

Technical Evaluation of the Northeast Consortium collaborative research project:  
*“A collaborative effort to examine new strategies  
for managing closed bottom habitats for sea scallops.”*  
Submitted Anonymously May 6, 2011

About the Reviewer: I have experience and expertise in marine invertebrate biology, including scallops.

Evaluation:

The stated objectives of this proposal were: 1) determine method(s) of handling commercial quantities of sea scallops (both legal and sublegal sizes) to minimize mortality prior to deploying on bottom; 2) determine the most effective method(s) of deploying commercial quantities of sea scallops to bottom plots; 3) follow the fate of scallops deployed into bottom plots over a month after deployment; 4) determine sites that maximize numbers of wild scallop spat per spat collector; and 5) provide fishermen and resource managers with information that will enable them to decide whether the use of closed and enhanced bottom areas is a viable management tool.

Objective 1) was fully achieved. No difference was found in survival of scallops transported “dry” compared to those transported “wet”, at least in the relatively cool conditions experienced during this study. This may be useful to other investigators and commercial operations, since it should be simpler and cheaper to use the “dry” method.

Objective 2) was abandoned because of “high winds, stormy weather, and rapid currents.” Although this objective was perhaps the least important in the study, it would have been worthwhile to deploy one or two samples from the surface simply to track their dispersal distance from deployment to settlement on the bottom.

Objective 3) was completed in full. The sites were surveyed numerous times during the first 30 days, and once one year later. In my view, it would have enhanced the value of the project if there was more longer term monitoring. I thus would have disagreed with the review of the original planning letter that this work should only concentrate on short-term deployment issues.

Objective 4) was also accomplished. Perhaps not surprisingly, spat settlement varied geographically, temporally, with water depth and distance from the bottom.

I don't think this study provided sufficient information to determine whether closures or enhancement are viable (Objective 5); the scope of the project was too limited to achieve this. Closures (either rotational or long-term) would require a three to five year study at minimum to observe one rotational cycle. This study was focused on short-term details of enhancement, and does not really inform on the effectiveness of closed areas, either as a source of enhanced biomass or as a way to delay harvest to a larger size. The state of Maine closed a number of areas to scallop fishing for three years; monitoring of these areas should help determine the effectiveness of this type of management in Maine waters.

The project did give some useful information on the practicalities of enhancement. Although not explicitly discussed, there were two distinct types of enhancement explored in this study. One type involves transporting scallops just below legal size to closed areas, presumably so that they will have a chance to grow to a larger size before capture. While this study answered some questions regarding transport and survival, the main problem with this idea is economic: Do the benefits outweigh the additional cost required to move the scallops to the closed areas? Given that there are several essentially cost-free methods of delaying harvesting sea scallops until they are larger, including gear regulations (e.g., 4" rings), rotational closures and effort reductions, I believe that this type of enhancement is not likely to be economically practical.

The second type of enhancement involves collection of wild spat and then deploying them in areas where they can grow out. Such enhancement has proved to be viable in several other scallop fisheries such as those in Japan and New Zealand, and may have some potential in coastal Maine, especially given the low levels of natural spat settlement observed in this study. The results of the project give practical information regarding where and when to deploy spat collectors, but because the spat were not grown out and harvested, this study cannot by itself determine whether this type of enhancement is viable.

I wish the final report had a discussion and conclusion section, especially to discuss these broader issues and possible future work. My view is that if follow-up work is to be funded, it should be for a study to collect spat, deploy them in a growout area, and then monitor the scallops until they are harvested, and include an economic analysis of probable costs and revenues from such an operation.

Brief discussions of each of the evaluation criteria are given below:

- **Project success:** The project accomplished some but not all of its stated goals and objectives.
- **Certification of results:** Data and data analysis appear to be sound
- **Dissemination of results:** Dissemination was accomplished via presentations to the Maine DMR scallop advisory council and a number of other groups as well the annual and final reports. This is adequate but not exceptional.
- **Project partnerships:** Partnerships with fishermen and students appear to have been successful
- **Project impacts:** The project may be useful to future scallop enhancement efforts.
- **End-Users:** Primarily those interested in scallop enhancement.
- **Overall rating.** Overall rating: GOOD. The project accomplished a majority of its objectives, and the scientific methodology appears sound. However, the project made only limited progress towards its stated goal as to whether closures or enhancement are viable.
- **Future research.** As discussed above, monitoring the current closures (as is being done by the Maine DMR) is the best way of evaluating the efficacy of closures for scallop management in coastal Maine. Enhancement via spat collection and seeding could be best evaluated with a project that carries through the entire process from collection to harvest.