



## Maritime Dune Community

**Community Code:** CT2B1B0000

**State Rank:** S3



**Concept:**

This is the classic community of dynamic sand dunes, with patches of herbaceous plants interspersed with areas of bare sand and shrubs, often part of a barrier beach system.

**Environmental Setting:**

Maritime Dune Communities are usually in barrier beach systems in a mosaic with other communities on the dynamic system's shifting sands in an extremely harsh physical environment. Winds move and carry salt; wind-blown sands prune and bury plants. Together, the salt and sand limit species diversity. The dunes behind the beachfront may occur as a single ridge or a series of parallel ridges that extend back through shrub and forest thickets to salt marsh and tidal flats associated with the protected bay or estuarine system. The dunes directly behind the beach are the most severely stressed by wind and airborne salt. These shifting foredunes are stabilized by colonies of beachgrass. Few other plants in the beach/dune community grow out into the unprotected foredunes. On back dunes, Maritime Dune Communities are sparsely vegetated with patches of herbaceous or low shrubby plants interspersed with areas of bare sand, and often grade into shrubland or woodland communities in more sheltered areas. Vegetation in wet areas between dunes is classified separately as a distinct Interdunal Marsh/Swale community. Ability of dunes to move is an important part of the habitat they provide.

**Vegetation Description:**

The Maritime Dune Community is characterized by expanses of dunegrass (*Ammophila breviligulata* ssp. *breviligulata*) and beach heather (*Hudsonia tomentosa*), with seaside goldenrod (*Solidago sempervirens*) and beach pea (*Lathyrus japonicus*). Poison ivy (*Toxicodendron radicans*) is often dense. Shrubs



such as bearberry (*Arctostaphylos uva-ursi*), bayberry (*Morella pensylvanica*), lowbush blueberry (*Vaccinium angustifolium*), sweet fern (*Comptonia peregrina*), and beach plum (*Prunus maritima*) grow on protected slopes and some interdunal areas; shrubs can become abundant and form extensive shrublands. Salt hay (*Spartina patens*), common hairgrass (*Deschampsia flexuosa*), little bluestem (*Schizachyrium scoparium*), and poverty grass (*Danthonia spicata*) can be common grasses in protected areas of the community. Beach pinweed (*Lechea maritima*), and jointweed (*Polygonum articulatum*) grow mixed with beach heather. Scattered pitch pines (*Pinus rigida*) occur in some dune systems. Actual composition and structure of the vegetation depends upon recent dune stability (deposition and erosion) and distance from the ocean.

**Differentiating Occurrences:** Barrier beach and dune communities occur in mosaics that shift location over time as the dunes move. Even in stable situations, the community edges may not be clear. Sandplain Heathlands are structurally similar to Maritime Dune Communities in that they have low shrubby herbaceous and grassy plants with patches of bare soil. Along the edges of dunes, Sandplain Heathlands and Maritime Dune Communities may overlap: Maritime Dune Communities are on dunes and dominated by beach grass and beach heather, which are much less dominant in the mix of species in Sandplain Heathlands. However, the communities may be so similar or change so gradually that it may be necessary to arbitrarily assign to a type based on the land form or the prevailing type. Maritime Dune Communities are the most sparsely vegetated communities on the dune systems, with scattered patches of low shrubs, including red cedar, pitch pines, bayberry, herbaceous species, and grasses with bare sand. The various maritime shrubland, woodland, and forest communities all have dominance of woody plants in larger areas than occur in the dune community, but may also be on dunes and could be considered to be subtracted from the broad definition of maritime communities on dunes. These include Maritime Juniper Woodland/Shrubland, Maritime Pitch Pine Woodlands on Dunes, and Maritime Shrubland communities. Very small patches of any type within another community should be considered to be part of the variation of the other community.

**Associated Fauna:** A variety of seabirds, shorebirds, and songbirds nest at the base and sides of dunes and in the interdunal area. The particular species depend upon topography, hydrologic regime, and the amount and type of plant cover. Vernal pools occur in some dune systems, serving as important feeding and breeding areas for a variety of reptiles and amphibians, invertebrates, and birds and mammals. Diamondback terrapins (*Malaclemys terrapin*) use dunes for nesting. The state-listed dune noctuid moth (*Sympistis riparia*, Special Concern) occurs in dunes.

**Public Access:** Sandy Neck Beach Conservation Area, Barnstable; Cape Cod National Seashore, Wellfleet; Boston Harbor Islands, Hingham; Parker River National Wildlife Refuge, Newburyport.



**Threats:**

Exotics (*Lonicera morrowii*, *Lythrum salicaria*, *Artemisia stelleriana*). Traffic (foot as well as vehicular) breaks the surface structure and removes vegetation. Road cuts change wind patterns and so alter deposition, erosion, and vegetation.

**Management Needs:**

Removal of exotics at the best sites. An important threat to dunes is direct disturbance to the integrity of dunes from off-road vehicles, mountain bicycle, or even foot traffic. Loss of vegetation accelerates erosion, and rapid sand loss may not be balanced by new sand from the beach. Protection from damaging access is essential. Although measures to address unusual erosion may be needed to restore disturbed sites, some erosion is a normal part of dune systems and provides important habitat for specialized species.

**USNVC/NatureServe:**

NVC System includes: CES203.264 Northern Atlantic Coastal Plain Dune and Swale. Includes multiple associations (others are wooded and not part of MA Dune community): (*Morella pensylvanica*)/*Schizachyrium littorale*- *Aristida tuberculosa* Shrub Herbaceous Vegetation (CEGL006161, GNR); *Ammophila breviligulata* - *Lathyrus japonicus* Herbaceous Vegetation (CEGL006274, G4?); *Deschampsia flexuosa* Herbaceous Vegetation (CEGL006621, GNR); *Hudsonia tomentosa* - *Arctostaphylos uva-ursi* Dwarf-shrubland (CEGL006143, G2G3); *Morella pensylvanica*/ *Schizachyrium littorale*- *Danthonia spicata* Shrub Herbaceous Vegetation (CEGL006067, G2); *Smilax glauca* - *Toxicodendron radicans* Vine-Shrubland (CEGL003886, G1G2).