

## Sweetgum – Willow Oak Coastal Plain Palustrine Forest

**System:** Palustrine

**Subsystem:** Forest

**PA Ecological Group(s):** Coastal Plain

**Global Rank:** GNR

**State Rank:** S1

### General Description

Sweetgum – Willow Oak Coastal Plain Palustrine Forest occupies depressions that are often flooded during winter and spring to a depth of up to 1 m. These depressions are larger than the typical vernal pool and have less distinct boundaries. The resulting low areas of Sweetgum – Willow Oak Coastal Plain Palustrine Forest are interspersed with patches of slightly higher, better drained forest with a similar species composition. Shrub growth may be dense, especially in the slightly higher areas, margins, bases of trees etc.; Swamp dog-hobble (*Leucothoe racemosa*), sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), and southern arrow-wood (*Viburnum dentatum*) are characteristic shrubs. The herbaceous layer is sparse where water stands for the longest time. In slightly higher areas the following are common: cinnamon fern (*Osmunda cinnamomea*), sedges (*Carex intumescens*, *C. tribuloides*, *C. abscondita*), Canada mayflower (*Maianthemum canadense*), and bellwort (*Uvularia sessilifolia*).

### Rank Justification

This forest type is limited to the 5–6 mile wide strip of Atlantic Coastal Plain that extends along the Delaware Estuary in southeastern Pennsylvania. Proximity to Philadelphia has resulted in urbanization and suburbanization of much of the coastal plain, leaving little of the original natural vegetation. The largest remaining examples are the 239-acre Delhaas Woods Preserve which encompasses several coastal plain forest types and the 285-acre Five Mile Woods Preserve. Other tracts are fragmented and highly vulnerable to invasion by non-native, invasive species.

### Identification

- Occurs only on the coastal plain
- Sweetgum (*Liquidambar styraciflua*) is a prominent component of the canopy
- Occupies slight depressions in an otherwise nearly level landscape
- Characterized by extensive seasonal flooding
- Herbaceous and shrub growth are thin or lacking in areas of deepest water

### Characteristic Species

Trees

- [Sweetgum \(\*Liquidambar styraciflua\*\)](#)
- [Willow oak \(\*Quercus phellos\*\)](#)
- [Swamp chestnut oak \(\*Quercus michauxii\*\)](#)
- [Pin oak \(\*Quercus palustris\*\)](#)
- [Swamp white oak \(\*Quercus bicolor\*\)](#)
- [Red maple \(\*Acer rubrum\*\)](#)
- [Blackgum \(\*Nyssa sylvatica\*\)](#)
- [River birch \(\*Betula nigra\*\)](#)

#### Shrubs

- [Sweet pepperbush \(\*Clethra alnifolia\*\)](#)
- [Fetter-bush \(\*Leucothoe racemosa\*\)](#)
- [Highbush blueberry \(\*Vaccinium corymbosum\*\)](#)
- [Southern arrow-wood \(\*Viburnum dentatum\*\)](#)
- [Swamp dewberry \(\*Rubus hispidus\*\)](#)
- [Poison-ivy \(\*Toxicodendron radicans\*\)](#)
- [Pinxter-flower \(\*Rhododendron periclymenoides\*\)](#)
- [Catbrier \(\*Smilax glauca\*\)](#)

#### Herbs

- [Cinnamon fern \(\*Osmunda cinnamomea\*\)](#)
- [New York fern \(\*Thelypteris noveboracensis\*\)](#)
- [Sedge \(\*Carex intumescens\*\)](#)
- [Sedge \(\*Carex tribuloides\*\)](#)
- [Canada mayflower \(\*Maianthemum canadense\*\)](#)
- [Clearweed \(\*Pilea pumila\*\)](#)
- [False nettle \(\*Boehmeria cylindrica\*\)](#)

- [Jewelweed \(\*Impatiens capensis\*\)](#)
- [Long's sedge \(\*Carex longii\*\)](#)
- [Bellwort \(\*Uvularia sessilifolia\*\)](#)

**International Vegetation Classification Associations:**

[Red Maple - Sweetgum Swamp](#) (CEGL006110)

**NatureServe Ecological Systems:**

None

**Origin of Concept**

Rhoads, Ann F. and Timothy A. Block. 2011. Natural Areas Inventory Update of Bucks County Pennsylvania. Bucks County Commissioners, Doylestown, PA.

**Pennsylvania Community Code**

MX : Sweet Gum – Oak Coastal Plain Forest

**Similar Ecological Communities**

The Sweetgum – Willow Oak Coastal Plain Palustrine Forest is similar to vernal pool wetlands as well as adjacent terrestrial forests on the Coastal Plain of Pennsylvania. The Non-vegetated Vernal Pool Community differs from the Sweetgum – Willow Oak Coastal Plain Palustrine Forest mainly in its more distinct margin and smaller size. The Sweetgum – Willow Oak Coastal Plain Palustrine Forest often occurs as a wide “bottom-land” with extensive seasonal flooding which, when the water drops, become un-vegetated areas. Both support species associated with vernal pool wetlands. The Sweetgum – Oak Coastal Plain Forest is a terrestrial type not subjected to the seasonal flooding seen in the Sweetgum – Willow Oak Coastal Plain Palustrine Forest. In contrast to the Sweetgum – Willow Oak Coastal Plain Palustrine Forest, it exhibits a more-continuous herbaceous cover, often including club mosses, such as flat-branched ground-pine (*Lycopodium obscurum*) and running-pine (*Diphasiastrum digitatum*). There are also differences in the shrub-layer. Swamp dog-hobble (*Leucothoe racemosa*) is more common in Sweetgum – Willow Oak Coastal Plain Palustrine Forest patches, whereas pinxter-flower (*Rhododendron periclymenoides*) becomes a more prominent part of the shrub layer in the Sweetgum – Oak Coastal Plain Forest.

**Fike Crosswalk**

None; this type is new to the Pennsylvania Plant Community Classification developed from inventory studies of Bucks County by Morris Arboretum.

**Conservation Value**

Rare community type in Pennsylvania, limited to the Atlantic Coastal Plain. This community provides habitat for species not found elsewhere in PA, including willow oak (*Quercus phellos*), swamp chestnut oak (*Quercus michauxii*), a sedge (*Carex abscondita*), and Long's sedge (*Carex longii*).

The seasonal flooding also contributes to amphibian breeding habitat for rare species including eastern spadefoot toad (*Scaphiopus holbrookii holbrookii*), New Jersey chorus frog (*Pseudacris feriarum kalmii*), wood frog (*Lithobates sylvaticus*), and eastern mud turtle (*Kinosternon subrubrum subrubrum*).

### **Threats**

Already limited in extent, occurrences of Sweetgum - Willow Oak Coastal Plain Palustrine Forest patches are threatened by activities that lead to further fragmentation and changes to the hydrological character. Most occurrences are threatened by invasive species, especially mile-a-minute (*Persicaria perfoliata*) and common reed (*Phragmites australis*), and over-browsing by white-tailed deer.

### **Management**

All areas of natural vegetation adjacent to existing coastal plain preserves should be protected to prevent loss of habitat and/or fragmentation.

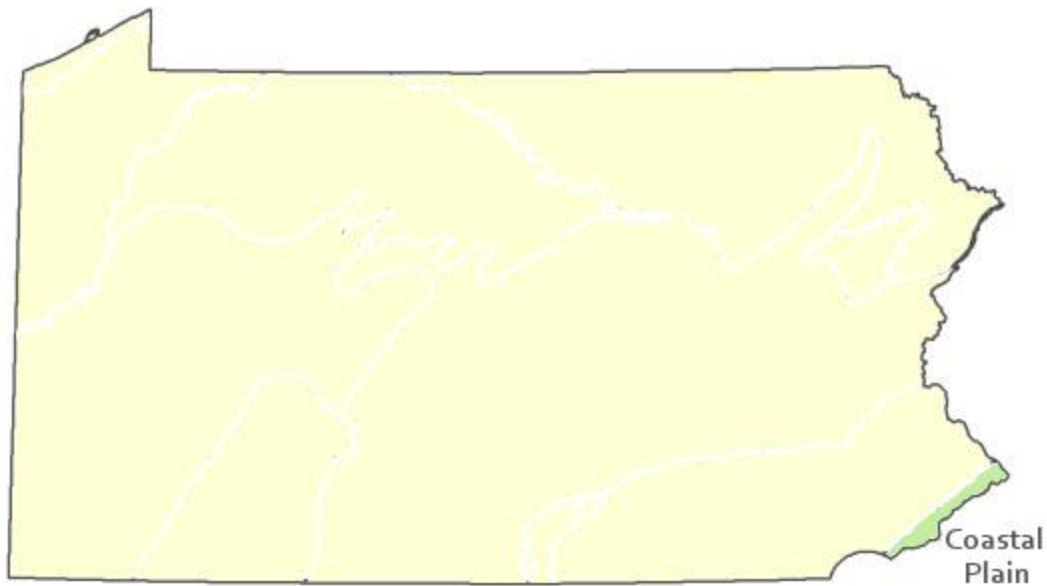
### **Research Needs**

Remaining sites should be monitored for deer browse impact which appears to be increasing. A better understanding of the hydrology would be helpful in designing protection strategies.

### **Trends**

Acreage has declined due to land development pressure; fragmentation of remaining examples has allowed invasion by non-native, invasive species of plants including mile-a-minute (*Persicaria perfoliata*), common reed (*Phragmites australis*), and Japanese honeysuckle (*Lonicera japonica*). Changes in soil acidity and nutrient status complicate restoration efforts on tracts that were formerly cultivated. Deer browse appears to be increasing.

### **Range Map**



### **Pennsylvania Range**

Southeastern strip of Bucks County parallel to the Delaware River

### **Global Distribution**

Mid-Atlantic States of Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia (NatureServe 2011)

### **References**

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Harrison, J.W. 2007. The Natural Communities of Maryland: Draft. Maryland Department of Natural Resources, Wildlife and Heritage Services, Annapolis, MD. Unpublished report. July 2007, 36 pp.

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