THREATS TO DUNES

Residential development and recreational use of beach areas threaten the stability and diversity of the dune environment. Placing structures within dune areas, and the heavy use of dunes by pedestrians and vehicles for access to the beach can destroy vegetation and contribute to the deterioration of dunes. Dunes are not permanent features of the landscape; they are features that may change rapidly over short time periods, especially when they are not anchored by vegetation.

These photographs illustrate the impact that 35 years (1968-2003) of development has had on Delaware coastal dunes. In 1968, Delaware's natural dune environments typically extended across a wide area along the coast, from the active shoreline zone back to the coastal salt marsh on the bay side. By 2003, many of these coastal dune zones were converted to individual homes and lots. Native coastal dune plants can be used effectively in the home landscape, preserving some of the natural diversity and environment in developed areas along the coast. C

Coastal storms can destroy even well-established dunes. During a storm, high-energy waves may wash over or break through the dunes, spilling out onto the landward side of the barrier. Low-lying areas, such as a beach and dune, are particularly vulnerable to erosion.

As shown in these photos, large storms can cause extensive erosion, eroding meters of the beach and dune system. Sand and water may wash over or break through the dunes, spilling out onto the landward side of the barrier. Low-lying areas, such as beaches and dune, are particularly vulnerable to erosion.

PROTECTING DELAWARE'S DUNES

There are many ways for individuals and communities to help protect Delaware's dunes and vegetation.

- Place signs at the dune site to explain the importance of keeping off the beach grass and dunes.
- Restore damaged dunes, plant vegetation, and put up dune fencing to restrict traffic.
- Use designated dune walkways and access points to control pedestrian and vehicular traffic flow across the dunes. Protect all planted areas from vehicles, pedestrians, and pets.
- Allow beach grass and dune vegetation to grow naturally. Mowing destroys the grasses’ ability to trap sand and may kill the plants, so please do not cut or mow beach grass.
- Maintain a clean, clear, and natural dune environment. Items such as Christmas trees, cut shrubs, and yard clippings may trap dune vegetation and may also be a fire hazard. This type of debris should not be placed on the dune or beach. Similarly, items such as cars, trucks, bikes, and boats should be kept off of the dune.
- Avoid hard landscaping such as railroad ties, flower boxes, retaining walls, piling tops, large stones, brick, cement blocks, and concrete. These items are easily lifted by storm waves, becoming debris that can batter homes and adjacent buildings, and may cause severe damage or property loss.
- All sand should remain on the dune and beach system. If there is a problem with drifting sand, please contact the DNREC Division of Soil and Water Conservation at 302-739-4411.

For additional information, contact:

- Delaware Department of Natural Resources and Environmental Control’s Division of Soil and Water Conservation (DSWCC) at 302-739-4411 or www.dnrec.state.de.us/SoilWaters
- Delaware Sea Grant Program Marine Advisory Service at 302-645-1633 or www.ccap.udel.edu
- Cape Henlopen State Park at 302-658-9441 or www.depad.gov
- DNREC Division of Soil and Water Conservation at 302-645-1633 or www.dnrec.state.de.us/SoilWaters
- Natural Resources Conservation Service (NRCS) at 302-645-1633 or www.nrcs.usda.gov
- The following agencies can provide technical assistance and advice: Delaware Department of Natural Resources and Environmental Control’s Division of Soil and Water Conservation (DSWCC) and the DNREC Division of Soil and Water Conservation. The latter can also be found by contacting Delaware Department of Natural Resources and Environmental Control’s Division of Soil and Water Conservation.

For more information, visit www.dnrec.state.de.us/dnrec2000/Divisions/Soil/Soil.htm

Well-maintained dune areas preserve and enhance the beauty and value of the coast and coastal ecosystems, while providing important natural habitat for plants and animals.
THE DUNE ENVIRONMENT

If you walk across the beach from the water’s edge along Delaware’s shoreline, you will come upon sand dunes. These mounds of sand dune look are vital to shoreline stability. They protect the coast during storms, provide a reservoir for sand, and sustain a unique ecosystem. Dunes in any beach area can be divided into several zones, as shown on the adjacent pages.

The primary dune is the first sandy ridge backing the beach. The fine sand grains that are here are pioneers in dune formation because they trap blowing sand and hold it in place. The grasses adapt to being buried by the sand and grow right up through the deposits. They also withstand temperatures at the sand’s surface that may reach 120 degrees on a hot summer day, and thrive on the high salt content of sea spray.

More stable secondary dunes are located behind the primary dunes. Low plants—such as beach heather, seaside goldenrod, and prickly pear cactus—may colonize this region. Farther back in the dune system, they mingle with small trees and woody shrubs such as bayberry and beach plum, and the yellow blossoms of seaside goldenrod attract monarch butterflies on their southward migration.

A variety of plants and animals live on the dunes, from beach grass and ghost crabs to harpy vultures, velvet ants, and digger wasps. In the spring, farms are among the shrublands that rely on the dunes for nesting grounds. Their well-camouflaged eggs match the color of the sand. In the fall, the yellow blossoms of seaside goldenrod attract monarch butterflies on their southward migration.

Beach plants have adapted to harsh environmental conditions—such as high temperatures, dramatic, occasional inundation by saltwater, salt spray, and the accumulation of sand. Generally, native beach grasses, trailing vines, and small perennials are the most hardy species and are found on the outer face of the dunes. Moving in an intermediate zone behind the dunes, also called interdunal areas, are often occupied by wetland vegetation. Shrubs and trees, often pruned to smaller sizes by windborne salt spray, are more abundant in the more landward back-dune zone.

Please avoid planting non-native or exotic species that can spread and destroy native vegetation. Planting a combination of native species can enhance the beach-dune system’s diversity and long-term viability.

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Native coastal vegetation protects the beach and dune system. Vegetation enhances the natural beauty of the coastal landscape and provides food, protective cover, and nesting sites for small animals. Whenever possible, coastal property owners should incorporate native vegetation into their dune and garden landscape plans. These plants are well adapted to life at the coast and are easy to maintain. They require less water, fertilizer, and pesticides, which ultimately saves time, money, and reduces pollution from unnecessary chemicals. Moreover, native coastal dune plants help protect the area by stabilizing the sand with deep roots and by trapping sand to build and maintain the dune.

This cross-section of a typical Delaware beach/dune/backdune/wetland zone lists some common flora found in and around Delaware sand dunes and coastal environments.

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