

Coastal Zone Soil Survey (CZSS)



For over 30 years, the USDA Natural Resources Conservation Service (NRCS) and National Cooperative Soil Survey (NCSS) partners have been conducting coastal zone soil surveys. CZSS gathers valuable inventory information to assist in predicting and explaining soil distributions and strategic soil functions and limitations. This crucial work assists in identifying healthy ecosystems, determining where to focus restoration resources and efforts, detecting early warning signs of degradation, and helping all of us make wise decisions concerning our coastal natural resources. Coastal areas are vital to our nation's economy and prosperity but also provide significant beneficial human and ecosystem services such as fishing, boating, swimming, and shipping or transporting goods.

What is a CZSS?

A CZSS is a seamless dataset of soil information encompassing shallow subaqueous and submerged soils and adjacent upland areas, including tidal marshes, barrier islands, swamps, and beaches. Subaqueous and submerged soils are permanently covered by water. The 3-dimensional soil inventory dataset provides properties and characteristics of soils from the soil surface to a depth of approximately 2 meters (6 feet). Previous soil survey publications provided limited soil information within coastal areas, but our inventory technologies and science have evolved and improved, allowing soil scientists to inventory and deliver highly detailed soil information for non-traditional NRCS customers such as aquaculture producers.

Why is subaqueous soil survey work so important?

Timely and reliable CZSS data provides valuable information to plan and manage areas with significant values yet exposed to high hazard and erosion potentials. This type of soil survey inventory provides data on subaqueous soils, which empowers aquaculture and fishery industry producers to make informed management decisions and conservation strategies to maximize production. Data such as spatial mapping, tabular soil properties and characteristics, and soil interpretations are widely recognized as critical for mitigating soil erosion hazards, creating the most accurate resource inventories, guiding strategic coastal restoration efforts, and tracking shoreline change due to coastal erosion.

How are subaqueous soils mapped?

Like terrestrial or traditional soil surveys, coastal areas are best inventoried using the well-established NCSS standards to guide the collection, inventory, and distribution of information about the nation's soil resources. Mapping soil involves a soil scientist who traverses the landscape, digging and documenting soil conditions to provide a map of the changes in soil properties and characteristics. Subaqueous soil mapping is performed similarly, except the soil is permanently submerged. Instead of topographic maps to provide landscape position, subaqueous soil inventory uses topobathymetric products to identify landscapes and landforms. Soil scientists use special tools such as peat corers, vibracores, and boats to obtain subaqueous soil profiles and samples.

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NRCS soil scientists worked with a boat manufacturer to build a custom-made airboat designed and equipped to collect soil samples in the marsh.



A soil scientist examines a subaqueous soil sample from a split vibracore soil profile. A soil profile is a vertical section of soil that shows the different soil layers.



Soil scientists secure a vibracore containing soil samples retrieved from a distinctive landform in the Long Island Sound using a custom-made pontoon boat.

What is NRCS' role in mapping coastal zones?

As part of the National Cooperative Soil Survey, NRCS is the lead Federal agency for mapping and interpreting our nation's soil resources, including the coastal zone. NRCS supports rigorous scientific content from field data gathering and research, distinctive partnerships, and modern techniques to produce spatial and tabular seamless soil surveys as well as timely distribution of the data to all users. NRCS knows that more refined and detailed scientifically based coastal zone soil inventory, data, and interpretations are achievable.

How will the information be used?

This collaborative, goal-oriented mapping project is useful in addressing the soil data needs of conservation planners, engineers, and land managers. NRCS conservation staff use CZSS information to enhance program delivery for aquaculture suitability, fish habitat restoration, seagrass planting restoration, the Environmental Quality Incentives Program, and other conservation-related practices. CZSS data also helps inform coastal management strategies to protect, conserve, and manage our nearshore coastal waters and natural resources.

Where can you find CZSS data?

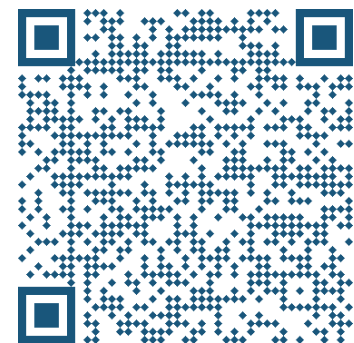
For much of the country, coastal zone soil survey data is available for swamp, tidal marsh soils, and adjacent upland areas. Subaqueous and submerged soil mapping is available for parts of Connecticut, Delaware, Florida, Maryland, New Jersey, New York, North Carolina, Rhode Island, Massachusetts, and Texas. Current and upcoming projects include new and additional portions of California, Delaware, Florida, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, North Carolina, Ohio, Puerto Rico, Rhode Island, Texas, and Virginia.

Web Soil Survey is the official online portal for soil survey inventory data. It provides tabular soil properties and characteristics, spatial mapping, and various soil interpretations. Many existing soil interpretations work for coastal zone soils, but because of the unique nature of subaqueous soils, NRCS soil scientists developed new interpretations for uses specific to the continuous inundation of the coastal zone. Current interpretations include:

- ◆ Submerged aquatic vegetation restoration potential
- ◆ Land utilization of dredge materials
- ◆ Mooring anchors
- ◆ Coastal and Marine Ecological Classification Standard bottom type
- ◆ Suitability for hard clam habitat
- ◆ Suitability for eastern oyster habitat

Visit www.soils.usda.gov or scan the QR code to learn more about soil survey.

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