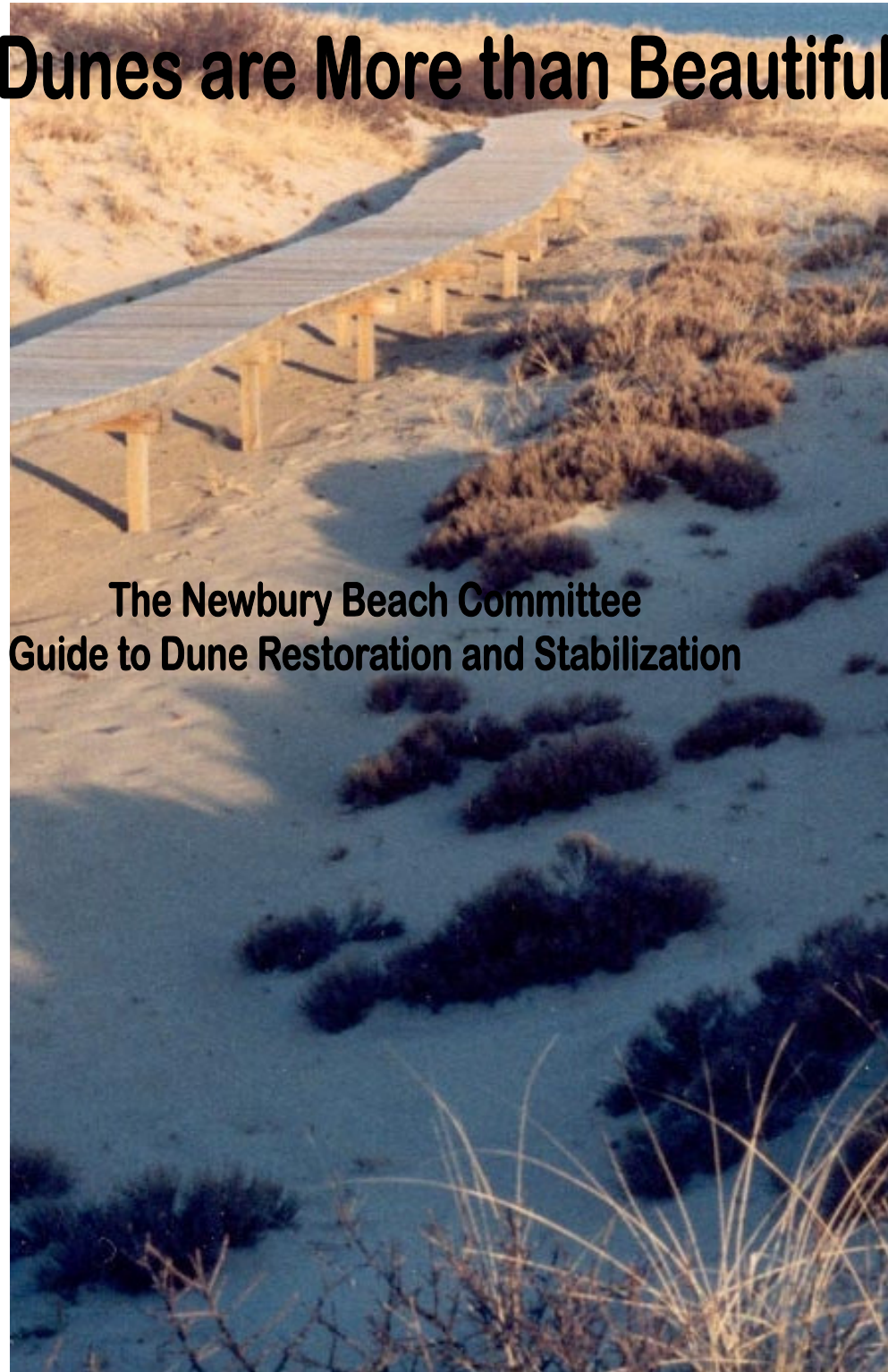


Dunes are More than Beautiful

**The Newbury Beach Committee
Guide to Dune Restoration and Stabilization**



Dunes are More than Beautiful They are Essential!

Designed and written by Janet Egan

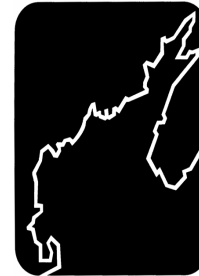
“...the inhabitants of Truro were regularly warned under the authority of law in the month of April yearly, to plant beach-grass, as elsewhere they are warned to repair the highways...In this way, for instance, they built up again that part of the Cape between Truro and Provincetown where the sea broke over in the last century...Thus Cape Cod is anchored to the heavens, as it were, by a myriad little cables of beach-grass, and, if they should fail, would become a total wreck, and ere long go to the bottom.”

-The Writings of Henry David Thoreau, 1855

Cover: “Plum Island Boardwalk”
Original photographs by Daniel F. Mahoney
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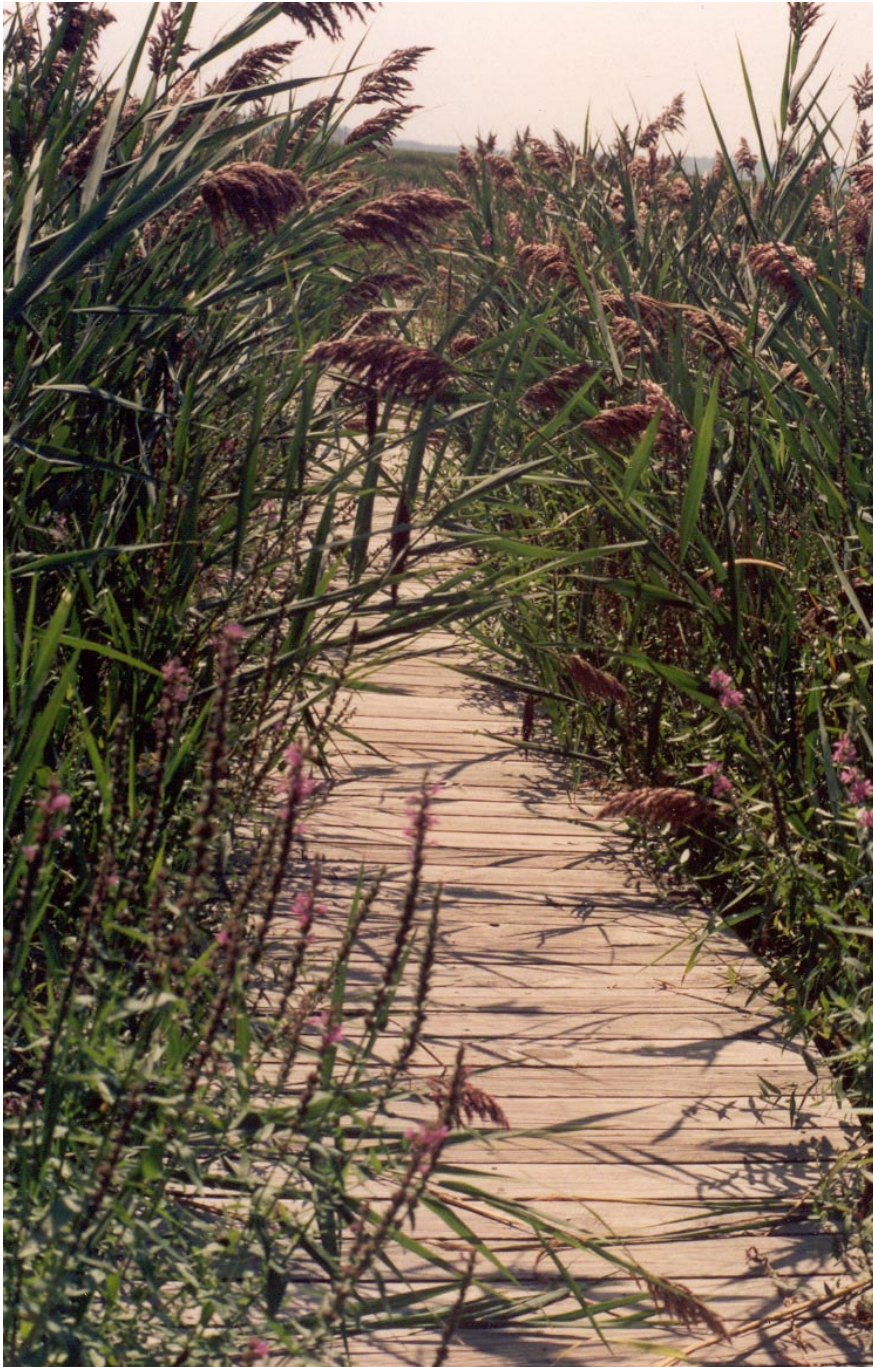
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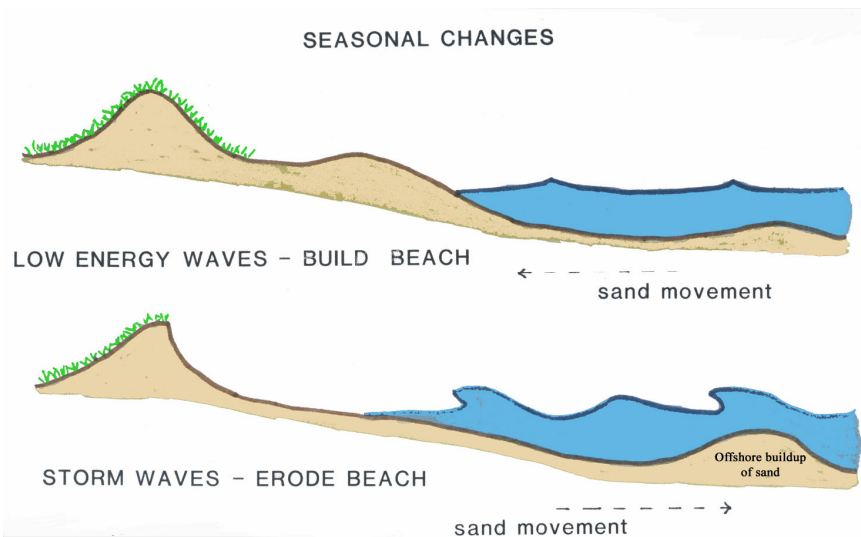
Our Beach

Plum Island is what is called a barrier beach. It is part of a system of barrier beaches bordering the Atlantic Ocean from Seabrook, NH to Ipswich, Mass. The beach is exposed directly to powerful waves on the seaward side, and acts as a buffer between the Atlantic Ocean and the salt marsh to the west. Similar to most barrier beaches, Plum Island consists of beach and dunes that are constantly moving and changing as the beach adjusts in response to wind and waves.

This cycle goes on all the time: daily, seasonally, and, sometimes dramatically, when there is a storm. Daily, the sand, pebbles, and other beach material move along the shore or out to sea with each tide. Seasonally, the beach builds up in summer and then slowly erodes again in the winter. Big storms, such as hurricanes or northeasters, also either erode or build up the beach in sudden bursts.

Constantly shaped by wind and waves, sand dunes are a familiar part of life on Plum Island, but we don't always think about how important they are. Dunes are our first line of defense against coastal storms and beach erosion. They absorb the impact of the high waves and storm surge. Dunes are also sand storage areas that supply sand to

eroded beaches. During a storm, a beach surrenders to the water sand it has been storing in the dunes. The waves carry the sand out to sea and leave it on the ocean floor. During calm periods, erosion reverses. The gentle waves move the sand slowly landward and the beach builds up again. This natural cycle of erosion and re-supply allows the coast to change its shape as it absorbs the storms and then rebuilds itself over and over again. The ocean currents and waves keep the beach in perpetual motion.



On an undeveloped barrier beach, the cycle of beach and dune movement goes on undisturbed and almost unnoticed. The beach erodes in natural response to storms and seasonal changes, and then re-forms, usually looking much as it did originally, but possibly slightly landward. Our use of the

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The Massachusetts Office of Coastal Zone Management.

References

Magnifico, Mike. *A Guide to Dune Stabilization*. Department of Environmental Management, Salisbury Beach State Reservation.

Olafson, Ann. *Stabilization of Coastal Dunes with Vegetation*. Restoration and Reclamation Review.

Sea Grant New York and Cornell Cooperative Extension of Suffolk County Marine Program. *American Beach Grass Planting Guide*.

barrier beaches can interfere with this natural cycle of sand movement and leave us vulnerable to loss of life and property during coastal storms. Increased development and recreational use of barrier beaches threatens the stability of our dunes. Structures built too close to the shoreline inhibit the landward movement of the dunes. Driving and walking on the dunes in areas not designated for such use causes deterioration of beach grass and other vegetation, which normally traps the sand and re-supplies the beach when it reforms.

Beach grass and other vegetation are crucial to this sand storage process. Beach grass traps the sand carried in by the waves and blown in by the wind. Without vegetation, the dune is exposed to wind erosion, resulting in blowouts or breaches in the dunes.

Beach grass is a hardy plant, amazingly tolerant to high salinity conditions, direct sun, extreme heat, lack of fertile soil and a fluctuating water supply. However, it cannot survive being trampled by vehicle or man. As part of its resistance to salinity and drying conditions the plant has developed a thick, brittle stalk, which, unfortunately, snaps easily when driven upon or trampled.

What You Can Do

People who live on and use the shoreline have the best opportunity to protect the dunes . As a beach-front resident, there are several things you can do to preserve and protect the dunes.

Plant Beach Grass

First of all, you can plant American beach grass, (*Ammophila breviligulata*), which helps increase the height and width of the dunes, repair damaged dunes, or establish new dunes where none exist. Beach grass is the most effective way to stabilize existing dunes and build new dunes along our coastline. It's easy to plant and it spreads rapidly. It reduces wind velocity near the ground and traps windblown sand around the grass. As the sand deposits accumulate, the grass grows up through it, maintaining a protective cover.

How to Plant Beach Grass

The best time to plant beach grass is October through April, (as long as the ground is not frozen). Plant two stems per hole. Placing more than two stems per hole will increase competition for nutrients, causing loss of plants. Plants (holes) should be spaced 18" to 20" apart. There should be 18" between rows. The rows should be staggered to provide maximum wind erosion control. Recom-

Frequently Asked Questions

Will planting beach grass attract insects?

No. The two most annoying insect pests on the beach are greenhead flies and salt marsh mosquitoes. Both of these pests are creatures of the salt marsh. They rely on muck and open marsh water for their life cycles. They are not attracted to beach grass. In fact, beach grass may help attract kingbirds and tree swallows, which prey on these insects.

What about deer ticks? I've heard they live in grass.

Deer ticks are usually found in wooded, brushy areas where deer browse. Deer ticks are sometimes found in beach grass if the grass is near places that are brushy and shrubby and attract deer. However, planting beach grass does not attract the ticks, and our beach front is not particularly shrubby.

Will the dunes block my view?

The natural cycle of sand movement ensures that the dunes formed as a result of planting beach grass will not get so high as to block the view of seaside residents. The sand that accumulates as a result of beach grass planting replenishes the beach after storms and unusually high tides.

Where to Buy Beach Grass

Beach grass is usually sold in bundles of 50 or 100 culms (stems). You can buy it by mail order or over the Internet from these convenient sources:

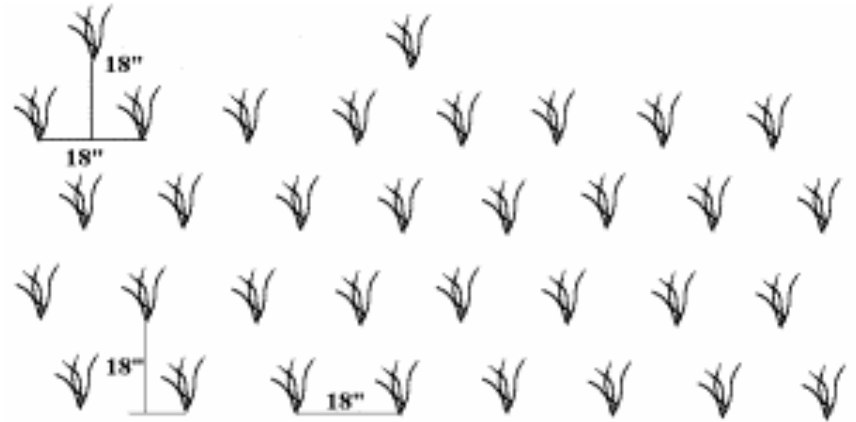
Church's Nursery
522 Seashore Rd
Cape May, NJ 08204
609-884-3927
<http://www.churchsbeachgrass.com>

Peat and Son
32 Old Country Rd
West Hampton, NY 11977-1218
631-288-3458

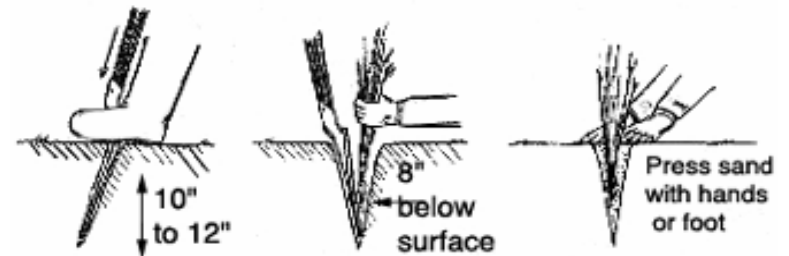
Fine Farms
24 Smith Street
Rehoboth, MA 02769
508-222-3477

Wooden snow fencing is available at local building supply retailers.

mended density is about 40 plants per hundred square feet.



1. Open a hole 10 to 12 inches deep with a broomstick, a narrow-bladed spade, or a dibble, (a tool designed for this purpose). Place 2 stems, with roots facing down, in the hole so that the main root is 8 inches below the surface of the sand. If plants are not planted 8 inches deep, they may dry out or be blown out by the wind.
2. Pack the sand around the plants to eliminate air space in the root zone. Do this by stomping with your foot or pressing with your hands.



3. Fertilize lightly. Newly planted and old beach grass responds well to fertilizer. Fertilizer should be applied 30 days after planting, but not before April 1st. Use an inorganic time-release fertilizer, such as 10-10-10 at a rate of about 1.4 pounds per 1,000 square feet. Remember not to over fertilize.

Other Dune Plants

Vegetation is the most effective way to preserve our dunes. Beach grass is the most important plant in the dune system, but many other plants help trap sand, and make the dunes more beautiful as well. Other native plants that do well on the dunes are beach pea, seaside goldenrod, bayberry, dusty miller, beach plum, sea rocket, and rosa rugosa.

Erect Sand Fencing

You should also erect sand fencing to protect the beach grass and trap additional sand. Sand fencing is also effective in trapping wind blown sand by reducing the wind velocity around it. It is most useful in building up dunes where there were none previously. The main reason to erect sand fencing where dunes already exist is to protect the beach grass.

Beach grass must be protected from foot traffic; otherwise, stems are broken and the plant dies. Sand fencing erected at the base of the dune and along walkways helps to keep people from walking on the beach grass. Sand fencing should be erected at the base of the dune on both the seaward and landward sides to block access.

The best material for sand fencing is the familiar wooden picket “snow fencing” that comes in rolls. Fencing should be supported with wooden posts (4 x 4) at 8’ intervals. Fencing should be placed on the landward side of the posts to prevent loss of the posts when fencing is destroyed during a coastal storm.

Spread the Word

Help conserve Plum Island by telling friends and family about the importance of beach grass and reminding them to stay off of the dunes.