Soil Survey Office at Hammonton, New Jersey (3-HAM)

New Oyster Reef Establishment in the Little Egg Harbor Estuary in Barnegat Bay, New Jersey

Purpose

The Barnegat Bay watershed covers approximately 600 square miles. It has a resident population of about 560,000 people, and the population doubles during the summer season. Suburban growth and development within the watershed unfortunately has had negative impacts on the estuary as a whole, including significant declines in water quality, increased demand on water quality, habitat loss and fragmentation, and declines in the fisheries. The newly published subaqueous soil survey for Barnegat Bay is a tool that already has been used in the challenge to restore and protect the natural resources within the estuary and to mitigate the negative impacts.

The 3-HAM Soil Survey Office (SSO) was recently contacted by Steve Evert from the Coastal Research Center of Stockton University and Dale Parson of Parsons Seafood in Tuckerton, New Jersey. Steve and Dale were interested in determining the different soil series and subaqueous soil mapping units in the Little Egg Harbor estuary portion of Barnegat Bay. The 3-HAM SSO furnished them with a subaqueous soil survey map for their area of interest. Steve and Dale then wanted to determine what benthic bottoms could best support new oyster reef establishment. They already had pre-selected four areas that they both thought could work well for establishing a new oyster reef. Using the subaqueous soil survey for Barnegat Bay, and specifically the information on the Little Egg Harbor estuary, we were able to narrow their four possible sites for new oyster reef establishment to the one optimal site. Upon selecting the best soil site to use, Dale and Steve got to work (see figure 1).

Why is this important? Since the mid-1900s, there has been a significant decline in Eastern oyster (*Crassostrea virginica*) populations due to overharvesting, disease, habitat loss, and compromised water quality. Oysters have a unique ability to provide valuable ecosystem services through water filtration, reducing water turbidity as well as pollution. Established oyster beds and reefs also provide valuable habitat for nursery and juvenile fish. The new oyster reef is a viable means of restoring the human-altered and compromised estuarine ecosystem. It will be monitored and evaluated by the Coastal Research Center to ensure that it continues to improve water quality in the Barnegat Bay estuary.

Figure 1.—Spreading cultch on the site selected for oyster reef establishment.

Key Outcomes

The completed subaqueous soil survey for Barnegat Bay helped generate new technical soil service requests for additional and specific soils information to assist in establishing a new oyster reef in the Little Egg Harbor estuary portion of the bay. In 2016, the new oyster reef was established in the estuary and produced 300 bushels of oysters. It is reported to be providing excellent habitat with minimal silting and subsidence issues. The new oyster reef is not an aquaculture (harvest) site but serves as a habitat restoration area for the degraded Barnegat Bay estuary.

The new oyster reef provides many valuable ecosystem services, including:

- Improving water quality (eutrophication reduction) in an estuary that has been declared compromised by human activities.
- Providing a benthic habitat for many species of fish.
- Serving as a pilot project area for potential additional oyster reef establishment sites, and so further restoring the estuary.

Figure 2.—An oyster rake captures the first-year grab, which is used to monitor the success of the reef.