New England Fishery Management Council

MEETING SUMMARY

Scallop Plan Development Team
September 1, 2, and 8, 2021
Webinar Meeting

The Scallop PDT met via webinar on September 1, 2, and 8, 2021 to: 1) review results from the 2021 scallop surveys, 2) discuss survey results and data treatment, 3) discuss 2022 work priorities, and 4) discuss other business.

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, Sharon Benjamin, Danielle Palmer, and Jessica Blaylock. There were approximately 25 members of the public listening in on the call for all three meetings.

Review of 2021 Scallop Surveys

Following a review of the timeline for development of 2022/2023 scallop fishery specifications (Framework 34), the PDT received presentations on findings from the 2021 scallop surveys. Presentations and short reports from each scallop survey group can be accessed at the following link: https://www.nefmc.org/calendar/sep-1-2021-scallop-plan-development-team-webinar

The following sections summarize questions and discussion points raised following each presentation.

Virginia Institute of Marine Science (VIMS) Dredge Survey of the Mid-Atlantic, Closed Area I, Nantucket Lightship Region, and Eastern Georges Bank – Sally Roman

- A comparison of length frequencies from the VIMS survey dredge in the Nantucket Lightship South (Figure 1) suggested that the mean shell height from this area was similar between the 2020 and 2021 surveys (~5mm). This could be a result of limited growth, but could also be a signal of a fishing effect in the area, with larger scallops being harvested from the area over the past year.
- Pre-recruits were observed in the Nantucket Lightship-West. This year class of scallops does not appear to be as expansive as the 2013 year class. The PDT agreed that these pre-recruits are too small to accurately quantify, and that a clearer signal of this year class should be evident in the 2022 surveys.
- VIMS noted observing the incoming NLS-West year class of juveniles up to the western boundary of the SAMS area – the PDT was interested in seeing if this year class extends

farther west and to the south of the surveyed area. It was also noted that the area west of the NLS-West overlaps with wind development areas.

School for Marine Science and Technology (SMAST) Drop Camera Survey of Georges Bank and the Gulf of Maine – Kyle Cassidy

- Related to the spread of pre-recruits observed in the NLS-West, there was another question around whether this year class extends west of the surveyed area. Mr. Cassidy noted that SMAST has been funded by Vineyard Wind to survey the area west of the NLS-West that overlaps with wind development areas – SMAST staff will reach out to Vineyard Wind for permission if that data can be shared when the fall 2021 survey is complete.
- There was some brief discussion on annotation methods and the continued development of automated annotation technology for optical surveys. Scallop survey groups will continue using the annotation methods reviewed and approved during the 2018 scallop benchmark assessment until automated annotation methods are peer-reviewed in the future.

Coonamessett Farm Foundation (CFF) HabCam Survey of the Mid-Atlantic, Nantucket Lightship South, and eastern Georges Bank – Tasha O'Hara

- There was some general discussion around how HabCam track lines are determined for the CFF survey domain. For broadscale surveys, such as in the Mid-Atlantic, track lines are spaced 4 to 5 nautical miles apart. Tracks are conducted in a systematic manner with transects alternating between "long" and "short" legs – this approach was based on peer-reviewed work performed by Dr. Hart several years prior. Longer transects allow for the survey to capture marginal habitat where not many scallops are expected to be found, and shorter transects focus on suitable scallop habitat where scallops are denser – alternating between the two allows for more comprehensive estimates within the survey domain.
- It was pointed out that the CFF and NEFSC HabCam annotation rates differ – in 2021, CFF accomplished an annotation rate of 1:400 images and NEFSC completed 1:50 images. In the past, 1:400 annotation rate has been enough to support geostatistical modeling; however, due to the low abundance of scallops observed in the Elephant Trunk and Delmarva, a geostatistical model could not be completed for 2021 for these areas. CFF plans to account for the additional resources needed in future proposals to increase the HabCam annotation rate.
- Council staff suggested that the annotation rates and other survey related topics be addressed through the ongoing work of the Scallop Survey Working Group.

Maine Department of Marine Resources/University of Maine Dredge Survey of Stellwagen Bank – Amber Lisi, Cameron Hodgdon

There were no questions or discussion on the presentation.

Northeast Fisheries Science Center (NEFSC) HabCam and Dredge Survey of Georges Bank – Dvora Hart

- The NEFSC dredge survey of Closed Area II North (CAII HAPC) observed many scallops that were covered in growth. Larger, older scallops located in the deeper part of the survey area in the HAPC tended to have more growth on their shells but there were also smaller scallops (3 year old's) in shallower water that were covered in barnacles.

Review of Combined Survey Estimates and Data Treatment Discussion

Following presentations from the scallop survey groups, the PDT reviewed the combined survey estimates for each SAMS area. The following summarizes discussion on survey estimates and data treatment issues:

- Survey data were collected outside of SAMS areas and not in the Northern Gulf of Maine (NGOM) Management Area (i.e., drop camera estimates for the outer Cape and Southern Stellwagen Bank). Like in past years, the PDT recommended to not include these estimates in projection model for 2022. It was noted that there is an on-going effort to re-stratify scallop survey strata and the PDT suggested that this would be the appropriate place to discuss folding the outer Cape and southern Stellwagen Bank into the NEFSC survey area/projection model.

- A comparison of the combined survey estimates for 2021 and projections for 2021 (from Framework 33) suggested that projections for 2021 were overestimated for both Georges Bank and Mid-Atlantic SAMS areas. The FW33 projection for all Georges Bank areas was overestimated by about 22%. Some members of the PDT felt that this amount of variation should be expected, and that the driving factor was the large difference between the projected and observed biomass in Closed Area II Southwest. The difference between the survey estimates and projections was larger for the Mid-Atlantic region, at around 40% for the combined areas. More detailed discussion is included below.

- *Nantucket Lightship South:*
  - There was divergence between the dredge, drop camera, and HabCam estimates for the Nantucket Lightship South (NLS-South), with the dredge estimate coming in lower than optical estimates. For the past several years, dredge efficiency has been reduced by 1/3rd to account for high densities of scallops in the NLS-South – while the PDT noted that some parts of the NLS-South continue to have higher densities, there were several comments suggesting that adjusting efficiency for all dredge stations could lead to an overly optimistic estimate. There was a suggestion to use optical estimates in the NLS-South to identify dredge stations that should have adjusted efficiency (i.e., adjust efficiency for dredge stations in parts of the NLS-South where optical surveys estimated density to be greater than 1 to 2 scallops per m^2, and otherwise use the normal assumption of dredge efficiency). The sensitivity analysis (Table 1 and Figure 2) suggested that adjusting dredge efficiency for select stations with higher densities yielded better alignment for all survey estimates in the NLS-South. Based on this, the PDT recommends adjusting the dredge efficiency at select stations with higher density instead of for all stations, and to take a mean of all three survey estimates for the final biomass calculation for the NLS-South.
  - Similar to previous years, the PDT recommends using the VIMS 2016-2021 shell height to meat weight (SHMW) parameters for the NLS-South because they represent the best available assumptions for an area with unique scallop dynamics.

- *Mid-Atlantic Bight Region:*
  - The PDT noted that estimates for SAMS areas in the northern extent of the Mid-Atlantic region were in close agreement with the 2021 projections whereas the estimates from southern SAMS areas had greater divergence (i.e., were overestimated). There was a suggestion that the overestimation in the southern MAB SAMS areas could be driven by higher-than-expected mortality, either from increased

discarding, natural mortality as the dominant year class reaches old age, or a combination of these two factors. It was also noted that a considerable amount of fishing occurred in the Mid-Atlantic Access Area (MAAA) in the late fall of 2020 and winter of 2021, when meat yield is lowest in this part of the resource – it was suggested that increased effort when yield is low can result in higher-than-expected fishing mortality. The PDT continued this discussion when reviewing updated information on nematode and shell blister disease prevalence in the Mid-Atlantic (see below).

o A geostatistical model could not be completed for the HabCam survey of the Elephant Trunk (ET) Open, ET-Flex, or Delmarva (DMV) SAMS areas because of the low abundance and sparse scallops observed there. In lieu of a geostatistical model, estimates for these SAMS areas were calculated using a stratified mean approach for HabCam data. This approach was presented at the 2015 Scallop Survey Review and has been published in peer-reviewed work. Dr. Hart noted that using the stratified mean approach is not preferable to the geostatistical approach, but that the stratified mean approach is sufficient when stratification of the survey area is done correctly. The strata used for the ET-Open, ET-Flex, and DMV SAMS areas were delineated based on areas of high density and low density. The PDT recommended using the stratified mean approach for HabCam estimates because geostatistics could not be done with the available data and the method has been peer-reviewed. The PDT noted that this approach resulted in similar estimates compared to the dredge survey, meaning that either not using the HabCam data or combining the stratified mean with the dredge survey would yield similar results for management. The group also discussed the low abundance observed in the ET and DMV by both HabCam and the survey dredge.

o Overall, the PDT felt that all estimates for Mid-Atlantic SAMS areas were in agreement and the combined mean estimates should be used in the projection model moving forward.

- *Georges Bank Region*:
  o The PDT noted some divergence between the drop camera and HabCam estimates for the CAII-Southwest and CAII-Ext SAMS areas. The PDT noted that the SMAST drop camera survey was completed in that area before fishing began in FY2021 and that the CFF HabCam survey did not occur until after the area(s) had been open to fishing for roughly 6 weeks. The PDT felt it was plausible that fishing in CAII between the drop camera and HabCam surveys was a main factor in the difference between the two estimates.

  o There was some divergence between the optical estimates for CAII-North, with the HabCam estimate and dredge estimate being several times greater than the drop camera estimate. It was suggested that this could be caused by several different factors: 1) optical surveys can have difficulty identifying scallops that have significant growth on them (i.e., bryozoans/hydroids/tunicates, etc.), such as in the deeper portions of CAII-North – it is possible that this is part of the reason for the drop camera estimate being lower than the dredge estimate; 2) HabCam surveyed CAII-North at a higher resolution compared to the drop camera, especially in deeper water where the majority of larger scallops were observed – it is possible that the drop camera survey did not completely cover the higher densities of scallops located

in deeper water; 3) there were several stations that of high densities where dredge filling could have been an issue, which means biomass at these stations could have been overestimated. Considering that CAII-North will not be accessible to the scallop fishery in FY2022, the PDT noted that the divergence in estimates will not change management advice for this area. Council staff noted that the Habitat Committee may be interested in this information, and they may follow-up on this topic with Michelle Bachman, who is Chair of the Habitat PDT.

- o Overall, the PDT noted that CAII estimates were in agreement and the combined mean should be used in the SAMS model.
- o For the Great South Channel (GSC) SAMS area, estimates from the HabCam and drop camera were post-stratified to account for the missed coverage by HabCam in the southern extent of the area. The PDT agreed to use the stratified estimates because they resulted in strong agreement; however, the PDT and survey groups plan to use the original non-stratified GSC SAMS area for future surveys and projections.
- o The PDT noted the agreement between survey estimates for all other SAMS areas on Georges Bank aside from the Nantucket Lightship South (see above for data treatment discussion).
- o There was very little discussion on Closed Area I because the surveys did not detect strong signals of incoming recruitment, or large amounts of exploitable scallops. Surveys of Closed Area I found older exploitable scallops and small amounts of pre-recruits and recruits (25mm – 60mm).

Northern Gulf of Maine Data Treatment

A decision point for the PDT was around the SHMW parameter estimates that should be used in the SMAST drop camera and ME DMR/UMaine dredge estimates for the Gulf of Maine. Last year the PDT recommended using a SHMW relationship developed by Dr. Dvora Hart (Hart 2020) using data from the ME DMR/UMaine 2019 dredge survey. ME DMR/UMaine collected biological samples from their survey of Stellwagen Bank in 2021 that were used to develop SHMW parameters. The PDT reviewed sensitivity analyses that compared SMAST and ME DMR/UMaine estimates for Stellwagen Bank based on the updated SHMW parameters and those from the 2019 dredge survey of the area (Hart 2020). While the resulting estimates were in close agreement, the PDT suggested using SHMW parameters from the 2021 dredge survey of Stellwagen as this represents the most recent data available.

ME DMR/UMaine staff noted that there were three dredge stations on Stellwagen Bank with high densities of scallops that could have led to efficiency issues. The PDT deliberated whether potentially lower dredge efficiency should be accounted for in the ME DMR/UMaine estimate for Stellwagen Bank. The PDT was hesitant to recommend any adjustment because of differences in gear characteristics between the NEFSC survey dredge and ME DMR dredge; the difference in liner, dredge size, and field methods means that dredge efficiency dynamics of the NEFSC survey dredge are not directly applicable to the ME DMR dredge. There was also a suggestion that density estimates from the drop camera survey of Stellwagen were not high enough to strongly suggest that dredge efficiency could be an issue. It was noted that the drop camera and survey dredge estimates for Stellwagen Bank were in strong agreement and the PDT agreed to move forward with using them in the projection model.

Nematode and Shell Blister Disease Discussion

Sally Roman (VIMS) provided an update on the prevalence and intensity of nematodes and shell blister disease in the Mid-Atlantic Bight. The prevalence and intensity of nematodes appeared to be consistent with what was observed in 2020. Shell blister disease has become increasingly prevalent in the Mid-Atlantic over the last two years and impacts meat quality and yield. Based on concerns from the PDT that the effect of shell blister disease could significantly impact SHMW relationships in the Mid-Atlantic, a sensitivity analysis was performed comparing SHMW estimates for diseased animals based on their condition factor (i.e., condition factor 1 – 4) relative to the SARC 65 SHMW estimate used in the SAMS model (Figure 3). This analysis suggested that the shell blister SHMW curves reduced as the condition factor worsened relative to the SARC 65 curves. This was especially the case in southern and offshore SAMS areas compared to those farther north and inshore. While it was suggested that reduced meat yield as a result of shell blister disease could be part of the reason why Mid-Atlantic projections have been overestimates in the past several years, it was also noted that interannual variability in SHMW relationships are expected and that differences between the SHMW curves were not substantial. Since data on shell blister disease are only available for the past two years, the PDT suggested continuing to use the SARC 65 SHMW estimates in the projection model, which are based on 15 years of data. Nevertheless, the PDT agreed that it will be important to continue monitoring shell blister disease in the future.

Other Data Treatment Decisions

The PDT briefly discussed other aspects of the projection model that have been adjusted over the past several years, such as selectivity curves, growth assumptions, and LPUE assumptions. Overall, the PDT felt that it was appropriate to recommend using the same assumptions and approaches used in last year's projection model. This included using the GB Open Selectivity Curve for the NLS-South and in the Northern Gulf of Maine and adjusting the growth stanzas to match slower than expected growth observed in the surveys and found in the 2020 management track assessment. (see November 2020 memo to SSC for more details).

Initial Run and NYB Closure Discussion

The PDT briefly discussed possible SAMS run ideas to start the specifications development process. An initial idea was to allocate 1.5 trips to CAII (same configuration as FY2020), 1 trip to the NLS-South, and 24 open area DAS at more, with the MAAA becoming open bottom. The PDT felt that is was important to gather input from the AP and Committee on this run idea. There was agreement that reverting the MAAA to open bottom would be a good idea based on the very low abundance observed there in the 2021 surveys. Some members of the PDT were unwilling to consider a possible closure in the NYB unless the MAAA reverted to open bottom to maintain access to scallop grounds in the southern range of the fishery. For CAII, the PDT was supportive of looking at several different options: 1) maintaining the current rotational area boundaries (i.e., CAII-SW and Ext combined in one area, keep CAII-SE closed) to support access area fishing on eastern Georges Bank while also protecting the juvenile scallops observed in the 2020 and 2021 surveys, 2) CAII-SW and Ext could be separated into two areas and allocated to separately, or 3) maintain CAII-SW as an access area and revert CAII-Ext to open bottom. It was also suggested that the high densities of pre-recruits observed in the NLS-West could warrant a closure in FY2022.

There was also support for developing closure options around the pre-recruit and recruits observed north of the MAAA, in the vicinity of the New York Bight (NYB) and Long Island (LI) SAMS areas. Several members of the PDT spoke in favor of such a closure considering recent work that has suggested the importance of source/sink dynamics in this area for seeding areas farther south. While there is not guarantee that a closure would result in increased spawning success in the Mid-Atlantic, improving yield of the smaller scallops in the NYB/southern LI areas would be beneficial to the fishery in several years when they reach harvestable size.

2022 Work Priorities

Staff provided an overview of the current list of work priorities for the Scallop FMP and the initial list of potential items that could be considered by the Council for 2022. There was limited discussion overall – a member of the PDT pointed out that time should be budgeted in the 2022 priority cycle to implement any recommendations that come out of the Scallop Survey Working Group and evaluation of rotational management (i.e., on-going 2021 work priorities).

Other Business

No other business was discussed.

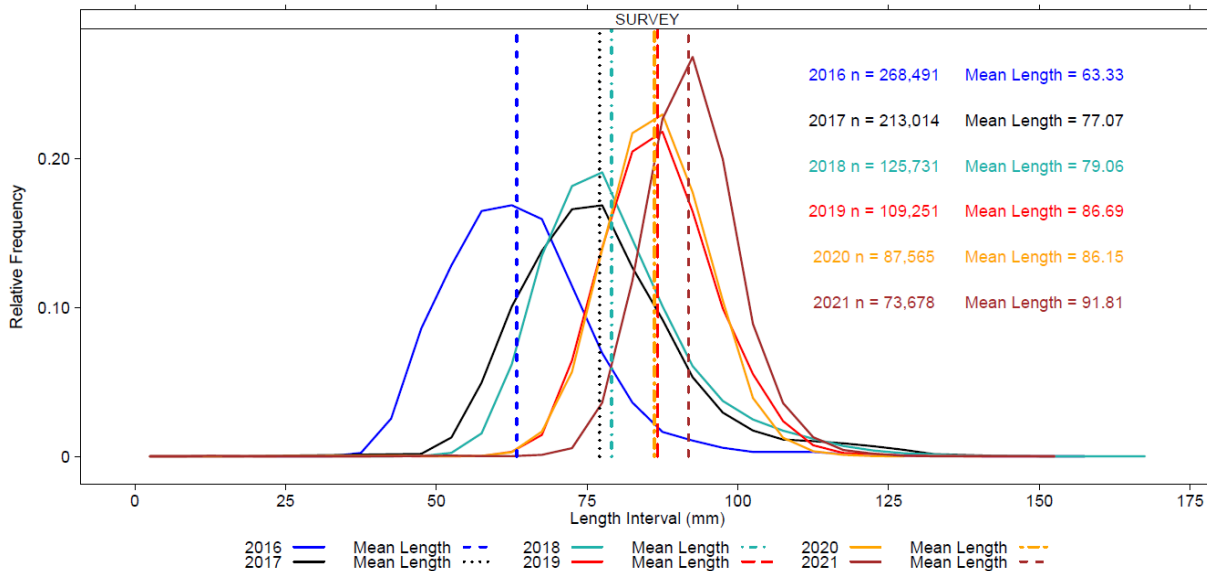*Figure 1 - Comparison of L-F in the NLS-South SAMS Area, 2016 - 2021*

Table 1 - VIMS Dredge Efficiency Select Station Analysis.

q	Total Biomass (mt)	SE Biomass (mt)	Avg MW (g)	Total Number
0.4 all stations	9,375	2,126	11.68	802
0.13 all stations	28,846	6,543	11.68	2,468
0.13 select stations	22,546	6,276	11.54	1,953

Figure 2 - Identification of High Density Dredge Tows using HabCam Data

- Select VIMS stations that overlapped Habcam density estimates > 2 scallops/m^2
- Applied reduced q = 0.13 for these stations
- All other stations in the SAMS Area q = 0.4
- 8 stations identified
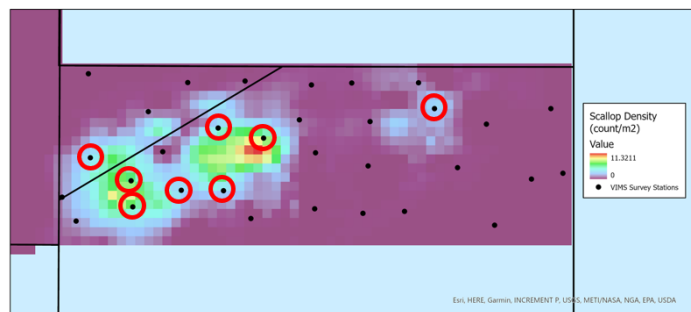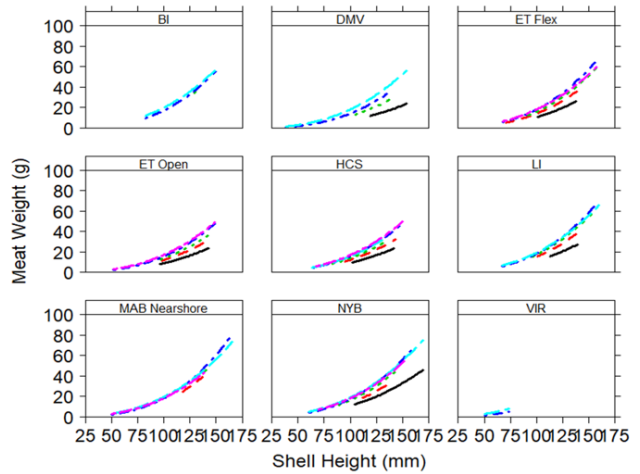- Habcam density ranged from 2.73 – 7.62 scallops/m^2 at these stations

Figure 3 - SHMW comparisons between SARC65 and shell disease condition factors.

MAB
Predicted SHMW Relationships

- Predicted SHMW relationships for VIMS 2021 data by shell blister disease condition & SARC 65

  - Several SAMS Areas had open and access area SARC estimates

  - Shell blister disease condition 3 curves slightly lower than SARC curves

  - SHMW curves become lower as shell blister disease severity increases

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