

Scallop AP and Committee

Jonathon Peros, NEFMC Staff

**Scallop Advisory Panel Meeting
September 13, 2018
Scallop Committee Meeting
September 14, 2018**



Upcoming Meetings (2018)

- September 25 – Scallop Report – NEFMC (Plymouth, MA)
- September 28 – PDT (Plymouth, MA)
- October 3 – PDT (Conference Call)
- October 10 – SSC Meeting (Boston, MA)
- October 23/24 – PDT/AP & CTE (Boston, MA)
- Framework 30 Final Action – December Council
- **April 1 – Target Implementation**

Overview of survey presentation

Part I: SARC 65 Overview (2018 benchmark assessment)

Part II: Summary of 2018 survey results (VIMS, SMAST, WHOI, CFF, NEFSC)

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

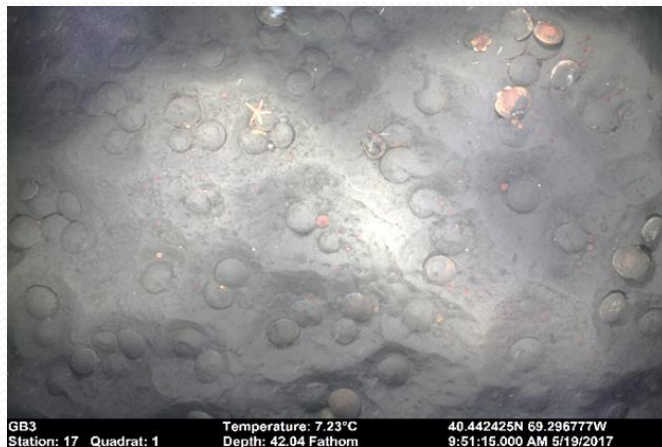
See PDT Meeting Summaries (Aug. 28/29, Sept. 5)

Survey Presentations are also available on the NEFMC scallop page under the [August 28/29 PDT Meeting page](#).

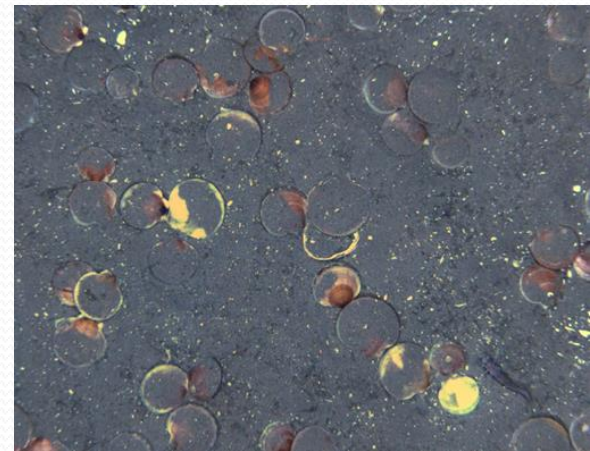


2018 Scallop Benchmark – SARC 65

- The lead:
 - Assessment was accepted by SARC.
 - 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

Sea Scallop Assessment – SARC65

Sea Scallop Working Group

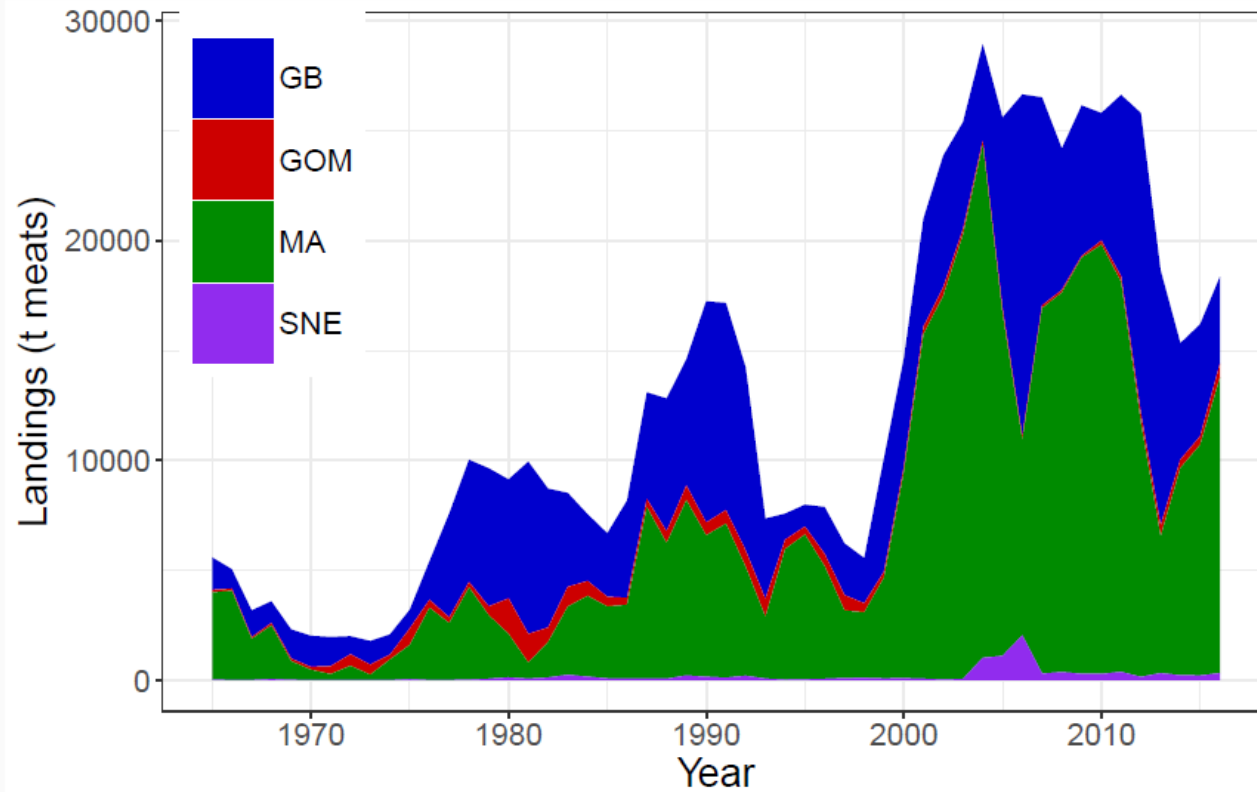
Dvora Hart, Assessment Lead

Jui-Han Chang, Co-Assessment Lead

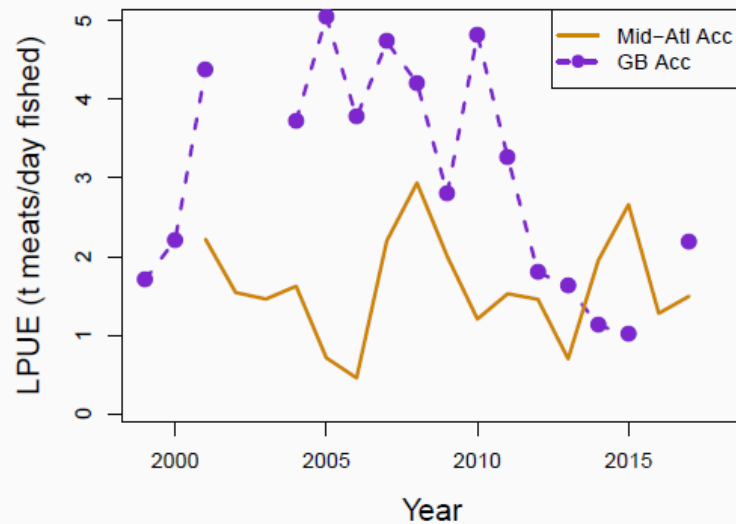
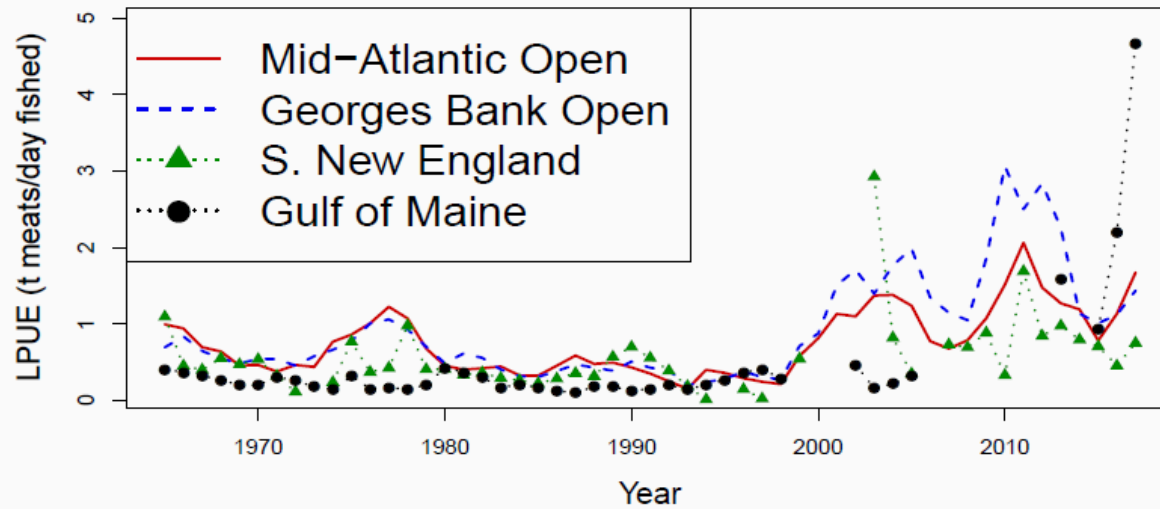
Burton Shank, Working Group Chair

Bill DuPaul, Ben Galuardi, Jonathon Peros,
David Rudders, Liese Siemann, Kevin Stokesbury

Landings by area (TOR-1)

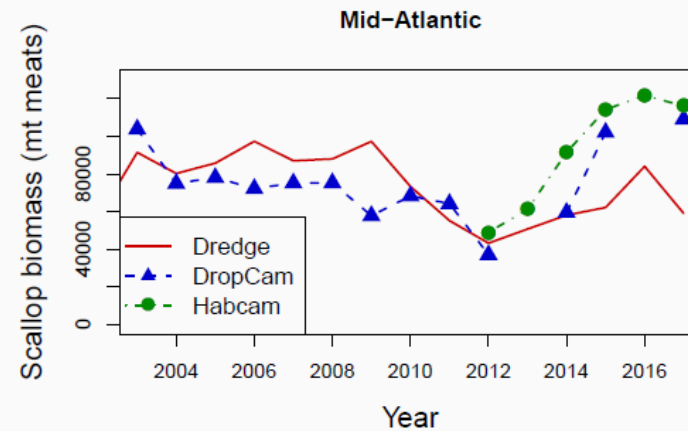
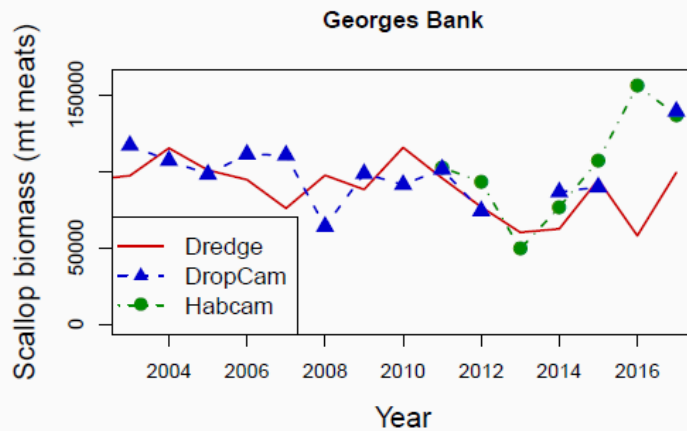


LPUE by region



Survey comparison

Dredge survey below optical surveys in most recent years, likely due to reduced dredge efficiency at high densities.

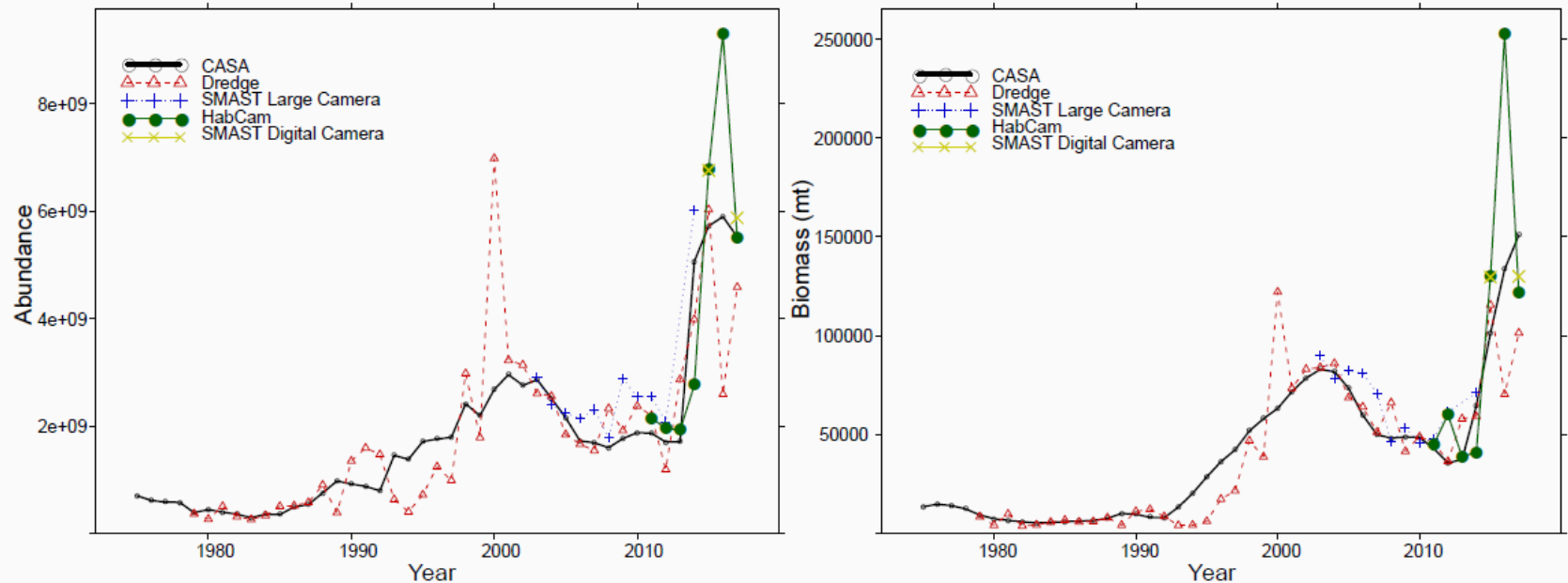


CASA (Catch At Size Analysis) Model (TOR-5)

- Based loosely on Sullivan et al. 1990
- Size-based model
- Appropriate for sea scallops (abundant commercial and population shell height data, and growth increment data)
- Parameters are estimated using modern likelihood methods
- Used since 2007 assessment, but with some refinements for each assessment
- As in 2014 assessment (SARC-59), three CASA models were ran for sea scallops: Georges Bank Open, Georges Bank Closed, and Mid-Atlantic

Georges Bank Closed Area

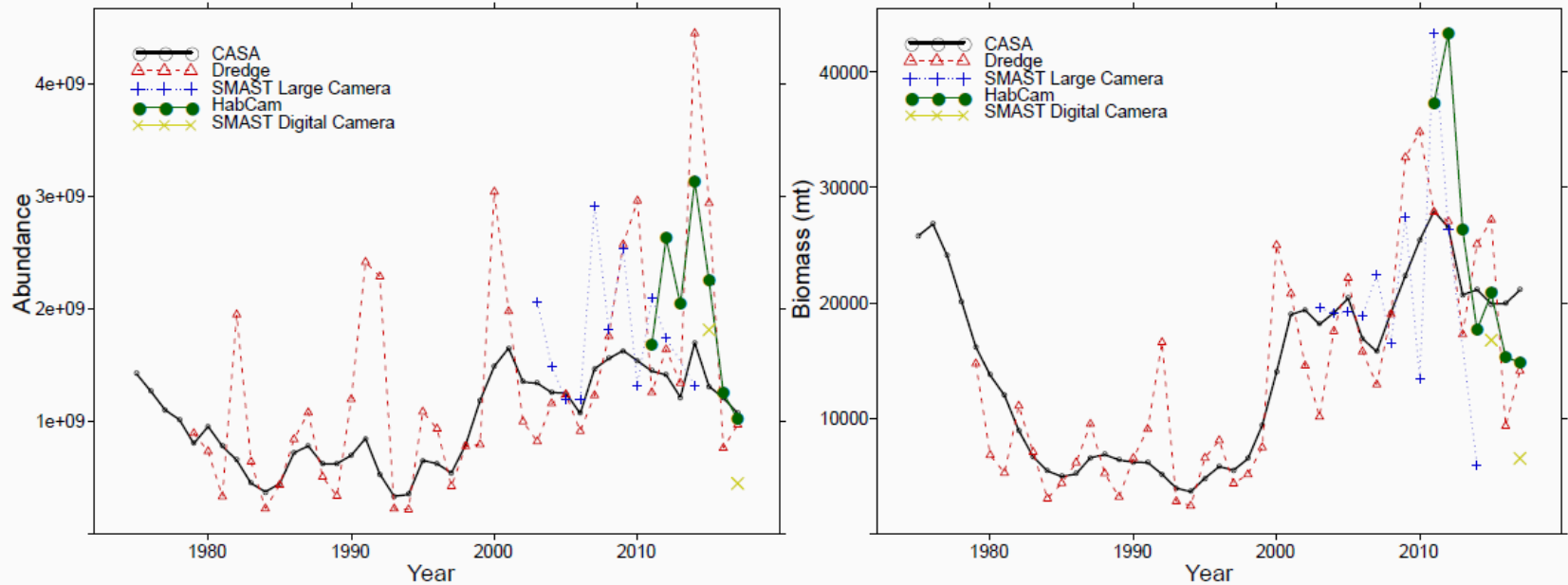
Observed and estimated abundance and biomass



Estimated abundance (left) and biomass (right) with expanded estimates from the lined dredge (red), SMAST large camera (blue), Habcam (green), and SMAST digital camera (light green) surveys.

Georges Bank Open Area

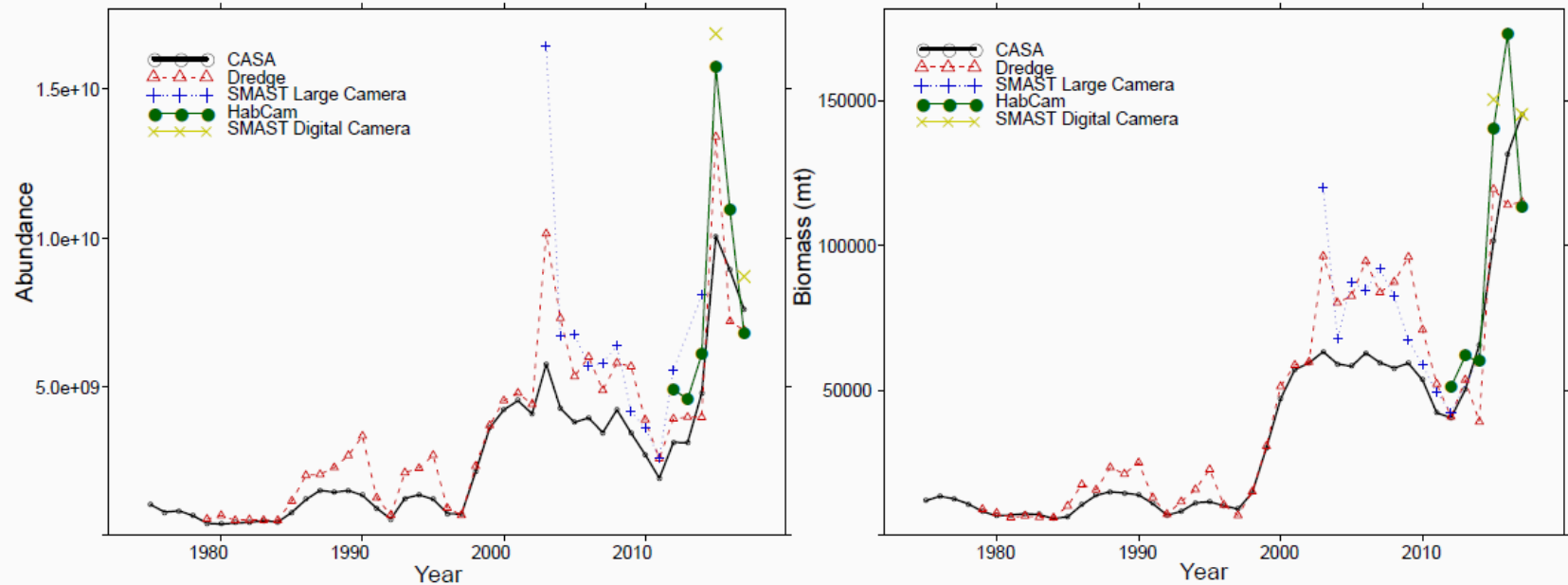
Observed and estimated abundance and biomass



Estimated abundance (left) and biomass (right) with expanded estimates from the lined dredge (red), SMAST large camera (blue), Habcam (green), and SMAST digital camera (light green) surveys.

Mid-Atlantic Area

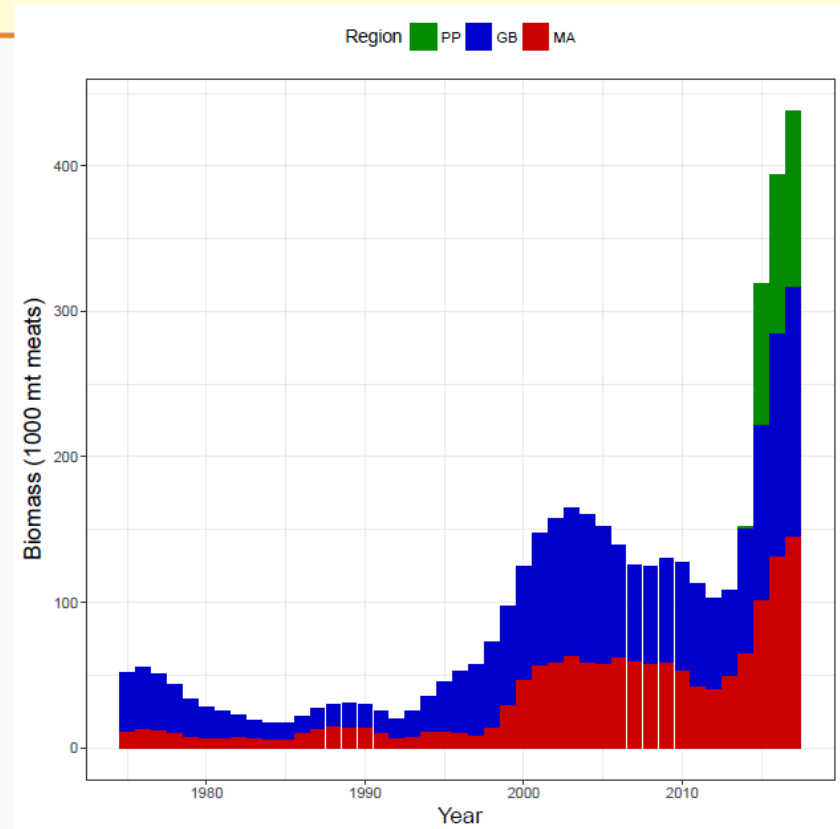
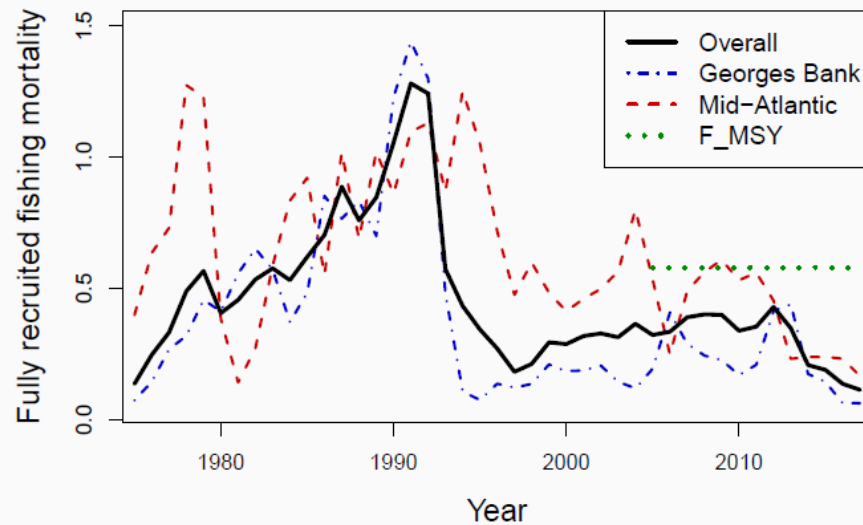
Observed and estimated abundance and biomass



Estimated abundance (left) and biomass (right) with expanded estimates from the lined dredge (red), SMAST large camera (blue), Habcam (green), and SMAST digital camera (light green) surveys.

All Three Stocks Combined

Fully recruited fishing mortality and biomass



Estimated fully recruited fishing mortality (left), and biomass (right) including Habcam biomass estimates of Peter Pan scallops (pp) for Georges Bank (open and closed combined) and Mid-Atlantic sea scallops.

All Three Stocks Combined

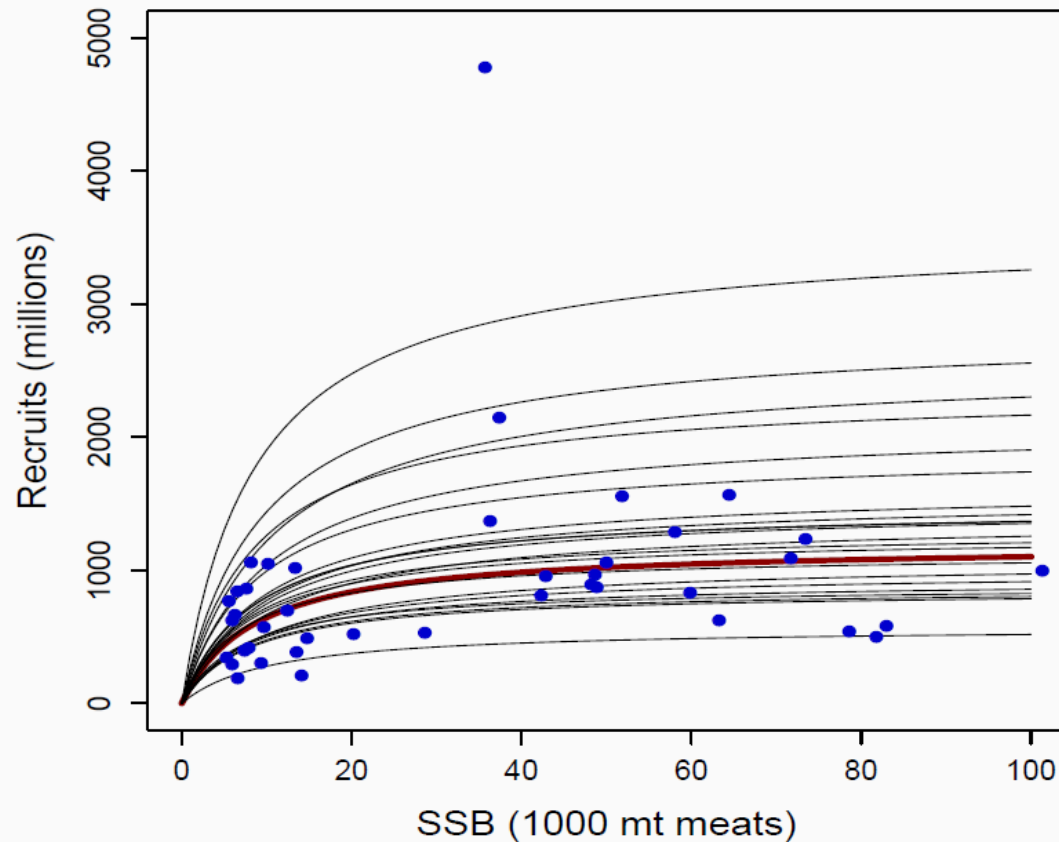
2017 biomass and fishing mortality estimates

Stock	Biomass (mt meats)	CV	F
Georges Bank Closed	150,951	0.08	0.05
Georges Bank Open	21,118	0.06	0.13
Mid-Atlantic	145,265	0.05	0.17
Total	317,334	0.06	0.12

Peter Pan scallops are excluded

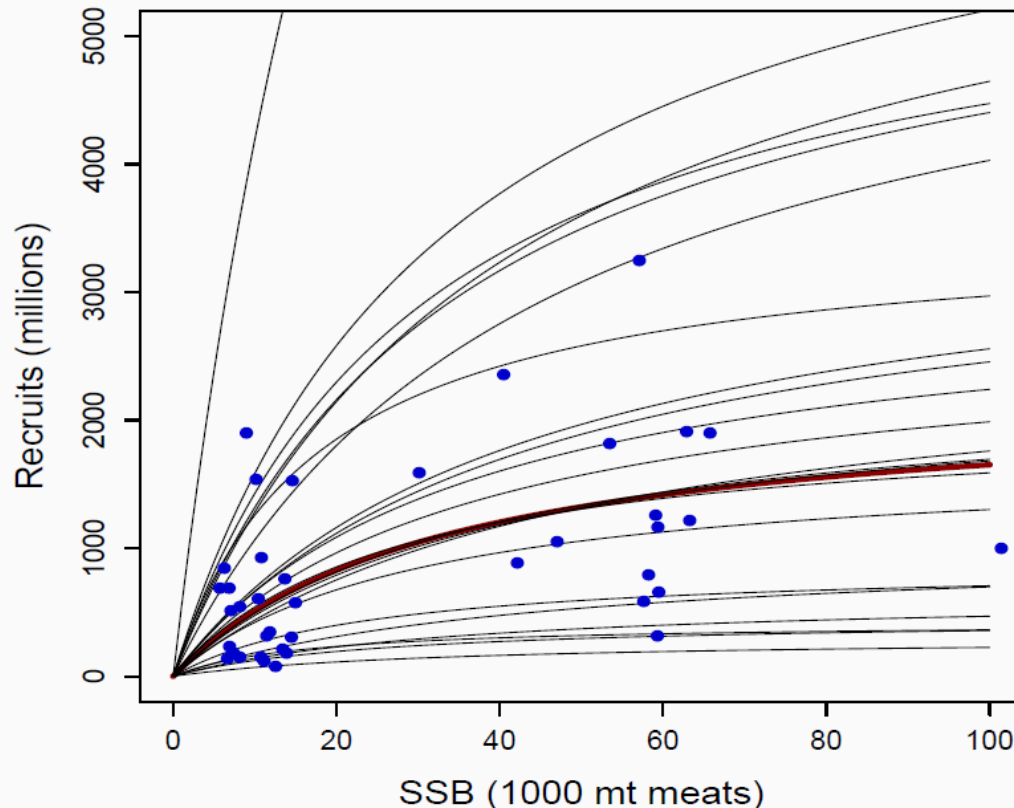
Georges Bank Stock-Recruit Relationship

Beverton-Holt function fairly well estimated. It is probably saturated during the present high biomass period, but there was likely some recruitment limitation when biomass was lower.



Mid-Atlantic Stock-Recruit Relationship

Strong evidence of higher recruitment in Mid-Atlantic at higher biomass. Beverton-Holt function more uncertain in Mid-Atlantic than Georges Bank. It is also unclear whether it is saturated during the high biomass period (since 2000).



Status determination using 2018 reference points (TOR-7)

The new proposed reference points are:

$B_{\text{MSY}} = B_{\text{TARGET}} = 116,766$ mt meats, $B_{\text{THRESOLD}} = 58,383$ mt meats and $F_{\text{MSY}} = 0.64$.

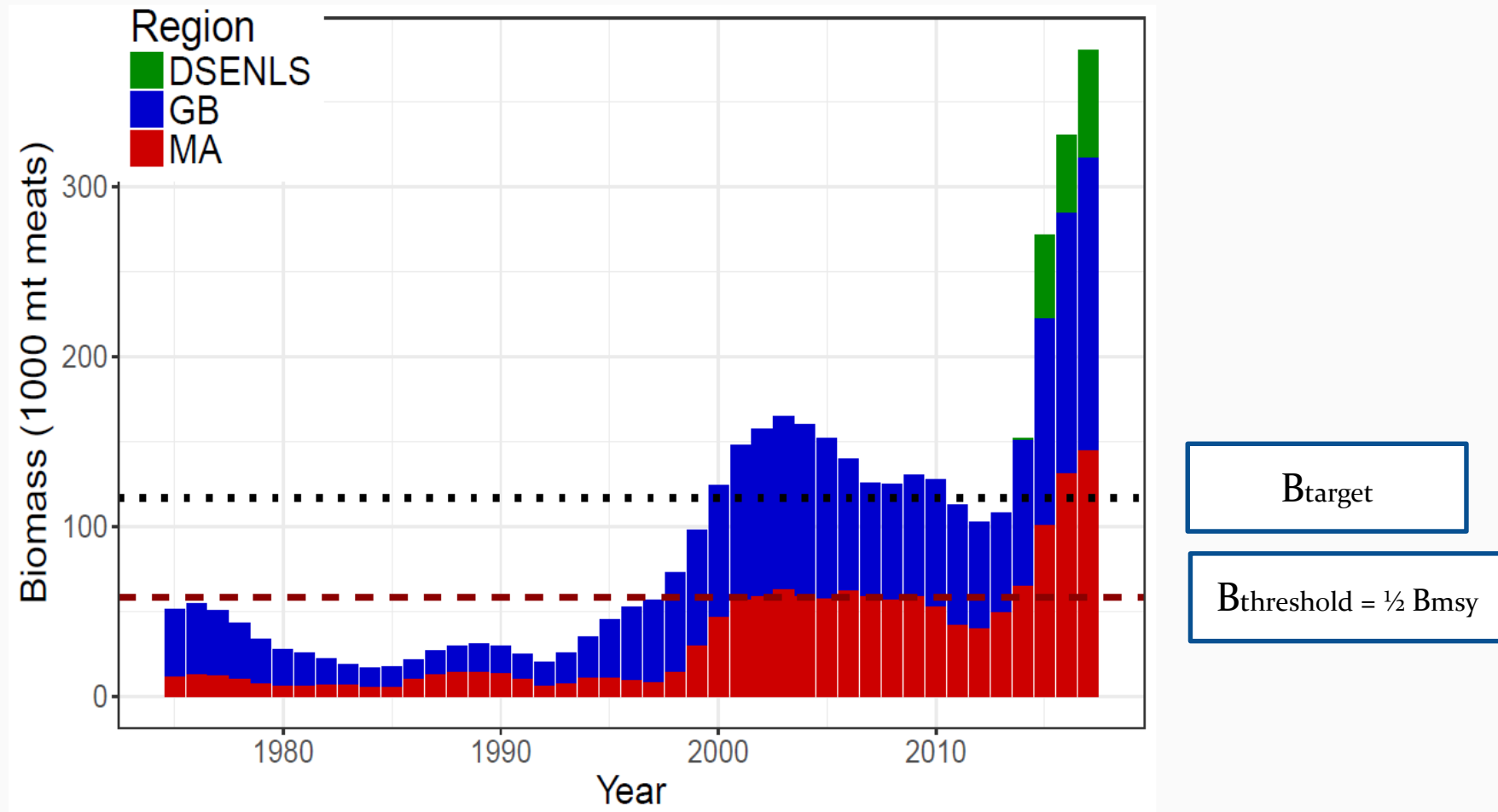
The estimated biomass in 2017 was 380,389 mt meats (317,335 mt meats excluding Peter Pan scallops), just under three times B_{MSY} and six times B_{THRESOLD} .

Estimated fishing mortality in 2017 was 0.12, less than a fifth of $F_{\text{MSY}} = 0.64$.

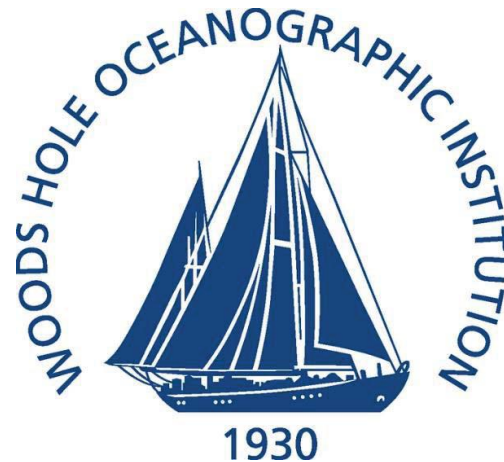
Therefore, according to the updated reference points, the stock is neither overfished nor is overfishing occurring. The probability that the stock is overfished or overfishing is occurring is very low.

Stock status and reference points

Biomass and fishing mortality in 2017 are at their maximum and minimum respectively for the 1975-2017 time series.

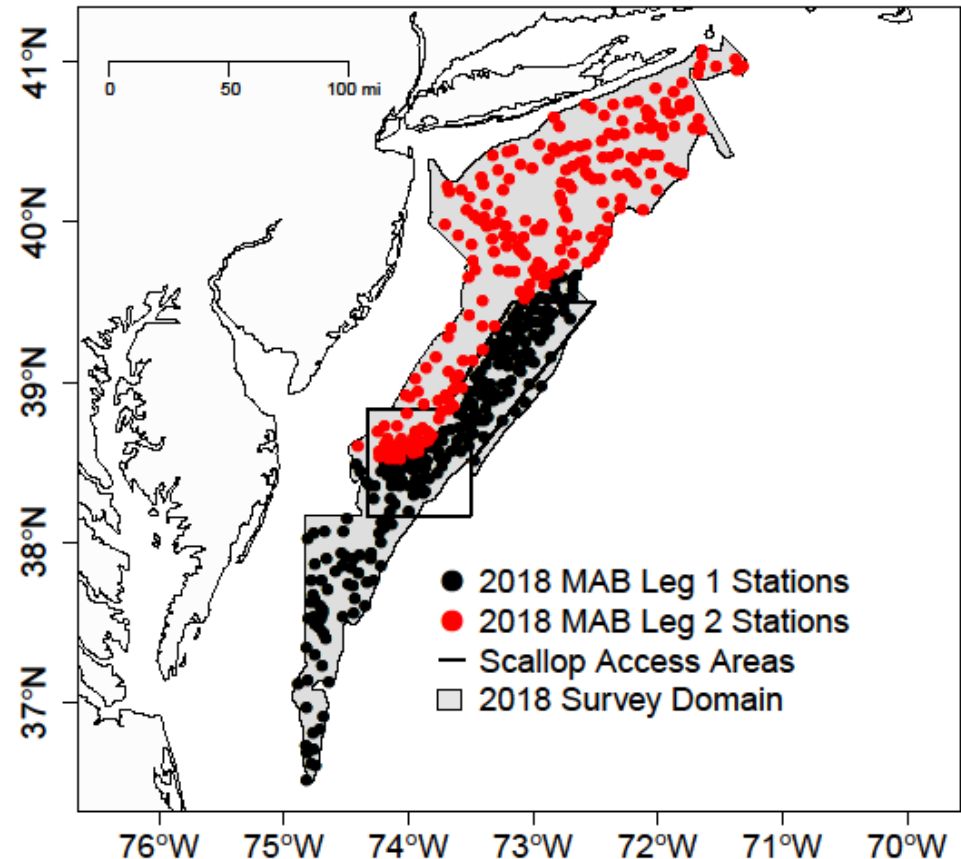


Part II: 2018 Surveys



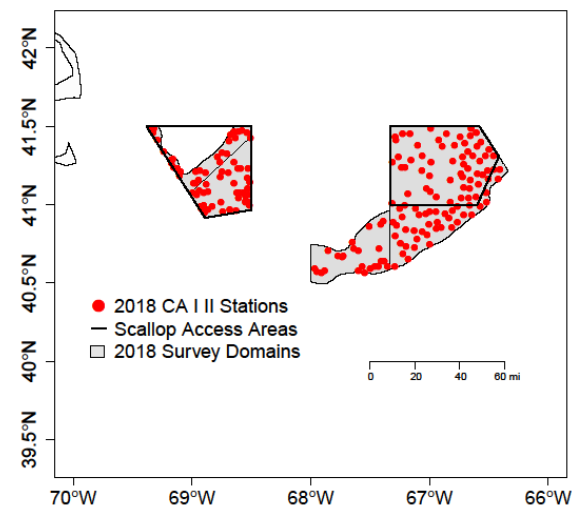
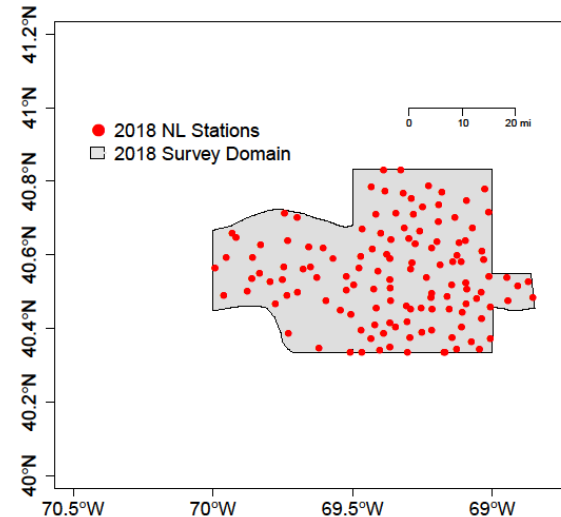
VIMS surveys – Mid-Atlantic

- 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
- 677 dredge tows (stations)
- Sampling intensity of SH:MW ~5,400 samples in MA
- One cohort (6yo) in MAAA
- No strong signals of incoming recruitment → some in open bottom (BI, LI, NYB).



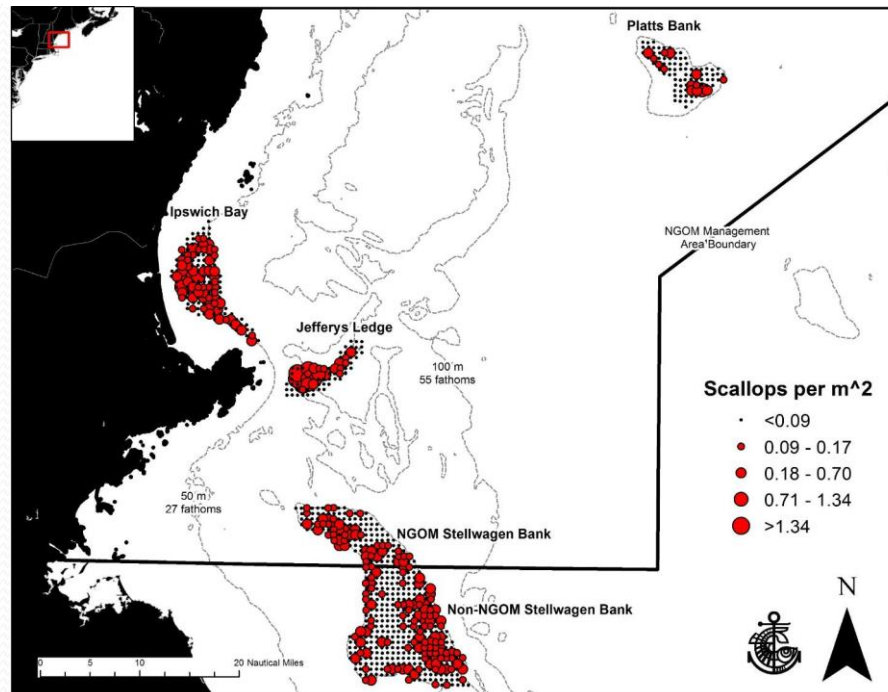
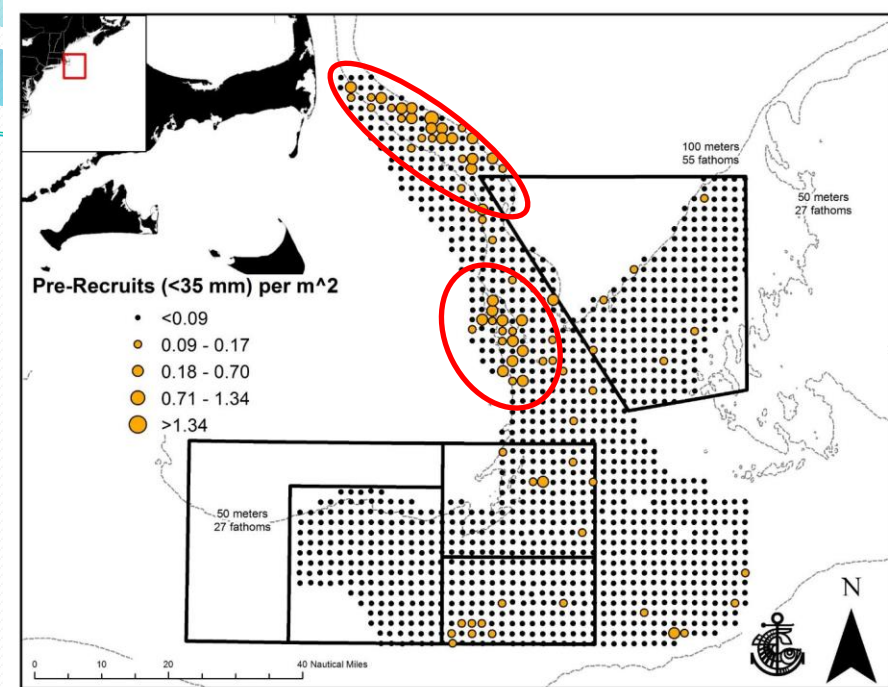
VIMS surveys – NLS, CAI, CAII

- 2 Cruises:
 - NLS - 7/12 – 7/18
 - CAI & CAII - 6/8 – 6/16
- 319 dredge tows (130 in NLS and 189 in CA I and CA II)
- Sampling intensity of SH:MW
 - ~2,000 samples for CAI & CAII II
 - ~1,800 samples for NLS
- Slower growth rates in NLS.
- No strong signals of incoming recruitment → some in CAII, CAII-ext, and SF



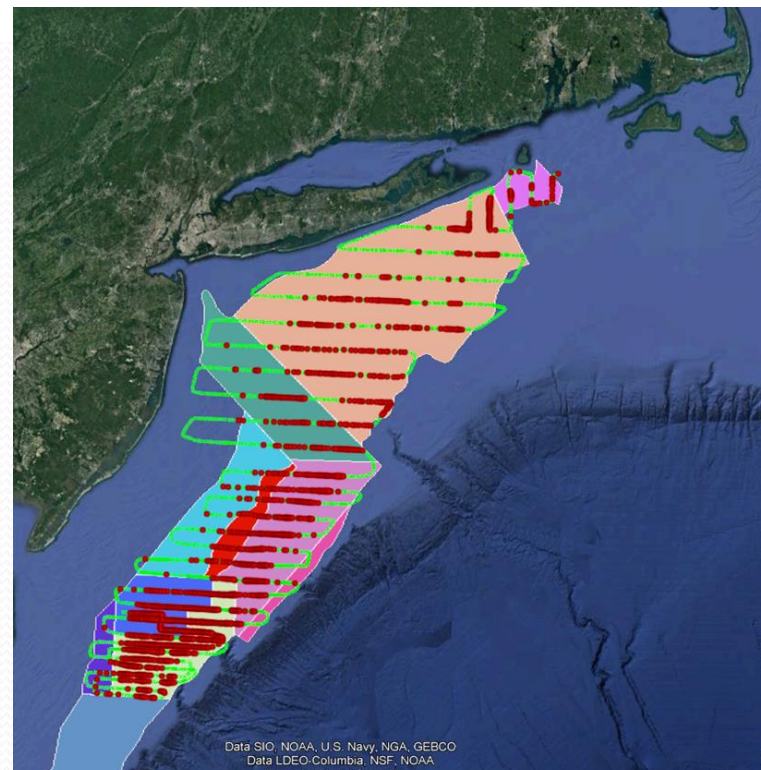
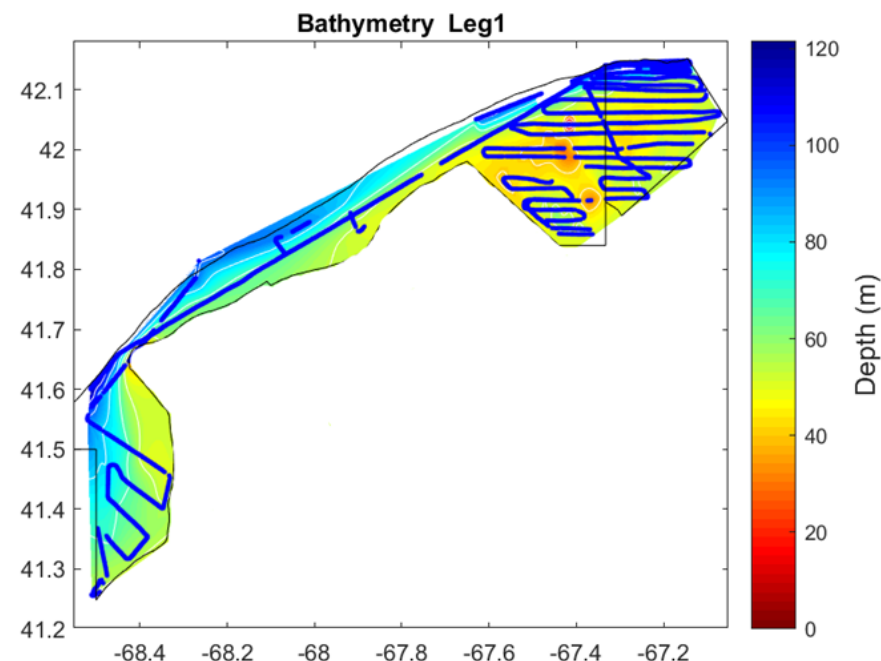
SMAST survey

- High-res surveys of CAI, SC, NLS, & GOM
- 1,307 total stations in SC, CAI, NLS
- 438 stations in NGOM, 352 on southern half of Stellwagen
- Imperx DSC camera
- Web-based image sharing
- CA I –8yo animals in “sliver” and younger (smaller) 4yo cohort
- Some recruitment detected in the SC
- Reduction in scallop density in the NLS-S-deep between 2017 and 2018
- Biomass on Platts, Jeffrey’s, Ipswich Bay, Stellwagen Bank



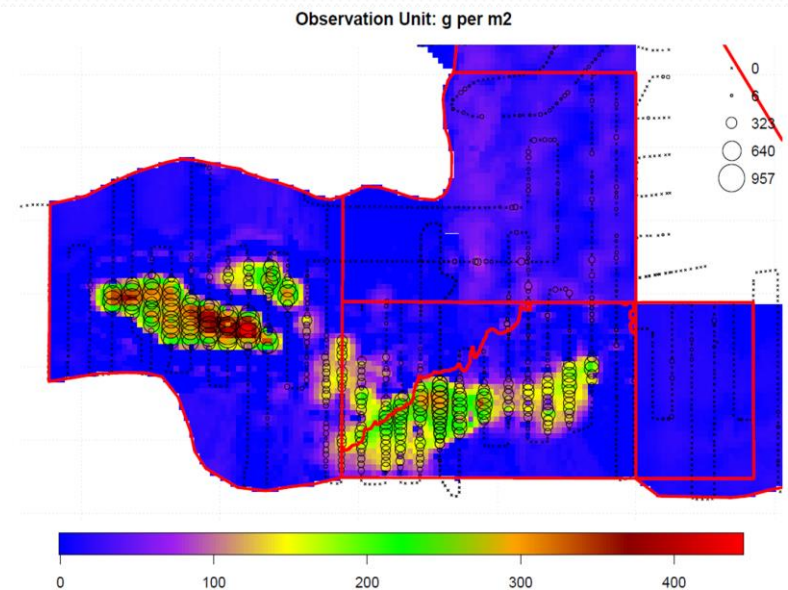
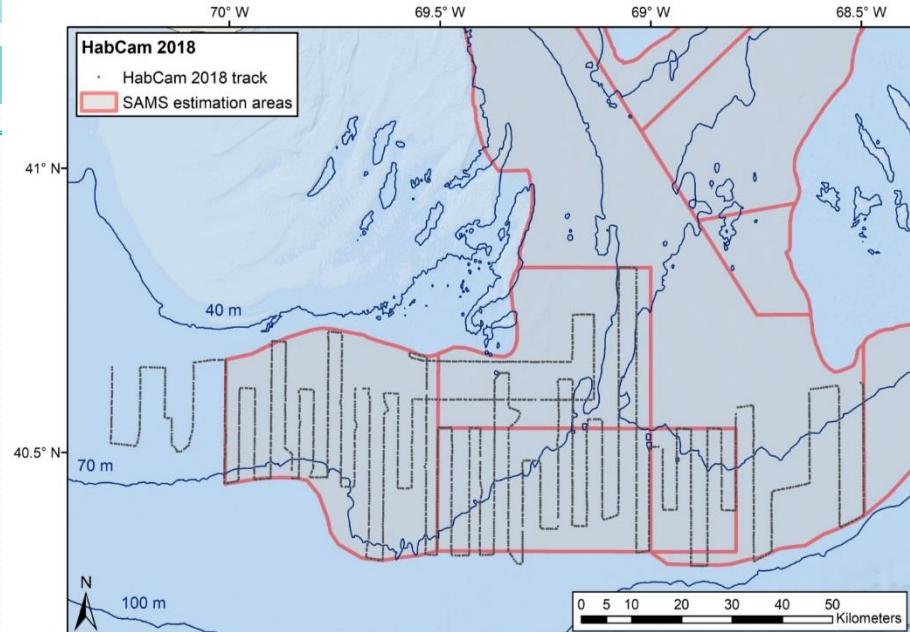
WHOI

- HabCam v2.2 survey of Eastern GB and the Mid-Atlantic
- Timing:
 - EGB: 6/25 – 7/1
 - Mid-Atlantic: 7/6 – 7/18
- Annotation Rate: ~1/14 images
- Multiple year classes in CAI N.
- Some recruits in eastern portion of the Northern flank.



CFF

- Survey NLS using HabCam v3
- July 15 – July 21 F/V Kathy Marie
- 725 miles of transects, 2-3nm spacing
- ~7,100 annotated images (~1/400)
- Majority of animals will be 7yo in 2019.
- High densities and majority of biomass in the NLS-S and NLS-NA
- NLS-ext appears to have been heavily fished (confirmed by VMS data)



NEFSC Survey

- R/V Huge R. Sharp
- Timing:
 - Mid-Atlantic: 5/16 – 5/23
 - Georges Bank: 5/25 – 6/18
- 116 dredge tows on GB
- HabCam v4 coverage of GB and MA, over 6 million images taken, estimates based on ~272,000 manual annotations (~1/22)
- Experimental work on dredge efficiency in high density areas.
- Some recruitment in Channel.



Photo Credit: NOAA Fisheries – Robert Johnson



High Density in ET-Flex. Photo Credit: NEFSC

Part III:

Fishery Data

PDT Discussion

2018 NGOM Survey & Outlook

- Stellwagen Bank holds the largest animals in the surveyed areas – same cohort that was fished in 2017 & 2018.
- Ipswich Bay: Highest density per meter squared.

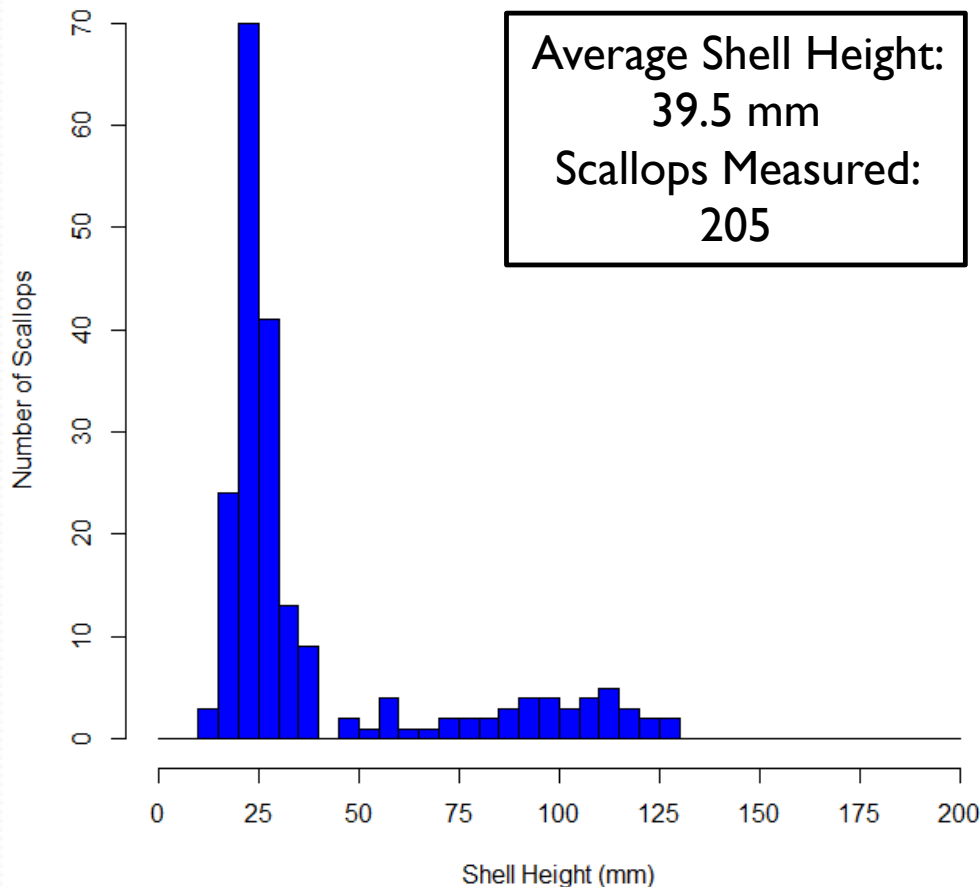
Area	Number of Scallops (mill)	Biomass (mt)	Mean meat weight (g)	Average Shell height (mm)
Platts Bank	3	100	30.2	110.2
Ipswich Bay (Fed Waters)	13	290	21.7	88.6
Jeffrey's Ledge	27	140	5.1	39.5
Stellwagen Bank	9	340	39.6	114.5

- 2019/2020 TAC: Projection method used in FW29 and Reviewed in SAW/SARC 65

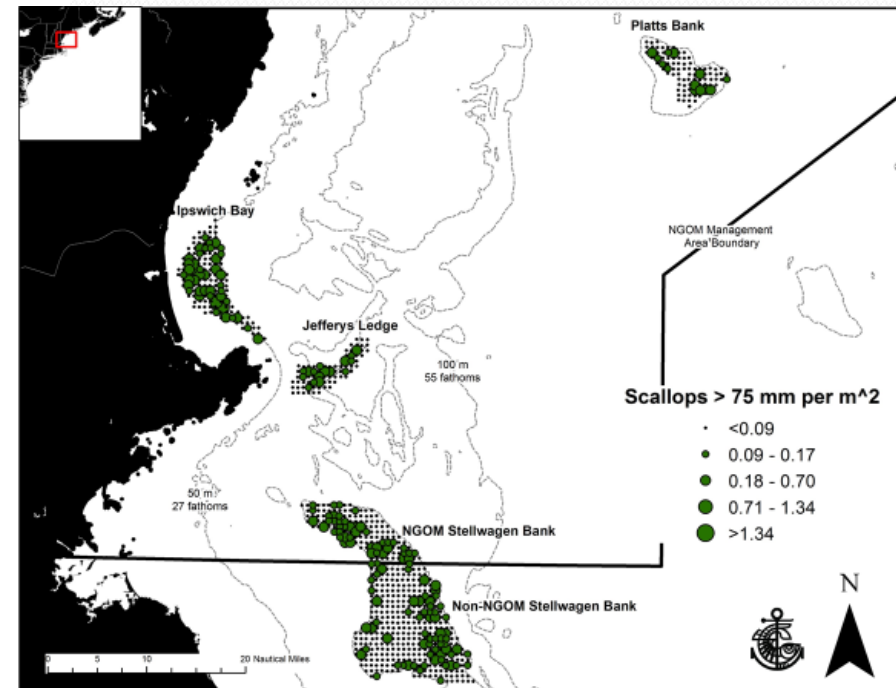
2018 NGOM Survey & Outlook

- Recruitment detected on Jeffrey's Ledge

2018 Jefferys Ledge



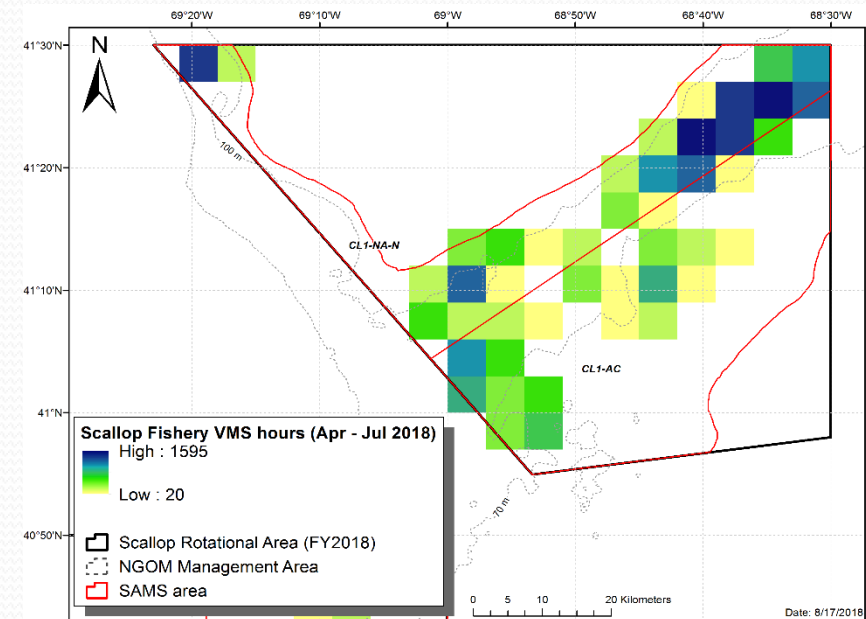
Scallops > 75 mm



Closed Area I

	Dredge				DropCam				Habcam				Mean		
SAMS AREA	Num (mil)	Bms mt	SE	Mean Wt	Num (mil)	Bms mt	SE	Mean Wt	Num (mil)	Bmsmt	SE	Mean Wt	Mean Num	Mean Bms	SE
CL1 ACC	26.4	1137	138	43.2	82	2700	550	33	31.3	763	7	24.3	46.7	1533	567
CL1 North (Sliver)	325.0	8889	1432	26.2	358	10850	2150	30	349.7	14786	1869	42.3	344.3	11508	3189

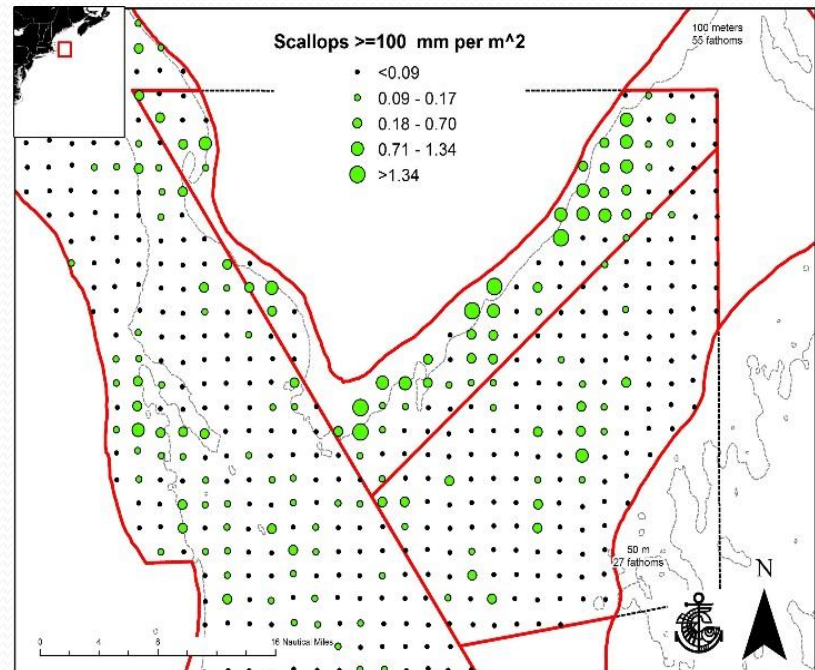
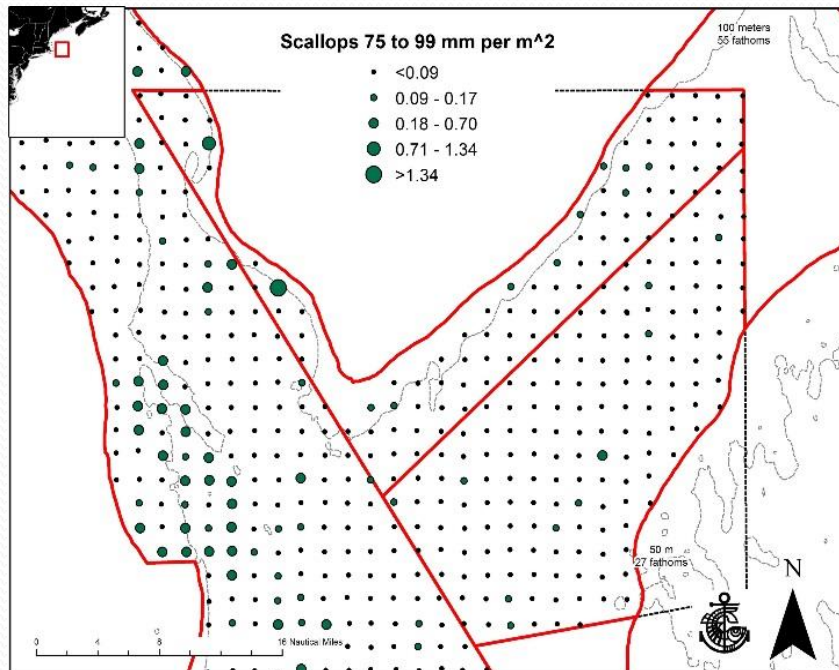
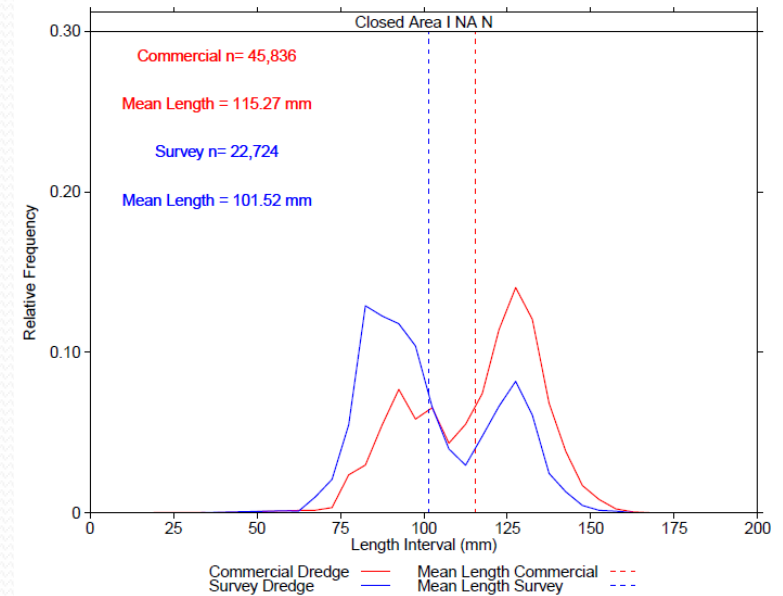
- Can likely support a **FT trip in 2019**
- Majority of animals and fishing in “sliver”
- Landings: Us and 10/20s
- Minimal recruitment
- Some gray meats reported
 - SMAST



Closed Area I

2 cohorts observed in surveys

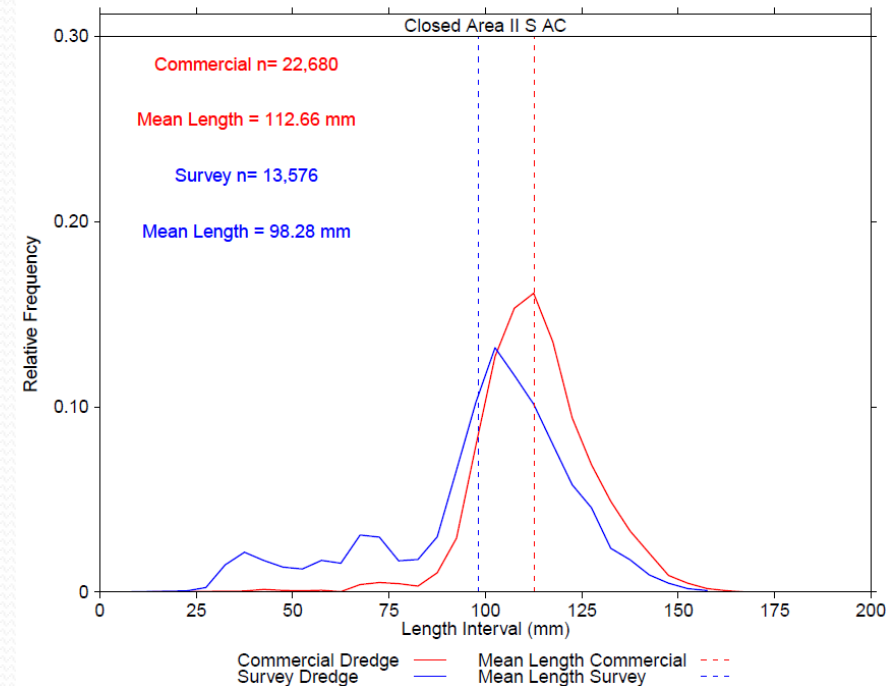
- Larger cohort will be 9yo.
- PDT does not support a closure in this area.



Closed Area II - South

	Dredge				Habcam				Mean		
SAMS AREA	Num (mil)	Bms mt	SE	Mean Wt	Num (mil)	Bmsmt	SE	Mean Wt	Mean Num	Mean Bms	SE
CL2 South	344.3	8875	688	24.8	248.5	7128	112	28.7	296.4	8001	697
CL2 Ext	375.2	7230	688	19.3	336.1	8086	144	24.1	355.7	7658	703

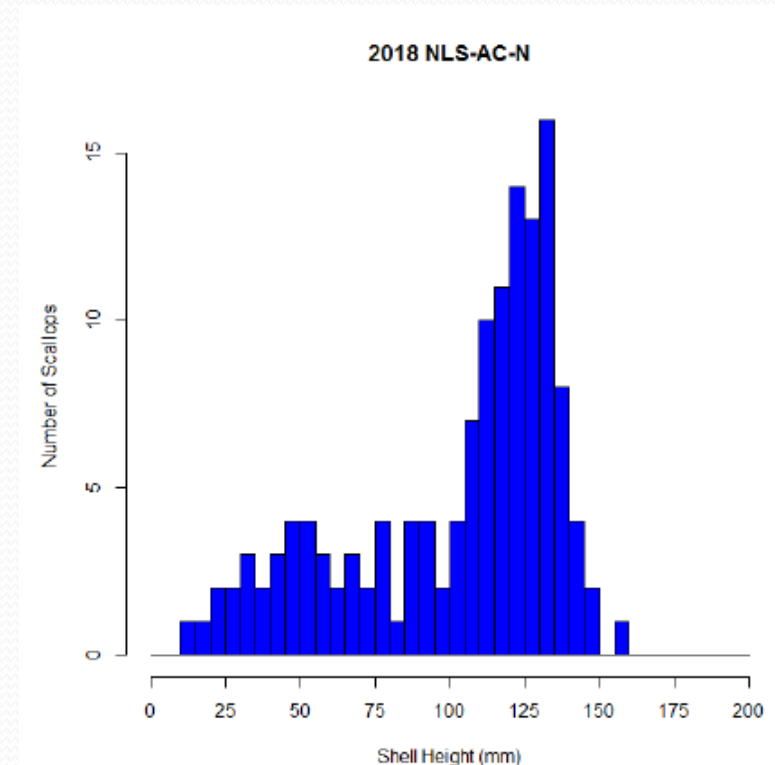
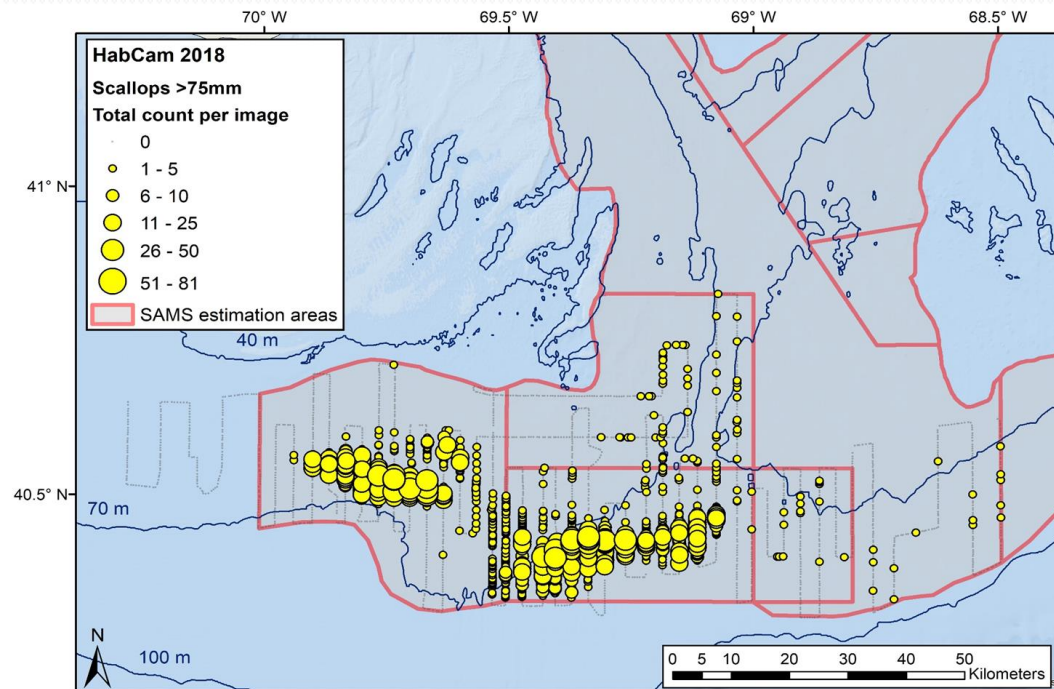
- Candidate for a **FT trip in 2019, but:**
- 3 cohorts in the area – oldest will be 5yo in 2019 and has additional growth potential.
- Less urgency to harvest in CAII relative to:
 - CAI, NLS-West, MAAA



NLS-North

	VIMS Dredge	SMAST Dropcam	HabCam	Average
NLS-AC-N	3,614 mt	3,855 mt	3,585 mt	3,685 mt

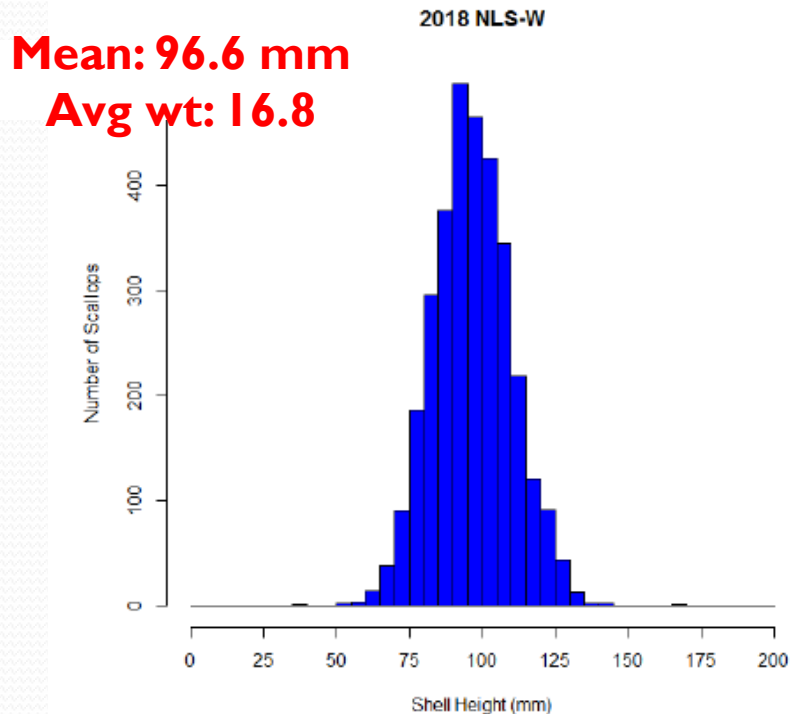
- Candidate for **closure in 2019**.
- At least 3 cohorts in the area, average recruitment.



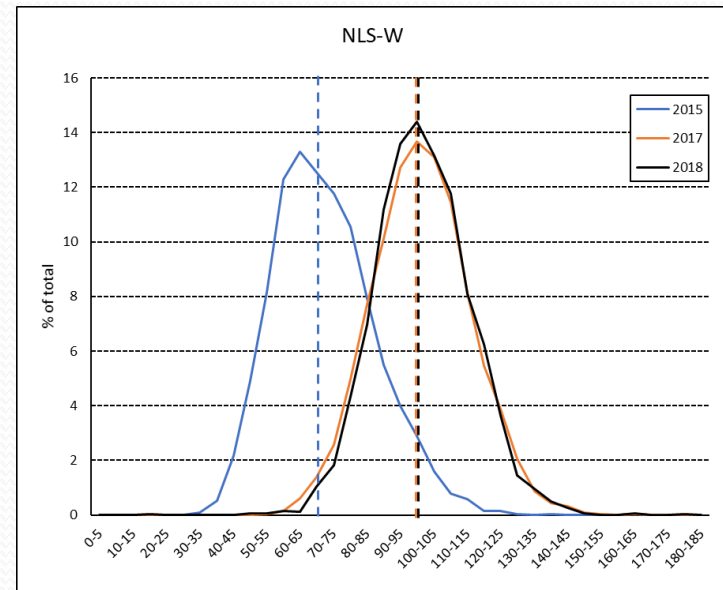
NLS-West

	SARC 65	VIMS	VIMS + 3x	VIMS, no dredge
NLS-West	56,029 mt	38,195	48,148 mt	49,828 mt

- *Data treatment:* Estimate uses VIMS 2016 – 2018 SH/MW and increasing dredge by 3x.
- Uncertainty around growth, PDT analyses planned.

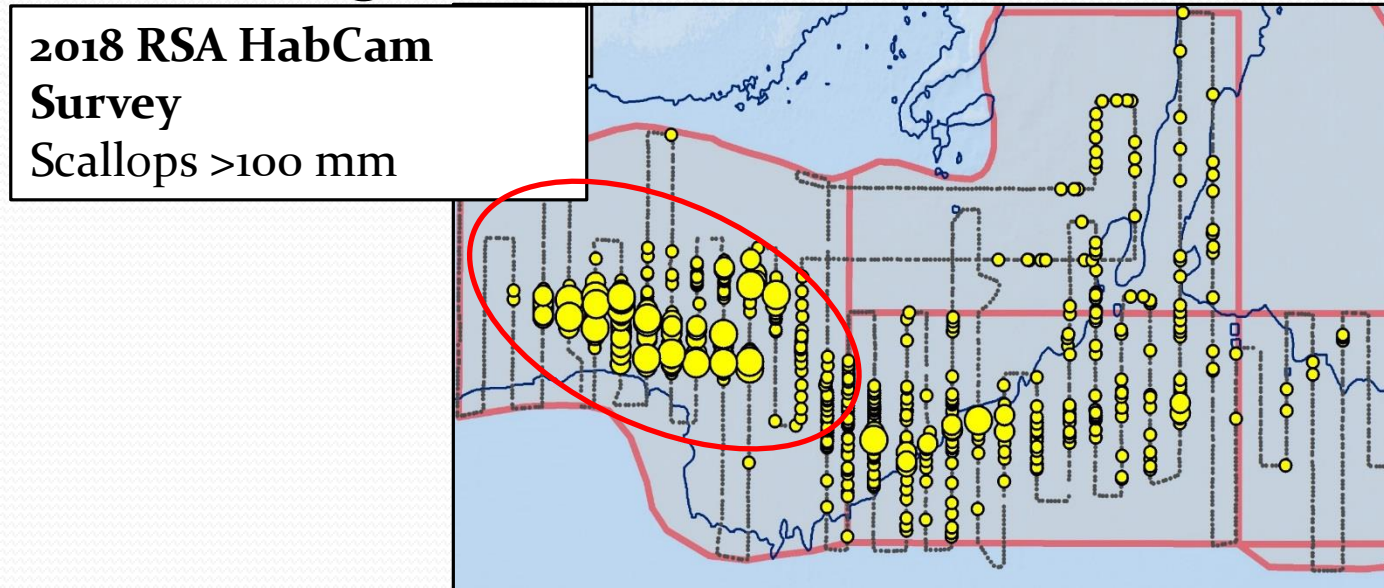


Very little growth observed between 2017 and 2018



NLS-West

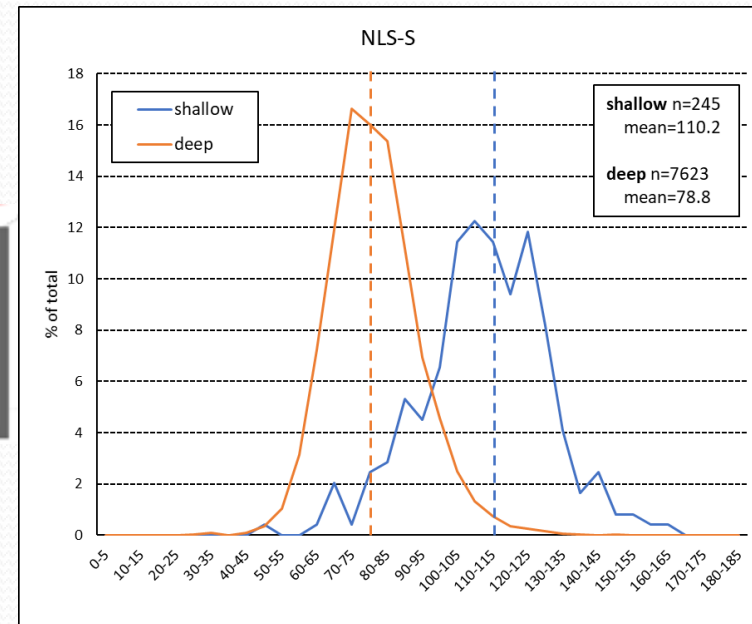
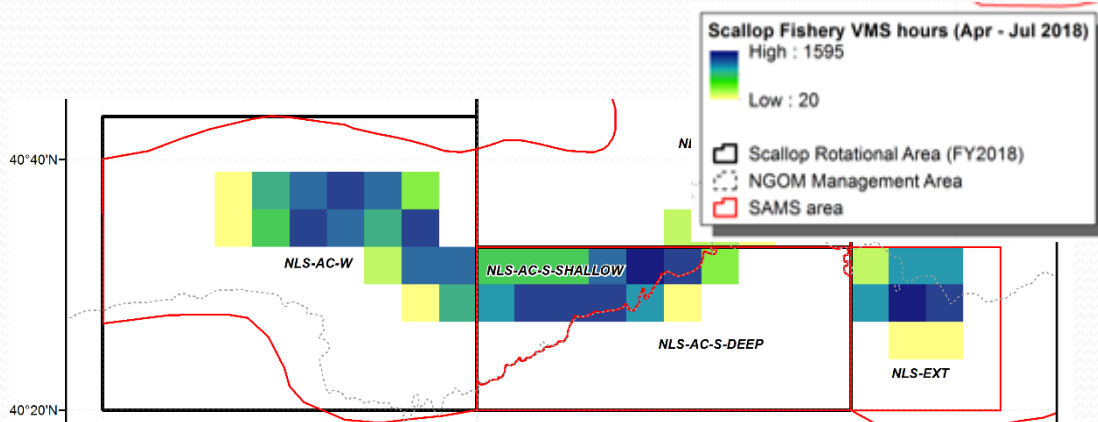
- **Candidate for multiple trips in 2019.**
- Fishery is working on 2012 cohort, ~100 mm in average length.
- NLS-West holds some of the highest densities of exploitable biomass in the fishery.
- 2018 Landings: Us and 10/20 count so far...



NLS-South Shallow

	VIMS Dredge	SMAST Dropcam	HabCam	Average
NLS-AC-S-SHLW	2,111 mt	4,120 mt	4,964 mt	3,732 mt

- Not expected to support a full trip in 2019 on its own.
- Could be combined with the NLS-West, or harvest could be delayed.
- Landings: Us and 10/20 count.



NLS-South-deep

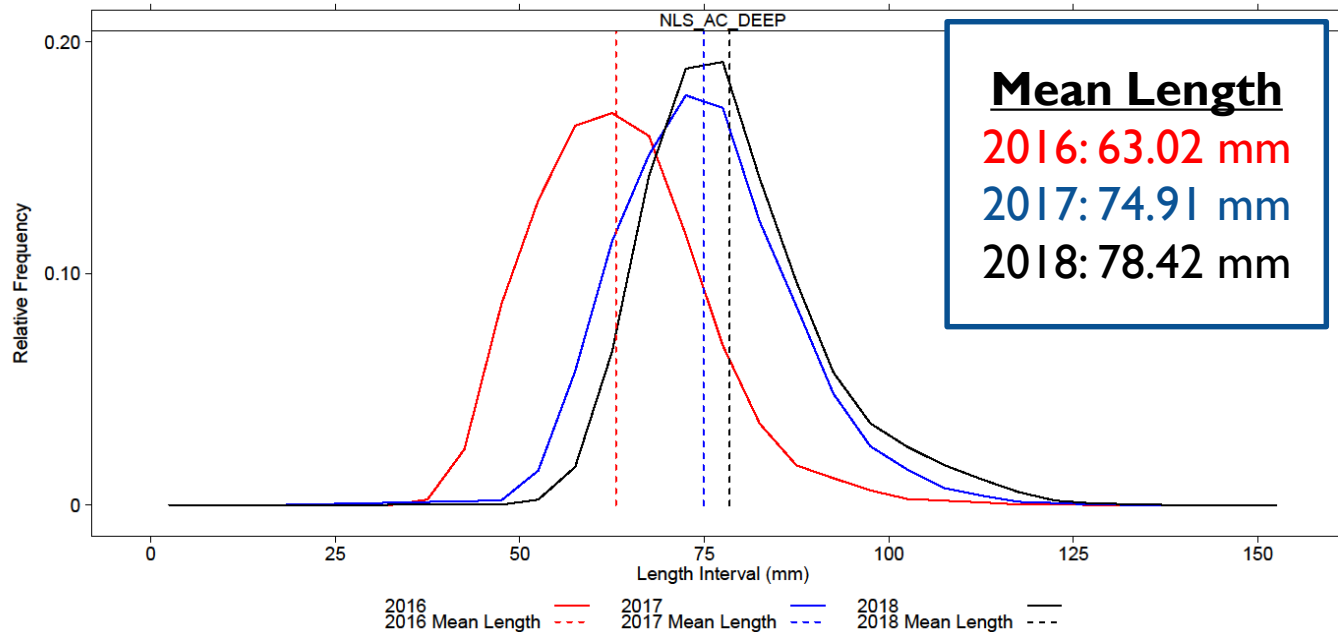
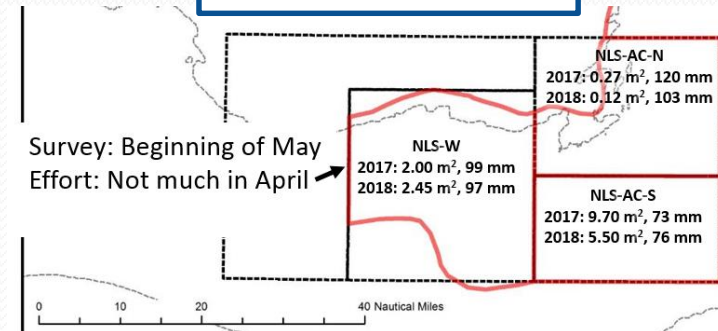
2017 → 2018

- Almost no observed growth
- Reduction in density per m²

Density

2017: 9.70 m²

2018: 5.50 m²



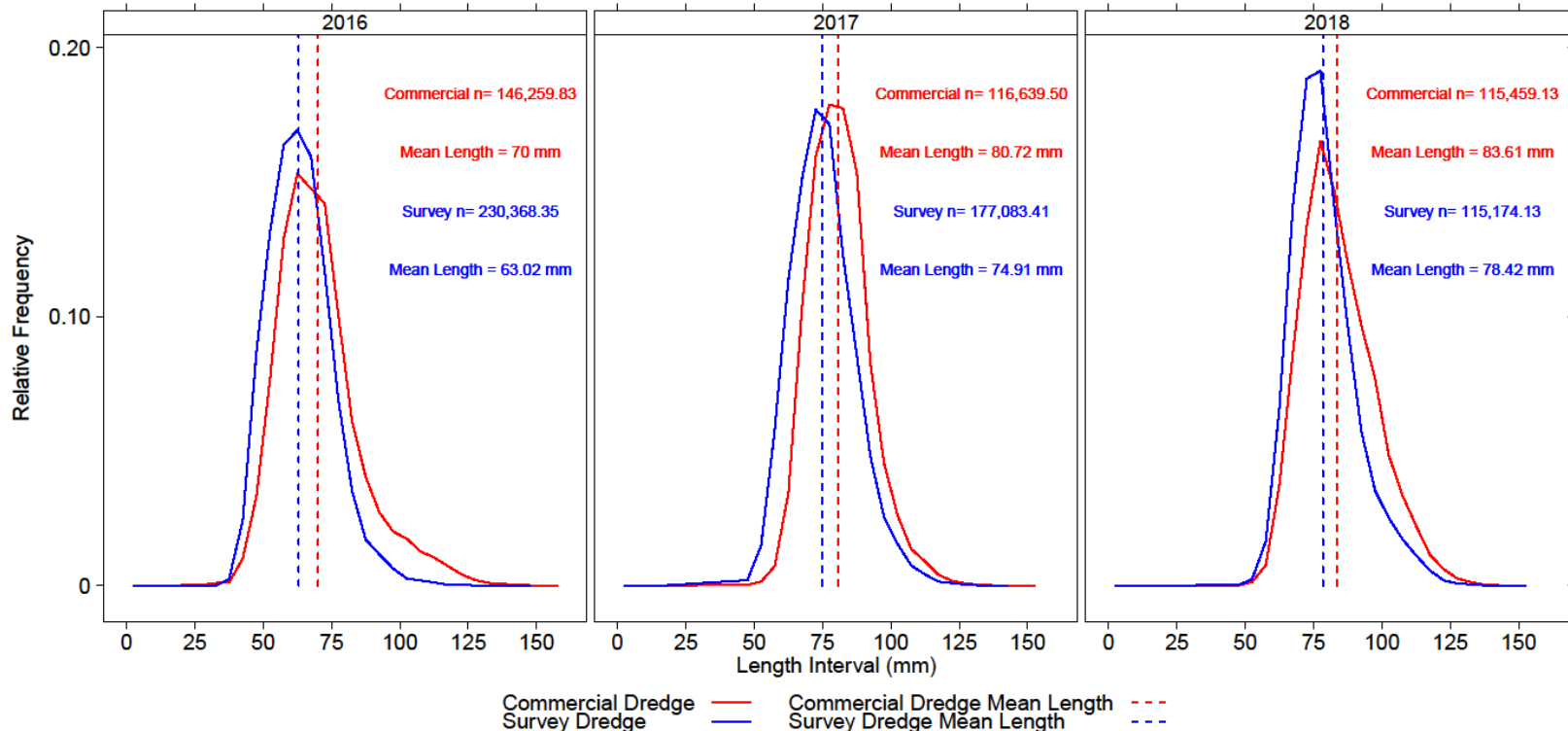
NLS-South-deep

	SARC 65	VIMS	VIMS + 3x	VIMS, no dredge
NLS-S-deep	26,563	27,602	34,483	36,243

- Same Data Treatment as NLS-West
 - 2016-2018 VIMS SH/MW + increasing dredge by 3x
- 34,483 mt \approx 76 million lbs of meats
- PDT: No biological reason not to harvest these animals. Meat quality appears to be good, but small.
 - Not growing normally.
 - Questionable fecundity.
 - May be environmental or density dependent factors that are limiting their potential to grow and reproduce.

NLS-South-deep

- Commercial dredge (4" ring) and survey dredge captured animals in 70 – 80 mm range.



Mid-Atlantic Access Area

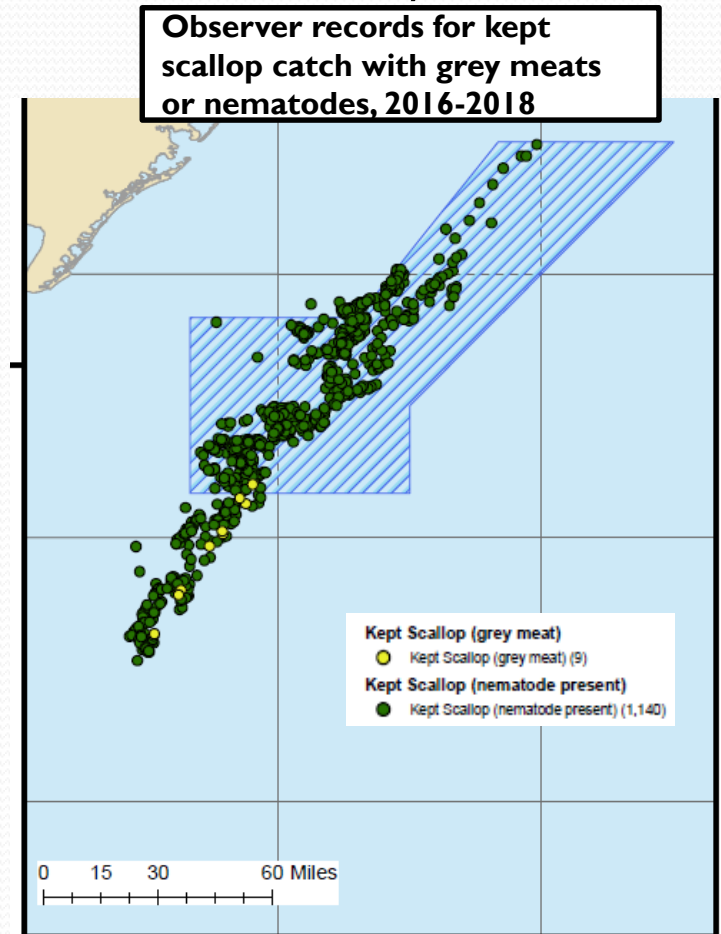
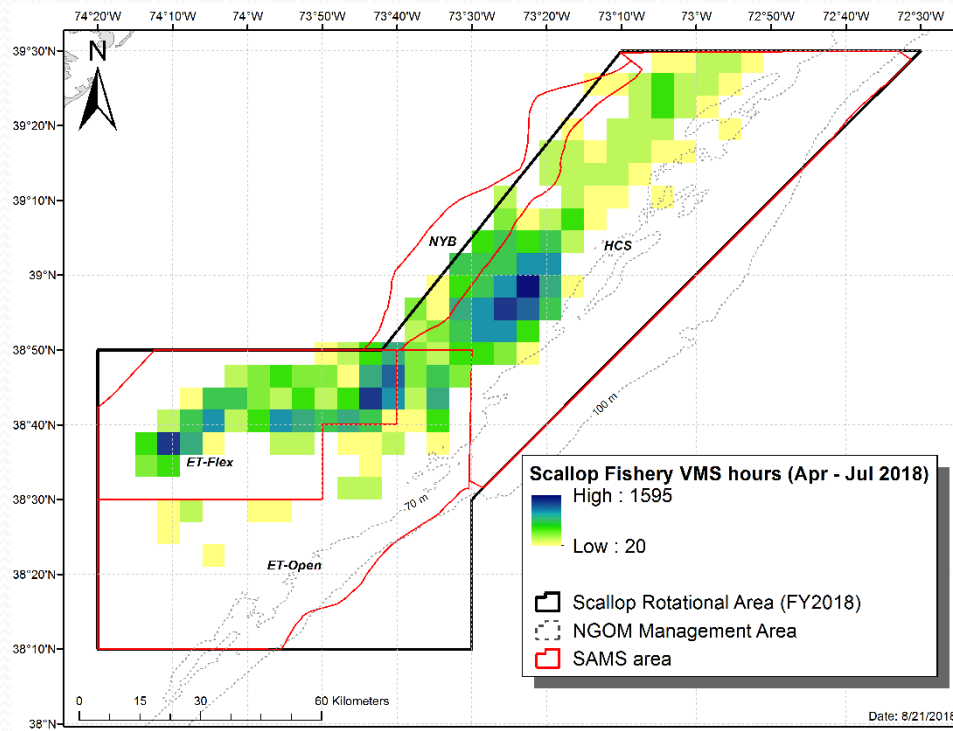
- **Combined Biomass:**

	MeanNum (mil)	MeanBms (mt)	SE
HC	675	10,698	908
ET-Open	722	12,699	828
ET-Flex	942	19,641	2,183
Combined	2,340	43,038	2505

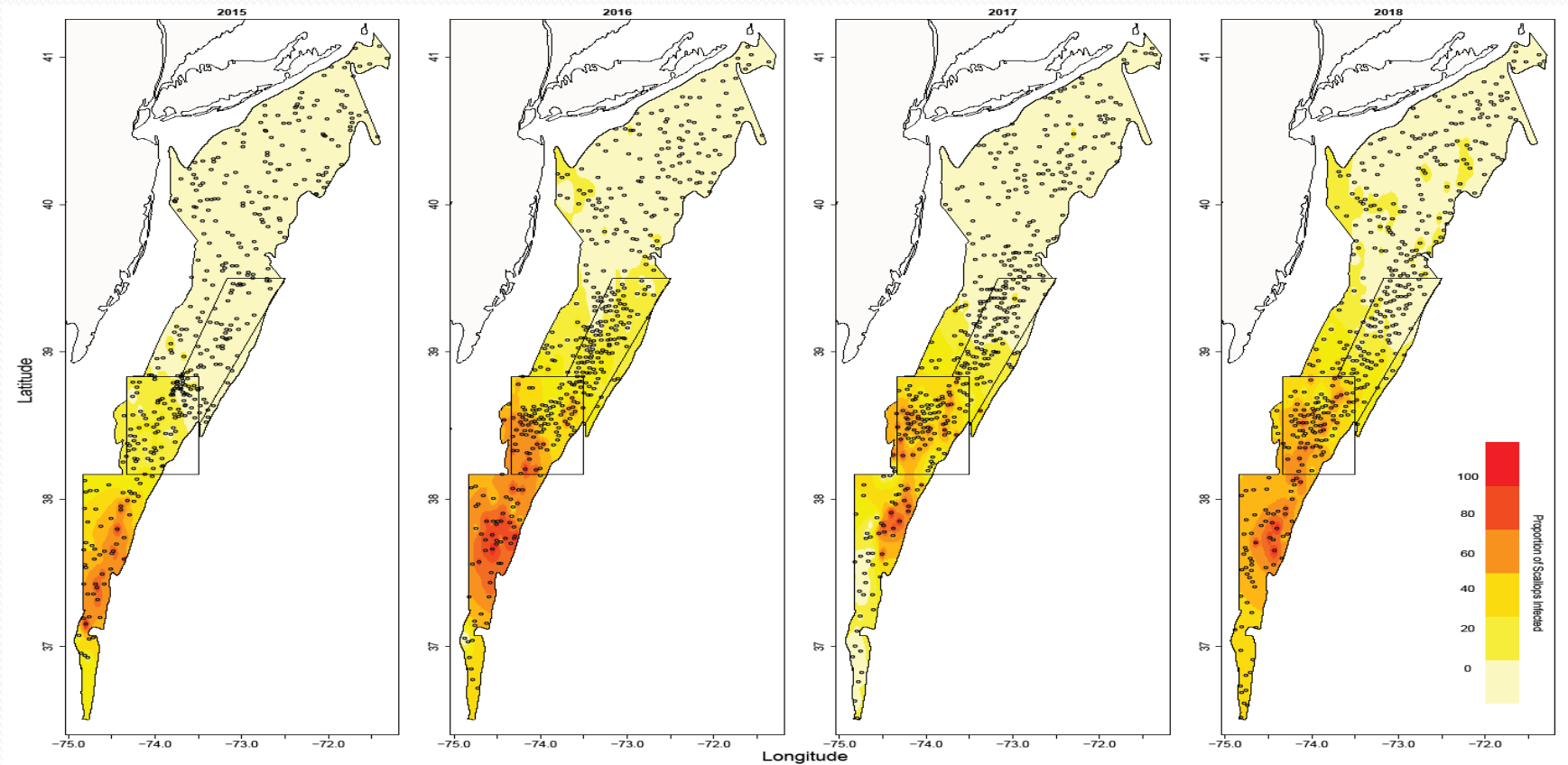
- Could **support multiple trips in 2019.**
- Fishery is working on one dominant YC (6yo in 2019).
- No signals of incoming recruitment in HC or ET.
- Meat quality continues to be an issue.

Mid-Atlantic Access Area

- Majority of 2018 fishing effort is north of 38.5° latitude.
- HabCam estimates: ~5,500mt of ET-Open biomass is south of 38.5° latitude (53% of total biomass estimate).

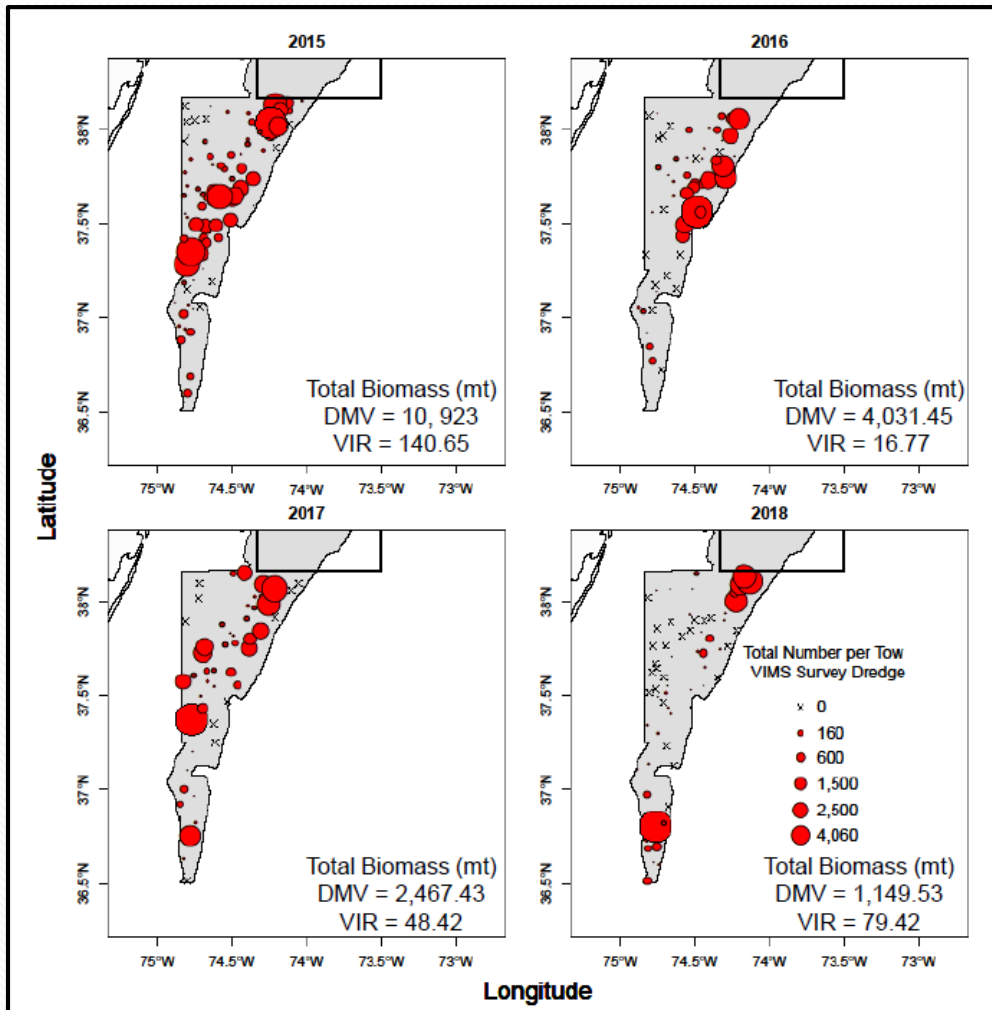


Nematode Prevalence 2015-18



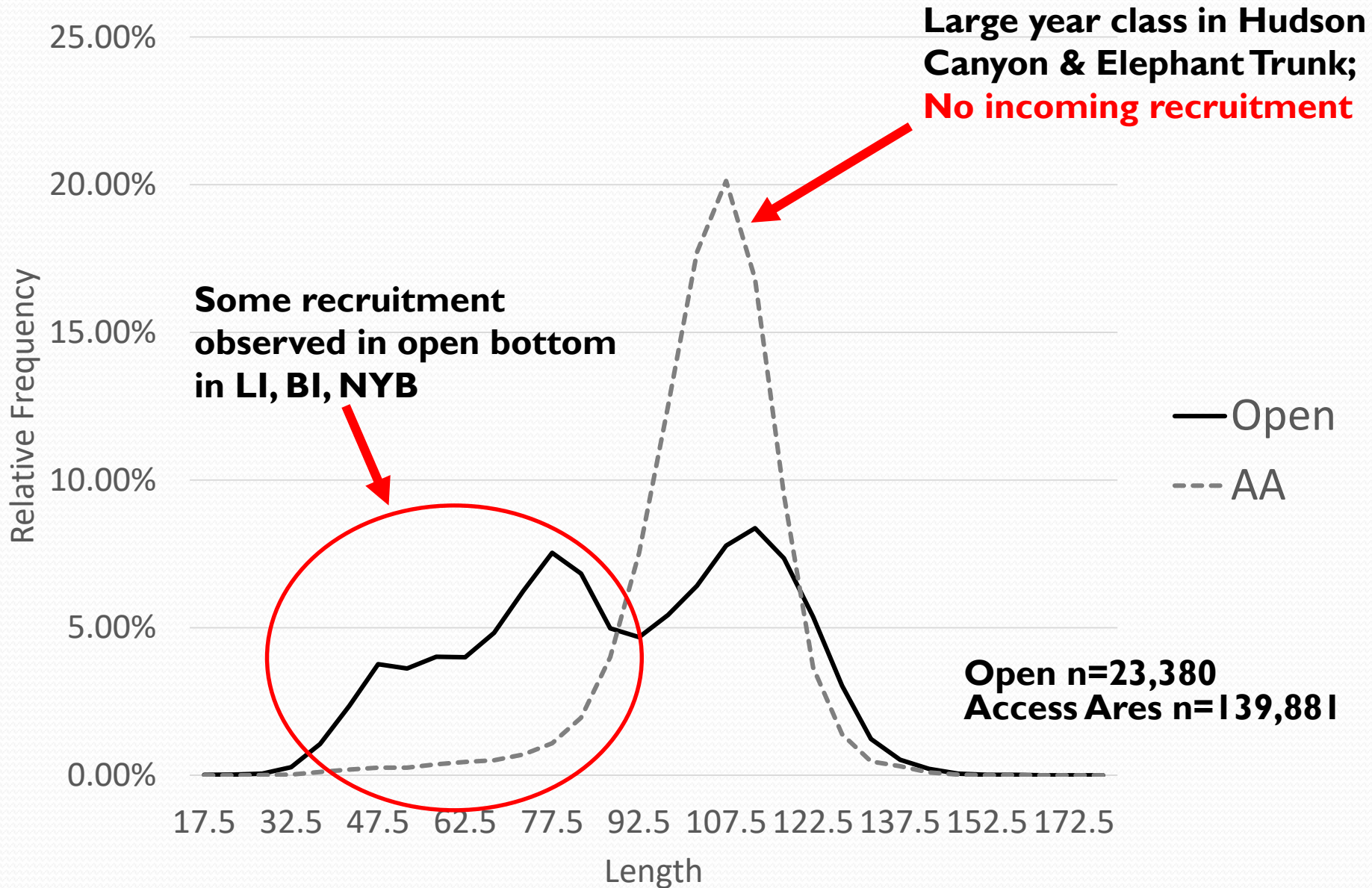
- % of scallops in a sample that contain at least one lesion.
- Northward expansion 2015-16.
- Apparent stabilization of the spatial extent 2016-17.
- Possible slight northward expansion from 2017-18.

Delmarva:

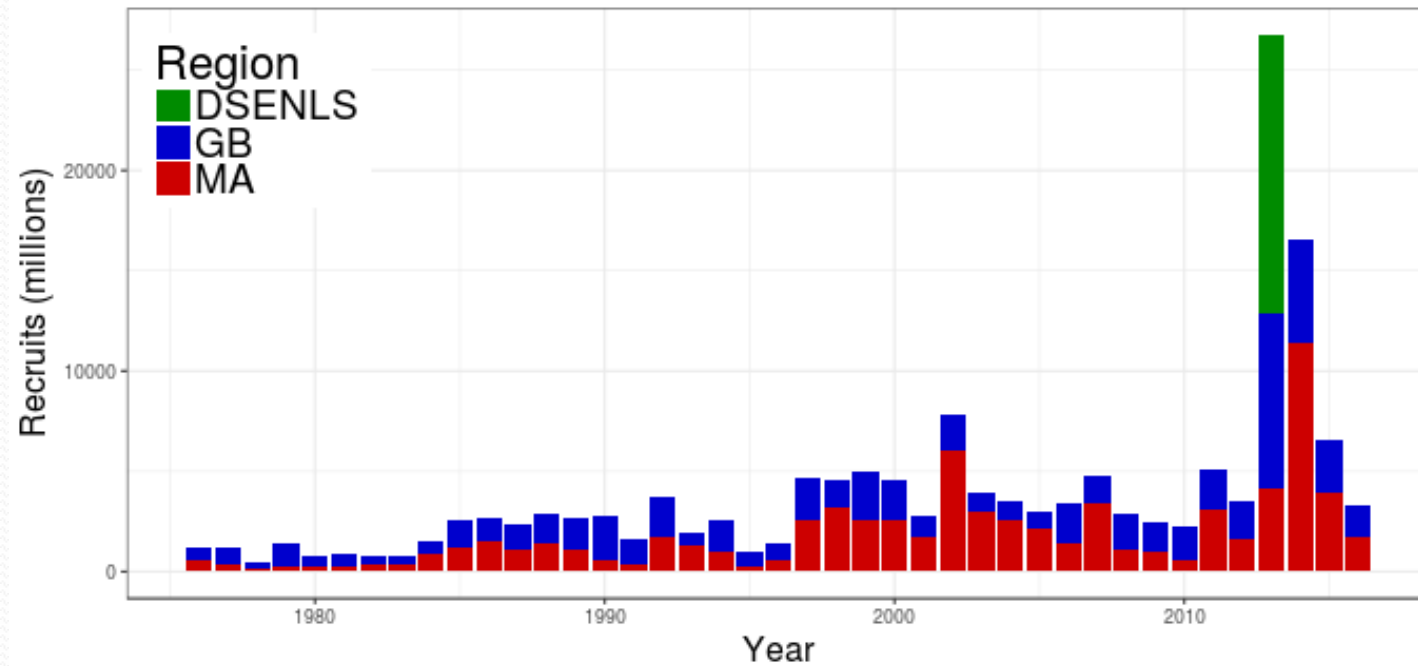


- Converted to open bottom in 2018 (FW29)
- Very little/no fishing in the area for several years.
- **PDT does not expect fishing in the area unless something changes.**
- Recruitment observed in 2017 did not pan out.
- Order of magnitude reduction in biomass in 3 years.
- Animals are at the southern extent of their range.

MA: Open vs. Access Area Lengths



Recruitment:



- No large incoming year classes since 2012/2013.
- Some (unremarkable) recruitment observed in:
 - South Channel, Nantucket Lightship - North
 - Block Island, Long Island, Mid-Atlantic Bight
 - CAI (N-S), CAI-ext, Southern Flank

PDT's 2019 Harvest Recommendations:

- The PDT: 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-West, and the Mid-Atlantic access areas will be 6, 7, and 9 years old in 2019, and are ready for harvest.
 - The majority of recruitment observed in the 2018 surveys is in open areas.
- New Reference Points → Potentially higher F_{msy}
 - Consider open area F rates that are consistent with recent values.
 - 2016: $F=0.48$ 2017: $F=0.44$ 2018: $F=0.295$

PDT Thoughts on Access Areas (so far)

Area	# of cohorts	Recruitment?	Fished in 2018?	Candidate For:
NLS-N	3	Average	No	Closure. <u>North</u> is not ready.
NLS-S Shallow	1	None observed	Yes - 1 trip	Opening if combine with WEST, or WAIT for 2020.
NLS-S Deep	1	None observed	Open, not fished	Animals not recruited to dredge
NLS-W	1	None observed	Yes - 2 trips	Multiple trips
CAII-S-AC	3	Some (average?)	No	Potential trip
CAI-NA	2	None observed	Yes - 1 trip	Potential trip
CAI-AC	2	Minimal	Open, some effort	Combine with other areas, open bottom?
MAAA	1	None observed	Yes - 2 trips	Multiple trips

2018 Fishery Performance

As of September 6, 2018 – 43% of FY complete

- FW29 Final Rule: April 19, 2018

Component	Landings to-date (lbs)
Limited Access	34,646,671
LAGC IFQ	1,897,772
LA w/ LAGC IFQ	61,884
Observer Set-Aside	424,293
TOTAL	37,030,620

- LA & IFQ Projected landings: ~56 million lbs.
 - Does not include set-asides

SAMS runs for 2019

	Status Quo (For comparison)	AP input	
Open Area F	$F=0.295$		
CAI	1 trip + carryover		
CAII	Closed		
NLS-N	Closed		
NLS-S	1 trip		
NLS-W	2 trips		
MAAA	2 trips		

Questions?

Action Plan: FW30

- Specifications and Standard Default Measures
- **GOAL: New specs in place by April 1, 2019**
- Include standard default measures
- Scallop benchmark → New reference points

Current Draft Plan:

- FW30 would be in streamlined action
- Other measures would be addressed in a separate Framework or Amendment
 - Council can work on multiple actions at the same time.
 - FWs and Amendments can be focused and streamlined.

2018 & 2019 Priorities FW30

Anticipated Outcomes. The AP and Committee may wish to identify potential 2019 work priorities. This will not be the last opportunity to discuss work for next year.

The Council will take final action on 2019 priorities in December.

2018 Priorities

Regulatory Requirements & Ongoing work	Council Ranking
<ul style="list-style-type: none">• Specifications for 2019/2020• Benchmark (SAW/SARC 65)• Support Scallop RSA Program• In-season catch accounting• Specify Allocation Review Triggers	<ol style="list-style-type: none">1. Modify Access Areas to be consistent with OHA22. Standard default measures3. Monitoring and catch accounting4. Consider LAGC IFQ trip limits5. NGOM Management measures

2018 Priorities and Vehicles

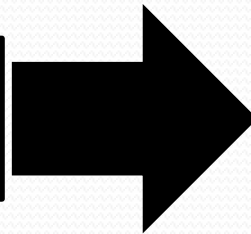
Each column represents a way to address the priority

Specs Package	Framework	Amendment	Other
<div>Specifications</div>	<div>I. Modify AAs</div>		<div>Benchmark (SAW/SARC) ✓</div>
	<div>Standard Default Measures</div>		<div>3. Monitoring and Catch Accounting Provisions ✓</div>
	<div>4. LAGC IFQ Trip Limits</div>		<div>RSA Support</div>
			<div>Ongoing</div>
			<div>Tracking flatfish catch</div>
Minimal/No Progress made so far in 2018			
	<div>Eastern GB? HABITAT FW</div>	<div>5. NGOM Management Measures</div>	<div>Allocation Review Triggers</div>

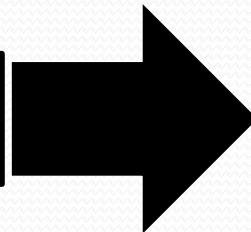
5 Meeting Outlook: **DRAFT**

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Regulatory Requirements



Council's Ranked Priorities



Council M

Jun-19

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Specifications for 2019/2020

data, preliminary OFL/ABC projections

Final Action

Submit Specs Package

in place April 1

Survey cruises on the water

Benchmark (SAW/SARC 65)

Present results of SARC 65

Support Scallop RSA Program

FFO Published, Program review update

Proposals Due, Reviews begin

Proposals in evaluation

Announce 2019/2020 awards

Council votes on 2020/21 Priorities

In-season catch accounting

Ongoing

Estimates for GF FW, FW30

Review bycatch estimates - consider YT transfer to GF

Specify Allocation Review Triggers

Executive Committee Discussion

Council's Ranked Priorities

1. Modify Access Areas to be consistent with OHA2

Consider modifying boundaries in FW30

Coordinate with Habitat on EGB (TBD), Consider a review of rotational management

2. Standard default measures

Review impacts analyses

Final Action

3. Monitoring and catch accounting

Review 3 letters to NOAA; develop any add. Recs.

4. Consider LAGC IFQ trip limits

Present analyses on trip limit increases (Committee tasking)

TBD (Depends on CTE/Council input in Sept. 2018)

5. NGOM Management measures

Review GOM appendix from SAW/SARC 65, fishery data

TBD (Expect CTE input in Sept)

Initial List of 2019 Priorities

- List from 2019 Priorities Initial Task List: Executive Committee

Priority/Task Title	Status	Regulatory Requirement?
Specifications for FY2020 and FY2021		YES
Modify AA to be consistent with OHA2	2018 Priority – some progress made	
NGOM management measures	2018 Priority – minimal progress made	
DAS and IFQ carryover		
Gear Modifications to Protect Small scallops	PDT does not recommend this as a 2019 priority	
Specify allocation review triggers	Ongoing	NMFS policy
Adjustments to industry funded observer program (NGOM coverage, etc)	NEFSC letter in August 2017	
In-season catch accounting		
Support Annual Scallop RSA process		

PDT Input: 2019 priorities

Follow-up to partial approval of OHA2:

- This priority could be addressed in several ways:
 - Access area changes/modifications (Ex: CAI North).
 - Timing of this work would ideally occur in Winter/Spring, as it has implications for scallop survey efforts and RSA awards.
- Opportunity to evaluate metrics in FMP & current practices:
 - Not using the rotational management criteria in A10
 - Move away from the legacy areas → Ex: DMV, CAI
- Anticipate supporting Habitat evaluation on EGB.

PDT Input (continued)

- Measures to address DAS and IFQ carryover
- ~~Gear modifications to protect small scallops~~
- Adjustments to the scallop industry funded observer program (NGOM coverage, etc)
 - PDT recommends addressing LAGC NGOM observer coverage under the NGOM priority. NO IFO mechanism to support coverage in this area.
- NGOM: Consider options for RSA in the NGOM.

Staff Input

- Progress made toward addressing majority of 2018 work priorities. Minimal progress on some issues.
 - Potential to carryover 2018 issues (NGOM)
- 2019 List: Items that AP and Committee would like more information on?
- How Council handles 2018 priorities will impact progress toward 2019 priorities.
 - EX: New action this fall, time to address full list of 2019 priorities would be limited.



Other Business

NGOM Enforcement

- Focused Enforcement Operation for the 2018 NGOM fishery.
- Presentation at the upcoming Council meeting under reports.
- 34 of 37 vessels in the fishery were boarded (92% contact rate).
- 18 violations on 16 vessels, most were minor.
- 1 summary settlement.



Council Report

To report fisheries violations,
call our national hotline:
1-800-853-1964

NGOM Enforcement

- Following table from pages 8 & 9 of Council report.

Table 7. Summary of Operation

Vessels/businesses contacted	34
Vessels with violations	16
Total Violations	18
Compliance Assistance Provided	17
Summary Settlements Issued	1
NOVAs referred to GC	0
Total Summary Settlement Fine Amounts Issued	\$500

Table 8. Summary of Violations

Violation	Number of Violations
Incomplete/Inaccurate VTR	4
Failure to submit VMS Preland	1
VMS Software Upgrade	1
Scallop Overage	7
Fishing Outside of NGOM area	1
Permit not readily available	1
No Permit	2
No IFQ available	1



END