



New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116

Eric Reid, *Acting Chairman* | Thomas A. Nies, *Executive Director*

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, Amber Lisi, 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 m², 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).

- 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.
- 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:
 - 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.
 - 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.
- Overall, the PDT noted that CAII estimates were in agreement and the combined mean should be used in the SAMS model.
 - 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.
 - 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).
 - 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. It was also noted that it will be important to better understand the fishery and market responses to nematodes and shell blister disease.

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 it 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

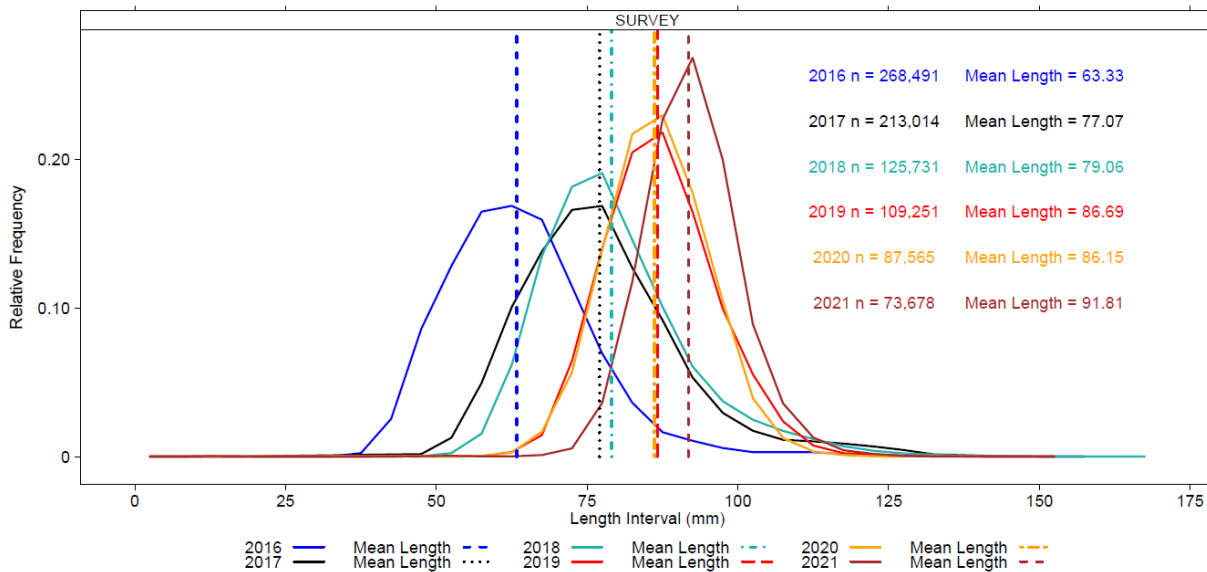


Table 1 - VIMS Dredge Efficiency Select Station Analysis.

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/m²
- 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/m² at these stations

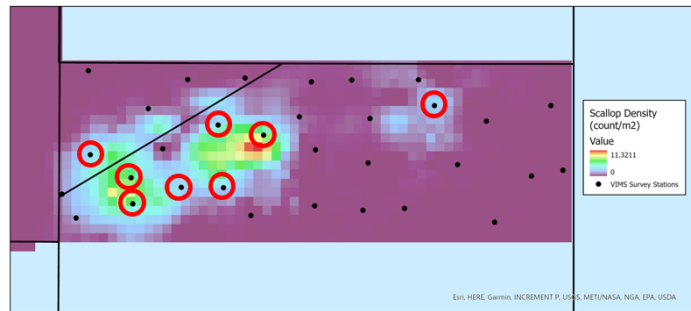
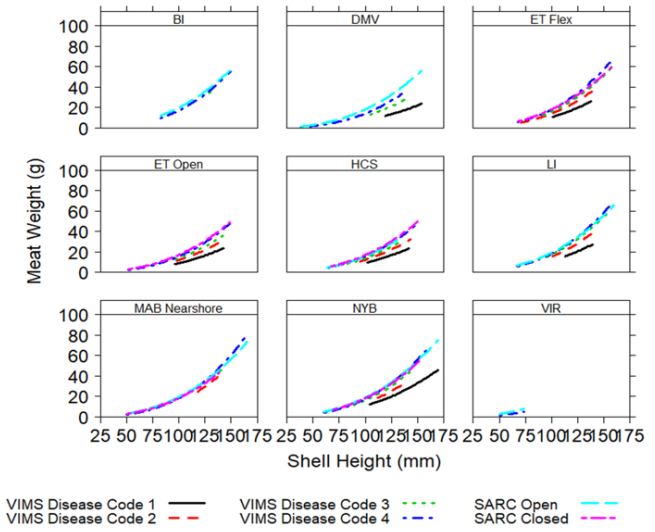


Figure 3 - SHMW comparisons between SARC65 and shell disease condition factors.

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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MEETING SUMMARY

Scallop Plan Development Team

October 1 and 5, 2021

Webinar Meetings

The Scallop PDT met via webinar on October 1 and 5, 2021 to: 1) provide input on TORs for the October SSC meeting, 2) provide input on memo to SSC re: OFL and ABC estimates for Georges Bank, the Mid-Atlantic, and the Gulf of Maine, 3) review Committee tasking for FW34 specifications runs, 4) review 2020 final year-end landings report, and 5) 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, Amber Lisi, and Jessica Blaylock.

Review of 2022 and 2023 (default) OFL and ABC

The PDT reviewed the draft terms of reference (TORs) for the upcoming Scientific and Statistical Committee meeting, which will focus on recommendations for the 2022 and 2023 overfishing limit (OFL) and acceptable biological catch (ABC) values for the scallop fishery. There was limited discussion on the TORs. Council staff noted that reference to the Gulf of Maine and Northern Gulf of Maine had been added to this year's TORs.

Dr. Dvora Hart presented the OFL and ABC estimates for 2022 and 2023 (default). The OFL/ABC continue to decrease, which is reflective of poor recruitment in recent years. There was some discussion around discard assumptions used when estimating OFL and ABC values. Discard mortality in the Mid-Atlantic is assumed to be half of discard mortality on Georges Bank – the discards are estimated by multiplying the discard assumption for Georges Bank (0.1) and Mid-Atlantic (0.05) to the biomass associated with the ABC for each region (0.45). It was noted that the Mid-Atlantic discard mortality assumption was adjusted in the 2018 benchmark assessment based on peer-reviewed work done by VIMS that examined discarding and incidental mortality using an AUV. The estimate of discards does include incidental mortality, which is the primary cause of discard mortality. There was a suggestion that the next generation of SAMS model (i.e., GeoSAMS) could consider how discard assumptions might differ based on resource conditions and expected fishing behavior.

The PDT discussed the OFL and ABC estimates for the Northern Gulf of Maine (NGOM) management area and other areas of the Gulf of Maine. This is the first year that biomass from

the NGOM has been included in the SAMS model to estimate OFL/ABC and it was done using the same approach as for GB and the Mid-Atlantic. There is currently no Fmsy reference point for the Gulf of Maine and NGOM, so the Georges Bank assumption was used ($F=0.46$ for OFL, $F=0.32$ for ABC) because Georges Bank is more representative of the Gulf of Maine compared to the average of the Mid-Atlantic and Georges Bank ($F=0.61$ for OFL and $F=0.45$ for ABC).

There was some general discussion around using estimates from the NGOM/GOM in the ABC/OFL values for 2022 and 2023. The Gulf of Maine including the NGOM has been outside of the NEFSC survey strata and has never been included in the OFL/ABC or accounted for when setting open area DAS. Amendment 21 to the Scallop FMP, which is expected to be implemented at the beginning of the 2022 fishing year, proposes that biomass from the NGOM be included in the OFL and ABC. The 2021 surveys covered parts of the Gulf of Maine that are both inside and outside of the NGOM – given this, there were suggestions that biomass from areas outside of the NGOM (i.e., Southern Stellwagen & WGOM closed area) should be included in the OFL/ABC because scallops are all managed as one stock and if data are available to inform biomass in this area, the estimates should be used. There was some concern about making this change outside of a stock assessment or Council action ahead of an assessment given that those are the processes that would typically adjust calculations to the OFL/ABC. The PDT agreed that all numbers from the NGOM and GOM should be provided to the SSC for consideration, and that the SSC could make a recommendation on which estimates should be used in the 2022 and 2023 OFL/ABC. There was also a general comment that the Stellwagen projections are very optimistic and that they should be interpreted cautiously – growth assumptions used were based on peer-reviewed work that supports this area being subject to fast growth.

Review of Committee-Tasked SAMS Runs

The PDT briefly reviewed the SAMS runs tasked by the Committee at their September 22nd meeting. Discussion was brief, however, a member of the PDT highlighted the importance of Closed Area II to the fishery and wondered how allocating to the sub-areas of Closed Area II separately instead of maintaining the larger continuous boundary might impact how the fishery operates in this region in 2023. There was also a comment that establishing a rotational closure around the one year-old scallops in the NLS-West is premature. Another comment suggested that estimates from the drop camera survey of the outer Cape be included in the Great South Channel SAMS area estimate – some were hesitant about this noting that the PDT has not done this before. Members of the PDT recommended addressing this issue through the on-going scallop survey restratification effort being led by the NEFSC.

Review of Projection Error Plots

The PDT compared the survey estimates with projections since SARC 65 (i.e., 2019 -2021) by calculating the projection error. The projection error is calculated as $100 * (\text{predicted biomass} - \text{observed biomass}) / \text{predicted biomass}$ (Figure 1). Positive error means the projection was an overestimate, and negative error means the projection was an underestimate. Projection error has varied over the past three years but projections have generally been overestimates. Projection performance on Georges Bank seems to be better than the Mid-Atlantic, where wider swings in overestimation have been seen, such as in 2021 with the substantial decrease in biomass in the ET and HCS. The comparison also showed the projection error tends to be greater in access areas

compared to open areas. There was some discussion that fishing behavior could be driving some of the higher projection area in access areas – recent work by Truesdell (2015)¹ said that access area fishing could be reducing yield by as much as 20% because shallower areas with better yield and faster growth are targeted first, meaning the scallops with greatest growth potential are removed from the area first. This dynamic is not currently accounted for in the SAMS model. It was also noted that vessels fishing DAS are less likely to discard because they are limited by time, whereas in access areas they are not on the clock and there is an incentive to target larger scallops and high grade – there was a suggestion that this could be happening at a scale great enough to impact the projections.

Review of 2020 Year-End Report

Ben Galuardi (GARFO) provided an overview of the FY2020 year-end landings report for the scallop fishery. The PDT recommended that a new row be added for the Limited Access ACT in next year's report. There was brief discussion clarifying how state waters landings are defined and binned in the report. The PDT agreed that the state waters landings estimate appeared to be accurate. The PDT briefly discussed the method for specifying landings from state waters, which are added to the OFL in the ACL flowchart. This year, the PDT will be using the latest three-year average of state waters landings to be used as the assumption for state waters landings in Framework 34. Council staff planned to follow-up with GARFO about the 2020 state waters landings assumption in the year-end report.

NGOM Default

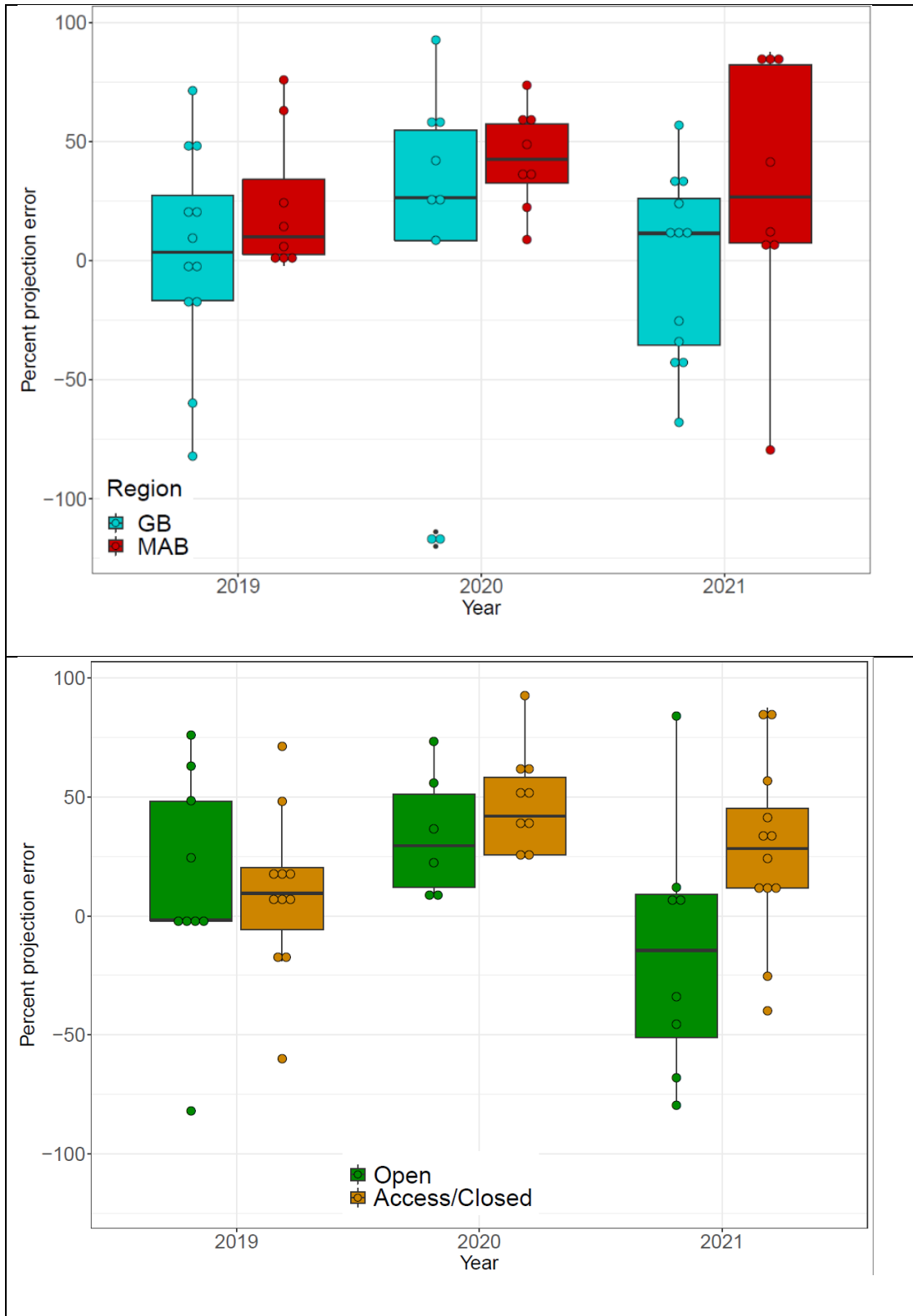
There was brief discussion around default measures for the NGOM. The FY 2021 default TAC for the NGOM exceeded the incoming TAC – the PDT agreed that future NGOM default TALs should be set conservatively enough so that this is prevented. It was noted that the defaults for the NGOM should be handled differently than for the limited access and LAGC IFQ components of the fishery because individual accountability does not exist for the NGOM (i.e., there are no vessel-level DAS or quota allocations in the NGOM). This means that NGOM vessels are not individually accountable for overages that occur if a default TAL is greater than the incoming TAL, and the incoming TAL is exceeded. The PDT requested to see 2022 and 2023 projections for the NGOM, and plans to consider the timing of the fishery, the seasonal meat weight anomaly, the possibility of gear conflicts, and the size of the areas that are likely to be fished (most are small) when developing options for the Committee to consider. The PDT will also consider if the default TAL would be based on projections from the preceding fishing year, or the second year of projections. For example, in the LA and LAGC IFQ components, defaults are based off of the year-one projections, not year-two.

Other Business

No other business was discussed.

¹ Truesdell, S. B., Hart, D. R., & Chen, Y. (2016). Effects of spatial heterogeneity in growth and fishing effort on yield-per-recruit models: an application to the US Atlantic sea scallop fishery. *ICES Journal of Marine Science*, 73(4), 1062-1073.

Figure 1 - Comparison of projection error for 2019 - 2021 by region (top) and access and open areas (bottom). The percent error is calculated as $100 * (\text{predicted} - \text{observed}) / \text{predicted}$.





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MEETING SUMMARY

Scallop Plan Development Team

October 19 and 22, 2021

Webinar Meetings

The Scallop PDT met via webinar on October 19 and 22, 2021 to: 1) review Scientific and Statistical Committee (SSC) recommendations to the Council re: scallop fishery OFL/ABC for FY2022 and FY2023 (default), 2) review and provide input on initial SAMS runs for Framework 34, 3) review and provide input on NGOM TAL projections for FY2022, 4) receive an update on the on-going Evaluation of Rotational Management (Dr. Cate O’Keefe, Fishery Applications), and 5) 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, Amber Lisi, and Jessica Blaylock. Dr. Cate O’Keefe (Fishery Applications) was in attendance.

There were approximately 15 members of the public on each webinar.

Review of 2022 and 2023 (default) OFL and ABC

Council staff provided a brief update on the overfishing limit (OFL) and acceptable biological catch (ABC) values recommended by the SSC to the Council for the scallop fishery in FY2022 and FY2023 (default) (Table 1). The SSC and PDT recommendations were consistent. The SSC deliberated whether not biomass from the Gulf of Maine outside of the Northern Gulf of Maine (NGOM) management area should be included in the OFL/ABC estimates. Similar to comments made at the PDT, the SSC ultimately agreed on including GOM values because 1) survey data are available to inform this approach, and 2) fishing in this part of the resource counts against the legal limits for the fishery. There were no comments or questions from the PDT.

Table 1 - 2022 & 2023 OFL and ABC recommendations for Framework 34.

SSC Recommendation: GOM, NGOM, GB&MA	2022	2023
OFL	38,271 mt	34,941 mt
ABC	30,305 mt	27,606 mt

Review of Framework 34 SAMS Runs for the NGOM

Dr. Dvora Hart (NEFSC) presented projections for the NGOM total allowable landings limit (TAL) for FY2022 and FY2023. Corresponding to Committee tasking, projections for FY2022 included only biomass from Stellwagen Bank as this is the only part of the NGOM expected to support fishing. The NGOM was treated like an access area in the SAMS model – the range of F rates tasked by the Committee were applied to inform the TAL options for FY2022 (F=0.15, 0.18, 0.20) (see Table 1). It was noted that biomass projections for Stellwagen are based on growth parameters from Hodgdon et al. (2020), which suggest growth on Stellwagen is faster than anywhere else in the resource – should these growth assumptions be faster than reality, the projections for FY2022 could be overestimated. Another reason to be cautionary in the NGOM in FY2022 is uncertainty around how intense fishing might affect the high density concentration of scallops on Stellwagen. It was suggested to be conservative in the NGOM because the scallops on Stellwagen have growth potential beyond FY2022.

The 2021 default catch limit for the NGOM exceeded the incoming NGOM TAC that was approved through Framework 33. Due to the delay in implementation of FW33, the default TAC was harvested which means the actual FY2021 was exceeded. The PDT suggested taking a more cautionary approach for NGOM default specifications in Framework 34 to avoid another situation where the incoming catch limit could be exceeded by the default measure. It was suggested that either 75% or 50% of the year 1 TAL could serve as a conservative default measure for year 2.

Table 2 – Northern Gulf of Maine (NGOM) exploitable biomass projections and catch limit options for FY2022 and FY2023 (default), based on Scallop Committee tasking from September 22, 2021.

NGOM Exploitable Biomass	2022 (mt)	2022 (lbs)	
OFL	907	1,999,593	
ABC (F=0.32 all areas)	684	1,507,962	
Fishing Year 2022 (values in lbs) Stellwagen Bank Only			
	F=0.15	F=0.18	F=0.20
Total Allowable Landings	559,974	661,387	727,525
1% NGOM ABC for Observers	15,080	15,080	15,080
RSA Contribution	25,000	25,000	25,000
NGOM Set-Aside	519,895	621,307	687,446
Possible 2023 Default Approach			
75% of 2022 NGOM Set-Aside	389,921	465,980	515,584
50% of 2022 NGOM Set-Aside	259,947	310,654	343,723

FW34 SAMS Runs and Specification Discussion

Dr. Dvora Hart presented the initial SAMS runs tasked by the Committee for FY2022 specifications (see Table 3).

- The landings per unit of effort (LPUE) model projection for FY2022 is approximately 2,300 pounds per day. The LPUE assumption impacts open area days-at-sea allocations – for example, at a set open area fishing mortality rate, if projected LPUE is higher than realized LPUE, fishing mortality will be lower than expected; if projected LPUE is lower than realized LPUE, fishing mortality will be greater than expected. Some felt that the FY2022 LPUE projection could be overestimated, while others pointed out that the projection is very close to LPUE thus far in FY2021 and could hold for FY2022. It was suggested that this be pointed out to the AP/CTE, and that adjusting open area F might be a simpler approach than revisiting the LPUE model when discussion FT LA DAS.
- There was some discussion around fishing mortality rates by SAMS area based on the different levels of access area and open area fishing across the range of specifications runs. Dr. Hart provided those numbers following the meeting.
- There was some discussion around the tradeoffs between closing the New York Bight area and days-at-sea allocations. The PDT was supportive of exploring options (i.e., “PDT run”) that would slightly increase open area F ($F=0.36$) in tandem with closing the NYB because this would give vessels more time to fish while also conserving part of the resource support open area fishing several years down the road. Related to this, it was noted that a higher open area F in FY2022 will mean that less biomass is available to fish in FY2023.
- Without closing the NYB, this area is projected to support roughly 1,700 mt of landings over the next several years. Closing the NYB results in landings of around 2,100-2,200 mt when the area reopens in FY2024 and for several years after that.
- Under options where the MAAA is reverted to open bottom, the SAMS model projects some effort to occur there despite the very low level of exploitable biomass (i.e., about 500 mt of landings). There was one suggestion that the Advisory Panel weigh in on this dynamic, as it is possible that vessels from the southern range of the fishery (i.e., NJ, VA, NC) could elect to fish on Georges Bank where catch rates are expected to be higher despite the longer steam time.
- Longer term landings and biomass projections assume that the open bottom is fished at an F of 0.48 after year 1 and assumed a ramped F rate in access areas. This assumption is based on the target open area F rate used prior to 2017. The PDT suggested using a more realistic F rate for longer term projections, such as a running three-year average, because 0.48 is higher than the open area has been fished in many years.
- A member of the PDT noted the discussion raised by the AP at their last meeting regarding revisiting the days-at-sea transiting regulations due to concerns around how closing the NYB area might impact open area fishing for southern vessels. They felt there might be a push for this to be addressed in FW34 instead of through 2022 priorities – Council staff noted that it is getting too late in the process to consider this addition to the FW34 workload. Another PDT member was skeptical that revisiting the DAS clock is an issue of widespread interest by industry members.

Evaluation of Rotational Management Update (Dr. Cate O’Keefe – Fishery Applications)

Dr. Cate O’Keefe provided an update on the on-going evaluation of rotational management report (see presentation [here](#)). There were some clarifying questions on some of the figures included in the presentation. The PDT revisited discussion around the timing of fishing relative to seasonal meat yield, highlighting the increase in fall fishing in the MAAA in FY2020 as seen

through the data presented by Dr. O’Keefe. Overall the PDT appreciated this dynamic being examined through the report and felt that more attention should be paid to seasonality when developing specifications. There was a suggestion to look at landings by market grade for open area fishing versus access area fishing as a way to examine if yields have been greater in access areas over the past several years. There was a suggestion to use NEFOP data to investigate discarding and high grading dynamics in access areas.

Table 3 – Initial specifications runs tasked by the Committee at their September 22, 2021 meeting.

	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	Status Quo	AP Motion 1; AP Motion 4	AP Motion 2 Run 1; AP Motion 3, 5, 6	AP Motion 2 Run 2, Motion 4, Motion 5/6	AP Motion 2 Run 3, Motion 3	NO ACTION
Open Area F	F=0.3	F=0.3	F=0.3	F=0.3	F=0.3	18 DAS
FT LA Trip Limit	18,000 lbs	18,000 lbs	18,000 lbs	15,000 lbs	15,000 lbs	18,000
Trips trading	9,000 lbs	9,000 lbs	9,000 lbs	15,000 lbs	15,000 lbs	n/a
CL2-SE	CLOSED	18000 lbs	CLOSED	CLOSED	CLOSED	CLOSED
CLS-SW	27,000 lbs (1.5 trips)	18,000 lbs	27,000 lbs (1.5 trips)	30,000 lbs (2 trips)	15,000 lbs	CLOSED
CL2-Ext		18,000 lbs			15,000 lbs	CLOSED
NLS-South	18,000 lbs	18,000 lbs	18,000 lbs	15,000 lbs	15,000 lbs	CLOSED
NLS-North	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLS-West	Open Bottom	CLOSED	CLOSED	CLOSED	CLOSED	Open Bottom
NLS-Triangle	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
CL2-N (HAPC)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
CA1	513k lbs LAGC AA	Open Bottom	LAGC IFQ AA from CAII	Open Bottom	LAGC IFQ AA from CAII	CLOSED
NYB	Open Bottom	Open Bottom	NEW CLOSURE	NEW CLOSURE	Open Bottom	Open Bottom
NF	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
GSC	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
SF	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
BI	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
LI	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
MAB-Nearshore	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
MAAA	18,000	Open Bottom	Open Bottom	Open Bottom	Open Bottom	18,000
DMV	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom	Open Bottom
West of NLS-W (Non-SAMS)	n/a	n/a	NEW CLOSURE	NEW CLOSURE	n/a	

State Waters Landings Estimate

Council staff presented the final state waters landings estimates to the PDT. The estimate is the average of the most recent three fishing years of landings estimates from the year end report. The state waters landings estimates from fishing years 2018 – 2020 are shown below, along with the three year average.

Table 4 - 2021 State waters landings estimate for FW34, including estimates from 2018-2020.

Fishing Year	Estimated Total Landings (lbs)
2018	733,975
2019	695,530
2020	1,006,926
Last 3 Year Average	812,144



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MEETING SUMMARY

Scallop Plan Development Team

November 2, 2021

Webinar Meetings

The Scallop PDT met via webinar on November 2, 2021 to: 1) review range of Framework 34 alternatives tasked by the Committee, 2) discuss SAMS run outputs, and 3) develop plan for completing bycatch estimates and impact analyses, 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, Danielle Palmer, Amber Lisi, and Jessica Blaylock.

Review of Framework 34 Alternatives Tasked by Committee

The PDT reviewed the range of alternatives tasked by the CTE to be included in Framework 34 at their October 27, 2021 meeting. For specifications, there are two options that are only different in their treatment of the Hudson Canyon area: one option keeps it closed and the other reverts it to open bottom. The PDT discussion focused on the option that includes closure of the Hudson Canyon. Several PDT members suggested that there is not a biological basis for closing the Hudson Canyon in that there is no conclusive evidence that closing an area influences scallop settlement. It was also noted that southern vessels may elect to fish in the Hudson Canyon if it were open bottom, but that closing it would limit that opportunity and would likely push more effort onto Georges Bank.

Review of SAMS Outputs

The PDT reviewed SAMS outputs (i.e., landings, area specific fishing mortality, LPUE, open area DAS, etc.) for the range of specification alternatives tasked by the Committee at their October 27, 2021 meeting. PDT discussion and input included:

- Related to open area fishing mortality (F), the PDT noted that the 26 day-at-sea option would push F (0.47) higher than what has been estimated for the fishery since 2015-2016, whereas F from 2017 to 2020 has been well below the legal limit. The justification for pushing F higher in 2015-2016 was due to the limited fishing opportunities in rotational areas, and understanding that two exceptional year classes in the ET and NLS would be recruiting to the fishery in the following years. It was noted that there are no large recruit classes expected to enter the fishery in the next few years, and many felt that continuing to fish the open area conservatively will be important to sustain open area fishing in FY2023 and beyond.

- The PDT discussed how open area effort is distributed in the SAMS model. A simple fishing behavior model is the basis for how effort is distributed in SAMS projections, which assumes effort per unit of area is proportional to the expected catch rates in each SAMS area. Areas with higher landings per unit of effort (LPUE) will have higher F rates. Open area SAMS in the Mid-Atlantic Bight (i.e., Long Island) are expected to have lower catch rates than those on Georges Bank (i.e., Southern Flank, Northern Flank), which is why the model is projecting F to be much lower for open area SAMS in the Mid-Atlantic compared to Georges Bank.
- The PDT acknowledged the uncertainty associated with predicting fishing behavior but also underscored the general trend being projected by the SAMS model of open area effort increasing on eastern Georges Bank. It was noted that this part of the resource will continue to be very important to the fishery for the next several years for both open area and access area fishing and that pushing F rates higher in FY2022 will mean fewer scallops to land in FY2023 and beyond.
- While the PDT did not form a consensus opinion for open area DAS in FY2022, the group strongly recommended against the 26 DAS option. Given the outlook that there is no incoming recruitment in the open area, the PDT did not think it makes sense to increase open area F beyond the more conservative levels allocated in recent years.

Framework 34 Bycatch Analysis

Staff noted that the PDT will need to project flatfish bycatch for the range of specification alternatives tasked by the Committee. Staff will work with GARFO/NEFSC staff to organize observed discard to kept estimates that the projections will be based on and draft a memo outlining the bycatch projections/outlook for FY2022 fishery that will be sent to the Groundfish PDT later in November.

Other Business

No other business was discussed. The meeting adjourned at 3:25 PM.