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Submitted to:
Sea Scallop Fishing Industry

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Yellowtail Bycatch in Georges Bank Closed Area II

The Virginia Institute of Marine Science (VIMS) conducted a sea scallop survey in Georges Bank Closed Area II (GBCAII) during July 2008. The survey was funded by the Sea Scallop Research Set-Aside Program (RSA). The results of the survey indicated a scallop biomass sufficient enough to allow for one access trip of 18,000 pounds in 2009 for a full time limited access vessel. The survey also encountered a large number of yellowtail flounder which presents the possibility that the scallop fishery could prematurely reach the yellowtail flounder total allowable catch (TAC) during the opening. The survey was conducted aboard the F/V *Celtic* towing a NMFS 8 foot survey dredge along with a regulatory compliant 15 foot commercial scallop dredge with a 10 inch diamond mesh twine top with a 1.76 hanging ratio (60 meshes, 34 rings) and 8.5 meshes on the side. The scallop and yellowtail flounder catch data are presented in Table 1. The abundance and distribution of sea scallops, yellowtail flounder and the expected catch of yellowtail flounder per 1000 lbs. of scallop meats are shown in Figures 1-3. This information is based upon catch data obtained during the research cruise from the commercial dredge during a 15 minute tow at 3.8 kts. with a 3:1 scope. This is the standard protocol for the VIMS/Industry cooperative survey. We present this data so that the scallop industry can target fishing effort to areas with less yellowtail flounder bycatch. We recognize that this data is from the 2008 survey, but it may provide guidance as to the spatial distribution of yellowtail flounder for the 2009 opening of GBCAII.

Additional Findings Regarding Scallop Dredge Twine Tops and Yellowtail Flounder Bycatch

VIMS conducted several research trips aboard the F/V *Celtic* within the boundaries of the access area of GBCAII during 2006 and 2007 to test the effects of altering the hanging ratio of the scallop dredge twine top on finfish bycatch. The research was conducted during “compensation” trips as part of the sea scallop RSA program and is part of a Master’s Thesis by Kelli Milleville Wright, who is in the process of writing up the results for publication in a peer reviewed journal. The results of the research showed that there was a significant reduction in yellowtail flounder bycatch when a twine top hanging ratio of 1.76 (60 meshes, 34 rings) was used compared to a

2.64 hanging ratio (90 meshes, 34 rings). Both dredges had twine tops with 8.5 meshes on the side and 7 rings to the clubstick. In this configuration, the sweep chain was forward of the bottom of the twine top. The analysis included the consideration of scallop catch variability and results showed that the net effect was fewer yellowtail caught for the same amount of scallops. This is an important consideration for the opening of GBCAII in 2009.

Another experiment was conducted using a short twine top (5.5 meshes on the side) with an apron of 13 rings to the clubstick compared with a “standard” twine top with 8.5 meshes on the side and an apron of 7 rings to the clubstick. Both dredges had a twine top hanging ratio of 1.76 (60 meshes, 34 rings). The results showed that the short twine top configuration caught more yellowtail flounder than the “standard” configuration. It is important to note that in this case, the sweep chain was even with the bottom of the twine top. Thus, dredges rigged with short twine tops and high hanging ratios will not be as useful for the reduction of yellowtail flounder bycatch. This is an important consideration for the opening of GBCAII in June of 2009.

Table 1 Catch data for the VIMS/Industry cooperative survey of the access area of Georges Bank Closed Area II during July 2008.

Station	Latitude (degrees)	Latitude (minutes)	Longitude (degrees)	Longitude (minutes)	Scallop (Number)	Scallop (Lbs.)	Count (MPP)	Yellowtail (Number)	Yellowtail (lbs.)	Ratio (YT lbs./1000 lbs. of scallops)
CA2-1	41	28.020	67	18.120	0.0	0.0	0.0	0.0	0.0	0.0
CA2-2	41	28.020	67	13.560	0.0	0.0	0.0	0.0	0.0	0.0
CA2-3	41	28.020	67	8.940	0.0	0.0	0.0	1.0	1.9	0.0
CA2-4	41	28.020	67	4.320	0.0	0.0	0.0	4.0	3.8	0.0
CA2-5	41	28.020	66	59.760	12.0	1.1	11.4	24.0	25.6	24239.0
CA2-6	41	28.020	66	55.140	27.0	2.7	10.1	15.0	15.2	5690.0
CA2-7	41	28.020	66	50.520	193.5	23.2	8.3	18.0	17.7	762.0
CA2-8	41	28.020	66	45.960	328.0	33.8	9.7	6.0	5.3	157.0
CA2-9	41	28.020	66	41.340	141.0	17.0	8.3	1.0	1.5	90.0
CA2-10	41	28.020	66	36.720	227.8	28.0	8.1	1.0	0.7	25.0
CA2-11	41	24.660	67	18.120	0.0	0.0	0.0	0.0	0.0	0.0
CA2-12	41	24.660	67	13.560	0.0	0.0	0.0	2.0	3.6	0.0
CA2-13	41	24.660	67	8.940	0.0	0.0	0.0	1.0	1.4	0.0
CA2-14	41	24.660	67	4.320	1.0	0.1	11.0	3.0	2.3	24980.0
CA2-15	41	24.660	66	59.760	4.0	0.5	7.7	10.0	11.0	21366.0
CA2-16	41	24.660	66	55.140	60.0	7.2	8.4	15.0	18.0	2523.0
CA2-17	41	24.660	66	50.520	344.4	37.7	9.1	10.0	11.4	302.0
CA2-18	41	24.660	66	45.960	329.0	37.7	8.7	0.0	0.0	0.0
CA2-19	41	24.660	66	41.340	252.0	36.0	7.0	0.0	0.0	0.0
CA2-20	41	24.660	66	36.720	296.0	36.7	8.1	0.0	0.0	0.0
CA2-21	41	24.660	66	32.160	0.0	0.0	0.0	0.0	0.0	0.0
CA2-22	41	21.360	67	18.120	1.0	0.1	11.0	0.0	0.0	0.0
CA2-23	41	21.360	67	13.560	0.0	0.0	0.0	0.0	0.0	0.0
CA2-24	41	21.360	67	8.940	1.0	0.2	6.3	4.0	4.1	25472.0
CA2-25	41	21.360	67	4.320	1.0	0.2	6.3	14.0	12.9	81006.0
CA2-26	41	21.360	66	59.760	19.0	2.1	8.9	12.0	12.8	5992.0
CA2-27	41	21.360	66	55.140	171.0	21.1	8.1	7.0	8.9	422.0

CA2-28	41	21.360	66	50.520	86.0	9.6	8.9	2.0	1.4	147.0
CA2-29	41	21.360	66	45.960	245.7	34.1	7.2	2.0	1.4	40.0
CA2-30	41	21.360	66	41.340	35.0	3.2	10.9	3.0	2.2	696.0
CA2-31	41	21.360	66	36.720	1256.3	159.4	7.9	0.0	0.0	0.0
CA2-32	41	21.360	66	32.160	807.8	85.8	9.4	3.0	2.8	32.0
CA2-33	41	21.360	66	27.540	2719.2	281.9	9.6	2.0	2.6	9.0
CA2-34	41	18.000	67	18.120	0.0	0.0	0.0	0.0	0.0	0.0
CA2-35	41	18.000	67	13.560	2.0	0.2	8.2	1.0	1.7	6800.0
CA2-36	41	18.000	67	8.940	0.0	0.0	0.0	0.0	0.0	0.0
CA2-37	41	18.000	67	4.320	19.0	2.5	7.7	13.0	14.8	6001.0
CA2-38	41	18.000	66	59.760	141.0	16.9	8.3	18.0	19.3	1143.0
CA2-39	41	18.000	66	55.140	116.0	14.0	8.3	6.0	6.4	454.0
CA2-40	41	18.000	66	50.520	253.8	32.0	7.9	6.0	4.9	152.0
CA2-41	41	18.000	66	45.960	137.0	18.5	7.4	2.0	1.7	93.0
CA2-42	41	18.000	66	41.340	225.0	28.2	8.0	5.0	4.3	152.0
CA2-43	41	18.000	66	36.720	183.0	16.2	11.3	16.0	15.8	976.0
CA2-44	41	18.000	66	32.160	656.3	72.7	9.0	3.0	3.4	47.0
CA2-45	41	18.000	66	27.540	1532.9	144.9	10.6	0.0	0.0	0.0
CA2-46	41	14.700	67	18.120	2.0	0.2	9.8	1.0	0.6	2830.0
CA2-47	41	14.700	67	13.560	0.0	0.0	0.0	0.0	0.0	0.0
CA2-48	41	14.700	67	8.940	14.0	1.5	9.4	8.0	8.9	5978.0
CA2-49	41	14.700	67	4.320	0.0	0.0	0.0	0.0	0.0	0.0
CA2-50	41	14.700	66	59.760	134.0	16.8	8.0	6.0	7.0	417.0
CA2-51	41	14.700	66	55.140	142.0	18.1	7.9	4.0	4.3	236.0
CA2-52	41	14.700	66	50.520	454.3	56.0	8.1	14.0	13.2	236.0
CA2-53	41	14.700	66	45.960	190.8	21.6	8.8	10.0	10.7	493.0
CA2-54	41	14.700	66	41.340	299.3	34.0	8.8	17.0	15.5	457.0
CA2-55	41	14.700	66	36.720	236.0	22.7	10.4	17.0	15.4	676.0
CA2-56	41	14.700	66	32.160	3360.7	304.7	11.0	5.0	5.2	17.0
CA2-57	41	14.700	66	27.540	567.5	48.1	11.8	2.0	1.7	36.0
CA2-58	41	11.340	67	18.120	3.0	0.3	8.6	5.0	6.0	17355.0
CA2-59	41	11.340	67	13.560	15.0	1.8	8.1	18.0	19.0	10296.0

CA2-60	41	11.340	67	8.940	433.7	55.2	7.9	9.0	10.0	181.0
CA2-61	41	11.340	67	4.320	269.5	31.7	8.5	10.0	11.5	363.0
CA2-62	41	11.340	66	59.760	397.5	32.8	12.1	18.0	18.2	556.0
CA2-63	41	11.340	66	55.140	360.0	40.2	9.0	14.0	14.4	359.0
CA2-64	41	11.340	66	50.520	390.0	32.2	12.1	8.0	7.3	225.0
CA2-65	41	11.340	66	45.960	1162.5	146.3	7.9	19.0	20.5	140.0
CA2-66	41	11.340	66	41.340	120.0	12.8	9.4	33.0	32.0	2501.0
CA2-67	41	11.340	66	36.720	0.0	0.0	0.0	0.0	0.0	0.0
CA2-68	41	11.340	66	32.160	1384.5	109.8	12.6	0.0	0.0	0.0
CA2-69	41	8.040	67	18.120	21.0	2.6	8.1	5.0	5.0	1903.0
CA2-70	41	8.040	67	13.560	0.0	0.0	0.0	0.0	0.0	0.0
CA2-71	41	8.040	67	8.940	298.4	37.4	8.0	4.0	4.4	118.0
CA2-72	41	8.040	67	4.320	276.0	27.8	9.9	13.0	11.4	408.0
CA2-73	41	8.040	66	59.760	490.0	48.5	10.1	7.0	5.1	105.0
CA2-74	41	8.040	66	55.140	700.0	49.7	14.1	8.0	19.8	399.0
CA2-75	41	8.040	66	50.520	630.0	55.9	11.3	9.0	9.1	164.0
CA2-76	41	8.040	66	45.960	490.0	45.3	10.8	15.0	15.6	344.0
CA2-77	41	8.040	66	41.340	979.0	98.7	9.9	6.0	5.8	58.0
CA2-78	41	8.040	66	36.720	524.9	53.2	9.9	2.0	1.6	31.0
CA2-79	41	8.040	66	32.160	53.0	3.8	14.1	36.0	30.8	8176.0
CA2-80	41	4.680	67	18.120	167.0	20.2	8.3	3.0	2.8	141.0
CA2-81	41	4.680	67	13.560	238.7	28.0	8.5	5.0	5.0	180.0
CA2-82	41	4.680	67	8.940	342.0	33.8	10.1	8.0	6.9	204.0
CA2-83	41	4.680	67	4.320	216.0	24.6	8.8	9.0	9.0	365.0
CA2-84	41	4.680	66	59.760	519.2	56.0	9.3	3.0	3.1	55.0
CA2-85	41	4.680	66	55.140	504.4	37.9	13.3	2.0	2.0	54.0
CA2-86	41	4.680	66	50.520	99.0	10.2	9.7	0.0	0.0	0.0
CA2-87	41	4.680	66	45.960	1445.3	152.6	9.5	24.0	24.4	160.0
CA2-88	41	4.680	66	41.340	0.0	0.0	0.0	0.0	0.0	0.0
CA2-89	41	4.680	66	36.720	1704.5	105.6	16.1	0.0	0.0	0.0
CA2-90	41	1.380	67	18.120	368.1	43.2	8.5	1.0	0.9	22.0
CA2-91	41	1.380	67	13.560	174.2	20.9	8.3	3.0	3.0	145.0

CA2-92	41	1.380	67	8.940	390.5	47.6	8.2	8.0	7.3	153.0
CA2-93	41	1.380	67	4.320	348.0	36.1	9.6	7.0	7.0	194.0
CA2-94	41	1.380	66	59.760	279.0	26.7	10.4	2.0	2.2	84.0
CA2-95	41	1.380	66	55.140	676.0	72.5	9.3	19.0	21.9	302.0
CA2-96	41	1.380	66	50.520	227.5	23.1	9.9	2.0	1.4	62.0
CA2-97	41	1.380	66	45.960	565.6	51.5	11.0	4.0	5.3	102.0
CA2-98	41	1.380	66	41.340	157.0	9.7	16.2	0.0	0.0	0.0
CA2-99	41	1.380	66	36.720	54.0	2.8	19.4	0.0	0.0	0.0

Figure 1 Spatial representation of sea scallop catch encountered during the VIMS/Industry survey of Georges Bank Closed Area II during July of 2008.

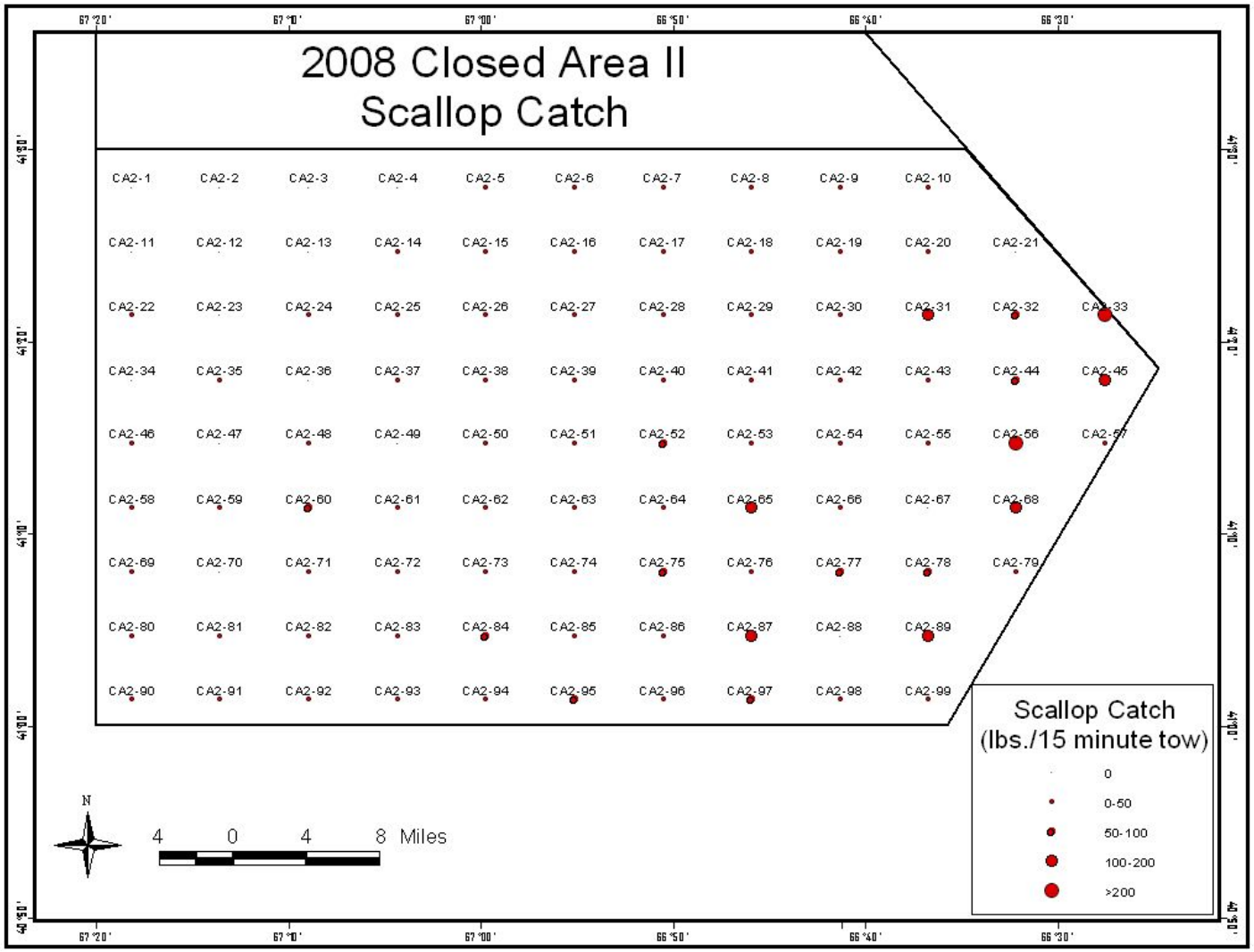

Figure 2 Spatial representation of yellowtail flounder catch encountered during the VIMS/Industry survey of Georges Bank Closed Area II during July of 2008.

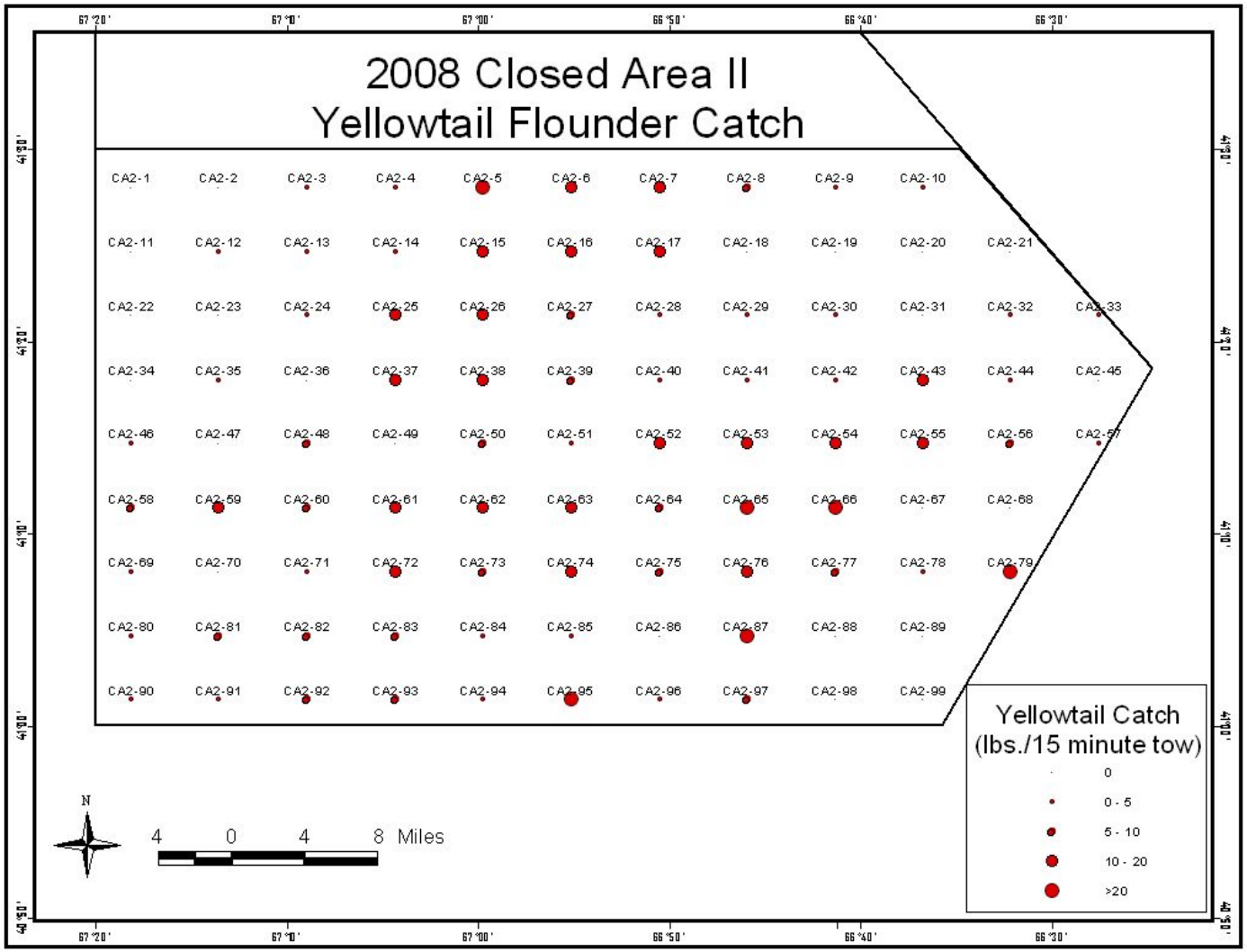

Figure 3 Spatial representation of the expected catch (in lbs.) of yellowtail flounder per 1000 lbs. of scallop meats. Estimated catches are based on the ratio of yellowtail and scallop catches at each station during the VIMS/Industry survey of Georges Bank Closed Area II during July of 2008.