

Ecological Site Descriptions of a Transitioning Subaqueous and Terrestrial Ecological Site in Southeastern Connecticut

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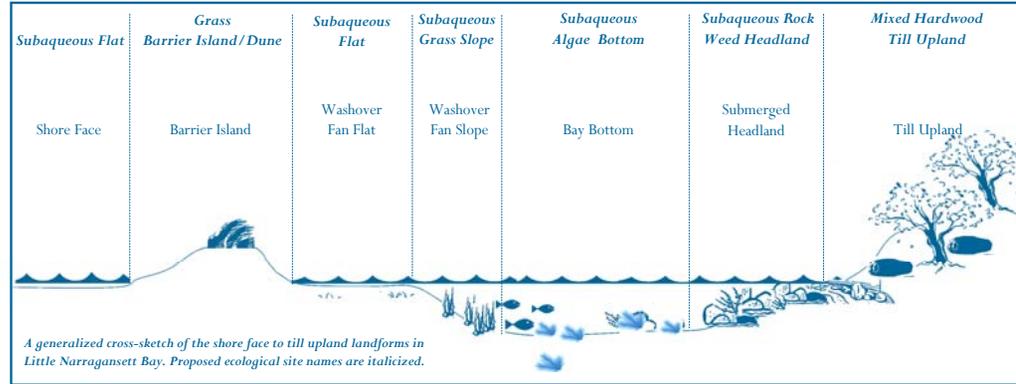
Introduction

The purpose of this study is to initiate the characterization of subaqueous and terrestrial ecological site descriptions. Specifically to define, delineate, and describe the Subaqueous Flat ecological site in southeastern Connecticut within the Little Narragansett Bay area.

An ecological site is recognized and described on the basis of the characteristics that differentiate it from other sites in its ability to produce and support a characteristic biological community. The ecological site description contains information about the individual ecological sites and is mapped by the Natural Resources Conservation Service by associating soil map units with one or more ecological sites.

An ecological site description is a product of all environmental factors responsible for its development. Physiographic features, climate features, water features, soil features, plant communities, site interpretations, and other supporting information are combined to produce an ecological site description.

Ecological site descriptions provide a common structure for communication of resource information among disciplines, agencies and organizations; information describing the interaction between soils, vegetation, animals, and land use; information to assess the condition of current sites and monitor changes; and information to support management decisions. Any land inventory, analysis, and resulting land management decisions require knowledge of these individual sites and their interrelations with one another.



Ecological Dynamics of the Site:

The Southern New England coastline is composed of barrier islands, peninsulas, bays and estuaries, and natural man-made passes. These mobile environments, constantly reshaped by the process of erosion and accretion are shown on the cross-sketch below. Hurricane activity can significantly change this environment.

In Long Island Sound, eelgrass is found at depths between 0.5 and 3.7 meters below mean low water (Koch and Boer, 1996) and form as isolated clumps or continuous beds. In the Subaqueous Flat ecological site, water depths range from 0 to 2.5 meters below mean sea level and eelgrass clumps or algal beds are sparse or nonexistent.

Factors influencing eelgrass distribution and growth include light penetration, nutrients, substrate, temperature, current velocity, wave energy, and salinity. Other disturbances in this area that can severely impact or damage eelgrass beds are trawls, nets, mooring chains, motorboat propellers, feeding herbivores (such as Canada geese (*Branta canadensis*) and the introduced mute swan (*Cygnus olor*)), and the placement of fill or dredged materials (TSCHR, 2003).

Koch, E. W., and S. Boer. 1996. Tides, light and the distribution of *Zostera marina* in Long Island Sound, USA. *Aquatic Botany* 53:97-107

Technical Support for Coastal Habitat Restoration (TSCHR). 2003. Long Island Sound habitat restoration initiative. Section 3: Submerged Aquatic Vegetation. p. 1-22.



Physiographic Features

These nearly level subaqueous soils are in shallow to deep water flats. The very deep, subaqueous soils are permanently submerged with saline water on unstable washover fans flats and shore faces. The soils formed in sandy deposits with numerous buried horizons from catastrophic storm events that breached the barrier island or spit. The soil is subject to depositional change due to severe storm events. Wave action and strong currents influence the formation of these soils. Water depths are up to 2.5 meters. Slopes are nearly level. This site is near the transitional margin of the Grass Barrier Island/Dune and Subaqueous Grass Slope ecological sites.



Representative Soil Features

Soil Series: (1) Rhodesfolly

The Rhodesfolly series consists of very deep, subaqueous soils that formed in sandy marine deposits. Typically, this Rhodesfolly soil has a firm, very dark gray fine sand surface layer, 0 to 23 cm thick. The substratum is dark gray or very dark gray sandy deposits with numerous buried horizons.

The Rhodesfolly soils are permanently submerged with salt or brackish water. All horizons have a pH of neutral through strongly alkaline and a pH of very strongly acid through slightly alkaline after 8 weeks incubation. Electrical conductivity is >16 mmhos/cm and salinity is >25 ppt throughout the profile. This soil has a peraquic moisture regime and high to very high saturated hydraulic conductivity.

Parent Material Kind: sandy marine deposits
Parent Material Origin: sandy marine deposits
Surface Texture: loamy fine sand to coarse sand
Surface Texture Modifier: none or gravelly
Subsurface Texture Group: sandy
Drainage Class: subaqueous

	Minimum	Maximum
Surface Fragments <=3" (% Cover):	0	0
Surface Fragments >3" (% Cover):	0	0
Subsurface Fragments <=3" (%Volume):	0	25
Subsurface Fragments >3" (%Volume):	0	0
Saturated Hydraulic Conductivity:	high	very high
Depth (cm):	0	200
Soil Electrical Conductivity (mmhos/cm):	39	55
Soil Salinity Level (ppt):	25	35
Soil Reaction (1:1 Water Initial pH):	6.6	9.0
Soil Reaction (1:1 Water Oxidized pH):	4.5	7.8
Sulfidic Materials:	None	None



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