



Dead Neck Beach SHELLFISH SURVEY

Osterville, MA

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Prepared by Rogue Wave Field Services

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Dead Neck Beach Shellfish Survey October 2007

A shellfish survey was completed by Mr. Steve Aubrey and Mr. George Hampson at the on Dead Neck Beach in April, 2008. The purpose of the survey was to collect population data on commercial shellfish species for a maintenance beach nourishment project. The shellfish survey completed was after discussions with Tom Marcotti, of Barnstable's Department of Natural Resources (DNR) on the methodology and frequency of sampling to be used for the survey.

The site for the proposed nourishment is 2400' long on the south shore of Dead Neck Island in Osterville. Both the south side of Dead Neck and the north side along the Seapuit River were surveyed from the western jetty at the entrance channel to West Bay 2400' west. The sediment along the south shore of the barrier beach is composed of chiefly of coarse to medium sand with rocks and cobbles. Along the north side the sediment varied, from chiefly sand to a sandy sticky mud.

EXPERIENCE

RWFS has completed numerous shellfish, benthic, and sub-aquatic vegetation surveys along the Northeast Coastline of the U.S. and in international coastal zones. Clients include Massachusetts Water Resources Authority, Falmouth Conservation Commission, Barnstable Conservation Commission, scientific and engineering firms and numerous private landowners. Locally, RWFS has worked on both large and small-scale shellfish, benthic/sub-aquatic habitat and algal surveys along coastal regions of Buzzards Bay, Nantucket Sound, Cape Cod Bay, and Boston Harbor in support of permitting government and private projects. In addition, RWFS has supported UMASS Dartmouth's School of Marine Science & Technology (SMAST) working on the Massachusetts Estuaries Project (MEP) and was a principal investigator for the Green Pond Habitat Study for the Falmouth Coastal Ponds Committee. These projects give the team an in-depth knowledge and understanding of the unique and fragile coastal waters of New England. RWFS shellfish biologists are familiar with the local regulatory agencies in Massachusetts and have presented their surveys before many Conservation Commissions.

METHODS

Quantitative samples were taken using clam rakes to sample approximately a 1 sq. ft. area. After discussions with Barnstable DNR, RWFS established transect lines every 100' along the south side of the beach and then sampled every 50' from MLW offshore until we could get no further because of depth. A baseline was established along the

MLW line of the project area. Shore normal (perpendicular) transects were established every 100' along the baseline and then sampled every 50' seaward (Figure 1).

Along the north side of the beach fronting the Seapuit River Each shore normal transects were established every 50' along the baseline and then sampled every 20' seaward (Figure 1). The difference in sampling frequency is due to the variation in habitat. Along the south side of Dead Neck which is exposed to wave action and is not ideal shellfish habitat within the surf zone, while the north side of the barrier beach provides better shellfish habitat.

At each sample site a rake haul covering more than 1 square foot was acquired. Each rake haul was sifted through a ¼" screen liner fitted to the rake basket to retain juvenile shellfish and other invertebrates. Clam rakes fitted with fine mesh screens are standard RWFS surveying equipment and allow for rapid determination of the presence or absence of shellfish over a wide area. Juvenile shellfish captured are important indicators for documenting recruitment. Recruitment is an important indicator in defining shellfish habitat. Large adult shellfish and no juveniles would suggest that the habitat may not support juvenile shellfish and depending on densities of the adults might suggest a marginal habitat for them.

Although nine commercial species of shellfish are of concern (regarding shellfish surveys) as part of RWFS policy, all species of shellfish obtained in this survey were identified, counted and measured. Additionally, notes were taken regarding other invertebrates, sediment type, degree of hydrogen sulphide present, and sub-aquatic vegetation (SAV's) obtained while sampling.

RESULTS

South Shore (Nantucket Sound facing)

A total of 25 shore normal transect lines were surveyed for shellfish along the south side of Dead Neck Beach. No shellfish were acquired in the 94 rake hauls sampled during the survey. Sediment were comprised chiefly of sand, gravel, shellhash and cobbles. No sub-aquatic vegetation (SAV's) were identified along the south facing beach.

The following invertebrates were observed within the area surveyed on the south facing beach:

Glycera

Pectinaria,

Clymenella

Cancer sp? Lady crabs

North Shore (Seapuit River facing)

A total of 49 shore normal transect lines were surveyed for shellfish along the north side of Dead Neck Beach. A total of 230 sites were sampled yielding a total of 81 commercial shellfish

The following 3 commercial shellfish species were identified during the survey:

Quahog

Mercenaria mercenaria

Soft Shell Clam

Mya arenaria

Razor Clam

Ensis directus

No (SAV's) were identified during the survey.

Density

A total of 240 square foot (ft²) plots within the survey limits were sampled, yielding 81 commercial shellfish. The numbers of each species are shown below.

Quahog	<i>Mercenaria mercenaria</i>	55
Soft Shell Clam	<i>Mya arenaria</i>	25
Razor Clam	<i>Ensis directus</i>	1

These findings yield a density of approximately .4 shellfish per ft² or 3 shellfish per 9 ft².

Densities of each species per 9 ft² are calculated as follows:

Quahog	<i>Mercenaria mercenaria</i>	2.1 / 9ft ²
Soft Shell Clam	<i>Mya arenaria</i>	.9 / 9ft ²
Razor Clam	<i>Ensis directus</i>	<.1 / 9ft ²

In addition, the following invertebrates were observed within the project area:

<i>Glycera</i>	<i>Tellian</i>
<i>Pectinaria,</i>	<i>Solemya</i>
<i>Clymenella</i>	<i>Maldanids</i>
<i>Sipunculids</i>	<i>Capitella</i>
<i>Diopetra</i>	<i>Leitoscoloplos</i>

See **TABLE 2** for detailed results by line and station number. The survey was worked from east to west (Figure 1).

For purposes of understanding the results of the survey:

“NS” means no shellfish were present

A number such as 5.0 represents one shellfish with a size of 5 centimeters across was acquired in the sample at that particular station.



Figure 1

SUMMARY

A shellfish survey was performed on Dead Neck Island in April, 2008 from the entrance to the West Bay 2400' west on both the north and south side of the barrier island. The purpose of the survey was to collect population data on commercial shellfish species for a maintenance beach nourishment project. The site is a barrier beach exposed to Nantucket Sound on the south side and the Seapuit River on the north.

Along the south side of Dead Neck, the beach is exposed to wave action and does not provide ideal shellfish habitat within the surf zone and nearshore sub-tidal zone. The north side of the barrier beach along the Seapuit River generally provides suitable shellfish habitat.

No sub-aquatic vegetation was identified during the survey.

Above the mean tide line the beach has numerous fiddler crabs and no shellfish. We begin to see viable shellfish habitat below the mean low water along the north side of the barrier island. Shellfish densities along the north shore averaged approximately 3 shellfish per square meter. Both juvenile and adult shellfish were present along the north shore indicating suitable habitat for shellfish.