



New England Fishery Management Council

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Eric Reid, *Chair* | Thomas A. Nies, *Executive Director*

MEETING SUMMARY

Habitat and Scallop Plan Development Teams

October 13, 2022
2:00 – 4:00 p.m.

Agenda

The PDTs received a presentation on a Before-After-Control-Impact study examining recovery at three dredged sites on the Northern Edge of Georges Bank. This analysis is based on imagery collected during spring 2022, 5.6 years after initial dredging impact, and follows up on previous work. Dr. Scott Gallager from Coastal Ocean Vision was the main presenter during the meeting and provided a written report and slides for review in advance of the discussion.

Meeting attendance

Habitat PDT members included Michelle Bachman (Chair), Sharon Benjamin, Jessica Coakley, Jenny Couture, Rachel Feeney, Fiona Hogan, Doug Potts, Julia Livermore, Dave Packer, and Alison Verkade.

Scallop PDT members included Jonathon Peros (Chair), Sam Asci, Jessica Blaylock, Adam Delargy, Bill DuPaul, Travis Ford, Benjamin Galuardi, Dvora Hart, Chris Parkins, Naresh Pradhan, Ryan Silva, and Kelly Whitmore.

Other attendees included Kaitlyn Clark, Libby Etrie (Habitat Committee Vice Chair), Scott Gallager (invited presenter) Melanie Griffin (Scallop Committee Chair), James Gutowski, Eric Hansen, Natalie Jennings, Amber Lisi, Alison Lorenc, Drew Minkiewicz, Ed Mullis, Eric Reid (Council and Habitat Committee Chair), Sally Roman, and Ron Smolowitz.

Discussion

Ms. Bachman and Mr. Peros provided a brief introduction to the meeting. They noted that the work Dr. Gallager was presenting is a continuation of a study conducted with Scallop Research Set Aside (RSA) funds that began around 6 years ago; earlier results have been shared with both Plan Development Teams (PDTs), including through the RSA Share Day. In early 2022, the Habitat PDT completed a white paper¹ summarizing issues relevant to habitat management on the Northern Edge of Georges Bank that included initial results of this study, plus a summary of

¹ <https://s3.us-east-1.amazonaws.com/nefmc.org/6.-220120-Northern-Edge-Habitat-Management-Considerations.pdf>

FINAL

follow up analyses completed in 2021 at the request of the Habitat PDT. The analysis presented at this meeting is based on HabCam imagery collected by the Northeast Fisheries Science Center in late spring 2022, analyzed by Dr. Gallager and others at Coastal Ocean Vision through a contract with the Council. The Council is considering adjustments to habitat management approaches on the Northern Edge of Georges Bank as a potential work priority for 2023, and the contract was timed so that the Council would have the final report from the 2022 contract in advance of the December 2022 Council meeting priorities discussion.

Following introductions, Dr. Gallager reviewed the results of this year's analysis, sharing the original study methods and some results for context. Members of both PDTs asked some questions during and after the presentation, which are summarized below. This feedback, and any additional questions or comments from Council staff, will be provided to Dr. Gallager in the coming weeks so that he can provide a final report to the Council before December.

- Survey 1 nm dredge impact which is the same distance NOAA surveys do.
- A PDT member noted that in deeper waters beyond the study sites but within the Habitat Closure/Habitat Area of Particular Concern there was evidence of scallop recruitment in this year's survey data. Also, there is evidence for recruitment in Closed Area I. Dr. Gallager expressed interest in processing those images. He clarified that scallops and other target taxa, including some habitat-forming species, were classified manually by annotators. Substrate classifications were automated using machine learning, with manually annotated training images.
- A PDT member asked how scallop abundance at the sites could recover in ~6 years when there are 10-12-year-old scallops in the area (see table on slide 44). Dr. Gallager said he would follow up on this and check the length frequency data for the scallops that were sampled.
- A PDT member asked how we should be thinking about the severity of the initial impact at these sites. Dr. Gallager noted that they did 9-10 tows per site, with the intention of removing all scallops, such that he would consider it to be a high level of impact. His thinking is that each haul represents a fishing trip occurring within the study site (this assumes that a captain doesn't fish depletion style along the same tow path, in which case the equivalent number of trips would be fewer). It should be possible to roughly convert the catch in bushels to meat weight to determine how the catch relates to a typical access trip possession limit of 18,000 lb.
- A PDT member asked about the monkfish results, specifically should we be thinking about distinguishing between changes in monkfish abundance with changes to monkfish habitat? Monkfish prefer soft/sandy bottom, so it seems plausible that the initial impact created areas that were attractive to them. Similar phenomena could be occurring with skates, which have similar habitat preferences. It is possible that dredging in general enhances habitat for these species, which may be worth considering in a management context, given monkfish bycatch concerns in the dredge fishery.
- Dr. Gallager clarified that for the analysis, the initial 6 sites were grouped into two classes, one more sandy and one more complex, and some results are presented by grouping sites, while others are for individual sites. In addition, certain taxa/targets were

FINAL

pooled for analysis (e.g., all epifauna, all echinoderms) to show community-level metrics. He feels biodiversity is a useful indicator of site-level or habitat-type recovery since it pools across taxa. This is important because individual animals are competing with each other for space, and this competition affects their recovery.

- Related to this, a PDT member asked if Dr. Gallager has the data to see shifts in dominance of species and top contributors to community structure before and after impact? Yes, he has these data and can look into this suggestion given he hasn't done this type of analysis.
- Percent substrate/epifauna was estimated using machine learning. The convolutional models used on the 2022 data to understand substrate type and which group substrate would belong to were different than the techniques used previously (most were manual estimates of percent composition). Dr. Gallager indicated that he needed to look at variability of the percent cover analysis this year relative to previous years; the numbers he has available suggest this year is more accurate/less variable than manual analysis done previously.
- He also discussed the models to count individual targets, which were not converging. Targets are individual organisms like scallops or fish that you can draw a bounding box around. Prior work used machine learning to classify these targets, but the 2022 data weren't working with the models, presumably because the image resolution and perspective changed. Some work was done to down sample the images to resolve this issue but given time constraints, they determined that manual annotation for individual targets was the best approach for this contract. Manual annotation is more accurate for target analysis but methods, and thus results, are different from previous years. He noted that he ideally wants to finish building the convolutional models and then redo the 2018 classification data to directly compare the results. This is beyond the scope of the contract but could be completed this winter.
- The PDTs requested that Dr. Gallager add in sample size column to the table on slide 44. For example, lacy tube worm (*Filograna implexa*) abundance declined but was not significant, and this is perhaps related to low sample sizes for this species.
- A PDT member asked whether a single control vs. impact comparison (for just the 2022 data 5.6 years after impact) was done. Dr. Gallager noted that he did the analysis both ways (i.e., this single comparison, and time series analysis) in order to see if there would be similar results.

There was some discussion of implications of the results in terms of how to manage scallop access fishing on the Northern Edge. The study shows that there are differences between sites in terms of epifaunal and scallop abundance, suggesting it would be possible to define a boundary within which scallops might be harvested without adversely affecting complex habitat. Buffers around complex habitat sites may be useful. This study also gives an indication about the timeframe over which taxa recover to prior levels of abundance, recognizing that data were collected only at certain intervals, including 22 months and 68 months after impact. Dr. Gallager made several suggestions for the Council to consider including identification of metrics to determine what habitat recovery means. Other metrics could include return of certain species,

FINAL

biodiversity, recovery of a certain percentage cover, other community measures. Dr. Gallager emphasized the before-after-control-impact studies are useful for decision making if variables of interest are well-defined.

Members of the public made the following comments:

- Drew Minkiewicz noted Dr. Gallager's observation that some areas should still be off limits to fishing, despite observed recovery, and asked for some rationale. Dr. Gallager noted the several studies that have demonstrated the importance of the area as nursery habitat for several finfish, and that higher epifauna areas should be avoided as a precaution, since there is a clear distinction between high epifauna and high scallop areas. Mr. Minkiewicz followed up to ask if his understanding was correct that based on the current results, the amount of time to keep the area closed between fishing events is somewhere between 22 and 68 months. Dr. Gallager noted that it would depend on the site characteristics, and management goals, i.e., what do you want to see in terms of recovery?
- Ron Smolowitz asked Dr. Gallager to speculate about what the results might have been if the dredge impacts had been less severe initially, for example removing 30% vs. ~100% of the scallops. Dr. Gallager commented that it will be important to think through community dynamics and interactions between taxa when considering these results. It is potentially easier for species to grow back if they are not competing with others for space, but this will change over time as a site is recolonized. Alternatively, if the initial impacts at a site are lower, with only partial removal of epifauna, the recovery trajectory may be different. The extent of the impacted area relative to adjacent unfished areas may also factor in.

No other business was discussed, and the meeting adjourned shortly after 4:00 p.m.