New England Fishery Management Council
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DRAFT MEETING SUMMARY

Scallop Plan Development Team
October 2020
Webinar Meetings

The Scallop PDT met via webinar on October 15, 20, 22, and 28, 2020 to review the results of the 2020 surveys and discuss data treatment (i.e., growth, dredge efficiency, data agreement and combining survey estimates, modifying SAMS areas if needed, etc.) in preparation for initializing the SAMS model. The PDT discussed a range of topics related to development of 2021 specifications that are highlighted below.

MEETING ATTENDANCE:
Jonathon Peros (Plan Coordinator), Sam Asci, Ben Galuardi, Dave Rudders, Dvora Hart, Naresh Pradhan, Rachel Feeney, Chris Parkins, Travis Ford, Bill DuPaul, Kelly Whitmore, Tim Cardiasmenos, and Amber Lisi.

The following summarizes PDT discussion from the four webinar meetings held in October that focused on 2020 survey findings and the initial steps to developing fishery specifications for FY2021/2022 through Framework 33. Discussion on many of the topics below occurred over the course of several calls.

2020 Sea Scallop Assessment Update

Dr. Dvora Hart (NEFSC) presented and overview of the scallop assessment update that occurred in September 2020. The presentation and assessment report are available at the following link (https://www.nefmc.org/calendar/nov-10-2020-scallop-advisory-panel-webinar) and the following summarizes key points from PDT discussion around the assessment:

- As of 2019, the stock was not overfished, and overfishing was not occurring.
- The 2020 management review considered changes to the CASA and SYM models but did not evaluate the SAMS model.
- CASA considers natural and discard mortality together and assumes it to be proportional to fishing mortality. CASA can account for the significant reduction in NLS-West biomass between 2018 and 2019 in several ways: 1) assuming the surveys are wrong and maintaining the assumptions of natural/discard mortality, or 2) assuming the surveys are correct, and allowing natural mortality to increase. The CASA model attempts to balance between these two. If the reduction in the NLS-West was a result of discard mortality to some degree, CASA is only able to account for it through increasing natural mortality.
- The 2020 assessment update found that growth rates have slowed in the years since the 2018 benchmark assessment (see discussion below). Discussion around this topic noted that it may be worth exploring modifications to growth assumptions used in SAMS. There has been evidence of

SAMS overestimating biomass in recent years which could be a result of growth parameters being faster than reality.

Presentations on 2020 Surveys

Representatives from each RSA survey group presented findings from the 2020 surveys of the scallop resource and NEFSC staff presented information on geostatistical modelling of HabCam estimates. A summary of survey coverage, links to survey short reports and presentations, and PDT discussion points are provided here:

Virginia Institute of Marine Science (Short Report, Presentation) – Dredge survey of the Mid-Atlantic, Nantucket Lightship region, Closed Area I Sliver, Great South Channel, Closed Area II and Surrounds.

School for Marine Science and Technology (Short Report, Presentation) – Drop camera survey of the Nantucket Lightship, Closed Area II/Closed Area II-Extension, Great South Channel, and Elephant Trunk.

Coonamessett Farm Foundation (Short Report, Presentation) – HabCam survey of Closed Area II and Surrounds, Nantucket Lightship South, and parts of the Mid-Atlantic (ET, HCS, NYB, LI, BI).

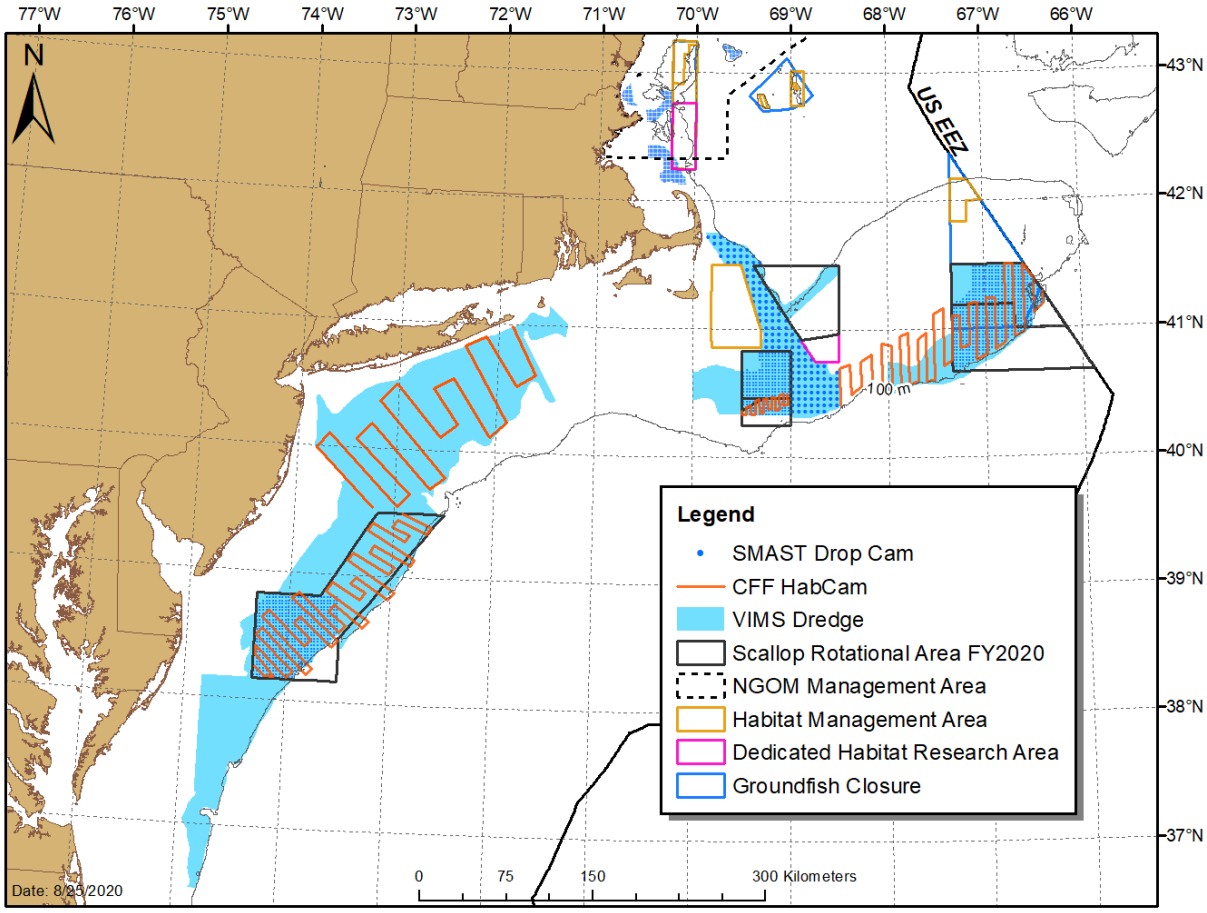
Northeast Fisheries Science Center (Short Report, Presentation) – Geostatistical estimates of HabCam surveys.

General Discussion:

- Despite the challenges created by the COVID-19 pandemic, RSA-funded survey groups were able to complete the 2020 field season. VIMS, SMAST, and CFF all expanded their survey coverage to gather additional data. The three areas that were not surveyed in 2020 were: Closed Area I Access Area, the Northern Flank, and Closed Area II North. See Figure 1 for 2020 coverage.
- Surveys detected recruitment on eastern Georges Bank, off of Long Island and the New York Bight, and to a lesser extent in the Great South Channel. The exceptional 2013 year class is the dominant cohort in the Mid-Atlantic Access Area (no recent recruitment), as is the 2012 year class in the NLS-S-deep. There is a dense aggregation of four year old scallops in CAII-SW that grew faster than expected (see Table 1).
- There was not a notable increase in clappers or poor meat condition in the Mid-Atlantic dredge survey. Shell blister disease appeared to be more prevalent in 2020 compared to past years, especially farther north in the Hudson Canyon (HCS) area which hasn't been observed in the past. Nematode distribution appeared to increase in the Elephant Trunk Flex (ET-Flex) and HCS SAMS areas.
- The PDT noted that it is important to consider the ~14 month delay in timing of 2020 surveys relative to 2019 when comparing L-F distributions (i.e., changes in L-Fs represent more than one year of growth).
- Observations by Canadian scientists suggested that a 30% reduction in meat yield occurred over the past year on eastern Georges Bank.
- Due to the timing of the surveys (i.e., mid- to late-summer), it is possible that the 2020 surveys detected more pre-recruits (<35 mm SH) than they would have had the surveys occurred earlier in the summer/late spring (small scallops have very fast growth rates).

- A warm-core ring was observed on Georges Bank at the time of the CFF HabCam survey of Closed Area II and surrounds. Observed bottom water temperatures ranged from 17 C to 19 C on Georges Bank, compared to around 15 C in the Mid-Atlantic Bight region. Scallop growth may be impacted at around 18 C and the upper bound of tolerance for scallops is around 20 C. Warm core rings have been observed in the same area of Georges Bank in recent years and swings in bottom temperature seem to vary from year to year.

Figure 1 – Completed RSA survey coverage for 2020 by survey type.



Review of Combined Survey Estimate Table

The PDT reviewed individual survey estimates for each SAMS area and the combined mean survey estimates over the course of several webinar meetings in October 2020. The data treatments recommended by the PDT are described in Table 2 and the final combined survey estimates are provided in Table 3. The following sub-sections summarize PDT discussion on survey estimates and primary data treatment recommendations.

Divergence in Southern Flank Estimates

Divergence between the dredge and HabCam estimates for the Southern Flank SAMS area were investigated through a series of sensitivity analyses. The dredge survey domain included only the eastern

portion of the SF, whereas the HabCam covered all of the SF. Follow-up analyses estimated HabCam biomass/mean weight/shell height separately for 1) the area overlapping the dredge survey domain (i.e., SF-VIMS) and 2) for the remainder of the area (i.e., SF-Rest). Less divergence between the dredge and HabCam biomass estimates was evident for the SF-VIMS area, though mean meat weight still differed by almost double. Follow on analyses reviewed geostatistical model selection (Doc.7h here) and SH/MW parameters (Doc.7i here) used in the estimates, though, ultimately, the PDT acknowledged that variation between estimates of different surveys is expected and recommended not adjusting the individual dredge/HabCam estimates and to use the mean of both surveys for the SF SAMS area.

Accounting for Growth Periods

The 2020 scallop assessment update (CASA) adjusted growth assumptions in the most recent period to reflect slower than expected growth. The PDT compared the 2020 survey results with what the SAMS model projected biomass would be in 2020 after accounting for fishing, *M*, and recruitment, using 2019 survey data. The comparison showed that the SAMS projections for 2020 were largely overly optimistic in most SAMS areas compared to observed estimates from the 2020 surveys. One way to account for the slower growth period identified in the 2020 assessment update is to scale down SAMS-area-specific $L\infty$ assumptions proportional to the shift in growth noted in the assessment. The PDT agreed that the shift in growth rates is an important variable to capture in the SAMS model moving forward and recommended adjusting $L\infty$ as described above when projecting forward to 2021.

Block Island HabCam

HabCam coverage in the BI SAMS area was limited to a single track that did not traverse depth contours within the area. The PDT noted that it is difficult to get a geostatistical estimate from a HabCam track at a constant depth, and that the 2020 HabCam BI estimate was likely an overestimate because the track went through the area with the highest abundance. The PDT recommended not using the HabCam estimate for BI (i.e., only using the dredge estimate), and discussed modifying the HabCam track in BI in the future to ensure the area is sampled across depth contours.

SH/MW Parameters for the Nantucket Lightship

The PDT has recommended using data from recent dredge surveys to develop shell height to meat weight (SH-MW) parameters for specific areas of the Nantucket Lightship region for the past several years. This year, the PDT recommends using SH-MW parameters based on the last five years of dredge survey data. The PDT has recommended deviating from the SARC 65 SH-MW parameters in the NLS Region in the past to account for unique growth in the various SAMS areas in the Nantucket Lightship. This year, the difference in biomass estimates based on SARC 65 versus 2016-2020 dredge parameters is minimal; however, despite the apparent convergence in 2020, the PDT recommends continued use of dredge SH-MW parameters as these are based on the most recent data available and encompass several years of area specific growth in a part of the resource with unique growth characteristics.

Recruitment

All three surveys of Closed Area II detected high densities of pre-recruits (<35 mm SH) along the eastern part of CAII-SE suggesting strong potential for this incoming year class in the future. The two-year-old scallops observed in the CAII-Ext and SF areas in 2019 were observed again the 2020, mixed in with at least two other year classes in both the <35 mm and greater than 75 mm size classes. While some pre-

recruits were observed in the Great South Channel along the northwest corner of CAI, outside of CAII and the SF areas, there were no strong signals of recruitment observed on Georges Bank.

Less recruitment was observed in the Mid-Atlantic region than on Georges Bank, though there were some signals of an incoming year class of juvenile scallops (<35 mm) in proximity of the Texas Tower (NYB/LI SAMS areas) and to a lesser extent in the northern part of the ET-Flex SAMS area. The majority of scallops observed in the Mid-Atlantic were in the greater than 75 mm size class.

Potential Modifications to SAMS/Management Boundaries

Noting the signal of incoming recruitment and several older year classes mixed in and around Closed Area II, the PDT investigated whether SAMS areas could be modified to separate smaller scallops from larger scallops to help support access to this part of the resource in 2021 while still allowing the smaller scallops to grow. Follow on analyses compared VIMS survey dredge densities in CAII and the SF for two different size class breaks (+/- 75 mm, +/- 100 mm). CAII-SW appeared to be dominated by a single year class (i.e., scallops around 75 mm), whereas the other SAMS areas were mixed with overlapping year classes that were not spatially distinct. The PDT highlighted the importance of protecting the smaller year classes in Closed Area II to optimize growth, but also noted that the existing CAII-SW SAMS boundary is well defined in terms of isolating the single year class that was observed in this area. Overall, the PDT did not recommend modifying SAMS/management boundaries for FY2021.

Comparison of 2020 Observed and 2020 Projected Length Frequencies

The PDT reviewed an analysis comparing the length frequencies from 2020 survey data with projections from the SAMS model for 2020. The "2019 run" of the SAMS model was initialized using survey data from 2019, and model results account for various factors including fishing mortality, natural mortality, discard mortality, and recruitment. Observed length frequencies from the 2020 VIMS dredge survey were used to compare to the 2020 projections for all areas, except the Southern Flank (SF), because the dredge did not cover the entire SF SAMS area.

The plots in Table 1 display L-Fs by SAMS areas from across Georges Bank and the Mid-Atlantic. The length-frequencies are shown by mean number per tow.

Discussion:

- Observed number per tow from the 2020 survey data are both higher and lower than the 2020 projections, depending on the SAMS area. This suggests that some combination of realized F, M, and growth was different than what was assumed in the 2019 SAMS model run.

- Projections were for a 12-month period following the 2019 surveys. The 2020 survey data were collected ~14 months after the 2019 surveys due to COVID-19 delays. The PDT suspects that additional Z over the extra two months would be less than Z=0.1.

- Error in surveys could explain some of the difference in observed versus projected L-Fs - for example, if both the 2019 and 2020 surveys in an area have 20% CVs, projections and surveys could differ by up to 50% due to survey error alone.

Results:

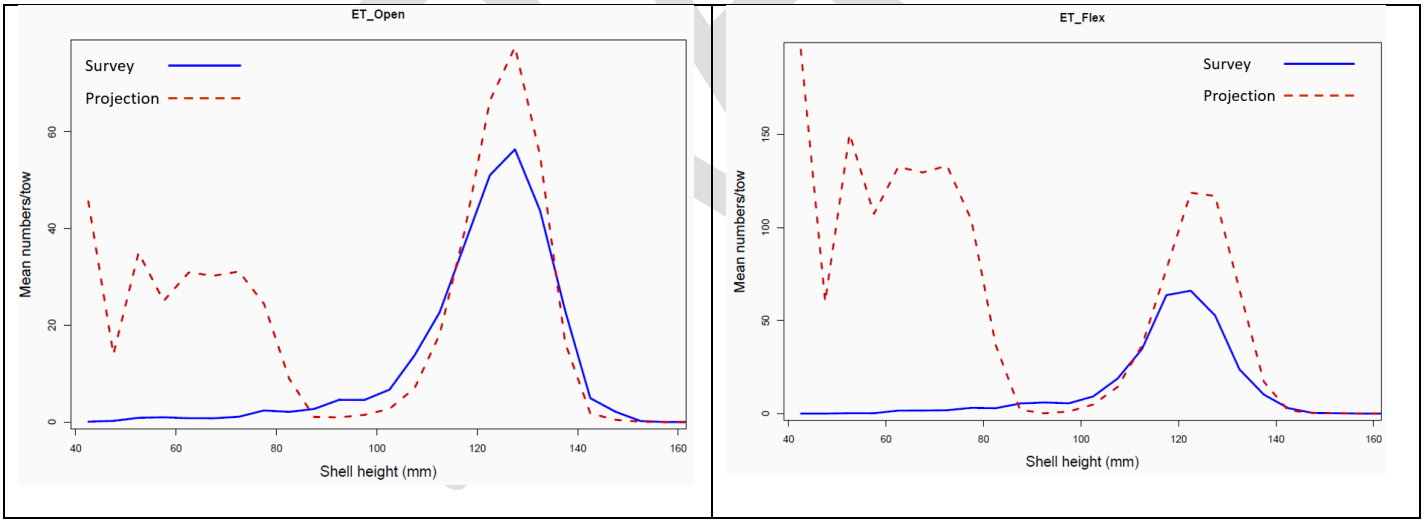
- The number of scallops per tow in the 2020 surveys were below projections in most areas, though there were some exceptions. Across the Mid-Atlantic region, it appears that projections were overly optimistic compared to observed L-Fs from the dredge survey. On Georges Bank, the scallops in the CAII-SW area grew faster than expected, reaching an average of nearly 100mm over a 14-month period when they were projected to reach only about 75-80mm over 12 months. This growth supports the PDT's recommendation to not change L∞ for the CAII-SW area.

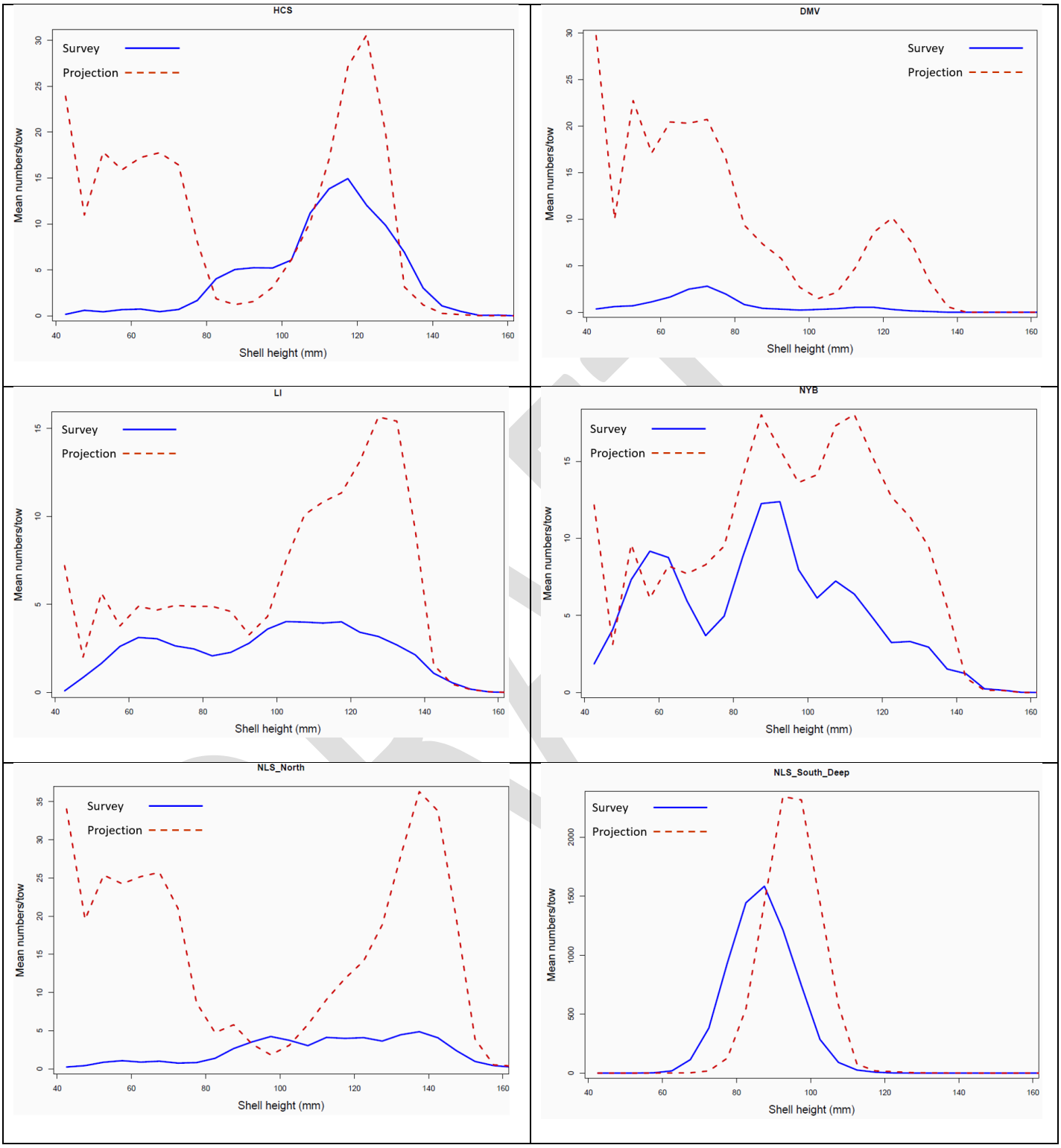
- Some of the divergence between surveys and the projections can be explained by poor recruitment (i.e., below average). As shown in the top panel for the Elephant Trunk Open and Elephant Trunk Flex, the model predicted average recruitment which did not show up in the 2020 surveys.

- Survey error and the two extra months between surveys are other plausible reasons for the projections to appear overly optimistic relative to the survey data.

- The comparison shows that the 2020 projections for SAMS areas in the Mid-Atlantic estimated more scallops than were observed in the 2020 surveys. While the survey data and projections generally tracked the shell-heights of the dominant 2013 year class in the Mid-Atlantic Access Area (ET-Open, ET-Flex, and HCS), the 2019 projections overestimated recruitment in these three areas. The 2020 projections estimated more scallops per tow than were observed in the 2020 surveys in the MAAA.

Table 1 – Length frequency plots comparing mean number of scallops per tow using 2020 survey data to projection using 2019 data. Survey data is shown in blue, and the 2019 projection data is shown as a red dashed line.




HCS
Survey
Projection
Mean numbers/tow
Shell height (mm)
DMV
Survey
Projection
Mean numbers/tow
Shell height (mm)
LI
Survey
Projection
Mean numbers/tow
Shell height (mm)
NYB
Survey
Projection
Mean numbers/tow
Shell height (mm)
NLS_North
Survey
Projection
Mean numbers/tow
Shell height (mm)
NLS_South_Deep
Survey
Projection
Mean numbers/tow
Shell height (mm)

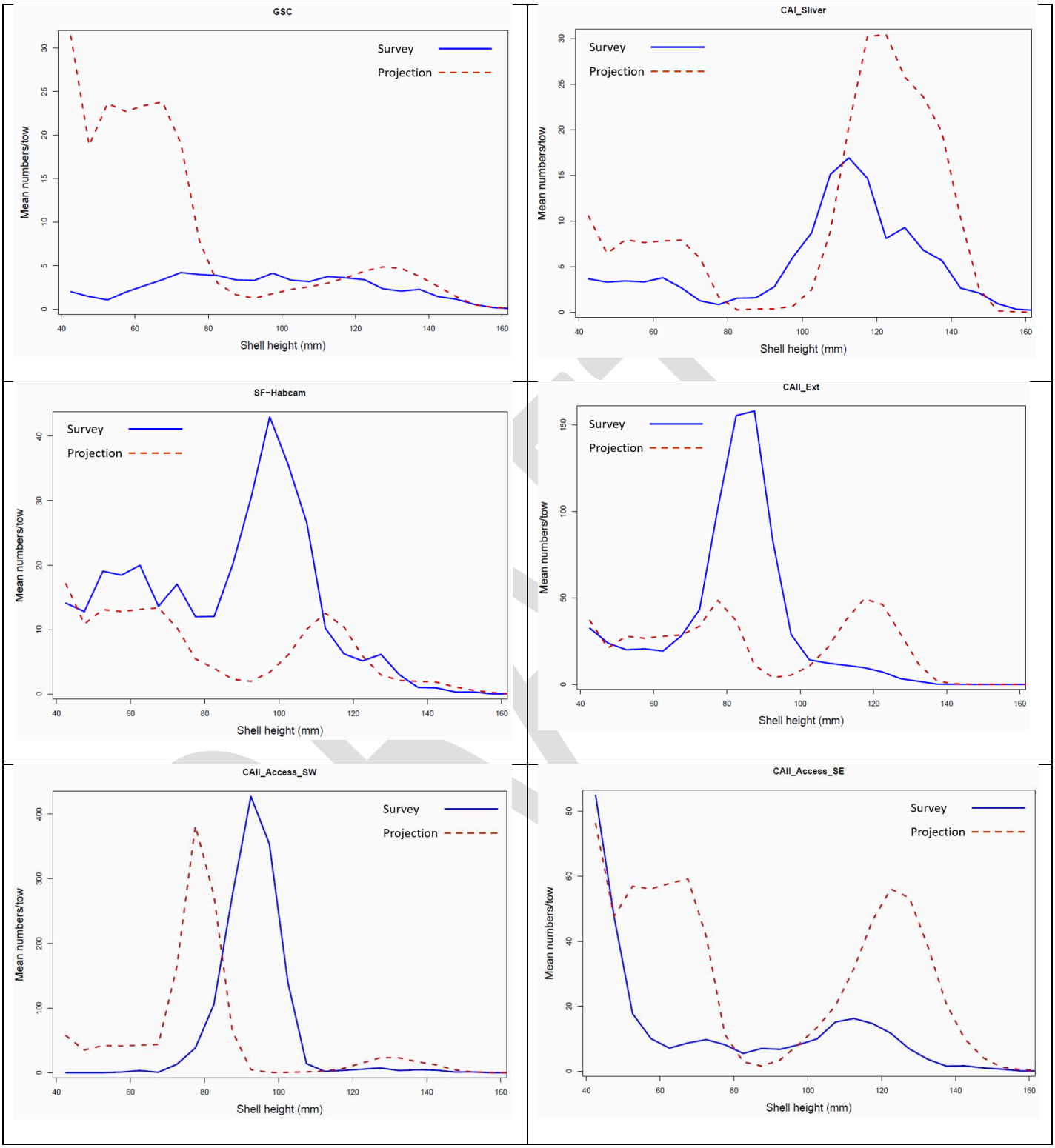

GSC
Survey
Projection
Mean numbers/tow
Shell height (mm)
CAI_Sliver
Survey
Projection
Mean numbers/tow
Shell height (mm)
SF-Habcam
Survey
Projection
Mean numbers/tow
Shell height (mm)
CAII_Ext
Survey
Projection
Mean numbers/tow
Shell height (mm)
CAII_Access_SW
Survey
Projection
Mean numbers/tow
Shell height (mm)
CAII_Access_SE
Survey
Projection
Mean numbers/tow
Shell height (mm)

Table 2 – Final data treatments recommended by the PDT for 2020 survey estimates by SAMS area.

GB	***SHMW equation, Dredge Efficiency***	***Treatment***
CL1-Access	SARC 65	Projection from FW32
CL1-Sliver	SARC 65	VIMS Dredge Data (no other survey data)
CL1-South	SARC 65	*No Data*
CL2-North	SARC 65	Projection from FW32
CL2-SE	SARC 65	Survey mean
CL2-SW	SARC 65	Survey mean
CL2-Ext	SARC 65	Survey mean
NLS-North	VIMS 16-20	Survey mean
NLS-South-Deep	VIMS 16-20, q=0.13	Survey mean
NLS-West	VIMS 16-20	VIMS Dredge Data (no other survey data)
NF	SARC 65	Projection from FW32
GSC	SARC 65	Survey mean
SF-VIMS	SARC 65	Develop HabCam estimate that is based on the VIMS survey domain, calculate the mean of dredge and HabCam.
SF-Rest	SARC 65	Use only HabCam data – (no other survey data)
MidAtlantic		
BI	SARC 65	Drop HabCam – low sampling. Use VIMS dredge data only.
LI	SARC 65	Survey mean
NYB	SARC 65	Survey mean
MAB-Nearshore	SARC 65	Survey mean
HCS	SARC 65	Survey mean
ET Open	SARC 65	Survey mean
ET Flex	SARC 65	Survey mean
DMV	SARC 65	VIMS Dredge Data (no other survey data)
VIR	SARC 65	VIMS Dredge Data (no other survey data)

Table 3 – Final dredge, drop camera, and HabCam estimates for 2020 by region and SAMS area, including the combined mean estimate for all areas that will be used in the SAMS model.

		Dredge				DropCam				Habcam				Mean				F32 Projections		
Region	Subarea	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	SE	MeanWt	Num	Bmsmt	%Change
GB	CL1ACC													*52.0*	*829*		*15.9*	52	829	
GB	CL1NA	60.2	1490	271	24.8									60.2	1490	271	24.8	143	3300	-54.8%
GB	CL-2(N)													*301.0*	*6347*		*21.1*	301	6347	
GB	CL-2SE	370.6	5185	528	14.0	505	5083	842	10.1	406	6718	57	16.5	427.3	5662	332	13.3	892	14763	-61.6%
GB	CL-2SW	1079.0	21357	4722	19.8	790	17769	3442	22.5	775	14693	354	19.0	881.3	17940	1951	20.4	757	8385	113.9%
GB	CL2Ext	913.8	12924	1524	14.1	1048	15401	1986	14.7	856	11055	200	12.9	939.3	13127	837	14.0	109	5965	120.1%
GB	SF-Rest									262	4165.6	28.5	15.9	262.4	4166	29	15.9			
GB	SF-VIMS	765.7	6747	124	8.8					622	9393.5	145	15.1	693.8	8070	95	11.6	472	8820	-8.5%
GB	NLSAccN	44.5	1725	223	38.7	101	3,990	775	39.4					72.8	2858	403	39.3	176	4619	-38.1%
GB	NLSAccS-Deep	3613	38606	8270	10.7	2544	34918	6595	13.7	2591	29496	1020	11.4	2916.0	34340	3542	11.8	3544	44995	-23.7%
GB	NLS-W	11.4	255	41	22.6									11.4	255	41	22.6	200	3706	-93.1%
GB	NF													*109.0*	*1434*		*13.2*	109	1434	
GB	GSC	241.8	6056	851	25.0	329	6077	2917	18.5					285.4	6067	1519	21.3	149	8056	-24.7%
GB	GSC-45	0.3	13	6	43.3									0.3	13	6	43.3			
GB	**TOTAL**	**7100.4**	**94358**	**9704**	**13.3**									**7012.1**	**102596**	**4441**	**14.6**	**6904**	**111219**	**-7.8%**
MAB	BI	25.3	809	118	32.0				*removed HabCam data*					25.3	809	118	32.0	130	1450	-44.2%
MAB	LI	294.9	6151	338	20.9					557	11228	2359	20.2	426.0	8690	1192	20.4	1079	9512	-8.6%
MAB	NYB	256.4	4007	230	15.6					388	6905	924	17.8	322.2	5456	476	16.9	603	8613	-36.7%
MAB	MA inshore	10.1	309	46	30.6									10.1	309	46	30.6	105	1163	-73.4%
MAB	HCSAA	174.7	4095	233	23.4					302	7949	847	26.4	238.2	6022	439	25.3	586	9393	-35.9%
MAB	ET Open	265.7	7811	370	29.4	453	12469	1171	27.6	393	10771	881	27.4	370.4	10350	504	27.9	663	20145	-48.6%
MAB	ET Flex	113.9	3208	283	28.2	262	8143	1127	31.1	242.4	5697	246	23.5	206.0	5683	396	27.6	1359	14990	-62.1%
MAB	DMV	37.0	352	61	9.5									37.0	352	61	9.5	304	799	-55.9%
MAB	VIR	16.1	71	11	4.4									16.1	71	11	4.4	50	110	-35.5%
MAB	**TOTAL**	**1194.1**	**26813**	**677**	**22.5**									**1651.2**	**37742**	**1507**	**22.9**	**4879**	**66175**	**-43.0%**
TOTAL	**TOTAL**	**8295**	**121171**	**9727**	**14.6**									**8663**	**140338**	**4690**	**16.2**	**11783**	**177394**	**-20.9%**

Initial Discussion on SAMS Base Run

The PDT discussed options for a base SAMS run that could be used as the starting point for 2021 specifications. Over the course of the October meetings, there were several comments focused on the outlook for CAII-SW; this area is dominated by a single year class (mean SH around 85 mm) which grew faster than expected between 2019 and 2020. Several on the PDT noted the trade-off of fishing in CAII-SW in 2021 versus keeping it closed until 2022 – though these scallops may be harvestable size in 2021 they will be mostly 10-20 count, whereas another year of growth would mean these scallops would likely be U10s in 2022. Dr. Hart noted several times that the biomass in CAII-SW plus a year of growth would support a viable fishing opportunity in this area in both 2021 and 2022. The PDT will continue this discussion after seeing results of the recommended base run (e.g., projected F in CAII-SW)(Table 4). Though not encompassed in the base run recommendation, the PDT also discussed the potential of turning the CAI and NLS-West SAMS areas into open bottom due to these areas not having enough biomass to support rotational fishing and no incoming year classes that require protection.

Table 4 – The default (No Action), Status Quo, and PDT recommended base run for initializing the SAMS model.

	Default	Status Quo	PDT BASE Run 1
Open area F	**TBD, 18 DAS**	**F=0.33**	**TBD, 24 DAS**
FT LA trip limit	**18,000**	**18,000**	**18,000**
CL1-Access	CLOSED	1/2 Trip (Flex)	CLOSED
CL1-Sliver	CLOSED		CLOSED
CL1-South	CLOSED	CLOSED	CLOSED
CL2-North (HAPC)	CLOSED	CLOSED	CLOSED
CL2-SW	CLOSED	CLOSED	1 AA trip
CL2-SE	CLOSED	1 AA Trip	CLOSED
CL2-Ext	CLOSED	CLOSED	CLOSED
NLS-North	CLOSED	1/2 Trip	CLOSED
NLS-West	CLOSED	CLOSED	CLOSED
NLS-South-Deep	CLOSED	1 AA Trip	1 AA Trip
NF	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
GSC	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
SF	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
BI	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
LI	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
NYB	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
MAB-Nearshore	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM
HCS	1 trip MAAA	2 AA trips MAAA	2 AA trips MAAA
ET Open			
ET Flex			
DMV	OPEN BOTTOM	OPEN BOTTOM	OPEN BOTTOM

State Waters Landings Discussion

The Scallop PDT reviewed the FY 2019 Scallop Year End report on October 22, 2022 and October 28, 2020. During these discussions Council staff explained that the year-end scallop catch report is prepared by NOAA Fisheries on an annual basis and is an indicator of the performance of the federal fishery

relative to OFL, ABC, and ACLs. One reason for reviewing this information is that an estimate of state waters landings is included in each specification package. The state waters catch is accounted for in the ACL flowchart as part of the total OFL, as are removals from the NGOM management area. In the past the PDT has recommended using an average of the three most recent years of available data. State waters landings data from the past nine years, along with catch estimates from recent actions are shown in the following tables.

- State waters landings estimates from harvester reports in the state of Maine suggest that 2019 calendar year landing from were over 480,000 pounds. Scallop landings reported during the first three months to ME DMR were ~307,000 pounds. The PDT also reviewed Maine state catch data at https://www.maine.gov/dmr/commercial-fishing/landings/documents/scallop.table.pdf

- There was a Massachusetts state waters fishery in Ipswich Bay in 2018 and 2019. Staff from DMF are planning to tabulate landings from 2019 and report back to the PDT.

- GARFO plans to revisit the state waters estimate of 273,146, and report out on a new value at an upcoming meeting. The breakdown of the initial 2019 estimate was 89% from Maine, and 11% from Massachusetts.

State waters catch estimates from the last nine year-end reports:

Fishing Year	Estimated Total Landings (lbs)
2011	941,791
2012	654,966
2013	271,568
2014	622,745
2015	536,618
2016	766,566
2017	684,637
2018	733,975
2019	273,146
Last 3 Year Average	**563,919**

Comparison of State Waters Estimate used in FW30 and FW32 to 3-year average (lbs):

Framework 30 estimate	662,607
Framework 32 estimate	728,393
3-year average	563,919

Update on 2020 Observer Coverage

Tyler Staples (NEFOP) provided a brief update on observer coverage in the scallop fishery for FY2020. NOAA Fisheries waived the requirement to carry observers from March 20-August 14, 2020 as a result of COVID-19. Since August 14th, observers have been redeployed on scallop vessels; however, observed sea days remain far lower than target coverage for all trip types in 2020 (i.e., open, access area, for both LA and LAGC vessels). It was noted that the daily compensation rate for observed scallop trips is based on projections of LPUE and that realized LPUE has been lower than expected during the past several months (i.e., since observers have been deployed on scallop vessels). Also, when selected to carry an observer, some vessels have been switching their declaration from an open area trip to an access area trip – this could be an indication that the compensation rate is too low for the open area (i.e., catch rates not high enough to offset the cost of the observer). Staff of GARFO and NEFSC noted that NOAA Fisheries is able to adjust the daily compensation rate mid-season if the initial estimate for the rate appears to be inaccurate. Considering that observer set-aside utilization has been low in FY2020 as a result of no observers being deployed for most of the fishing year, and the importance of gathering as much observer data as possible for the remainder of the year, the PDT recommended that GARFO/NEFSC evaluate the compensation rate for open and access area trips.

Discussion on VIMS Selectivity Work

On October 28, 2020 the Scallop PDT received a presentation from Ms. Sally Roman (VIMS) on a recently published paper comparing the selectivity of the New Bedford style dredge which is characterized by several bale bars, and the turtle deflector dredge developed by the Coonamessett Farm Foundation which has one bale bar running from the gooseneck to the cutting bar (Rudders and Roman 2019). The research estimated the selectivity profile of the Coonamessett Farm Turtle Deflector Dredge (CFTD) and New Bedford Style Dredges (Figure 2), and compared results to New Bedford selectivity profile estimated by Yochum and DuPaul (2008). The study was conducted during resource surveys across the Mid-Atlantic and on Georges Bank, and tow speeds of ~3 knots. Results suggest that when towed at similar speeds, the New Bedford style dredge is more likely to select for larger scallops. Council staff examined VTR data and reported that in 2017 and 2020, around 25% of the LA access area trips to CAII used a TDD.

Figure 2 - Retention probability of the TDD and NBD at varying shell heights (Roman and Rudders, 2019).

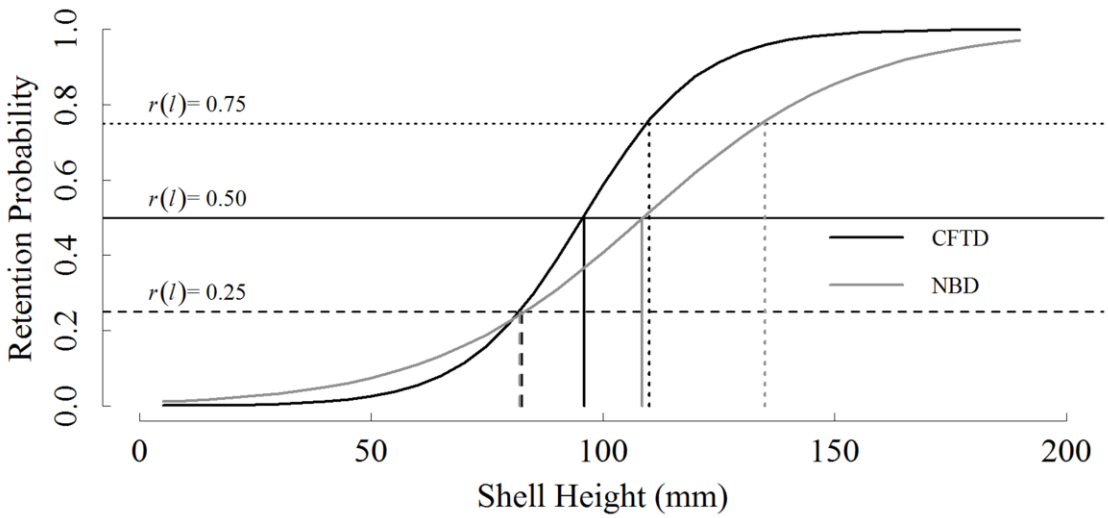


Table 5 - Dredge style reported on LA AA trips to CAII in 2017 and 2020.

Dredge Type	STANDARD	TURTLE	other	Grand Total
CAII trips	265	94	11	370
	72%	25%	3%	100%

Results (presented to PDT):

- Turtle dredge l_{50} of 98.2 mm is significantly lower than the updated New Bedford dredge l_{50} of 107.4 mm
- Turtle dredge l_{50} is not significantly lower than the Yochum and DuPaul l_{50} of 100.1 mm but CIs barley overlap and there is a shift in the selectivity curve to left indicating the Turtle dredge has a higher probability of catching smaller scallops
- This has been documented by Smolowitz et al. (2012b) & Davis et al. (2016)
- Most likely a result of operational changes (tow speed) (Davis et al. 2016)
- & change in hydrodynamic flow (Smolowitz et al. 2012a)
- Results indicate Turtle dredge selectivity profile differs from the New Bedford dredge
- Updated New Bedford dredge selectivity shows slight changes compared to Yochum and DuPaul (2008)

- *Pooled GB l_{50} is greater, SR* is wider, retention probability for largest scallops is lower & higher for smaller scallops
- *Wider SR* & higher retention probability for small scallops probably related to NL South Deep scallops
- Large catch volumes can reduce selectivity (Yochum and DuPaul, 2008; Polet, 2000; Herrmann, 2005)

Discussion:

- Council staff asked the PDT if, based on the Roman and Rudders (2019) analysis, using the NBD could be a potential management tool to select for larger scallops. The group felt that the difference in selectivity between the two dredges could be examined further using fishery data collected by observers. The PDT did not support considering any gear changes or management measures for Framework 33.
- The PDT noted that the fishery selectivity is a combination of many things, includes sorting on deck. The dredge is not a precise piece of equipment when it comes to selecting for a specific size scallop. The group did note that the dredge is a tool that can be used to help improve yield, such as the adoption of the 4" ring.
- Other considerations for evaluating dredge selectivity include the speed at which the dredge is towed. The PDT also noted that bycatch should be considered when evaluating any sort of gear requirement.