MARITIME SHRUB (STUNTED TREE SUBTYPE)

Concept: Maritime Shrub communities are naturally short woody vegetation (less than 5 meters tall) of barrier island uplands and swales, where salt spray is a major influence on plant composition and stature. The Stunted Tree Subtype is dominated or codominated by *Quercus virginiana*, *Juniperus virginiana* var. *silicicola*, *Persea palustris*, or other trees kept short by salt spray.

Distinguishing Features: Maritime Shrub type is distinguished from Maritime Evergreen Forest and other forests by the stature of the canopy, which is persistently less than 5 meters tall. Usually the canopy is streamlined and visibly pruned by salt spray. It may grade smoothly into Maritime Evergreen Forest with increasing canopy height as salt spray diminishes with distance from the ocean or as the ground drops behind dunes. Maritime Shrub is distinguished from Salt Shrub by species composition, with *Morella cerifera, Ilex vomitoria*, or other upland species dominant and with wetland species such as *Baccharis halimifolia* and *Iva frutescens* only a minor component if present.

The flora of the Stunted Tree Subtype may be very similar to that of Maritime Evergreen Forest, with only the vegetation height distinguishing them, but often it is more depauperate and more likely to be dominated by *Juniperus silicicola* or *Quercus virginiana* rather than *Quercus hemispherica* or *Pinus taeda*. The Stunted Tree Subtype is distinguished from other subtypes by the dominance or codominance of species capable of becoming larger trees, rather than solely by *Morella cerifera*, *Ilex vomitoria*, or other shrubs.

Synonyms: *Quercus virginiana - (Ilex vomitoria)* Shrubland (CEGL003833).
Ecological Systems: Central Atlantic Coastal Plain Maritime Forest (CES203.261). Northern Atlantic Coastal Plain Dune and Swale (CES203.264). Southern Atlantic Coastal Plain Dune and Maritime Grassland (CES203.273).

Sites: Maritime Shrub occurs on barrier islands and coastal spits, in dune swales, sand flats sheltered from overwash, and sometimes higher on the leeward slopes of dunes.

Soils: Most examples are mapped as Newhan (Typic Quartzipsamments) or Corolla (Aquic Quartzipsamment), a few as Duckston (Typic Psammaquent) or other sandy Entisols.

Hydrology: Hydrology is typical of the theme as a whole, ranging from apparently xeric to mesic. Salt spray is substantial, excluding most plant species and limiting the height of vegetation. Salt water intrusion rarely if ever occurs.

Vegetation: The vegetation is a thicket of shrubs and stunted trees less than 5 meters tall. In shorter examples, the tree crowns effectively extend to the ground. In taller examples, there may be open space beneath the canopy, but there are not distinguishable understory and shrub layers. The canopy typically is dense but may be open or have small breaks in some cases. *Quercus virginiana* or *Juniperus silicicola* generally dominate the canopy, alone, together, or in combination with *Ilex vomitoria*. Infrequently, *Persea palustris*, *Prunus caroliniana*, *Prunus serotina*, or some other tree species may be abundant or even dominant in the canopy. CVS plot

data also show high constancy and often high cover for *Morella cerifera*, *Smilax auriculata*, *Smilax bona-nox, Muscadinia rotundifolia, Parthenocissus quinquefolia*, and only slightly less for *Toxicodendron radicans*. Herbs have low cover beneath the canopy but may be locally more abundant in small openings. No herbaceous species are as constant as the woody dominants. The most frequent species are *Uniola paniculata, Solidago mexicana, Galium bermudense, Opuntia drummondii*, *Sporobolus pumilus, Heterotheca subaxillaris*, and *Oenothera humifusa*. A wide variety of species of various Maritime Grassland communities may be present occasionally.

Range and Abundance: Ranked G3. The related association ranges from Virginia to Georgia. This Stunted Tree Subtype is scattered along the entire coast of North Carolina, but more sparsely than the other subtypes. Most examples are on wider or more stable barrier islands, where they are associated with forests. However, new vegetation resembling this subtype is developing in places where the dunes were artificially stabilized. It is unclear how similar this vegetation is to the long-standing natural examples.

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Associations and Patterns: Maritime Shrub (Stunted Tree Subtype) most often occurs at the seaward edge of patches of Maritime Evergreen Forest, where salt spray becomes more extreme. Seaward, it gives way abruptly to Dune Grass, Maritime Wet Grassland, or Maritime Dry Grassland. Occasional examples may grade to marsh communities or barrier island communities.

Variation: No variants are recognized at present, but they may be warranted. This community covers a broad geographic range, and biogeographic variation comparable to that in Maritime Evergreen Forest may exist. However, the more extreme environment and more depauperate flora may limit such variation. There also may be a worthwhile distinction between long-standing examples on the extremely streamlined leading edge of forest patches, and earlier primary successional examples in places where shelter from salt spray has increased. The latter occur naturally in places where the coast has accreted or where growing dunes have increased shelter. A similar situation occurs where dunes have been artificially stabilized on narrower barrier islands. It can be difficult to distinguish these situations.

Dynamics: The dynamics of Maritime Shrub and Maritime Evergreen Forest have been the subject of intense scientific interest, as discussed in the Maritime Upland Forests theme description. As with other barrier island communities, Maritime Shrub communities occur in a dynamic environment. They may be temporarily disturbed or permanently converted to other community types by sand dune migration, loss of protection from salt spray, or erosion in severe storms. However, some examples, especially of this subtype, are old and have long been stable.

Examples may develop by primary succession if protection from salt spray and overwash increases. This appears to be happening naturally in places where the coastline has accreted, such as in some areas near Cape Hatteras. An artificially caused analogue develops in places where sand dunes have been increased by fencing and planting. The shrublands in these places may come to resemble more natural examples over time but appear to remain depauperate and not well developed decades after the dunes were stabilized.

The boundary between Maritime Shrub and Maritime Evergreen Forest is very sensitive to changes in sheltering from salt spray, because the gradient in salt spray influence is steep. Where Maritime

Shrub has been cleared at the seaward edge of a forest patch, the forest canopy often dies back and is reduced in stature, developing a new shrub-height leading edge.

Comments: Though the Stunted Tree Subtype usually occurs in association with Maritime Evergreen Forest, it can also occur as small isolated patches that "crouch" behind high dunes in a matrix of Dune Grass.

Because this subtype can be so floristically similar to Maritime Evergreen Forest, Medford's (2018) analysis did not distinguish it readily. Some CVS plots clustered together in a group that was recognized as such, but more plots were in forest clusters. Plot data cannot always be distinguished readily by cover data alone, and canopy height may be needed for accurate identification of this community. Maritime Evergreen Forest plots that have been recently disturbed and are dominated by understory and shrub species may conversely be difficult to recognize in plot data, but generally they are apparent in the field by their location and the presence of dead trees.

Rare species:

References:

Medford, H. 2018. A refined classification of maritime forest communities of the Carolinas. Research paper. UNC-Chapel Hill.