

**Suffolk County Shellfish Aquaculture Lease Program  
in  
Peconic Bay and Gardiners Bay**

**Hard Clam Productivity Survey Protocol**

**February 2011**

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**Hard Clam Productivity Survey Protocol**  
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If a credible objection to a proposed lease site is made based on natural hard clam productivity, and the site is conditionally approved by the County, the lease applicant must arrange and pay for conduct of a hard clam population survey. The survey protocol must be approved in advance by the County, and be capable of providing statistically valid results. The survey must be conducted by a professional using the pre-approved protocol. The results of the survey will be used to determine if the potential lease site meets the threshold criteria for lease eligibility

*Lease Program Management Plan, Administrative Guidance, Appendix H – Shellfish Productivity Survey* describes the rationale for establishing the threshold criteria for hard clam productivity, and provides a general overview of benthic sampling methods. (See pages 135-137.) Proposed lease sites having a mean population density of  $\geq 2.0$  legal size hard clams/m<sup>2</sup> cannot be leased. In making its decision on approval of a lease site, the County reserves the right to consider other relevant data/information, including the “presence of significant numbers of seed clams.”

The Suffolk County Dept. of Planning staff, in consultation with Ms. Debra Barnes, NYSDEC Bureau of Marine Resources, and Dr. Robert Cerrato, SoMAS at Stony Brook University, has developed the following hard clam productivity survey protocol, which can be used by prospective lease applicants to help them make informed decisions about proceeding with the lease process on sites that have been conditionally approved by the Suffolk County Aquaculture Lease Board. An effort has been made to assure that the protocol is reasonable in terms of sampling method(s); availability of professionals to conduct the survey and prepare a report that certifies results; and the need to keep the cost burden low on prospective lessees.

*Survey Protocol Considerations*

- Type of sampling gear – diver with rake or suction dredge; clam rake; patent tongs; hydraulic harvesting gear. Consider the effect of gear used, and sampling unit size variability. The larger the area sampled, i.e., sampling unit size, the smaller the variability in the mean calculated for each sample site.
- Limit the number of samples to that which can be collected in one day of field work. The number of samples collected would be specific to the sampling gear utilized. (Gear that samples a large surface area would require fewer samples than gear sampling a smaller area.)
- Confidence limits. The mean density of hard clams for the entire site should be calculated at a confidence level of at least 95%. If the mean density is  $\geq 2.0$  legal size hard clams/m<sup>2</sup>, the site is not eligible to be leased.
- Samples should be taken within each sediment type (province) found in the 10-acre lease site. PEP Benthic Habitat Map information will be used to determine sediment type. The number of samples for each sediment type should be proportional to the relative area of that sediment type found in the site.

- Consider different types of sampling templates, i.e., standard grid for diver survey; columns or rows for hydraulic gear (tows). The grid/columns/rows should be based on the coordinate system used on the Lease Sites Map.
- For the first year of sampling, use a typical grid and standard number of samples to determine the variability in hard clam population density. Use the results obtained in the first year to calculate how many samples would be needed to be 95% confident that the mean is  $\geq 2.0$  clams/m<sup>2</sup>. Adjust number of samples that need to be taken in later years.
- Large seed clams  $\geq 25$ mm shell length should be sampled to determine seed population density. The mean population density for large seed should be calculated separately, i.e., the number of large seed should not be combined with the number of legal size clams in any calculations.
- Consider preparation and use of a model spread sheet/form for reporting data and calculations, so that population surveys are prepared in a consistent manner.

#### *Survey Protocol Guidelines for First Survey Year*

For the first year of implementation, 10 samples would be taken within each 10-acre lease site. The samples would be collected at locations within a grid that divides each 10-acre lease site into 16, 0.625-acre grid cells. A typical illustration of such a grid is displayed in the attached figure for Lease Site #767, with latitude and longitude coordinates shown for the corners of the grid cells. Sample grids would be randomly selected, and the location of each sample site within each grid would be selected to avoid proximity to grid cell boundaries. The sampling station location should be recorded in the field by GPS to an accuracy of 10 feet. Sampling unit size would be fixed at 1m<sup>2</sup>, assuming a diver with suction dredge, or rake, is utilized. (For prospective lease sites on grants, the approach outlined above would be adjusted to take a large potential lease size into consideration, e.g., 20 acres.)

A findings report would be prepared by a qualified environmental professional that includes a methodology description and tabulation of sample results (hard clam seed and legal size hard clam density at each station; mean seed and legal size hard clam density on the entire 10-acre lease site; and standard deviation calculations for each hard clam class size category).

It is the intent of the Department of Planning to share any applicant survey plans received with NYSDEC Bureau of Marine Resources and SoMAS for comment, discussion, and potential amendment, prior to issuing an authorization to lease applicants to proceed with conduct of such surveys.

# Hard Clam Population Survey 10-Acre Lease Site Sampling Grid

