Coastal Zone Mapping of Little Narragansett Bay

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Introduction

Figure 1. *Photograph taken in Little Narragansett Bay of the submerged headlands, Napatree sand soil map unit.*

Recent studies have demonstrated that *shallow-water sediments* (generally less than 2.5 m deep that exhibit pedological properties could be better understood as "soils" (Demas and Rabenhorst 1998). The extent of subaqueous soils is obvious in coastal zone areas such as Little Narragansett Bay, and their importance to the structure and function of this underwater ecosystem is unquestionable. However, little is known about the physical, chemical, and morphologic properties of these soils.

The geographic focus of this project is in the ecologically significant estuary of Little Narragansett Bay, located along the coast of southeastern Connecticut and southwestern Rhode Island. The project encompasses an area approximately 2,500 acres in size and contains subaqueous soils formed from a variety of parent materials and aquatic environments.

Methods

The USDA, Natural Resources Conservation Service, a member of the National Cooperative Soil Survey, is the lead federal agency for the mapping and interpretations of the nation's soil resources. The well established standards, techniques, and protocols used to map and interpret the nation's terrestrial soil resources have been applied to this project.

Using bathymetry data and soil descriptions from augering, soil scientists identified subaqueous landforms and developed a soil-landscape model. Specific points were then located within each soil-landscape area and soil samples were taken using a vibracore. The soil samples were described and sent to the NRCS National Soil Survey Center, in Lincoln, Nebraska, for laboratory analyses.

Figure 2. *Photographs of three vibracores taken from Little Narragansett Bay. From left to right - the Napatree, Anguilla, and Rhodesfolly tentative series.*

Results and Conclusions

The result of this endeavor is a detailed seamless map extending from the land into the estuary identifying the subaqueous soil resources and soil-landscape model at a scale of 1:12,000. Important subaqueous soil interpretations have been identified and will be developed, such as dredging (sulfidic materials), SAV and shellfish habitat, and moorings. Ancillary benefits are many and include detailed bathymetry, submerged archeological investigations, geomorphologic investigations, and ecologically meaningful characterization of important shallow water habitats, particularly necessary for eelgrass restorations. Ultimately, new partners and stakeholders will be engaged in the National Cooperative Soil Survey efforts.

Background Image – *Photo of eelgrass taken at Little Narragansett Bay.*

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