



## New England Fishery Management Council

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### **Research Steering Committee May 30-31, 2006 Sheraton Harborside Hotel, Portsmouth, NH**

#### **Meeting Summary**

The Research Steering Committee (RSC), chaired by Council member David Goethel met on May 30-31 at the Sheraton Harborside Hotel in Portsmouth, NH. Other Council members serving on the committee and in attendance were Mike Leary, Phil Ruhle, and Dana Rice. Other participating committee members included Dr. Earl Meredith of Northeast Cooperative Research Partners Program (NCRPP), Dr. Fred Serchuk from the Northeast Fisheries Science Center (NEFSC), Richard Taylor, Michael Pol from the MA Division of Marine Fisheries and NEFMC staff member Patricia Fiorelli.

NMFS Regional Office staff included Paul Perra, and Heidi Henninger. Dr. John Annala from the Gulf of Maine Research Institute attended along with Frank Gable from the University of Rhode Island, Teresa Johnson from Rutgers University, Lara Slifka from the Cape Cod Commercial Hook Fishermen's Association and NH fisherman Ted Racine.

#### **Final Project Reviews**

The Research Steering Committee met to address a number of issues related to cooperative research. Agenda items included a management review of the seven final reports listed below. As outlined in the Council's Research Review Policy, the RSC is charged with reviewing final reports that are generated through cooperative research activities in the Northeast Region and providing advice on whether results are acceptable for consideration in the management process.

- *Northeast Groundfish Study Fleet Pilot – Phase II Report for July 2004 – February 2005;*
- *Improving the Selectivity of Trawl Gear with Escape Windows and Visual Stimuli;*
- *Development of Video Techniques for Bycatch Reduction Study;*
- *Assessment of Benthic Community Recovery in the Western Gulf of Maine Closed Area;*
- *Near-term Observations of the Effects of Smooth Bottom Net Trawl Fishing Gear on the Seabed;*
- *Ongoing Study Expansion - Smooth Bottom Net Trawl Fishing Gear Effect on the Seabed: Investigation of Temporal and Cumulative Effects;*
- *Characterization of Bycatch Reduction from Codend Mesh Size Increases in the Directed Scup Bottom Trawl Fishery*

#### **Northeast Groundfish Study Fleet Pilot – Phase II Report for July 2004 - February 2005**

Submitted by Perot Systems Government Services. Approved by NOAA Fisheries November 14, 2005. Brief review included. Phase I evaluated computers that would be used by fishermen during

the course of their activities to record catch and effort data. This report discusses continued activities to develop a logbook, test hardware and transmit data. 65 pp, plus statement of work (\$906,248)

**Research Priority Addressed:** Improve fishery stock assessments through the use of study fleets

**Results:** In Phase II of the Study Fleet project there were five major objectives:

- Study Fleet Size: Equip an additional fifteen (15) fishing vessels to capture catch and effort fishing dependant data during normal fishing operations; also maintain the Study Fleet of 30 with hardware and software support. Also the 30 vessels equipped with data logging and transmission systems that provide properly formatted data to the NMFS-designated recipients.
- Study Fleet Data Feed: Maintain a steady stream of data from the fishing vessels from July 1, 2004 to February 28, 2005 and transmit the data via satellite or send the data manually via electronic mail.
- Study Fleet Outreach Program: Maintain lines of communication through an outreach program with the Study Fleet Coordinating Organizations and the participating fishing vessels which was established in Phase I.
- Study Fleet Information System: Design and build a Study Fleet Information System to load, manage and disseminate data submitted by Study Fleet participants.
- Study Fleet Electronic Logbooks: Continue the development of the UNH Logbook and P-Sea Windplot Logbook electronic logbooks to capture catch and effort data

According to the report and NMFS review, all of the major objectives were met during Phase II, except for full vessel participation in the transmission information via satellite and completion of the study fleet web application.

**RSC Discussion:** In the interest of full disclosure, several RSC members acknowledged they were participants in this study fleet project. Those who did not participate noted that this particular project was not reviewed by the committee prior to award of the two contracts (for Phase I and II) which is now over a year old. The purpose of the contracts was to evaluate hardware and software options on several types of vessels and test the transmission of data via satellite. In the intervening time, translation of the data has now become more efficient and realistic in terms of satellite transmission (alternatives have replaced this objective, i.e. floppy disks, etc.). A more comprehensive plan to acquire fishery dependent data may be the next step.

Specific comments included 1) that while a brief technical review was provided, a more comprehensive peer or rigorous technical review of the study fleet project was discussed as a need. While it did not achieve all its goals and objectives as discussed earlier, the project did provide some basis for further initiatives. A great deal of detail was provided in the report on successes as well on obstacles to progress, although more information would required before any next steps are taken.

All management bodies may be interested in the continuing development of this project as it moves forward to provide timely and detailed information for decision-making. The RSC believes a detailed briefing to the committee needs to occur and may provide further insights into future use of this vehicle as a potential research and management enhancement tool. Overall, the committee considered the report acceptable for management purposes, with further work necessary as indicated above.

The committee agreed that a presentation to the RSC would be appropriate before more meaningful recommendations for the use of a study fleet as a management tool are developed.

As an important sidebar issue, members were very clear to point out to the Council that efforts to test electronic VTRs (E-VTRs) are very separate from the pilot study fleet project. They acknowledged that a study fleet might use similar or related technology, but testing or use of E-VTRs is unrelated to the research efforts related to the study fleet initiated at the recommendation of the RSC and Council several years ago.

### **Improving the Selectivity of Trawl Gear with Escape Windows and Visual Stimuli**

Submitted by Manomet Center for Conservation Sciences in July 2002. Approved by NOAA Fisheries on November 10, 2005. The intent of the project was to test the effectiveness of two escape window, both with and without an associated visual stimulus in the form of a black panel, in reducing bycatch and discards in the Gulf of Maine groundfish fisheries. The NOAA Fisheries cover letter states that the investigators completed some of what was described in the statement of work, but that project activities were not consistent with the description in the original contract. (\$174,956)

**Research Priority Addressed:** Evaluate discard, bycatch and non-catch mortality rates – initiate special studies under experimental design protocols to calculate gear interaction or discard rates, including marine mammals such as harbor porpoise.

**Results:** The technical review states that the researchers proposed to test the selectivity of two 7-inch escape panels with and without tunnels and compare those to 6.5-inch diamond and square mesh codends, which are currently mandated. While the PIs stated that “the covered codend method allows for the absolute effective efficiency of each window to be determined while minimizing both the duration and number of tows required,” (which was true), they tested only the 7-inch hex and 7-inch square with and without the tunnel. They failed to compare these configurations with the current mesh size now in regulation, using two different vessels in two different locations and comparing them against each other, contrary to the statement of work.

**RSC Discussion:** The RSC agreed with the points raised in the very detailed technical review, although it was noted that only one individual reviewed the project. Principally, the revised methods reduced the quality of the data acquired through the experiment. The committee also agreed that substantial revision of the results section, including tables and figures, is necessary to understand the basic conclusions of the project. Given the lack of an easily definable hypothesis and the difficulties in examining the results (although all data were provided), the RSC concluded that this final report does not provide information that is acceptable for consideration in the management process.

### **Development of Video Techniques for Bycatch Reduction Study**

Submitted by Capt. Bill Lee and Dr. Allan Michael in 2004. Approved by NOAA Fisheries Feb. 10, 2006. Some technical comments are included. Project funds were used to develop video techniques and other apparatus that could be used to monitor fisheries bycatch. A manual for construction of video gear was also developed to provide a “how-to” guide for others who might want to pursue their own avenues of research, as well as a video “Introducing Fishermen to Marine Research Equipment”. @40 pp. (\$67,060)

**Research Priority Addressed:** Document and mitigate bycatch mortality.

**Results:** As described in the statement of work, underwater gear was to be developed to better monitor and evaluate gear performance and fish behavior. The goal was to better understand and therefore reduce bycatch and discards, and reduce or eliminate discard mortality.

The PI was successful developing and testing a “codend video quantifier” which worked well under several, but not all environmental conditions (visibility was reduced in depths of greater than 30 fathoms and during tows in muddy substrates). The project was somewhat useful as a first step in demonstrating the use of scientific data collection devices to fishermen, although the PIs move away from this objective by describing the project as one of gear development. The networking and video production elements were completed, but without adding information on fish behavior.

**RSC Discussion:** The technical review was determined to be sufficient by the RSC. Achievement of all goals and objectives was mixed as noted above, but methods were innovative and a number of products have been widely distributed. They noted that technical issues limited the breadth of the findings and were noted in technical review. Several committee members expressed some skepticism about results obtained through video under artificially lit conditions, but in general the project was considered useful to other researchers who may wish to base future projects on the results.

### **Assessment of Benthic Community Recovery in the Western Gulf of Maine Closed Area**

Submitted by Dr. Les Watling and Cameron McClellan with graduate student Emily Knight, in cooperation with the Gulf of Maine Research Institute. Approved by NOAA Fisheries Feb. 2, 2006. Technical comments are included. It is unclear if the report made available to the RSC includes a response to the comments provided. In the Executive Summary the PIs characterize benthic community composition in open and closed sites relative to their exposure to disturbance. Many photos and charts do not reproduce well and are difficult to read in black and white copy. 35 pp. No statement of work was included with the final report. (\$155,565)

**Research Priority Addressed:** Evaluate the use of Marine Protected Areas.

**Results:** The objective of the project was to investigate changes in the biological composition of benthic communities on and within coarse sediments at different time steps following the cessation of trawling in the Western Gulf of Maine (WGOM) Closed Area. Changes in community composition from sites in the WGOM Area that have been closed to trawling for different amounts of time were compared to sites of similar substrate and depth in the Kettle, an actively trawled fishing ground. \*The Executive Summary provided the following results. Multivariate analysis showed significant differences in benthic community composition between the Kettle and the WGOMC which we attributed to the cessation of chronic trawling disturbance. In general, benthic communities in the Kettle were dominated by more disturbance tolerant, opportunistic families, while communities in the WGOMC were dominated by more disturbance intolerant, sessile families. However, the report stated it appears that the infaunal and epifaunal components of benthic communities most likely recover at vastly different rates. Infaunal communities of both the 4 and 6 year closed sites were dominated by the sessile tube-building polychaete Sabellidae, while Open 2003 and Open 2004 sites were dominated by the faster reproducing mobile polychaete Spionidae. The 4 and 6 year closed sites of the WGOM Area and Open 2004 also had double the number of rarer low abundance families than Open 2003.

In the epifaunal communities, very little recovery was observed until the 6 year closed sites. The 6 year closed sites showed higher total abundances of individuals, and higher species richness than the

2 and 4 year closed sites, or Open 2003 and 2004. The 6 year closed sites were dominated by *Mogula sp.* but showed sharp increases in phylum Porifera. The 2 and 4 year closed sites, and Open 2003 and Open 2004 were dominated by *Molgula sp.* and the mobile, opportunistic northern shrimp, *Pandulus borealis*. \*Technical comments about the above results noted too much tendency to equate sessile taxa with stability and mobile taxa with instability.

**RSC Discussion:**

The RSC commented that the technical review was sufficient, the project achieved its stated goals, and results could be useful to the Council's committees, but possibly not in this format. There were significant differences in open and closed areas relative to habitat impacts on benthic communities. The RSC commented that the report is satisfactory and that it is appropriate that the Council's Habitat and other oversight committees further consider the information contained within. The master's thesis that was produced during these research activities is available to any of the end users.

**Near-term Observations of the Effects of Smooth Bottom Net Trawl Fishing Gear on Seabed**

Submitted by CR Environmental and Boat Kathleen A. Mirarchi. Approved by NOAA Fisheries Feb. 6, 2004. In addition to aspects such as seabed mapping in the western Gulf of Maine, the project compares benthic biological communities in soft bottom habitats of heavily and lightly trawled areas and discusses how the communities responded to trawling. (\$150,990)

**Research Priority Addressed:** Measure the effects of gear on fish habitat and reduce negative impacts.

**Results:** The objective of this study was to have fishermen and scientists in a cooperative effort *observe fisheries habitat characteristics before and immediately after repetitive trawling with a smooth bottom net in soft bottom habitat off Scituate, MA, in the western Gulf of Maine*. Because essentially all areas that are suitable for soft bottom trawling in this region are already fished, it was virtually impossible to locate adequate treatment and control sites for comparison. Therefore, the PIs were forced to take the next best alternative - paired sites representing an uncontrolled gradient of trawling pressure.

According to the PIs, the most significant impacts observed on soft bottom habitat at Mud Hole and Little Tow were those on the physical habitat by the trawl doors. These were more visible in the lower energy finer grained Mud Hole site compared to the slightly shallower more high energy environment of Little Tow. More subtle smoothing of the bottom was observed with the sweep. Some re-suspension of sediment may be occurring based on shifts in grain size.

The most immediate biological effect was the direct removal of large epibenthic organisms by the otter trawl particularly rock crabs and flatfish. Less obvious effects were the apparent exposure of polychaete worm tubes (Maldanidae) with the sweep of the net, potentially increasing their vulnerability to predation. Fish stomach analyses also suggest that amphipods become more available to predation by flatfish with increasing trawl intensity.

No significant immediate impacts of otter trawling six times with a smooth bottom trawl net gear on benthic macrofaunal community was detected for the fine to medium sand habitats of our sites in Massachusetts Bay. The dominant species was the polychaete, *Prionospio steenstrupi*.

**RSC Discussion:** Given that the next project reviewed was a continuation of the one discussed above, comments for both are combined below.

## **Ongoing Study Expansion - Smooth Bottom Net Trawl Fishing Gear Effect on the Seabed: Investigation of Temporal and Cumulative Effects**

Submitted by CR Environmental and Boat Kathleen A. Mirarchi. This report is an extension of the initial project discussed above. (\$212,785)

**Results:** The objective of our 2002 study was to provide targeted weekly trawling pressure (chronic impact) over a number of months on established experimental trawl corridors at two sites (LittleTow and Mud Hole) historically subjected to different trawling pressure in the Gulf of Maine off Scituate, MA. Replicate reference and experimental corridors at the two sites were sampled prior to trawling, and at two latter times during the chronic trawling to investigate any discernable cumulative impacts on the generally soft bottom habitat at the study areas. The specific tasks included:

- Conducting fishing industry-supported high-resolution sediment mapping in areas of the western Gulf of Maine (i.e. Little Tow and Mud Hole);
- Identifying biological communities (pelagic, epifaunal, infaunal) associated with the mapped areas and determining relationships between the soft bottom sediment type and these communities; and
- Examining and comparing commercially important fish species and benthic biological communities in soft bottom habitat in both heavily and lightly fished reference areas and how they respond to the cumulative impact of trawling with a smooth bottom trawl net.

The Massachusetts Bay trawling impact study addressed the impacts of trawling on physical attributes of the seabed and on diversity, abundance, and successional status of the benthos. Results of the studies in 2001 and 2002 indicate that impacts of net sweep and the ground cables are not great relative to untrawled reference areas. Local impact of trawl door furrows remains moot as the REMOTS® survey apparently did not sample these features. Faunal data also indicate that there were no great differences between trawled and “control” (reference) areas in terms of physical or ecological structure of the seabed. The ambient benthic infauna is adapted to natural disturbance in the form of bed-load transport of sand and the re-suspension of fines by tidal turbulence. It is likely that the impacts of trawling on the infaunal benthic communities at Mud Hole and Little Tow are comparable in magnitude to these natural disturbances. This assertion may not hold true for trawl door furrows as these features, although a small proportion of the impacted bottom, were not adequately sampled.

The 2001 and 2002 trawling studies focused on seafloor bathymetry, sedimentary structures, benthic invertebrate and fish inventories, and fish stomach contents. Rate dependent processes were not addressed. Any deeper understanding of the effects of trawling will require information about these rate sensitive processes.

**RSC Discussion:** The committee determined that with respect to both the initial and follow-on reports, the technical review was adequate and the project achieved all of its stated goals. The report was well-done and the methods and results clearly stated. Several RSC committee members noted the section of the report in which the authors discussed the level of habitat disturbance caused by a severe storm and its impact in eroding the fine muddy substrates in the study area (see above paragraph on results). The RSC felt the report is acceptable for management decision-making and recommended the Habitat Committee and PDT could find the final project useful, but Council species committees and their respective PDTs might also review the report for relevant information.

## **Characterization of Bycatch Reduction from Codend Mesh Size Increases in the Directed Scup Bottom Trawl Fishery.**

Submitted by Rhode Island Sea Grant in cooperation with fisherman Chris Brown. NOAA Fisheries approved the project in July 2004. Very brief technical comments are provided. As implied, the project characterizes bycatch in the directed bottom trawl scup fishery using the current codend mesh size and two experimental sizes. Citing the MAFMC Scup FMP objectives, the PIs suggest that potential economic and conservation benefits could be gained by increasing the mesh size. 15 pp.

**RSC Discussion:** The committee discussed remarks to accompany a transmittal letter forwarding this report to the MAFMC. These included that the authors reported and tested the fraction of legal-sized scup compared to all scup in the catch, and then reported and tested the fraction of sub-legal catch compared to the total number of scup. These comparisons appear to be redundant, as the fraction of sublegals plus the fraction of legals equals the total number of scup. The authors did not quantify the loss of legal-sized scup in the larger meshes, information that is necessary to assess the practicality of the codend size increase. Without it, the validity of the conclusion, "modifying gear to select for larger sizes of scup should improve the economic return to the industry" cannot be adequately judged. While the authors report numbers of scup, identifying pounds would also be useful.

Further, the length frequency figures indicate that the sampled scup population (the catch in the 4.5 in mesh was different for the two larger codends). Also, the 6.0 in mesh appears to catch larger scup than the 6.5 in mesh, as shown by the length frequency figures. This result is counter intuitive. It would be helpful for the authors to address both issues in their discussion/results.

### **Additional Agenda Items**

The NCRPP staff updated the RSC on status of study fleet, the NCRPP website and gave a presentation on future educational and outreach activities. Concerning this last issue, the recommendation was made to encourage discussion of coordinated educational and outreach activities by the informal committee convened several months ago that includes the leadership of the major organizations involved in cooperative research --- the NEFMC and MAFMC, NEFSC, Northeast Consortium and SMAST. It was reported that the next Broad Agency Announcement BAA will be published as soon as a legal review by the agency is complete. Available funds may be in the range of \$700-800 thousand dollars.

The RSC recommended that the NEFMC coordinate with NCRPP and utilize its website to report on projects reviewed by the RSC. Technical reviews will not be published by either entity, but the NEFMC's website will indicate whether or not reviewed project results are acceptable for consideration in the management process.

The RSC provided recommendations to NMFS concerning revisions to its process for reviewing and recommending cooperative research proposals for funding, including scoring technical reviews and creating greater transparency concerning decision-making and final approval of projects for funding.