

## Scallop Survey Group – Data Prep Information

### Tuesday, August 3, 2021 – Version 1

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[Files can be accessed at this link.](#)

#### Requests/homework for Survey Groups:

1. Provide survey data to NEFSC and Council staff by August 16, 2021.
2. Participate in a survey partner call on August 18, 2021.
3. Survey short reports are due by COB Friday, August 27, 2021.
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.

#### Meeting Outlook

1. Participate in a survey partner call on August 18, 2021.
2. First PDT Data Meeting - Wednesday, September 1 (webinar morning - 10am start)
3. Second PDT Data Meeting - Thursday, September 2 (webinar)
4. Third PDT Data Meeting - Wednesday, September 8 (webinar – morning))
5. Scallop AP and Committee Meetings – September 21 & 22, 2020 (webinar)
6. Council Meeting - September 28th - 30th
7. SSC Meeting - Wednesday, October 13

#### Key Points:

##### 1. Data Delivery:

- a. The deadline for ALL data (Georges Bank, Mid-Atlantic, and Gulf of Maine) is August 16, 2021. Data from the NGOM will be used in calculations of the OFL, ABC, and ACL, in addition to the NGOM TAL, so it is imperative that all information is available as we begin the specifications process.
- b. The minimum shell-height cutoff for abundance and biomass estimates will continue to be 40mm.

##### 2. 2021 Survey Short Reports: The survey short report is due to Council staff by COB Friday, August 27, 2021.

- a. The template will be updated with the 2021 SAMS areas and will be shared with all survey partners. We should have this over to you next week.
- b. For survey abundance and biomass estimates, a minimum shell-height cutoff at 40 mm 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 for the September 1, PDT meeting: 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. The meeting is expected to start at 10am.

- a. Survey presentations to start the discussions. 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 data from Center survey, and combined survey estimates. The combined survey estimates (dredge, drop camera, HabCam) will use the HabCam biomass calculations from the NEFSC.

**4. New SAMS areas and NGOM Stellwagen Area:**

- a. The GSC will be split into three areas this year because of a discrepancy in survey coverage. [New SAMS areas and a map of the HabCam coverage can be found at this link.](#) There is full coverage of the area for the dredge and drop camera, but HabCam missed the “middle” part of the area, so we now have “North”, “Middle” and “South”. The PDT will develop combined estimates for each part of the GSC.
- b. DMR and SMAST have agreed to provide an estimate from the same area of Stellwagen Bank in the NGOM. Their survey domains did not match, and the Council needs an estimate from the same area to be able to compare and average the two. This is explained in more detail below, and the shp file is available using the link above.

**5. SH/MW Equations:**

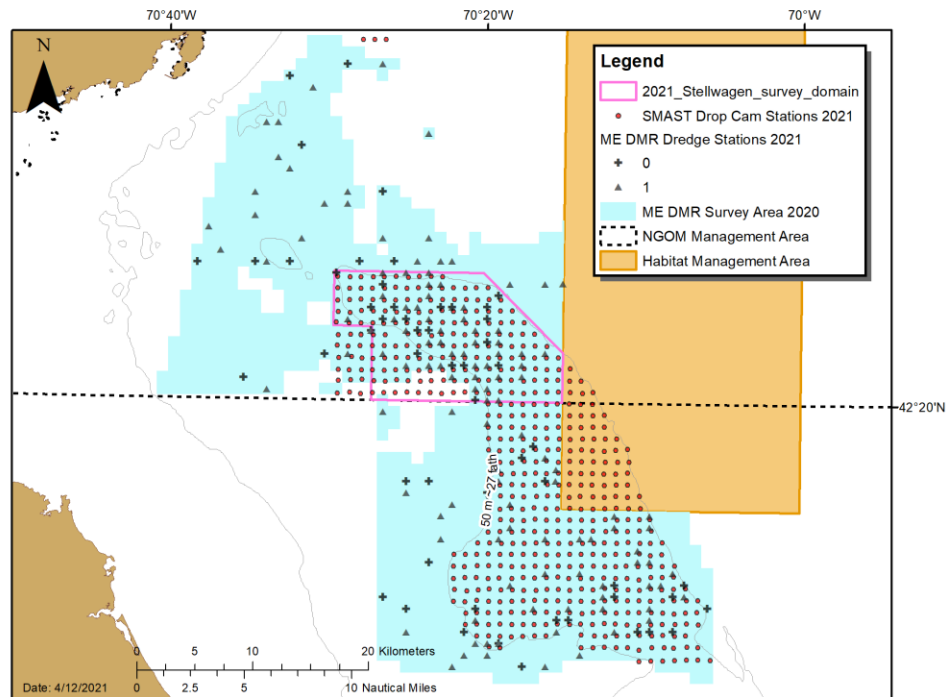
- a. Bottom line, no changes from last year. See Table 2 for which SH/MW to use for each SAMS area.
- b. For Georges Bank and the Mid-Atlantic, we will continue to use the SH/MW equations from SARC 65, which are provided on page 4.
- c. For the NLS-S area, we will use the special SH/MW equation from SARC 65. Council staff have also asked VIMS to develop an area specific SH/MW equation for the NLS-S (see #6).
- d. For the NGOM and GOM area, we will use the Hart 2020 SH/MW equation that is provided below. SMAST provided this equation in excel form as well.

*SH/MW Sensitivity Analyses for NLS-South: VIMS agreed to update the SH/MW analyses that they have provided to the PDT in the past for all areas of the NLS region. We are most interested in NLS-South for FY2022. Survey groups should provide a comparison of NLS-S biomass estimates using SARC 65 and VIMS 2016-2021 SH/MW estimates for the upcoming meeting on August 18, 2021. (See*

6. Table 2). This data will be provided in a new table in the survey short report. **Dredge efficiency** in high density areas may 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.

### Estimating Abundance and Biomass for Stellwagen Bank in the NGOM

1. The Council/PDT need estimates from the *same area of Stellwagen Bank inside the NGOM* from both survey groups (SMAST and ME DMR/UMaine). The process for combining estimates will be the same as we use for the rest of the resource when we have multiple surveys for the same area. We will be taking an average of the available data, which will be used in the forward projection.
2. We are looking for ME DMR/UMaine and SMAST to provide estimates of abundance, biomass, SE, mean meat weight, average shell height, and density for the area outlined in pink below (these are all of the fields in the survey short report). Sam Ascii has circulated the shape file with these boundaries to both survey groups. This area was informed by the 2019 and 2020 surveys of Stellwagen, several years of VMS data, and is where the majority of fishing in the NGOM is likely to take place in FY2022. SMAST, DMR, NEFSC, and Council staff discussed this area in April of 2021.



a.

3. Survey groups can **post-stratify to generate an estimate for the area in pink**. The same goes for your coverage south of 42 20' (if needed). While it is not ideal to post-stratify, we do this in other parts of the resource when SAMS areas change. The PDT can discuss variance estimates in the fall when we review the data. From the first survey group call on April 1, it was clear that aligning the drop camera and the dredge after the fact was not going to involve or require a statistical approach.
4. We don't have set survey strata in the NGOM, but we are trying to move in that direction so that we have defined survey areas/SAMS areas for generating estimates for management in the future.

Shell-height meat-weight for 2021 biomass estimates

**SARC 65 SH/MW Equations (Same from 2018, 2019, 2020):** 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 portion 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<sup>1</sup> and CAII-EXT)

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<sup>1</sup> Note that the NLS-EXT SAMS area was dissolved into the GSC SAMS area for 2019.

**Hart 2020 Gulf of Maine SH/MW Equation:**

*Hart SH/MW equation with covariates:*

- New SH/MW equation, based on 2019 dredge survey:

$$W = \exp(-281.91 + 72.42 \ln L - 0.212 \ln D + (71.13 - 18.16 \ln L) \ln h)$$

where  $h$  is shell height (mm),  $L$  is latitude (deg),  $D$  is depth (m), and  $W$  is meat weight (g).

*Covariates 2019 ME DMR dredge survey (excel formula from SMAST)*

$$MW = \text{EXP}(-281.905 + 72.415 * \text{LN}(\text{Counts!SS\$2}) - (0.212 * \text{LN}(\text{Counts!Q\$2})) + (71.13 - (18.16 * \text{LN}(\text{Counts!SS\$2}))) * \text{LN}(G4)) / 1000$$

**VIMS 2016 – 2021 SH/MW Equation for NLS-South:**

Survey groups should also use finer-scale SH/MW parameters provided by VIMS to develop biomass estimates in the Nantucket Lightship South. A full SH/MW analysis of the Nantucket Lightship has been included on the OneDrive site. Here is the equation you can use for the sensitivity.

For the NLS-South

$$W = \exp(-22.64 + (2.87 * \ln(\text{shellheight})) + (-0.23 * \ln(\text{depth})) + (0.33 * \text{latitude}) + -0.24)$$

**Biomass Estimates for Short Reports/September 1, 2021 PDT Meeting:**

- **Comparison of biomass estimates in the NLS-South.** 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 1 - Estimation areas in the Nantucket Lightship using SARC 65 and VIMS 2016 - 2021 data.*

	SARC 65 special equation	
NLS-South-Deep	Note: use specific equation, which is provided above.	

***SH/MW in the survey short report:*** survey groups should report estimates using the SARC 65 SH/MW equations for all areas, and the specific equation for the NLS-South. See

- Table 2. The PDT will discuss the biomass and abundance estimates, and make a decision as a group about which SH/MW parameters are appropriate to use for determining final 2021 estimates.

Table 2 - SH/MW equations to be used in the survey short report.

<b>GB</b>	<b>SHMW equation for the short report</b>	<b>Sensitivity</b>
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	SARC 65 specific equation	VIMS 16-21 SH/MW
NLS-West	SARC 65	
NF	SARC 65	
GSC-North	SARC 65	
GSC-Middle	SARC 65	
GSC-South	SARC 65	
SF	SARC 65	
<b>MidAtlantic</b>		
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	
<b>Gulf of Maine</b>		
Stellwagen – NGOM – Agreed to Area	Hart 2020	
Ipswich - NGOM	Hart 2020	
Ipswich – MA State	Hart 2020	
Jeffreys - NGOM	Hart 2020	
Platts - NGOM	Hart 2020	
GOM – South 42 20’	Hart 2020	
WGOM Closure	Hart 2020	

**Dredge Efficiency in High Density Areas:**

While the NLS-S is getting fished, there is potential for continued divergence in dredge and optical estimates in high-density areas of the Nantucket Lightship (i.e. NLS-S-Deep) Conducting a sensitivity by adjusting dredge efficiency by factor of 3 (SARC 65) would be a reasonable starting point for this discussion. VIMS agreed to provide this 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. Council staff will work with VIMS to determine if the sensitivity can be completed by the August 18, 2020 survey group 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?				

**Potential for follow-up discussion at the PDT.**

1. **Recruitment:** Preliminary reports suggest some recruitment was observed in 2020. Interest in following up on these observations:
  - a. **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. The PDT has discussed looking into protecting aggregations of smaller scallops in these areas for 2022.
  - b. **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.
  - c. **Nantucket Lightship West:** From the 2021 surveys, reports of some seed in this area from dredge and HabCam surveys.