.0	6640.1	W13034.6	Y43595.2	151	43.2		210	38	172	163	3	2	95	230
0178	4113.9	6625.0	W12974.1	Y43589.4	84	51.9	50.22	27	10	17	14	35	60	5	230
0179	4124.4	6633.3	W12956.3	Y43647.9	194	50.3		338	12	326	302	75	10	15	1472
0180	4124.4	6638.4	W12975.5	Y43651.7	231	47.0		100	0	100	99	65	10	25	345
0181	4059.2	6910.3	W13766.2	Y43640.5	4	33.9	46.26	1409	982	427	198	40	50	10	552
0182	4105.5	6915.1	W13765.0	Y43684.1	204	31.7		1969	1066	903	720	50	40	10	506
0183	4103.9	6913.0	W13760.8	Y43672.1	230	29.5		2054	1184	870	549	50	40	10	460
0184	4101.8	6905.3	W13730.1	Y43651.8	186	45.4		283	122	161	136	50	40	10	276
0185	4102.3	6909.9	W13751.5	Y43659.2	161	34.4		585	246	339	298	50	40	10	460
0186	4101.5	6912.2	W13766.5	Y43656.5	194	33.4	53.49	175	13	162	151	35	50	15	69
0187	4100.6	6917.2	W13795.9	Y43655.8	330	29.5		2068	1204	864	516	20	70	10	690
0188	4104.9	6920.1	W13793.4	Y43685.4	352	24.1		47	9	38	27	80	15	5	345
0189	4107.0	6918.8	W13778.0	Y43697.1	30	30.1	51.76	5856	4116	1740	972	45	50	5	920
0190	4109.0	6917.5	W13762.9	Y43708.1	359	26.8		0	0	0	0	0	0	0	0
0191	4109.6	6918.1	W13763.5	Y43712.4	36	25.7		432	22	410	392	15	65	20	736
0192	4110.0	6919.3	W13768.1	Y43716.1	45	30.6		2872	944	1928	1056	20	60	20	690
0193	4117.4	6923.5	W13758.8	Y43766.0	196	26.2	48.40	40	8	32	32	60	20	20	184
0194	4119.0	6915.0	W13707.2	Y43766.2	356	53.6		3564	3312	252	18	35	35	30	242
0195	4122.2	6917.8	W13707.9	Y43788.6	148	57.4		123	28	95	55	30	10	60	483
0196	4126.5	6922.4	W13713.3	Y43819.7	154	32.8	45.88	2226	386	1840	1252	50	10	40	92
0197	4127.9	6921.4	W13701.7	Y43826.9	358	41.6		3448	713	2731	708	50	10	40	92
0198	4131.3	6923.8	W13699.3	Y43850.1	256	40.5		0	0	0	0	0	0	0	0
0199	4131.1	6924.4	W13703.4	Y43849.6	343	37.7	48.52	812	136	706	527	50	10	40	460
0200	4127.3	6934.3	W13773.8	Y43838.8	338	17.5		2	1	1	1	5	90	5	460

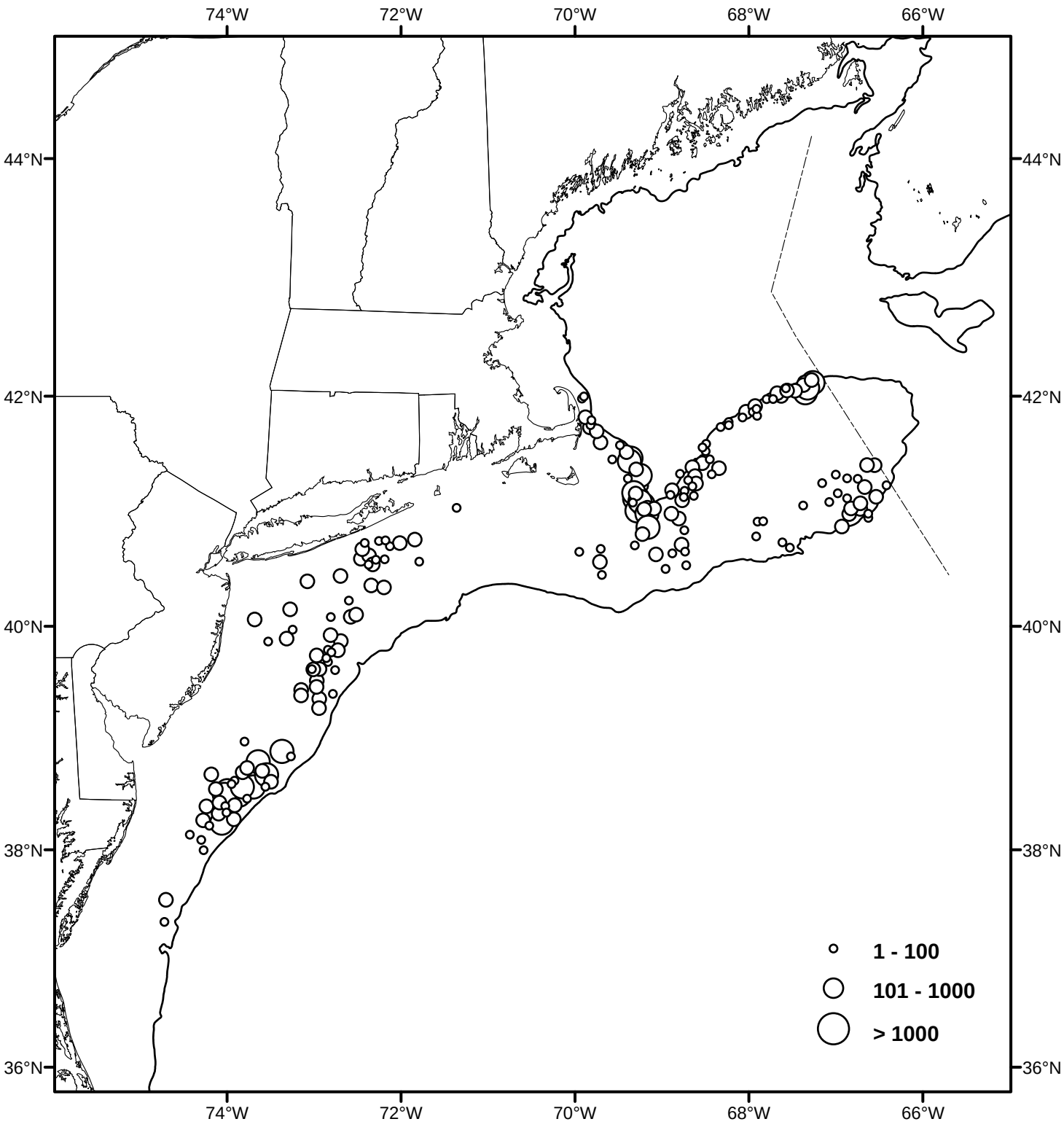
HUGH R. SHARP 2012 SEA SCALLOP SURVEY
01 June - 07 July 2012

Station Data								Number of Scallops				By-Catch			
	Position		Loran			Depth	Bottom Temp	Total	<90mm	>90mm	>100mm	Shell	Stone	Inverts	Total
Station	Lat.	Long.	TD's		heading	(FM)	(F)	No.	>40ct	<40ct	<30ct	(Percentage)			Vol.(lt)
0201	4134.7	6928.9	W13711.4	Y43876.6	310	37.7		77	30	47	41	10	80	10	828
0202	4136.1	6942.3	W13778.7	Y43902.1	134	19.7		637	197	440	355	5	94	1	1150
0203	4141.9	6945.0	W13767.4	Y43940.4	182	36.1	45.54	309	36	273	265	10	80	10	644
0204	4143.9	6949.7	W13784.7	Y43958.7	168	25.2		395	129	266	244	40	50	10	552
0205	4147.6	6948.6	W13761.4	Y43979.1	247	48.7		6	2	4	4	10	80	10	92
0206	4157.2	6946.7	W13705.0	Y44032.3	353	60.7	43.86	15	15	0	0	10	80	10	104
0207	4159.8	6953.7	W13732.6	Y44057.6	359	35.5		1	0	1	0	10	80	10	460
0208	4158.7	6955.1	W13746.0	Y44053.4	354	24.6		64	50	14	12	60	20	20	253
0209	4149.1	6952.7	W13777.7	Y43993.8	352	20.8	47.71	189	130	59	54	10	10	80	161
0210	4145.0	6949.2	W13776.8	Y43964.6	32	35.0		40	5	35	33	30	60	10	253
Total								91385	54588	35851	26778				

NEFSC SEA SCALLOP SURVEY 2012
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Less Than 90 mm



NEFSC SEA SCALLOP SURVEY 2012
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Greater Than or Equal to 90 mm



NEFSC SEA SCALLOP SURVEY 2012
NOAA Fisheries Service
SEA SCALLOPS - Number/Tow
Total Number