2018 RSA HabCam v3

Scallop Survey Short Report

Prepared by:

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22-August-2018

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1.0 2018 SURVEY BIOMASS ESTIMATES*

HabCam v3							
Georges Bank	**NumMill**	**BmsMt**	**SE**	**MeanWt**	**Avg. Size (mm)**	**Scallop density**	**HabCam images annotated**
CL1ACC							
CL1NA							
CL-2(N)							
CL-2(S)							
CL2Ext							
NLSAccN	115.3	3794	20.4	32.91	120.6	0.11	1904
NLSAccS-shallow	393.2	7075	58.9	17.99	94.87	1.36	507
NLSAccS-deep	3741.9	31940	1288.6	8.54	78.36	5.12	1220
NLS-W	2237.1	60445	4441.8	27.02	99.3	1.53	2156
NLSExt	12.48	328	29.65	26.29	102.2	0.03	625
NF							
SCH							
SF							
MidAtlantic							
BI							
LI							
NYB							
MA inshore							
HCSAA							
ET Open							
ET Flex							
DMV							
Virginia							

*: Scallops 40mm and greater

2.0 FIGURES OF SURVEY COVERAGE

The RSA HabCam v3 survey took place from July 15-21, 2018 and covered approximately 725 nm in the Nantucket Lightship (NLS) scallop management area, as well as a portion of the southern flank immediately to the east of the NLS-Ext and a small area to the west of the NLS-W (**Figure 1**). Approximately 2.9 million stereo image pairs were collected, of which 7,143 were annotated, yielding an annotation rate of approximately 1:400 images. Quality control was performed on a minimum of 25% of the annotated images (QC rate was increased in areas of high scallop biomass).

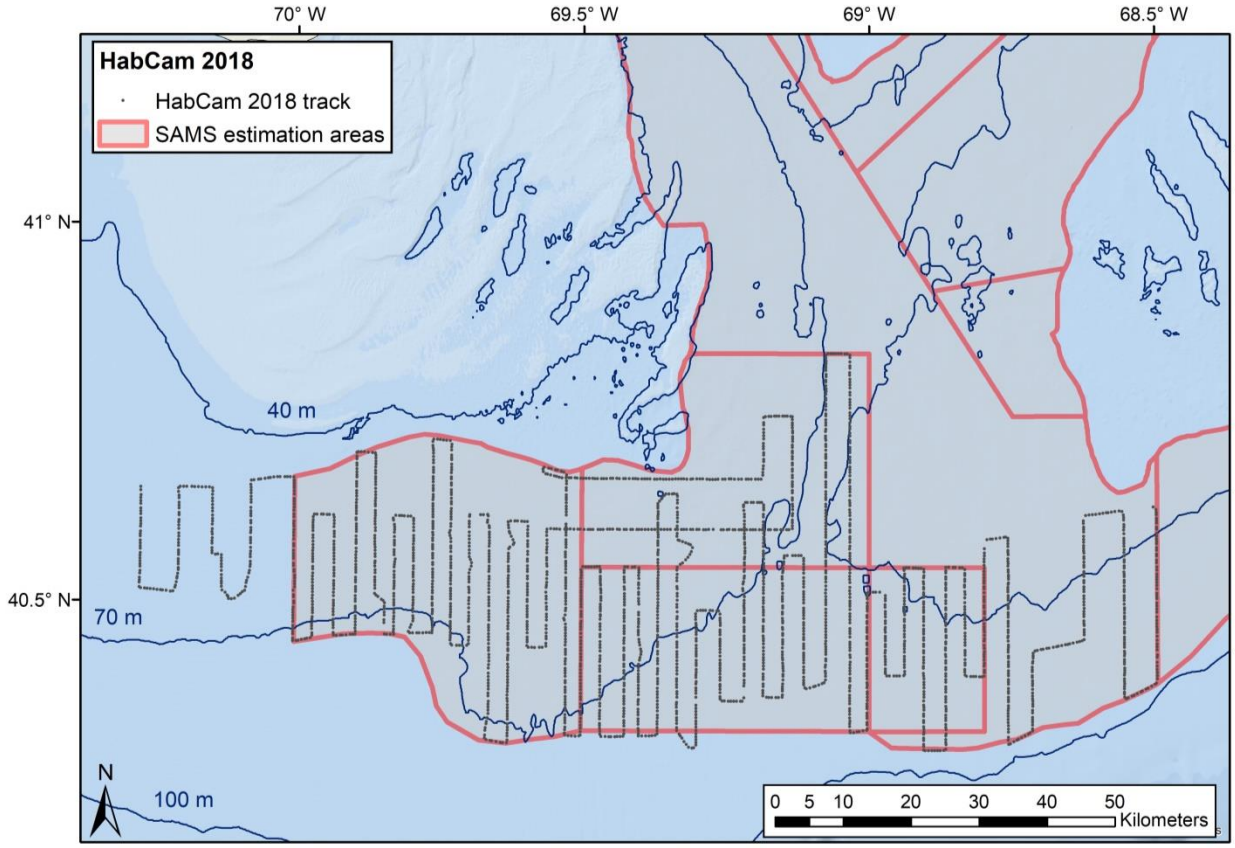
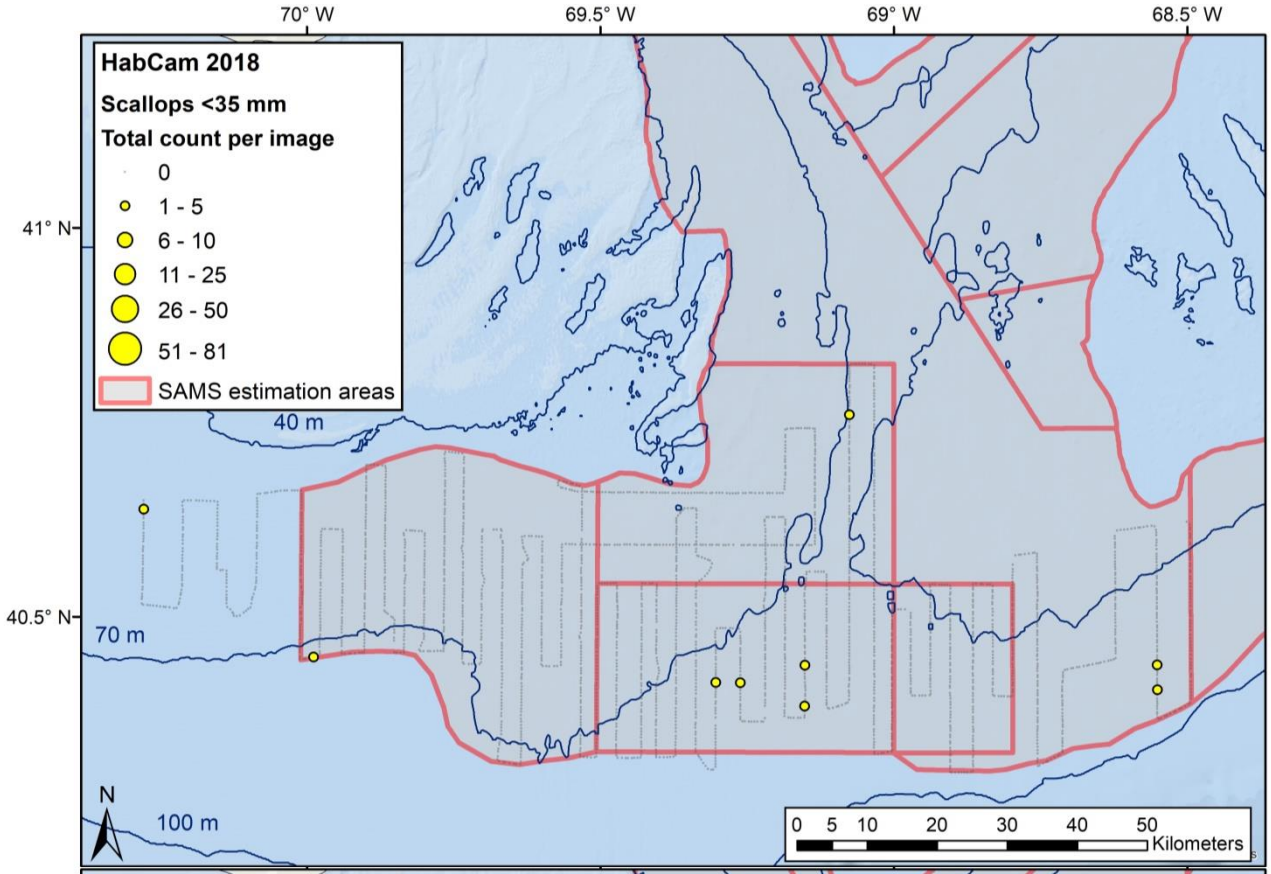
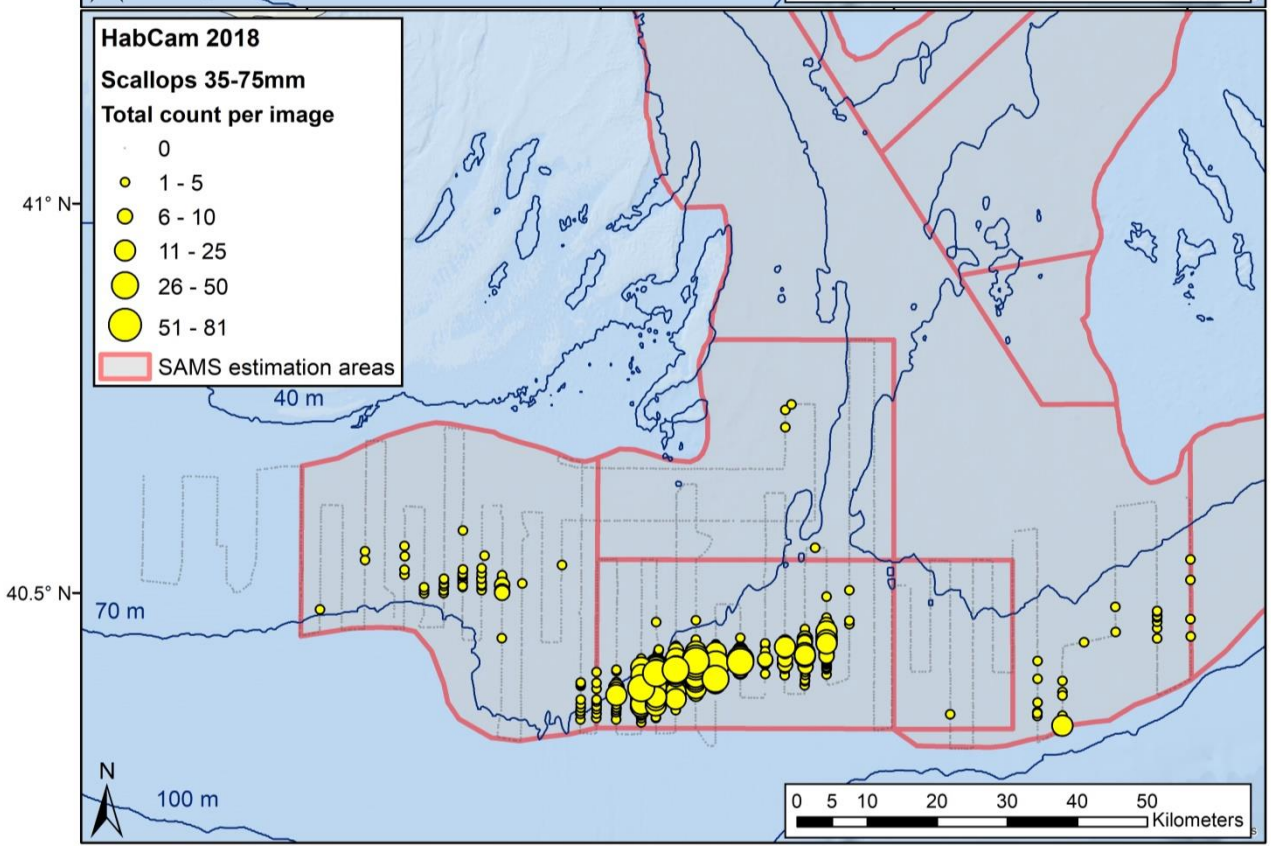


Figure 1. CFF RSA HabCam v3 survey track.

The SAMS areas with the largest concentration of scallops were NLS-S and NLS-W (**Figure 2**), as seen in 2015 and 2017. Substantial numbers of recruit scallops (35-75 mm shell height) were present in the deeper waters of NLS-S, though pre-recruit scallops (<35mm) were not seen in substantial densities in the NLS.

There is a marked difference in the numbers of observed scallops in the NLS-Ext 2017-2018 (scallops counted = 461 in 2017, 16 in 2018). Based on preliminary VMS data, it is possible that this is a result of high fishing pressure in the north-central portion of the NLS-Ext.


70° W
69.5° W
69° W
68.5° W
41° N
40.5° N
HabCam 2018
Scallops <35 mm
Total count per image
0
1 - 5
6 - 10
11 - 25
26 - 50
51 - 81
SAMS estimation areas
40 m
70 m
100 m
N
0 5 10 20 30 40 50
Kilometers


41° N
40.5° N
HabCam 2018
Scallops 35-75mm
Total count per image
0
1 - 5
6 - 10
11 - 25
26 - 50
51 - 81
SAMS estimation areas
40 m
70 m
100 m
N
0 5 10 20 30 40 50
Kilometers

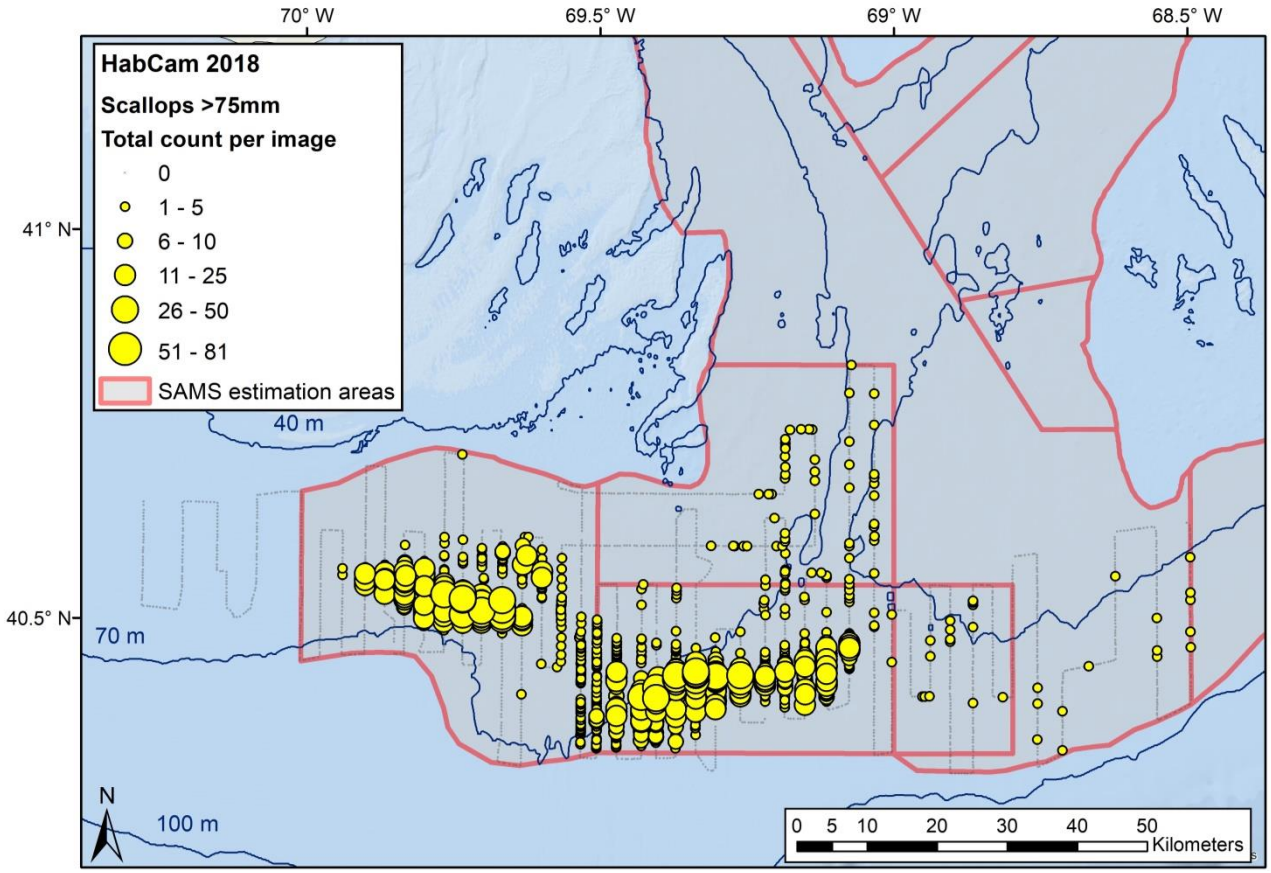
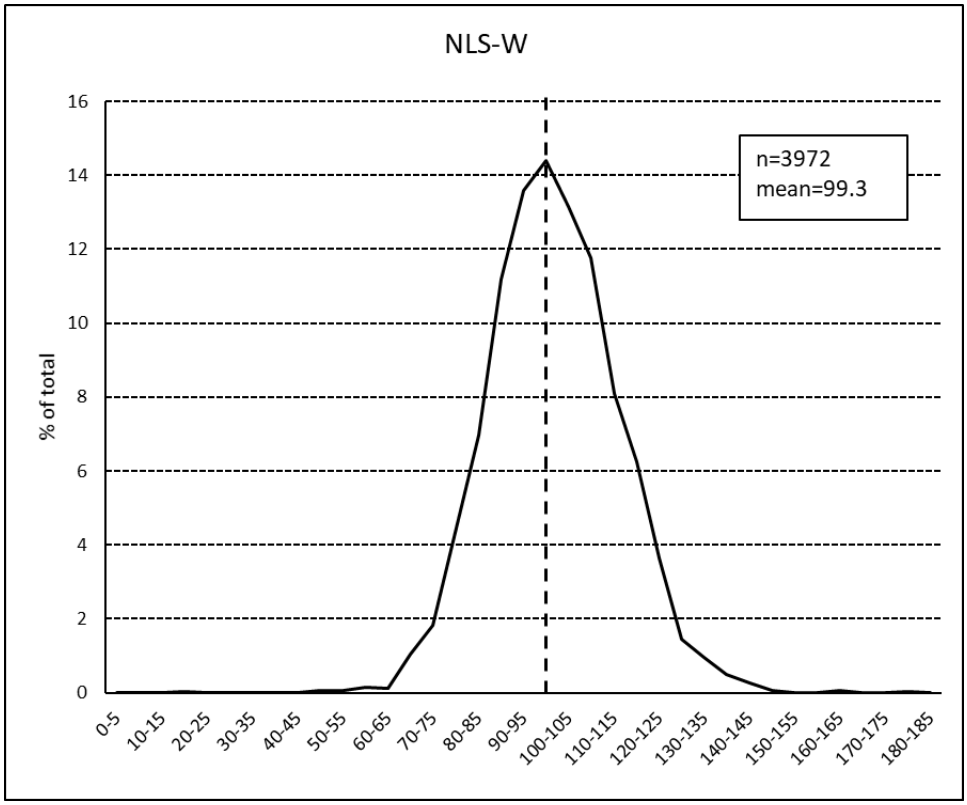
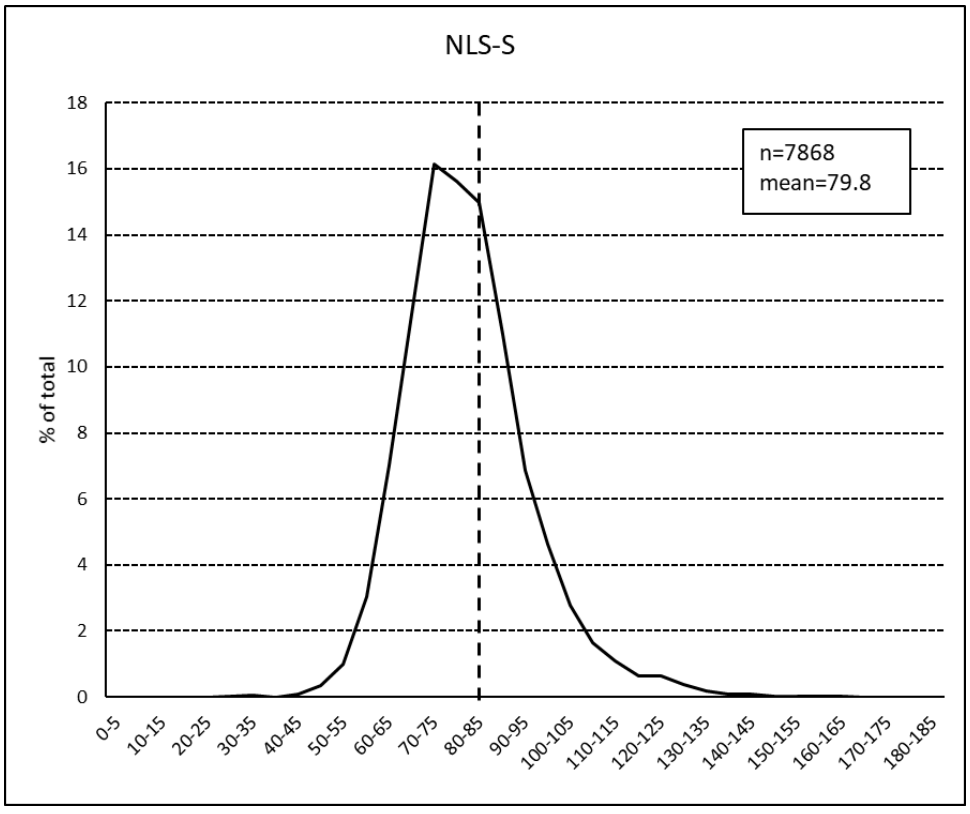


Figure 2. Distribution plots of scallops (top panel: pre-recruits <35mm, second panel: recruits 35-75mm, bottom panel: >75mm). Larger circles represent more scallops per image in that particular size class.

3.0 LENGTH FREQUENCY PLOTS BY SAMS AREA





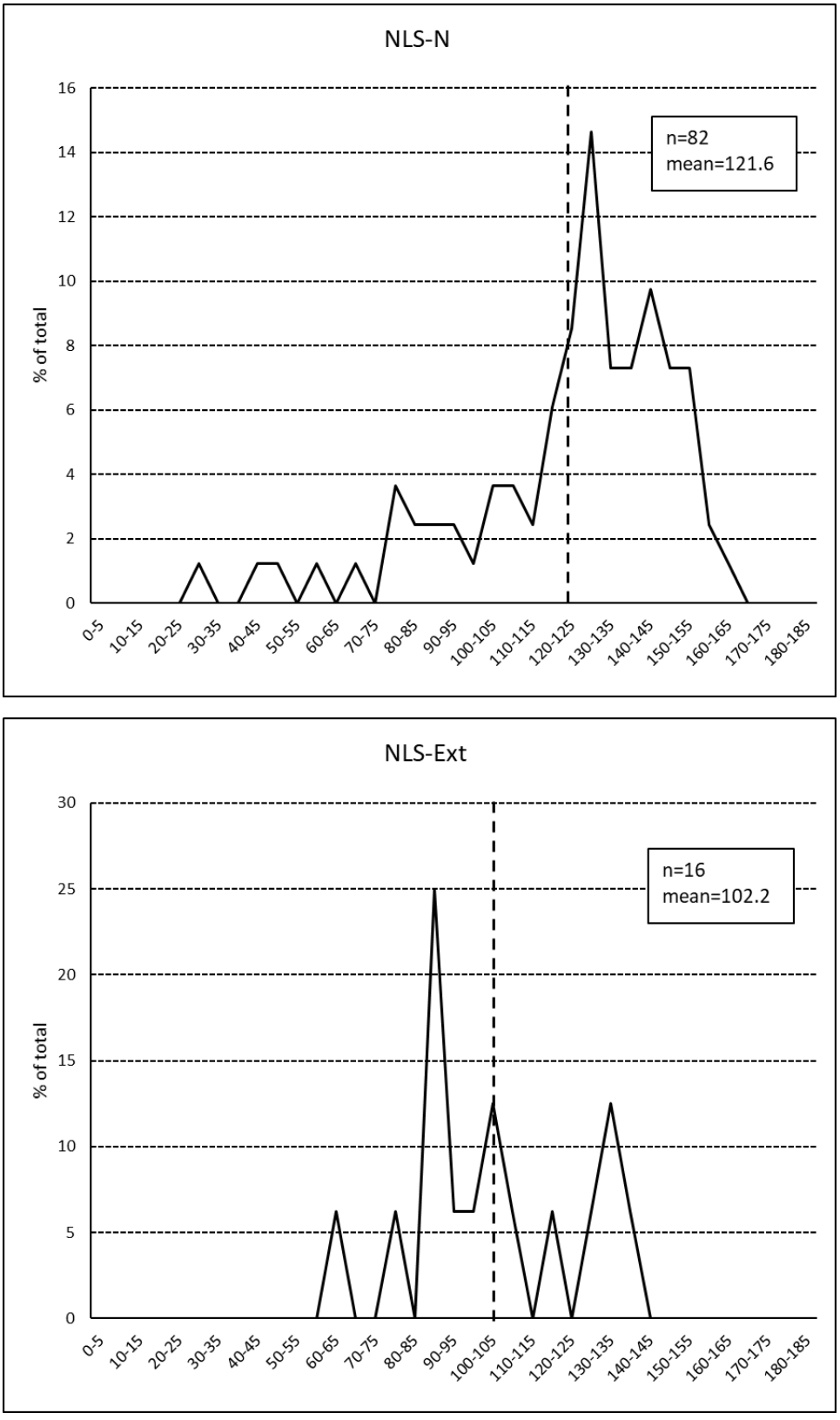


Figure 3. 2018 RSA HabCam length-frequency plots of sea scallops by NLS SAMS area. n=total number of scallops counted. Dashed line represents 5mm bin where mean shell height is contained.

Table 1. Frequency of scallops in 5mm size bins observed in 2018 (by NLS SAMS area).

	Frequency			
Range	**NLS-W**	**NLS-S**	**NLS-N**	**NLS-Ext**
0-5	0	0	0	0
5-10	0	0	0	0
10-15	0	0	0	0
15-20	1	0	0	0
20-25	0	0	0	0
25-30	0	1	1	0
30-35	0	5	0	0
35-40	0	0	0	0
40-45	0	8	1	0
45-50	2	27	1	0
50-55	2	79	0	0
55-60	6	238	1	0
60-65	5	552	0	1
65-70	41	914	1	0
70-75	73	1269	0	0
75-80	172	1229	3	1
80-85	277	1179	2	0
85-90	445	865	2	4
90-95	540	540	2	1
95-100	572	365	1	1
100-105	522	219	3	2
105-110	467	130	3	1
110-115	322	85	2	0
115-120	248	50	5	1
120-125	145	49	7	0
125-130	58	31	12	1
130-135	38	14	6	2
135-140	20	7	6	1
140-145	11	6	8	0
145-150	2	2	6	0
150-155	0	2	6	0
155-160	0	1	2	0
160-165	2	1	1	0
165-170	0	0	0	0
170-175	0	0	0	0
175-180	1	0	0	0
180-185	0	0	0	0
Total:	**3972**	**7868**	**82**	**16**

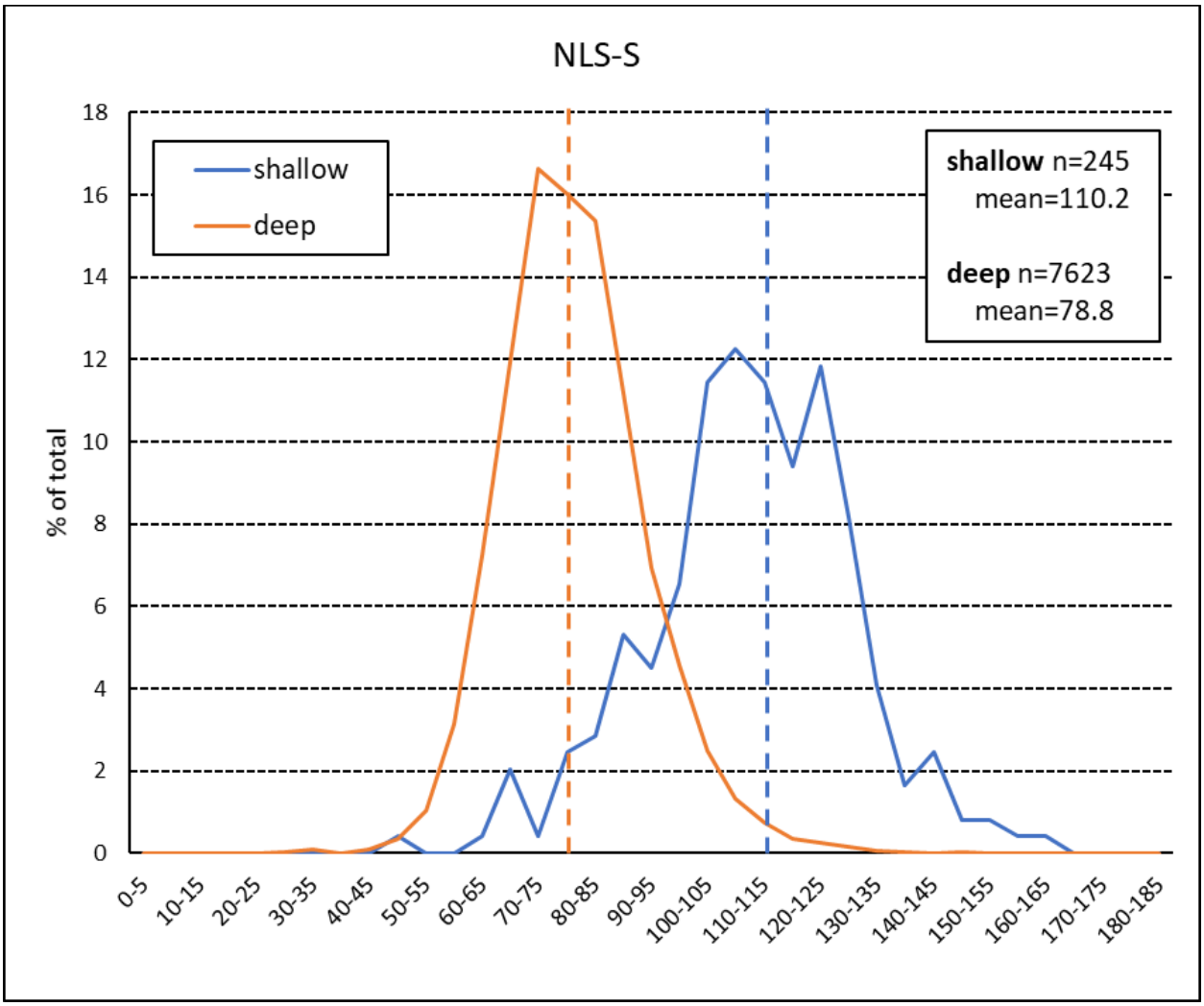


Figure 4. Length-frequency plot of sea scallops observed in the shallow (<70m) and deep (>70m) portions of the NLS-S SAMS area in 2018. n=total number of scallops counted. Dashed line represents 5mm bin where mean shell height is contained.

4.0 SPECIAL COMMENTS

- Anecdotally, there were substantially more sea stars observed in the NLS than in 2017 (see F**igure 5** below; note this includes ALL sea stars – not just *Astropecten spp.*).
- There was also more evidence of potential scallop predation by sea stars observed in captured images in 2018 vs. 2017, particularly in the central NLS-W SAMS area (**Figure 6**).

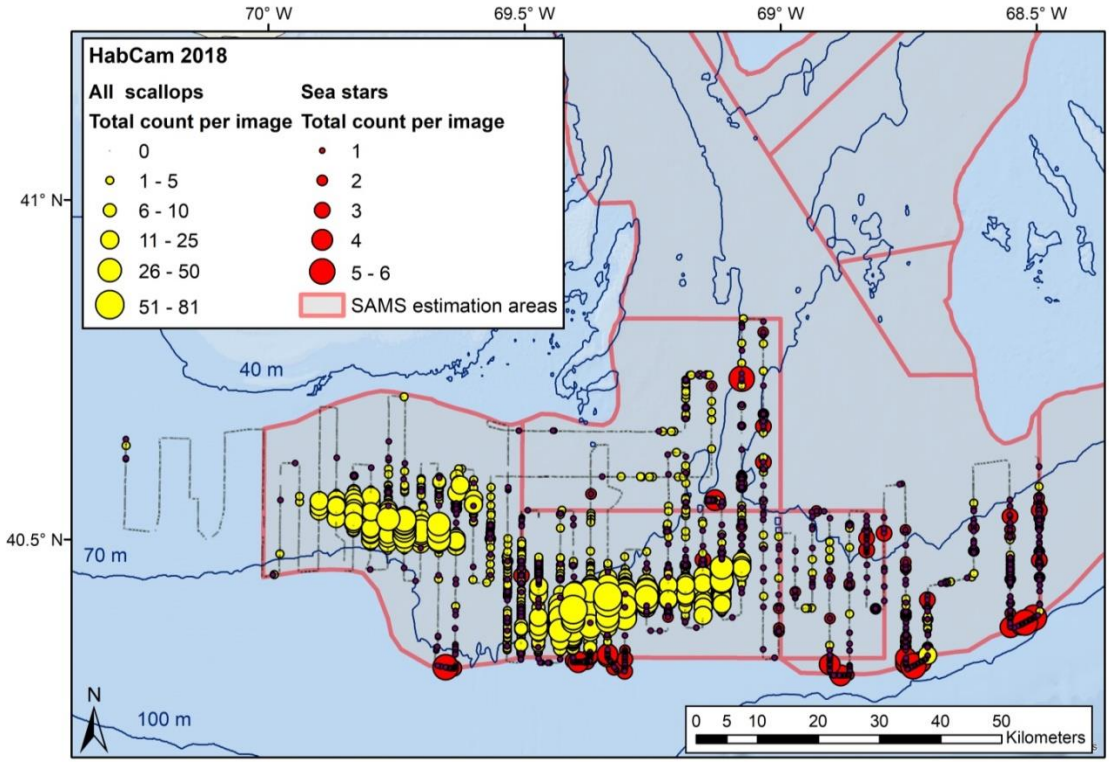


Figure 5. Distribution plot of sea stars and scallops observed in the NLS during the 2018 RSA HabCam survey.

Figure 6. Images of potential scallop predation by sea stars observed in the NLS-W SAMS area during the 2018 RSA HabCam survey

- Time series length-frequency plots of sea scallops in the NLS-W and NLS-S 2015-2018 indicate a slowing or cessation of growth (as indicated by shell height; **Figure 7**).

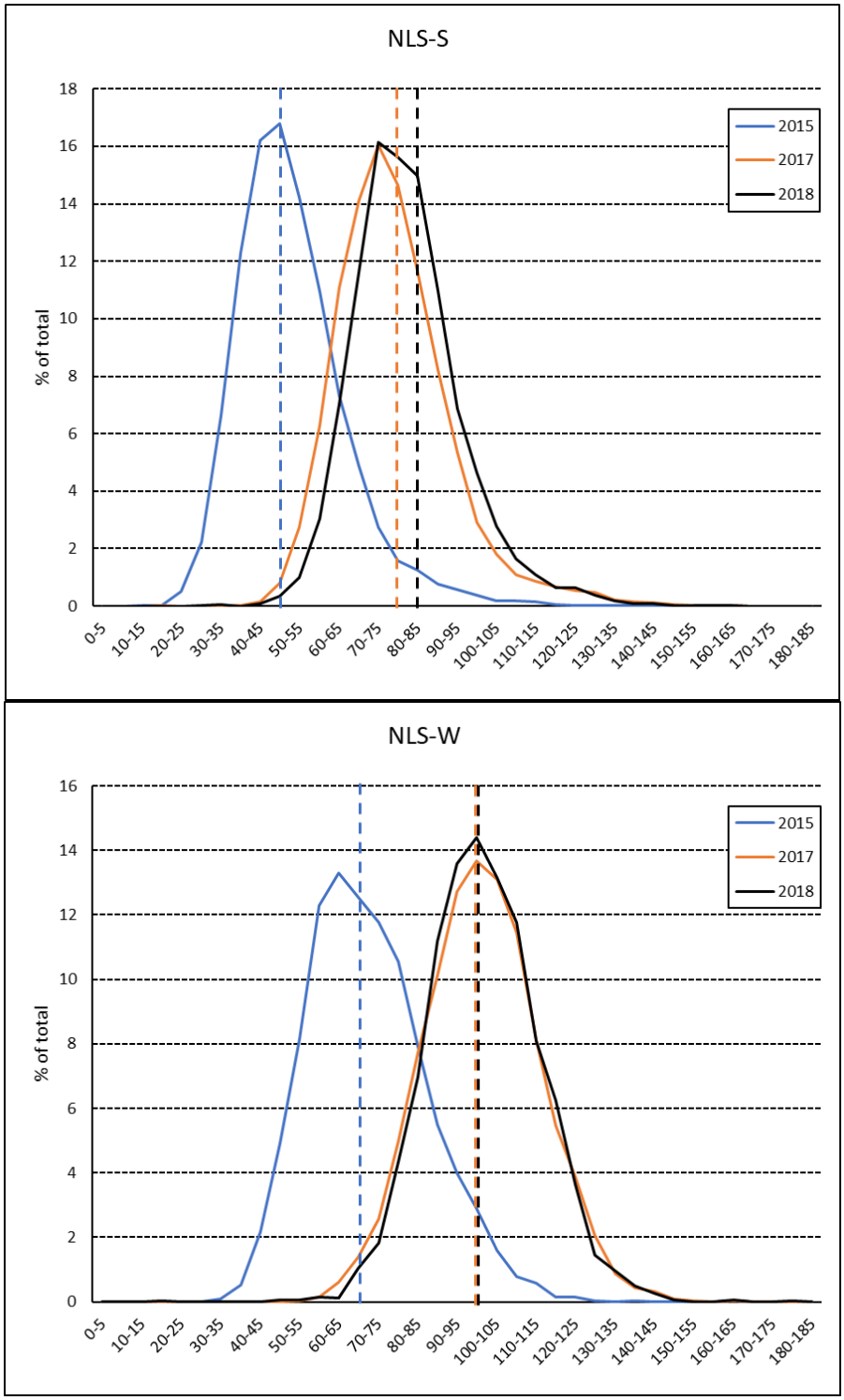


Figure 7. Time series plot of scallop L-F in the NLS-W (top panel) and NLS-S (bottom panel) 2015-2018 (from RSA HabCam surveys). Dashed line represents 5mm bin where mean shell height is contained.

5.0 EXPLOITABLE BIOMASS ESTIMATES FOR 2018 (CURRENT FY)

HabCam v3				
Georges Bank	**NumMill**	**Exploitable BmsMT**	**SE**	**MeanWt**
CL1ACC				
CL1NA				
CL-2(N)				
CL-2(S)				
CL2Ext				
NLSAccN	6.89	226.7	1.22	32.91*
NLSAccS-shallow	110.9	1996	16.6	17.99*
NLSAccS-deep	588.2	5021	202.6	8.54*
NLS-W	825.6	22308	1639	27.02*
NLSExt	0.17	4.58	0.41	26.29*
NF				
SCH				
SF				
MidAtlantic				
Block Island				
Long Island				
NYB				
MA inshore				
HCSAA				
ET Open				
ET Flex				
DMV				
Virginia				

*__Note__: Mean meat weights for total and exploitable biomass are the same.

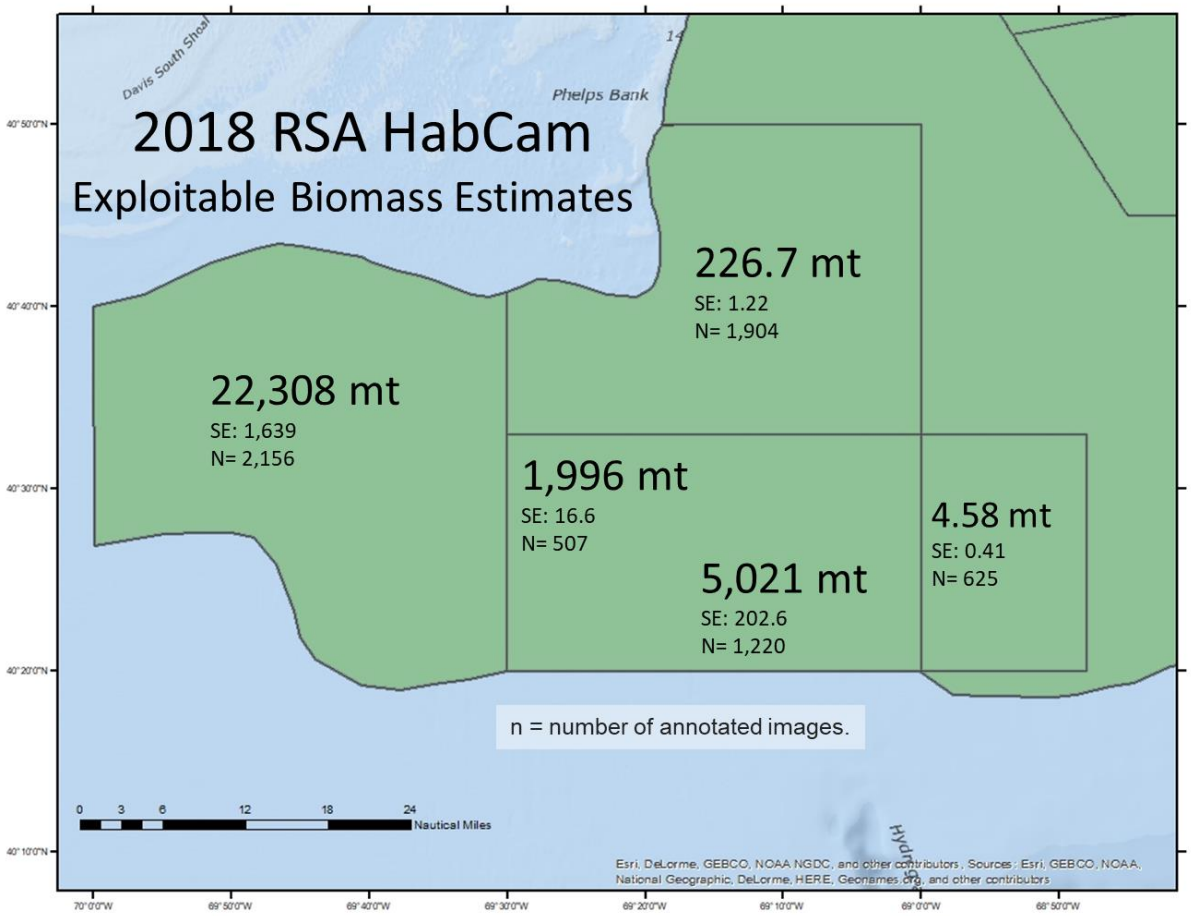


Figure 8. Exploitable biomass by NLS SAMS area derived from 2018 RSA HabCam data (note: additional NEFSC HabCam data also used in the NLS-N and NLS-Ext SAMS areas).