New England Fishery Management Council
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MEETING SUMMARY

Habitat Plan Development Team
Conference call

The Habitat Plan Development Team held a conference call on June 28, 2016 to discuss: (1) video survey image analysis to support the clam framework, (2) lobster fishery data to support the deep-sea coral amendment, (3) other analysis/writing tasks for coral amendment.

Plan Development Team members and Council staff: Michelle Bachman (Chair), Peter Auster, Jessica Coakley, Geret DePiper, Rachel Feeney, Kathryn Ford, Maria Jacob, Dave Packer, Katie Richardson, David Stevenson, Page Valentine, Carl Wilson.

Other invited participants: John Quinn (Habitat Committee Chair); Alison Verkade, NMFS GARFO HCD; Megan Ware, ASMFC staff; Kathleen Reardon, Maine DMR

Audience: Libby Etrie, Jackie Odell, Chris Franklin, Gib Brogan, Aaron Kornbluth, Joseph Myers, Heidi Henninger, Heather Coleman, Molly Masterton, Peter Shelley, and others that called in via phone only.

Major conclusions:
- The video survey image analysis project will collect the following information: (1) presence/absence and percent cover of pebble, cobble, and boulder sediments, with percent cover grouped into three categories: <10%, >10-30%, >30%; (2) presence/absence of epifauna assessed in the Swept Area Seabed Impact model; (3) flag attributes of particular interest, such as long-lived taxa, high epifauna abundance, mussel beds, etc.
- The PDT recommended using the digital still images for the image analysis project, because they are higher quality and seabed features, particularly small ones, can be more easily discriminated. The digital vs. large camera images, cover the same overall footprint, but there is a greater density of large camera images.
- Approaches for using the results of the image analysis project will be discussed at the next meeting on July 28.
- A combination of dealer data, VTR, Area 3 survey information, and Maine harvester report data will be used to characterize effort and catch in the lobster fishery relative to the coral zones.

The call began at noon with a brief overview from the chair. The purpose of the call was to update the PDT as to ongoing work, and discuss various analyses to support the two ongoing habitat-related management actions. The PDT will meet in person on July 28 to review progress on these topics to date and discuss any information that will be provided to the Habitat Committee on August 18.

Agenda Item 1: Clam framework image analysis

A working group of PDT members has been collaborating on an image analysis approach since late winter. The group summarized their approach in a working document that outlined (1) the Council's problem statement and its interpretation, (2) existing data and information, including a summary of the vulnerability assessment developed for the Swept Area Seabed Impact model, and (3) additional data to gather from each image. The chair summarized this document and related workgroup discussions for the PDT. She noted that the primary objective of the call was to agree on the data elements that would be recorded for each image so that image analysis could begin soon. These included:

- Which data source/image type should be analyzed?
- How should substrate information be catalogued for each image?
- What information should be collected for epifauna?

During the call the PDT also discussed some approaches about how to map these results and use them to develop alternatives. One theme of this discussion was that the data are what they are. On the one hand, the density of data for the Great South Channel (GSC) HMA is unmatched in other locations throughout the region (somewhat lower resolution data is available for Georges Shoal (GS)). On the other hand, each video survey station covers only a small footprint (12.8 m^2 per station large camera, 3.2 m^2 for digital camera). Ideally, to understand habitat distributions on a fine scale, seafloor maps would be generated using data from 40-60 images collected along a 1 km transect. However, the management question here is where are the large contiguous patches of vulnerable habitat, i.e., where are the groups of stations that indicate these habitat types? 'Large' refers to operational and enforcement considerations in the fishery; small fishes may find very small patches of habitat important for shelter and feeding. Very fine resolution habitat mapping is not needed to discern these patterns at the landscape scale.

Another theme of the discussion was how to minimize use of time and resources to collect additional data from the images, while providing useful information to the Committee and Council. One team member suggested using existing sediment maps to identify locations to focus on, but others felt it was important to analyze images from the entire management area, including the mobile bottom-tending gear closure portion of the Great South Channel HMA. The team reviewed maps showing the distribution of stations with large camera (1,384 GSC, 92 GS) and digital still images (514 GSC, 81 GS). In the GSC, there are some areas with sparser sampling; these less sampled or unsampled areas encompass the shallowest depths of the HMA (see Map 1 below).

Related to this, a team member wondered whether there was any bias in terms of some sediment types being better sampled than others. While the team did not have an answer to this question, the SASI sediment map identifies these areas as sand-dominated. Another question was whether it would be necessary to sample additional images outside the boundary of the HMA, so as to avoid edge-related artifacts in the resulting maps. The team left this open as a possibility but will proceed for now with analysis of images within the HMA. Sampling additional edge stations may be more or less important depending on the interpolation method used to generate the habitat maps. Reviewing the coverage of higher resolution digital images (colored dots in Map 1), and some sample images, the team agreed that analyzing just the digital images was a reasonable approach.[1]

Map 1 – Video survey station locations and depth in the Great South Channel and Georges Shoal HMAs. DSC = digital image, large camera = image extracted from video. "Already analyzed" indicates that SMAST has a database file for the image. "Have DSC image" or "Could get DSC image" indicates that the database includes large camera information only for that station. Digital elevation model from the Nature Conservancy's Northwest Atlantic Marine Ecoregional Assessment. Depths deeper than 80 m are not shown.
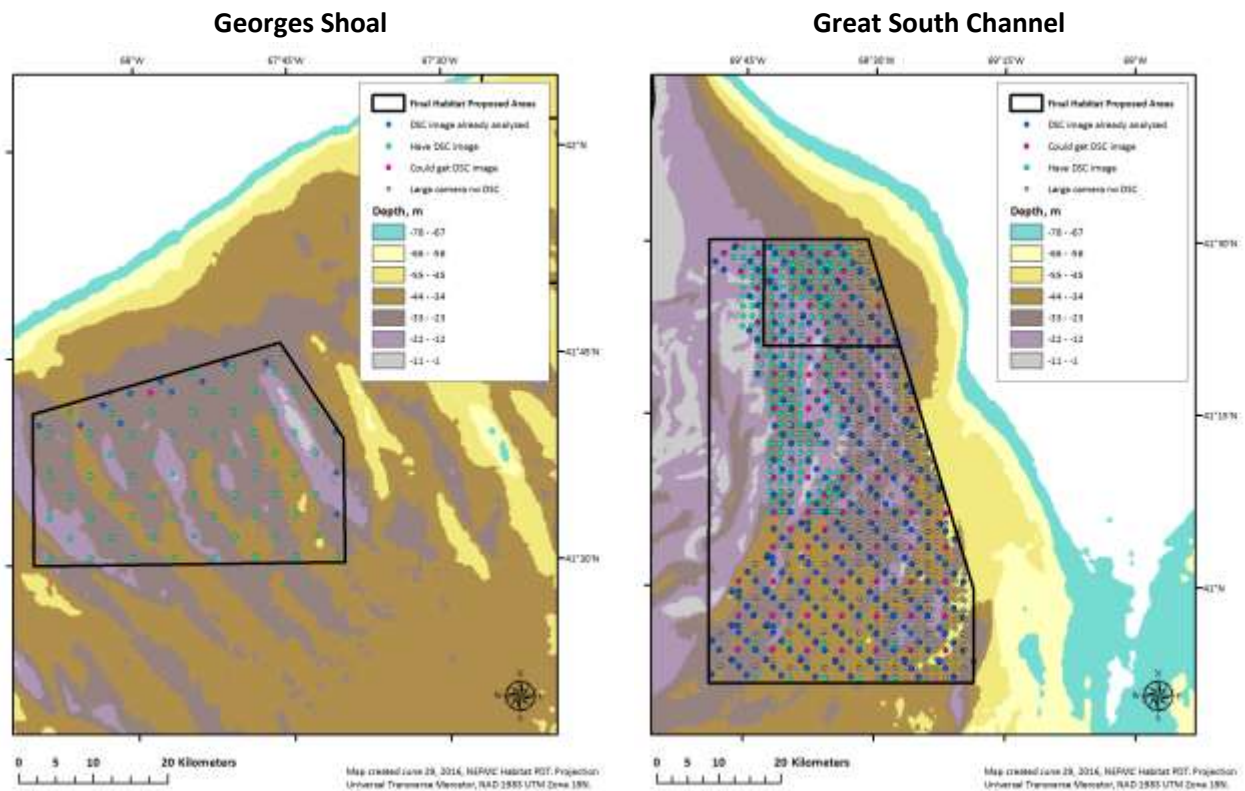
Next the team discussed sediment classification. The Swept Area Seabed Impact model grid classifies a video station as granule/pebble, cobble, or boulder dominated if one of these grain size classes is found at all four quadrats, with larger grain sizes taking priority in mapping. The

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[1] Some additional time after the call was spent examining large camera vs. digital images, to confirm that use of the digital images was the best approach. It was decided that the additional resolution of the digital images is worth the tradeoff in terms of reduced sample size.

percent cover of these gravel sediments was not assessed, but the PDT agreed percent cover is important to understand and contributes to habitat value. In addition, it is important to capture the occurrence of gravel sediments, because they function directly as shelter from flow and predators, and serve as substrates for attached fauna, even if they only occur at a subset of the images collected at a station. Thus, the PDT agreed that it was important to collect percent cover information (absent, >0-10%, >10-30%, >30%) for each of the three gravel size classes, and will consider different options for aggregating these percentages by grain size class at the station level.[2] Collecting data according to four categories vs. only two (absence/presence) will help us to identify transitional habitats and identify the most critical areas for protection have high coverage of gravels.

In terms of epifauna, the workgroup recommended layering epifauna data with sediment data to understand the distribution of vulnerable seafloor substrates, rather than combining sediment and epifauna data into a composite seafloor substrate score. The PDT agreed with classifying epifauna into two classes, present and absent, and recommended flagging images of particular interest, including mussel beds or images where epifauna were very dense or included longer-lived species. Presence will be noted if the image contains any of the biological features noted in the SASI model for these habitat types, specifically tube-dwelling amphipods, anemones, ascidians, brachiopods, bryozoans, hydroids, macroalgae, epifaunal bivalve mollusks (attached species, such as mussels, not free-swimming sea scallops), tube-dwelling polychaete worms, and sponges. Sea pens are also a feature assessed in the SASI model but are not present in either HMA.

The team agreed to further consider how to summarize and map the data after reviewing initial results in July. Next steps:

- Revise image analysis plan and distribute to PDT (Bachman)
- Review image analysis plan with SMAST staff/faculty (Bachman)
- Begin analysis (Verkade)
- Explore mapping approaches (Ford, Bachman)

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[2] After the call, Dr. Valentine suggested describing percent cover for all size classes of gravel combined, and scoring only presence/absence by size class. This will simplify the analysis. Areas where pebble vs. cobble vs. boulder occur can still be mapped. Dr. Valentine also noted that granules, which are 2-4 mm in size, are going to be difficult to detect in the images, such that it is more appropriate to refer to this category as pebble vs. granule/pebble.

Agenda Item 2: Coral amendment analysis and lobster fishery data

Next, the PDT discussed the coral amendment. A focus of the call was introducing the group to data that can be used to evaluated impacts on the lobster fishery. Data for this fishery are somewhat different from fisheries we typically work on. While the Council has not yet recommended analyzing exclusion of lobster gear from coral zones, the PDT should work to provide information to support this decision.

General goals for impacts analysis and development of the amendment document were also discussed. The goal is to provide background information (in the format of an affected environment section) as well as preliminary impacts analysis for the August 18 Committee meeting.[3]

Megan Ware (ASMFC staff, lobster FMP coordinator) described a survey of Area 3 permit holders that was developed by ASMFC in response to a NEFMC request for additional data on effort in the offshore lobster fishery. The survey was initially distributed in February and included questions about location, depth, and seasonality of fishing, as well as the relative importance of the canyons as a fishing ground (individual canyons and overall relative to other locations). The survey was sent to all Area 3 permit holders, not just those who report via VTR. The survey did not ask if fishermen had encountered corals while hauling their gear, but it did ask if they were familiar with the coral amendment, and had space for open-ended comments about this issue.

ASMFC staff and collaborators drafted a report based on initial responses and are currently updating the report to reflect additional responses and comments from the ASMFC Lobster Management Board. Individuals involved in both the lobster and Jonah crab trap fisheries responded to the survey. In general, respondents did not expect effort to increase or decrease in the near term. Some canyons and depths were identified as relatively more important than others. The PDT asked about management changes that could influence effort, and it was noted that while Areas 2 and 3 are currently undergoing trap reductions, these are primarily designed to reduce latent effort. ASMFC will distribute the final report to the PDT when it is complete. The distribution of effort described by survey respondents can be compared to that obtained from the VTR data.

Next, the PDT discussed lobster data for the inshore Gulf of Maine. Lobster Management Area 1 is divided into seven management zones, and zones A and B overlap the Outer Schoodic Ridge and Mt. Desert Rock coral zones, respectively. Most of the vessels fishing in these areas have state lobster permits only and are not required to submit VTRs (under 10% do submit them because they hold other federal permits). The distribution of effort in each zone by distance from shore will be assessed using the Maine harvester reports, which cover 10% of permit holders each year, and are designed to be representative of the permit categories fished in each management zone. Permit categories are based on number of crew.

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[3] We will want to be sure it is clear that the decision on whether or not to analyze lobster/crab trap restrictions is pending.

The harvester reports include effort and catch data. Area fished includes statistical area, A-G management zone, and distance from shore (0-3, 3-12, or 12+ nm). An initial look at these data for Zones A and B indicates that most vessels fish in state waters (0-3 nm) of both zones, with progressively less effort and landings in the 3-12 and 12+ nm from shore distance zones (the Mt. Desert Rock area is in the 3-12 nm zone and the Outer Schoodic Ridge area is in the 12+ distance zone). Trip reports provide latitude/longitude coordinates, but when the PDT reviewed the VTR-based revenue maps for this area, members knowledgeable about the Maine lobster fishery were uncomfortable with using the VTR-based distribution to infer areas of relative importance.

The harvester reports also include information about depth fished, which could be used in combination with distance zone to infer the amount of overlap with deep-sea coral areas. The PDT re-examined digital elevation models for the area, and discussed whether it might be possible to gather additional backscatter data in the Mt. Desert Rock area, where there is a 3 arc second resolution DEM available, but additional resolution of seafloor topography would be ideal. Maine has a multibeam echosounder that is deployed opportunistically from commercial vessels to collect seafloor data. Output resolution is 0.5 m^2. The system has integrated, shipboard data processing via Olex software, and data collection occurs on days when the vessels are not fishing.

More generally, the PDT will work towards developing an initial assessment of impacts on corals and fisheries for the August Committee meeting, and will also start compiling background information for the affected environment section. Some material has already been drafted, and other work can be borrowed from the MAFMC coral amendment document, which is currently undergoing review and revision.

Next steps:

- Summarize depth, and if possible given sample size, seasonality information from harvester reports (Wilson)
- Investigate possibility of multibeam mapping around MDR (Wilson)
- Distribute final Area 3 survey results (Bachman)
- Compile information for affected environment section from previous documents and MAFMC (Bachman)
- Organize and begin to draft affected environment section (Stevenson, Packer)
- Preliminary economic impacts analysis (DePiper, Bachman)
- Preliminary coral impacts analysis (Bachman)
- Coordinate economic/social impacts approaches (Feeney, DePiper)

The call concluded just after 3 p.m.