

Progress Report to the Northeast Consortium for the Project:

**Examining Fishing Practices of Divers in the Maine Sea Urchin Fishery
2008 Cooperative Research Award 09-019
(2053)**

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for the period July 1, 2009 – December 31, 2009**

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Major Accomplishments and Milestones to Date

During this period, all the remaining project fieldwork and some of the data entry and analysis were completed.

Fieldwork

On July 1, 2009, the two industry divers, with a DMR observer on board, re-evaluated the harvest and control lanes at the Winter Harbor and Frasier Point sites, using the same methods described in our previous report for the work done April 6-11, 2009. First, ground lines were laid to mark the three lanes at each site, using buoyed anchors and bolts left behind during the last visit. Then each diver made one dive on each of the three treatment lanes (size-selectively fished, non-size-selectively fished (straight-raked), and control) at each site. During each dive, thirty haphazard (blind toss) 1x1 meter quadrats were evaluated for sea urchin counts and algal cover using the methods described in our previous report. On July 2, they marked and re-evaluated the harvest and control lanes at the Hancock Point site and the replanted and control areas at Bean Island. Then the ground lines were removed from all sites. A total of 11 dives were made by each of the two divers during this period (three at each of the three harvest sites

and two at the transplant site), and each diver evaluated 30 quadrats during each dive, for a grand total of 660 quadrats evaluated.

On September 1 and 2, 2009, just before the fishing season opened, the four sites were marked and evaluated in the same manner again. In addition, all sea urchins at least 10 mm in diameter were collected from three quadrats by each diver from each lane and measured on the boat. All lanes at all the sites were also videotaped under water. Then the ground lines were removed from all sites.

Data entry and analysis

The data from the evaluation dives that were made right after the harvesting and replanting, on April 15 and 16, 2009, have been entered and analyzed. Data entry has begun for the data collected in July and September.

Unexpected difficulties

The divers sometimes forgot to record the depth of each quadrat, and also the depth correction for the dive (to correct observed depths to depth from Mean Low Water). Depth corrections were estimated, by comparing corrected beginning and ending depths from the April 11 evaluations with uncorrected ones and assuming they should be about the same. Missing or estimated depth data should not cause serious problems.

Project alterations

- 1) In addition to the alterations reported in our previous report, we decided not to lay out a series of parallel grids for assessing the replanted site at Bean Island, as originally proposed. Because the ledge at the site is narrow (about 10 m), multiple lanes were not necessary.
- 2) We proposed collecting a sample of urchins to measure from four quadrats in each of three depth strata in each plot during the September sampling. Since we did not use depth strata after all (see explanation in previous report), the divers collected urchins from six quadrats in each lane, consistent with Maine sea urchin survey protocols.

Next steps, tasks for next 6 months

We plan to finish the data entry and analyses for the field work completed to date, and present them in the next annual report. We also hope to re-evaluate the sites during the annual Maine sea urchin survey, during June 2010. We are also collecting data for the 2009-10 winter fishing season during our regular commercial catch port sampling and harvester interview process, as a companion project to this one, as described in our proposal.

Impacts of the project to fishermen/fishing community and scientist/science community

We have successfully trained two commercial divers in field evaluation techniques.

It is too early to know what the further impact of the experiments will be, since the follow-up evaluations of the project sites, and ecological impacts, if any, have not been analyzed yet.