Scallop Survey Group Call
Wednesday, September 2, 2020
Summary

Attendance: Jonathon Peros & Sam Asci (Council Staff), Kyle Cassidy (SMAST), Dr. Dave Rudders (VIMS), Dr. Liese Siemann, (Coonamessett Farm Foundation), Dr. Dvora Hart & Dr. Jui-Han Chang (NEFSC).

Members of groups who conducted dedicated scallop surveys in 2020 participated in an hour and twenty-minute call on Wednesday, September 2, 2020. The call focused on preparation for the upcoming meeting to review the results of the 2020 surveys.

Requests/homework for Survey Groups:

1. VIMS provide fine-scale SHMW estimates for NLS to Council staff and other survey groups by September 24th, 2020. (Update paper from last year)
2. Provide survey data to NEFSC and Council staff by October 1, 2020.
3. Survey short reports are due the week of October 5th, 2020.
4. Prepare a roughly 20-minute presentation for the PDT summarizing survey results and send to Council staff ahead of the PDT survey data meeting.

Key Points:

1. **Data Delivery:** All survey groups agreed to data delivery deadlines and to use a minimum shell-height cutoff of 40mm for abundance and biomass estimates.
    a. The deadline for Georges Bank and Mid-Atlantic data is October 1, 2020.
    b. The deadline for Gulf of Maine survey data is October 15, 2020 with some flexibility because this data is not currently used in the SAMS model but will be used later in the specifications process to set catch limits in the NGOM.
2. **2020 Survey Short Reports:** A summary of the survey data will be due to Council staff a week before the PDT meeting. The template has been updated with the 2020 SAMS areas and has been shared with all survey partners.
    a. For survey abundance and biomass estimates, a minimum shell-height cutoff at 40mm will be used to provide consistency in what is being presented. The smallest scallops that are modeled in the SAMS model are 40mm.
3. **Presentations** should be ~20 minutes, with 5-10 minutes for questions. Send presentations to Council staff before the meeting, we will click through your slides for you.
    a. Survey presentations to start the discussions. Initial focus will be on Georges Bank and the Mid-Atlantic. NGOM results can be reviewed at a later meeting, as this data is not currently used in CASA or SAMS. Order of presentations:
        1. VIMS (Sally)
        2. SMAST (Kevin)
        3. CFF (Tasha) – Note: CFF will be presenting separate biomass calculations from HabCam data. These estimates will be used to help interpret biomass estimates.
        4. NEFSC (Dvora) – Present the 2020 projections for SAMS areas that were not surveyed in 2020 (i.e., CAI, NF, CAIIN), present biomass estimates from HabCam data using the SARC 65 methods, and combined survey estimates. Complete PDT tasking of 2020 projections. The combined survey

estimates (dredge, drop camera, HabCam) will use the HabCam biomass calculations from the NEFSC.

SH/MW Sensitivity Analyses: *VIMS agreed to update the SH/MW analyses that they have provided to the PDT in the past. Survey groups agreed to provide a comparison of NLS biomass estimates using SARC 65 and VIMS 2016-2020 SH/MW estimates for the upcoming meeting. (See*

4. Table 4). This data will be provided in a new table in the survey short report.
5. **Dredge efficiency** in high density areas is likely to be an issue again this year in the NLS-South. VIMS agreed to provide this sensitivity analyses (i.e., efficiency reduced by 0.3) in their short report.

Observations from the 2020 Survey Season – Potential for follow-up discussion at the PDT.

1. **Recruitment:** Preliminary reports suggest some recruitment was observed in 2020.
    a. **Southeast Parts and Southern Flank:** CFF and VIMS reported observing recruitment in their 2020 surveys, with high densities of small scallops in the eastern part of Closed Area II access area that is currently open to fishing.
    b. **Seed in the Mid-Atlantic:** CFF and VIMS reported seeing seed in the Long Island and New York Bight SAMS area. Seed reported near the Texas Tower in the LI SAMS area.
    c. **Discussion about recruitment at PDT:** This year, groups are being asked to identify areas where their surveys observed pre-recruits (<35mm) using a polygon. See example below:

EXAMPLE: The 2019 drop camera survey saw what looks like patch of recruitment in the ET. A red polygon is drawn around this area.

Please provide Council staff with the coordinates of general areas that hold roughly 1 pre-recruit per meter squared. (lat/lon)

The goal is to overlay where these areas with recruitment are for each survey.

Feel free to add this to your short reports.

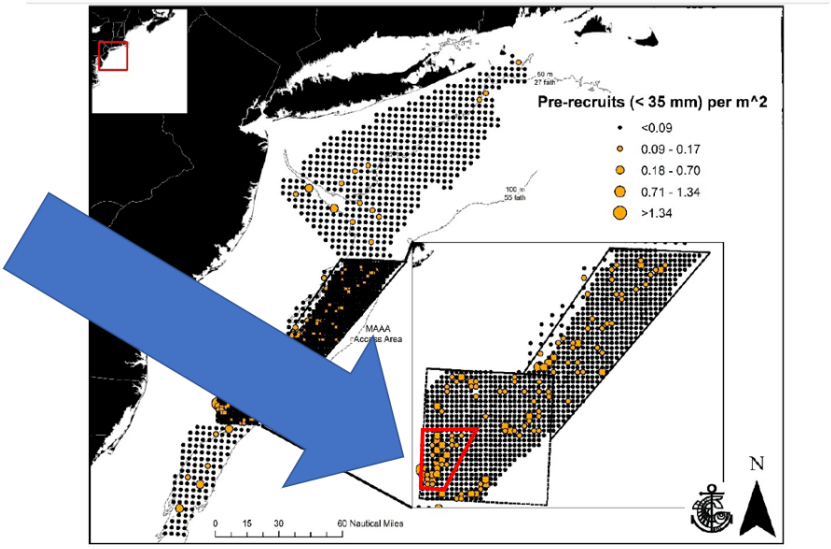


Figure 4. Pre-recruit scallop density at 2019 SMAST drop camera survey stations on Georges Bank and the Mid-Atlantic based on digital still camera observations.

Shell-heigh meat-weight for 2020 biomass estimates

SARC 65 SH/MW Equations (Same from 2018 & 2019): The SARC 65 benchmark assessment developed shell-height to meat-weight equations for the Mid-Atlantic and Georges Bank, as well as a separate equation for the slow-growing scallops in the deep water of the Nantucket Lightship area ("Peter Pan scallops", along the 70 meter depth contour).

Survey groups should develop biomass estimates using following the SARC 65 questions:

- NLS-South: For the potion of the Nantucket Lightship South Access Area, survey groups should use the following equation:

$$W=\exp(-11.84 + 3.167*\ln(\text{shell height}))$$

- Georges Bank and the Mid-Atlantic—Survey groups should use the following equations worked up by Dr. Dave Bethoney and Sally Roman for the rest of Georges Bank and the Mid-Atlantic:

  Mid-Atlantic:

  $$W = \exp(-9.48 + 2.51*\ln(\text{shell height}) + -0.1743 + -0.059094 + -0.0033*\text{depth} + 0.021*\text{latitude} + -0.031*\text{Clop} + 0.00525*(\ln(\text{shell height})*21) + -0.000065 *(21*\text{depth}))$$

  Georges Bank:

  $$W = \exp(-6.69 + 2.878*\ln(\text{shell height}) + -0.0073*\text{depth} + -0.073*\text{latitude} + 1.28*\text{Clop} + -0.25*(\ln(\text{shell height})*\text{Clop}))$$

  Mday is 21
  Shell height is in mm
  Depth is in m
  Latitude is in decimal degrees
  Clop covariate is 1 in the former groundfish closed areas or access areas and 0 in the open areas (includes NLS-EXT[1] and CAII-EXT)

VIMS 2016 – 2020 SH/MW Equations: Survey groups should also use finer-scale SH/MW parameters provided by VIMS (forthcoming) to develop biomass estimates in the Nantucket Lightship. To develop alternative biomass estimates for Nantucket Lightship areas, survey groups should use data in Table 2 below. A full SH/MW analysis of the Nantucket Lightship will be included in PDT meeting materials.

[1] Note that the NLS-EXT SAMS area was dissolved into the GSC SAMS area for 2019.

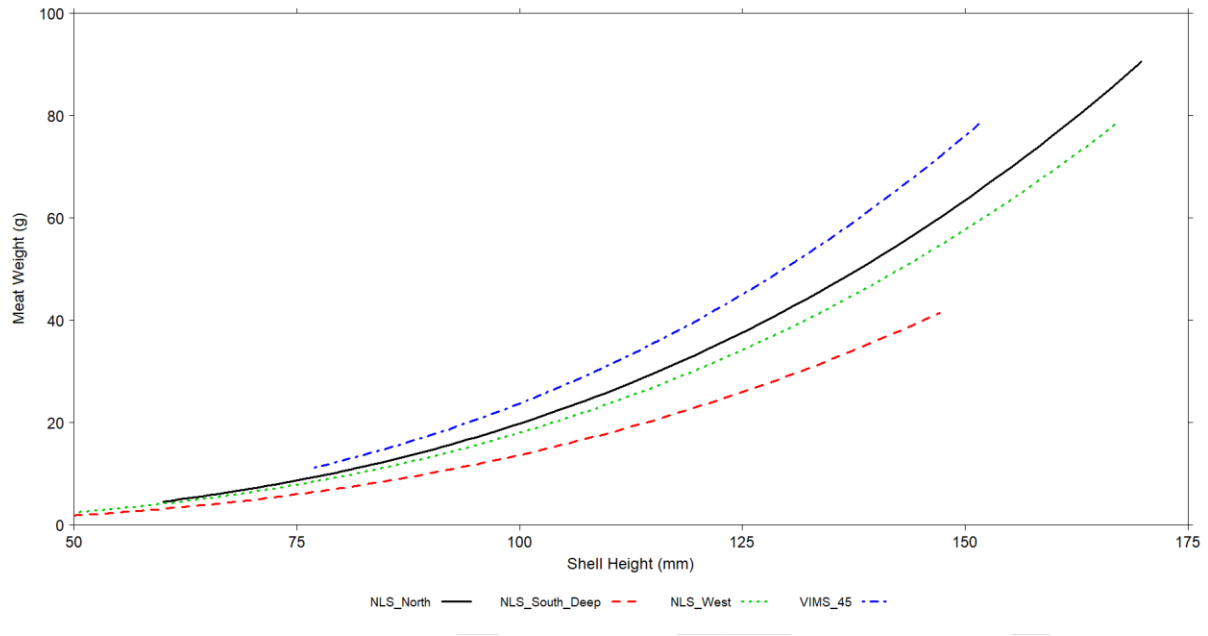
Table 1 – SHMW models for the 2016 - 2020 VIMS NL survey data. Bold variables indicate significance. Model in red was selected as the preferred model. The number of parameters (K), AIC, Delta_AIC, AIC weight (AICWt), and Deviance explained are also included).

Modnames	Parameters	K	AIC	Delta_AIC	AICWt	Deviance
m4	**~1 + Shell Height + SAMS Area + Depth + Latitude**	9	44,086.29	0	0.76	74.23
m1	~1 + **Shell Height*Depth + SAMS Area + Latitude**	10	44,088.80	2.51	0.22	74.22
m3	~1 + **Shell Height + SAMS Area + Depth**	8	44,094.13	7.83	0.02	74.22
m2	~1 + **Shell Height*Depth + SAMS Area**	9	44,097.46	11.17	0	74.2
m5	~1 + **Shell Height + SAMS Area + Latitude**	8	44,097.62	11.32	0	74.24
null	~1	3	58,821.82	10,734.82	0	

Table 2 – Parameter estimates for model m4 from Table 1.

Parameter	Parameter Estimate
Intercept	-24.04
log Shell Height	2.87
SAMS_AreasNLS_South_Deep	-0.27
SAMS_AreasNLS_West	-0.08
SAMS_AreasVIMS_45	0.02
log Depth	-0.25
Latitude	0.37

Figure 1 - Predicted SHMW relationships by SAMS Area for the NL using model m4 from Table2.



Biomass Estimates for October 2020 PDT Meeting:

- **Comparison of biomass estimates in the NLS Region.** Survey groups (VIMS, SMAST, CFF) agreed to prepare two sets of biomass estimates for all Nantucket Lightship areas using the SARC 65 and VIMS 2016-2020 SH/MW parameters as a sensitivity analysis:

Table 3 - Estimation areas in the Nantucket Lightship using SARC 65 and VIMS 2016 - 2020 data.

	SARC 65	VIMS 2016-2020 (see Table 2)
NLS-N		
NLS-South-Deep	Note: use specific equation, which is provided above.	
NLS-W		

In the survey short report, survey groups should report estimates using the SARC 65 SH/MW equations for all areas, except the NLS, where the VIMS 2016-2020 data should be used. See

- Table 4. The PDT will discuss the biomass estimates for this region, and make a decision as a group about which SH/MW parameters are appropriate to use for determining final 2020 estimates.

Table 4 - SH./MW equations to be used in the survey short report.

GB	**SHMW equation**
CL1-Access	SARC 65
CL1-Sliver	SARC 65
CL1-South	SARC 65
CL2-North	SARC 65
CL2-Southeast	SARC 65
CLS-Southwest	SARC 65
CL2-Ext	SARC 65
NLS-North	SARC 65
NLS-South-Deep	SARC 65 specific equation
NLS-West	SARC 65
NF	SARC 65
GSC	SARC 65
SF	SARC 65
MidAtlantic	
BI	SARC 65
LI	SARC 65
NYB	SARC 65
MAB-Nearshore	SARC 65
HCS	SARC 65
ET Open	SARC 65
ET Flex	SARC 65
DMV	SARC 65

Dredge Efficiency in High Density Areas:

The group noted the potential for continued divergence in dredge and optical estimates in high-density areas of the Nantucket Lightship (i.e. NLS-S-Deep) and felt that adjusting dredge efficiency by factor of 3 (SARC 65) would be a reasonable starting point for this discussion. VIMS agreed to provide a sensitivity in their short report using a reduced dredge efficiency of 0.13. No new analyses related to dredge efficiency are expected at the upcoming PDT meeting.

[Dredge surveys – compare biomass estimates in high density areas using a reduced dredge efficiency]

	No adjustment		Reduced efficiency (*0.13)	
	NumMill	BiomassMT	NumMill	BiomassMT
NLS-South				
Other areas of concern?				

Bycatch Data

The group briefly discussed options for estimating yellowtail and windowpane bycatch on Georges Bank, and identified the seasonal bycatch survey run by CFF as a potential source of information. Since the survey group call, CFF suggested that they could provide:

1. Yellowtail and windowpane flounder data from this past year's bycatch project with the cover net - relative abundance and distribution data from each trip and size data - for the cover net and control commercial dredge
2. Yellowtail and windowpane flounder data for CAIIS from the bycatch projects that have included this area since 2011 or since we have continuously been in that area since 2016 (we weren't in that area for the 2015-2016 project years).

Next steps on bycatch issues for FW33: Council staff will summarize the PDT's data needs, and circulate this list for comments.