

Selection and Maintenance of Plant Materials for Coastal Landscapes



Coastal Landscaping

Landscaping in coastal areas presents some difficulties not encountered elsewhere. The forces of nature along the shore can be extremely harsh. Salt spray, wind, poor soil, dry conditions, shifting sands, storms and even salt water overwash will limit the number of plants that may be used on these sites. All of these factors cause problems for many common landscape plants. At the same time, using plant material is one of the best methods of controlling erosion caused by coastal forces. Native and naturalized species that are adapted to coastal conditions are especially effective because they may require less maintenance and upkeep. The following information is intended as a guide to coastal landscape practices and is also appropriate for other sites with dry, sandy soils.

With any coastal project, keep in mind that any activity in the resource area, or within the 100' buffer zone, is subject to jurisdiction under the local Conservation Commission which administers the Wetlands Protection Act (MGL Ch. 131, sec. 40), as well as any existing town bylaws. In most cases, this involves a permit process. Resource areas include not only water bodies and wetlands but also bordering vegetated wetlands, coastal banks, dunes, salt marshes, beaches and tidal flats.

Plants and Planting

When selecting plants for coastal landscapes, keep in mind that few plants can survive the rugged conditions of full and direct exposure to the ocean. Proper plant selections based on site-specific conditions and site preparation become critical and are basic to the success of any coastal landscape. Although wind and salt spray cannot be controlled, careful planning can reduce exposure to these conditions. Plant screens can be planted to provide shelter for less tolerant plants. For example, rugosa rose (*Rosa rugosa*) and bayberry (*Myrica pensylvanica*) can be used to form a low, tough outer defense in areas other than the seaward side of the fore dunes. Behind this, a staggered double row of evergreens, such as Japanese white pine (*Pinus parviflora*) or Eastern red cedar (*Juniperus virginiana*) will enhance the effect. Once this screen is in place, it will shelter less tolerant plants, allowing them to become established. Plant screens generally start with the low materials on the windward side and increase in height away from the wind.

In addition to salt and wind, dry, permeable sandy soil conditions may also pose similar problems on many properties. A critical aspect of planting in coastal areas is the condition of the soil. This applies not only to direct waterfront parcels but also to inland areas adjacent to the coast. Sandy soils are dry and lack nutrients and organic matter. When preparing soil for planting, the addition of organic material to the planting area is highly recommended. Compost, composted manure or peat moss will increase the ability of a sandy soil to hold both water and nutrients. A minimum of a 3" layer of organic material should be worked into the entire planting area; more would be better. Trees and shrubs should be planted following correct procedures: planting holes should be three to five times the diameter of the root ball and no deeper than the distance measured from the trunk flare to the bottom of the root ball. Find the trunk flare on trees and plant them so the flare is at ground level. Avoid deep planting, as this will result in the eventual decline of the plant. Adequate water at planting time is critical to the survival of the plant material. Newly

planted material, even if drought tolerant, will require regular additional water throughout the first growing season. A two to three-inch layer of mulch will help reduce loss of soil moisture and keep soil temperatures cooler. Even with the addition of organic materials, plants that are adapted to dry, sandy conditions should be selected as they will need less maintenance and care once they have become established. Plants that are not adapted will have an increased maintenance requirement and may be more susceptible to insect and disease problems.

As a general policy, use native plants whenever possible. The best indicator of plant suitability will be the plant community that is already growing on the site. The existing plants will tell you more about the site than almost anything else will, and additional plant selections can be made based on what is already there. For instance, if only a few hardy plants can be found, such as American beach grass (*Ammophila breviligulata*), beach plum (*Prunus maritima*), bayberry and red cedar, the number of other suitable plants will usually be limited. On other sites with more shelter and better soils, even along the water, a varied mixture of healthy plants will reflect the larger number of choices available.

Weeping lovegrass (*Eragrostis curvula*) is a bunch type perennial grass that can be seeded in sandy areas that are not subject to blowing sand. Hardy to zone 7, it is adapted to poor, droughty soils and has an extensive fibrous root system that stabilizes sandy soils. It can be seeded at the rate of 5 lbs. per acre on a soft seedbed. As it needs warm soil for germination, it is best sowed between May 1 and June 15 and raked or harrowed into the sand. Rolling or culti-packing following sowing to ensure good seed contact with the soil enhances germination. Lovegrass will reseed itself if allowed to mature, thus strengthening the stand over time.

Dunes

In sterile dune areas or in areas with blowing sand, American beach grass is the best plant to use in initial plantings. Beach grass can be planted in late fall and through the winter up until mid April. Dormant culms should be planted 8" deep, with two to three stems per hole, spaced 12" to 18" apart depending on slope and exposure as well as density constraints in endangered or threatened shorebird habitat (seek the opinion of your local Conservation Commission). Shrubs such as bayberry and rugosa rose can be used further back in the dunes once the beach grass has become established, since the beach grass will protect the shrub stems from sand abrasion.

Steep embankments

On steep embankments, soil stabilization becomes extremely difficult. Even if the entire face of the bank has established vegetation on it, ground water seepage can cause entire sections of the bank to erode or slump. For barren banks, mulches, netting and erosion control blankets placed over various seed grasses can be used to hold the embankment until vegetation becomes established. Trees should not be planted on the bank face, as they are more likely to be pulled out as they grow due to erosion or high winds. Existing trees should be pruned back. Grasses, with their fibrous root systems, tend to be better as stabilizing plants than shrubs. However, shrubs can provide a canopy that will intercept heavy rainfall, thereby reducing erosion, and are good when used in combination with grasses.

Any bare spots on the slope should be vegetated as soon as possible to provide a thick plant cover to control erosion. Avoid piling brush or debris on a bank as this will not protect the slope from erosion and,

in some cases, will prevent stabilizing plants from becoming established.

If the toe of the slope is not stabilized, erosion of the bank will continue to occur. When sections of a slope are lost due to winter storms, waves, heavy rains or wind damage, they must be repaired before additional damage occurs. American beach grass can be used to stabilize the base of many slopes but can only be used to the tide line. Biodegradable fiber rolls (bio-logs), with culms of beach grass planted in them can be used to stabilize the toe of a bank, allowing the upper bank vegetation to become established. In sheltered locations, salt marsh grass (*Spartina patens*) can be used in the area between mean high and spring high tide lines. Saltwater cordgrass (*Spartina alterniflora*) can be used in the intertidal zone. Both beach grass and cordgrass are available from commercial nurseries.

Lawns

The same coastal forces that affect trees and shrubs will also influence the health of a lawn. In poor, sandy soils, a minimum of 6" of topsoil should be applied prior to seeding or sodding. This will improve conditions for good turf establishment as well as minimizing potential leaching of nutrients. Turf grasses such as chewing fescue, hard fescue and creeping fescue should predominate over Kentucky bluegrass in any seed mix or sod blend. These types of grass will have a higher tolerance for dry conditions and a lower requirement for nitrogen fertilization than bluegrass. Use a starter fertilizer when seeding or sodding a new lawn. For established lawns, the use of a slow release fertilizer (i.e. WIN or Water Insoluble Nitrogen) will also minimize the potential leaching of nutrients. Water is necessary for good plant growth but light, frequent irrigation promotes shallow rooting of turf. Water lawns infrequently but deeply, soil should be moist to a depth of 6" to promote deep rooting.

With an increased interest in the use of native plants, many blends of native grass seeds are now available commercially. Fine fescue is a native grass that has been improved for turf grass use. It is slow growing, and if left uncut, will reach a mature height of 8" to 12". Fescue has narrow, fine leaf blades and is very drought tolerant. It also has low fertility requirements and will tolerate partial shade. There are two main types of fine fescue: red fescue (*Festuca rubra*), which includes creeping and chewing fescue, and sheep fescue (*F. ovina*). Hard fescue is variety of sheep fescue (*F. ovina* var. *longifolia*).

Little bluestem (*Schizachyrium scoparium*) is a native grass found throughout the northeast, especially in coastal areas. It can be found in mixes with fine fescues, as well as mixed with tufted hairgrass (*Deschampsia flexuosa*) and Pennsylvania sedge (*Carex pensylvanica*).

Native grasses can be left to form a meadow but will benefit from annual mowing to eliminate woody plants that seed in. If a mowed lawn is desired, it should be maintained at a height of 2 ½" -3".

Buffer Strips

In conjunction with a lawn, a vegetated buffer strip should be maintained between the resource area and the area of human intervention. A buffer strip can control erosion resulting from run-off cascading over the top of and down a bank face. It will also provide wildlife habitat and reduce or prevent human impact on the edge of the water or resource areas. For example, a narrow vegetated buffer strip, 10' to 20' wide, along the edge of a resource area will mitigate the effects of a fertilized lawn and managed landscape, trapping potential pollutants and nutrients moving from the managed area towards a water body.

Whenever possible, use indigenous species when planting vegetated buffer strips. Wider buffers may be recommended by many towns, especially for more intensive uses such housing or commercial developments, roads or parking areas. For information about regulations in your town, consult with your local Conservation Commission.

Paths and walkover structures

People always desire access to the water; this often results in people walking down a coastal bank or over a dune. If access is not provided by a path, boardwalk or other right-of-way, the entire areas will be impacted by foot traffic, frequently resulting in severe erosion. To mitigate this, boardwalks or stairs should be installed to close existing footpaths that are causing erosion. Entrances and edges can be planted with thick or thorny shrubs to discourage access. Rugosa rose or sea buckthorn (*Hippophae rhamnoides*) would be good choices but any well-established planting will work. Snow or sand fencing can be installed to prohibit access in eroding areas. A permit is required before any structure such as a stairway or boardwalk can be constructed. Check with your local Conservation Commission for requirements prior to construction.

Native plants

When landscaping in sensitive coastal or wetland areas, it is recommended that plant species that are indigenous to a particular locale be used if they are available. These plant species, having developed naturally in these areas, are particularly well adapted to these habitats and enhance the biodiversity as well as provide food and shelter for wildlife.

Native Plants for Coastal Planting

*suitable for exposed conditions

Ground covers, grasses and forbs

American Beach grass - *Ammophila breviligulata**
American Dune grass – *Leymus mollis*
Bearberry - *Arctostaphylos uva-ursi**
Creeping Juniper - *Juniperus horizontalis**
False Heather - *Hudsonia tomentosa**
Hard Fescue - *Festuca ovina* var. *longifolia*
Lance-leaf Coreopsis- *Coreopsis lanceolata*
Little Bluestem - *Schizachyrium scoparium*
Marsh Hibiscus - *Hibiscus moscheutos*
Panic Grass - *Panicum virgatum*
Pennsylvania Sedge - *Carex pennsylvanicum*
Red Fescue - *Festuca rubra*
Saltmarsh Cordgrass - *Spartina patens*

Scotch Lovage – *Ligusticum scoticum*
Sea Lavender - *Limonium nashii**
Seashore Mallow - *Kosteletzkya virginica*
Seaside Goldenrod - *Solidago sempervivans**
Sheep Fescue - *Festuca ovina*
Smooth Cordgrass - *Spartina alterniflora*
Sweet Goldenrod – *Solidago odorata*
Thread-leaf Coreopsis - *Coreopsis verticillata*
Tufted Hairgrass - *Deschampsia flexuosa*
Virginia Creeper - *Parthenocissus quinquefolia**

Shrubs

Arrow-wood - *Viburnum dentatum*
Bayberry - *Myrica pensylvanicum**
Beach Plum - *Prunus maritima**
Chokeberry, Black - *Aronia melanocarpa*
Chokeberry, Red - *Aronia arbutifolia*
Coast Leucothoe - *Leucothoe axillaris*
Eastern Ninebark - *Physocarpus opulifolius*
Elderberry - *Sambucus canadensis*
Groundsel Bush - *Baccharis halimifolia*
Highbush Blueberry - *Vaccinium corymbosum*
Inkberry - *Ilex glabra*
Marsh Elder - *Iva frutescens*
Nannyberry - *Viburnum lentago*

New Jersey Tea - *Ceanothus americanus*
Northern Wild Raisin - *Viburnum cassinoides*
Shadbush - *Amelanchier canadensis**
Sumac, Fragrant - *Rhus aromatica*
Sumac, Shining - *Rhus copallina*
Sumac, Smooth - *Rhus glabra*
Sumac, Staghorn - *Rhus typhina*
Sweet Fern - *Comptonia peregrina**
Sweet Pepperbush - *Clethra alnifolia*
Sweetspire - *Itea virginica*
Virginia Rose - *Rosa virginiana*
Winterberry - *Ilex verticillata*

Trees

American Holly - *Ilex opaca*
Eastern Arborvitae - *Thuja occidentalis*
Atlantic White Cedar - *Chamaecyparis thyoides*
Black Cherry - *Prunus serotina**
Colorado Spruce - *Picea pungens* (native to North America)
Eastern Red Cedar - *Juniperus virginiana**
Green Ash - *Fraxinus pennsylvanica*

Oak, various species - *Quercus* spp.*
Pitch Pine - *Pinus rigida**
Red Maple - *Acer rubrum*
Sassafras - *Sassafras albidum*
Sweet Bay Magnolia - *Magnolia virginiana*
Tupelo - *Nyssa sylvatica*
White Spruce - *Picea glauca* (native to North America)

Non-Native Ornamentals for Coastal Planting

Groundcovers, grasses and forbs

Bearberry Cotoneaster - *Cotoneaster dammeri*
Dusty Miller - *Artemisia stelleriana**
English Lavender - *Lavandula angustifolia*
English Ivy - *Hedera helix*
Feather Reed Grass - *Calamagrostis acutiflora*
Heather - *Calluna vulgaris*
Juniper, Japanese Garden - *Juniperus procumbens**

Juniper, Shore - *Juniperus conferta**
Memorial Rose - *Rosa wichuraiana*
Santolina - *Santolina chamaecyparissus*
St. Johnswort - *Hypericum* spp.
Russian Sage - *Perovskia atriplicifolia*
Thyme - *Thymus* spp.
Variegated Moor Grass - *Molina caerulea variegata*
Weeping Lovegrass - *Eragrostis curvula*
Yarrow - *Achillea* spp.

Shrubs

Alternate Leaf Butterfly Bush - *Buddleia alternifolia*
Bigleaf Hydrangea - *Hydrangea macrophylla*
Bush Cinquefoil - *Potentilla fruticosa*
Butterfly Bush - *Buddleia davidii*
Climbing Hydrangea - *Hydrangea anomela* subsp. *petiolaris*
Common Cherrylaurel - *Prunus laurocerasus*
Firethorn - *Pyracantha coccinea*
Japanese Holly - *Ilex crenata*
Panicle Hydrangea - *Hydrangea paniculata*
Purple-leaf Sand Cherry - *Prunus x cistena*
Rockspray Cotoneaster - *Cotoneaster*

horizontalis
Rose of Sharon - *Hibiscus syriacus*
Rugosa Rose - *Rosa rugosa*
Scotch Broom - *Cytisus scoparius*
Sea Buckthorn - *Hippophae rhamnoides*
Seven-son Flower - *Heptacodium miconioides*
Siberian Peashrub - *Caragana arborescens*
Spirea, various species - *Spirea* spp.
Spreading Cotoneaster - *Cotoneaster divaricata*
Viburnum, various species - *Viburnum* spp.
Vitex - *Vitex negundo*
Yew, various species - *Taxus* spp.

Trees

Crabapple, various cultivars - *Malus* spp.
(select disease resistant cultivars only)
Ginkgo - *Ginkgo biloba*
Japanese Cryptomeria - *Cryptomeria japonica*
Leyland Cypress - *X Cupressocyparis leylandii*
Littleleaf Linden - *Tilia cordata*
London Plane - *Platanus x acerifolius*
Pine, Austrian - *Pinus nigra*

Pine, Japanese Black - *Pinus thunbergii**
(subject to Black Turpentine beetle)
Pine, Japanese White - *Pinus parviflora*
Pine, Scotch - *Pinus sylvestris*
Pine, Swiss Stone - *Pinus cembra*
Sawara False Cypress - *Chamaecyparis pisifera*
Silk tree - *Albizia julibrissin*
White Poplar - *Populus alba**

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