

Seashore Plantings

The misty and enchanting atmosphere of coastal landscape attracts people to build their homes by the seashores. New homeowners often desire luxuriant vegetation surrounding their dwellings for protection and privacy. However, the non-tempered winds and ocean spray present an enormous challenge to plant life to be able to stabilize in unsettled sand. It is crucial to select suitable plants that endure the harsh environment for a successful seashore landscaping.

Plants that are able to survive in the rugged coastal environment must withstand the prevailing winds, tolerate the salt spray and be capable to set their roots into dry and porous sand. The use of native plants has become more acceptable by many residents and been boosted by the awareness of ecological and energy issues in coastal environment. However, some introduced species that can do well in seashore conditions should also be included for increasing the stabilization of sand dunes and the diversity of vegetation along the shorelines.

An understanding of coastal ecosystem is essential to be able to position proper plants at the proper places. Seashore plantings serve an important function as natural erosion stabilization for dunes and bluffs along the coastline. There are four major coastal ecosystems could be identified on Long Island shores with distinct ecological characteristics.

The Coastal Ecosystem of Long Island

Belt I – A. Seashore conditions

Areas consist of relatively flat beach and beach dune that dominate the south shore of Long Island. The beach dunes immediately flanking beaches are known as primary dunes.

The most common primary fore-dune plants are herbaceous perennial plants that die to the ground in the fall of each year and send up new shoots from their roots in spring. These primary fore-dune plants act as dune stabilizers. They slow the wind at the dune surface, causing deposition of wind borne sand. During storms their root systems help hold sand in place, there by slowing the rate of dune erosion.

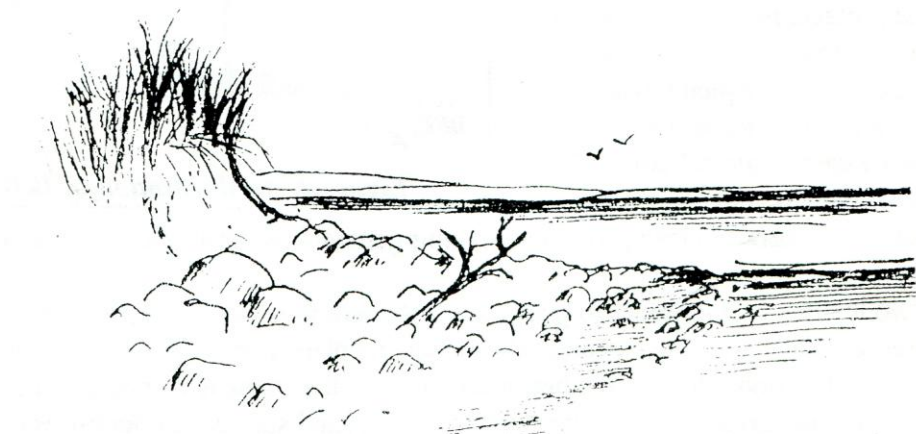


Figure 1. An illustration of Belt I-A, Seashore Conditions.

Belt I – B. Coastal Sound Bluff Ecosystem

Narrow beaches backed by eroding sandy bluffs characterize much of the north shore of Long Island, including parts of the north shore of the South Fork.

The beach bluffs flanking the narrow beaches on Long Island's north shore are over one hundred feet in some areas. There are many good plants including grasses, vines, low shrubs, and minor trees that can be used for bluff-stabilization projects.

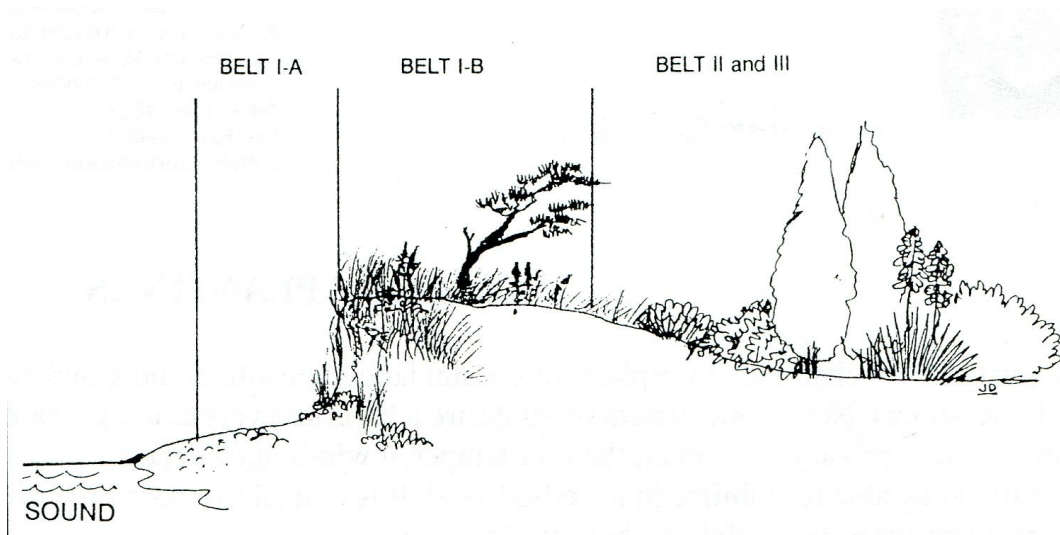


Figure 2. An illustration of Belt I-B, Coastal Sound Bluff Ecosystem.

Belt II –Coastal Plain Ecosystem

Areas sit behind the sand dune or the bluff. Plants usually are more protected by the dunes, bluffs, screens, or artificial structures.

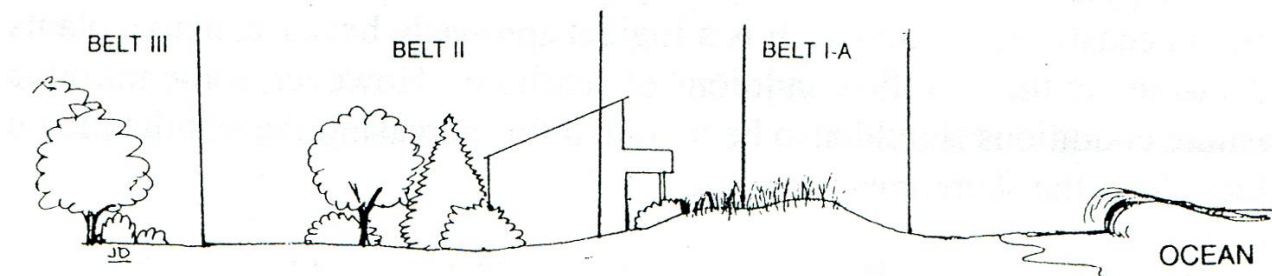


Figure 3. An illustration of Belt II, Coastal Plain Ecosystem.

Belt III – Barrier Beach Ecosystem

On barrier beaches, the secondary dunes lead to a protected bay. The back of the primary dune and the protected areas of secondary dunes are characteristically vegetated in a zoned mosaic pattern. This means that micro-environmental conditions favor the dominance of various plants in relatively close proximity making generalizations about this area very difficult.

Two limiting factors seem to play a key role here though: height above sea level and exposure to salt laden sea breezed. The lower the elevation the closer the plant communities are to the water table.

The dry dune areas (at higher elevations) behind the beach are very similar in many respects to a desert environment for the stationary plants found growing there. It is very hot with sand surface temperatures of

120°F not uncommon. It is also very dry. Rainwater percolates very rapidly through sand and so plants must have very deep root systems to reach the water table below.

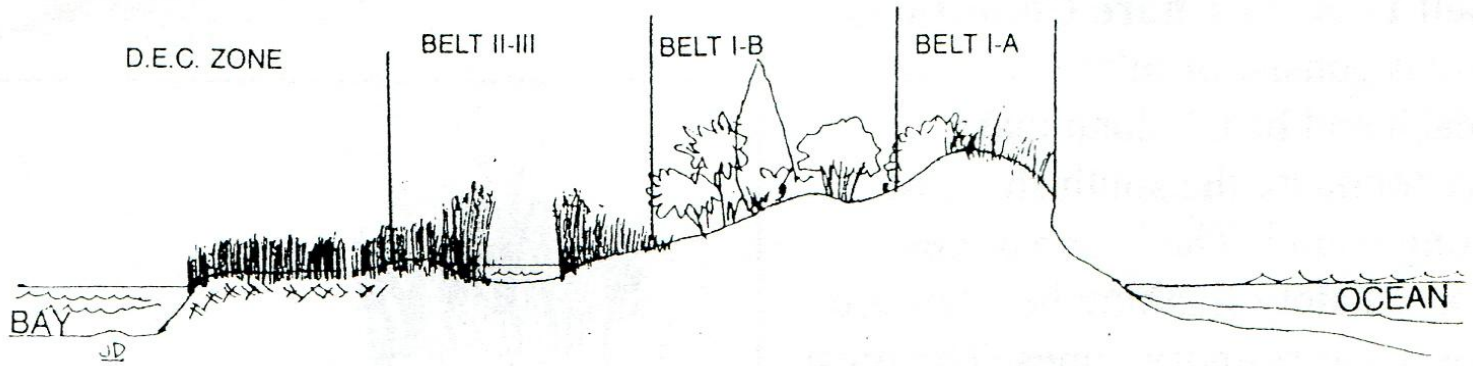


Figure 4. An illustration of Belt III, Barrier Beach Ecosystem.

Landscape Plants for the Coastal Environment

This list is broken down into belts of exposure depending on the ecosystem of the Long Island coastal environment. The maximum water support is drip irrigation, at least for establishment purposes.

Belt I - A. Seashore Conditions

<i>Ammophila breviligulata</i>	American beachgrass
<i>Artemisia stelleriana</i>	Beach wormwood
<i>Lathyrus japonicus</i>	Beach pea
<i>Solidago sempervirens</i>	Seaside goldenrod

(Virtually no woody plants could survive in this harsh environment)

Belt I - B. Coastal Sound Bluff Ecosystem

Trees:

<i>Pinus rigida</i>	Pitch pine
<i>Prunus serotina</i>	Wild black cherry
<i>Prunus virginiana</i>	Choke cherry

Shrubs:

<i>Amelanchier canadensis</i>	Shadbush
<i>Ligustrum ovalifolium</i>	California privet
<i>Myrica pensylvanica</i>	Bayberry
<i>Prunus maritima</i>	Beach plum
<i>Rhus copallina</i>	Shining sumac
<i>Rhus typhina</i>	Staghorn sumac
<i>Rosa rugosa</i>	Rugosa rose

Grasses, Ground Covers and Herbaceous Perennials:

<i>Arctostaphylos uva-ursi</i>	Bearberry
<i>Chrysanthemum nipponicum</i>	Montauk Daisy
<i>Hudsonia tomentosa</i>	Beach heath
<i>Juniperus conferta</i>	Shore juniper
<i>Juniperus horizontalis</i>	Creeping juniper
<i>Opuntia humifusa</i>	Prickly pear
<i>Sedum spp</i>	Stone crops
<i>Parthenocissus quinquefolia</i>	Virginia creeper

Belt II – Coastal Plain Ecosystem

Trees:

<i>Amelanchier canadensis</i>	Serviceberry
<i>Celtis occidentalis</i>	Hackleberry
<i>Crataegus crus-galli</i>	Cockspur hawthorne

Shrubs:

<i>Aronia arbutifolia</i>	Chokeberry
<i>Aronia melanocarpa</i>	Black chokeberry
<i>Caryopteris x clandonensis</i>	Blue mist shrub

<i>Crataegus phaenopyrum</i>	Washington hawthorne	<i>Clethra alnifolia</i>	Sweet pepperbush
<i>Gleditsia triacanthos</i>	Honeylocust	<i>Comptonia peregrina</i>	Sweet fern
<i>Juniperus virginiana</i>	Red cedar	<i>Hydrangea macrophylla</i>	Bigleaf Hydrangea
<i>Ilex opaca</i>	American holly	<i>Ilex glabra</i>	Inkberry
<i>Rhus aromatica</i>	Fragrant sumac	<i>Ilex verticillata</i>	Winterberry
<i>Rosa wichuraiana</i>	Memorial rose	<i>Juniperus chinensis</i>	Chinensis juniper
<i>Santolina chamaecyparissus</i>	Lavender cotton	<i>Juniperus horizontalis</i>	Creeping juniper
<i>Spatina pectinata</i>	Freshwater cordgrass	<i>Pinus mugo</i>	Mugo pine
<i>Yucca filamentosa</i>	Adam's needle	<i>Salix purpurea</i>	Purple osier
<i>Yucca glauca</i>	Soapweed	<i>Vaccinium corymbosum</i>	Highbush blueberry

Grasses, Ground Covers and Herbaceous Perennials:

<i>Elymus arenarius</i>	Blue lyme grass
<i>Festuca ovina</i> 'Glaucous'	Blue fescue
<i>Hemerocallis</i> spp. & cvs.	
<i>Hibiscus moscheutos</i>	Marsh mallow
<i>Lavandula angustifolia</i>	English lavender
<i>Rosa wichuraiana</i>	Memorial Rose

Belt III - Barrier Beach Ecosystem

Trees:

<i>Abies concolor</i>	White Fir
<i>Acer rubrum</i>	Red Maple
<i>Cedrus atlantica</i>	Atlas Cedar
<i>Cercis Canadensis</i>	Eastern redbud
<i>Chamaecyparis thyoides</i>	Atlantic white cedar
<i>Cryptomeria japonica</i>	Japanese Cedar
<i>Fagus sylvatica</i>	European Beech
<i>Ilex opaca</i>	American holly
<i>Malus</i> spp. & cvs.	Crabapple
<i>Nyssa sylvatica</i>	Pepperidge; Black Gum
<i>Picea abies</i>	Norway Spruce
<i>Pyrus</i> spp.	Pear
<i>Sophora japonica</i>	Japanese Pagoda Tree
<i>Syringa reticulata</i>	Japanese Tree Lilac
<i>Tilia</i> spp.	Basswood; Linden

Grasses:

<i>Calamagrostis x acutiflora</i>	'Karl Foester'
<i>Erianthus ravennae</i>	Ravena grass
<i>Helictotrichon sempervirens</i>	Ornamental oats
<i>Panicum virgatum</i>	Switch grass

Shrubs:

<i>Euonymus japonica</i>	Euonymus
<i>Forsythia</i> spp.	Forsythia
<i>Juniperus</i> spp.	Juniper
<i>Kolwitzia amabilis</i>	Beautybush
<i>Potentilla fruticosa</i>	Shrub Cinquefoil
<i>Rhododendron</i>	Pinxter bloom azalea
<i>periclymenoides</i>	
<i>Rhododendron vaseyi</i>	Pink shell azalea
<i>Rhododendron viscosum</i>	Swamp azalea
<i>Rosa</i> 'Knock Out'	Rose

Ground Covers:

<i>Iberis sempervirens</i>	Candy tuft
<i>Liriope</i>	Liriope
<i>Pachysandra terminalis</i>	Pachysandra

Herbaceous Perennials:

<i>Armenia maritima</i>	Sea pink
<i>Asclepias tuberosa</i>	Butterfly Weed
<i>Erygium maritimum</i>	Sea holly

The Beach Environment

It is hostile to plant life. Even native plants which have adapted themselves to seaside conditions through the ages find establishment difficult. For almost all of them, growth is slow.

The inhibitive natural forces:

Salt Spray – is the most potent factor. Plants vary considerably in their resistance to its damaging effect. Plants with less resistance to the salt spray and violent winds of frontal areas find their places toward the rear.

The “Grass” or “Pioneer zone” –is closest to the ocean and has the most direct exposure to the elements.

The middle “Scrub Zone” –usually starts behind the protection of frontal dunes; the greatest distance from the ocean.

Trees which do advance into the scrub zone are whipped and sheared down to shrub size. The sprawling wind-flattened trees can be seen on the beach. Salt-laden ocean winds can transform the majestic tree into a wind sheared shrub, molded and smoothed into sculptured harmony with the contours of the rolling sand dunes.

The heaviest accumulation of spray occurs on the seaward side of vegetation. The chlorine ion enters the leaf tissue. These salts are not translocated, and when the concentration in the tissue becomes too great, the leaf or bud dies.

Killing of the terminal cause profuse lateral branching and the development of a dense canopy in which individual leaves and twigs protect each other and don not accumulate killing amounts of salt. While this process is going on, the protected leeward stems of the plant grow and elongate in the direction away from the ocean.

When individual leaves and twigs from a canopy dense enough to protect the plant from lethal salt accumulations, so does the plant itself set up a barrier to help shield one or more plants behind it.

The Sand

Dune sand performs the important job of providing a base to anchor and support the plant. This function is sometimes in jeopardy when gale winds swirl and sand begins to shift. The dune sand has an extremely high percent of very fine sand, minute quantities of clay, silt and lack of organic matter. Once it dries out, as it easily does, it is difficult to wet again.

Yet, in the “subsoil” zone of dune land, there is more moisture than one would expect. When plants get their roots into this more constant supply of water they have overcome the first big obstacle to survival. The almost pure sand profile of a dune offers little resistance to root penetration. This is beneficial. Most naïve dune plants develop deep and extensive root systems which tap the lower lying and more constant sources of water. The tough cuticle of leaves and their ability to toll inward to reduce transpiration are other factors which help many native beach plants to survive hot, dry summer periods.

Temperature

Did you ever walk barefoot on the bare sand among the dunes on a hot sunny day? The bare sand surface in the dunes could be many degrees higher than the temperature in the shade.

The Wind

The wind acts as a transporting agent of salt spray has the most profound effect on vegetation. Another wind factor to be recognized with it is its force and the resulting physical damage to plants. Native plants of the beach areas have growth characteristics which resist injury. Most of them have tough leathery leaves – Bayberry, Euonymus , Ligustrum and Yucca. Strong wind can sandblast, up-root, or bury plants.

The above plant list has been revised by Caroline Kiang, Extension Educator - Cornell Cooperative Extension of Suffolk County with recommendations and advices from Dr. Jonathan Lehrer, Farmingdale State College, and Richard Weir of Horticulture Solutions 6/2012

Line drawings done by Jeanne Daniele, Suffolk County Master Gardener Volunteer.

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