

## TIDAL FRESHWATER MARSH (SHRUB SUBTYPE)

**Concept:** The Shrub Subtype covers transitional zones between Tidal Freshwater Marsh and Tidal Swamp or other forests, where the vegetation is naturally dominated by shrubs, though herbs typical of other Tidal Freshwater Marsh subtypes generally are abundant. Relict trees may be present in areas that have recently developed into Tidal Freshwater Marsh in response to rising sea level.

**Distinguishing Features:** The Shrub Subtype is distinguished from other Tidal Freshwater Marshes by dominance or codominance of shrubs along with herbaceous plants in a freshwater or oligohaline tidal setting. Its boundary with Tidal Swamp and Estuarine Fringe Pine Forest is placed where trees no longer form a substantial canopy; relict trees may be present but with 30% cover or less.

**Synonyms:** *Morella cerifera* - *Rosa palustris* / *Thelypteris palustris* var. *pubescens* Shrubland (CEGL004656).

Ecological Systems: Atlantic Coastal Plain Embayed Region Tidal Freshwater Marsh (CES203.259).

**Sites:** This community occurs on intertidal flats and shorelines, most often in zoned mosaics with other subtypes. Patches are most often on the inland edge of the marsh complex, but may occur on shoreline berms or on local rises.

**Soils:** Most occurrences in both lunar and wind tidal areas have organic soils, most often Currituck (Terric Haplosaprist) but often Lafitte, Hobonny, or Dorovan (Typic Haplosaprist). A few may be mineral soils such as Chowan (Thapto-histic Fluvaquent).

**Hydrology:** This community may occur with lunar or wind tides in oligohaline waters, occasionally adjacent to areas that are nearly brackish in salinity.

**Vegetation:** This community is an open shrubland dominated by *Morella cerifera*. *Rosa palustris* may also be abundant, as may young *Acer rubrum* or *Pinus taeda*. Remnant larger trees, particularly *Taxodium distichum*, *Nyssa biflora*, or *Fraxinus* spp. may be present. Other frequent woody species include *Toxicodendron radicans*, *Muscadinia rotundifolia*, *Smilax walteri*, *Smilax laurifolia*, *Smilax rotundifolia*, *Salix nigra*, *Baccharis halimifolia*, *Persea palustris*, and *Liquidambar styraciflua*. Large herbs are dense between the shrubs and often beneath them. Frequently extensive species include *Thelypteris palustris*, *Osmunda spectabilis*, *Cladium jamaicense*, *Peltandra virginica*, and *Carex* spp. Less frequently, *Typha* spp., *Pontederia cordata*, *Iris virginica*, *Eleocharis fallax*, or *Hydrocotyle verticillata* may be extensive. Other frequent species include *Mikania scandens*, *Hibiscus moscheutos*, *Saururus cernuus*, *Sagittaria lancifolia* var. *media*, *Persicaria sagittata*, *Apios americana*, *Ptilimnium capillaceum*, *Hypericum walteri*, *Cicuta maculata*, *Boehmeria cylindrica*, *Persicaria arifolia*, *Persicaria hydropiperoides*, *Centella erecta*, *Pluchea foetida*, and *Bidens* spp. Any other species of Tidal Freshwater Marshes may also be present. *Phragmites australis* may invade and come to dominate patches.

**Range and Abundance:** Ranked G4. This subtype is frequent and often extensive in oligohaline marsh complexes throughout North Carolina. The association ranges from North Carolina to Delaware and Maryland.

**Associations and Patterns:** The Shrub Subtype often grades into the Sawgrass, Cattail, Threesquare, Needlerush, or Estuarine Low Marsh Subtype. Inland, it usually gives way to Tidal Swamp or Estuarine Fringe Pine Forest. The transitions may be particularly gradual in either direction, reflecting the gradual succession that occurs with rising sea level.

**Variation:** Examples are extremely variable, with herbs varying with the transition to neighboring subtypes. Variants are recognized based on tidal dynamics. It is not clear if there are obvious vegetational differences associated with them. Other variation that could be recognized as subtypes includes the presence or absence of *Taxodium*, which might persist as a sparse savanna for many years.

1. Wind Tidal Variant
2. Lunar Tidal Variant

**Dynamics:** The Shrub Subtype usually represents an obvious transitional stage, though one that may persist for many years. As Tidal Swamps and Estuarine Fringe Pine Forests are increasingly stressed by rising sea level, trees stop regenerating and the shrubs and herbs of this community establish beneath the thinning canopy. The transition to this community may occur gradually or quickly, as enough trees die to allow the lower strata to dominate. If *Taxodium* is present in the swamp, it may persist as an open stand for many years due to its tolerance of water and salt, while pine forests and swamps with only *Nyssa* and other hardwoods lose the relict trees more quickly. With continued sea level rise, the shrubs become sparser, and the community transitions to one of the other subtypes. Fire may accelerate either transition by killing individuals of woody species that are unable to regenerate. The recent development and transitional nature of this subtype is often demonstrated by the presence of numerous standing or fallen dead trees.

A few examples of the Shrub Subtype may be successional in the opposite direction, representing a transition from a herbaceous marsh to a forest as trees establish in areas that were disturbed or that are newly established on new sediment deposits.

The Shrub Subtype appears to represent less wet settings than other subtypes, and presumably is flooded less often and less deeply.

**Comments:** The common abundance of fallen logs, along with the shrubs and vines, makes this one of the most difficult communities to explore, while standing snags can make it dangerous. There is a moderate number of plots representing it, but all are in the wind tidal area.

*Morella cerifera* - *Toxicodendron radicans* / *Spartina bakeri* Shrubland (CEGL004789) is a more southern equivalent from South Carolina to Florida. *Morella cerifera* - *Baccharis halimifolia* / *Eleocharis fallax* Shrub land (CEGL006846) is a more northerly equivalent from Virginia, Maryland, and Delaware.

**Rare species:**

**References:**