

Scallop AP and Committee

Jonathon Peros, NEFMC Staff

**Scallop Advisory Panel Meeting
September 18, 2019**

**Scallop Committee Meeting
September 19, 2019**



Upcoming Meetings (2019)

- September 26 – Scallop Report – NEFMC (Gloucester, MA)
- October 1 – PDT (Braintree, MA)
- October TBD – PDT (Conference Call)
- October 17 – SSC Meeting (Boston, MA)
- October 23/24 – PDT/AP & CTE (New Bedford, MA)
- Framework 32 Final Action – December Council
- Amendment 21: Vote on range of alternatives in Jan?
- **April 1 – Target Implementation**

Overview of survey presentation

Part I: Summary of 2019 survey results (VIMS, SMAST, CFF, NEFSC, ME DMR/UMaine)

Part II: Fishery Data & Summary of PDT discussions to date

See PDT Meeting Materials (Aug. 27/28)

Survey Presentations are also available on the NEFMC scallop page under the [August 27/28 PDT Meeting page](#).

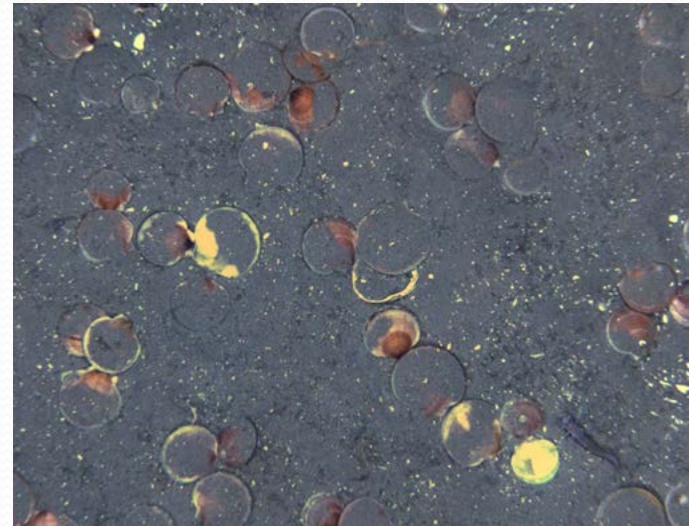


2018 Scallop Benchmark – SARC 65

- In 2017: Stock **not overfished**, and **overfishing was not occurring**.
- Highest level of biomass in the timeseries (1975-2017)
- Unremarkable recruitment since historic year classes in 2011 & 2012.
- Fishing mortality (F) at the lowest level in the timeseries.



High Density in Nantucket Lightship. Photo Credit: SMAST



High Density in ET-Flex. Photo Credit: NEFSC

Part I: 2019 Surveys

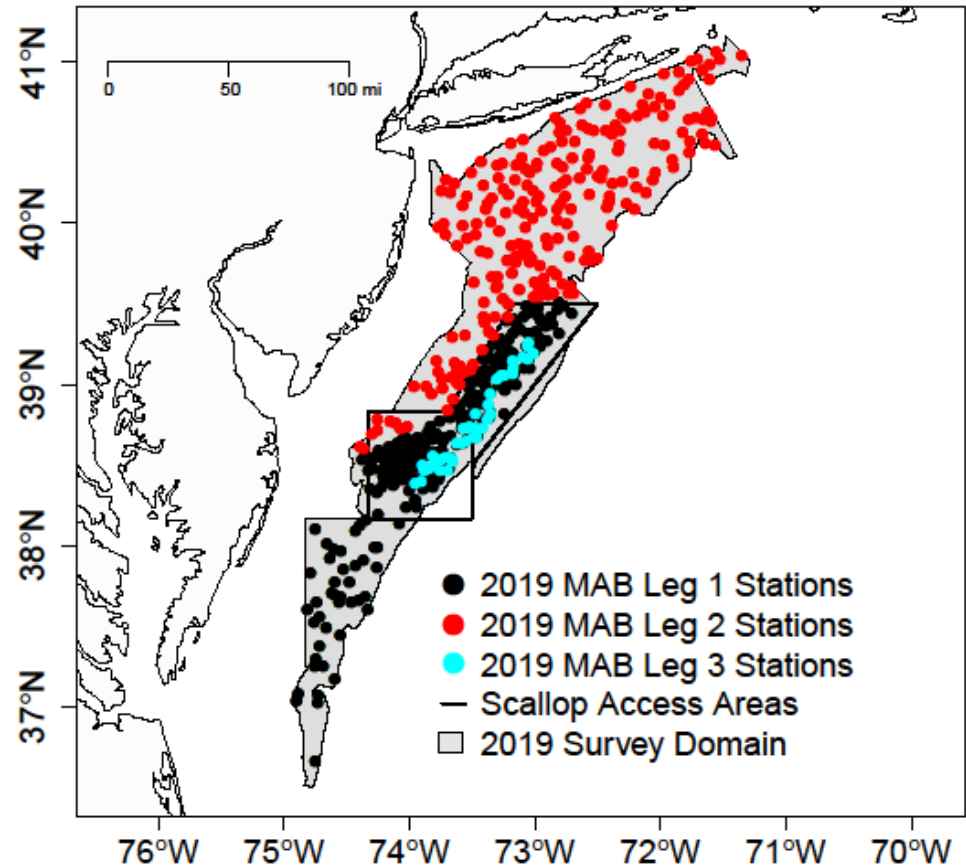


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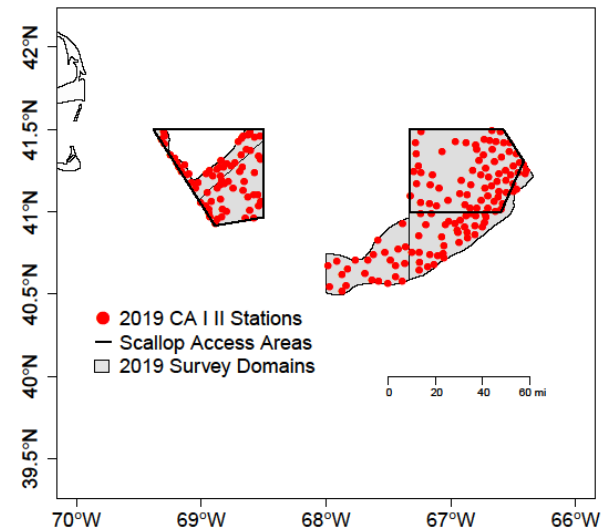
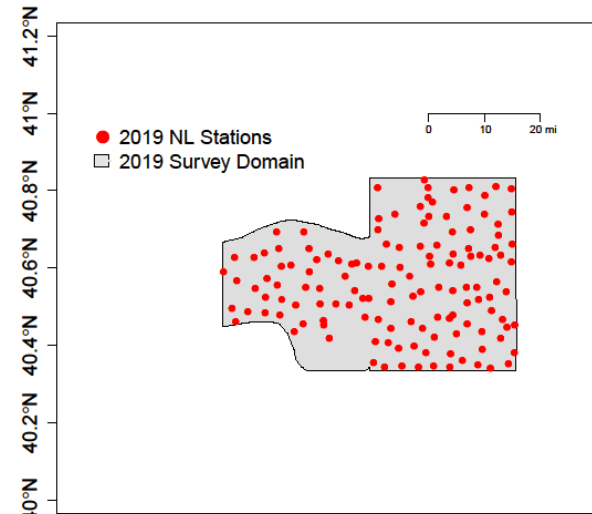
VIMS surveys – Mid-Atlantic

- 2 cruises in May
 - Leg 1: 5/4 – 5/13 (VB → HC)
 - Leg 2: 5/19 – 5/29 (ET → BI)
- Continued use of stratified random sampling design to increase precision, automated data collection
- 450 dredge tows (stations)
- Sampling intensity of SH:MW ~5,500 samples in MA
- One dominate cohort (7yo) in MAAA
- No strong signals of incoming recruitment → some in the “Gully” around Hudson Canyon



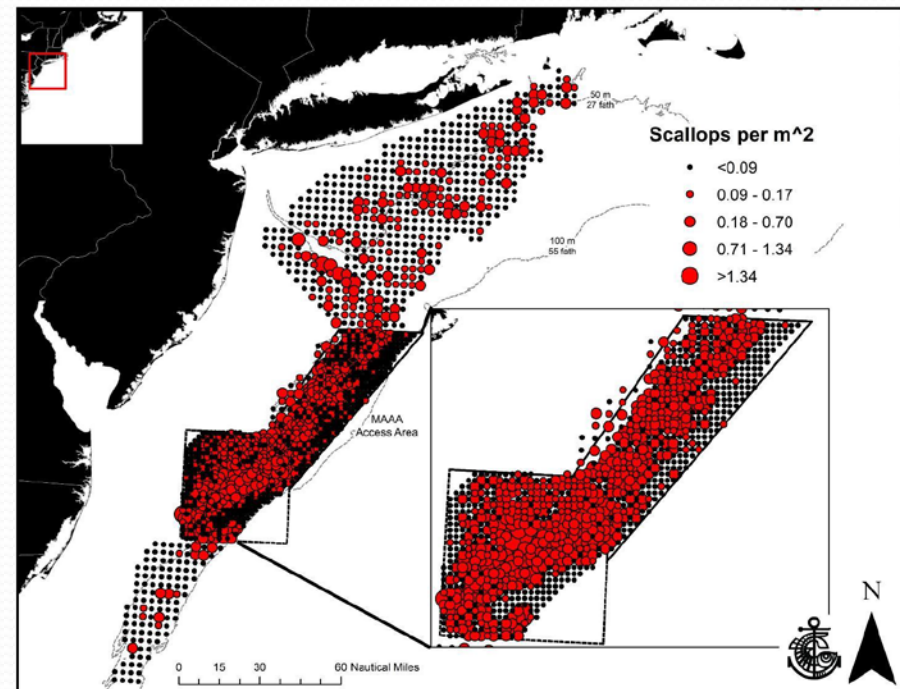
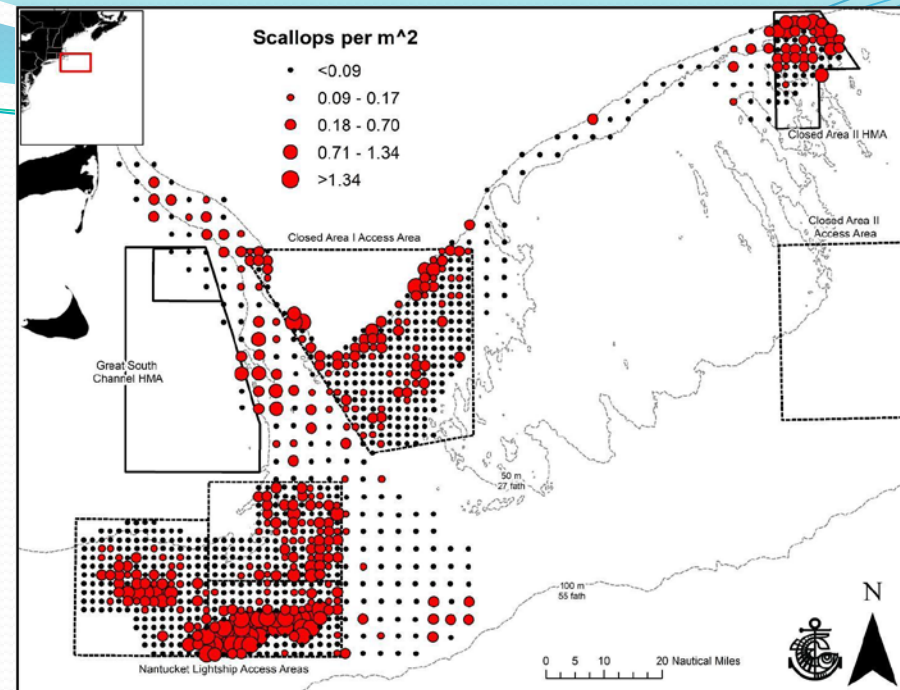
VIMS surveys – NLS, CAI, CAII

- 2 Cruises:
 - NLS - 7/24 – 7/31
 - CAI & CAII - 6/7 – 6/14
- 335 dredge tows (135 in NLS and 200 in CA I and CA II)
- Sampling intensity of SH:MWV
 - 2,350 samples for CAI & CAII II
 - ~2,000 samples for NLS
- Slower growth rates in NLS.
- Clappers in the NLS-West.
- Recruitment on GB → some in CAII, CAII-ext, and SF



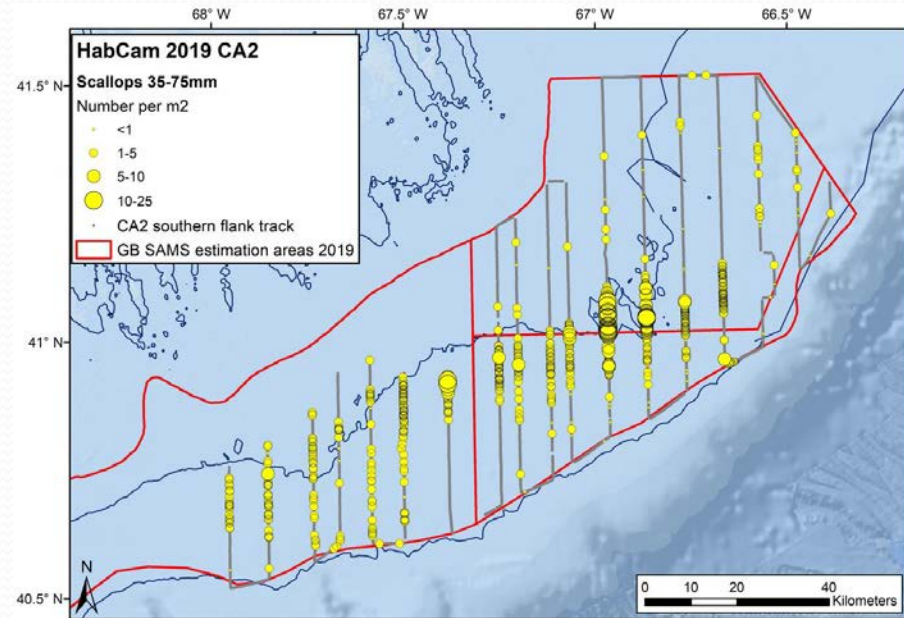
SMAST survey

- High-res surveys of CAI, NLS, ET, HC, CAII-N
- 2,728 total stations
- Imperx DSC camera
- Web-based image sharing
- Reduction in scallop density in the NLS-S-deep between 2017 and 2018
- Steep decline in biomass and density in NLS-W.
- Some growth in the NLS-S-deep.
- Coverage on NF and CAII-N added this summer.



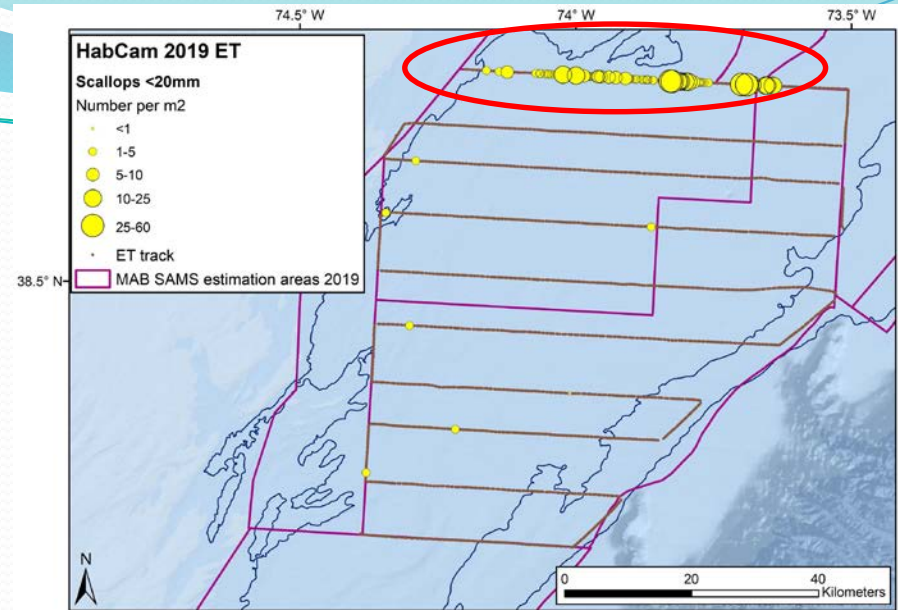
CFF – CAII, SF

- HabCam v3
- June 27 – July 4
- F/V Kathy Marie
- 540 miles of transects
- ~9,700 annotated images (~1/250)
- 2 cohorts across southeast parts (Closed Area II, Ext, Southern Flank)



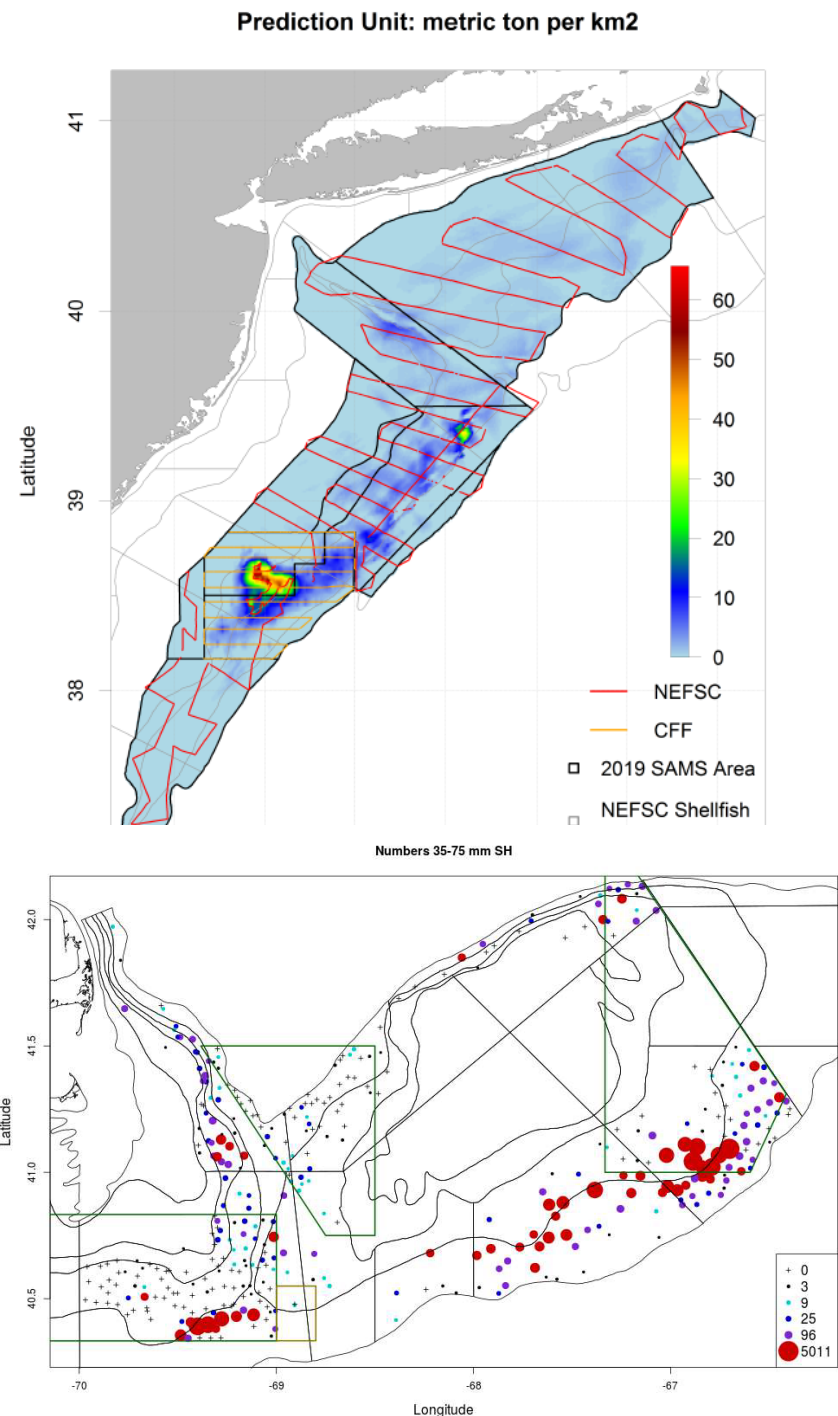
CFF – NLS & ET

- NLS:
 - July 9-15, 2019
 - 610 miles of transects
 - ~6,500 annotated images (~1/400)
 - Tracking 2012 cohort
- Elephant Trunk:
 - July 25-30, 2019
 - 360 miles of transects
 - ~3,700 annotated images (~1/400)
- Pre-recruits along northern boundary of ET-Flex (<20mm)

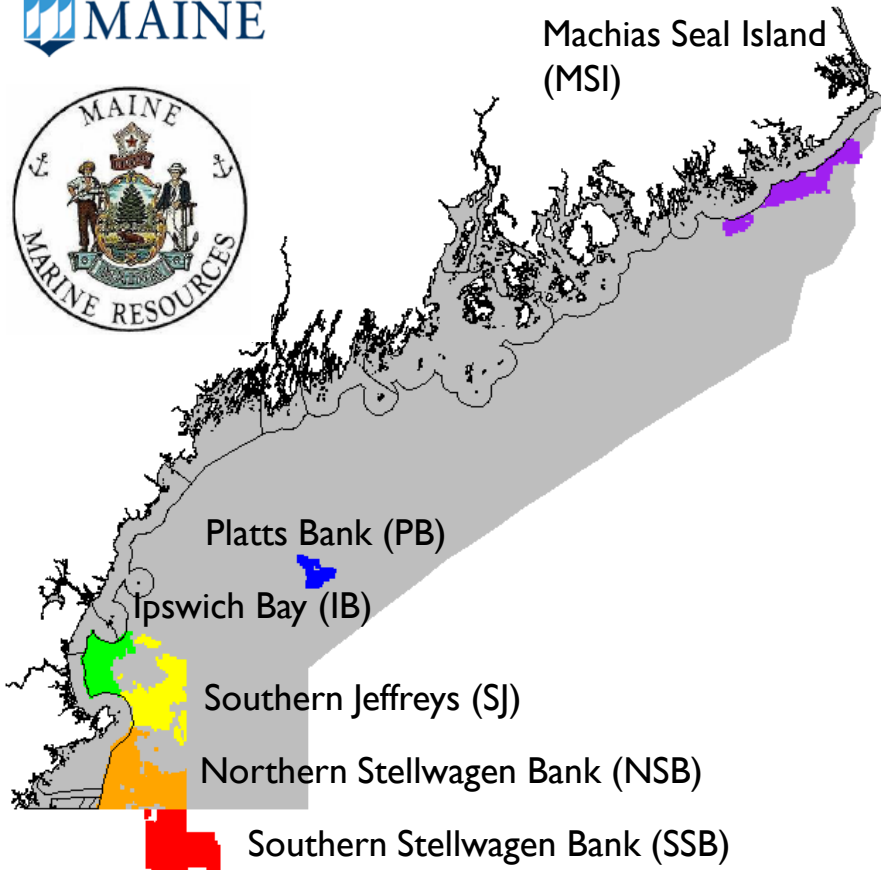


NEFSC Survey

- R/V Huge R. Sharp
- Timing:
 - Mid-Atlantic: 5/15 – 5/28
 - Georges Bank: 5/30 – 6/15
- 104 dredge tows on GB
- HabCam v4 coverage of GB and MA, over 2.5 million images taken, estimates based on ~85,000 manual annotations (~1/30)
- Experimental work on dredge efficiency in high density areas.
- Some recruitment in southern GSC.



ME DMR/UMaine



- F/V Clean Sweep
- Timing:
 - Survey: 5/27/19 – 6/24/19
 - NGOM Fishery open 4/1 – 4/25
- 323 dredge tows (5 min) across 6 areas
- Random stratified survey design
- Strong recruitment on Stellwagen Bank.
- Exploitable scallops in 2020 on Jeffreys and in Ipswich Bay

2019 Scallop Survey Biomass Estimates - September 10, 2019 version with updates to VIMS dredge efficiency (.4/3) in NLS-S-deep and NLS-W

Region	Subarea	Dredge				DropCam				Habcam				Mean			
		Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt
GB	CL1ACC	18.4	693	84	35.6	36	1049	203	29					27.1	871	73	32.1
GB	CL1NA	259.0	7857	912	29.5	154	3487	786	23					206.4	5672	401	27.5
GB	CL-2(N)	154.0	5778	2026	37.5	184.1	5,926	1,608	32					169.1	5852	862	34.6
GB	CL-2(S)	1671.0	20,689	1,129	15.4					1035	11710	356	11.3	1353.0	16200	592	12.0
GB	CL2Ext	312.1	5,568	566	17.4					653	6714	117	10.3	482.5	6141	289	12.7
GB	NLSAccN	81.5	3368	210	41.3	122	4,690	696	38.35	71	3066	379	42.9	91.6	3708	273	40.5
GB	NLSAccS-Shallow	117.6	1721	426	14.6	305	4655	3398	15.3	219	3420	9	15.6	213.8	3265	1142	15.3
GB	NLSAccS-Deep	3618.6	36608.8	1182	10.1	4839	49689	8919	10.3	3829	46060	871	12	4095.6	44119	3013	10.8
GB	NLS-W	600.8	10080.4	663	16.7	838	13,438	6,325	16.03	623	12575	3618	20.2	687.4	12031	2439	17.5
GB	NF	91.0	1585	735	17.5	57.2	1,008	372	18					74.1	1297	275	17.5
GB	GSC	296.0	7302	1354	24.7	439	6135	1000	14.0					367.6	6719	561	18.3
GB	GSC-45	1.7	82.57	29.51	49.5									1.7	83		49.5
GB	SF	686.8	12216.0	2127	17.8					1074	8514	188	7.9	880.4	10365	1068	11.8
GB	TOTAL	7908.4	113549	3937	14.4									8650.3	116322	4391	13.4
MAB	BI	94.9	1,515	254	17.3	47	1076	305	23	37	850	8	22.7	59.8	1147	132	19.2
MAB	LI	407.3	9,079	350	22.4	501	9417	962	19	570	12282	770	21.6	492.7	10259	427	20.8
MAB	NYB	537.8	7425	523	14.8	464	7032	1288	15	487	7091	330	14.6	496.4	7183	476	14.5
MAB	MA inshore	53.4	1265	181	23.7					26	1020	7	39.6	39.7	1143	91	28.8
MAB	HCSAA	380.4	8544	775	22.6	580	10185	783	18	762	18303	2273	24	574.1	12344	842	21.5
MAB	ET Open	592.0	15,105	897	25.8	888	18051	1187	20	634	17215	229	27.1	704.6	16790	502	23.8
MAB	ET Flex	523.6	13,529	1,174	25.5	771	19654	2711	25	778	24357	457	31.3	690.9	19180	996	27.8
MAB	DMV	20.3	203	43	10.5	89	374	111	4	47.0	599	58	12.8	52.2	392	44	7.5
MAB	VIR	4.2	14	1	3.0									4.2	14	1	3.3
MAB	TOTAL	2614.0	56679	1811	21.7					3341.0	81717	2477	24.5	3114.6	68452	1546	22.0
TotalOpen		2505	46255	2687	219					2894	37070	224	130	2951	44741	1271	204
TOTAL TOTAL		10522	170228	4333	16.2					3341	81717	2477	24.5	11765	184774	4655	15.7

Part II:

Fishery Data

PDT Discussion

2019 NGOM Survey & Outlook

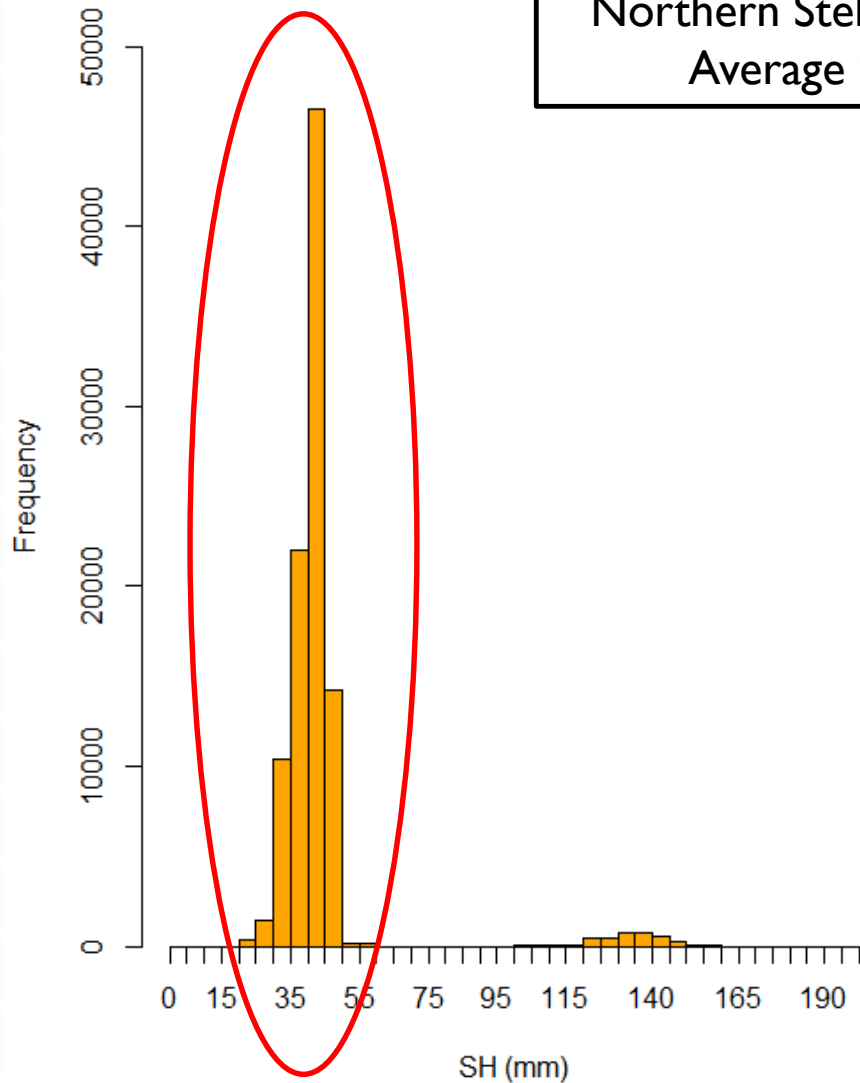
- Strong recruitment event on Stellwagen Bank (N & S).
- Jeffrey's Ledge: Highest density per meter squared (2.53).

Area	Number of Scallops (mil.)	Biomass (mt)	Mean meat weight (g)	Average Shell height (mm)
Machias Seal Isl.	24	288	11.9	113.5
Ipswich Bay (Fed Waters)	~7	135	18.0	107.1
Jeffrey's Ledge	~25	682	19.4	108.3
Northern Stellwagen Bank	~54	622	2.2	53.6

- 2020/2021 TAC: Projection method used in FW29 and FW30. (Reviewed in SAW/SARC 65)

2019 NGOM Survey & Outlook

- Very strong recruitment detected on Stellwagen Bank

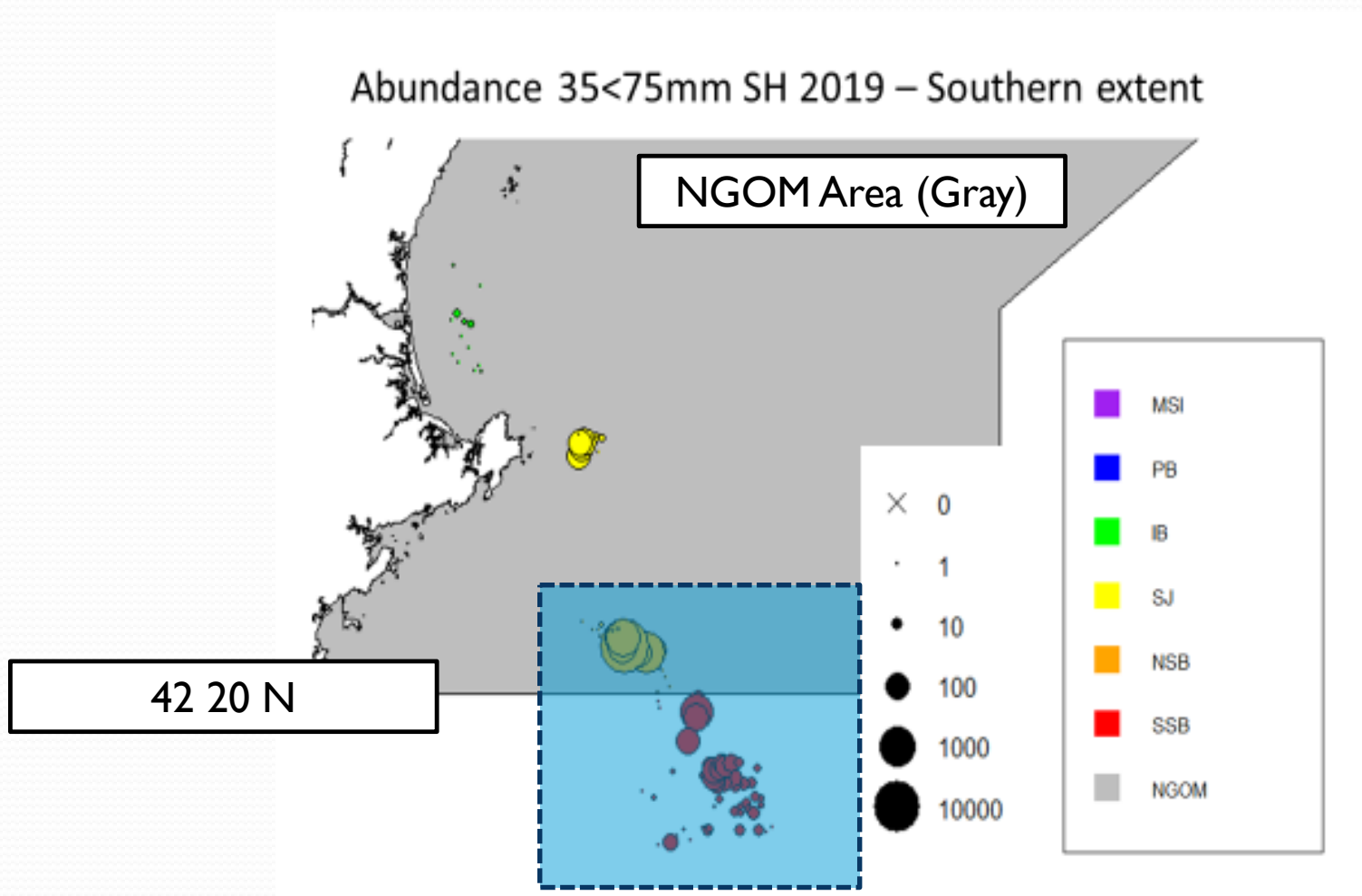


Northern Stellwagen, inside NGOM
Average Shell Height: 53.6



Management Considerations

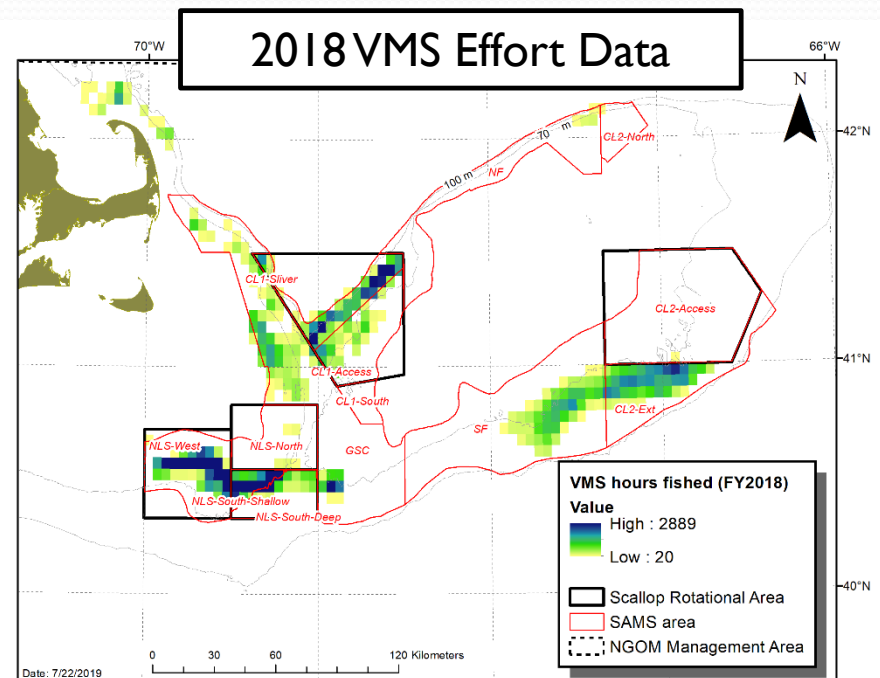
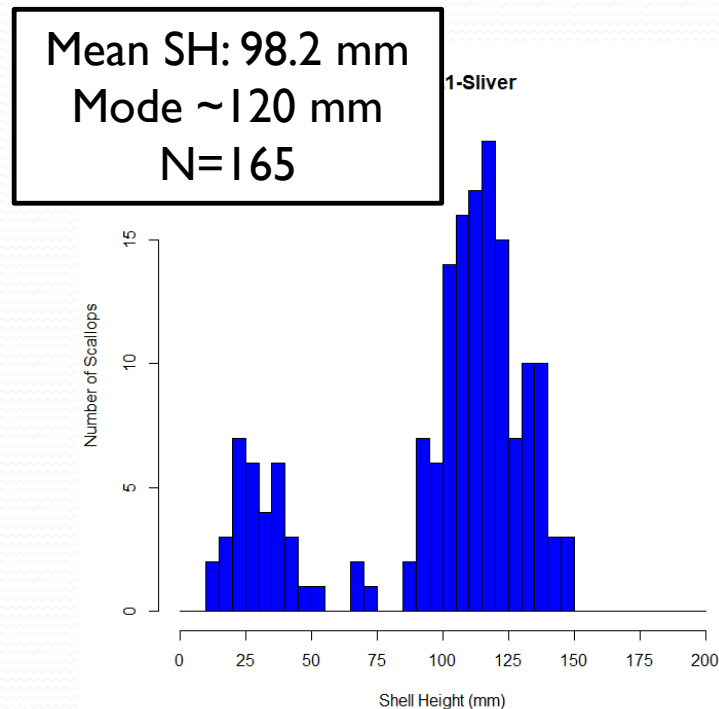
- PDT Input: The Council may want to consider a closure to protect the strong YC on Stellwagen Bank to improve YPR



Closed Area I

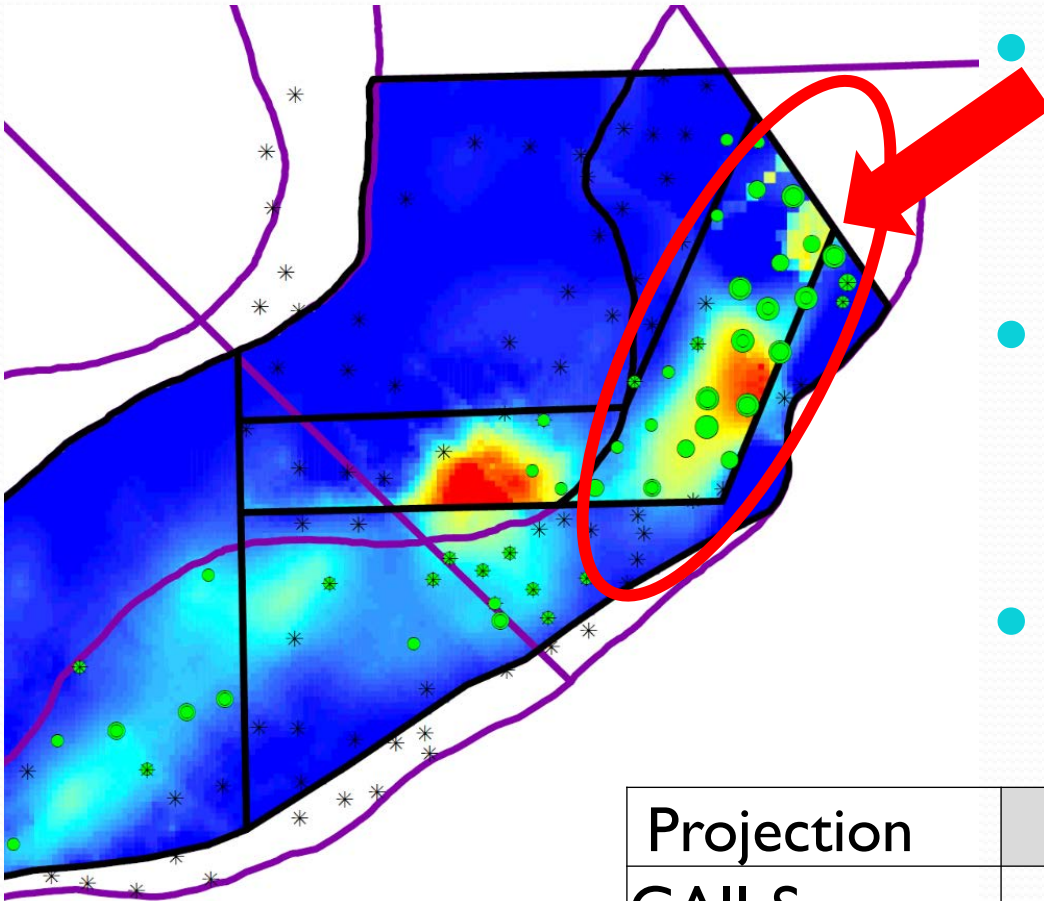
- Can likely **support fishing in 2020 (<1 trip)**
 - Majority of animals and fishing in “sliver”
 - Landings: Us and 10/20s
 - Minimal recruitment
- | Projection | F=0.51 (mt) | F=0.51 (mt) |
|------------|-------------|-------------|
| CAI Sliver | 1131 | 2,493,42 |
| CAI Access | 235 | 518,08 |

Projection	F=0.5 I (mt)	F=0.5 I
CAI Sliver	1131	2,493,428
CAI Access	235	518,086



Closed Area II - South

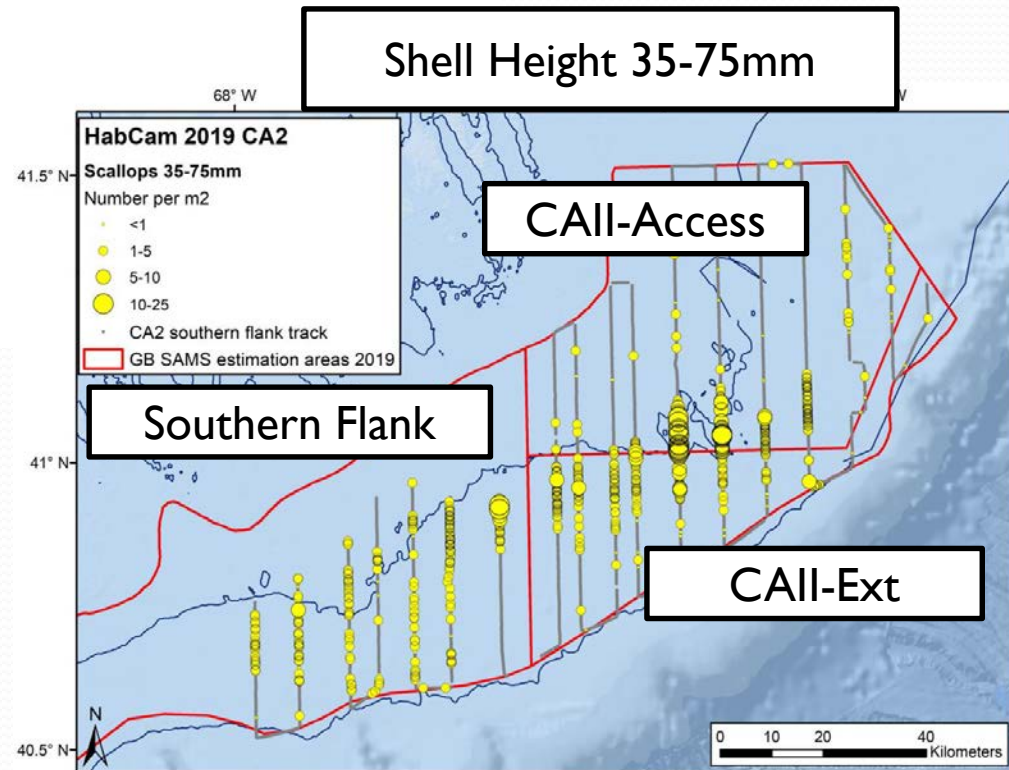
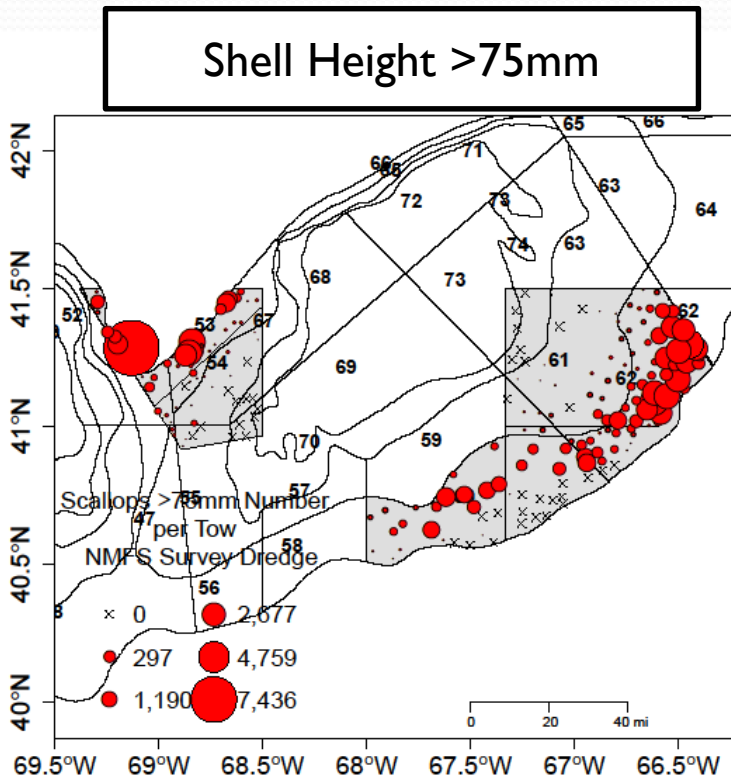
- Candidate for a **FT trip+ in 2020**
- 2 cohorts in the area – oldest will be 6yo in 2020.
- Majority of biomass in eastern portion of stratum 62
- Divergence in dredge and HabCam survey estimates → Truth?
- 2019 Surveys: 1.35 billion scallops, 35.7 mil. lbs



Projection	F=0.5I (mt)	F=0.5I (lbs)
CAII-S	4998	11,018,704

Closed Area II - South

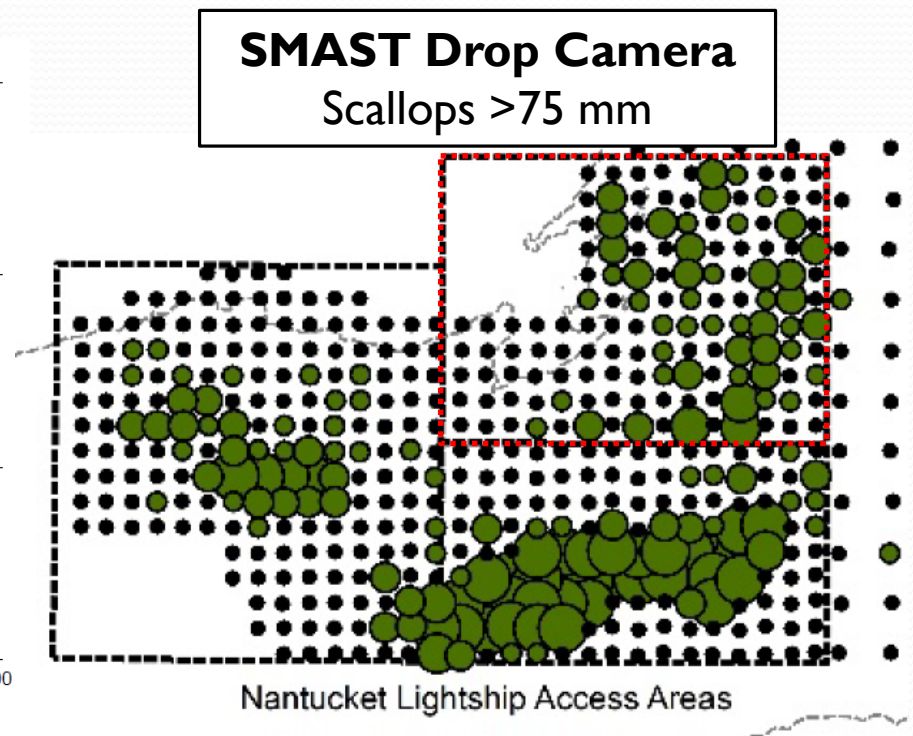
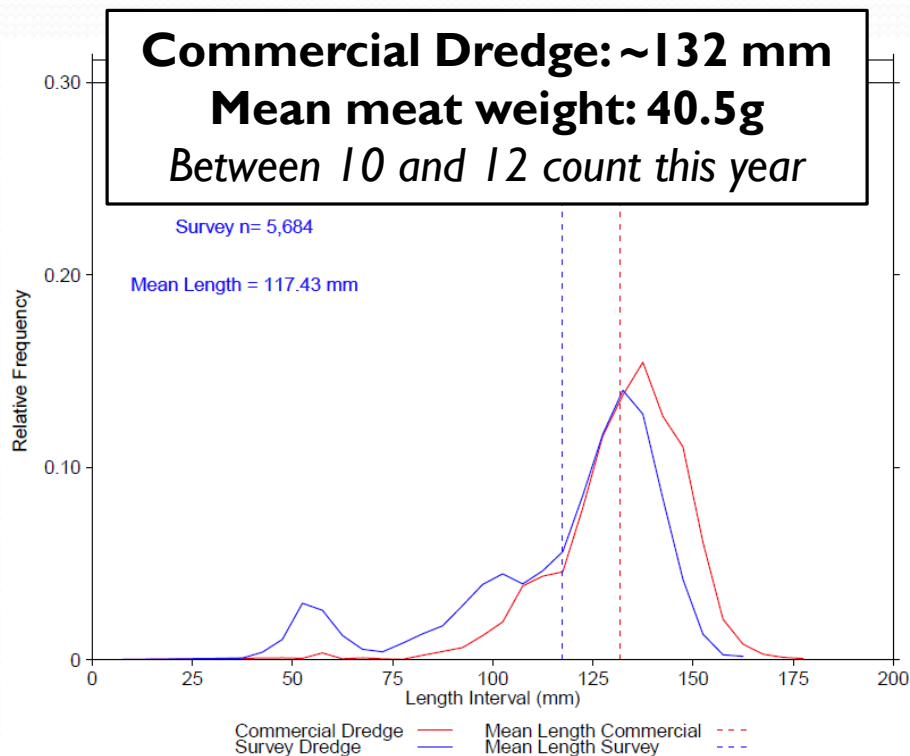
- PDT Recommendation: Consider a closer in CAII (and CAII-ext, SF?) to improve yield-per-recruit (protect YT).
- Cohorts in this area are somewhat spatially distinct.



NLS-North

Projection	F=0.5 I (mt)	F=0.5 I (lbs)
NLS-N	1,096	2,416,266

- Candidate for **partial trip in 2020**.
- Minimal recruitment, largest cohort exploitable.



Nantucket Lightship West

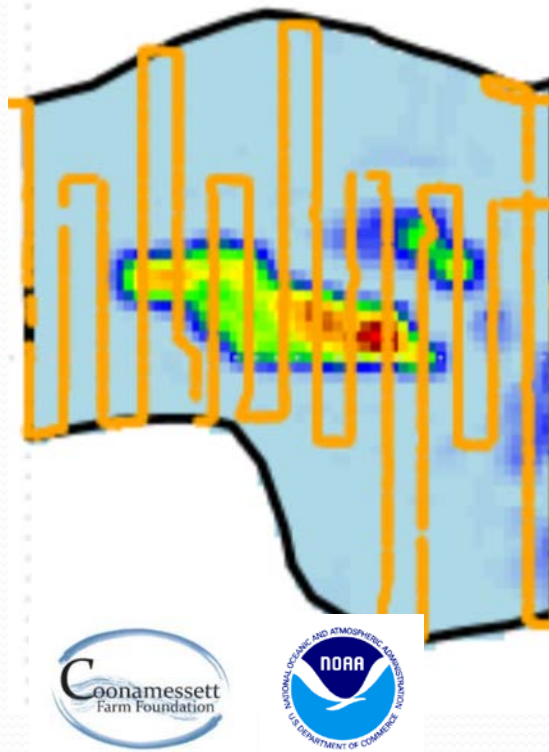
FY 2018: 2 Trips
FY 2019: 3 Trips
~30 million lbs
allocated

High total
mortality
(M, F, discard)

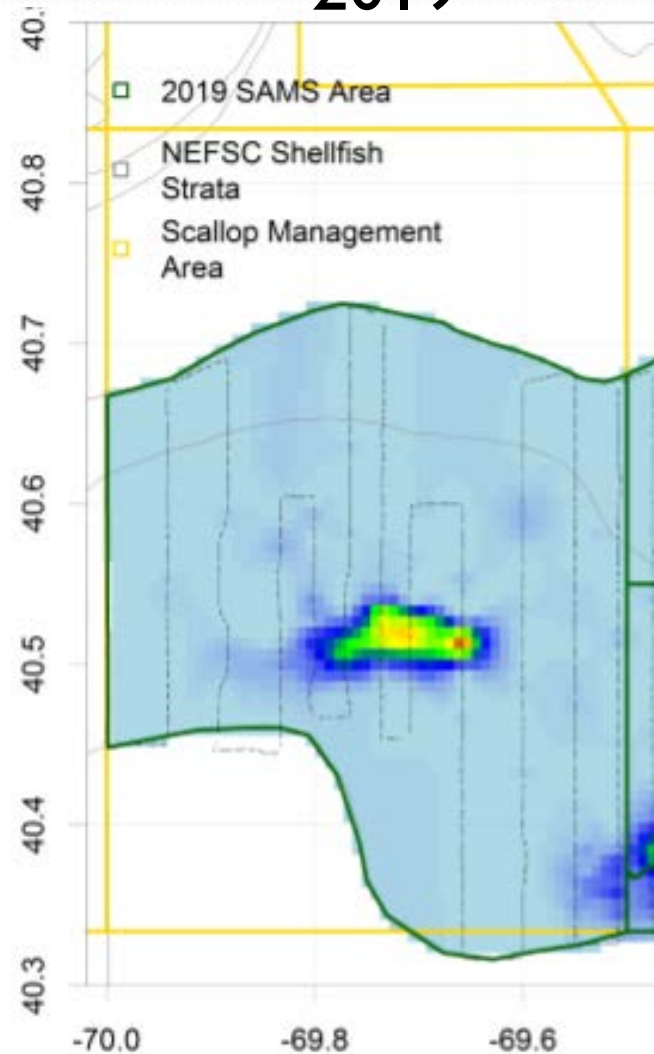
~50 million lb
decline in total
biomass estimate
from 2018 - 2019

Substantial downturn in biomass.

2018



2019

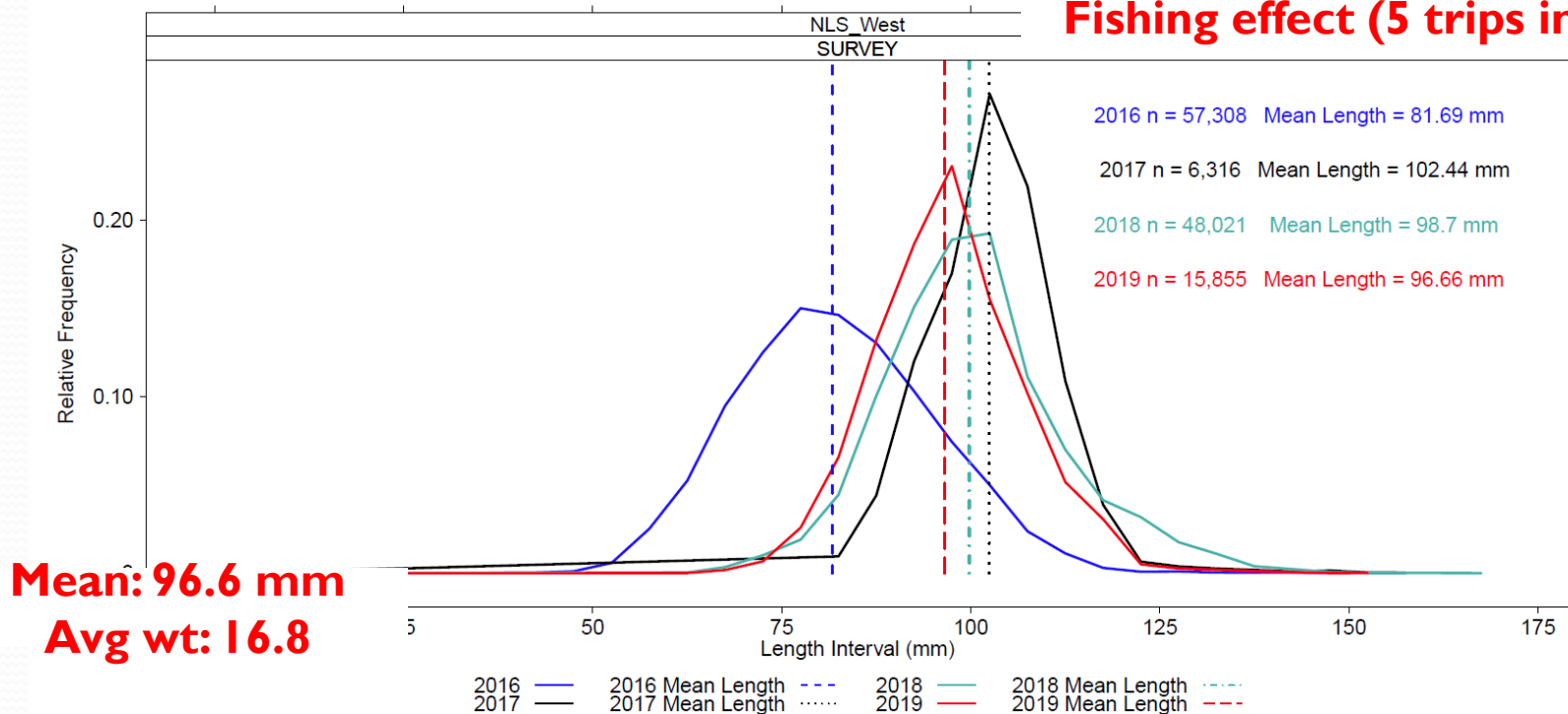


NLS-West

Projection	F=0.5I (mt)	F=0.5I (lbs)
NLS-West	1,434	3,161,429

- **Model suggests that there is not another trip in NLS-W in 2020. Need to re-think default allocation.**
- **Uncertainty around growth.**

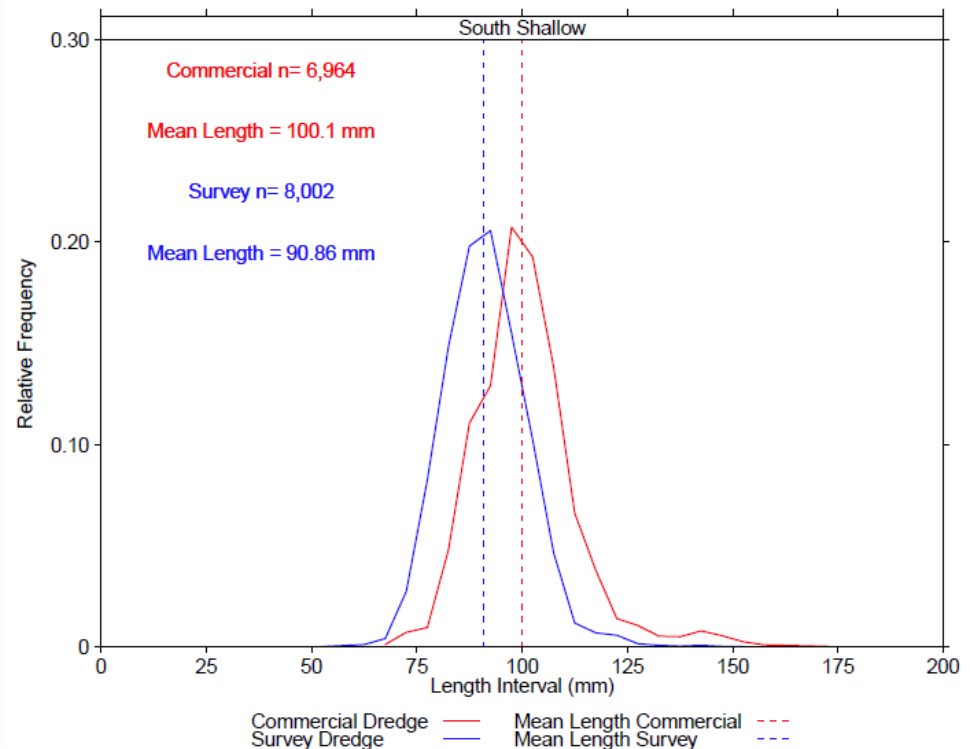
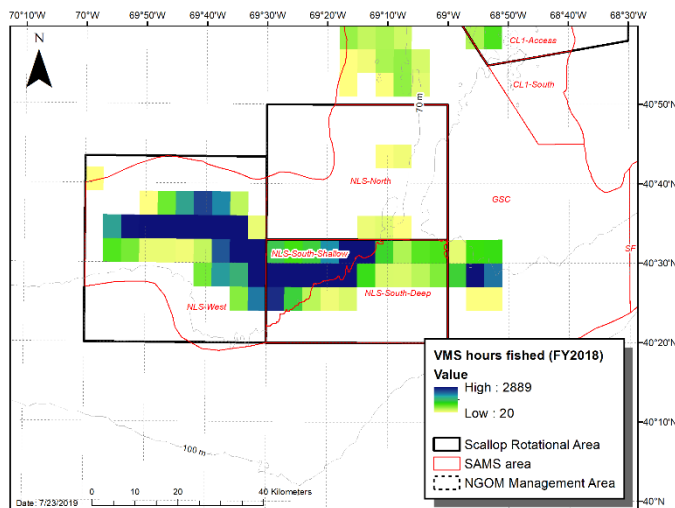
**Very little growth observed
between 2017, 2018, 2019
Fishing effect (5 trips in 2 year)**



NLS-South Shallow

Projection	F=0.5 I (mt)	F=0.5 I (lbs)
NLS-S-shallow	1,376	3,033,561

- Not expected to support a full trip in 2020 on its own.
- Could be combined with another Lightship area.
- L-F is comparable to the NLS-W



NLS-South-deep

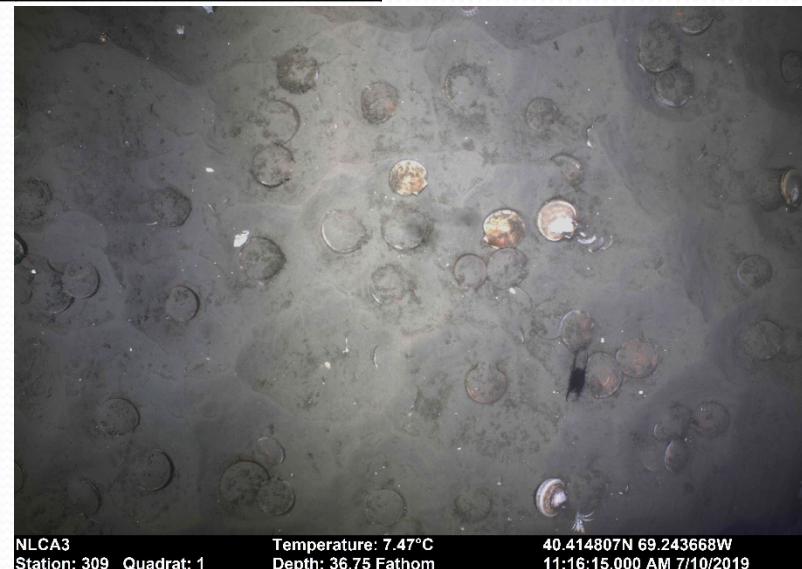
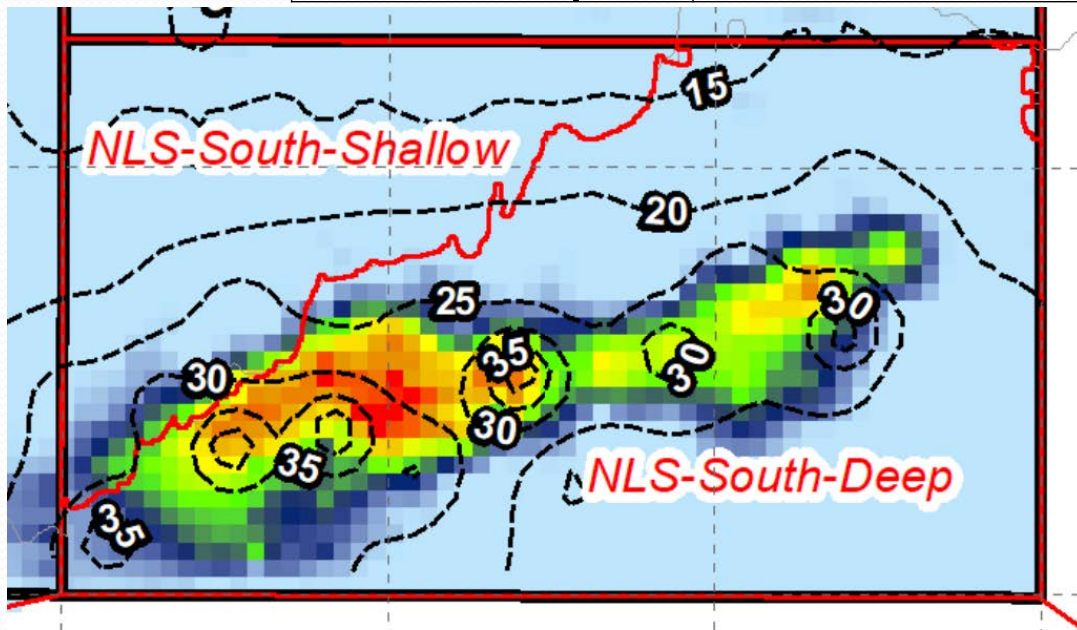
The outlook for these scallops has changed some since the Council voted in June to prioritize work to modify the FMP to accommodate harvest of these scallops through a separate TAC, outside of the 94.5% and 5.5% allocation split.

- **Then:** the majority of animals would be 40-50 count and 8 years old in 2020, and may be more susceptible to large scale mortality as they get older in age.
- **Now:** The 2019 survey information in this area suggests that these scallops grew between 2018 and 2019, and that meat counts have improved enough to make the NLS-S-deep a more viable candidate for fishery access in the future.

NLS-South-deep

- **What:** There is one exceptional year class in this area. These scallops are in deeper water, with marginal habitat.
- **Where:** Two high-density patches (i.e. depths of 70 m or more). The SAMS area is approx. 22nm east to west, and 13 nm north to south.
- **How many scallops are in the area?** over 35,000 mt (over 3 billion animals) with an average meat weight of 10 g.

Projection	F=0.5I (mt)	F=0.5I (lbs)
NLS-S-deep	8,234	18,152,863



NLS-South-deep

2018 → 2019

- Density per m^2 stabilized
- Observed Growth

Density

2017: 13.66 m^2

2018: 6.85 m^2

2019: 6.26 m^2



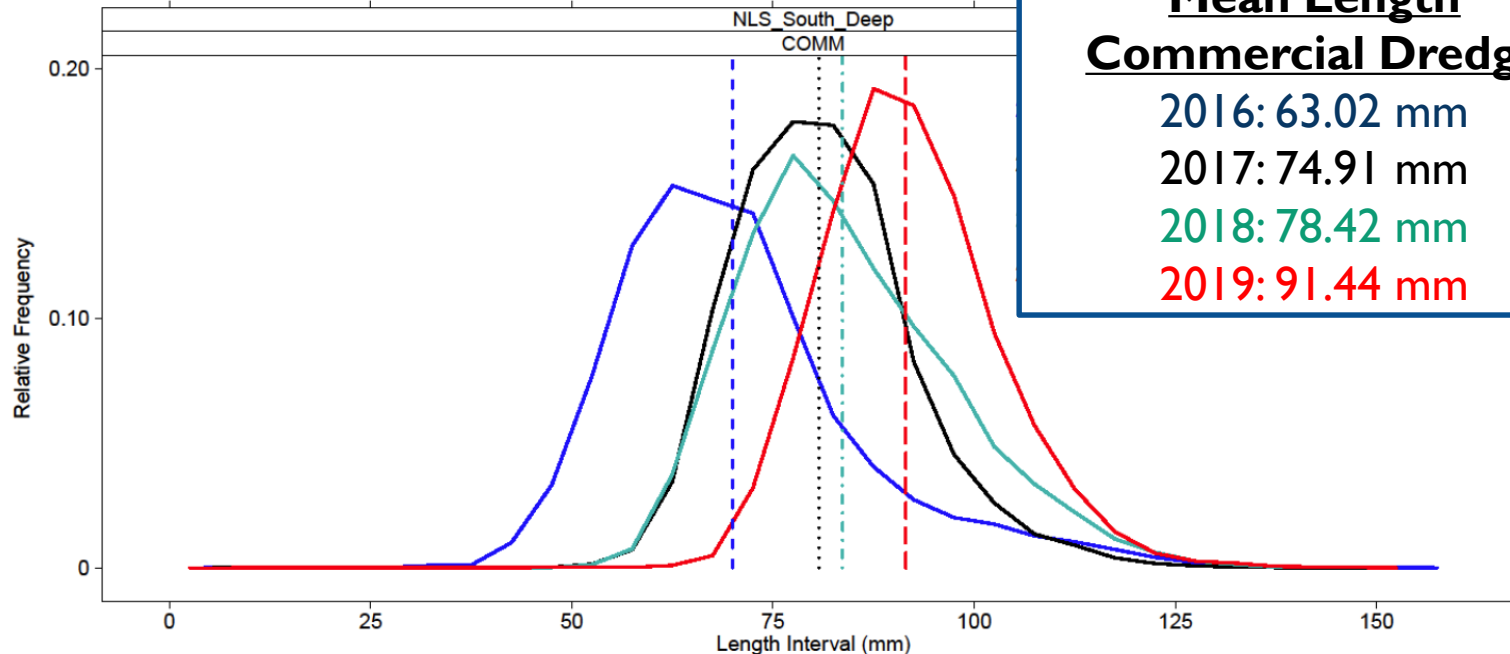
Mean Length Commercial Dredge

2016: 63.02 mm

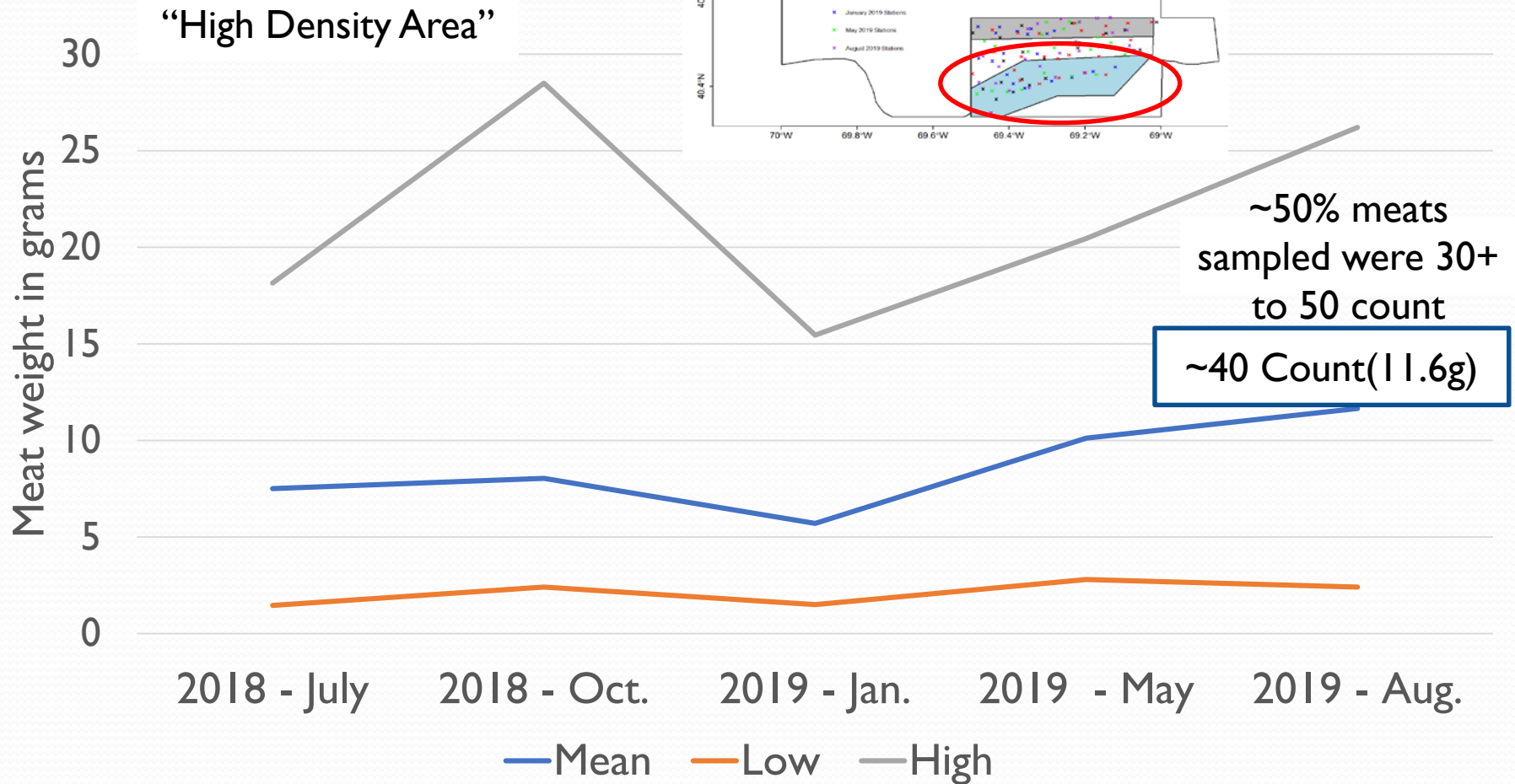
2017: 74.91 mm

2018: 78.42 mm

2019: 91.44 mm

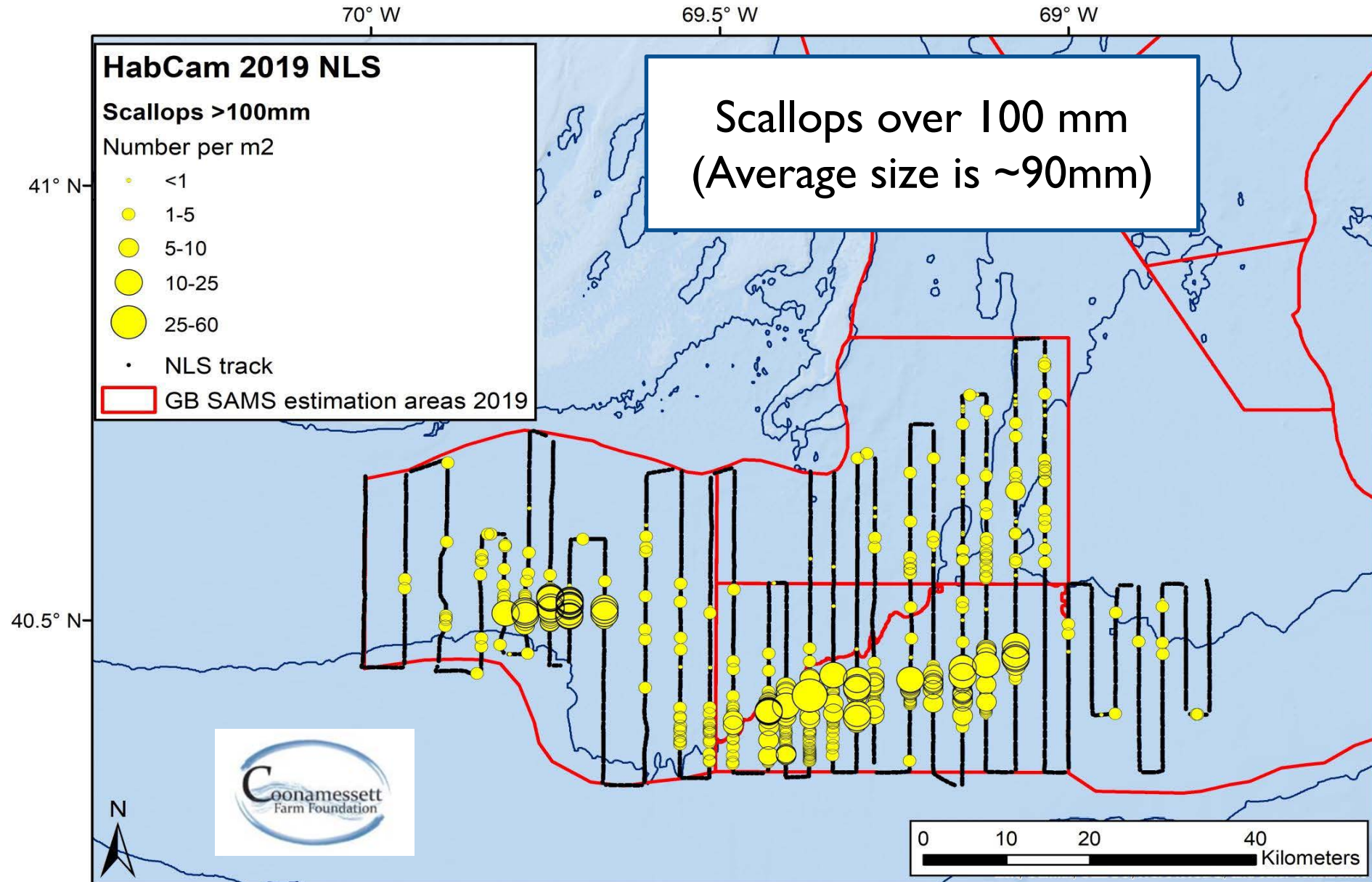


Meat Weights



- Data from VIMS RSA Project (5 surveys from July 2018 – August 2019)
- Wide range of market grades in the NLS-S. Not all 40 count.

Lengths in NLS-S-deep



Selectivity in NLS-S-deep

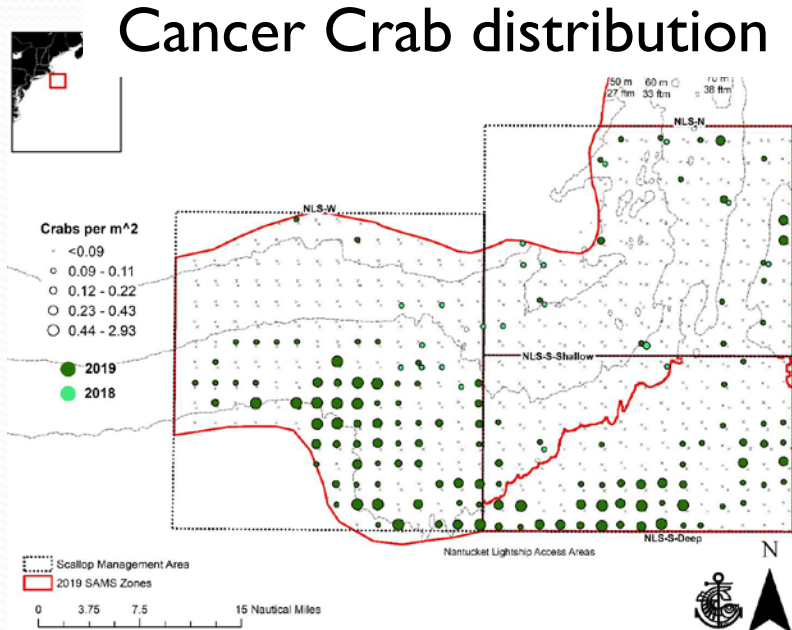
- Not all scallops have recruited to the 4" ring.
- Commercial dredge (4" ring) capable of retaining a range of sizes.



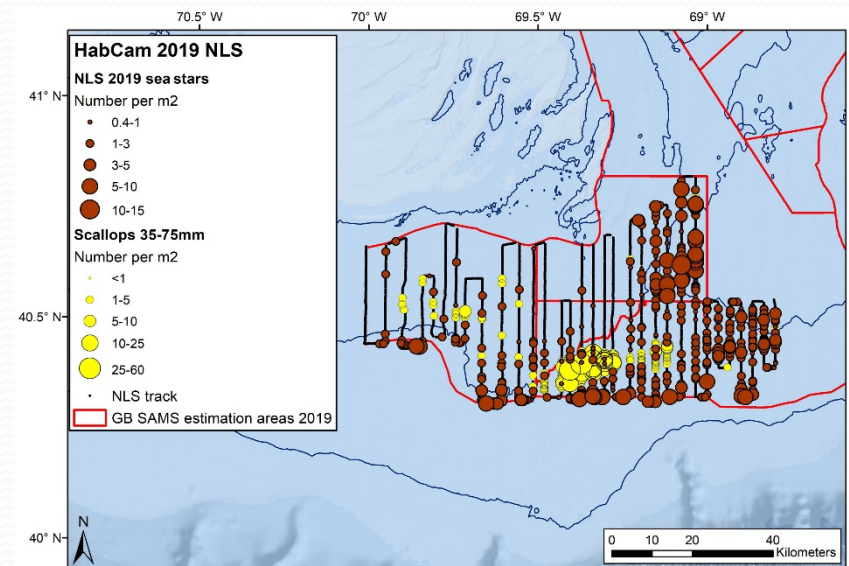
NLS-S-deep video

Scallop Mortality in NLS-S-deep

- Cancer crabs and sea stars are present in this area, but do not appear to be substantially increasing mortality.
- Given the slight difference in meat weights, high grading could be expected.
- Lessons from experience in NLS-W?



Sea star (all) distribution



Potential approaches to NLS-S

Changes that could be made in a Framework or a Specs Package	More Complicated Changes to the FMP (that would take more time to develop, potentially an amendment)
<ul style="list-style-type: none">• Possession limits (remove, change)• Change the minimum ring-size <p><i>The PDT does not recommend modifying the 4" minimum ring size.</i></p> <ul style="list-style-type: none">• Gear obstruction.• Increase Crew limits.• Develop an area TAC that is not part of the LA and LAGC IFQ allocation.• Modify the access area boundary. <p><i>Distribute effort (access) to the area over the FY to reduce congestion, improve safety.</i></p>	<ul style="list-style-type: none">• Use of shucking machines at sea• Large scale shell stocking• Transferring shell stock at sea

PDT Recommendations:

- Consider the next two years of spatial management when developing options for the scallops NLS-S-deep.
- Use a simple approach in 2020.
 1. Do nothing – see what happens, continue to monitor these scallops.
 2. Allocate as a standard access area trip. Consider modifying trip limits and crew sizes, and consider ways to limit discard mortality.
 3. Create a separate TAC as a special access program (SAP) that would effectively be “bonus” scallops, and handled separately from the spatial management allocation.
 1. These scallops would be accounted for in the ACL flow-chart before the 94.5% and 5.5% allocation split.
 2. There are some additional administrative considerations: How the LAGC IFQ component could participate in this SAP, such as a separate allocation outside of the IFQ.

Mid-Atlantic Access Area

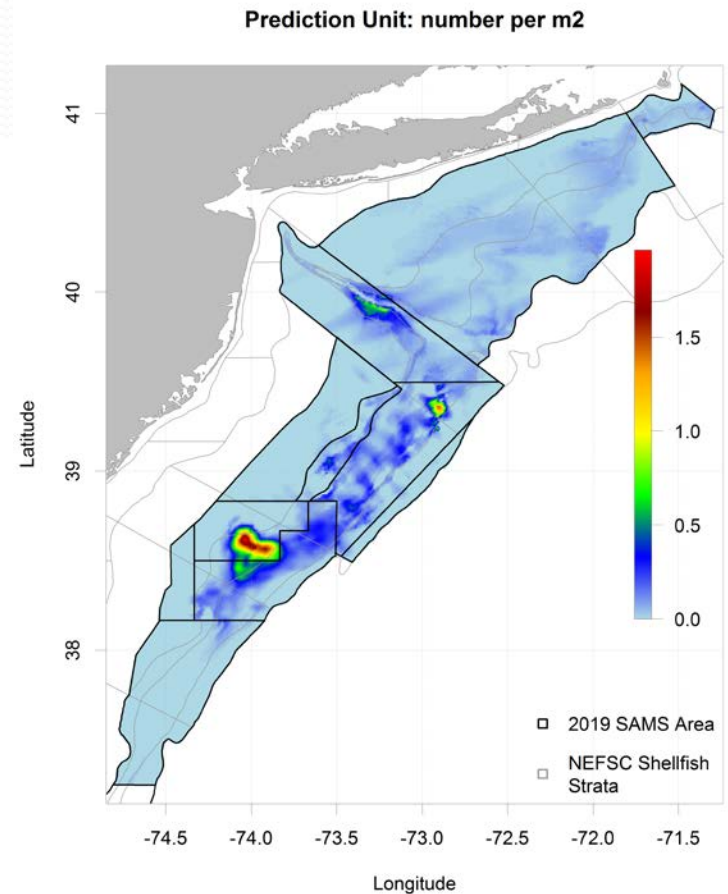
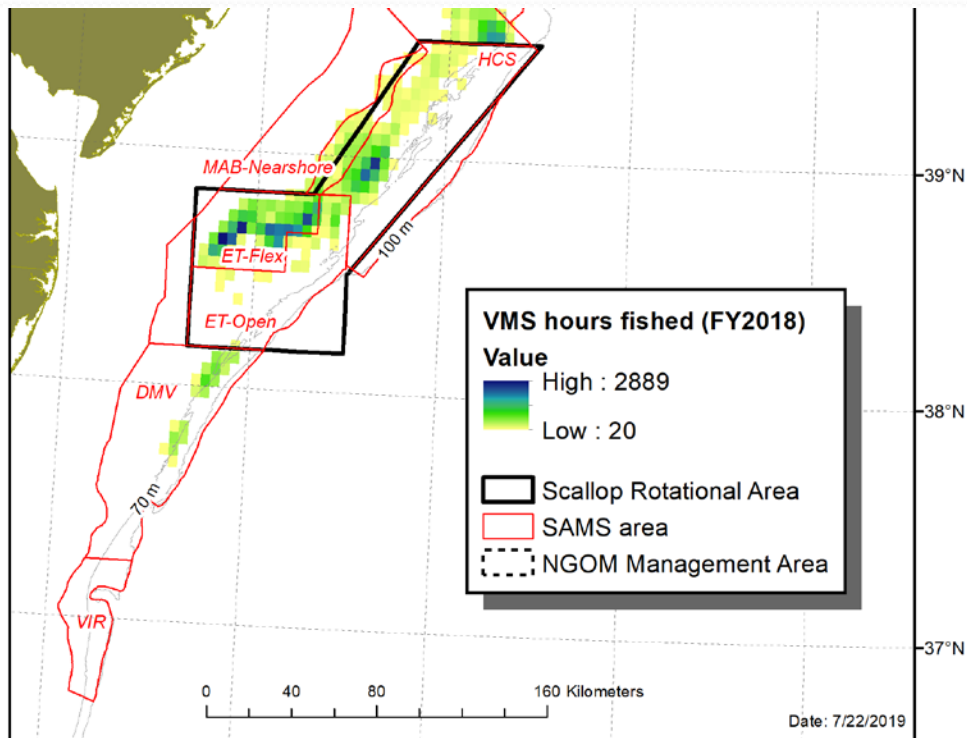
- **Combined Projection Results:**

MAAA		ABC	OFL
	Total	F=0.51	F=0.64
HCS	8,221	2,814	3,283
ETFlex	15,088	5,120	5,956
ETOpen	13,929	4,616	5,366
Total	37,238	12,550	14,605

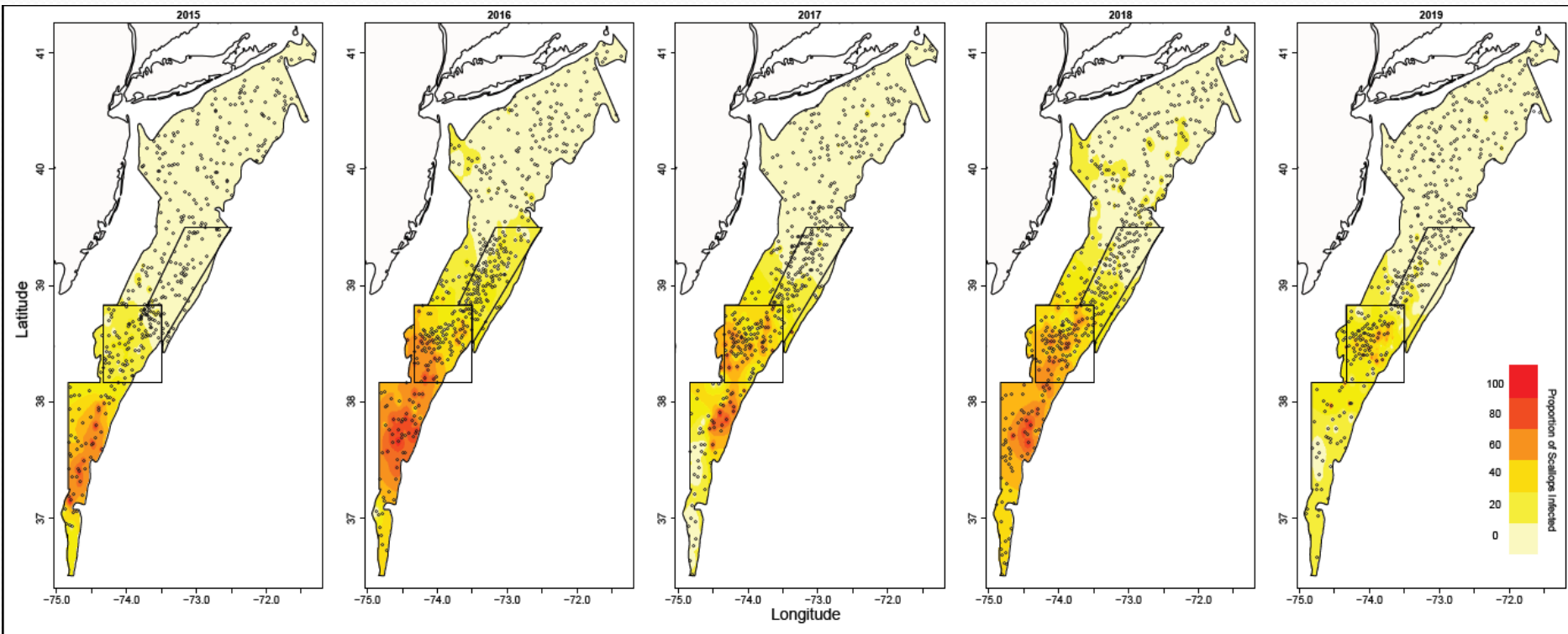
- Could **support multiple trips in 2020. (2?)**
- Fishery is working on one dominant YC (7yo in 2020).
- Some pre-recruits and recruits ET.
- Meat quality may be improving, still issues.

Mid-Atlantic Access Area

- Majority of FY 2018 effort was north of 38.5° latitude.
- Some fishing in Delmarva (no longer part of MAAA)

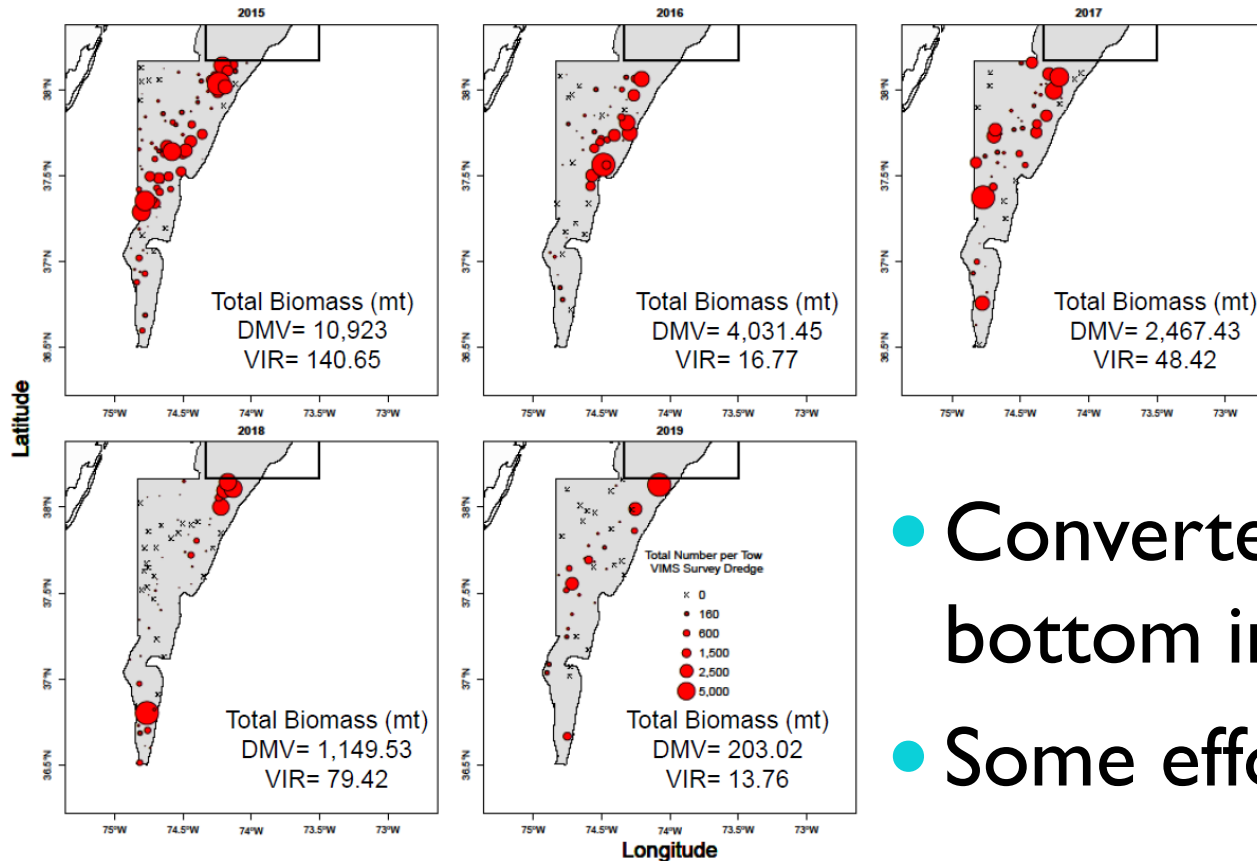


Nematode Prevalence 2015-19



- % of scallops in a sample that contain at least one lesion.
- Northward expansion 2015-16.
- Apparent stabilization of the spatial extent 2016-17.
- Possible slight northward expansion from 2017-18.
- Reduction in prevalence in 2019

Delmarva:



VIMS Biomass

2015: 10,923 mt

2016: 4,031 mt

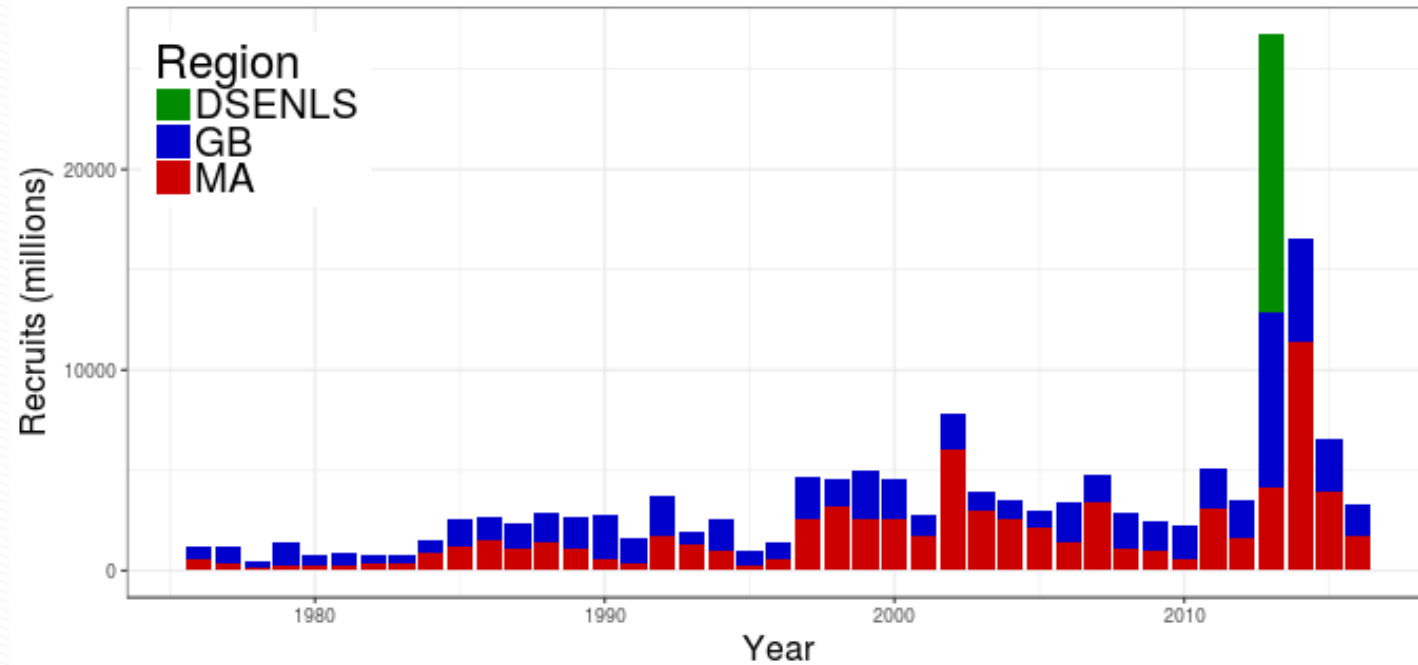
2017: 2,467 mt

2018: 1,149 mt

2019: 203 mt

- Converted to open bottom in 2018 (FW29).
- Some effort in FY2018.
- Order of magnitude reduction in biomass.
- Animals are at the southern extent of their range.

Recruitment:



- No large incoming year classes since 2012/2013.
- Some recruitment observed in Georges Bank.
- Pre-recruits and recruits detected in ET area.
- Large recruitment event on Stellwagen.

2019 Fishery Performance

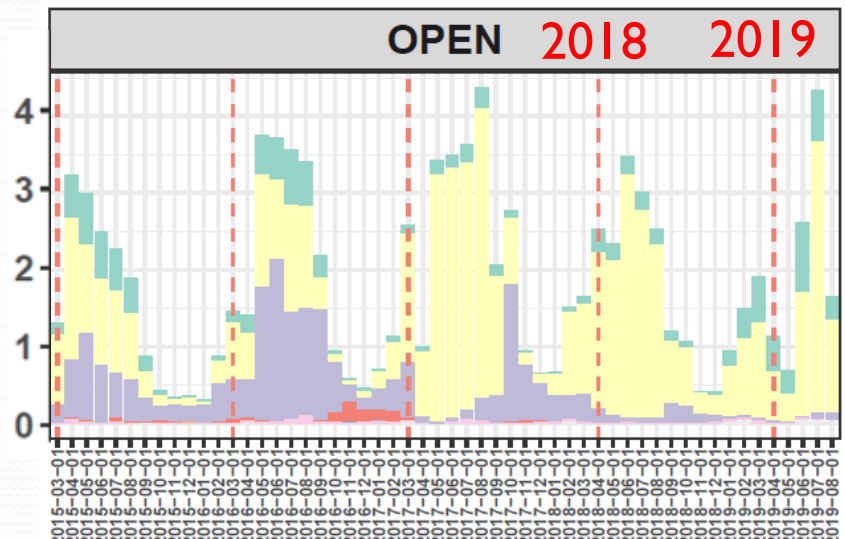
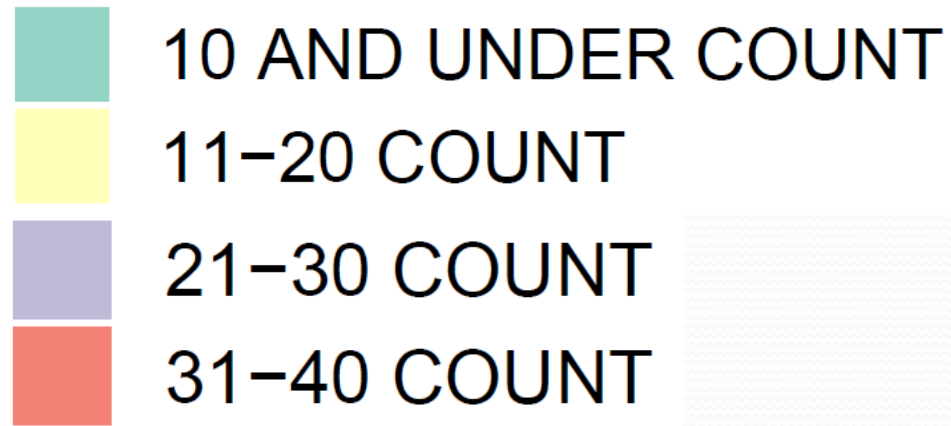
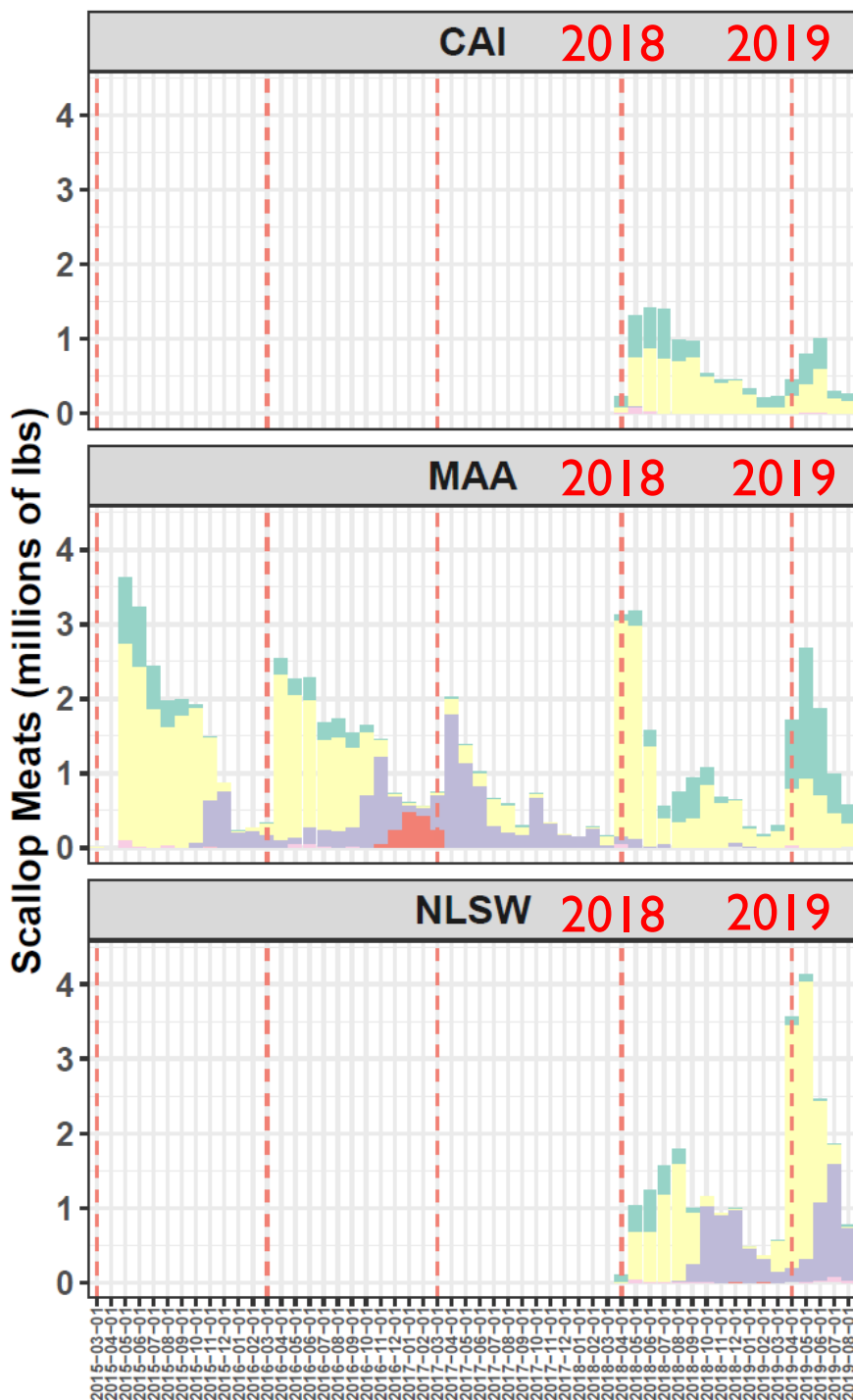
As of September 4, 2019 – 43% of FY complete

- FW30: FY Started April 1, 2019

Component	Landings to-date (lbs)
Limited Access	34,921,783
LAGC IFQ	1,710,845
LA w/ LAGC IFQ	38,038
Observer Set-Aside	384,358
TOTAL	37,055,024

- LA & IFQ Projected landings: ~60 million lbs.
 - Does not include set-asides

Recent Fishery Performance



PDT's 2020 Harvest Recs:

- Focus effort in access areas, and to continue to back off effort in open areas for the following reasons:
 - Animals in Closed Area I, Nantucket Lightship-North, and the Mid-Atlantic access areas will be 7 & 8 years old in 2020, and are ready for harvest.
 - The majority of (weak) recruitment observed in the 2018 was in open areas, and would just be entering the fishery in 2020.
 - Limited removals from access areas in 2021.
- New Reference Points in SARC 65 → Potentially higher F_{msy}
 - Consider open area F rates that are consistent with recent values.
 - 2017: $F=0.44$ 2018: $F=0.295$ 2019: $F=0.23$

PDT input:

- Without strong incoming YC, focus on options that will support harvest for next two years (2020 and 2021).
- Exceptional recruitment events have posed (new) management challenges. Dense aggregations in small areas, don't fully understand non-harvest mortality.
 - Past: NLS-West
 - Present: NLS-S-deep; ET-Flex
 - Future: Stellwagen?
- 2020 Specs: How to utilize older scallops that are within rotational areas, where full trip is not an option.
 - Lottery?
 - Different trip limits?

PDT Thoughts on Access Areas (so far)

Area	# of cohorts	Recruitment?	Fished in 2018?	Candidate For:
NLS-N	3	Weak	No	Less than 1 trip.
NLS-S Shallow	1	None observed	Yes - 1 trip	Combine with other NLS area?
NLS-S Deep	1	None observed	Open, not fished	Access as TAC or AA PDT recommends: Simple.
NLS-W	1	None observed	Yes - 3 trips	1 default trip, projections suggest not enough biomass.
CAII-S-AC	2	Average	No	Potential trip(s) (1+)
CAI-Sliver	2	None observed	Yes - 1 flex trip	Less than 1 trip.
CAI-AC	2	Weak	Combined with CAI Sliver	Less than 1 trip. Combine with CAI-Sliver?
MAAA	1+	Some pre-recruits	Yes - 3 trips	Multiple trips (1 default)

ABC values for 2020		
	F=0.51 (mt)	F=0.51 (lbs)
HCS	2814	6,203,808
Virginia	6	13,228
ETFlex	5120	11,287,668
ETOpen	4616	10,176,538
DMV	158	348,330
NYB	2357	5,196,296
LI	2696	5,943,663
Inshore+BI	947	2,087,778
C1North "Sliver"	1131	2,493,428
C1Central "Access Area"	235	518,086
C2North*	1665	3,670,697
C2South "CAII AA"	4998	11,018,704
NLSW	1434	3,161,429
NLSN	1096	2,416,266
NLSSShal	1376	3,033,561
NLSSDeep	8234	18,152,863
C2Ext	2484	5,476,283
GSC	1662	3,664,083
NF	500	1,102,311
SF	2725	6,007,597

Questions?