

# THE MAPPING PARTNERSHIP FOR COASTAL SOILS AND SEDIMENT (MAPCOAST) - NEW FRONTIERS FOR SOIL SURVEY



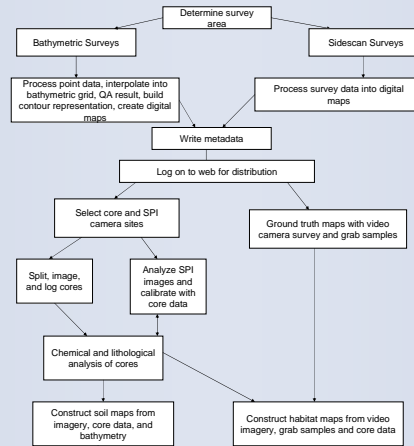
## What is MapCoast?

The MapCoast Partnership began during the winter of 2004 when the Natural Resource Conservation Service approached the University of Rhode Island about establishing the institutional framework needed to begin to map, inventory, describe, and classify coastal soils and sediment in Rhode Island and New England. The MapCoast partnership brings together groups and individuals who recognize the importance and need to collect more detailed soil and sediment data for coastal marshes, dunes, inter-tidal flats, and shallow water habitats (to approximately 5 m of water). MapCoast partners recognize that map data and attributes for coastal and shallow water soils (subaqueous soils) and sediment are essential for management and protection of these vital coastal ecosystems.

## Goals

- 1) Develop a readily accessible database of soils and sediment in coastal Rhode Island that meets the variety of needs of the user community.
- 2) Create and develop a seamless digital terrain model that incorporates existing models and shallow water bathymetry.
- 3) Start to establish correlations between habitat, sediment, and organisms as well as coastal marine and upland communities.

## MapCoast Process



Visit: [www.mapcoast.org](http://www.mapcoast.org)

## Subaqueous Soils and Eelgrass

**Eelgrass** and other **seagrasses** are vital components of the shallow subtidal ecosystem. Seagrasses provide nursery grounds for juvenile finfish and shellfish, act as natural filter of estuarine water. In addition, they are an indicator of water quality and ecosystem health. Eelgrass and other seagrass beds are prime habitat for commercial fisheries and aquaculture. Because of their importance, restoration of areas previously inhabited by seagrasses has been a priority of estuarine managers.

**Subaqueous soils** are the substrate in which seagrasses grow. Subaqueous soils provide structure and nutrients for the seagrass beds and are also a vital component of the subtidal ecosystem. In addition to supporting seagrass beds, subaqueous soils provide habitat for shellfish as well as a variety of other invertebrates. MapCoast partners recognize that mapping subaqueous soils will provide essential information to support eelgrass restoration efforts, aquaculture, commercial shell fishing, and numerous other coastal management activities which are vital to the economy of Rhode Island.



[http://www.inforan.org/mapswork/oregonestuary/oregonestuary\\_page2.htm](http://www.inforan.org/mapswork/oregonestuary/oregonestuary_page2.htm)



Photo courtesy of Thomas Freeman



[www.rohan.sdsu.edu/~kelpbass/Dart\\_Project.htm](http://www.rohan.sdsu.edu/~kelpbass/Dart_Project.htm)

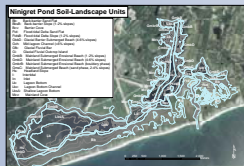
Image by Tony Morse

## MapCoast in Action: Products, Sampling, and Technology

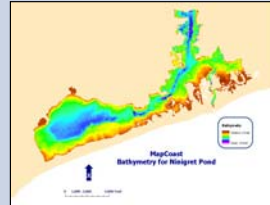


Coarse-silty over sandy-skeletal, Typic Sulfaguet

An example of a vibrocore which has been split in half. After the core has been split, it is described using typical soil science methods. After description, the soil is then classified.



The first complete subaqueous soil survey was done in Ninigret Pond, RI. Soil series information for Ninigret Pond are currently being developed.



The first step in completing a subaqueous soil survey is collecting bathymetry information. Bathymetry is used for identifying subtidal landscapes and locating sampling locations.



A survey grade (RTK) global positioning system is used to collect elevation data in shallow areas where traditional acoustic devices do not work. All elevations are tied to MSL based on NAVD 88.



A side-scan sonar map of Ninigret Pond was also produced to help with the mapping efforts. Side-scan sonar data proved useful for fine tuning map boundaries, identifying other habitats, and providing other information on bottom type.



A bucket auger can also be used to sample the bottom types. The surface in this picture is to the right. Note the distinct horizonation in this sample.



A photo of the piston cover from the pontoon boat.



The bucket auger was used off the side of the boat for sampling subaqueous soils.



Another example of the distinct horizonation which can be observed in these soils. A bucket auger was used for this sample.



Edgetech SubScan - Maps 100 and 400 kHz sidescan and 3 kHz sub bottom.



A sediment profile image (SPI) camera provides a high-resolution image of the upper 20 cm of the soil surface. Data from the SPI camera is used make detailed analysis of the soil water interface, provide grain size data, and indicators of oxic/anoxic conditions. At full resolution, they are 8 x 10".



A map of soil surface textures and Eelgrass Beds for Ninigret Pond - an example of they type of maps that can be created with MapCoast data.



The RI and Connecticut NRCS subaqueous soil mapping teams collaborated to do some vibro-coring in Little Narragansett Bay.



The MapCoast Steering Team in front of the RV Judith Doerner.