

# USGS-NPS VEGETATION MAPPING PROGRAM

## Vegetation Classification of Assateague Island National Seashore

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## VEGETATION SAMPLING & CLASSIFICATION

### Introduction

This report presents the results of the vegetation classification portion of the NBS/NPS Vegetation Mapping Program at Assateague Island National Seashore. The methods for sampling the vegetation are briefly discussed, particularly in relation to the standard described in NBS/NPS Vegetation Mapping Program: Field Methods for Vegetation Mapping. Also included in this document are the vegetation classification for Assateague Island, the field key to the vegetation types, and descriptions of each vegetation type. Supplements to this report include the field data sheets for the classification plots and corresponding electronic data files (in dBase 5.0).

### Methods

During a two day reconnaissance visit, an initial list of community types was developed by visually inspecting the National Seashore and visiting examples of all obvious vegetation polygon types.

The methods used for developing the vegetation classification for Assateague Island National Seashore followed the standards described in Field Methods for Vegetation Mapping. Due to the size of Assateague Island, the sampling approach was based on sampling across key environmental gradients and photographic signatures. The sample area consisted of the entire area of Assateague Island with no sites being inaccessible to sampling. Polygons were selected for sampling based on environmental factors (primarily beach, foredunes, interdunes, back dunes and salt marsh). Due to the low relief across the island, aspect, slope and soil type were not used for stratifying the samples. In addition, samples were selected to be geographically dispersed to capture the representative variability of each of the vegetation types. Accessibility was a minor factor in the selection of polygons for sampling (most polygons were not difficult to access).

Sample plots were subjectively located within polygons so as to include representative expressions of the community. The heterogeneity of the vegetation and the number of samples per type precluded randomly selecting plot location. The number of sample plots per vegetation type varied with the total coverage, number of polygons, and variability of each type. A total of 114 plots were taken across Assateague Island National Seashore, which averages to approximately 5 plots per vegetation type.

The size of sample plots varied with vegetation type. For forest, woodland and shrubland communities, 15 x 15 m and 20 x 20 m plots were used. The herbaceous vegetation was sampled with a 5 x 5 m sampling frame. In addition to the species information collected within the classification plots, additional species that were encountered in the vegetation polygon were noted on the field form.

Accuracy assessment will be completed following the completion of the final vegetation map. It is anticipated that additional field data will be collected to test and assess the accuracy of the map.

### Results

Twenty-five vegetation types were delineated for Assateague Island National Seashore, including: 4 forest types, 1 woodland type, 8 shrubland types, 11 herbaceous types and 1 sparsely vegetated type.

Wild ponies that live on Assateague Island have created and maintain many disturbance vegetation types. Staff at the Monument have created several exclusion areas that demonstrate what the structure and composition of vegetation would be in the absence of grazing.

Following is the vegetation classification for Assateague Island National Seashore (set within the hierarchy of the National Vegetation Classification System). A vegetation key to facilitate identification of the types in the field and a description of each vegetation type at the National Seashore are provided in later sections of this report.

## Classification

### I. Forest

#### I.A. Evergreen forest

##### I.A.9. Temperate and subpolar needle-leaved evergreen forest

##### I.A.9.e. Needle-leaved evergreen seasonally flooded / saturated forest with rounded crowns

##### I.A.9.e.i. *Pinus taeda* (wetland) Forest Alliance

##### ***Pinus taeda* / *Myrica cerifera* / *Osmunda regalis* Forest**

#### I.B. Deciduous forest

##### I.B.2. Cold-deciduous forest

##### I.B.2.a.ix. *Prunus serotina* - *Amelanchier canadensis* - *Quercus* spp. Forest Alliance

##### ***Prunus serotina* / *Myrica cerifera* / *Smilax rotundifolia* Forest**

##### I.B.2.f.iii. *Acer rubrum* - *Nyssa sylvatica* Wetland Forest Alliance

##### ***Acer rubrum* - *Nyssa sylvatica* - *Magnolia virginiana* Forest**

#### I.C. Mixed evergreen - deciduous forest

##### I.C.3. Mixed needle-leaved evergreen - cold-deciduous forest

##### I.C.3.a. Mixed needle-leaved evergreen - cold-deciduous (upland) forest

I.C.3.a.iv. *Pinus taeda* - *Quercus (nigra, falcata)* Forest Alliance

***Pinus taeda* / *Myrica cerifera* / *Vitis rotundifolia*  
Forest**

II. Woodland

II.A. Evergreen woodland

II.A.2. Needle-leaved evergreen woodland

II.A.2.a. Needle-leaved evergreen woodland with rounded crowns

II.A.2.a.iv. *Pinus taeda* Woodland Alliance

***Pinus taeda* / *Hudsonia tomentosa* Woodland**

IV. Shrubland

IV.B. Deciduous shrubland

IV.B.2. Cold-deciduous shrubland

IV.B.2.a. Temperate deciduous shrubland

IV.B.2.a.i. *Myrica pensylvanica* - (*Prunus maritima*) Shrubland Alliance

***Myrica pensylvanica* / *Diodia teres* Shrubland**

IV.B.2.a.ii. *Myrica cerifera* (Wet) Shrubland Alliance

***Myrica cerifera* / *Hydrocotyle* spp. Shrubland**

*Smilax* spp. - *Toxicodendron radicans* Shrubland Alliance

***Smilax glauca* - *Toxicodendron radicans*  
Shrubland**

IV.B.2.c. Deciduous seasonally / temporarily flooded shrubland

IV.B.2.c.i. *Myrica (cerifera, pensylvanica)* - *Vaccinium corymbosum* (wet) Shrubland Alliance

***Myrica (cerifera, pensylvanica) - Vaccinium  
corymbosum Shrubland***

IV.B.2.c.ii. *Myrica cerifera - Baccharis halimifolia* Shrubland  
Alliance

***Myrica cerifera - Baccharis halimifolia / Spartina  
patens Shrubland***

IV.B.2.g. Saltwater-tidal irregularly flooded shrubland

IV.B.2.g.i. *Baccharis halimifolia - Iva frutescens* Shrubland  
Alliance

***Baccharis halimifolia - Iva frutescens / Spartina  
patens Shrubland***

V. Sparse Shrubland

V.B. Deciduous sparse shrubland

V.B.2. Cold-deciduous sparse shrubland with a dominant herbaceous stratum

V.B.2.b. Deciduous sparse shrubland with medium-tall grasses

V.B.2.b.i. *Myrica pensylvanica - Schizachyrium scoparium*  
Sparse Shrubland

***Myrica pensylvanica / Schizachyrium scoparium  
ssp. littorale - Eupatorium hyssopifolium Sparse  
Shrubland***

VI. Dwarf shrubland

VI.A. Evergreen dwarf shrubland

VI.A.1. Needle-leaved and microphyllous evergreen dwarf shrubland

VI.A.1.b. Needle-leaved and microphyllous evergreen creeping or matted dwarf  
shrubland

VI.A.1.b.i. *Hudsonia tomentosa* Dwarf Shrubland Alliance

***Hudsonia tomentosa / Panicum (amarum,  
amarulum) Dwarf-shrubland***

VIII. Herbaceous vegetation

VIII.A. Tall grassland

VIII.A.2. Temperate tall grassland

VIII.A.2.a.ii. *Juncus roemerianus* Herbaceous Alliance

***Juncus roemerianus* Herbaceous Vegetation**

VIII.A.2.g. Brackish tidal regularly/irregularly flooded tall grassland

VIII.A.2.g.i. *Typha angustifolia* - *Hibiscus* spp. Herbaceous Alliance

***Typha angustifolia* - *Hibiscus moscheutos*  
Herbaceous Vegetation**

VIII.A.2.g.iii. *Phragmites australis* Herbaceous Alliance

***Phragmites australis* Herbaceous Vegetation**

VIII.A.2.i. Saltwater tidal regularly/irregularly flooded tall grassland

VIII.A.2.i.i. *Spartina alterniflora* Herbaceous Alliance

***Spartina alterniflora* / *Ascophyllum nodosum*  
Herbaceous Vegetation**

VIII.B. Medium tall grassland

VIII.B.2. Temperate and subpolar medium tall grassland

VIII.B.2.b. Open medium tall grassland

VIII.B.2.b.i. *Ammophila breviligulata* Herbaceous Alliance

***Ammophila breviligulata* - *Panicum (amarum,*  
*amarulum)* Herbaceous Vegetation**

VIII.B.2.d. Seasonally / temporarily flooded medium tall grassland

VIII.B.2.d.v. *Juncus dichotomus* Herbaceous Alliance  
***Juncus dichotomus* - *Drosera intermedia*  
Herbaceous Vegetation**

VIII.B.2.d.vi. *Panicum virgatum* (seasonally flooded) Herbaceous Alliance

***Panicum virgatum* - *Spartina patens* Herbaceous  
Vegetation**

VIII.B.2.d.vii. *Scirpus pungens* (seasonally flooded) Herbaceous Alliance

***Scirpus pungens* - *Fimbristylis castanea*  
Herbaceous Vegetation**

VIII.C. Short grassland

VIII.C.2. Temperate and subpolar short grassland

VIII.C.2.b. Open short grassland

VIII.C.2.b.i. *Spartina patens* - *Scirpus pungens* Herbaceous Alliance

***Spartina patens* - *Scirpus pungens* - *Solidago sempervirens* (Upland) Herbaceous Vegetation**

VIII.C.2.e. Saltwater tidal regularly/irregularly flooded short grassland

VIII.C.2.e.i. *Spartina patens* (Estuarine) Herbaceous Alliance

***Spartina patens* - *Distichlis spicata* - *Borrchia frutescens* Herbaceous Vegetation**

VIII.E. Low forb vegetation

VIII.E.1. Perennial low forb vegetation

VIII.E.1.b. Saltwater tidal semipermanently flooded low perennial forb vegetation

VIII.E.1.b.i. *Salicornia* - *Spartina alterniflora* Herbaceous Alliance

***Salicornia* spp. - *Sarcocornia perennis* - *Spartina alternifolia* Herbaceous Vegetation**

IX. Sparsely vegetated

IX.D. Sparsely vegetated sand accumulations

IX.D.1. Sparsely vegetated sand dunes



IX.D.1.e. Storm tide irregularly flooded upper beaches

IX.D.1.e.i. *Cakile edentula* Sparsely Vegetated Alliance

*Cakile edentula* ssp. *edentula* - *Salsola caroliniana*  
Sparse Vegetation

## Discussion

Overall, the sampling of vegetation and development of a classification for Assateague Island were successful. There were a number of minor difficulties (to be expected in a pilot project), and the lessons learned should prove valuable for future mapping projects. Following are some specific recommendations that should improve future vegetation mapping projects:

- 1) Make sure that there is enough time to complete the up-front ground work, so that everyone has a good idea of the vegetation types and the environmental gradients. This is essential to determine where the sampling should occur across the Park unit.
- 2) Analysis of the time requirements for this project should be better incorporated to develop realistic deadlines for the vegetation sampling, vegetation classification and the development of the descriptive products.
- 3) Vegetation sampling should ideally be conducted by two person teams, an ecologist/botanist and an assistant. Having a second person to help haul equipment, lay out plots, record data, and take GPS readings may more than double the efficiency of the operation.
- 4) Make sure that there is a well thought-out and documented plan for what the Park will be able to provide in terms of on-site logistics, and for the training, use and post-processing associated with GPS applications.

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## VEGETATION KEY FOR ASSATEAGUE ISLAND NATIONAL SEASHORE

1a. Vegetation woody, tall (height 2m or taller) .....	2
1b. Vegetation generally shorter than 2m .....	8
2a. Vegetation predominantly needle-leaved .....	3
2b. Vegetation predominantly deciduous .....	5
3a. Vegetation more or less densely shaded .....	4
3b. Vegetation more open, with patches of bare sand prevalent.....	<i>Pinus taeda / Hudsonia tomentosa Woodland</i>
4a. Soils characterized by duff overlying sands; not influenced by water table .....	<i>Pinus taeda / Myrica cerifera / Vitis rotundifolia Forest</i>
4b. Soils characterized by moderately deep muck, surface water often present .....	<i>Pinus taeda / Myrica cerifera / Osmunda regalis Forest</i>
5a. Tree species dominant ( <i>Prunus serotina</i> , <i>Aronia arbutifolia</i> ) (although individuals may exhibit multiple trunks) .....	6
5b. Shrub species dominant .....	7
6a. Soils not influenced by water table.....	<i>Prunus serotina / Myrica cerifera / Smilax rotundifolia Forest</i>
6b. Soils wet .....	<i>Acer rubrum - Nyssa sylvatica - Magnolia virginiana Forest</i>
7a. Soils deep mucks with surface water common; hydrophytes present .....	<i>Myrica cerifera / Hydrocotyle spp. Shrubland</i>
7b. Soils drier (but still may be influenced by water table).....	<i>Myrica cerifera – Baccharis halimifolia / Spartina patens Shrubland</i>
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- 10b. Vegetation of more stable substrate; bunch grasses (*Schizachyrium scoparium*, *Andropogon virginicus*) and herbs *Eupatorium hyssopifolium*, *E. rotundifolium*, *Gnaphalium* common ..... ***Myrica pensylvanica* / *Schizachyrium scoparium* ssp. *littorale* - *Eupatorium hyssopifolium* Sparse Shrubland**
- 11a. *Myrica cerifera* dominant shrub.....***Myrica (cerifera, pensylvanica)* – *Vaccinium corymbosum* Shrubland**
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- 12b. Shrubs dominant..... 13
- 13a. Dwarf-shrubs dominant.....***Hudsonia tomentosa* / *Panicum (amarum, amarulum)* Dwarf-shrubland**
- 13b. Shrubs > 0.25m tall dominant.....***Baccharis halimifolia* – *Iva frutescens* / *Spartina patens* Shrubland**
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- 15b. *Spartina alterniflora* nearly to totally absent..... 18
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- 16b. Vegetation not as above ..... 17
- 17a. *Distichlis spicata* prevalent..... ***Spartina alterniflora* / *Ascophyllum nodosum* Herbaceous Vegetation, *Distichlis spicata* variant**
- 17b. Large algal mats present; *Salicornia* spp. usually present.....***Salicornia* spp. *Sarcocornia perennis* - *Spartina alterniflora* Herbaceous Vegetation**
- 18a. *Juncus roemerianus* dominant .....***Juncus roemerianus* Herbaceous Vegetation**
- 18b. *Spartina patens* prevalent ..... 19
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20b. Short grasses prevalent .....	<i>Spartina patens</i> - <i>Distichlis spicata</i> – <i>Borrchia frutescens</i> Herbaceous Vegetation
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26b. <i>Drosera intermedia</i> absent; <i>Scirpus pungens</i> common .....	<i>Scirpus pungens</i> - <i>Fimbristylis castanea</i> Herbaceous Vegetation

**VEGETATION DESCRIPTIONS FOR  
ASSATEAGUE ISLAND NATIONAL SEASHORE**

**Pinus taeda / Myrica cerifera / Osmunda regalis Forest**

COMMON NAME	Loblolly pine / waxmyrtle / royal fern Forest
SYNONYM	Estuarine fringe loblolly pine forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Forest
PHYSIOGNOMIC SUBCLASS	Evergreen forest
PHYSIOGNOMIC GROUP	Temperate and subpolar needle-leaved evergreen forest
FORMATION	Needle-leaved evergreen seasonally flooded / saturated forest with rounded crowns
ALLIANCE	<i>Pinus taeda</i> (wetland) Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community ranges from the coast of Delaware to North Carolina.

ENVIRONMENTAL DESCRIPTION This community is a maritime / coastal loblolly pine wetland forest occurring in backdune depressions intersecting the water table. Soils are characterized by moderately shallow muck (15 cm) overlying organic matter-stained sands. This vegetation occurs adjacent to salt marshes, sometimes even forming small "islands" within high salt marsh. This forest occurs on Assateague Island NS almost exclusively in association with the upland *Pinus taeda* / *Vitis rotundifolia* Forest Community as a result of the relatively high water table and natural undulations on the dune surface. Where sand has accumulated to a depth of 0.5m or more above the water table, leaf litter accumulates as undecomposed duff, but where the substrate intersects the water table, organic material accumulates as muck.

USFWS WETLAND SYSTEM Palustrine System

**MOST ABUNDANT SPECIES**

*Globally*

Strata

Tree canopy  
Tall shrub  
Herbaceous  
Vine/liana

Species

*Pinus taeda*  
*Myrica cerifera*  
*Osmunda regalis*, *Osmunda cinnamomea*  
*Smilax rotundifolia*, *Smilax glauca*, *Toxicodendron radicans*

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<u>ASIS</u>	<u>Species</u>
Strata	
Tree canopy	<i>Pinus taeda</i>
Tall shrub	<i>Myrica cerifera</i>
Herbaceous	<i>Polygonum pensylvanicum</i>
Vine/liana	<i>Smilax rotundifolia</i> , <i>Toxicodendron radicans</i>

DIAGNOSTIC SPECIES *Pinus taeda*, *Myrica cerifera*, *Smilax rotundifolia*

VEGETATION DESCRIPTION This coastal wetland forest community is characterized by closed to partially open canopy dominated by *Pinus taeda*. Other canopy associates may be absent, or may include *Acer rubrum*, *Persea palustris*, or *Liquidambar styraciflua*. The understory is made up of vines, strongly dominated by *Smilax rotundifolia*, with lesser amounts of *Toxicodendron radicans* and *Parthenocissus quinquefolia*. In addition to comprising the majority of the ground layer of these forests, these vines are relatively large-stemmed lianas that contribute significant cover to the canopy by covering the lower branches of trees. *Myrica cerifera* is a typical shrub of this community. The herbaceous layer is usually relatively sparse, characterized most frequently by ferns such as *Woodwardia areolata*, *Osmunda regalis*, or *Osmunda cinnamomea*. *Polygonum pensylvanicum* may also occur.

On Assateague Island NS, *Pinus taeda* dominates the canopy, with occasional *Acer rubrum*. *Smilax rotundifolia* is the strongly dominant vine of the understory, with lesser amounts of *Toxicodendron radicans* and *Parthenocissus quinquefolia*. *Myrica cerifera* is also a minor component of this vegetation. Despite the shallow water table and presence of muck, there is little reflection of the influence of hydrology on the vegetation. Trees tend to occur on slightly elevated hummocks, with standing water evident in hollows. *Phragmites australis*, *Rubus argutus*, *Panicum virgatum*, and *Polygonum pensylvanicum* also occur within this community on Assateague Island NS. Tree diameters range from 12-36 cm at breast height. This community occurs primarily on the bay side of the island adjacent to salt marsh.

OTHER NOTEWORTHY SPECIES *Acer rubrum* and *Persea palustris* are often canopy associates; *Arundinaria gigantea* is a component of this community in North Carolina.

CONSERVATION RANK G2G3

RANK JUSTIFICATION This type is restricted to the mid-Atlantic coast and vulnerable to development pressure.

COMMENTS The pine woodland of Higgins et al. (1971), the woodland community of Hill (1986), the mature loblolly pine stands of wet sites described from Cape Hatteras by Bratton and Davison (1987), and the loblolly pine association of Brush et al. (1980) are partially contained within this community. The estuarine fringe loblolly pine forest of Schafale and Weakley (1990) and the coniferous swamp described from eastern Maryland by Shreve et al. (1910) are synonymous with this type.

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PLOTS

42AB05



## Prunus serotina / Myrica cerifera / Smilax rotundifolia Forest

COMMON NAME	Black Cherry / Waxmyrtle / Greenbrier Forest
SYNONYM	Maritime forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Forest
PHYSIOGNOMIC SUBCLASS	Deciduous forest
PHYSIOGNOMIC GROUP	Cold-deciduous forest
FORMATION	Lowland and submontane broad-leaved cold-deciduous forest
ALLIANCE	<i>Prunus serotina</i> — <i>Amelanchier canadensis</i> — <i>Quercus</i> spp. Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE This community occurs on the coast from Delaware to Virginia; the range may also include southern New Jersey.

### ENVIRONMENTAL DESCRIPTION

This community occurs on the coast, and is subject to salt spray and winds. Occurrences of this community on barrier islands and on dunes of the mainland exhibit wind-pruning. The substrate of this community varies from pure sand directly adjacent to the ocean, to loamy sands in more sheltered areas of the coast.

This community generally occurs behind the interdunes on Assateague Island NS and often, but not always, exhibits the same "sunken forest" quality noted further north in New York (Stalter 1979) and southern New Hampshire (Dunlop and Crow 1985). This sunken forest refers to the topography created by large depressions, lower in elevation (by 1 to 3 meters) than the interdunes themselves. Interdunes often shield this community from strong prevailing winds and salt spray, permitting lush growth of broadleaf shrub and vine species.

USFWS WETLAND SYSTEM Not applicable

### MOST ABUNDANT SPECIES

#### *Globally*

#### Strata

Tree canopy  
Tall shrub  
Herbaceous  
Vine/liana

#### Species

*Prunus serotina*, *Amelanchier canadensis*, *Sassafras albidum*  
*Myrica cerifera*  
(absent)  
*Smilax rotundifolia*, *Parthenocissus quinquefolia*, *Toxicodendron radicans*

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<u>ASIS</u>	
<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Prunus serotina</i> , <i>Aronia arbutifolia</i>
Tall shrub	<i>Myrica cerifera</i> , <i>Vaccinium corymbosum</i>
Herbaceous	<i>Festuca rubra</i>
Vine/liana	<i>Smilax rotundifolia</i> , <i>Smilax glauca</i>

DIAGNOSTIC SPECIES *Prunus serotina*, *Myrica cerifera*, *Pinus taeda*

VEGETATION DESCRIPTION This community is a temperate deciduous maritime forest, generally occurring on the lee side of sand dunes. Although placed within the forest class, the physiognomy of this vegetation is very variable and ranges from open woodland to stunted forest to dense nearly impenetrable thicket. Individual trees tend to be wind-pruned and multiple-stemmed. This community is characterized by *Prunus serotina*, *Amelanchier canadensis*, *Pinus taeda*, *Aronia arbutifolia*, and *Sassafras albidum* in varying proportions. *Myrica cerifera* may form a subcanopy, but if the forest is particularly stunted, this species may contribute substantially to the canopy as well. As other communities in this alliance, the *Prunus serotina* / *Myrica cerifera* — *Smilax rotundifolia* community supports a number of vines in great abundance, such as *Smilax rotundifolia*, *Smilax glauca*, *Parthenocissus quinquefolia*, and *Toxicodendron radicans*. Herbs are generally scarce to lacking entirely, and when present are generally made up of tree and vine seedlings.

Assateague Island NS supports variable expressions of this community, but in general they are characterized by a tree canopy that is patchy, open and of variable species composition; *Prunus serotina*, *Acer rubrum*, *Amelanchier canadensis*, *Diospyros virginiana*, and *Pyrus angustifolia* contribute variable cover. In some areas, *Prunus serotina* contributes only minor cover in comparison to *Acer rubrum* and *Aronia arbutifolia*. Stunted trees are evenly mixed with tall *Myrica cerifera* and *Vaccinium corymbosum* to form dense vegetation. To a much lesser extent, *Pinus taeda* and *Ilex opaca* may occur locally. The dense tall shrub layer is dominated by *Myrica cerifera* with *Vaccinium corymbosum* as a common associate. Less common, yet scattered throughout are shrubs of *Aronia arbutifolia*. Tangled over most of the sub-canopy and shrub layers of this community is a dense cover of vines, predominantly *Smilax rotundifolia*, *Smilax glauca*, *Parthenocissus quinquefolia*, and *Toxicodendron radicans* making this vegetation almost impenetrable. Herb cover is sparse to non-existent due to heavy shading from the dense canopy above. Most obvious are *Festuca rubra*, *Rumex acetosella* and vine seedlings sparsely scattered on the dry leaf litter.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G2G3

RANK JUSTIFICATION This type is restricted to the mid-Atlantic coast and vulnerable to development pressure.

COMMENTS This community is similar to the *Prunus serotina* — *Sassafras albidum* — *Amelanchier canadensis* / *Smilax rotundifolia* community of the same alliance (Anderson, Sneddon, and Metzler 1994) ranging from southern New Hampshire to New Jersey, but is differentiated from this community by the presence of *Pinus taeda* and *Myrica cerifera*. The woodland community (Hill 1986) and the mixed woodland (Higgins et al. 1971) described from Assateague Island are

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partially contained within this community. The woodland described from Virginia by Boule (1979) is synonymous with this community. The range of this community is approximately the same as that of the floristic transition region of the maritime forests of the Atlantic coast proposed by Bellis (1992).

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**PLOTS**

72AB01  
42AB03  
42AB01

Acer rubrum — Nyssa sylvatica — Magnolia virginiana Forest

COMMON NAME	Red maple — Black gum — Bay Forest
SYNONYM	Inland red maple swamp
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Forest
PHYSIOGNOMIC SUBCLASS	Deciduous forest
PHYSIOGNOMIC GROUP	Cold-deciduous forest
FORMATION	Lowland and submontane broad-leaved cold-deciduous forest
ALLIANCE	<i>Acer rubrum</i> — <i>Nyssa sylvatica</i> (wetland) Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

RANGE This community occurs on the coastal plain in New Jersey, Pennsylvania, Delaware, Maryland, and northern Virginia.

ENVIRONMENTAL DESCRIPTION This community is a nutrient-poor wetland forest occurring in poorly drained depressions. Soils are typically moderately deep to deep muck over mineral soil, with pools of standing water at the surface. Water pH is acidic. At Assateague Island NS, standing water is not generally visible on the surface, but the water table is close to the surface.

USFWS WETLAND SYSTEM Palustrine System

MOST ABUNDANT SPECIES

*Globally*

Strata

Tree canopy

Tall shrub

Herbaceous

Non-vascular

Species

*Acer rubrum*, *Nyssa sylvatica*, *Liquidambar styraciflua*

*Vaccinium corymbosum*, *Clethra alnifolia*

*Osmunda cinnamomea*, *Osmunda regalis*, *Woodwardia areolata*

*Sphagnum* spp.

*ASIS*

Strata

Tree canopy

Tall shrub

Herbaceous

Non-vascular

Species

*Acer rubrum*

*Vaccinium corymbosum*, *Myrica cerifera*

*Smilax rotundifolia*

*Sphagnum* spp.

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DIAGNOSTIC SPECIES *Acer rubrum*, *Nyssa sylvatica*, *Magnolia virginiana*, *Osmunda cinnamomea*

VEGETATION DESCRIPTION This community is characterized by *Acer rubrum* and *Nyssa sylvatica* in the canopy, which may be quite open in some examples. Canopy associates include *Magnolia virginiana*, *Liquidambar styraciflua*, and *Persea palustris*. The shrub layer is characterized by *Vaccinium corymbosum*, as well as *Clethra alnifolia*, *Ilex verticillata*, *Rhododendron viscosum*. The herbaceous layer is generally poorly developed, and may include *Symplocarpus foetidus*, *Triadenum virginicum*, *Lythrum lineare*, *Osmunda regalis*, *Woodwardia areolata*, and *Osmunda cinnamomea*. *Sphagnum* and other mosses are common.

At Assateague Island National Seashore, this community occurs in small isolated patches and is characterized by scattered individuals of *Acer rubrum* and more dense understory of *Vaccinium corymbosum*, *Myrica cerifera*, and *Smilax rotundifolia*. This community is better represented on the Virginia portion of Assateague Island, where it supports *Quercus nigra*, *Ilex opaca*, *Aronia arbutifolia*, and *Salix nigra* in the tree and shrub layers, and *Triadenum virginicum*, *Viola lanceolata*, *Lobelia siphilitica*, and *Galium obtusum* in the herb layer (Harvill 1967).

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G3?

RANK JUSTIFICATION Confidence in global rank is low; mature examples of this community are relatively rare.

COMMENTS This community occurs only sparingly within Assateague Island NS, and always below minimum mapping unit in size. It always occurs as a complex, most commonly in close association with the *Pinus taeda* / *Myrica cerifera* / *Osmunda regalis* (Wetland) Forest with the *Prunus serotina* / *Myrica cerifera* / *Smilax rotundifolia* Forest as small inclusions or on the periphery of these forests.

The inland red maple swamp and the Cape May lowland swamp described by Breden (1989), the broadleaf swamp forest described from Cumberland County, New Jersey (Heckscher 1994), the *Acer rubrum* — *Quercus nigra* — *Nyssa sylvatica* swamp of Harvill (1967) described from the Virginia portion of Assateague Island and the woodland fresh marsh community of Hill (1986) are either contained within this community or synonymous with it.

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**PLOTS**

None

## Pinus taeda / Myrica cerifera / Vitis rotundifolia Forest

COMMON NAME	Loblolly Pine / Waxmyrtle / Muscadine Forest
SYNONYM	Coastal loblolly pine forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Forest
PHYSIOGNOMIC SUBCLASS	Mixed evergreen — deciduous forest
PHYSIOGNOMIC GROUP	Mixed needle-leaved evergreen — cold-deciduous forest
FORMATION	Mixed needle-leaved evergreen — cold-deciduous (upland) forest
ALLIANCE	<i>Pinus taeda</i> — <i>Quercus (nigra, falcata)</i> Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community occurs discontinuously along the coast from Delaware south to North Carolina.

ENVIRONMENTAL DESCRIPTION This community occurs on the outer coastal plain and on barrier islands in sheltered backdunes protected from salt spray and overwash. The substrate is rapidly drained sands or sandy loams which are nutrient poor.

On Assateague Island NS, this community occurs more frequently towards the western or bay side, often adjacent to the high salt marsh (*Spartina patens* — *Distichlis spicata* — *Borrchia frutescens* Herbaceous Vegetation). *Pinus taeda* / *Andropogon virginicus* Woodland often occurs as large distinct inclusions within the forest. The *Pinus taeda* / *Myrica cerifera* / *Osmunda regalis* (Wetland) Forest often occurs in close association with the *Pinus taeda* / *Myrica cerifera* / *Vitis rotundifolia* Forest, particularly in areas where the water table is close to the surface.

USFWS WETLAND SYSTEM Not applicable

### MOST ABUNDANT SPECIES

<u>Globally</u> <u>Strata</u>	<u>Species</u>
Tree canopy	<i>Pinus taeda</i> , <i>Quercus falcata</i>
Tall shrub	<i>Myrica cerifera</i> , <i>Vaccinium corymbosum</i>
Vine / liana	<i>Vitis rotundifolia</i> , <i>Toxicodendron radicans</i> , <i>Smilax rotundifolia</i>
Herbaceous	<i>Chasmanthium laxum</i>

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<u>ASIS</u>	<u>Species</u>
Strata	
Tree canopy	<i>Pinus taeda</i>
Tall shrub	<i>Myrica cerifera</i> , <i>Vaccinium corymbosum</i>
Vine / liana	<i>Toxicodendron radicans</i> , <i>Smilax rotundifolia</i> , <i>Vitis rotundifolia</i>
Herbaceous	<i>Chasmanthium laxum</i>

DIAGNOSTIC SPECIES *Pinus taeda*, *Vitis rotundifolia*, *Chasmanthium laxum*

**VEGETATION DESCRIPTION** This community is a mid-Atlantic coastal upland loblolly pine forest dominated by *Pinus taeda*. Although this community is predominantly needle-leaved, it is placed within a mixed forest alliance because of its strong floristic and ecologic affinity with other maritime forests of the *Pinus taeda* — *Quercus (nigra, falcata)* Forest Alliance. Canopy associates often include *Quercus falcata*, *Acer rubrum*, *Prunus serotina*, and *Sassafras albidum*. The tall shrub layer is comprised of *Myrica cerifera* and *Vaccinium corymbosum*. Vines and lianas are always present in abundance; *Vitis rotundifolia* is most commonly present, but *Toxicodendron radicans*, *Smilax rotundifolia*, *S. glauca*, and *Parthenocissus quinquefolia* are usually present in abundance as well. The herbaceous layer may be sparse, particularly if shrubs and vines are dense, but *Chasmanthium laxum* may be fairly abundant in this community. Other herbs include *Chasmanthium laxum*, *Panicum amarulum*, *Eupatorium hyssopifolium*, and *Elephantopus nudatus*. In southern Virginia and North Carolina, *Quercus virginiana* and *Gelsemium sempervirens* may also be present, but *Quercus virginiana* is never abundant and when present is usually restricted to the understory.

Assateague Island NS occurrences of this community are characterized by mature forests of *Pinus taeda* (DBHs ranging from 20-55 cm) with canopy closures up to 85 percent with very few, or no other associated canopy species. Scattered deciduous trees make up a sparse subcanopy tree layer, comprising less than 15 percent cover and more often even less than 5 percent. Subcanopy trees include such species as *Sassafras albidum*, *Acer rubrum*, *Juniperus virginiana*, *Diospyros virginiana*, *Amelanchier canadensis*, and *Magnolia virginiana*. Typically, no *Pinus taeda* is found in the subcanopy of the mature forests at Assateague. Shrub cover is variable but generally not prevalent. *Myrica cerifera* is common in clumps and scattered individuals of *Vaccinium corymbosum*, *Diospyros virginiana*, *Amelanchier canadensis*, and *Sassafras albidum* are local in the shrub layer. These forests have various densities of vine cover ranging from very dense (80 percent) to sparse (15 percent). *Smilax rotundifolia* and *Vitis rotundifolia* are characteristic, often climbing into the lower tree canopy. Also, *Toxicodendron radicans*, *Smilax glauca*, and *Parthenocissus quinquefolia* are other common vines in this community. The herb layer is generally sparse, falling below 30% cover. Tree seedlings (*Sassafras albidum*, *Pinus taeda*, *Acer rubrum*) are common, and the grass *Chasmanthium laxum* is almost always present. *Panicum virgatum*, *Mitchella repens*, *Andropogon glomeratus*, *Carex albolutescens*, and *Elephantopus nudatus* are present, but much less frequent.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G2G3

**RANK JUSTIFICATION** These forests are restricted to a narrow geographic range in regions particularly vulnerable to development pressure.



COMMENTS Logging of predominantly live oak maritime forests in North Carolina is suspected to have caused expansion of forests dominated by *Pinus taeda* (Bratton and Davison 1987; Schafale and Weakley 1990), and logging likely impacted the maritime forests of Assateague Island as well (Higgins et al. 1971). However, disturbance brought on by high winds and coastal storms has always been a part of coastal systems and natural coastal and maritime forests dominated by *Pinus taeda* are likely to have always occurred.

The following descriptions are synonymous with the *Pinus taeda* / *Myrica cerifera* / *Vitis rotundifolia* Forest: *Pinus taeda* / *Myrica* coastal forest association in Delaware (Clancy 1993); mature loblolly pine forest of dry sites at Cape Hatteras (Bratton and Davison 1987); the *Pinus taeda* community described from Assateague Island, Virginia (Harvill 1967); the pine woodland and the pine-deciduous hardwood woodland of the Virginia portion of Assateague Island (Stalter 1990); the upland forest of Virginia described by Klotz (1986); and the mature loblolly pine stand at Angola Neck, Delaware (Fleming 1978). Portions of the maritime deciduous forest in North Carolina (Schafale and Weakley (1990), the woodland community of Assateague Island (Hill 1986), and of the mesic forest and maritime forest at Virginia Beach (Clampitt 1992) are included within this community.

This community has floristic affinity with communities of the *Quercus virginiana* Forest Alliance, but is differentiated by a strong dominance by *Pinus taeda* and lack of species of southern maritime forests such as *Sabal minor* and *Osmanthus americanus*. This community also shares a number of species in common with the *Prunus serotina* / *Myrica cerifera* / *Smilax rotundifolia* Forest, but is differentiated by a strong dominance by *Pinus taeda*, a structure characterized by generally taller and straighter trees, a better developed herbaceous layer, and in general, a more protected position in back dunes.

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**PLOTS**

67AB01

67AB06

67AB04

62AB01

52AB07

## Pinus taeda / Hudsonia tomentosa Woodland

COMMON NAME	Loblolly pine / Beach Heather Woodland
SYNONYM	Loblolly pine woodland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Woodland
PHYSIOGNOMIC SUBCLASS	Evergreen woodland
PHYSIOGNOMIC GROUP	Needle-leaved evergreen woodland
FORMATION	Needle-leaved evergreen woodland with rounded crowns
ALLIANCE	<i>Pinus taeda</i> Woodland Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** This community probably ranges from Delaware south along the coast to northern Virginia, but further research will be required to determine the range with greater confidence.

**ENVIRONMENTAL DESCRIPTION** This community is a maritime woodland of sand dunes. Soils in this community are sandy and rapidly drained. Unlike the *Pinus taeda* / *Myrica cerifera* / *Vitis rotundifolia* Forest, this community often occurs directly adjacent to actively shifting foredune and is exposed to salt spray, winds, and storms. The community also occurs on unstable sands of protected backdunes. In the denser woodlands, more pine duff accumulates and herb diversity and cover is generally higher. Where woodlands are more open and trees sparse, growing conditions are harsh, less duff accumulates, and vast areas of exposed white sand are characteristic.

Large areas of this woodland occur on Assateague Island NS, both on foredunes and on protected backdunes.

**USFWS WETLAND SYSTEM** Not applicable

### MOST ABUNDANT SPECIES

*Globally*

Strata

Tree canopy

Herbaceous

Species

*Pinus taeda*

*Andropogon virginicus*, *Hudsonia tomentosa*, *Dichanthelium acuminatum*

*ASIS*

Strata

Tree canopy

Species

*Pinus taeda*

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Herbaceous                      *Andropogon virginicus*, *Hudsonia tomentosa*, *Dichantheium acuminatum*

DIAGNOSTIC SPECIES   *Pinus taeda*, *Hudsonia tomentosa*

VEGETATION DESCRIPTION   This maritime woodland community may be restricted to barrier islands of the mid-Atlantic. Trees are generally characterized by low spreading branches and multiple trunks. A shrub layer is lacking, herbaceous cover is usually low, and the vines so evident in all other forests of Assateague Island NS are scarce. Large patches of exposed sand are not uncommon. This community is poorly known regionally. Few published accounts of maritime forests make reference to open-canopy woodlands in the mid-Atlantic. This description is based on data collected from Assateague Island NS.

This community is characterized by a very open canopy created by sparsely distributed *Pinus taeda*. The tree canopy ranges from 10 to 50 percent closure and tree diameter and height is generally less, ranging from 10 to 30 cm and 6 to 10 m respectively. *Pinus taeda* dominates the canopy, but hardwoods such as *Quercus falcata*, *Q. phellos*, and *Ilex opaca* are frequent. The oaks often take on picturesque, low spreading multiple trunks. Younger, smaller pines make up a sparse subcanopy. Tall shrubs are also sparse, although an occasional *Myrica cerifera*, *Pinus taeda* sapling, or *Vaccinium corymbosum* can be found. Sparse low shrubs of *Hudsonia tomentosa* are more common (contributing less than 5 percent cover). *Smilax glauca* and *Toxicodendron radicans* are typical vine species but also make up less than 5 percent cover. Herbs are sparse, yet much varied. *Andropogon virginicus* and *Smilax rotundifolia* are commonly present. The typical pattern of herb distribution is on dry open sand, in direct sunlight. Here, small patches of *Dichantheium acuminatum*, *D. scoparium*, *Andropogon virginicus*, *Eupatorium rotundifolium*, *Erigeron sp.*, *Euthamia tenuifolia*, *Solidago sempervirens*, and *Gnaphalium obtusifolium* are typically mixed with scattered *Hudsonia tomentosa* and *Smilax rotundifolia*. In total, herb cover ranges from 5 to 40 percent, generally near the lower end of the scale.

Small depressions under shading trees may hold *Juncus dichotomus*, *J. canadensis*, *Scirpus pungens*, *Chasmanthium laxum*, *Panicum virgatum*, or *Andropogon virginicus* and *A. glomeratus*. These comprise very low cover but reflect a tendency for low moist sandy depressions to occur within the woodland.

OTHER NOTEWORTHY SPECIES   None

CONSERVATION RANK   G2

RANK JUSTIFICATION   This community is probably restricted to barrier islands or foredunes of the mid-Atlantic coastal mainland. Further research will be required to justify the rank.

COMMENTS   This woodland community often occurs in complex with the *Hudsonia tomentosa* / *Panicum (amarum, amarulum)* Dwarf-shrubland, and may actually represent a natural succession of dwarf-shrubland to woodland.

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The pine woodland of Higgins et al. (1971) and the woodland community of Hill (1986) described from Assateague Island are partially contained within this community. The upland forest described from northern Virginia by Klotz (1986) is suspected to contain this community, but will require further research. Portions of the maritime forest and the dune woodland described by Clampitt (1992) from Virginia Beach are floristically and ecologically related to this community and may be classified as such when additional regional data become available.

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**PLOTS**

32RR03

47AB01

52AB03

42AB04

62AB02

## Myrica pensylvanica / Diodia teres Shrubland

COMMON NAME	Bayberry / Buttonweed Shrubland
SYNONYM	Maritime shrubland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Temperate deciduous shrubland
ALLIANCE	<i>Myrica pensylvanica</i> — ( <i>Prunus maritima</i> ) Shrubland Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community occurs from Delaware south to northern North Carolina.

ENVIRONMENTAL DESCRIPTION This maritime shrubland community usually occupies the area intermediate between the very unstable oceanward portions of the dunes and the more protected backdunes, where it forms partially open to dense shrub thickets. The substrate is sand with no soil profile development, and with variable amounts of accumulated leaf litter. Where this community occupies the lee side of foredunes, greater exposure to winds and storms contributes to a shorter stature and more open aspect of the vegetation. Here, there are large patches of open unvegetated or sparsely vegetated sand.

On Assateague Island NS, this community is exposed to winds and salt spray, occurring on the unstable sands of foredunes, but well beyond tidal influence. Storm surges and overwash frequently kill back the shrubs, however, imposing a perpetual long-term disturbance regime. Large expanses of unvegetated sand are characteristic, although the vegetation may be quite patchy and dense in some areas that have remained relatively undisturbed for longer time periods. The substrate is generally deep (greater than 1 meter) unconsolidated sands, with the water table usually exceeding this depth.

USFWS WETLAND SYSTEM Not applicable

### MOST ABUNDANT SPECIES

<i>Globally</i>	<u>Species</u>
<u>Strata</u>	
Short shrub	<i>Myrica pensylvanica</i> , <i>Myrica cerifera</i>
Herbaceous	<i>Solidago sempervirens</i> , <i>Ammophila breviligulata</i> , <i>Diodia teres</i>

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ASIS

Strata

Short shrub

Herbaceous

Species

*Myrica pensylvanica*, *Myrica cerifera*

*Solidago sempervirens*, *Ammophila breviligulata*, *Triplasis purpurea*,  
*Oenothera humifusa*

DIAGNOSTIC SPECIES *Myrica pensylvanica*, *Diodia teres*

VEGETATION DESCRIPTION This community is a maritime shrubland dominated by *Myrica pensylvanica*. It supports the following species characteristic of the *Myrica pensylvanica* — (*Prunus maritima*) Shrubland Alliance, including *Solidago sempervirens*, *Oenothera humifusa*, *Cyperus grayii*, *Ammophila breviligulata*, *Chamaesyce polygonifolia*, *Rhus copallinum*, and from Maryland and north, *Prunus maritima*. This community is further characterized by species that differentiate it from other communities in the alliance, most notably *Myrica cerifera*, *Panicum amarulum*, *Spartina patens*, *Baccharis halimifolia*, and stunted individuals of *Pinus taeda*.

On Assateague Island NS, this community is characterized by sparse (generally less than 50%) cover of low or stunted *Myrica pensylvanica*. The low growth form (less than 1.5 meters) of *M. pensylvanica* is partially the result of sand burial, sometimes almost covering individual shrubs. *Myrica pensylvanica*, *Solidago sempervirens*, and *Ammophila breviligulata* are the most characteristic species of this community at Assateague Island NS. Much less frequent are shrubs of *Baccharis halimifolia*, *Diospyros virginiana*, and *Myrica cerifera*. *Prunus maritima* occurs sparingly, as Assateague is the southern range limit of this species, but it can be found in very local patches or as individuals within this foredune community as a shrub or small tree in growth form. The constant movement of sand in this community also limits the herbaceous cover. Species suited to these shifting sands include sparse *Hudsonia tomentosa* with *Solidago sempervirens* and *Ammophila breviligulata*. Other herbaceous species characteristic but sparsely distributed in this community include *Diodia teres*, *Panicum amarulum*, *Triplasis purpurea*, *Toxicodendron radicans*, *Chamaesyce polygonifolia*, *Cenchrus tribuloides*, *Parthenocissus quinquefolia*, *Lechea maritima*, *Dichanthelium acuminatum*, and *Rumex acetosella*. This community is common on Assateague Island NS, occurring most frequently on the southern portion of the island beyond the limits of the artificially created and maintained foredune planted with *Ammophila breviligulata*. This community also occurs on the northern tip of the island on artificial habitat created by dredge spoil deposition; here the vegetation is less typical and supports a number of exotic species in addition to those previously mentioned, including *Bromus tectorum*, *Vulpia myuros*, *Lepidium* spp., and *Trifolium arvense*. Total shrub cover is also greater here than in most other occurrences of the more natural manifestation of this community.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G2G3

RANK JUSTIFICATION This community is restricted to coastal dunes of the mid-Atlantic, and is vulnerable to development pressure.

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**Assateague Island National Seashore**

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COMMENTS The *Prunus maritima* — *Myrica pensylvanica* coastal dune scrub association described from Delaware (Clancy 1993) and the dunegrass-shrub transition zone of Assateague Island described by Higgins et al. (1971) are synonymous with this community. The shrub succession community (Hill 1986) and the dunegrass-shrub transition zone (Higgins et al. 1971) described from Assateague Island, and the upland (dune) thicket described from Virginia (Klotz 1986) are partially contained within this community.

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PLOTS

57AB08  
47AB06  
12RR04  
52AB06  
32CEF  
12RR02  
77AB05  
22RR01  
12RR03



## Myrica cerifera / Hydrocotyle spp. Shrubland

COMMON NAME	Waxmyrtle / Water Pennywort Shrubland
SYNONYM	Maritime shrub
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Evergreen shrubland
PHYSIOGNOMIC GROUP	Broad-leaved evergreen shrubland
FORMATION	Broad-leaved evergreen saturated shrubland
ALLIANCE	<i>Myrica cerifera</i> (wetland) Shrubland Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

RANGE The range of this community has not been fully evaluated, but likely includes Delaware to North Carolina.

ENVIRONMENTAL DESCRIPTION This community is a maritime tall wetland shrubland of backdunes. It is influenced by a shallow water table, as evidenced by the presence of obligate and facultative wetland species in the herbaceous layer. Surface water may be evident in pools, and a shallow to moderately deep layer of muck usually characterizes the soil profile, although the hydrologic regime of this alliance is somewhat variable. On Assateague Island NS, moderately deep, wet, mucky soils are characteristic.

USFWS WETLAND SYSTEM Palustrine system

### MOST ABUNDANT SPECIES

#### *Globally*

##### Strata

Tall shrub

Herbaceous

##### Species

*Myrica cerifera*, *Baccharis halimifolia*

*Toxicodendron radicans*, *Parthenocissus quinquefolia*

#### *ASIS*

##### Strata

Tall shrub

Herbaceous

##### Species

*Myrica cerifera*, *Baccharis halimifolia*

*Toxicodendron radicans*, *Chasmanthium laxum*, *Polygonum pennsylvanicum*

DIAGNOSTIC SPECIES *Myrica cerifera*, *Hydrocotyle verticillata*

**VEGETATION DESCRIPTION** This community has not been fully evaluated regionally, and is largely based on data collected from Assateague Island NS. It is a tall maritime shrubland of sheltered backdunes. It is characterized by tall, tree-like dense shrub growth dominated by *Myrica cerifera*, with associates including *Baccharis halimifolia*, *Acer rubrum*, *Vaccinium corymbosum*, *Rosa palustris*, *Ilex opaca*; common herbs include *Hydrocotyle* spp., *Juncus dichotomus*, *Juncus scirpoides*, *Woodwardia areolata*, *Osmunda regalis*, *Carex albolutescens*, *C. hormathodes*, *Leersia virginica*, *Polygonum pennsylvanicum*, *Boehmeria cylindrica*, and *Rubus flagellaris*.

At Assateague Island NS, this shrubland community typically forms a dense (greater than 80%) cover dominated by *Myrica cerifera*. Large individuals of *Baccharis halimifolia* are also scattered throughout. Shrubs are tall, reaching heights of 6m and appear tree-like in their growth form. This community is prevalent at Assateague Island NS, forming vast thickets, particularly in more protected areas behind the artificial dune, most typically located between the bayside high marsh herbaceous vegetation and the inner-island forests. Commonly associated species include *Rosa palustris*, *Baccharis halimifolia*, and *Myrica pennsylvanica* in the shrub layer. Herbaceous vegetation is also quite lush and diverse. Common herbs include *Calystegia sepium*, *Galium obtusum*, *Chasmanthium laxum*, *Panicum* spp., and *Festuca rubra*. *Toxicodendron radicans* is very common and constitutes a large portion of the "understory" cover. The well shaded, yet lush nature, promotes many additional facultative and obligate wetland species such as *Ludwigia palustris*, *Juncus canadensis*, *Eleocharis* sp., *Eleocharis rostellata*, *Ranunculus sceleratus*, *Ptilimnium capillaceum*, *Lycopus americanus*, *Bidens* spp., *Carex hormathodes*, *Samolus parviflorus*, *Hydrocotyle verticillata*, and *Polygonum pennsylvanicum*.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** Information not available.

**RANK JUSTIFICATION** Further comparison with similar vegetation in Delaware, Virginia and North Carolina will be required to determine the conservation rank with confidence.

**COMMENTS** This vegetation is prone to invasion by *Pragmites australis*, so this species can be found in various densities throughout, but generally never very prevalent over large areas. The mesic shrub zone of Higgins et al. (1986) and the shrub succession community of Hill (1971) described from Assateague Island, as well as the thicket community of Boule (1979) and the swamp thicket of Klotz (1986) described from Virginia are partially contained within this community. Maritime shrub vegetation occurring on sites having a high water table, described for North Carolina by Schafale and Weakley (1990) is also likely contained in part within this community.

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**PLOTS**

67AB05

37AB06

*Myrica (cerifera, pensylvanica)* — *Vaccinium corymbosum* Shrubland

COMMON NAME	(Waxmyrtle, Bayberry) — Highbush Blueberry Shrubland
SYNONYM	Shrub bog
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Deciduous seasonally / temporarily flooded shrubland
ALLIANCE	<i>Myrica (cerifera, pensylvanica)</i> — <i>Vaccinium corymbosum</i> (wet) Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE This community occurs in Delaware and Maryland, and may extend to Virginia.

ENVIRONMENTAL DESCRIPTION This community occurs in seasonally flooded interdunal depressions. On Assateague Island NS, these depressions remain saturated and hold standing water (to a depth of less than .15 meters) early in the growing season. Standing water disappears later in the summer, but soils remain somewhat moist throughout the season. A shallow organic layer (1-5 cm) overlies sand.

USFWS WETLAND SYSTEM Palustrine System

MOST ABUNDANT SPECIES

*Globally*

Strata

Short shrub

Herbaceous

Species

*Myrica cerifera, Vaccinium corymbosum*

*Drosera intermedia, Panicum virgatum, Scirpus pungens*

*ASIS*

Strata

Short shrub

Herbaceous

Species

*Myrica cerifera, Vaccinium corymbosum*

*Drosera intermedia, Panicum virgatum, Scirpus pungens*

DIAGNOSTIC SPECIES *Myrica cerifera, Vaccinium corymbosum, Osmunda regalis, Drosera intermedia, Xyris torta*

VEGETATION DESCRIPTION This community is a relatively open, short-statured shrub wetland. The two most characteristic shrubs are *Myrica cerifera* and *Vaccinium corymbosum*. *Rosa palustris* and *Myrica pensylvanica* are two other common shrub associates. Unlike the *Myrica cerifera* /

*Hydrocotyle* spp. Shrubland, this community is of generally shorter stature. *Panicum virgatum*, *Andropogon virginicus* and other grasses are common. Other herbs include *Juncus canadensis*, *J. scirpoides*, *J. dichotomus*, *Pluchea foetida*, *Triadenum virginicum*, *Drosera intermedia*, *Lycopodiella appressa*, *Xyris torta*, and *Osmunda regalis*.

This community is not widespread on Assateague Island NS, being largely confined to southern portion. Occurrences range in size from an eighth to a quarter hectare and are generally located in the interdunal areas of the inner-island. This community is distinct in that *Myrica cerifera* grows in standing water forming a 20 to 50 percent cover with *Vaccinium corymbosum* characteristically scattered around the perimeter of the wet depressions. It is characterized by patchy, open *Myrica cerifera* 1-2m tall, with lesser amounts of *Vaccinium corymbosum*. *Pinus taeda* seedlings and saplings may also be found scattered throughout. Characteristic of this community are high cover of particular grasses and rushes such as *Panicum virgatum*, *Scirpus pungens*, *Juncus dichotomus*, *Juncus canadensis*, and to a lesser degree *Andropogon glomeratus* and *A. virginicus*. Other herbaceous species associated with this community include *Pluchea foetida*, *Rhexia mariana*, *Euthamia tenuifolia*, *Triadenum virginicum*, and occasionally *Osmunda regalis*. The presence of *Lycopodiella appressa*, *Drosera intermedia*, and *Xyris torta* suggest the presence of acidic, nutrient poor conditions, hence the local name "shrub bog."

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Insufficient information available to assign a rank.

COMMENTS This alliance and community are poorly known; the description of the community is synonymous with the alliance and based largely on data collected from Assateague Island NS.

The mesic shrub zone (Higgins et al. 1971) is partially contained within this community, and the shrub bog (Hill 1986) is synonymous with the community. The scrub-shrub/mixed herbaceous interdunal wetland association of McAvoy and Clancy (1994) and the mesic shrub thicket described from New Jersey by Martin (1959) are closely related floristically and ecologically, and may also be synonymous with this community.

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**PLOTS**

57AB04  
57AB01  
52AB01  
42CEF02

*Myrica cerifera* — *Baccharis halimifolia* / *Spartina patens* Shrubland

COMMON NAME	Waxmyrtle — Groundsel Tree / Salt Hay Shrubland
SYNONYM	Maritime shrubland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Deciduous seasonally / temporarily flooded shrubland
ALLIANCE	<i>Myrica cerifera</i> — <i>Baccharis halimifolia</i> Shrubland Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

RANGE The range of this community likely includes New Jersey to South Carolina.

ENVIRONMENTAL DESCRIPTION This mesic shrub community occurs on maritime dunes, usually on more protected backdunes not directly influenced by storm tides. It is not tidally flooded, although is impacted by salt spray. The substrate is sand with little or no organic layer. Soils have a shallow loamy component, from the accumulation of organic matter under graminoid vegetation, but in less vegetated examples, exposed sands persist. The water table is often less than half a meter below the surface, so mottled sands lie directly below the loam and loamy-sands.

USFWS WETLAND SYSTEM Palustrine System

MOST ABUNDANT SPECIES

*Globally*

Strata

Short shrub

Herbaceous

Species

*Myrica cerifera*, *Baccharis halimifolia*

*Spartina patens*, *Toxicodendron radicans*, *Solidago sempervirens*,  
*Panicum virgatum*

*ASIS*

Strata

Short shrub

Herbaceous

Species

*Myrica cerifera*, *Baccharis halimifolia*

*Spartina patens*, *Toxicodendron radicans*, *Solidago sempervirens*,  
*Panicum virgatum*

DIAGNOSTIC SPECIES *Myrica cerifera*, *Baccharis halimifolia*, *Spartina patens*, *Panicum virgatum*

**VEGETATION DESCRIPTION** This community is characterized by a moderately open canopy of *Myrica cerifera*, *Baccharis halimifolia*, *Myrica pensylvanica*, *Rhus copallinum*. *Spartina patens* and *Toxicodendron radicans* are characteristic herbs; other associates include *Panicum virgatum*, *Andropogon virginicus*, *Juncus dichotomus*, *Solidago sempervirens*, *Smilax* spp., *Parthenocissus quinquefolia*, *Vitis* spp., and *Scirpus pungens*. This community may be differentiated from the *Myrica cerifera* / *Hydrocotyle* spp. Shrubland by the absence of wetland species and muck soils, and from the *Baccharis halimifolia* — *Iva frutescens* / *Spartina patens* Shrubland community by the influence of the freshwater table rather than tidal flooding and by the absence of halophytes such as *Iva frutescens*. This community is differentiated from the *Myrica (cerifera, pensylvanica)* Shrubland by the absence of *Drosera intermedia*, *Xyris torta*, and *Lycopodiella appressa*.

Examples of community on Assateague Island NS are characterized by more or less evenly distributed shrubs, with *Myrica cerifera* and *Baccharis halimifolia* cover ranging from 10 to 60 percent. More often, *Baccharis* is much more prevalent than *Myrica* in this layer. *Toxicodendron radicans* characteristically covers up to 10 percent of this community. The herbaceous cover is predominantly dry, tufted *Spartina patens* (from 50 to 100 percent) and *Scirpus pungens*; *Panicum virgatum* may also be evenly mixed as a secondary component of the herbaceous cover (generally less than 30 percent). Other herbs are frequent but provide little overall cover. Characteristic species include *Eupatorium hyssopifolium*, *Solidago sempervirens*, *Juncus dichotomus*, *Fimbristylis castanea*, and *Panicum amarulum*.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** Information not available.

**RANK JUSTIFICATION** Further research is necessary to determine the conservation rank.

**COMMENTS** This community is not well known; the description is based largely on data collected from Assateague Island NS. Portions of the mesic shrub community (Higgins et al. 1971) and the shrub succession community (Hill 1986) described from Assateague Island are contained within this community. The thicket community (Boule 1979) and the upland thicket (Klotz 1986) described from Virginia are suspected to be synonymous with this community. Portions of the maritime shrub community described from North Carolina by Schafale and Weakley (1990), particularly occurrences lacking *Ilex vomitoria* and *Quercus virginiana* may be included within this community. The salt grass — sea myrtle — red cedar savanna and the salt grass — sea myrtle savanna described from New Jersey (Martin 1959) may also be synonymous with this community.

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Higgins, E.A.T., R.D. Rappleye, and R.G. Brown. 1971. The flora and ecology of Assateague Island. University of Maryland Agriculture Experiment Station Bull. A-172. 70 pp.

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**PLOTS**

57AB03  
77AB06  
TNC1  
TNC3  
TNC7  
TNC2  
TNC9  
37AB05

## Baccharis halimifolia — Iva frutescens / Spartina patens Shrubland

COMMON NAME	Groundsel Tree — Marsh Elder / Saltmeadow Grass Shrubland
SYNONYM	Salt shrub
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Saltwater-tidal irregularly flooded shrubland
ALLIANCE	<i>Baccharis halimifolia</i> — <i>Iva frutescens</i> Shrubland Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE New Jersey to South Carolina and perhaps farther south.

**ENVIRONMENTAL DESCRIPTION** This community always occurs in association with salt marshes. In its natural condition, this community forms the border of the salt marsh between the high salt marsh (communities of the *Spartina patens* Herbaceous Alliance) and the adjacent upland vegetation. It also occurs in patches on areas of slightly higher elevation within the salt marsh or on spoil mounds adjacent to ditches. This community often forms an abrupt transition from salt marsh to upland reflecting the relatively higher elevation and less frequent tidal flooding. Shrub cover in this situation tends to be fairly dense, and herbs are sparsely distributed. Where the topographic relief is more gradual, the community is characterized by an open and relatively evenly spaced shrub stratum with a well-developed herbaceous layer, reflecting an intergrading of this community with the adjacent high salt marsh. Storm-induced disturbance causes periodic die-back of the shrubs restricting the extent of their spread.

At Assateague Island NS, this community is characterized by a shallow (10-20 cm) organic layer comprised of peat or peaty muck overlying sand or sandy loam.

USFWS WETLAND SYSTEM Estuarine System

### MOST ABUNDANT SPECIES

<i>Globally</i>	<i>Species</i>
<u>Strata</u>	
Short shrub	<i>Iva frutescens</i> , <i>Baccharis halimifolia</i>
Herbaceous	<i>Spartina patens</i>

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ASIS

Strata

Short shrub

Herbaceous

Species

*Iva frutescens*, *Baccharis halimifolia*

*Spartina patens*

DIAGNOSTIC SPECIES *Iva frutescens*

VEGETATION DESCRIPTION Characteristic shrub species include *Baccharis halimifolia* and *Iva frutescens*. Associated shrubs include *Myrica cerifera* and *M. pensylvanica*; *Borrchia frutescens* and *Juniperus virginiana* var. *silicicola* are also found in this community in the southern part of the range. *Spartina patens* is a characteristic and usually abundant grass; other common herbaceous associates include *Distichlis spicata*, *Hibiscus moscheutos*, *Toxicodendron radicans*, *Teucrium canadense*, *Festuca rubra*, *Limonium carolinianum*, and *Setaria parviflora*. This community is differentiated from the *Baccharis halimifolia* — *Iva frutescens* / *Panicum virgatum* community to the north by the relative unimportance of *Panicum virgatum* and by the abundance of *Spartina patens* and presence of more southern-ranging species such as *Setaria parviflora*.

On Assateague Island NS, *Iva frutescens* is the dominant shrub of this community, with cover values ranging from 30 to 85 percent. *Baccharis halimifolia* is often present at very low cover. Ground cover is complete and most commonly *Spartina patens* but can be mixed with *Eleocharis palustris*, *E. rostellata*, *Scirpus pungens*, and *Distichlis spicata*. Seedlings of *Baccharis* and *Iva* are frequent and individuals of *Lythrum lineare*, *Kostyletzyka virginicus*, *Limonium carolinum*, and *Solidago sempervirens* are scattered throughout.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G5

RANK JUSTIFICATION This community is a common component of salt marshes of the mid- Atlantic coast.

COMMENTS Portions of the shrub succession community (Higgins et al. 1971) and the salt marsh community (Hill 1986) described from Assateague Island, and the swamp thicket (Klotz 1986) described from Virginia are contained within this community. Vegetation that may be considered synonymous with this community has been described to varying extent by several authors, and includes the following names: salt marsh and upper border (Barry 1980; South Carolina); salt grass — marsh elder savanna (Martin 1959; New Jersey); saltbush zone (Boule, 1979, Virginia); Estuarine scrub-shrub wetland (Tiner 1985a and 1985b; Delaware and New Jersey); Salt bush — salt meadow marsh (Daiber et al. 1976, Delaware); *Iva frutescens* — *Baccharis halimifolia* (Good 1965, New Jersey); and *Iva frutescens* and *Baccharis halimifolia* (Klemas et al. 1973, Delaware); Salt shrub (Reschke 1990, New York); Salt marsh complex, marsh-upland border (Breden 1989, New Jersey). Portions of the salt shrub (Schafale and Weakley 1990, North Carolina) are included in this community. This community is differentiated from the *Myrica cerifera* — *Baccharis halimifolia* / *Spartina patens* community by the presence of *Iva frutescens* and by the influence of tidal flooding.

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**PLOTS**

32RR06  
47AB03  
32RR11  
37AB02  
67AB08  
32RR10

*Myrica pensylvanica* / *Schizachyrium scoparium* ssp. *littorale* — *Eupatorium hyssopifolium* Sparse Shrubland

COMMON NAME	Bayberry / Little Bluestem — Hyssop-leaved Eupatorium Sparse Shrubland
SYNONYM	Maritime Grassland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparse Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous sparse shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous sparse shrubland with a dominant herbaceous stratum
FORMATION	Deciduous sparse shrubland with medium-tall grasses
ALLIANCE	<i>Myrica pensylvanica</i> — <i>Schizachyrium scoparium</i> ssp. <i>littorale</i> Sparse Shrubland

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE The range of this community is not well known; North Carolina is likely the southern extent. This community is related to maritime grasslands of New England and New York. Further analysis is required to determine the classification, and thus the range, with confidence.

ENVIRONMENTAL DESCRIPTION This community occurs on deep well-drained sands of old leveled interdunes of Assateague Island NS. It usually occurs within the influence of offshore winds and salt spray.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

*Globally*

Strata

Short shrub

Herbaceous

Species

*Myrica pensylvanica*

*Eupatorium hyssopifolium*, *E. rotundifolium*, *Schizachyrium scoparium* ssp. *littorale*, *Toxicodendron radicans*, *Solidago sempervirens*

*ASIS*

Strata

Short shrub

Herbaceous

Species

*Myrica pensylvanica*

*Eupatorium hyssopifolium*, *E. rotundifolium*, *Schizachyrium scoparium* ssp. *littorale*, *Toxicodendron radicans*, *Solidago sempervirens*

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**DIAGNOSTIC SPECIES** *Myrica pensylvanica*, *Schizachyrium scoparium* ssp. *littorale*, *Eupatorium hyssopifolium*, *E. rotundifolium*

**VEGETATION DESCRIPTION** Although highly variable in species composition, the typical expression of this community is characterized by a predominance (25 - 50 percent cover) of bunch grasses including *Schizachyrium scoparium* ssp. *littorale*, *Andropogon virginicus*, *Panicum amarulum*, *Ammophila breviligulata*, *Dichanthelium scoparium* and *D. acuminatum*. Generally one or two of these species will dominate while the others occur as more infrequent, scattered clumps. Occasionally *Spartina patens*, growing in a dry "wispy" condition, will form the dominant graminoid cover. Shrubs of *Myrica pensylvanica* are sparse and stunted *Baccharis halimifolia* and *Diospyros virginiana* are even less frequent. Dense tangles of *Toxicodendron radicans* are very characteristic of this alliance as they sprawl over the bare ground and sparse vegetation. *Rubus argutus* is also scattered throughout. Much of the remaining dry sands are exposed with sparsely distributed herbs. Characteristic herb species include *Cirsium horridulum*, *Solidago sempervirens*, *Gnaphalium obtusifolium*, *Linaria canadensis*, *Euthamia tenuifolia*, *Oenothera humifusa*, and *Diodia teres*.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** Information not available

**RANK JUSTIFICATION** Further research is necessary to determine the conservation rank.

**COMMENTS** This community is not well known; the description provided here is based on data collected from Assateague Island NS. The shrub succession community of (Hill 1986) and the xeric shrub community (particularly at lower elevations) (Higgins et al. 1971) described from Assateague Island are partially contained within this community. The sandplain grassland (Dunwiddie et al. 1993), the maritime grassland in New York (Reschke 1990), and the *Andropogonetum scoparii* described from Long Island, New York (Blizzard 1931) are related to this community, but classification will require further work.

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**PLOTS**

77AB01  
77AB03  
32RR01  
37RR05  
TNC4

Hudsonia tomentosa / Panicum (amarum, amarulum) Dwarf-shrubland

COMMON NAME	Beach Heather / Beachgrass Dwarf-shrubland
SYNONYM	Hudsonia dune
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Dwarf-shrubland
PHYSIOGNOMIC SUBCLASS	Evergreen dwarf-shrubland
PHYSIOGNOMIC GROUP	Needle-leaved and microphyllous evergreen dwarf-shrubland
FORMATION	Needle-leaved and microphyllous evergreen creeping or matted dwarf-shrubland
ALLIANCE	<i>Hudsonia tomentosa</i> Dwarf-shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE This community is locally abundant on coastal dunes from New Jersey to northern Virginia.

ENVIRONMENTAL DESCRIPTION This community is largely confined to maritime interdunes. Influenced by wind-deposited sand, the substrate is unstable and supports no soil development and large patches of sparsely vegetated or unvegetated sand are common. This community occurs on well drained sands of back dunes and interdunes of Assateague Island.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

*Globally*

Strata

Short shrub

Herbaceous

Species

*Hudsonia tomentosa*

*Lechea maritima*, *Schizachyrium scoparium* ssp. *littorale*,  
*Toxicodendron radicans*, *Solidago sempervirens*, *Artistida tuberculosa*

*ASIS*

Strata

Short shrub

Herbaceous

Species

*Hudsonia tomentosa*

*Lechea maritima*, *Myrica pensylvanica*, *Solidago sempervirens*, *Spartina patens*

DIAGNOSTIC SPECIES *Hudsonia tomentosa*, *Lechea maritima*, *Panicum amarulum*

VEGETATION DESCRIPTION This community is a maritime dwarf-shrubland characterized by *Hudsonia tomentosa*, a species adapted to sand burial. *Hudsonia tomentosa* is dominant,



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occurring as discrete patches that may coalesce into a dense mat on older more stabilized dunes. A number of other shrubs such as *Myrica pensylvanica*, *Myrica cerifera*, *Pinus taeda* saplings, and *Prunus maritima* may occur, but in low abundance and cover. *Schizachyrium scoparium* ssp. *littorale*, *Ammophila breviligulata*, *Aristida tuberculosa*, *Spartina patens*, and *Panicum amarulum* are common grasses of this community, and *Toxicodendron radicans* is a common vine. Other herbaceous associates include *Lechea maritima*, *Cyperus grayi*, *Artemisia stelleriana*, *Chamaesyce polygonifolia*, *Solidago sempervirens*, and *Diodia teres*.

On Assateague Island NS, *Hudsonia tomentosa* generally constitutes 30 to 70 percent of the total ground cover with exposed sand remaining. *Myrica pensylvanica* shrubs and *Pinus taeda* saplings are almost non-existent but can occur as scattered individuals. Herbaceous vegetation is also quite sparse (less than 5 percent cover) but may include scattered individuals of *Panicum amarulum*, *Panicum amarum*, *Solidago sempervirens*, *Linaria canadensis*, *Lechea maritima*, *Ammophila breviligulata*, *Gnaphalium obtusifolium*, *Schizachyrium scoparium* ssp. *littorale*, *Dichantheium acuminatum*, and *Oenothera humifusa*. Scattered vines of *Smilax rotundifolia* and canes of *Rubus argutus* are occasional.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G3

RANK JUSTIFICATION There are many occurrences of this community, but it is restricted to large coastal dune systems vulnerable to development pressure and to ORV use.

COMMENTS At Assateague Island NS, community size can range from very small openings within a shrubland or woodland to large extensive dunes dominated by *Hudsonia tomentosa*.

The *Hudsonia* dunes (Higgins et al. 1971) and the *Hudsonia* dune community (Hill 1986) described from Assateague Island are synonymous with this community. Numerous other researchers have described this vegetation to varying degrees. The following names have been ascribed to vegetation that may be placed within this community: Dunegrass — beach heather — low thicket mixture (Martin 1959, New Jersey); beach heather community (Collins and Anderson 1994, New Jersey); dune crest community (Clampitt 1992, Virginia); *Hudsonia tomentosa* — *Ammophila breviligulata* dune scrub association (Clancy 1993, Delaware); Coastal dune shrubland (Breden 1989, in part, New Jersey).

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**PLOTS**

52AB02

42AB02

12RR01

TNC10

57AB02

## *Typha angustifolia* — *Hibiscus moscheutos* Herbaceous Vegetation

COMMON NAME	Narrow-leaved Cattail — Rose Mallow Herbaceous Vegetation
SYNONYM	Brackish tidal marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Tall grassland
PHYSIOGNOMIC GROUP	Temperate tall grassland
FORMATION	Brackish tidal regularly / irregularly flooded tall grassland
ALLIANCE	<i>Typha angustifolia</i> — <i>Hibiscus</i> spp. Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** The range of this community is not known; the alliance occurs in coastal areas from Maine through South Carolina. Further research is necessary to determine the classification, and thus the range, with confidence.

**ENVIRONMENTAL DESCRIPTION** This community is a brackish tidal marsh occurring where water salinity ranges from 0.5-18.0 ppt. Brackish marshes are most extensive on large tidal rivers, but smaller marshes of this alliance also occur at the upper limits of larger tidal creeks. At Assateague Island NS, the soils of this community are comprised of a shallow organic layer (5-20 cm peaty muck) overlying sand.

**USFWS WETLAND SYSTEM** Estuarine system

### MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Typha angustifolia*, *Pontederia cordata*, *Hibiscus moscheutos*, *Scirpus pungens*

*ASIS*

Strata

Herbaceous

Species

*Typha angustifolia*, *Scirpus pungens*

**DIAGNOSTIC SPECIES** *Typha angustifolia*, *Hibiscus moscheutos*

**VEGETATION DESCRIPTION** The species composition of this community is a mixture of salt marsh and freshwater tidal marsh species. The vegetation is dense and characterized by tall graminoids such as *Typha angustifolia*, with associates including *Spartina cynosuroides*, *Phragmites*

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*australis* or *Scirpus americanus*, *Pontederia cordata*, *Lilaeopsis chinensis*, *Hibiscus palustris*, *H. moscheutos*, and *Pluchea odorata*.

At Assateague Island NS, this herbaceous vegetation typically occurs on the edge of non-tidal intermittently flooded wetlands and irregularly flooded tidal wetlands, or where the two meet. Therefore, a brackish influence is often present in the water feeding these poorly drained wetlands. *Typha angustifolia* characteristically dominates the vegetation cover (30 to 90 percent cover). Otherwise, the soil substrate is either bare muck or peat, standing water, or an accumulation of dead *Typha* litter. Other herbaceous species are present but sparsely distributed and with low cover values; characteristic species include: *Hibiscus moscheutos*, *Spartina patens*, *Distichlis spicata*, *Scirpus pungens*, *Lycopus americanus*, *Eleocharis palustris*, *Hydrocotyle umbellata*, *Eupatorium capillifolium*, *Ptilimnium capillaceum*, *Bidens* spp., and *Spartina alterniflora*. This vegetation is not widespread on Assateague, and is largely confined to the head of tidal creeks on the bay side.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Further research is necessary to determine the rank.

COMMENTS Classification of this community and associated brackish tidal marshes is complex and awaits the collection and analysis of further data. The transitional fresh marsh (Hill 1986) described from Assateague Island is partially contained in this community. Higgins et al. (1971) did not describe this vegetation. The following vegetation descriptions are contained partially or entirely within the *Typha angustifolia* — *Hibiscus* spp. Alliance: *Typha angustifolia* — *Hibiscus palustris* community (Metzler and Barrett 1992, Connecticut); Brackish tidal marsh (Reschke 1990, New York); Brackish tidal marsh complex (Breden 1989, New Jersey); Brackish tidal marsh community (Maine Natural Heritage Program 1991, Maine); Brackish marsh (Sperduto 1994, New Hampshire); *Hibiscus* marsh (Cahoon and Stevenson 1986, Maryland); narrowleaf cattail type (McCormick and Ashbaugh 1972, New Jersey); *Typha angustifolia* community (Good and Good 1975, New Jersey); *Typha angustifolia* type (Ferren et al 1981, New Jersey); fresh-brackish marsh (Klotz 1986, Virginia). The *Typha* association described from Maryland by Shreve et al. (1910) is likely synonymous with this community.

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#### PLOTS

37AB04

37RR02

42RR03

## Phragmites australis Herbaceous Vegetation

COMMON NAME	Reed-grass Herbaceous Vegetation
SYNONYM	Reed-grass marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Tall grassland
PHYSIOGNOMIC GROUP	Temperate tall grassland
FORMATION	Brackish tidal regularly / irregularly flooded tall grassland
ALLIANCE	<i>Phragmites australis</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	1

**RANGE** This community has a broad geographic range, including eastern and midwestern states, as well as Canada.

**ENVIRONMENTAL DESCRIPTION** This community is a dense tall grassland indicative of disturbance. It occurs in a range of wetland habitats from fresh to brackish in salinity. At Assateague Island NS, the soil profile is characterized by a shallow organic layer overlying sand.

**USFWS WETLAND SYSTEM** Estuarine System, Palustrine System

### MOST ABUNDANT SPECIES

<i>Globally</i>	
<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Phragmites australis</i>

<i>ASIS</i>	
<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Phragmites australis</i>

**DIAGNOSTIC SPECIES** *Phragmites australis*

**VEGETATION DESCRIPTION** This community is a broadly-defined reed-grass marsh. It is characterized by dense stands of *Phragmites australis*, a species which tends to grow in colonies of tall, stout, leafy plants often to the exclusion of all other vascular plant species. Associated species are highly variable, depending on the community that has been invaded.

On Assateague Island NS, *Phragmites australis* most frequently invaded stands of the following communities: *Myrica cerifera* / *Hydrocotyle* spp. (Wet) Shrubland, *Myrica cerifera* — *Baccharis halimifolia* / *Spartina patens* Shrubland, or *Myrica (cerifera, pensylvanica)* — *Vaccinium*

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*corymbosum* shrubland. Spreading in large colonies, *Phragmites* eventually dominates disturbed areas at coverage up to 100 percent. More typically, though, scattered individuals of other species may occur, such as sparse *Myrica cerifera* shrubs, *Kosteletzyka virginica*, *Calystegia sepium*, *Boehmeria cylindrica*, *Typha angustifolia*, *Apocynum cannabinum*, *Rosa palustris*, *Polygonum* sp., and *Mikania scandens*. Vines of *Toxicodendron radicans* are also frequent, but typically occur at low cover.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK \*

RANK JUSTIFICATION \*This community is not only globally secure, but its growing distribution is highly undesirable from a conservation perspective.

COMMENTS Although *Phragmites australis* rhizomes have been noted in salt marsh sediments exceeding three thousand years in age (Niering and Warren 1977) and is thus a native component of salt marshes, the growth of the species in its native condition was likely to have been significantly different than the dense monotypic stands that characterize this community. The presence of the *Phragmites australis* community in wetlands today generally indicates human-induced disturbance, either through direct habitat manipulation or through passive introduction of reproductive material to naturally disturbed substrates. In cases where *Phragmites australis* is a significant component of the vegetation, but the vegetation retains sufficient species composition to retain its identity, the site is considered an unhealthy or degraded example of that community. In cases where *Phragmites australis* cover is so high that native species have been excluded and the original community is no longer recognizable, the occurrence then falls within the *Phragmites australis* Herbaceous Vegetation.

The following state Natural Heritage program communities are contained within this community: *Phragmites australis* community (Metzler and Barrett 1992, Connecticut); *Phragmites australis* tidal marsh association (Clancy 1993, Delaware).

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PLOTS

37AB03  
37RR01  
32RR04

## Spartina alterniflora / Ascophyllum nodosum Herbaceous Vegetation

COMMON NAME	Saltwater Cordgrass Herbaceous Vegetation
SYNONYM	Low salt marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Tall grassland
PHYSIOGNOMIC GROUP	Temperate tall grassland
FORMATION	Saltwater tidal regularly/irregularly flooded tall grassland
ALLIANCE	<i>Spartina alterniflora</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

**RANGE** This community occurs in estuaries from southern Maine to Cape Hatteras, North Carolina. The northern limit is determined by a slower accumulation of silt and corresponding absence of algal species (Chapman 1937). The southern limit corresponds with the southern limit of the Virginian province of the American Atlantic Temperate Region, a transitional area harboring animal species of both southern and northern affinities (Gosner 1979).

**ENVIRONMENTAL DESCRIPTION** The community is generally limited to the zone between mean sea level and the mean high water level. The habitat occurs in protected inlets behind barrier beaches, or in drowned river valleys. Peat depth ranges from a few feet if the community formed over a mud flat, to 80 feet in drowned river valleys. *Spartina alterniflora* is limited to the low marsh zone by moderate salinity; it can withstand longer submergence than other salt marsh grasses, but still requires periodic exposure of the substrate. It also requires moderately high levels of iron (7-15 ppm).

On Assateague Island NS, this community is irregularly to regularly flooded by the brackish waters from the bay and has standing water at or near the soil surface.

**USFWS WETLAND SYSTEM** Estuarine system

### MOST ABUNDANT SPECIES

<i>Globally</i>	
<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Spartina alterniflora</i>

<i>ASIS</i>	
<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Spartina alterniflora</i>



DIAGNOSTIC SPECIES *Spartina alterniflora*

VEGETATION DESCRIPTION This community is commonly known as the "low salt marsh," occurring as a tall grassland strongly dominated by *Spartina alterniflora*. There is little variation in vascular plant species composition across the range. It occurs in nearly pure stands, with occasional low-growing species such as *Spergularia marina*, *Salicornia* spp., *Suaeda maritima* and seaweeds such as *Ulva lactuca* and other algae such as *Fucus vesiculosus* and *Ascophyllum nodosum*, which grow at the bases of the *Spartina* plants (Moul 1973).

At Assateague Island NS, this community typically exhibits two different expressions. Both form the low marshes of the island's bay side or fringes along gut channels into the island's interior. *Spartina alterniflora* growing in monotypic stands is the characteristic community closest to the tidal influence (along the water's edge). These pure stands of *Spartina alterniflora* generally cover 50 to 80 percent of the ground, leaving the remainder as exposed peat, mucky sand or algal mats. Herbs of *Salicornia virginica* and *S. bigelovii* can be quite common mixed in with the *Spartina*, often becoming more apparent later in the growing season. *Limonium carolinianum* is another characteristic herb, but only as scattered individuals. *Ascophyllum nodosum* was not observed during 1995 sampling, but may occur sparingly.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G5

RANK JUSTIFICATION This community occurs throughout the northeast and mid-Atlantic coast. However, high quality examples lacking disturbance as a result of ditching, dredging, filling and other activities are uncommon.

COMMENTS *Ascophyllum nodosum* may be sparse or absent from southern occurrences of this community, but these occurrences are placed within this type because of the associated characteristic faunal assemblage, including *Uca pugnax*, *Littorina saxatilis*, *Littorina obtusata*, and *Brachidontes demissus*.

Assateague Island NS supports a variant of the *Spartina alterniflora* / *Ascophyllum nodosum* community in which *Distichlis spicata* is abundant, in some cases more so than *Spartina alterniflora*. The vegetation is ecologically equivalent to low marsh, receiving regular tidal inundation. The same herb species as the typical community are associated here as well, but the *Salicornia* spp. become more scattered. Water table levels are slightly lower (5 - 30 cm) in the *Spartina* — *Distichlis* community, but soils are basically the same in both communities, 0 - 20 cm of peat over blue-gray and brown mottled sand. The prevalence of *Distichlis spicata* in this low marsh setting is unusual from a regional perspective. The alteration of tidal regime and the subsequent inundation of former high marsh is suspected to have contributed to the species composition of this tidal marsh vegetation at Assateague (Furbish, pers. comm.) In addition,

*Spartina alterniflora* is heavily grazed by feral horses on the island. Grazing may be impacting species composition and density within these communities and promoting the growth of *Distichlis spicata* (a non-browsed species). Additional research is needed to determine the significance of this vegetation.

The salt marsh (Higgins et al. 1971) and the salt marsh community (Hill 1986) described from Assateague Island are partially contained within this community. The following state Natural Heritage program communities are contained partially or fully within this alliance: *Spartina alterniflora* community (Metzler and Barrett 1992, Connecticut); Salt marsh complex, low marsh (Breden 1989, New Jersey); *Spartina alterniflora* salt marsh (Clancy 1993, Delaware); Low salt marsh (Reschke 1990, New York); Cordgrass saltmarsh community (Maine Natural Heritage Program 1991); Low salt marsh (Enser 1993, Rhode Island); Low salt marsh community (Sperduto 1994, New Hampshire). This vegetation has been described or documented by a wealth of authors. Teal (1986) provides an extensive bibliography.

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**PLOTS**

32RR12  
47RR02  
22RR02  
32RR15  
72AB02  
17RR01  
67AB07

## Juncus roemerianus Herbaceous Vegetation

COMMON NAME	Needlerush Herbaceous Vegetation
SYNONYM	Needlerush marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Tall grassland
PHYSIOGNOMIC GROUP	Temperate tall grassland
FORMATION	Brackish-tidal regularly/irregularly flooded tall grassland
ALLIANCE	<i>Juncus roemerianus</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community occurs in coastal marshes from Maryland south to Louisiana.

ENVIRONMENTAL DESCRIPTION Degree of tidal inundation and relative elevation control the distribution of salt marsh vegetation in general; *Juncus roemerianus* was found to be lower in elevation than the associated *Spartina patens* type and mixed type (Cooper and Waits 1973). In general, *Juncus roemerianus* occurs on sandy substrates (Penfound 1952).

USFWS WETLAND SYSTEM Estuarine System

### MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Juncus roemerianus*

*ASIS*

Strata

Herbaceous

Species

*Juncus roemerianus*

DIAGNOSTIC SPECIES *Juncus roemerianus*

VEGETATION DESCRIPTION This southern salt marsh community occurs in association with low salt marshes or in brackish marshes, and is characterized by discrete, dense patches usually strongly dominated by *Juncus roemerianus* with few other associates. Associates that do occur at low cover may include *Borrhichia frutescens*, *Baccharis halimifolia*, *Spartina alterniflora*, *Distichlis spicata*, *Scirpus robustus*, *Aster tenuifolius*, and *Aster subulatus*. This community may

occur as isolated patches within low salt marsh, or may dominate vast areas at the heads of tidal creeks that drain the marsh.

At Assateague Island NS, this community occurs within the low and high salt marshes of the bay side, therefore, usually surrounded by the *Spartina alterniflora* / *Ascophyllum nodosum* Herbaceous Vegetation or the *Spartina patens* — *Distichlis spicata* — *Borrchia frutescens* Herbaceous Vegetation. *Juncus roemerianus* forms large clones or clone-like patches effectively excluding other species. Vegetation generally covers 98 to 100 percent of the ground with a small percentage of other herbs associated, which may include scattered individuals of *Spartina alterniflora*, *S. patens*, *Limonium carolinianum*, or *Iva frutescens*. Soils of this alliance are generally poorly to very poorly drained, often with standing water atop of peat accumulations (averaging 15 cm in depth) which in turn overlie gleyed sands.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G5

RANK JUSTIFICATION This community is common on the southeastern seaboard, but large undisturbed areas are of high conservation concern.

COMMENTS Although this community exhibits little floristic variation across its range, the associated animal species may vary to a greater extent. Further analysis may suggest a further subdivision of this community.

The salt marsh community (Hill 1986) and the salt marsh (Higgins et al. 1971) described from Assateague Island are partially contained within this community. The brackish marsh (Schafale and Weakley 1990, North Carolina), and the *Spartina* — *Distichlis* — *Juncus* associates described by Penfound (1952) are partially contained within this community. The *Juncus roemerianus* association of the low marsh (Adams 1963) and the *Juncus* type (Cooper and Waits 1973) described from North Carolina, the irregularly flooded salt marsh (Jenkins 1974) described from the Chesapeake Bay, the lower high marsh of South Carolina (Stalter 1973), and the needlerush — saltmeadow type described from Maryland by Nicholson and van Deusen (1954) are related to and may be synonymous with this community.

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**PLOTS**

27RR02

32RR09

32RR14

37AB01

42RR01

*Ammophila breviligulata* — *Panicum* (amarum, amarulum) Herbaceous Vegetation

COMMON NAME American Beachgrass — Beachgrass Herbaceous Vegetation

SYNONYM Dunegrass community

TNC SYSTEM Terrestrial

PHYSIOGNOMIC CLASS Herbaceous

PHYSIOGNOMIC SUBCLASS Medium tall grassland

PHYSIOGNOMIC GROUP Temperate and subpolar medium tall grassland

FORMATION Open medium tall grassland

ALLIANCE *Ammophila breviligulata* Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE This community occurs on maritime dunes from southern New Jersey south to the Chesapeake Bay, Virginia.

ENVIRONMENTAL DESCRIPTION This dune grassland community occurs almost exclusively on sandy, unstable, droughty substrates with no soil profile development. Aeolian processes cause active sand deposition and erosion. The sand substrate is usually visible, and litter accumulation from plant debris is nearly absent. This community generally occurs on foredunes that receive the force of wind and salt spray, but is beyond the influence of most storm tides. At Assateague Island NS, much of the soil surface in the community (40 to 60 percent of total area) is exposed, unstable sand. Sands are generally unconsolidated and the water table at least one meter deep (or beyond, on the foredune proper).

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Ammophila breviligulata*, *Panicum amarulum*, *Panicum amarum*

*ASIS*

Strata

Herbaceous

Species

*Ammophila breviligulata*, *Solidago sempervirens*

DIAGNOSTIC SPECIES *Ammophila breviligulata*, *Solidago sempervirens*, *Panicum amarulum*,  
*Oenothera humifusa*

**VEGETATION DESCRIPTION** This community is a maritime dune grassland dominated by *Ammophila breviligulata*, *Panicum amarum*, and *Panicum amarulum*. Plant cover is variable, ranging from 10% to 75%, but is usually low. Other associated species characteristic of this community include *Solidago sempervirens*, *Strophostyles helvula*, *Triplasis purpurea*, *Cenchrus tribuloides*, *Chamaesyce polygonifolia*. *Panicum amarulum*, *Oenothera humifusa*, and *Spartina patens* are common associates of this community, and differentiate it from communities of this alliance from New Jersey and north. This community contains several species characteristic to the *Cakile edentula* ssp. *edentula* sparsely vegetated community, but the *Ammophila breviligulata* — *Panicum (amarum, amarulum)* Herbaceous Vegetation is differentiated by 1) its location beyond storm tide influence, 2) dominance by perennial rather than annual species; 3) greater plant cover on average, and 4) greater prevalence of *Solidago sempervirens*.

At Assateague Island NS, this community is best developed on the island foredunes, next to the beach, and extends to the western base of the dunes adjacent to the *Myrica pensylvanica* — *Diodia teres* Shrubland occurring behind the protection of the foredune. These two communities often occur in complex as well. This community is nearly restricted to the ocean side of the island, but was observed at a single site on the bay side of Assateague on the very northern tip of the island. The largest examples of the *Ammophila breviligulata* — *Panicum (amarum, amarulum)* Herbaceous Vegetation occur on both slopes and the summit of the artificial dune on the central portion of the island where *Ammophila* was extensively planted. In a more natural condition, *Ammophila breviligulata* can be the dominant cover (up to 60 percent) but this generally occurs only in protected enclosures, established to prevent browse by feral horses on the island. Unprotected, high quality, examples of dense *Ammophila breviligulata* do occur at the northern-most end of the island. The more typical expression of this community is a mix of *Ammophila breviligulata* with other herbaceous species, including a broad mix of *Solidago sempervirens*, *Triplasis purpurea*, *Scirpus pungens* (where overwashed by sand), *Chamaesyce polygonifolia*, *Diodia teres*, *Cakile edentula* ssp. *edentula*, *Linaria canadensis*, *Spartina patens*, *Salsola caroliniana*, *Panicum amarulum*, *Lechea maritima*, and *Oenothera humifusa*. Sparse individuals of stunted *Myrica pensylvanica* shrubs and seedlings occur in this alliance but make up less than 2 percent of the total vegetation cover.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** G3G4

**RANK JUSTIFICATION** This community is restricted to the mid-Atlantic coast and is vulnerable to development pressure.

**COMMENTS** The dunegrass community described from Assateague Island by Hill (1986) and Higgins et al. (1971) is synonymous with this community, as are the following: mid-Atlantic *Ammophila breviligulata* — *Panicum amarulum* dune grassland variant (Clancy 1993, Delaware); *Ammophila* — *Panicum amarum* dunes (Harvill 1965, Virginia); *Panicum* — *Ammophila* community (Egler 1962, Virginia); foredune (Klotz 1986, Virginia); foredune (Boule 1979, Virginia); sand dune (Fender 1937, southern New Jersey); dune community (Baumann 1978, Virginia). Portions of the following are also included within this community: dune grass (Schafale and Weakley 1990, North Carolina); dune community (Baumann 1978, Virginia); coastal dune grass community (Breden 1989, New Jersey); primary dune (Stalter 1990, Assateague Island, Virginia); dunegrass community (Clampitt 1992, Virginia).



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PLOTS

12RR05  
37RR03  
52AB05  
TNC16  
TNC14  
TNC8  
62AB04  
32RR02

## Juncus dichotomus — Drosera intermedia Herbaceous Vegetation

COMMON NAME	Rush — Spatulate-leaved Sundew Herbaceous Vegetation
SYNONYM	Bog; Sand Bog
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Medium tall grassland
PHYSIOGNOMIC GROUP	Temperate and subpolar medium tall grassland
FORMATION	Seasonally / temporarily flooded medium tall grassland
ALLIANCE	<i>Juncus dichotomus</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** Further data analysis will be required to establish the classification and range of this community with greater confidence. The range is suspected to include Delaware south to Virginia.

**ENVIRONMENTAL DESCRIPTION** This interdunal wetland community occurs in small, very shallow seasonally flooded basins. Soils are characterized by a shallow organic layer overlying sands. At Assateague Island NS, this community typically occurs in very small (4 square meters to one-eighth hectare) interdunal freshwater depressions that remain saturated throughout the growing season. Soils are characterized by a very shallow organic layer (2 cm thick) over a grey-brown sand. The water table is generally high (from 10 to 50 cm from the surface).

**USFWS WETLAND SYSTEM** Palustrine System

### MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Juncus dichotomus, Drosera intermedia, Andropogon virginicus*

*ASIS*

Strata

Herbaceous

Species

*Juncus dichotomus, Drosera intermedia, Andropogon virginicus*

**DIAGNOSTIC SPECIES** *Juncus dichotomus, Drosera intermedia, Xyris torta, Lycopodiella appressa*

**VEGETATION DESCRIPTION** This community is typically small rush-dominated vegetation of seasonally flooded basins. Related to "dune swales" of the *Vaccinium macrocarpon* dwarf-shrub alliance (Sneddon *et al.* 1994), this community shares some species with communities of this alliance, such as *Lycopodiella appressa, Utricularia subulata, and Drosera intermedia.*

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However, sedges and rushes rather than *Vaccinium macrocarpon* are more characteristic of this community. Associates include *Andropogon virginicus*, *Juncus dichotomus*, *Juncus canadensis*, *Juncus biflorus*, *J. scirpoides*, *Drosera intermedia*, *Fimbristylis autumnalis*, *Linum medium*, *Scirpus pungens* and *Solidago sempervirens*. This community occurs in close association, often as a finely textured mosaic, with the *Myrica (cerifera, pensylvanica) — Vaccinium corymbosum* Shrubland and the *Myrica cerifera / Hydrocotyle* spp. Shrubland.

At Assateague Island NS, characteristic species include high coverage (up to 40 percent) of *Juncus dichotomus* and to a much less extent *Utricularia subulata*, *Drosera intermedia*, and *Lycopodiella appressa*. Common associates include *Andropogon virginicus*, *Juncus canadensis*, *J. biflorus*, *J. scirpoides*, *Fimbristylis autumnalis*, *Linum medium*, and *Solidago sempervirens*. This community has a limited extent on Assateague, primarily occurring in interdunal depressions in the central portion of the island, south to the Fox Hills area.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** Information not available.

**RANK JUSTIFICATION** Classification of this type will require further clarification before a conservation rank can be assigned.

**COMMENTS** This community is poorly known regionally; it is synonymous with the bog community described by Hill (1986) from Assateague Island. Higgins et al. (1971) did not describe this community. The *Andropogon* community described from Virginia by Tyndall and Levy (1978) may be synonymous with this community. Jones (1992) describes interdunal wetlands of Virginia, which appear to be floristically related. Portions of the maritime wet grassland described from North Carolina (Schafale and Weakley 1990) may be included in this community.

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**PLOTS**

42CEF  
42CEF03

## Panicum virgatum — Spartina patens Herbaceous Vegetation

COMMON NAME	Switchgrass — Salt Hay Herbaceous Vegetation
SYNONYM	None
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Medium tall grassland
PHYSIOGNOMIC GROUP	Temperate and subpolar medium tall grassland
FORMATION	Seasonally / temporarily flooded medium tall grassland
ALLIANCE	<i>Panicum virgatum</i> (seasonally flooded) Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** The range of this vegetation is poorly known due to the low confidence of the classification. The community apparently occurs in New Jersey, Delaware, Maryland, and may occur extend to North Carolina, but the full range will require further study.

**ENVIRONMENTAL DESCRIPTION** This community is characterized by seasonally flooded basins landward of maritime backdunes. Soils are characterized by a shallow organic layer (usually a few centimeters in depth) overlying loamy sand or sand. The water table is at or close to the surface in the spring. Freshwater maintains these depressions as saturated or seasonally flooded and somewhat poorly drained.

**USFWS WETLAND SYSTEM** Palustrine System

### MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Panicum virgatum, Spartina patens*

*ASIS*

Strata

Herbaceous

Species

*Panicum virgatum, Scirpus pungens, Spartina patens*

**DIAGNOSTIC SPECIES** *Panicum virgatum, Spartina patens*

**VEGETATION DESCRIPTION** This medium-tall grassland community is strongly dominated by *Panicum virgatum*. The vegetation is similar in total floristic composition to the *Myrica (cerifera, pennsylvanica)* — *Vaccinium corymbosum* Shrubland, but shrubs are generally lacking or at very low cover and grasses are much more abundant. Associated species include *Spartina patens*,

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*Juncus canadensis*, *Solidago sempervirens*, *Festuca rubra*, *Eleocharis palustris*, *Toxicodendron radicans*, *Linum medium*, *Carex albolutescens*, and *Euthamia tenuifolia*. This community is variable in its expression but is typically dominated by 40 to 85 percent cover of *Panicum virgatum* and occurs in larger interdunal depressions (up to one-half hectare). Variability occurs in the cover of *Panicum virgatum* and the richness of associated species. In some cases, *Myrica cerifera* or *Baccharis halimifolia* will constitute less than 10 percent shrub cover. In most cases, shrub coverage is much less or none and other herbs co-dominate. When *Panicum virgatum* is not as dense, it is most often associated with an even mixture of *Scirpus pungens* or *Spartina patens*.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Further analysis is necessary to determine the classification, and thus the conservation rank, with confidence.

COMMENTS The fresh marsh (Hill 1986) partially contains this community. This vegetation is not described by Higgins et al. (1971) *per se*, although a portion of the mesic shrub community appears to fall within this community. The freshwater marsh described in New Jersey (Fender 1937) is partially contained within this community, as is the *Panicum virgatum* Wetland Association described from Delaware (Heckscher et al. 1995).

REFERENCES

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PLOTS

47AB08  
47AB05  
52AB04  
77AB04

## Scirpus pungens — Fimbristylis castanea Herbaceous Vegetation

COMMON NAME	Three-Square — Coastal Fimbry Herbaceous Vegetation
SYNONYM	Interdunal swale; Fresh marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Medium tall grassland
PHYSIOGNOMIC GROUP	Temperate and subpolar medium tall grassland
FORMATION	Seasonally / temporarily flooded medium tall grassland
ALLIANCE	<i>Scirpus pungens</i> (seasonally flooded) Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** The range of this community will require further research to determine with greater confidence, but is suspected to include Delaware to North Carolina.

**ENVIRONMENTAL DESCRIPTION** This community is characterized by seasonally wet maritime interdunal depressions, commonly known as interdunal swales. There is usually standing water present in these swales in the spring.

At Assateague Island NS, vegetation is emergent in 0 to 15 cm of fresh water during the early and mid-growing season. The unvegetated surface is generally water or bare soil in some cases. During the dryer summer season, standing water disappears but soils may remain somewhat saturated. Soils consist of shallow peat averaging 5 cm in depth over dark mottled grey sand.

**USFWS WETLAND SYSTEM** Palustrine System

### MOST ABUNDANT SPECIES

*Globally*

Strata

Herbaceous

Species

*Scirpus pungens*, *Spartina patens*, *Andropogon virginicus*, *Fimbristylis castanea*

*ASIS*

Strata

Herbaceous

Species

*Scirpus pungens*, *Eleocharis palustris*, *Fimbristylis castanea*, *F. autumnalis*

**DIAGNOSTIC SPECIES** *Scirpus pungens*, *Fimbristylis castanea*, *Eleocharis* spp., *Juncus* spp.

**VEGETATION DESCRIPTION** The general aspect and species composition of the *Scirpus pungens* — *Fimbristylis castanea* Herbaceous Vegetation is variable, not only among occurrences, but also over the course of the growing season. At Assateague Island NS, this community is typically characterized by dense *Scirpus pungens* (up to 80 percent cover). When *Scirpus pungens* is not as dense, it is most often associated with an even mixture of *Spartina patens* or *Fimbristylis castanea*. In spring, *Scirpus pungens* is generally dominant with few other associates except *Eleocharis* spp., imparting a distinct aerial photo signature. By late summer a number of other species such as *Fimbristylis castanea* and *Sabatia stellaris* contribute more substantial cover. Other herbs are sparse and provide very little to the overall vegetation cover. These associated species include *E. rostellata*, *Phragmites australis*, *Pluchea foetida*, *Juncus scirpoides*, *Hydrocotyle umbellata*, *Eleocharis parvula*, *Panicum amarulum*, *Fimbristylis autumnalis*, *Sabatia stellaris*, *Ptilimnium capillaceum* and *Juncus canadensis*. In some drier swales adjacent to the maintained dune on the central portion of Assateague Island NS, *Ammophila breviligulata* is present in quantity.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** Information not available.

**RANK JUSTIFICATION** The classification, and thus the conservation rank, will require further research.

**COMMENTS** This community is poorly known regionally; the description provided here is based largely on data collected at Assateague Island NS.

The fresh marsh community described by Hill (1986) and Higgins et al. (1971) from Assateague Island are partially contained within this community. The *Scirpus* — *Hydrocotyle* community and the *Spartina* — *Scirpus* community described by Tyndall and Levy (1978) in Virginia, and the *Juncus scirpoides* — *Scirpus pungens* interdunal wetland association described by McAvoy and Clancy (1994) in Delaware are related to, and may be synonymous with this community. The wet community of barrier flats of North Carolina described by Travis and Godfrey (1976) may also be included in this community. Portions of the maritime wet grassland described from North Carolina by Schafale and Weakley (1990) may be included in this community.

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**PLOTS**

47AB04

37RR04

TNC12

TNC13

TNC18



*Spartina patens* — *Scirpus pungens* — *Solidago sempervirens* (Upland)  
Herbaceous Vegetation

COMMON NAME	Salt hay — Three-square — Seaside Goldenrod Herbaceous Vegetation
SYNONYM	Maritime dry grassland; overwash community
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous vegetation
PHYSIOGNOMIC SUBCLASS	Short grassland
PHYSIOGNOMIC GROUP	Temperate and subpolar short grassland
FORMATION	Open short grassland
ALLIANCE	<i>Spartina patens</i> — ( <i>Scirpus pungens</i> ) (upland) Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE This community ranges from Maryland to North Carolina.

ENVIRONMENTAL DESCRIPTION This community is an upland dune grassland of mid-Atlantic barrier islands. The plants of this community are influenced by water-deposited sand caused by storm surges. They differ ecologically from dune grasslands dominated by *Ammophila breviligulata* or *Uniola paniculata*, which are primarily impacted by wind-deposited sand. Storm overwash is a prevalent natural disturbance to this community. This community is common at the north end of Assateague Island NS where extensive sand overwash has occurred. This community is also frequent in the interdunes behind foredune "blowouts" created after large storm events. This community appears to be a successional step between interdunal herbaceous wetlands and interdunal herbaceous/shrub uplands. It is interesting to note that approximately 10 to 20 cm below the sandy surface of this vegetation often lies the dark organic soils of a buried wetland.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

*Globally*

Strata  
Herbaceous

Species  
*Spartina patens*, *Solidago sempervirens*, *Strophostyles helvula*

*ASIS*

Strata  
Herbaceous

Species  
*Scirpus pungens*, *Spartina patens*

DIAGNOSTIC SPECIES *Spartina patens*, *Solidago sempervirens*

VEGETATION DESCRIPTION This community is characterized by upland maritime dune grassland vegetation. *Spartina patens*, and sometimes *Scirpus pungens*, or both are dominant on dunes or overwash terraces. Total vegetation cover is variable, ranging from quite sparse (25% cover) to dense. Bare sand is often visible through the vegetation, and there is no soil profile development. Species diversity is variable; although it may be quite low and confined to the nominate species in the northern part of the range, it may be of greater diversity, including *Strophostyles helvula*, *Solidago sempervirens*, *Cenchrus tribuloides*, *Setaria parviflora*, *Distichlis spicata*, *Sabatia stellaris*, *Ammophila breviligulata*, *Suaeda linearis*, *Bassia hirsuta*, *Atriplex patula*, *Fimbristylis castanea*, and *Cakile edentula* ssp. *edentula*.

At Assateague Island NS, this community is characterized by *Spartina patens* and *Scirpus pungens*, which takes on a stunted growth form and *Spartina patens* takes on a dry wispy growth form. The two species can grow separately or together; separately they tend to be more sparse in their total cover than in areas where they occur together. Very few other species are associated with this community and constitute little additional ground cover. These may include scattered individuals of *Toxicodendron radicans*, *Solidago sempervirens*, *Lythrum lineare*, *Kosteletzkya virginica*, and seedlings of *Baccharis halimifolia*. Hill (1986) notes the following additional species of pans and washes: *Suaeda linearis*, *Bassia hirsuta*, *Atriplex patula*, *Polygonum glaucum*, *Spergularia marina*, *Salicornia bigelovii*, and *S. virginica*.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK G2G3

RANK JUSTIFICATION This community is restricted to mid-Atlantic barrier beaches, and is threatened by development pressure.

COMMENTS The "wash" briefly described by Hill (1986) and Higgins et al. (1971) on Assateague Island are synonymous with this community, as are the grassland community described from Virginia by Baumann (1978) and the low dune community of Boule (1979). Portions of the dunegrass community of Higgins et al. (1971), the maritime dry grassland of North Carolina described by Schafale and Weakley (1990), the dry community of barrier flats described from North Carolina by Travis and Godfrey (1976), and the secondary dunes described from Virginia by Klotz (1986) are also included in this community.

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**PLOTS**

27RR01  
TNC15  
TNC17  
22RR03

*Spartina patens* — *Distichlis spicata* — *Borrichia frutescens* Herbaceous  
Vegetation

COMMON NAME	Salt hay — Spikegrass — Sea Oxeye Daisy Herbaceous Vegetation
SYNONYM	High marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Short grassland
PHYSIOGNOMIC GROUP	Temperate and subpolar short grassland
FORMATION	Saltwater tidal regularly / irregularly flooded short grassland
ALLIANCE	<i>Spartina patens</i> (Estuarine) Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community ranges from Delaware south to Florida.

ENVIRONMENTAL DESCRIPTION This community is restricted to salt marshes, occurring at a slightly higher elevation than the adjacent *Spartina alterniflora* — *Ascophyllum nodosum* Herbaceous Vegetation. As such, it receives irregular tidal flooding. The substrate is peat of variable depths overlying sand. At Assateague Island NS, the community is irregularly to regularly flooded by the brackish waters from the bay or nearby water channels and its water table is at or near the surface. Soils are generally 10 to 30 cm of very poorly drained peaty organics overtop grey or mottled sand. The *Scirpus robustus* variant is characterized by shallow peaty soils (up to 20 cm) that are very poorly drained and appear to be influenced by freshwater, amidst infrequent brackish overwash.

USFWS WETLAND SYSTEM Estuarine System

MOST ABUNDANT SPECIES

*Globally*

Strata  
Herbaceous

Species  
*Spartina patens*, *Distichlis spicata*

*ASIS*

Strata  
Herbaceous

Species  
*Spartina patens*, *Distichlis spicata*

DIAGNOSTIC SPECIES *Spartina patens*, *Distichlis spicata*, *Borrichia frutescens*, *Kostyletzyka virginica*, *Pluchea purpurascens*

**VEGETATION DESCRIPTION** This high salt marsh coastal community is dominated by *Spartina patens*, forming meadows at slightly higher elevations in relation to the adjacent *Spartina alterniflora* — *Ascophyllum nodosum* Herbaceous Vegetation. *Distichlis spicata*, *Limonium carolinianum*, *Agalinis maritima*, *Salicornia virginica*, *Sabatia stellaris*, *Borrichia frutescens*, *Lythrum lineare*, *Scirpus pungens*, *Eleocharis rostellata*, *Solidago sempervirens*, *Fimbristylis castanea*, *Pluchea purpurascens*, *Hibiscus palustris*, and *Atriplex patula* var. *hastata* are characteristic associates. Shrub seedlings such as *Baccharis halimifolia* and *Myrica cerifera* may also be found in this community. This community is differentiated from the *Spartina patens* — *Distichlis spicata* — *Plantago maritima* Herbaceous Vegetation of New England, New York, and New Jersey by the absence or relative infrequent occurrence of *Juncus gerardii*, *Puccinellia fasciculata*, *Plantago maritima*, and *Triglochin maritima* and by the importance of species of southern distribution such as *Borrichia frutescens*, *Kostyletzyka virginica*, *Fimbristylis castanea*, *Lythrum lineare*. *Juncus roemerianus*, occurring as discrete patches reaching substantial size, is a community associated with the *Spartina patens* — *Borrichia frutescens* Herbaceous Vegetation.

At Assateague Island NS, this community covers extensive areas of bayside marsh. The community is almost solely vegetated by *Spartina patens* (from 75 to 100 percent cover) with few associated species except for small amounts of *Distichlis spicata* (up to 10 percent cover). Associates include *Eleocharis rostellata*, *Lythrum lineare*, *Fimbristylis castanea*, and *Sabatia stellaris*. Hill (1986) also notes the "infrequent but widespread" presence of *Juncus gerardii* in salt marshes of Assateague, and denotes *Borrichia frutescens* as "rare" and confined to the Virginia portion of the island.

A variant of this community has *Scirpus robustus* as a substantial component. It is comprised of *Scirpus robustus* forming large discrete patches up to a half hectare in size, with *Spartina patens* and *Distichlis spicata* forming a continuous and dense "understory". This variant is limited to the bayside highmarsh on Assateague Island NS. Combined, these three species completely cover the ground except for a small percentage of leaf and stem litter that persists from past growing seasons. *Baccharis halimifolia*, occurring primarily as seedlings, is also an associate.

**OTHER NOTEWORTHY SPECIES** None

**CONSERVATION RANK** G4G5

**RANK JUSTIFICATION** Although widespread on the eastern seaboard, examples of this community that have not been impacted by ditching, dredging and filling, mosquito spraying, and other activities are relatively uncommon.

**COMMENTS** Despite the rarity of *Borrichia frutescens* at Assateague Island NS, the high marsh community of Assateague is classified with the high marshes of southern affinity because of the relative lack of northern species and the presence of others with southern distribution. The salt marsh community described from Assateague Island by Hill (1986) and Higgins et al. (1971) are partially contained within this community. The *Spartina patens* — *Distichlis spicata* high marsh described from Delaware (Clancy 1993) is synonymous, as are the *Spartina* — *Distichlis* — *Juncus* associates described of southern salt marshes by Penfound (1952), the *Spartina patens* type

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described from North Carolina by Cooper and Waits (1973), the *Aster tenuifolius* — *Distichlis spicata* — *Fimbristylis castanea* — *Borrchia frutescens* — *Spartina patens* association of the high marsh described from North Carolina by Adams (1963), and the high marsh of south Atlantic and Gulf coast marshes (Cooper 1974).

Vegetation similar to the *Scirpus robustus* variant has been described by several authors: *Spartina patens* type (Cooper and Waits 1973, North Carolina); *Scirpus robustus* association (Bourn and Cottam 1950, Delaware); salt estuarine bay-marsh, saltmarsh bulrush and seashore saltgrass (Hindman and Stotts 1989, Chesapeake Bay and North Carolina Sounds).

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**PLOTS**

47AB02  
32RR05  
77AB02  
TNC11  
47RR01  
32RR07  
77AB07  
67AB02

## Smilax glauca — Toxicodendron radicans Shrubland

COMMON NAME	Sawbrier — Poison Ivy Shrubland
SYNONYM	Vine dune
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Temperate cold-deciduous shrubland
ALLIANCE	<i>Smilax</i> spp. — <i>Toxicodendron radicans</i> Shrubland Alliance
CLASSIFICATION CONFIDENCE LEVEL	3

**RANGE** This vegetation is not widely described in the literature, but is suspected to occur in New England south to Maryland and perhaps Virginia.

**ENVIRONMENTAL DESCRIPTION** Generally confined to barrier beach systems, this vegetation is comprised of dense vines that cover the crests of dunes that are exposed to salt spray and winds. Very little soil development occurs and the water table is well below 1 meter in depth.

**USFWS WETLAND SYSTEM** Not applicable

### MOST ABUNDANT SPECIES

#### *Globally*

##### Strata

Herbaceous

##### Species

*Smilax rotundifolia*, *S. glauca*, *Toxicodendron radicans*

#### *ASIS*

##### Strata

Herbaceous

##### Species

*Smilax glauca*, *Vitis rotundifolia*, *Smilax rotundifolia*, *Parthenocissus quinquefolia*

**DIAGNOSTIC SPECIES** *Smilax glauca*, *Smilax rotundifolia*, *Toxicodendron radicans*, *Parthenocissus quinquefolia*

**VEGETATION DESCRIPTION** This community is best described as vine-covered maritime sand dunes. The dominant species of any single dune may be one of any of a number of vine species such as *Smilax glauca*, *S. rotundifolia*, *Vitis rotundifolia*, *Parthenocissus quinquefolia*, or *Toxicodendron radicans*. In some cases, the vines are low-growing and occur directly on the sand surface, but in others, the vegetation has a height of 1m or more, with vines growing over older stems of the same species, or over other shrubs such as *Myrica pensylvanica*.

At Assateague Island NS, this community is most common in the central portion of the island, near the area known as Fox Hills. Vegetation characteristic of this community is dominated by dense vines (up to 70 percent cover), primarily *Smilax glauca*. Usually present, but providing much less cover are other vines including *Vitis rotundifolia*, *Toxicodendron radicans*, *Smilax rotundifolia*, and *Parthenocissus quinquefolia*. Associated herbs are sparse and may include scattered individuals of *Linaria canadensis*, *Lechea maritima*, *Rumex acetosella*, *Schizachyrium scoparium* ssp. *littorale*, and *Solidago sempervirens*. Shrub species constitute very little cover and are much less common, but occasional *Rubus argutus*, *R. flagellaris*, *Hudsonia tomentosa*, *Myrica pensylvanica* and *Myrica cerifera* can be found. Overall, vegetation is low to the ground (less than half a meter tall) and generally covers 70 to 80 percent of the community, with exposed sand remaining.

OTHER NOTEWORTHY SPECIES None

CONSERVATION RANK Information not available.

RANK JUSTIFICATION More study is necessary to determine the range of this community, but it is not likely to be common.

COMMENTS The greenbrier thicket described from Island Beach State Park, New Jersey by Martin (1959) likely belongs to this community. Neither Hill (1986) nor Higgins et al. (1971) describe this community *per se* on Assateague Island.

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#### PLOTS

57AB07  
57AB06  
57AB05  
42RR02



Salicornia spp. — Sarcocornia perennis — Spartina alterniflora Herbaceous  
Vegetation

COMMON NAME	Saltwort — Saltwater Cordgrass Herbaceous Vegetation
SYNONYM	Salt panne
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Low forb vegetation
PHYSIOGNOMIC GROUP	Perennial low forb vegetation
FORMATION	Saltwater tidal semi-permanently flooded low perennial forb vegetation
ALLIANCE	<i>Salicornia</i> — <i>Spartina alterniflora</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community occurs in coastal salt marshes from Nova Scotia to the Carolinas, north of the range of *Batis maritima*.

ENVIRONMENTAL DESCRIPTION This community tends to develop in shallow depressions within high salt marshes where drainage is poor. The depressions are flooded by high tides but as the water evaporates during low tide the salinity concentration increases forming "salt pannes." Formation of the pannes may result from ice scouring, rafting flotsam, peat compaction, or by mosquito ditch levees which create small impoundments. At Assateague Island NS, this community is typically identified as large sparsely vegetated "circular" flats or depressions within the low marsh community. Throughout the seasons, large areas of slight depression in the low marsh hold brackish to hypersaline water up to 10 cm in depth.

USFWS WETLAND SYSTEM Estuarine System

MOST ABUNDANT SPECIES

*Globally*

Strata  
Herbaceous

Species

*Salicornia bigelovii*, *S. virginica*, *Sarcocornia berennis*, *Spartina alterniflora*

*ASIS*

Strata  
Herbaceous

Species

*Salicornia bigelovii*, *S. virginica*, *Sarcocornia perennis*, *Spartina alterniflora*

DIAGNOSTIC SPECIES *Salicornia bigelovii*, *S. virginica*, *Sarcocornia perennis*

**VEGETATION DESCRIPTION** This community is salt panne vegetation dominated by *Salicornia bigelovii*, *S. virginica*, *Sarcocornia perennis*, and/or a short form of *Spartina alterniflora*. Total vegetation cover is quite variable in pannes, from near total absence of vascular plants to a dense cover of *Salicornia bigelovii*, *S. virginicus*, *Sarcocornia perennis*, or *Spartina alterniflora*. *Limonium carolinianum* is another common associate. Algal mats are characteristically present, visible even in densely vegetated pannes. The following algae were noted to occur in association with *Spartina alterniflora* in the littoral zone of a Massachusetts salt marsh: *Oscillatoria subuliformis*, *O. amphibia*, *Lyngbya* spp., *Microcoleus chthonoplastes*, *Nodularia harveyana*, *Hydrocoleum lyngbyaceum*, *Symploca* spp. (Webber 1967).

At Assateague Island NS, this community most frequently occurs within large areas of the *Spartina alterniflora* / *Ascophyllum nodosum* Herbaceous Vegetation. Vegetation is sparse in these mud flats except for a dense algal mat that develops later in the summer. Occasional *Spartina alterniflora* persist in the flats, but the pans mostly remain unvegetated until late summer and fall. By late season, most of the standing water has dried and *Salicornia virginica* and *S. bigelovii* can become quite dense. No other vegetation is associated with this community. This community is regularly to irregularly flooded by nearby brackish water. Bare peat, and mucky soils are prevalent (up to 85 percent bare soils) and, at high tide, standing water covers this community. Hill (1986) includes the following additional species as components of pans on Assateague Island: *Bassia hirsuta*, *Spergularia marina*, *Atriplex patula* var. *hastata*, *Suaeda linearis*, *Suaeda maritima*, and *Agalinis maritima*.

**OTHER NOTEWORTHY SPECIES** Blue-green algae are an important component of this community, in some cases contributing significantly more biomass than do vascular species.

**CONSERVATION RANK** G5

**RANK JUSTIFICATION** This community is common in salt marshes of the northeast.

**COMMENTS** The pans described from Assateague Island by Hill (1986) and Higgins et al. (1971) are synonymous with this community. This vegetation has been described by numerous researchers. The following names are considered synonyms: *Salicornia europaea* — *Spartina alterniflora* community (Metzler and Barrett 1992, Connecticut); salt marsh complex, pannes (Breden 1989, New Jersey); salt panne (Reschke 1990, New York); *Spartina alterniflora* / *Salicornia europaea* community and salt panne (Clancy 1993, Delaware); pan (Nichols 1920, Connecticut); panne (Good 1965, New Jersey); *Salicornia* tidal flat (Clovis 1968, Virginia); salt pan (Klotz 1986, Virginia); *Salicornia* — *Bassia* salt flat (Harvill 1965, Virginia); Salicornietum ambiguae (Conard 1935, New York); salt flat (Schafale and Weakley 1990, North Carolina); salt panne and stunted *Spartina alterniflora* community (Miller and Egler 1950, Connecticut); panne marsh (Baumann 1978).

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**PLOTS**

72AB03  
62AB03  
32RR08  
32RR13

## Cakile edentula ssp. edentula — Salsola caroliniana Sparse Vegetation

COMMON NAME	Sea Rocket — Saltwort Sparsely Vegetated Community
SYNONYM	Beach community
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely vegetated
PHYSIOGNOMIC SUBCLASS	Sparsely vegetated sand accumulations
PHYSIOGNOMIC GROUP	Sparsely vegetated sand dunes
FORMATION	Storm tide irregularly flooded upper beaches
ALLIANCE	<i>Cakile edentula</i> Sparsely Vegetated Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE This community occurs in maritime coastal areas from southern Maine to Cape Hatteras, North Carolina.

ENVIRONMENTAL DESCRIPTION This community occurs on maritime beaches that are subject to irregular tidal flooding, generally spring or storm tides in maritime settings. Vegetation cover is variable, depending on the amount of exposure to wave and wind action, but on average is sparse. At Assateague Island NS, this community occurs on the unconsolidated sands of the beach and foredunes.

USFWS WETLAND SYSTEM Not applicable

### MOST ABUNDANT SPECIES

#### *Globally*

##### Strata

Herbaceous

##### Species

*Cakile edentula* ssp. *edentula*, *Salsola caroliniana*, *Chamaesyce polygonifolia*, *Atriplex arenaria*

#### *ASIS*

##### Strata

Herbaceous

##### Species

*Cakile edentula* ssp. *edentula*, *Salsola caroliniana*, *Triplasis purpurea*, *Chamaesyce polygonifolia*

DIAGNOSTIC SPECIES *Cakile edentula* ssp. *edentula*, *Salsola caroliniana*, *Atriplex arenaria*, *Chamaesyce polygonifolia*

VEGETATION DESCRIPTION This community is sparsely vegetated on average, so no species can be considered dominant. Annual or biennial species more or less restricted to beach habitats are characteristic of this community, including *Cakile edentula* ssp. *edentula*, as well as *Salsola*

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*caroliniana*, *Chamaesyce polygonifolia*, *Honckenya peploides*, *Cenchrus tribuloides*, *Amaranthus retroflexus*, *Chenopodium album*, *Erechtites hieracifolia* and *Atriplex arenaria*. Sparse *Ammophila breviligulata* is also a common associate.

At Assateague Island NS, this community is sparsely vegetated with *Cakile edentula* ssp. *edentula*, covering approximately one percent of the area. Other associated species in this community are just as sparse and generally adapted to a low growth form, given the exposed windy conditions of their environment. Associated species include *Ammophila breviligulata*, *Chamaesyce polygonifolia*, *Salsola caroliniana*, and *Triplasis purpurea*; constituting less than additional percentage of vegetation cover, combined. 95 to 99 percent of the substrate is unvegetated sand.

**OTHER NOTEWORTHY SPECIES** *Amaranthus pumilus* is a globally rare species restricted to this community but is thought to have been extirpated from Assateague Island.

**CONSERVATION RANK** G4G5

**RANK JUSTIFICATION** This community is common on maritime dunes of the northeast, but is vulnerable to development and shifting wave action due to jetties.

**COMMENTS** The following names have been applied to vegetation that are considered to be synonymous: beach community (Hill 1986, Assateague Island); beach (Higgins et al. 1971, Assateague Island); beach community (Johnson 1985); pioneer beach community (Boule 1979, Virginia); beach (Fender 1937, New Jersey); dune-strand area (Clovis 1968, Virginia); dune community (Jenkins 1974, Chesapeake Bay); beach community (Baumann 1978, Virginia); middle beach (Shreve et al. 1910, Maryland); *Cakiletum edentulae* (Conard 1935, New York); sea-strand vegetation, beach formation (Harshberger 1900, New Jersey); middle beach (Nichols 1920, Connecticut); embryo dune (Klotz 1986); beach (McDonnell 1979, Massachusetts); maritime beach (Reschke 1990, New York); beach vegetation (Moul 1969, Massachusetts); marine sandy beach (Clancy 1993, Delaware); marine intertidal gravel / sand beach community (Breden 1989, New Jersey); coastal beach strand (Sperduto 1994, New Hampshire); Beach strand community (Maine Natural Heritage Program 1991); *Cakile edentula* — *Chenopodium album* community (Metzler and Barrett 1992, Connecticut). The dune and swale community described from the Virginia portion of Assateague (Stalter 1992) is partially contained within this community.

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**PLOTS**

17RR02  
67AB03  
22RR04  
62AB05