

2019 CFF RSA HabCam v3 Survey

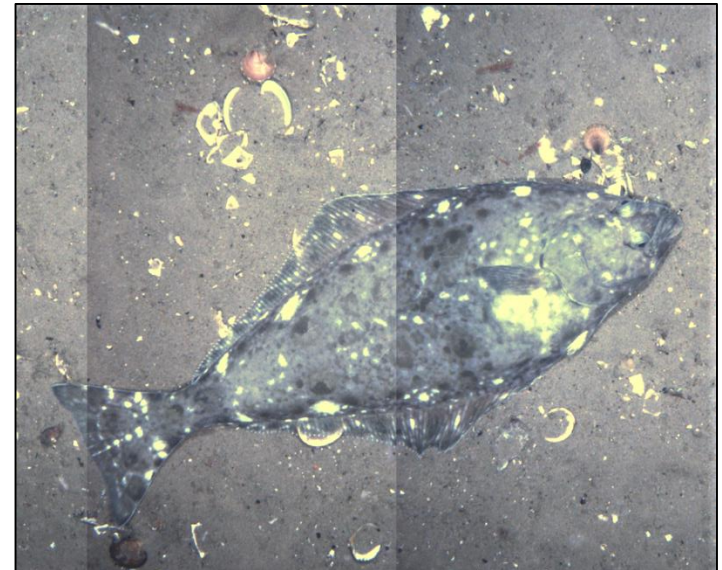
Closed Area 2 / Southern Flank, Nantucket Lightship, & Elephant Trunk

Jason Clermont, Tasha O'Hara, Liese Siemann¹; Paul Rosonina, Arnie DeMello²; Jui-Han Chang³

1. Coonamessett Farm Foundation; 2. Arnie's Fisheries ; 3. NOAA Northeast Fisheries Science Center

Atlantic Sea Scallop
Plan Development Team
Meeting

27-28 Aug. 2019
Woods Hole, MA



Overview

HabCam v3 – System

- Stereo cameras:
 - 2 AVT Prosilica
- 4 Strobes
- SBE37 CTD
- Benthos altimeter
- Telemetry / Control Bottle
 - Attitude sensor
 - Media converters
 - Network hardware



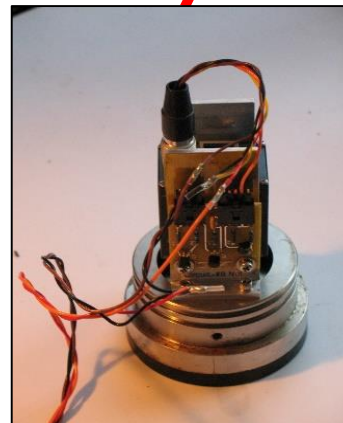
SBE 37 CTD



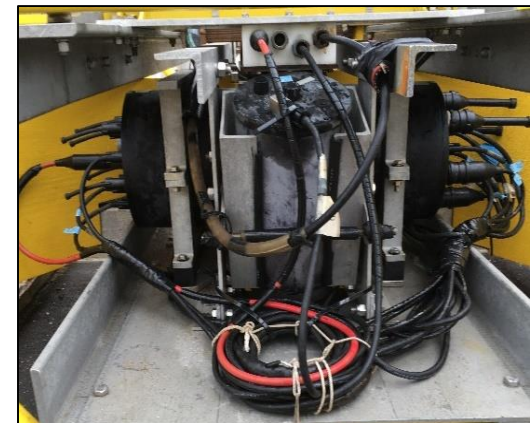
Altimeter



Strobes (4)



Stereo cameras (2)



Telemetry and control bottle

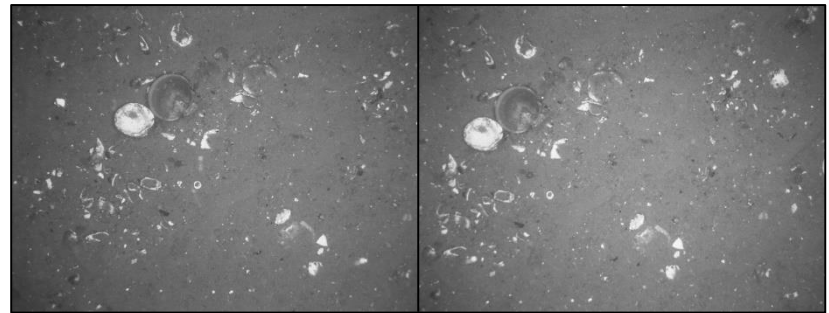
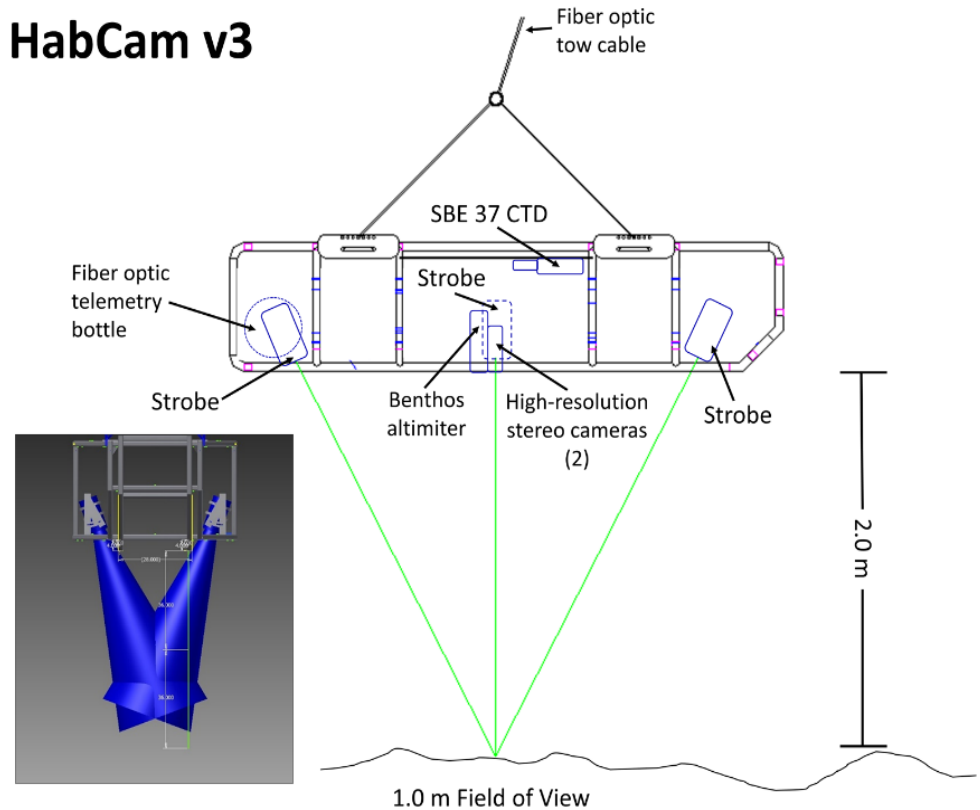
Overview

HabCam v3 – Deployment

- Target altitude 1.7 - 2.0 m
- FOV 0.7 – 1.0 m²
- 4.5-5 knots
- Images and data transmitted over FO cable
 - 6 images per second
- Shipboard metadata



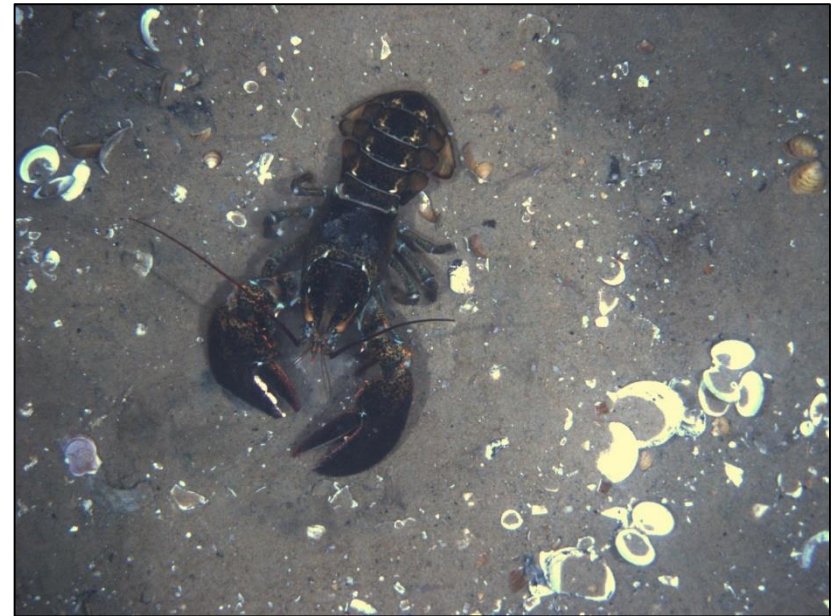
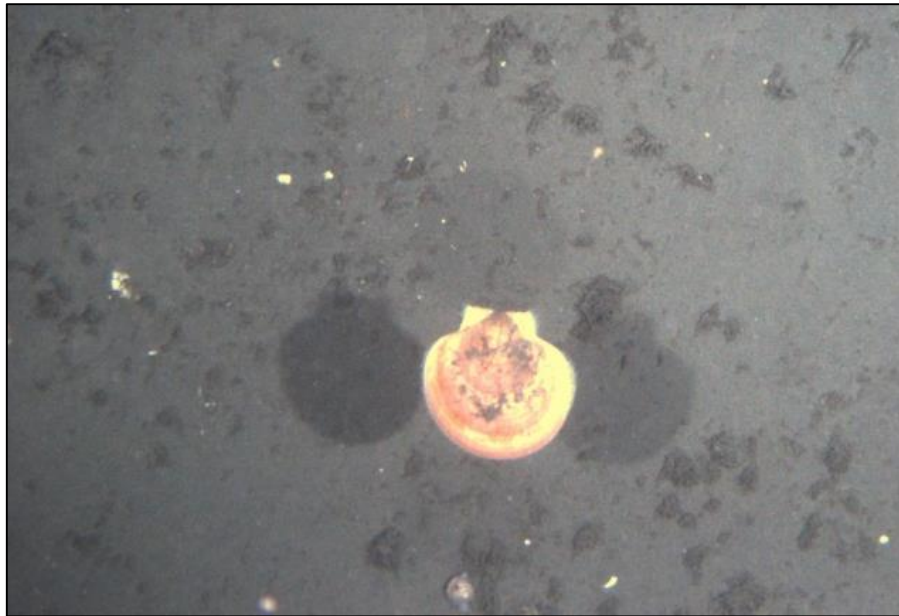
HabCam v3



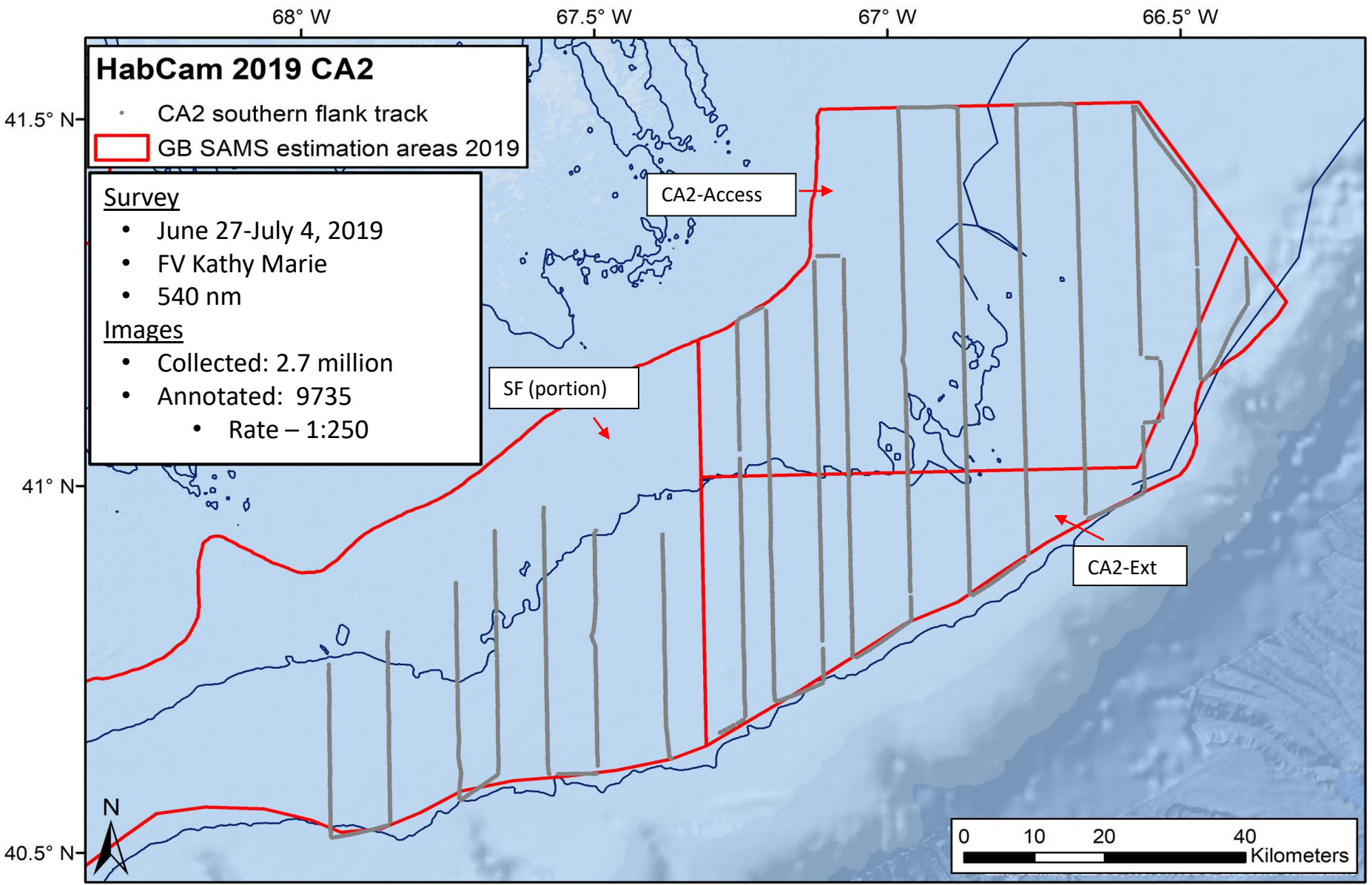
2019 CFF RSA HabCam Survey

Objectives

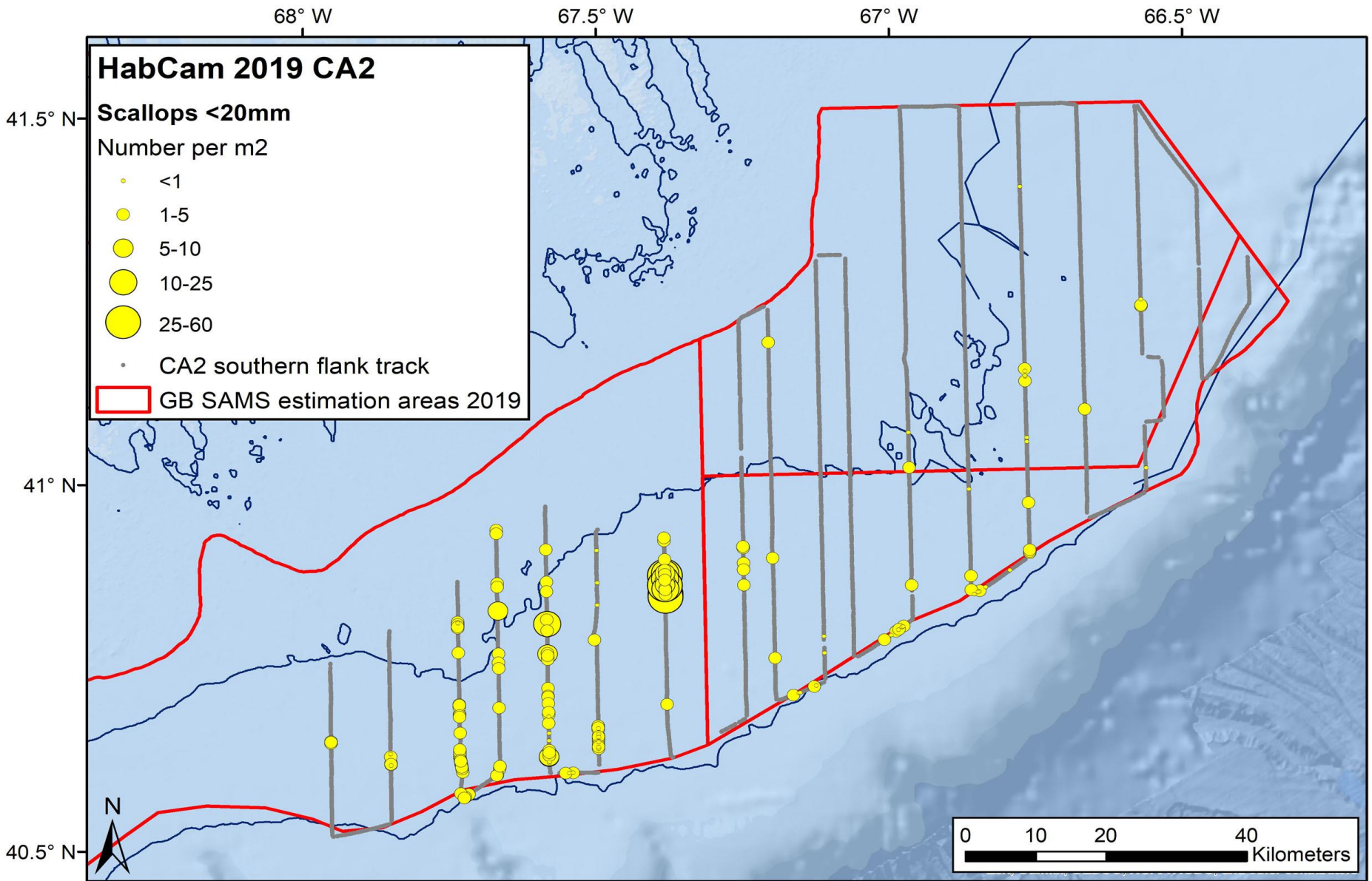
1. Provide data for biomass estimates and size distribution of scallops in CA2, SF (portion), NLS, and ET.
2. Comparison of scallop biomass, distribution and L-F with previous surveys (NLS)
 - Growth and survival



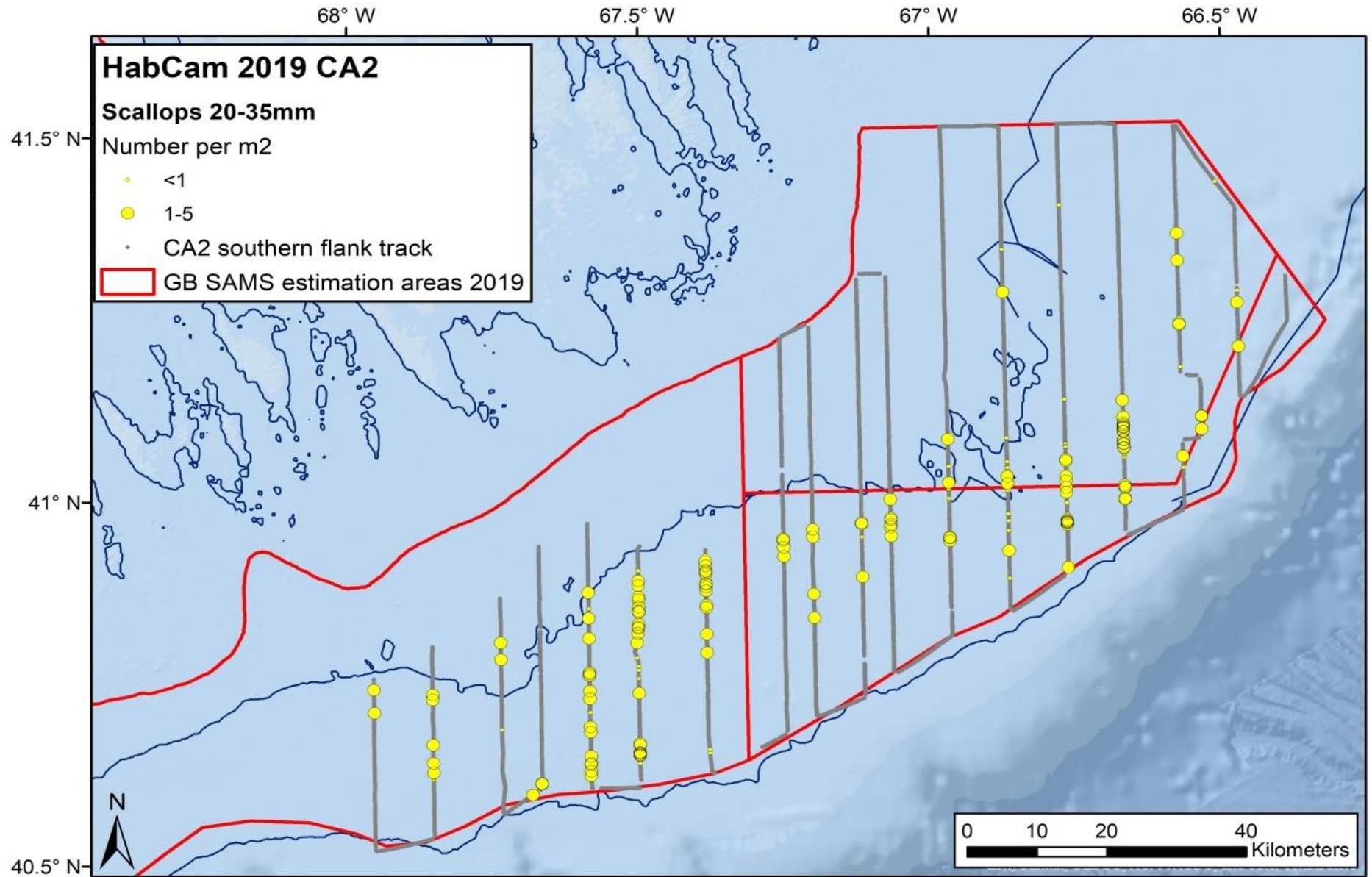
Closed Area 2 / Southern Flank: 2019 Survey



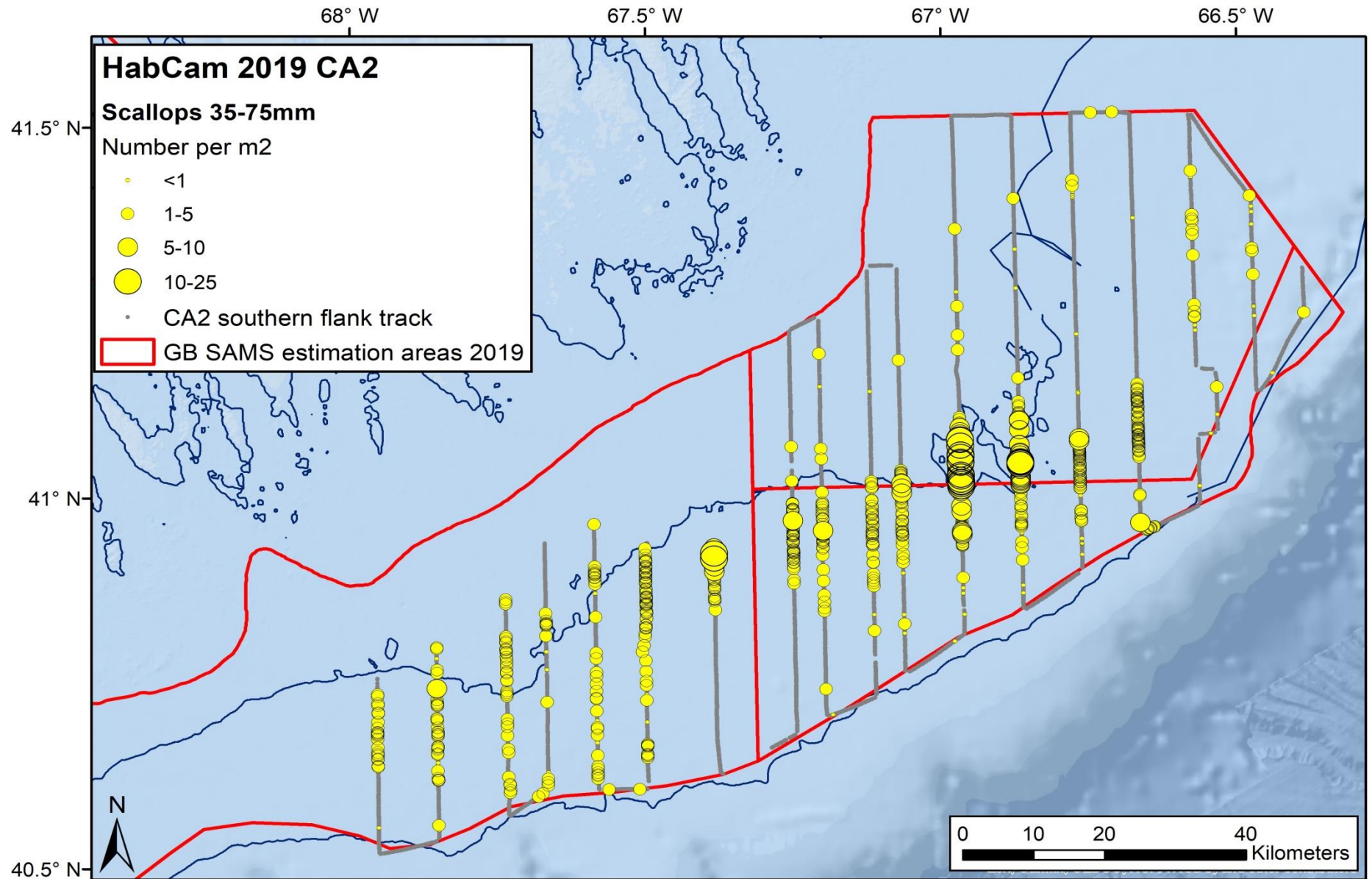
CA2 / SF (portion) Scallop Size Distribution



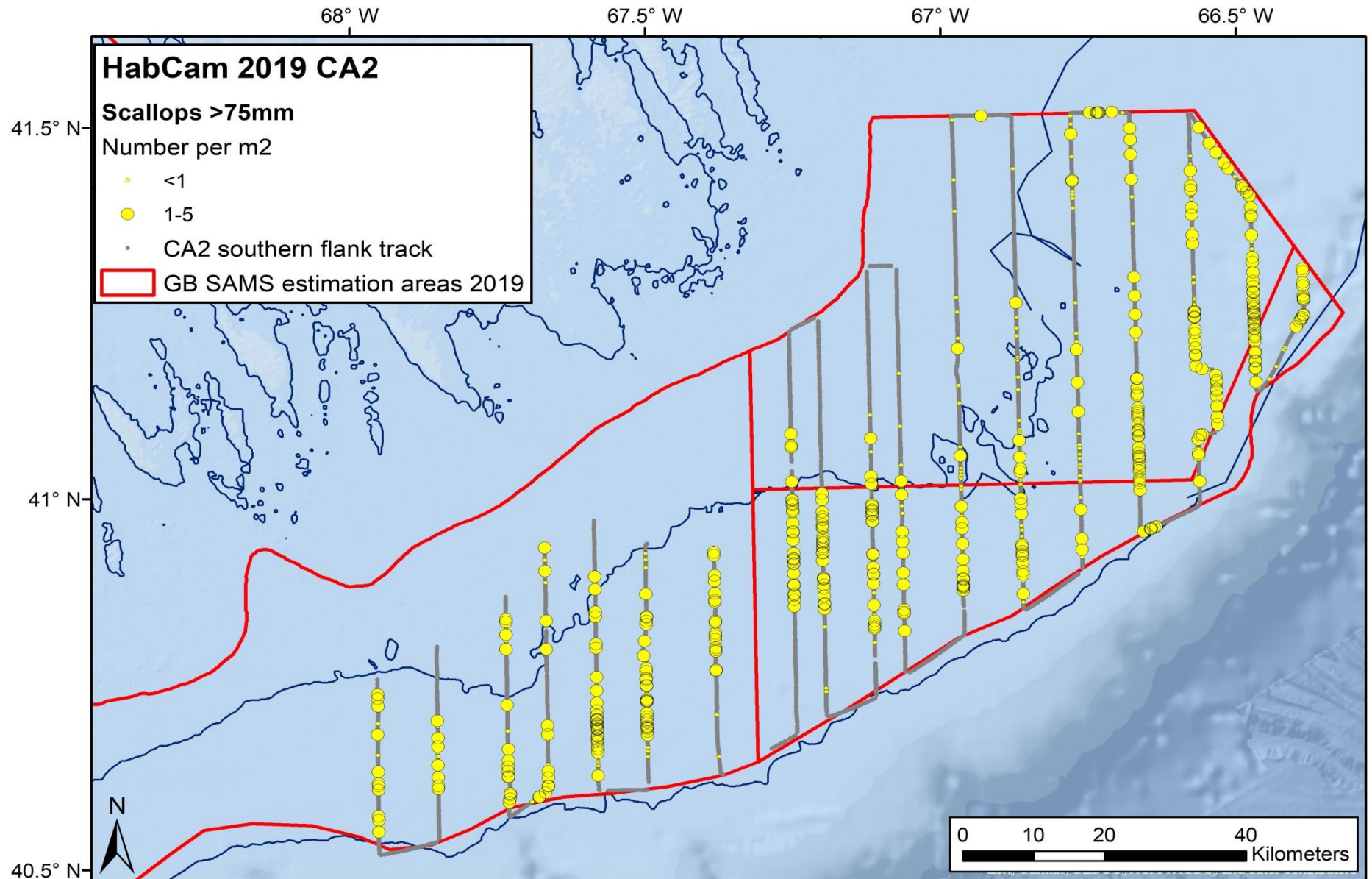
CA2 / SF (portion) Scallop Size Distribution



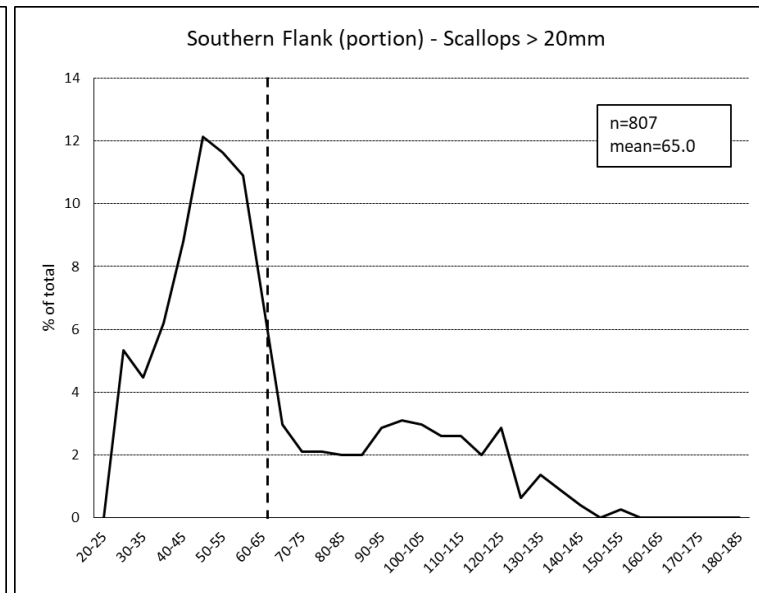
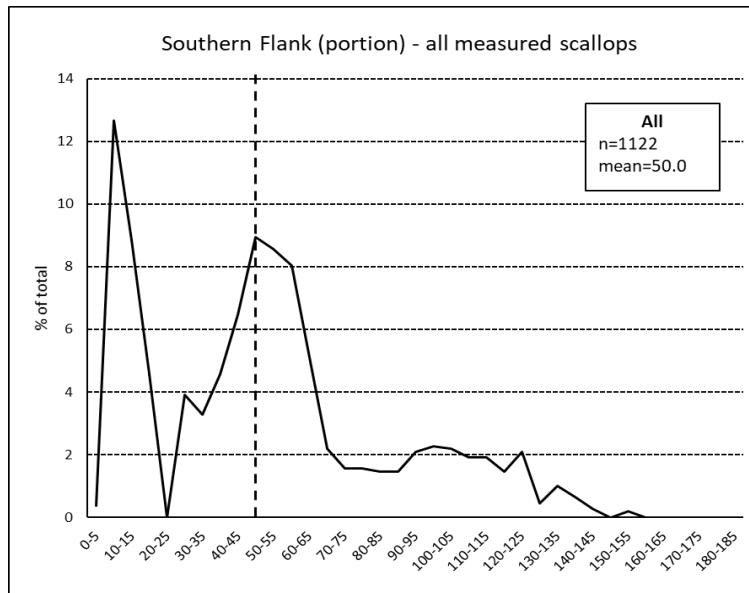
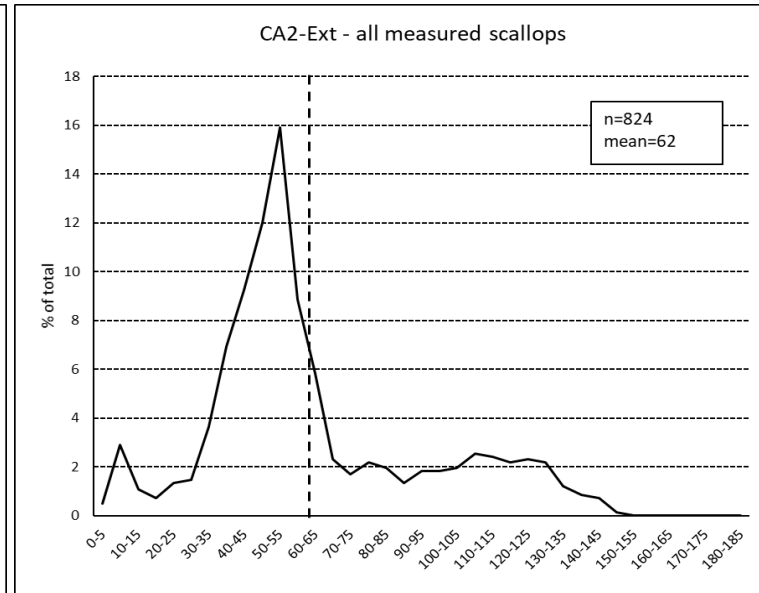
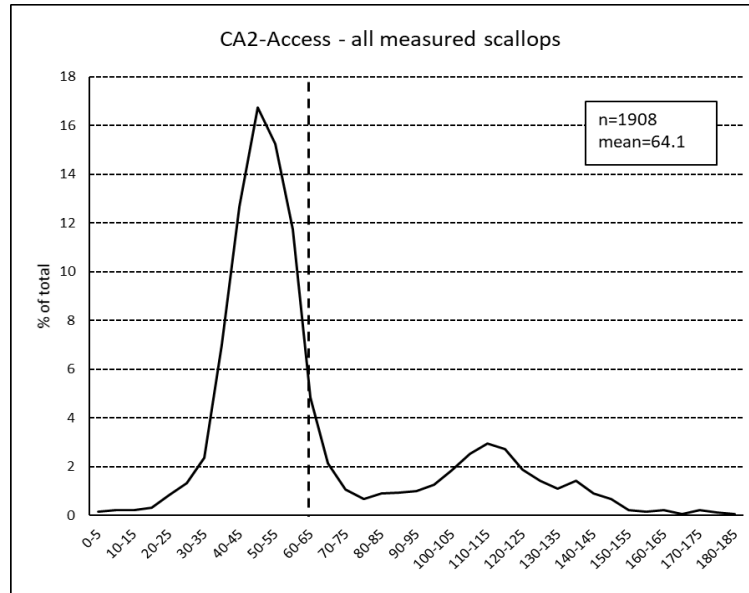
CA2 / SF (portion) Scallop Size Distribution



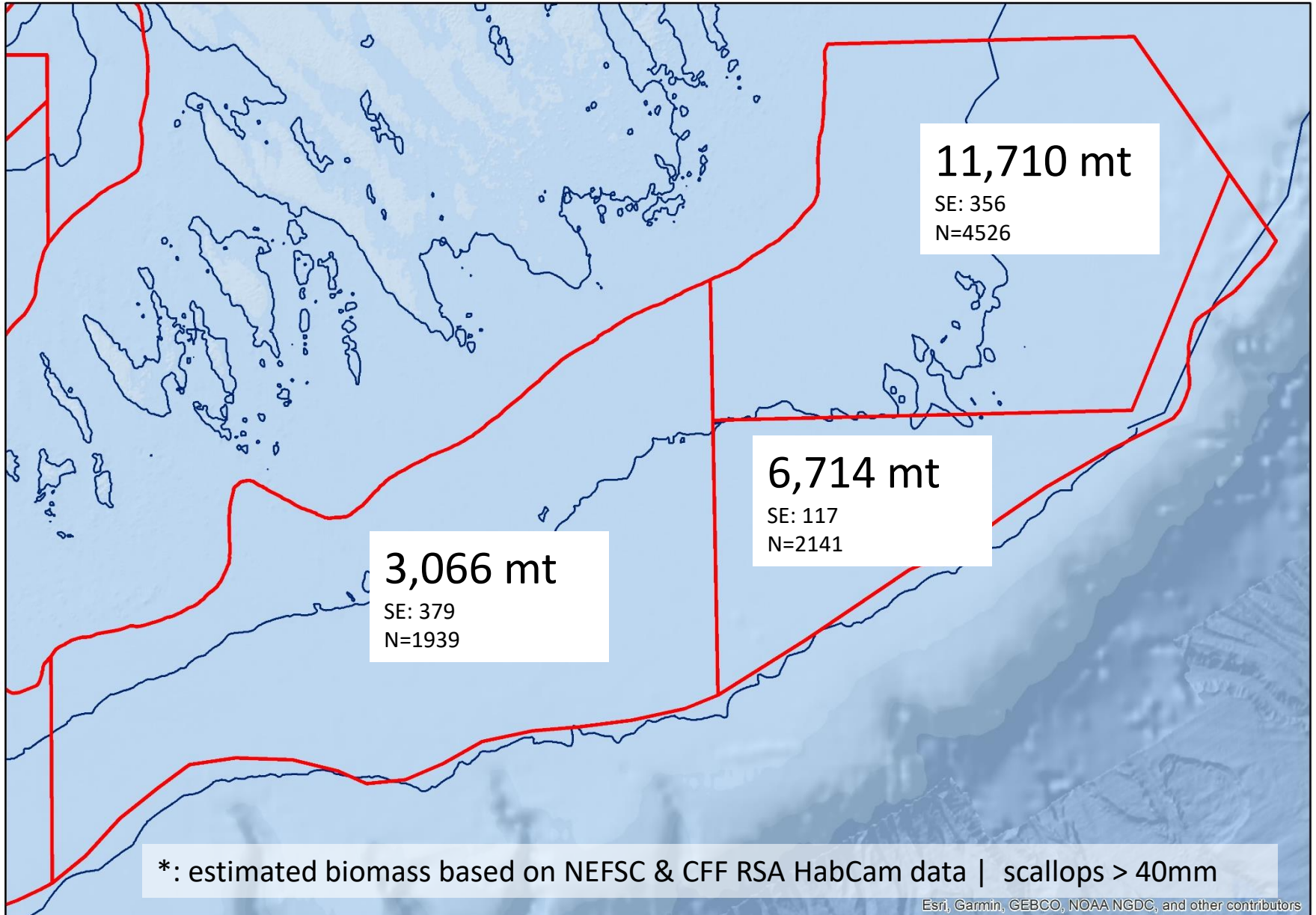
CA2 / SF (portion) Scallop Size Distribution



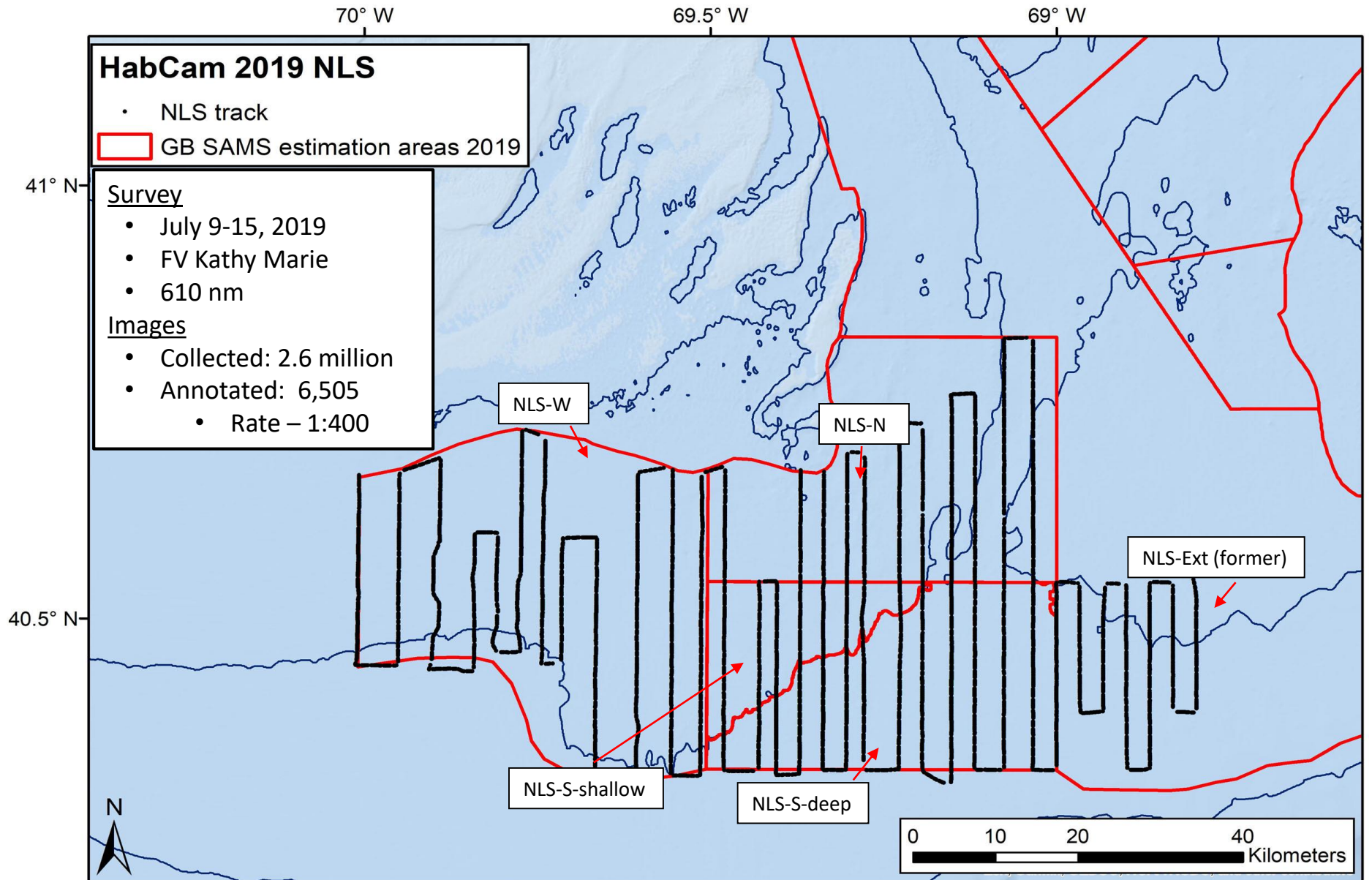
CA2 / SF (portion) Length-Frequency



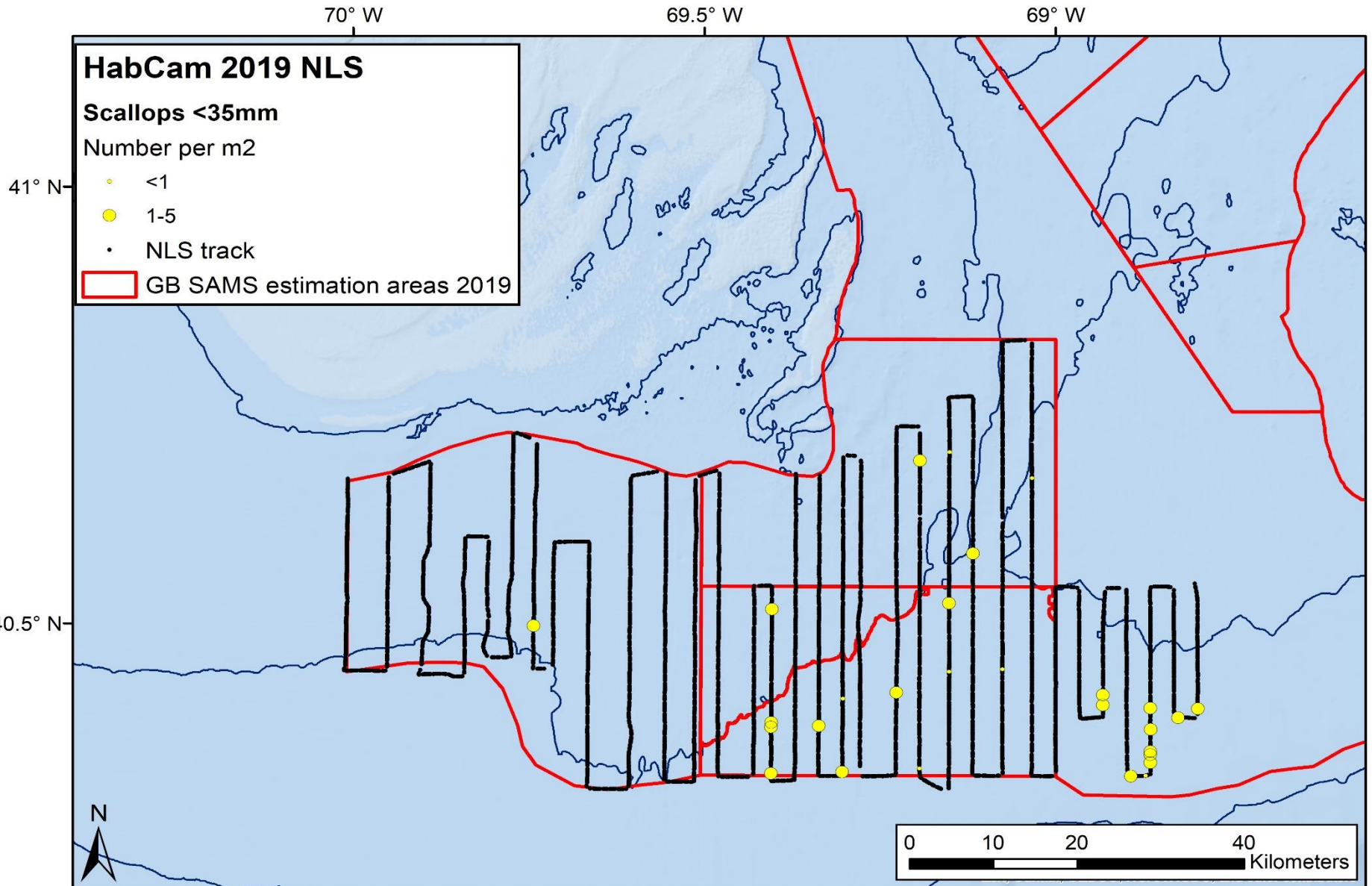
CA2 / SF Biomass: Total*



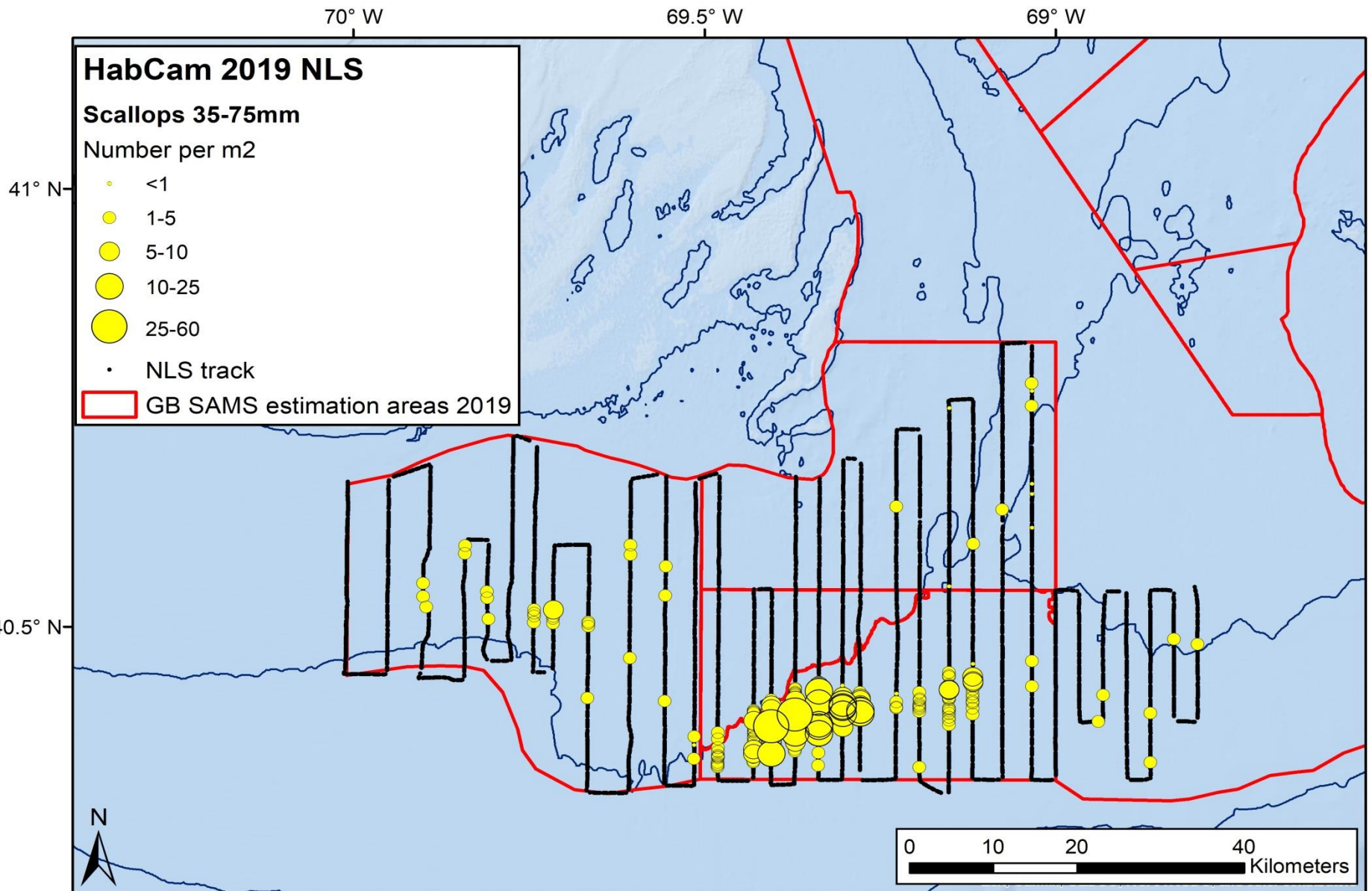
Nantucket Lightship: 2019 Survey



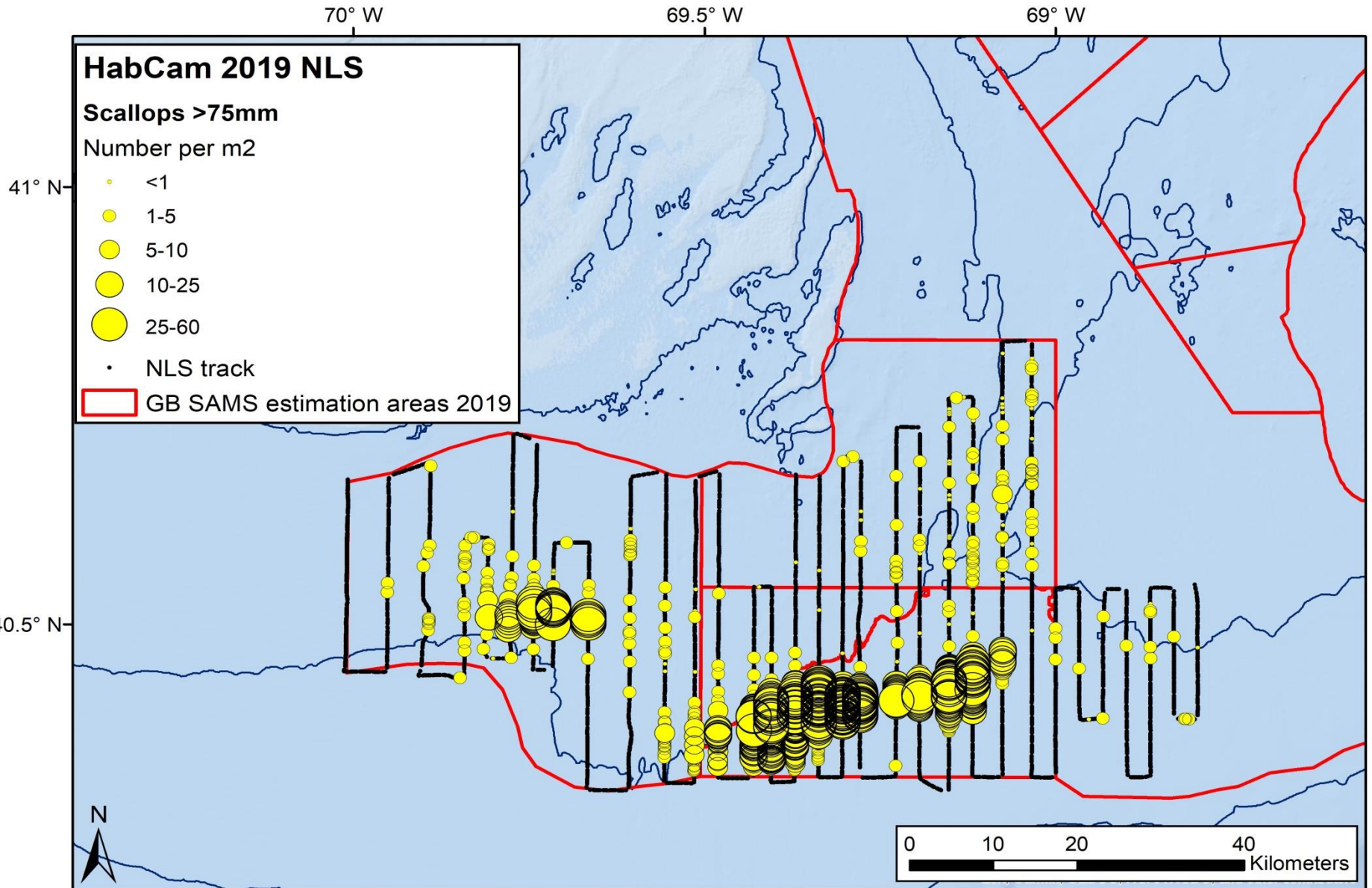
Nantucket Lightship Scallop Size Distribution



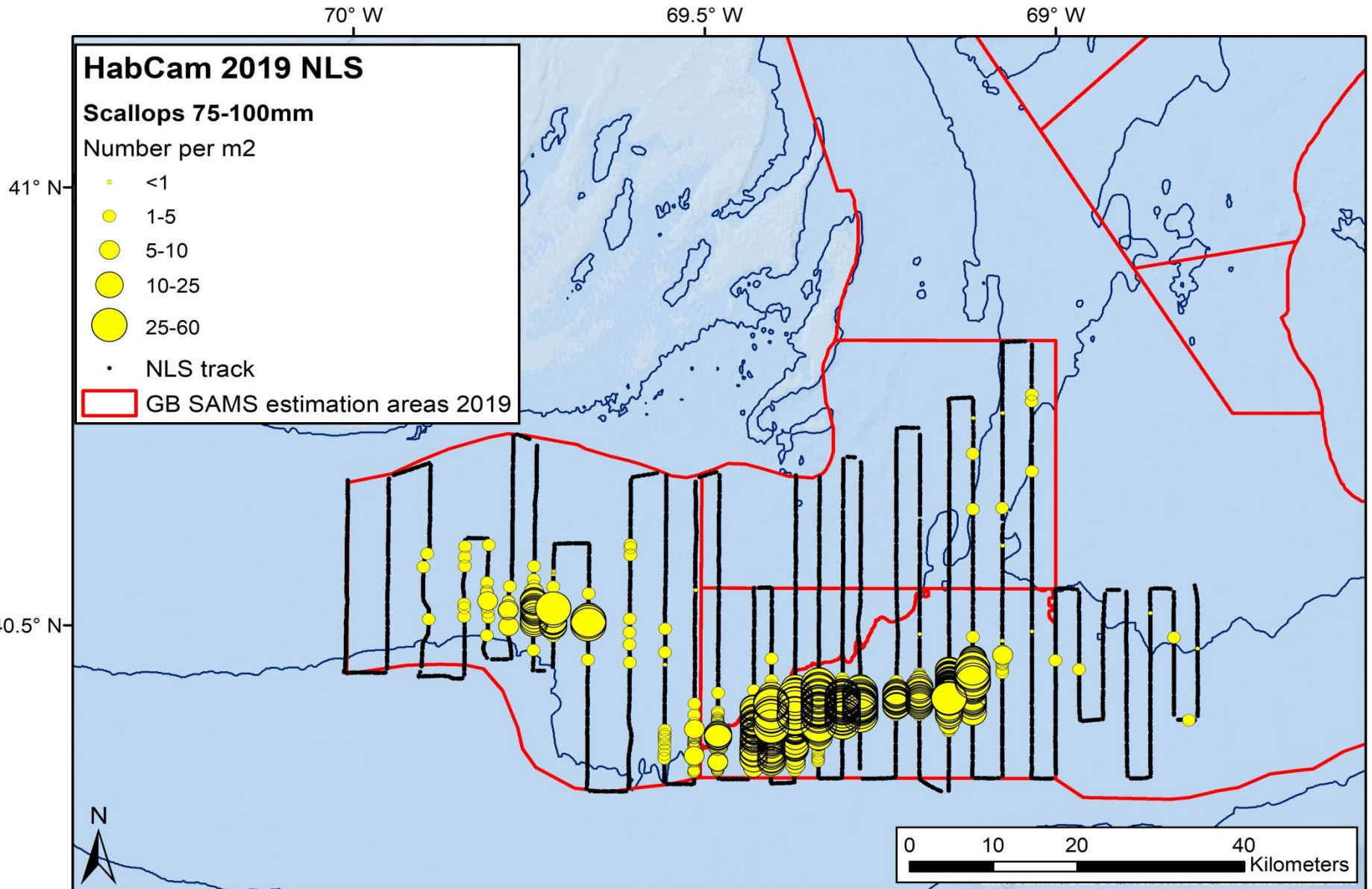
Nantucket Lightship Scallop Size Distribution



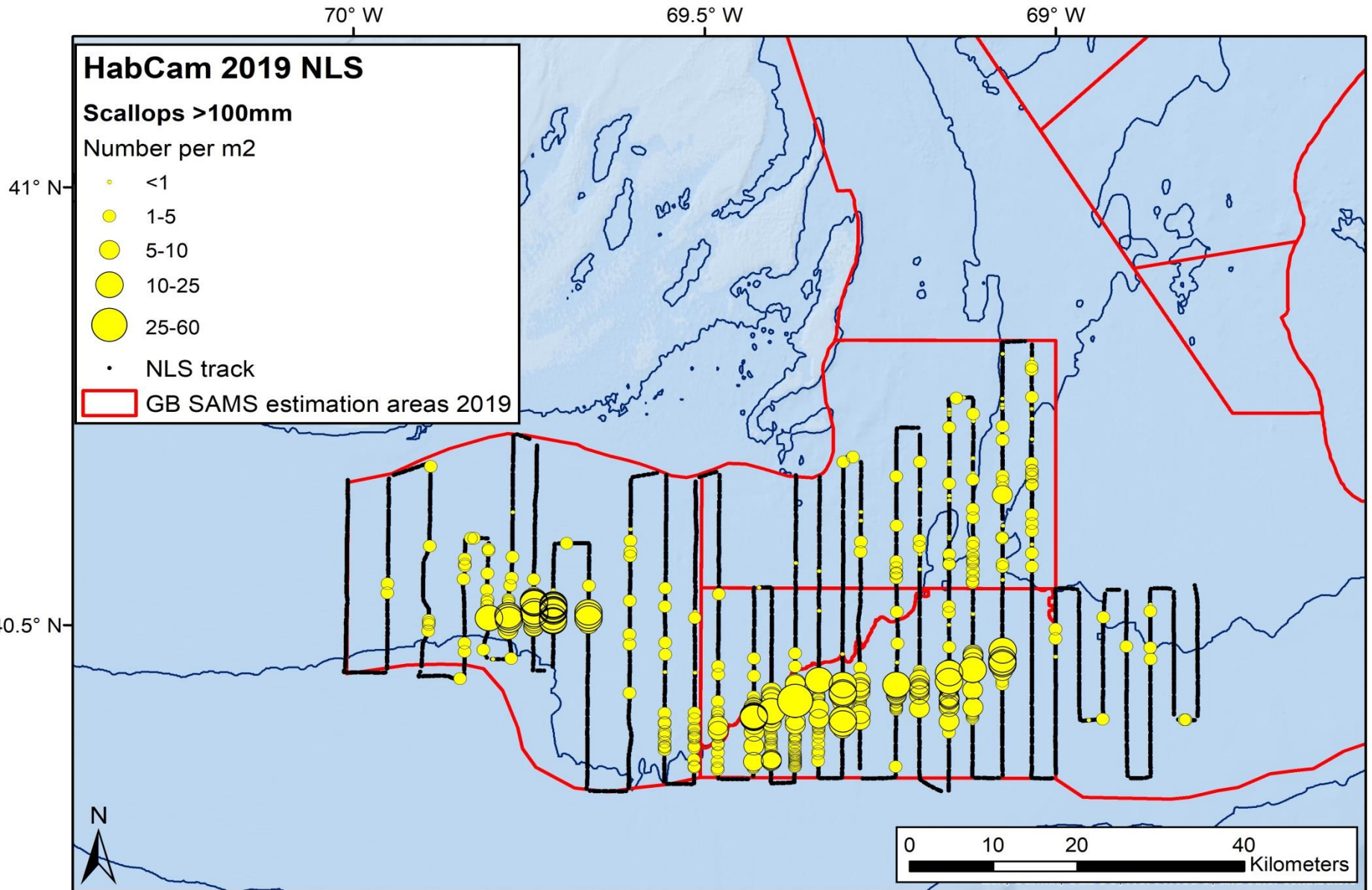
Nantucket Lightship Scallop Size Distribution



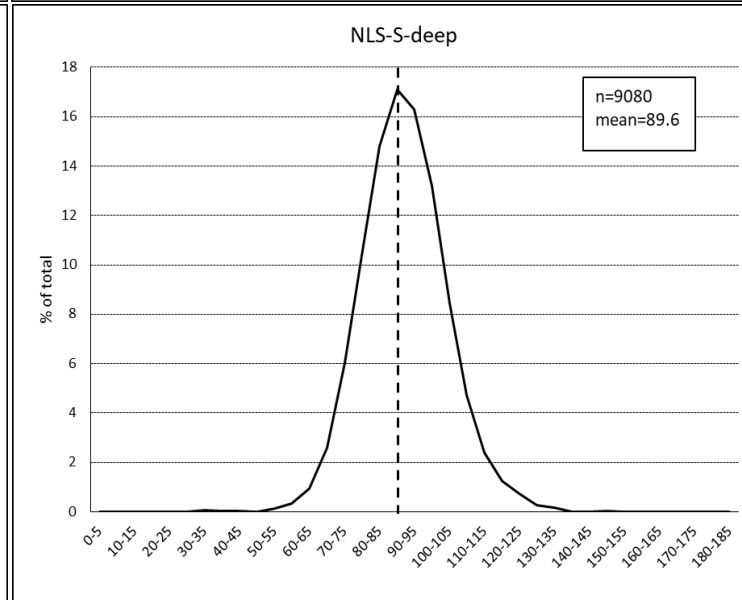
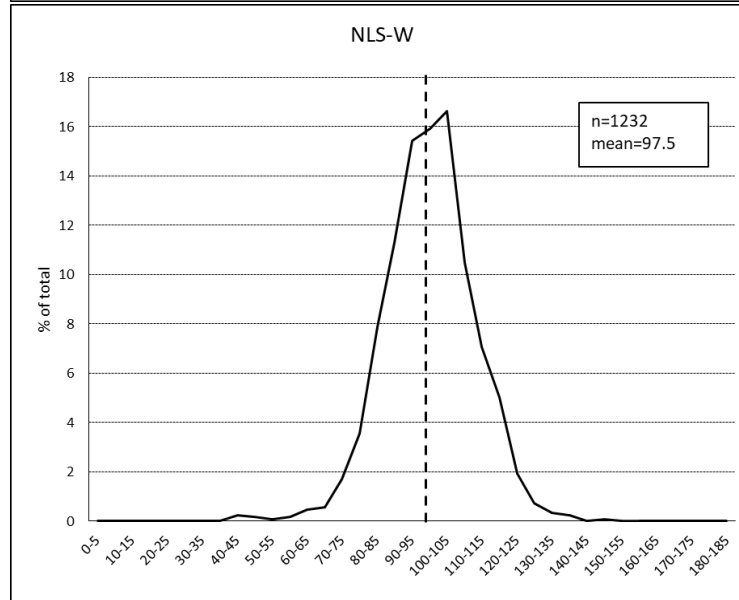
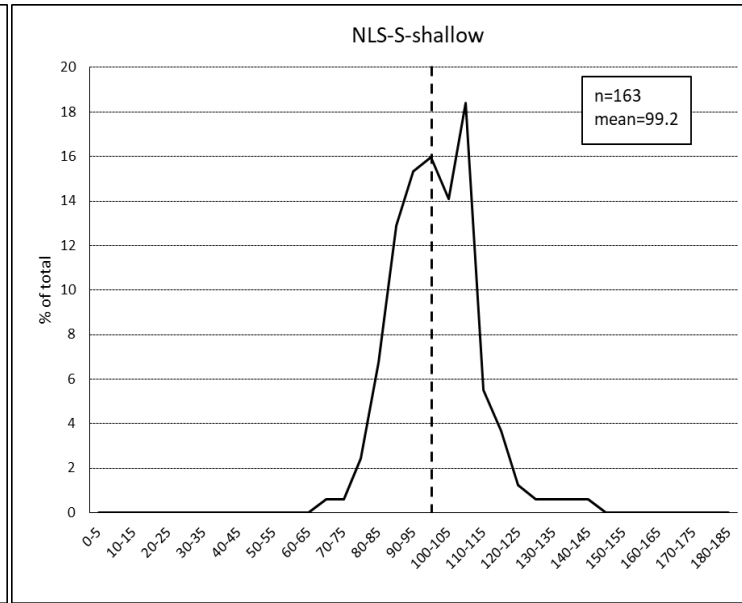
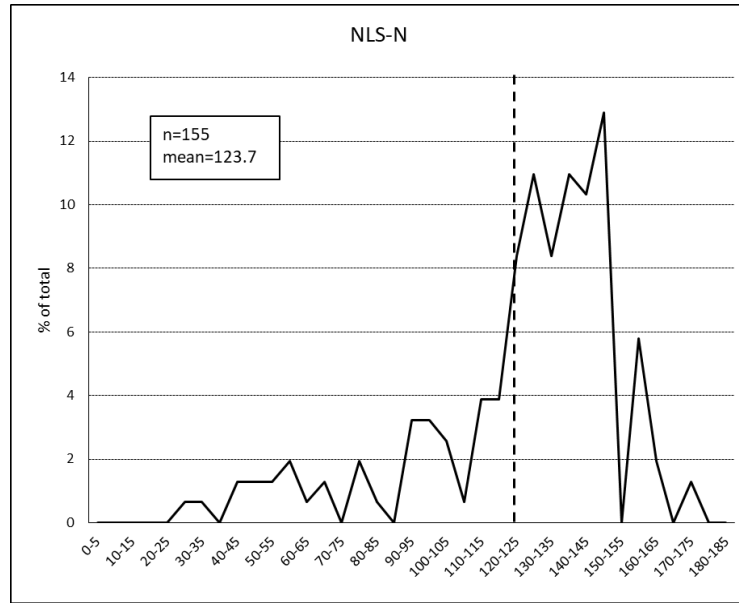
Nantucket Lightship Scallop Size Distribution



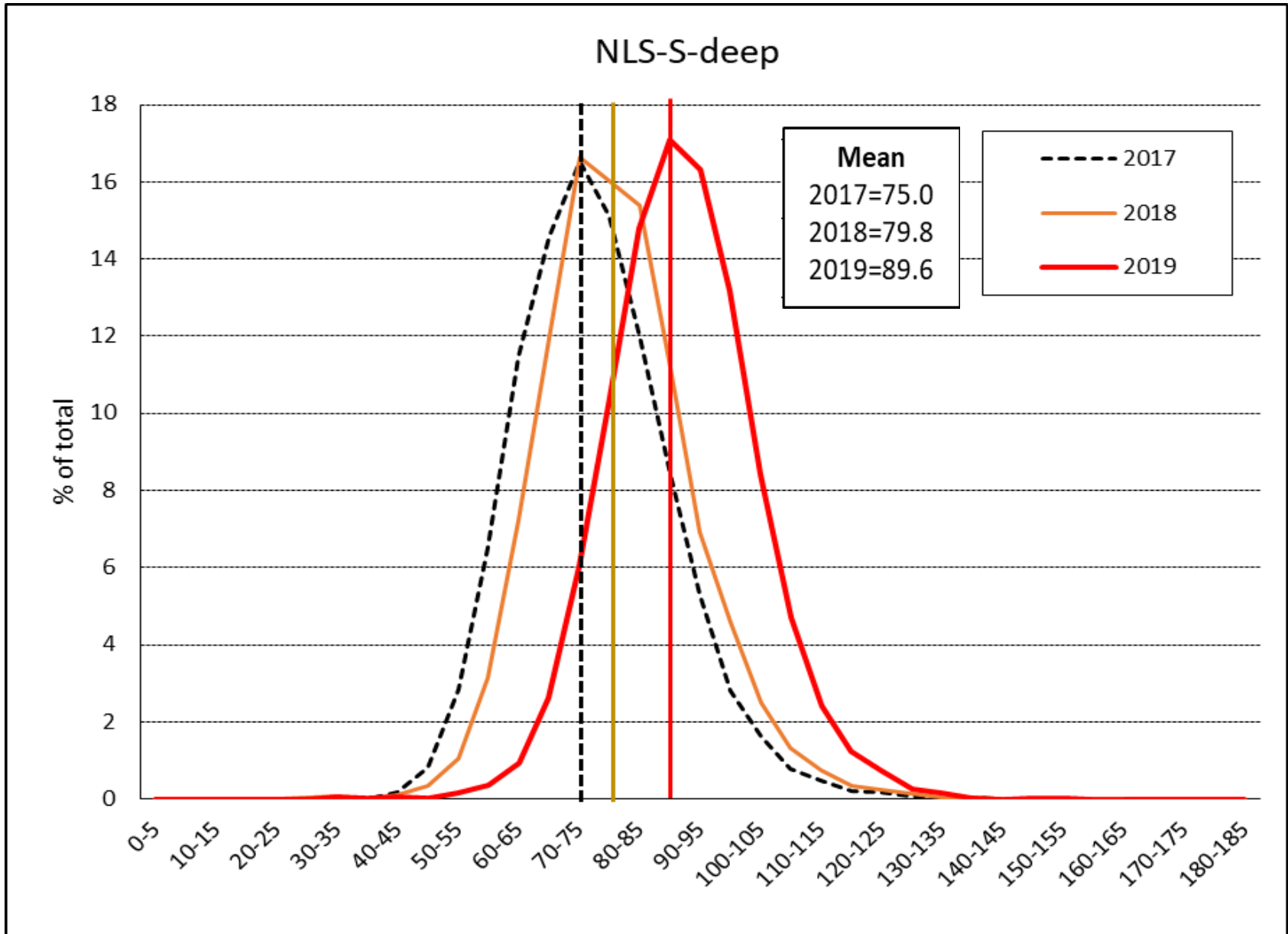
Nantucket Lightship Scallop Size Distribution



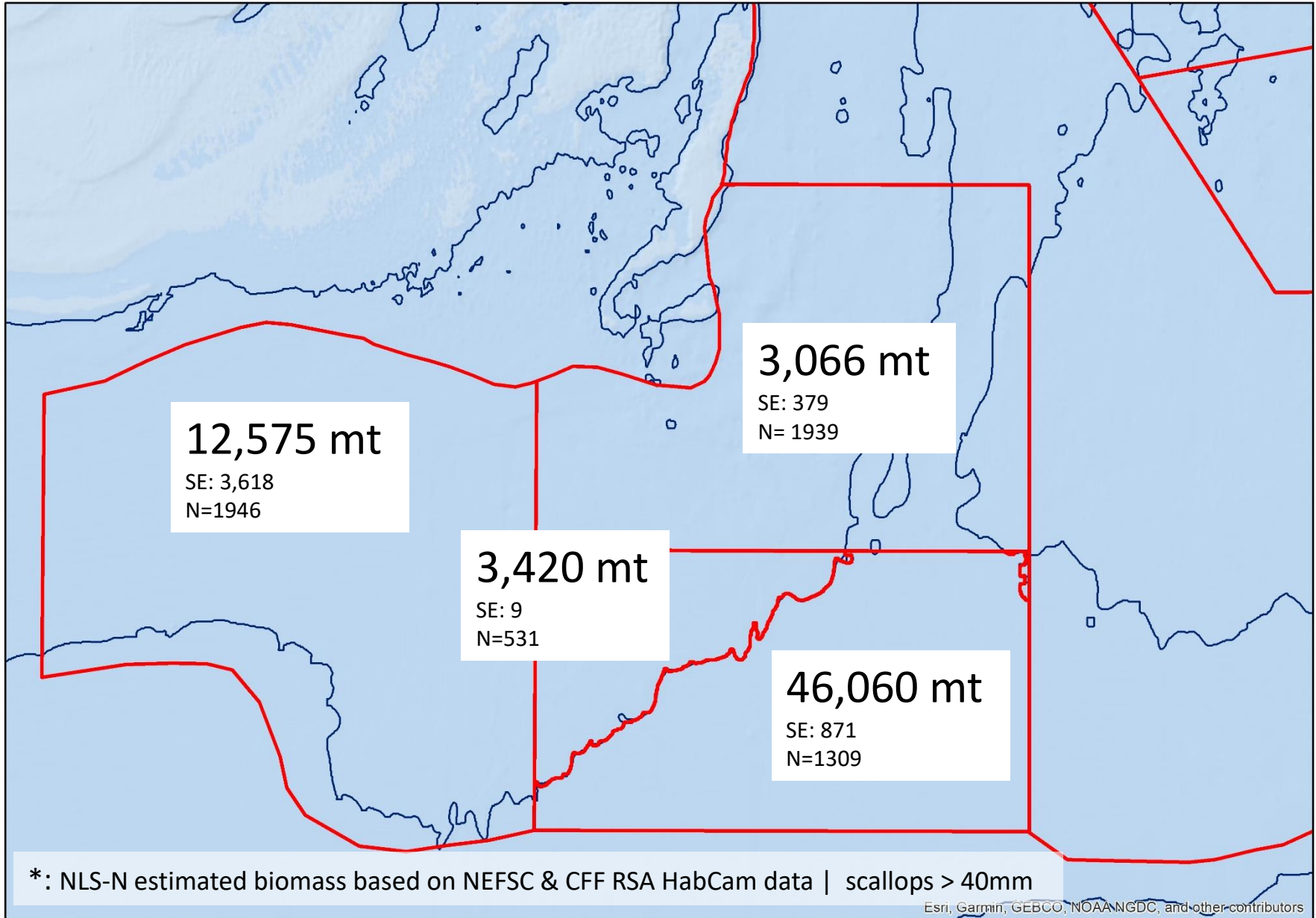
Nantucket Lightship Length-Frequency



Nantucket Lightship Length-Frequency



NLS Biomass: Total*

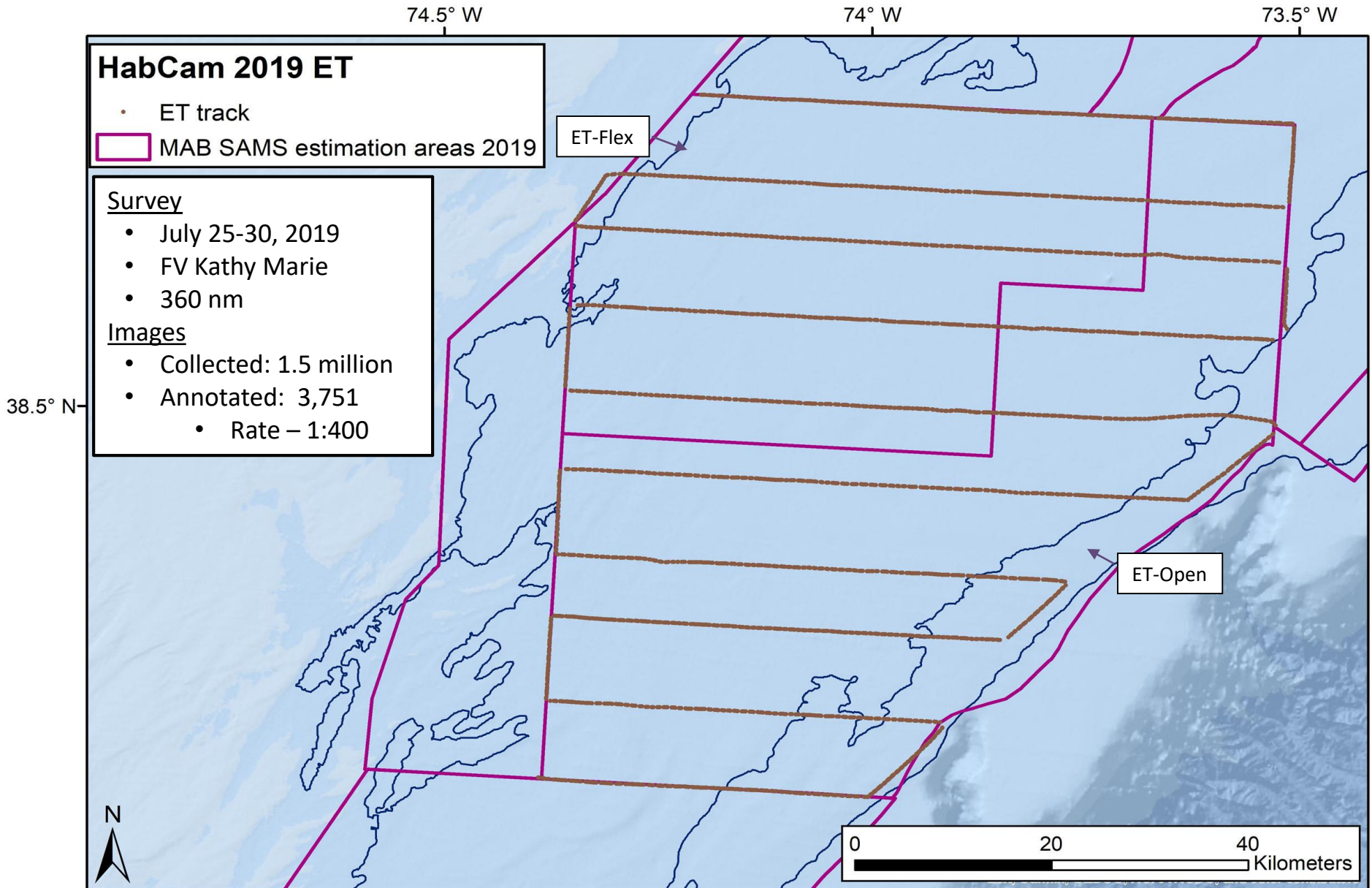


NLS Biomass* 2018-2019

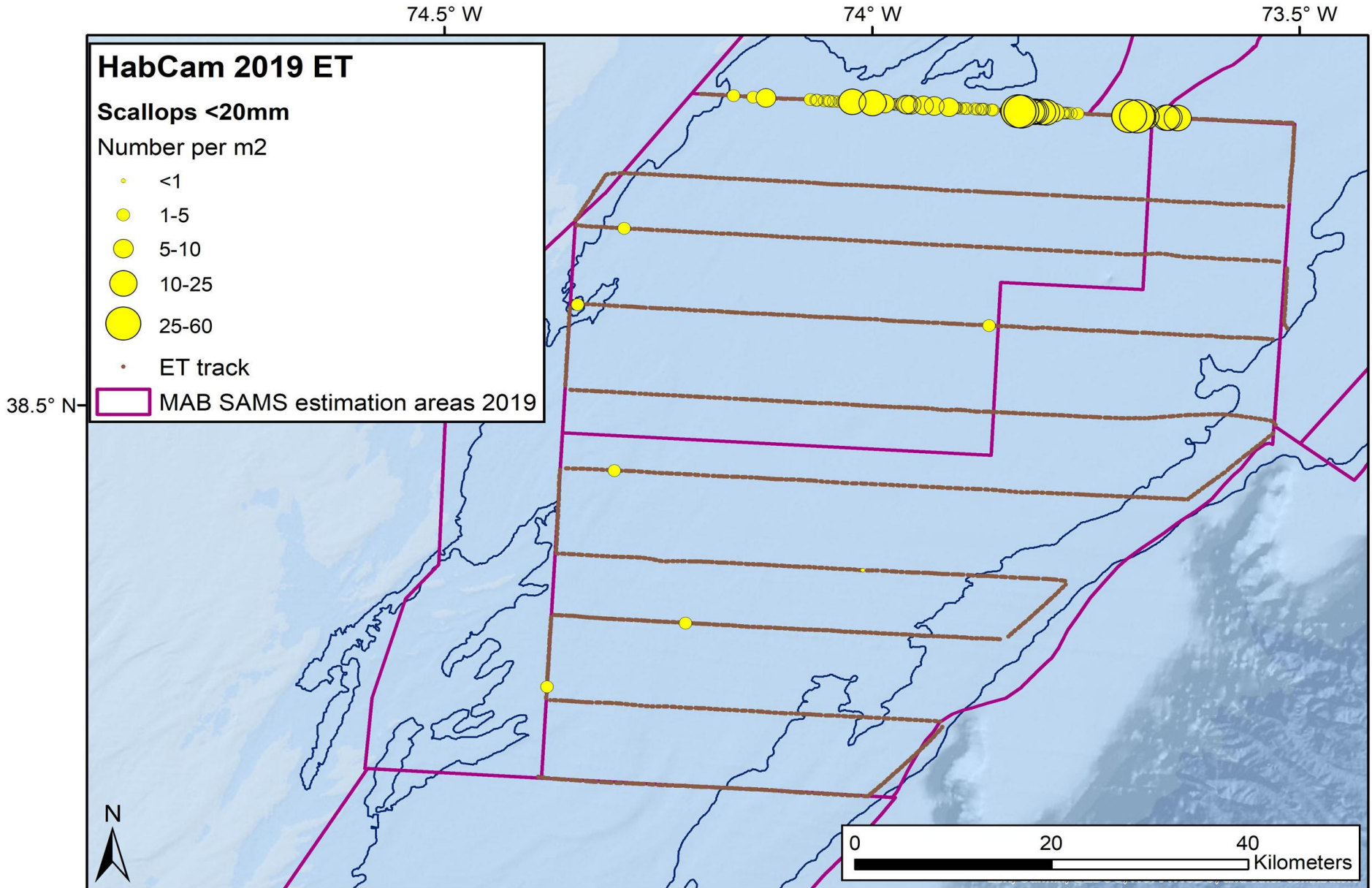
	2018 HabCam	2019 HabCam
NLS-N	3585	3066
NLS-S-shallow	4964	3420
NLS-S-deep	31785	46060
NLS-W	41155	12575

*: total biomass taken from 2018 preliminary combined survey estimates document

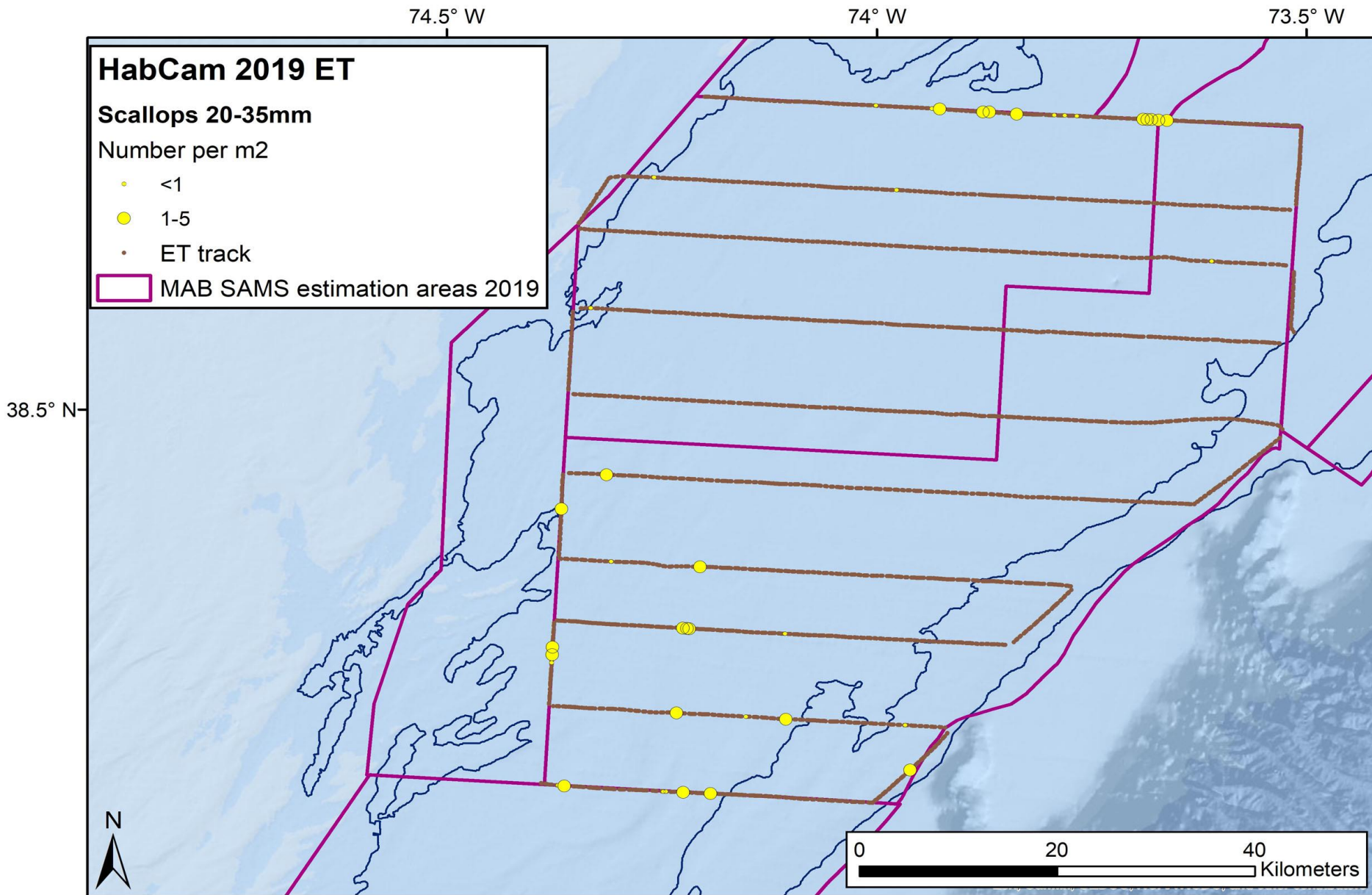
Elephant Trunk: 2019 Survey



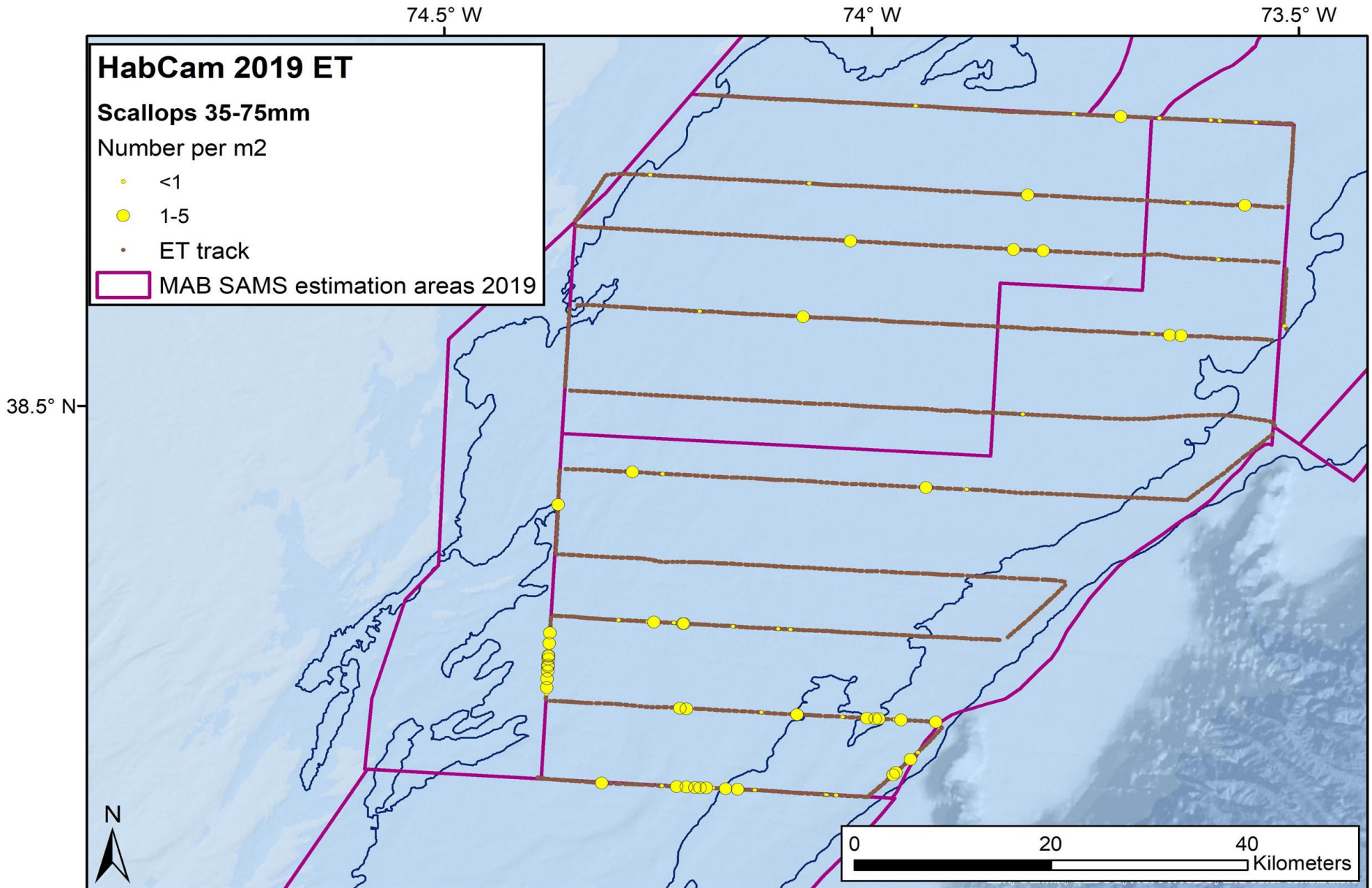
Elephant Trunk Scallop Size Distribution



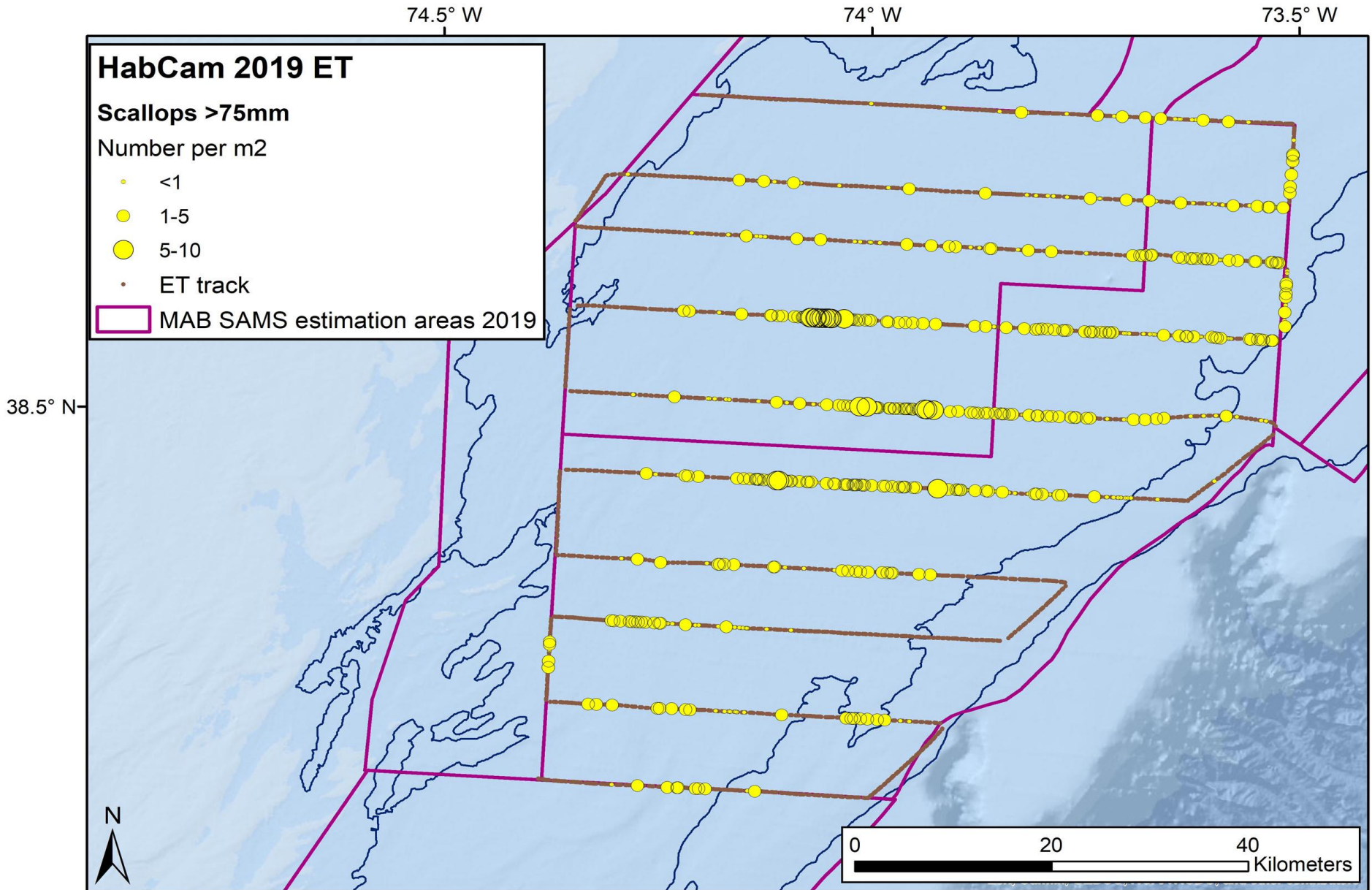
Elephant Trunk Scallop Size Distribution



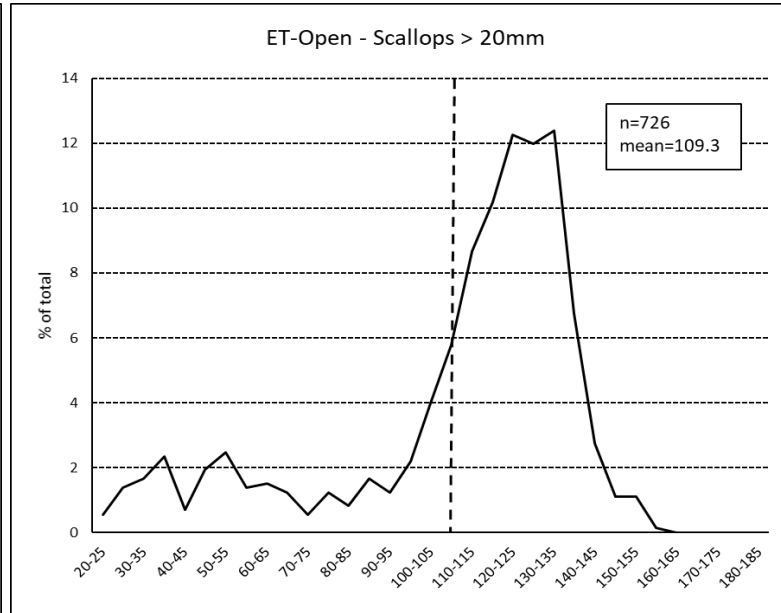
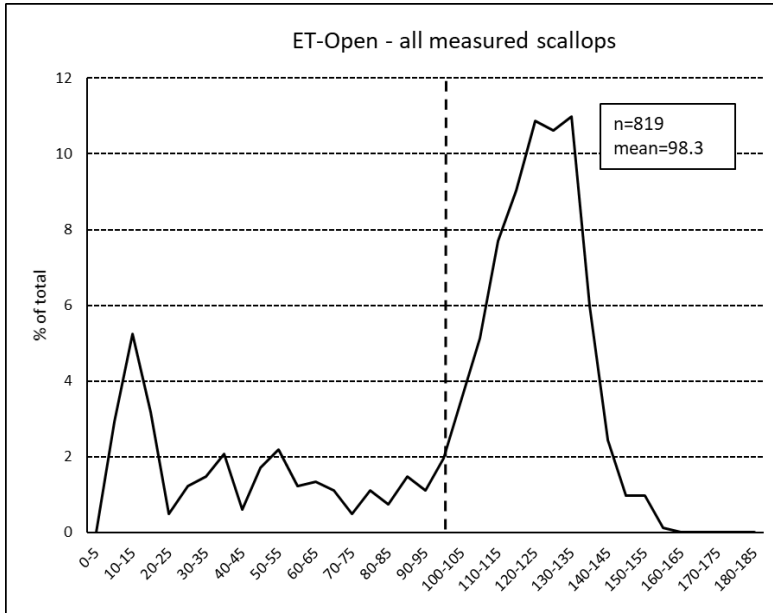
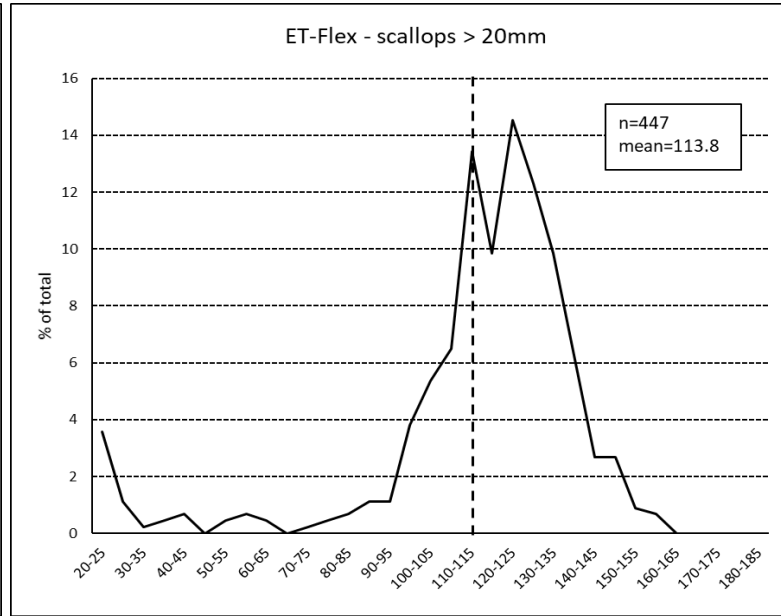
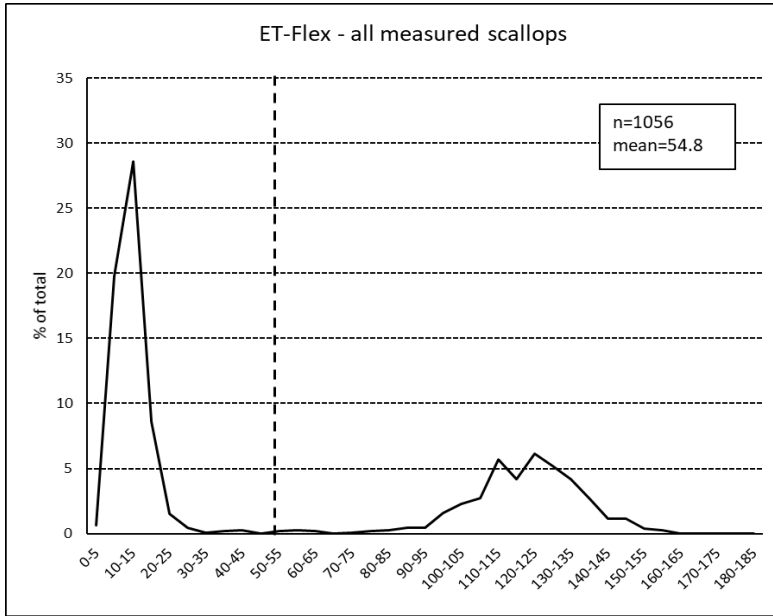
Elephant Trunk Scallop Size Distribution



Elephant Trunk Scallop Size Distribution



Elephant Trunk Length-Frequency



ET Biomass (total)*

24,357 mt

SE: 457
N=5189

17,215 mt

SE: 229
N=5189

*: Estimated biomass based on NEFSC & CFF RSA HabCam data | scallops > 40mm

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Future Work / Improvements

- Necessary maintenance / overhaul to winch & overboarding systems
- Continued upgrades to hardware, acquisition and annotation systems
- Automate processes (habitat types, etc.)
- Improve collaboration among survey groups
- Mechanism to share data with outside users

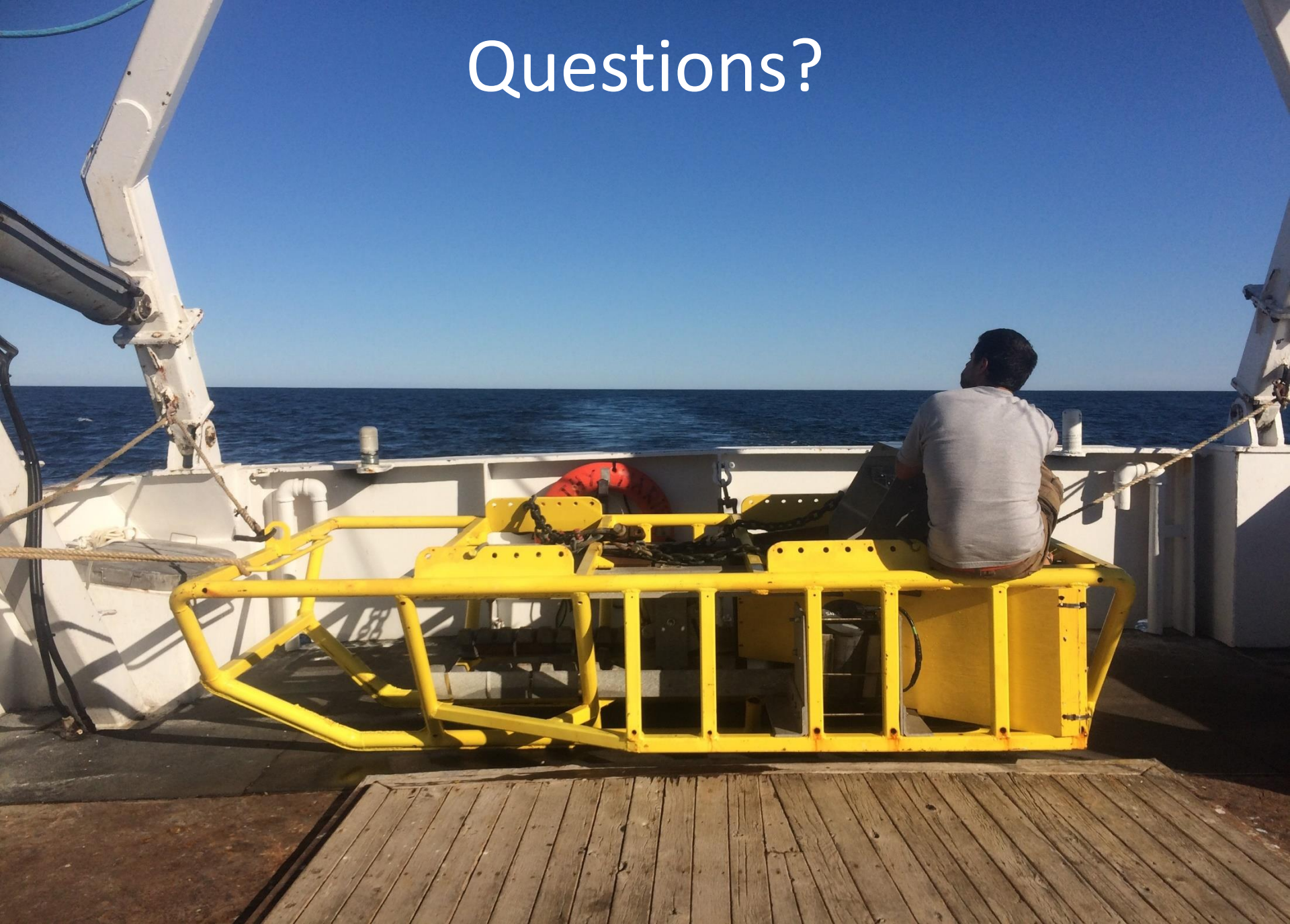


Acknowledgements

- Scallop RSA Program
- Crew of the F/V Kathy Marie | Capt. Paul Rosonina
- Jon Howland – WHOI | Glen Manchester – NE Marine Services
- Science party – CFF

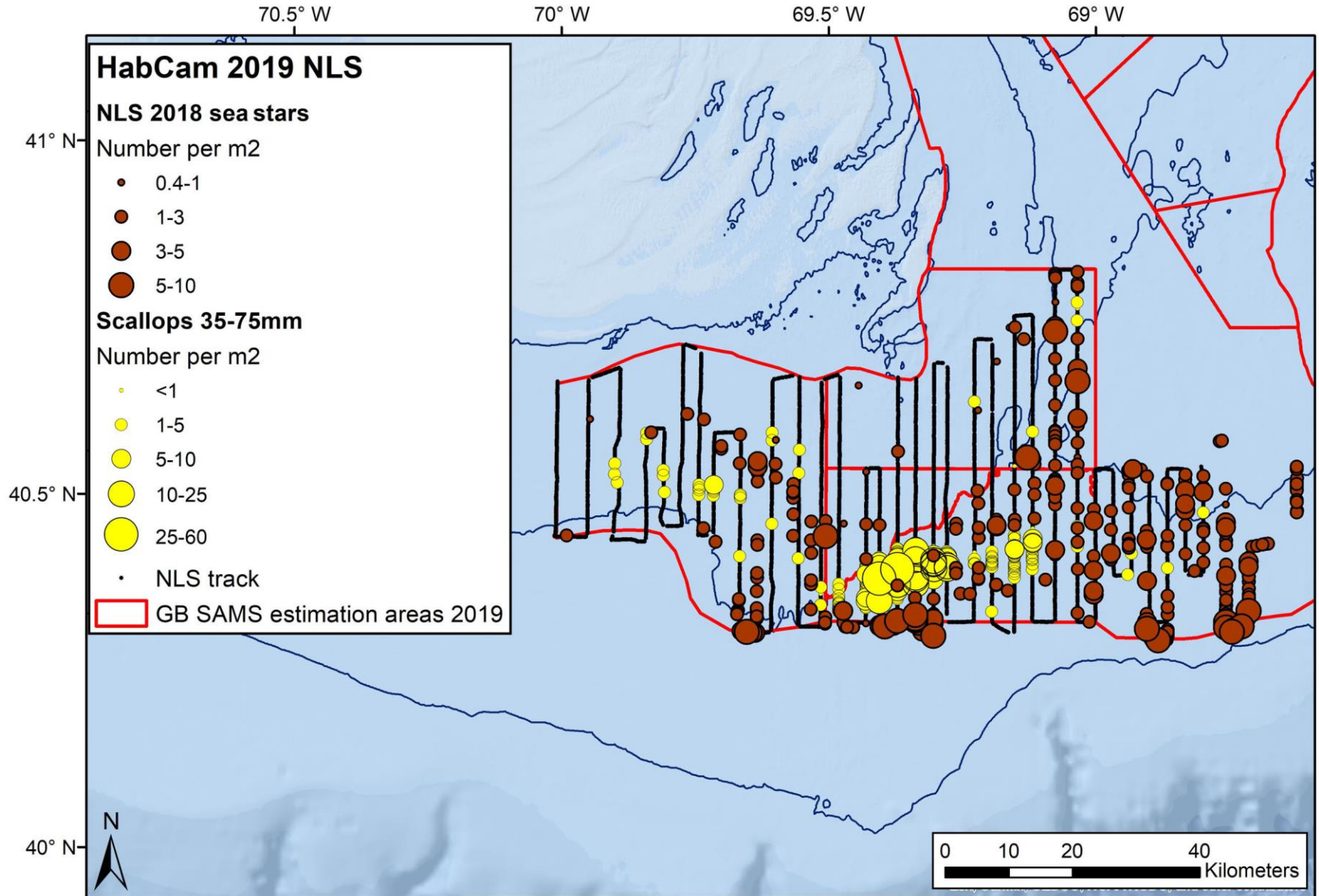


Questions?

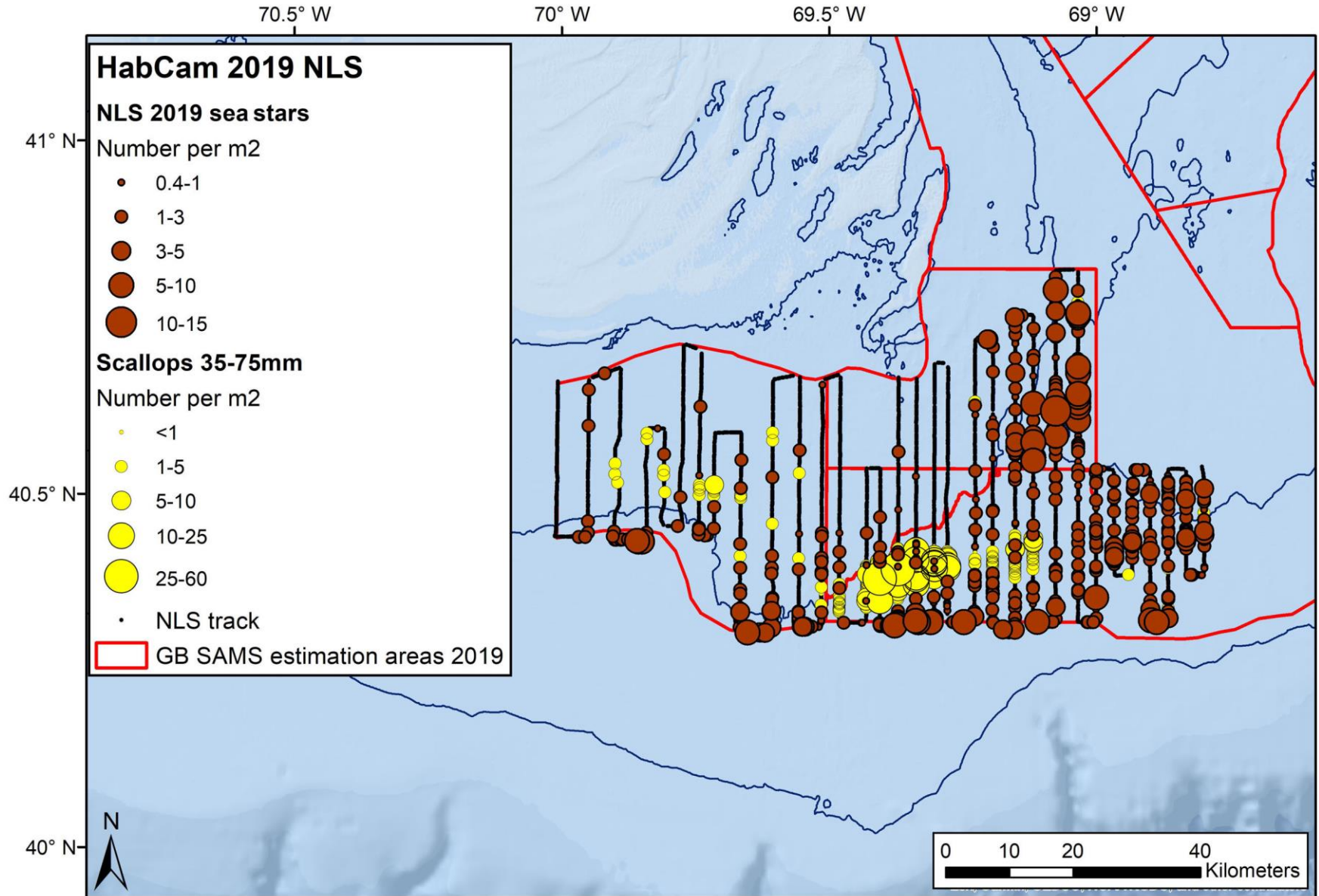


Additional info / slides

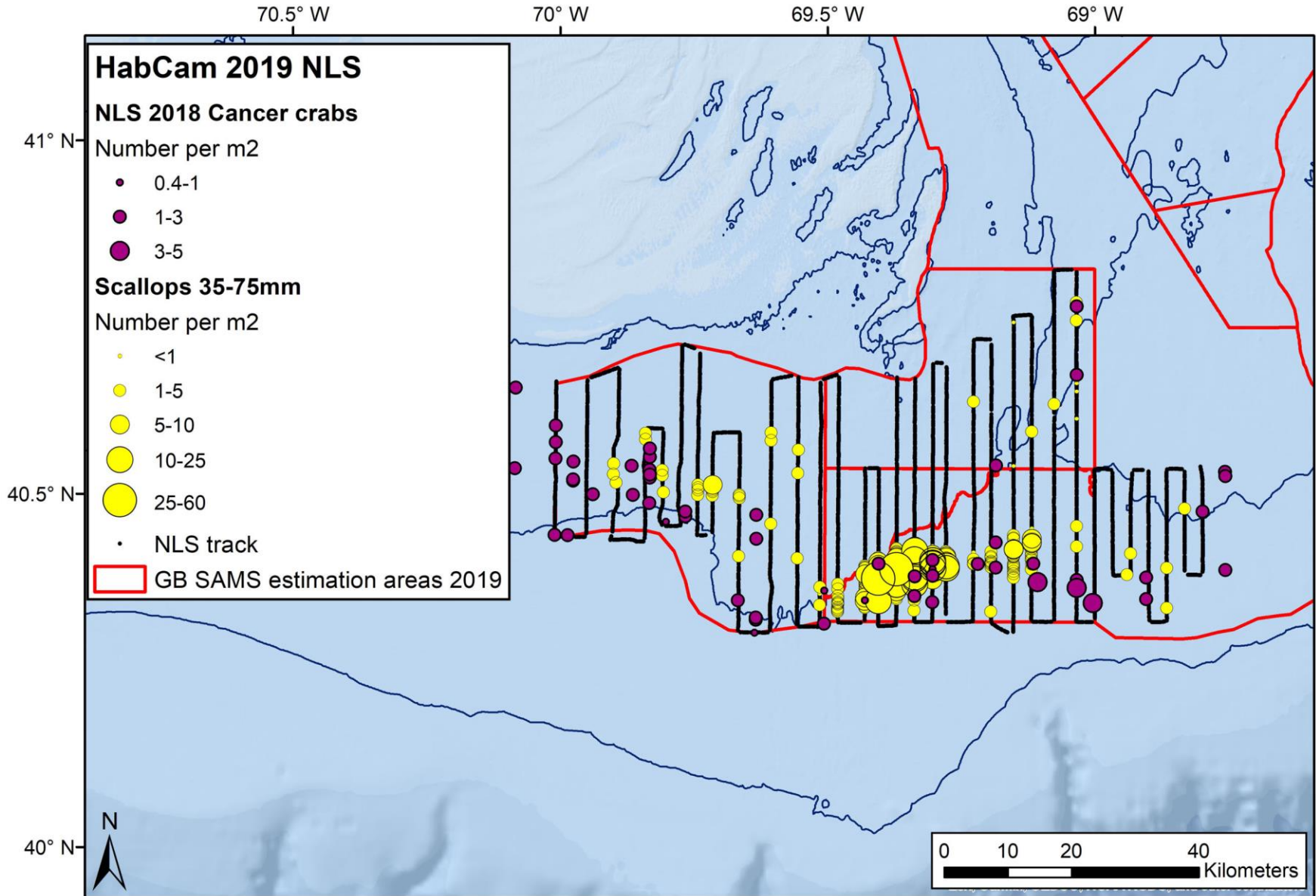
Scallop predators - NLS



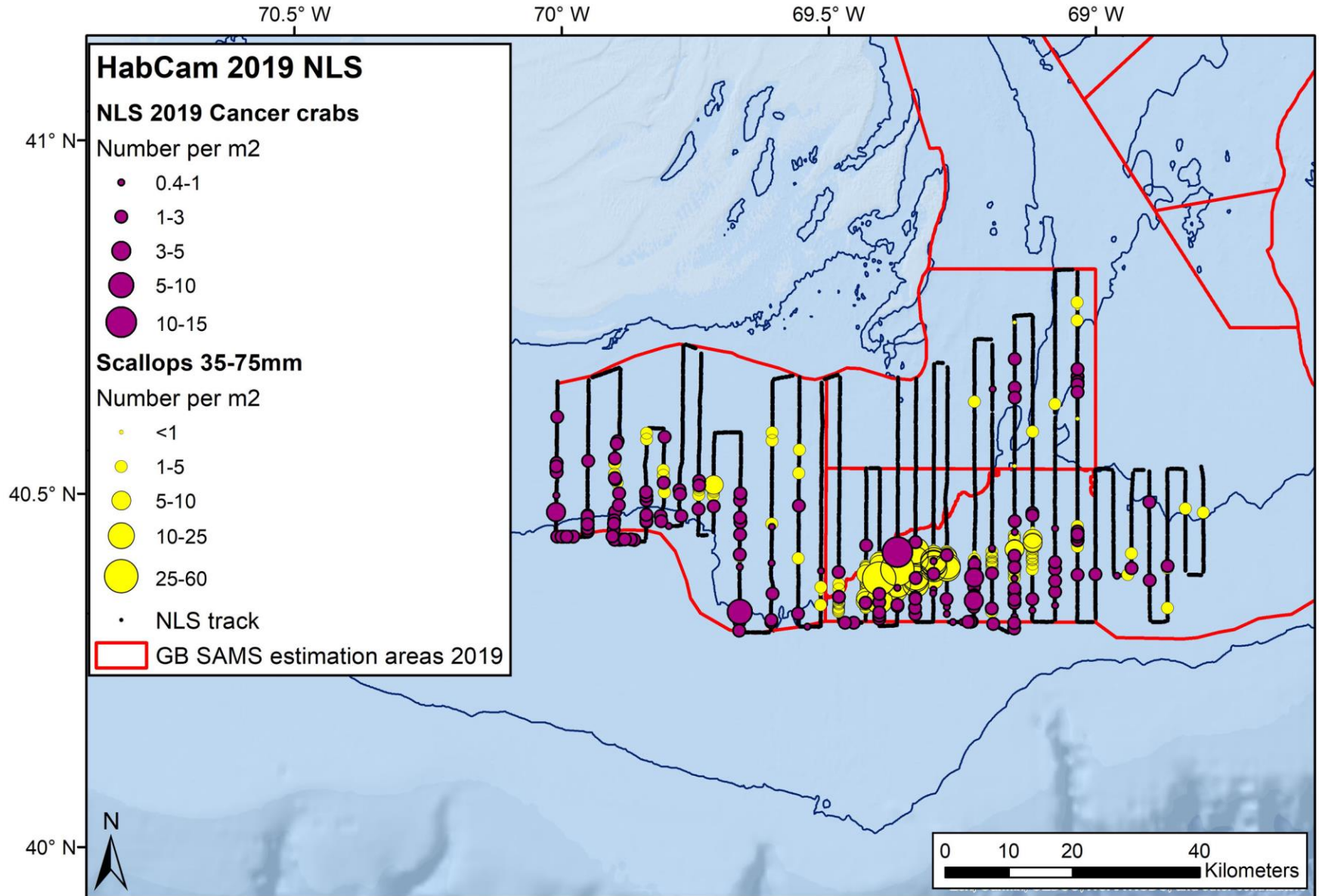
Scallop predators - NLS



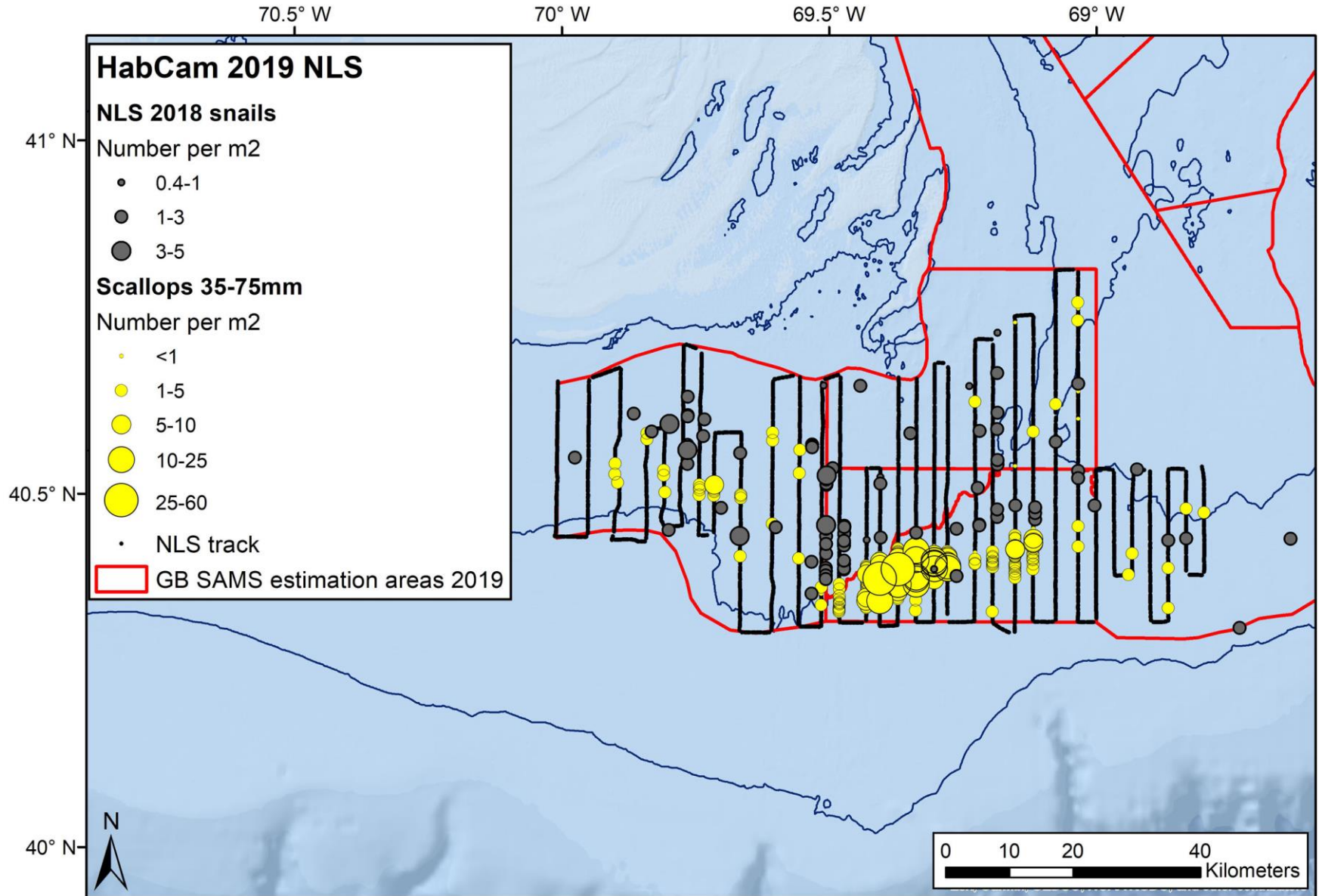
Scallop predators - NLS



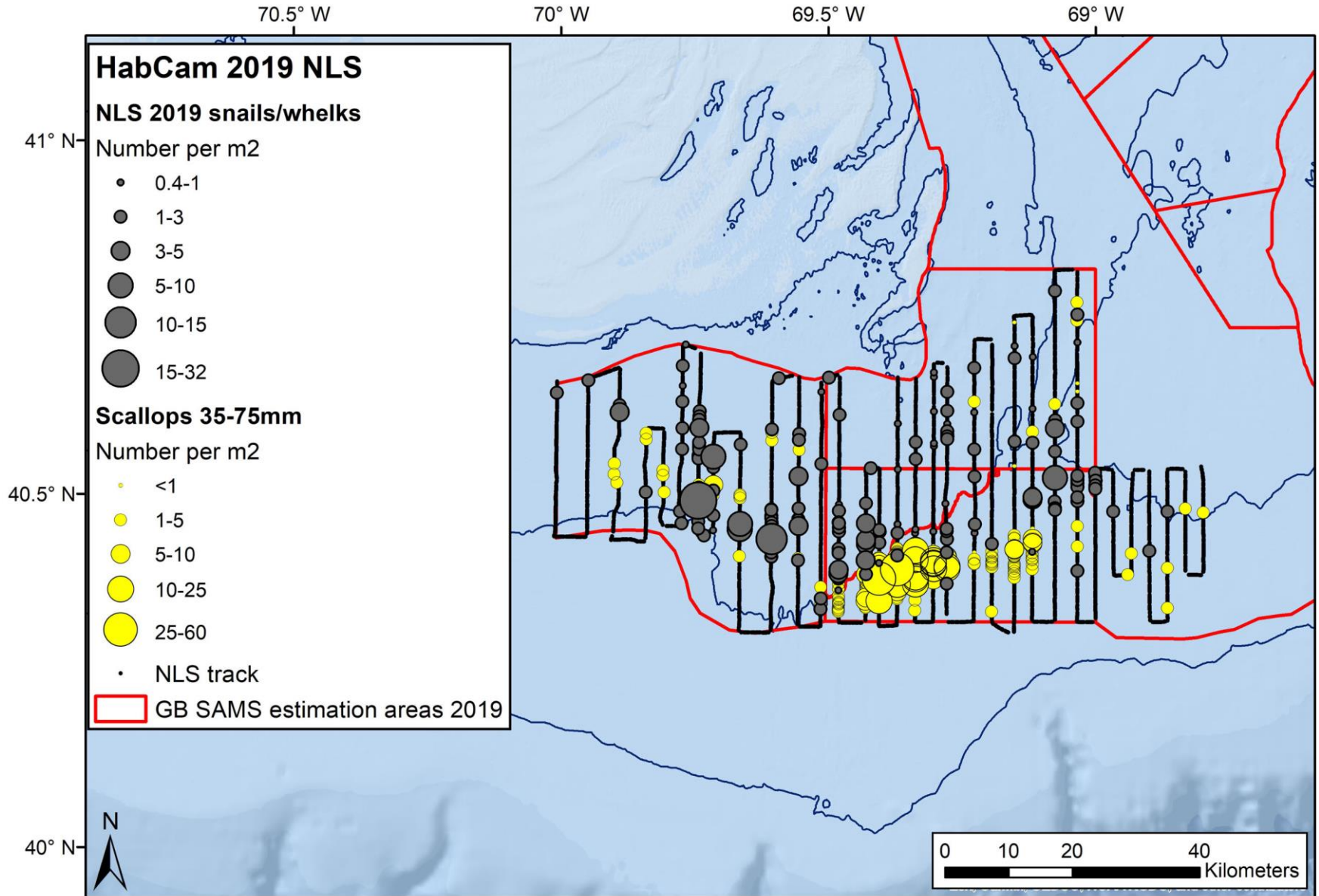
Scallop predators - NLS



Scallop predators - NLS



Scallop predators - NLS



2019 Total Biomass

<hr/> Total Biomass <hr/>				
SAMS Area	HabCam	SMAST	VIMS	Average
CL2-Access	11710		20689	16200
CL2-Ext	6714		5568	6141
NLS-North	3066	4700	3369	3712
NLS-South-Shallow	3420	4650	1721	3264
NLS-South-Deep	46060	49700	11898	35886
NLS-West	12575	13450	3276	9767
SF	8514		6438	7476
ET-Open	17215	18050	15105	16790
ET-Flex	24357	19650	13529	19179

Total Biomass* 2018-2019

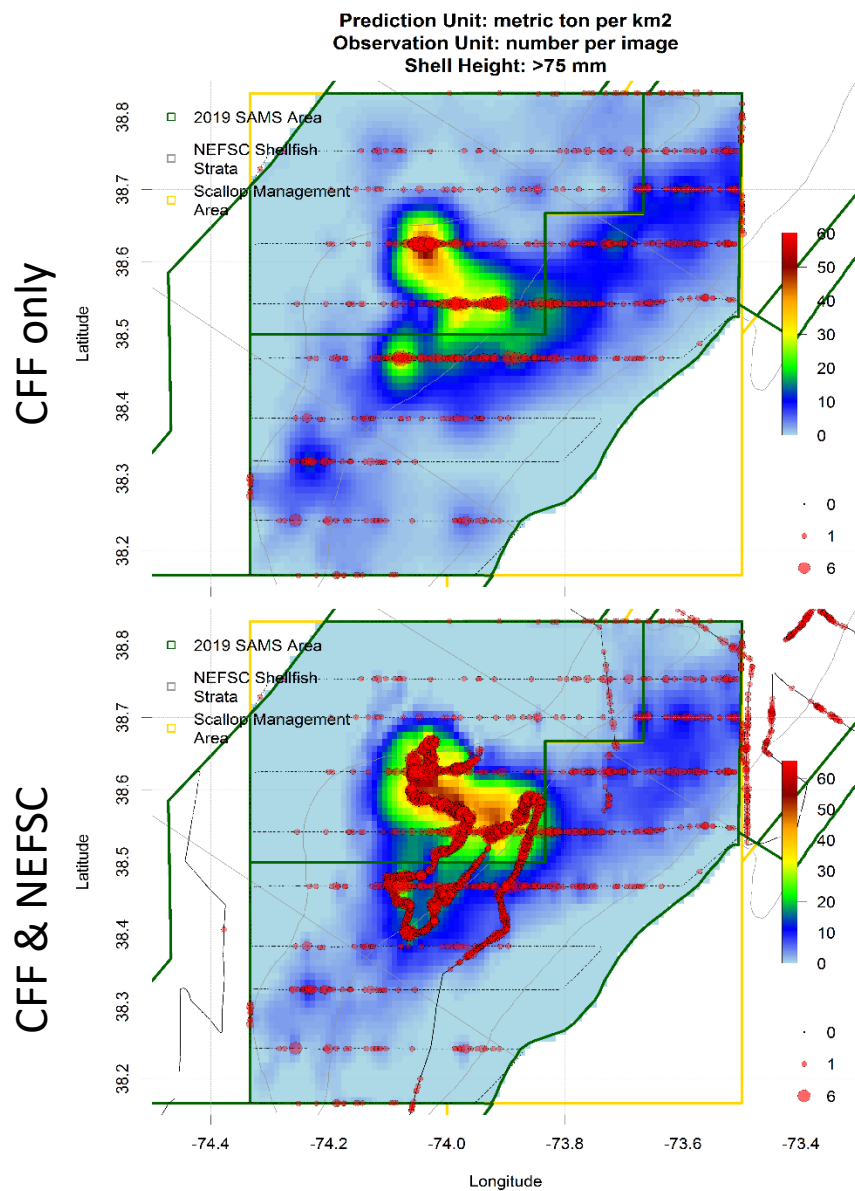
	2018 Mean	2018 HabCam	2019 HabCam
CA2-Access	8001	7128	11710
CA2-Ext	7658	8086	6714
SF	5715	7027	8514
NLS-N	3685	3585	3066
NLS-S-shallow	3732	4964	3420
NLS-S-deep	34485	31785	46060
NLS-W	48155	41155	12575
ET-Open	12699	10272	17215
ET-Flex	19641	21264	24357

*: total biomass; taken from 2018 preliminary combined survey estimates document

2019 Total Biomass

Total Biomass									
SAMS Area	Number (millions)	Biomass (MT)	SE	MeanWt (g)	Avg Size (mm)	NumPer m2	Num Annotated	CFF	NEFSC
CA2-Access	1035	11710	356	11.3	67.6	0.31	4526	*	*
CA2-Ext	653	6714	117	10.3	71.6	0.4	2141	*	*
NLS-North	71	3066	379	42.9	124.6	0.07	1939	*	*
NLS-South-Shallow	219	3420	9	15.6	96.9	0.76	531	*	
NLS-South-Deep	3829	46060	871	12	91.2	5.24	1309	*	
NLS-West	623	12575	3618	20.2	99.5	0.43	1946	*	
SF	1074	8514	188	7.9	62	0.25	8634	*	*
ET-Open	634	17215	229	27.1	120.7	0.23	5189	*	*
ET-Flex	778	24357	457	31.3	121.5	0.43	3974	*	*
ET-Open	741	20564	2551	27.7	116.7	0.27	1929	*	
ET-Flex	570	16924	1728	29.7	119	0.32	1364	*	

ET Total Biomass – CFF & NEFSC



ET Flex

CFF: 16924 mt

Combined: 24357 mt

ET Open

CFF: 20564 mt

Combined: 17215 mt