MEETING SUMMARY

Habitat Plan Development Team
March 16, 2018
Providence, RI

The Habitat PDT met to discuss the clam dredge framework and other business.

Meeting Attendance

PDT members included Michelle Bachman (Chair), Peter Auster, Jessica Coakley, Geret DePiper, Rachel Feeney, Marianne Ferguson, Dave Packer (webinar), Doug Potts, David Stevenson, and Page Valentine (webinar). Alison Verkade (GARFO Habitat Conservation Division) was invited to participate in the meeting. Ms. Verkade has been working on the clam framework image analysis project.

David Wallace, Louie Lagace, Jeffrey Pike, and David Borden also attended the meeting and participated in the discussion.

Major conclusions:

- The outcome of the OHA2 process in identifying the GSC HMA is a valid starting point for further work. Other outcomes of that process might have been possible, but at this point we are working to identify areas of less vulnerable habitat where fishing could be allowed to continue.
- Complex habitats vulnerable to fishing occur throughout the HMA. There is no ecologically justifiable way to sub-divide the HMA and identify specific areas with an absence of vulnerable habitat.
- Clam dredging appears to occur in about 50% of the area that is currently exempted and overlaps very closely with areas of complex habitat identified by the PDT.
- Given the above conclusions, additional criteria are needed from the Committee for the PDT to move forward with designing or analyzing alternatives.
- The PDT will continue to investigate ways to discriminate between both theoretical sub-areas of the HMA as well as potential exemption alternatives based on habitat characteristics, complexity, and vulnerability.
- The PDT, AP, and Committee need to keep moving forward on this action to have a range of alternatives for the Council to approve in June. These alternatives may be a
combination of approaches suggested by the Advisory Panel and Committee, with data-driven refinements suggested by the PDT.

Clam dredge framework

The PDT had an opportunity to provide edits to the summary of their March 2 conference call. No specific suggestions on the content of the meeting summary were offered; the chair will finalize the week of March 19.

There were some questions (at the beginning of the day and at a few other points) about whether HMAs (including this one) could be adjusted through a framework. While it is clear from the alternatives adopted by the Council and approved by NMFS for Omnibus Habitat Amendment 2 (OHA2) that additions, removals, or changes to HMAs can be done through frameworks, changing the GSC HMA is outside the scope of the current action, based on the problem statement and prior Committee and Council discussions. The chair noted that the PDT should work under the assumption that the GSC HMA boundary is a given.

Related to the GSC HMA, the Council has been made aware of a recent (last two years) expansion of the mussel dredge fishery into the GSC HMA. Mussel dredges are identified in the regulations as a bottom-tending mobile gear and will be prohibited throughout the GSC HMA once it is designated. The Council would need to expand the scope of the framework to consider any exemptions for this gear type. There are some data on mussel catches in both the Northeast Fisheries Science Center (NEFSC) and Science Center for Marine Fisheries (SCMFIS) clam dredge surveys, and mussels can be observed in School for Marine Science and Technology (SMAST) video surveys as well. There appears to be very limited data on the spatial distribution of mussel dredging and a federal permit or vessel trip reports are not required.

The PDT looked at the terms of reference for the SSC subpanel review of the SCMFIS clam survey reports. The group agreed that keeping the TORs general would be best. Questions about data quality, interpretation, and uncertainty are important. The PDT suggested that the key question for the Council is how the data can be used to inform development of alternatives.

Next, the PDT explored a variety of spatial data sets.

**Image-based habitat data:** The PDT reviewed maps of the image analysis data. Ms. Verkade confirmed that she assessed gravel pavement as 80-100% pebble, cobble, and/or boulder coverage of the seabed in an image.

The PDT discussed spatial patterns in the data. Complex habitat occurs throughout the HMA. As noted in the March 2 PDT call summary, tow tracks of clam dredging activity do not overlap large sand shoals but do overlap the areas of complex habitat. The group expressed concerns over parsing habitat value (vulnerability) within a management area that has already been filtered through the habitat amendment process in terms of trade-offs between habitat value and effects on fisheries operations. Our ecological knowledge does not allow parsing further based on degree of patchiness of complex habitats within a seafloor landscape, at least at this small spatial scale. The PDT felt it was not appropriate to attempt to sub-divide the HMA at this stage, absent
specific guidance from the Committee about their desired balance between habitat protection and fishery access.

The group explored whether sub-areas could be discriminated statistically. Conceptually, a lower percentage of observations (stations) with complex habitat doesn’t mean the habitat is any less important for fish. Further, any areas with complex substrate and associated biological features are vulnerable to impact from clam dredges, regardless of how densely such features appear to be distributed based on point sampling (i.e., there could be dense patches of complex habitat not detected by the point sampling). Nonetheless, if the Committee wants to set aside some exemption areas, the data could likely be used to identify sites where encounters with complex substrate are less likely.

The PDT used a theoretical breakdown of the HMA into four quadrants to assess if one subarea had more complex habitat than another, where complex was defined as at least 10% gravel cover in at least one image at a station. The conclusion of this initial chi-squared analysis of proportions was that subareas do have statistically significant differences in the frequency of complex habitat, but additional work on this analysis is required. Regardless of the frequency with which complex habitat is encountered, these seafloor features will be vulnerable to the adverse impacts of dredging where they occur. The PDT will work after this meeting to draw equal area quadrants and re-run the chi-squared analysis.

The PDT observed that there is a visual correspondence between The Nature Conservancy’s seabed forms data and the complex/not complex habitat maps as well as the clam dredge vessel tracks. Seabed form is a combination of topographic position, i.e. a cell’s elevation relative to its surrounding neighborhood, and slope, the difference in elevation between adjacent cells. The dataset shows depressions, high flats, side slopes, etc. The seabed forms data set will be integrated into the information provided to the Committee and Advisory Panel.

The group also discussed developing interpolated maps of complex/not complex substrate, and possibly other variables, using Voronoi/Theissan polygons. These could be used in addition to the point data, would be consistent with data products used to support development of SASI and OHA2.

**Fish distribution and relative abundance data.** The PDT agreed that while fish distribution in trawl surveys was important, rather than rehash the analysis of why this area is important, we should reference prior work in the underlying OHA2, and maybe bring this information into an appendix for the clam action. For any new or updated data sets, knowing where zero tows occurred is important, as we are on the edge of where the survey occurs and some locations in the HMA are not sampled.

**Clam distribution and relative abundance; clam fishing effort.** The PDT agreed it would be helpful to explain where clams are shifting to, so that any exemption areas can be designed to be forward looking in time. The PDT reviewed vessel monitoring system from the data portal and VTR maps based on Dr. DePiper’s confidence interval-based modeling. The two data sets are consistent with one another in terms of the spatial distribution of effort. The PDT will request VMS data to develop heat maps and assess hours fished, number of vessels, etc. by management.
alternative and year. Based on prior discussions and confirmed by industry members in the room, 3.5 knots is a reasonable speed threshold to assign a VMS poll as fishing or non-fishing. Estimating fishing from VMS data is somewhat challenging here in that the tow times are very short relative to the ~1 hour polling interval. The PDT observed on the charts provided that fishing does not occur on the shallowest sand shoal habitats, and Mr. Lagace agreed that there are areas that cannot be fished because they are too shallow. There was also some discussion with audience members about the total area fished on an annual basis (Mr. Wallace suggested that 1% of the area is fished annually), and the way that the fishery shifts spatially over time, fishing down a bed and then shifting to an adjacent location.

A PDT member asked whether clam dredging has seasonal patterns, and PDT members and audience members agreed that the activity is year-round, weather permitting. This led to a question about whether fish usage of this area is concentrated in a particular season. Another member responded that while use patterns might be seasonal (i.e. young of the year cod settle in a certain window of time) that habitat recovery occurs on multi-year time scales, and that many habitat impacts of dredging that occur at one time of year carry over into other times of year. This means that longer term closures to clam dredging are the most consistent with habitat impact and recovery dynamics. Further, a PDT member noted that even biological elements of habitat that recover quickly (e.g., months to a year) are important to some fish species during the same year and time period.

An audience member asked if rotational management might be appropriate in this case (similar to that used in the scallop fishery). While this might make sense from a clam resource perspective (and perhaps formalizes the way that the fishery operates, fishing down a bed and then shifting locations), a long rotational interval would be needed to allow for habitat recovery from impact (~10 years). The chair commented that if we understood fish production rates by habitat, these issues would be easier to decide, as there could be objective measures for how much conservation is sufficient to meet goals around rebuilding or maintaining stocks. Unfortunately, we are not working with that level of information here, which means it is not possible to objectively determine how much conservation is sufficient.

**Habitat impacts of hydraulic dredges**

The PDT will also continue work on the literature review of habitat impacts of hydraulic clam dredges, which is substantially complete. Most of the studies were done in sandy bottom, or in much deeper water, and unfortunately there are no studies from areas with habitats very similar to the GSC HMA. These studies show that hydraulic clam dredges have adverse impacts on benthic habitats that exceed those of other bottom fishing gears, although recovery of some habitat features can be fairly rapid in certain highly energetic environments.

**Fishing effects model updates**

The PDT did not have time to discuss updates to the fishing effects model in any detail, and draft sediment maps were not available for review. The PDT will review these maps as well as whether to model high/low energy combined or separately at a later time. A member observed that the shorter time steps envisioned for the updated model as compared to SASI (monthly vs.
annual) could influence how we think about susceptibility and recovery parameters and the interaction of fishing and natural disturbance. A member also raised the potential for using the model to assess sensitivity of results to changes in susceptibility and recovery times across the range of habitats. The PDT agreed it would be appropriate to update the literature review underlying the model for completeness, but that additional work completed in the past 7-8 years since the SASI literature review did not paint a fundamentally different picture of gear effects.

Other business

The meeting adjourned at 4 p.m.

Table 1 – Follow up items from March 16, 2018 PDT meeting

<table>
<thead>
<tr>
<th>Task</th>
<th>Name(s)</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalize and distribute TORs for SSC subpanel review</td>
<td>Michelle Bachman, Chris Kellogg</td>
<td>Completed 3/20</td>
</tr>
<tr>
<td>Obtain locations of all trawl survey tows from Jeff Pessutti (to ID zero tows)</td>
<td>Dave Stevenson</td>
<td>ASAP to support development of maps for an appendix on fish usage of GSC HMA habitats</td>
</tr>
<tr>
<td>Compare habitat complexity between subsets of HMA</td>
<td>Michelle Bachman, working with Jessica Coakley and Geret DePiper</td>
<td>3/16 first cut; clean up sub-areas and update analysis week of 3/26</td>
</tr>
<tr>
<td>Continue to develop affected environment</td>
<td>Michelle Bachman, Rachel Feeney, working with Jessica Coakley</td>
<td>Ongoing; will distribute draft framework to Committee on 4/19</td>
</tr>
<tr>
<td>Update maps of different data sets (clam, habitat from image data, VTR). Include tested sub-areas for reference.</td>
<td>Michelle Bachman</td>
<td>Update by 3/27 for distribution to AP</td>
</tr>
<tr>
<td>Develop additional products for AP/CTE meeting including maps of interpolated substrate, seabed forms, shear stress</td>
<td>Michelle Bachman</td>
<td>Create by 3/27 for distribution to AP</td>
</tr>
<tr>
<td>VMS data request</td>
<td>Doug Potts, with APSD staff and Geret DePiper</td>
<td>Get started ASAP; hopefully have maps for Committee meeting</td>
</tr>
<tr>
<td>Update SASI impact analysis for hydraulic dredge gear</td>
<td>Dave Stevenson, Michelle Bachman</td>
<td>ASAP for inclusion in dredge impacts appendix</td>
</tr>
<tr>
<td>Identify additional literature relevant to gear effects analysis</td>
<td>Peter Auster</td>
<td>ASAP for inclusion in dredge impacts appendix</td>
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