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**ECOLOGICAL SYSTEM: ATLANTIC COASTAL PLAIN NORTHERN BASIN SWAMP AND WET HARDWOOD FOREST**

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**Summary:** This system is comprised of hardwood swamps of seasonally flooded habitats, including relatively shallow groundwater-influenced depressions, stream headwaters and other topographic depressions. It ranges from Long Island, New York, south to Virginia. Although supporting some seepage indicators, they are also affected by overland flow. The substrate is mineral soil overlain by a variable organic but non-peaty layer. Characteristic tree species include *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), *Nyssa sylvatica* (blackgum), *Quercus phellos* (willow oak), and *Fraxinus pennsylvanica* (green ash). *Pinus taeda* (loblolly pine) is not uncommon south of Delaware Bay.

**High-ranked Species:** *Carex schweinitzii* (G3G4, schweinitz's sedge), *Helonias bullata* (G3, swamp-pink), *Hydrochus spangleri* (G1, Seth forest water scavenger beetle), *Juncus caesariensis* (G2, New Jersey rush), *Narthecium americanum* (G2, bog asphodel), *Scirpus longii* (G2G3, Long's bulrush), *Trillium pusillum* var. *virginianum* (G3T2, dwarf wakerobin)

**Range:** It ranges from Long Island, New York, south to Virginia. United States: DE, MD, NJ, NY, VA

**Delaware Estuary Associations:**

- Cape May Lowland Swamp
- Chesapeake Red Maple Swamp
- Coastal Loblolly Pine Wetland Forest
- Coastal Plain Calcareous Seepage Swamp
- Red Maple - Sweetgum Swamp
- Southern New England Red Maple Seepage Swamp
- Southern Red Maple - Black Gum Swamp Forest

**CLASSIFIERS FOR ATLANTIC COASTAL PLAIN NORTHERN BASIN SWAMP AND WET HARDWOOD FOREST**

**Primary Division:** 203

**Land Cover Class:** Woody Wetland

**Spatial Scale & Pattern:** Large patch

**Required Classifiers:** Natural/Semi-natural; Vegetated (>10% vasc.); Wetland

**Diagnostic Classifiers:** Forest and Woodland (Treed); Seepage-Fed Sloping; North Atlantic Coastal Plain

**Non-diagnostic Classifiers:** Isolated Wetland [Partially Isolated]

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**CAPE MAY LOWLAND SWAMP**

*Acer rubrum* - *Nyssa sylvatica* - *Liquidambar styraciflua* - *Populus heterophylla* Forest

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**Range:** This community is apparently restricted to the Cape May portion of New Jersey's Outer Coastal Plain.

**Environmental Description:** Typically this community occupies the headwaters of streams where occurrences probably receive groundwater discharge. Topography is gently rolling with a series of wet depressions alternating with drier islands.

**Vegetation Description:** Stands generally have high diversity; one occurrence was found to contain 20-25 species of trees and 40 species of shrubs. Typical canopy species include *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), *Fraxinus profunda* (pumpkin ash), and *Nyssa sylvatica* (blackgum). *Magnolia virginiana* (sweetbay) and *Ilex opaca* (American holly) are frequent subcanopy trees. Characteristic shrubs include *Clethra alnifolia* (coastal sweet-pepperbush), *Rhododendron*

*viscosum* (swamp azalea), *Lindera benzoin* (northern spicebush), and *Itea virginica* (Virginia-willow). In addition to these generally "acid-loving" species, a number of typical calcicoles occur in this community, including *Cirsium muticum* (swamp thistle), *Euphorbia purpurea* (glade spurge), and *Platanthera flava* var. *flava* (pale-green orchid). Several species with a more southern distribution are also found in this community, including *Quercus michauxii* (swamp chestnut oak), *Quercus phellos* (willow oak), *Quercus nigra* (water oak), *Triadenum walteri* (greater marsh-St. John's-wort), and *Populus heterophylla* (swamp cottonwood).

**Noteworthy Associated Plant and/or Animal Species:** *Euphorbia purpurea* (glade spurge), *Fraxinus profunda* (pumpkin ash), *Hottonia inflata* (featherfoil), *Listera australis* (southern twayblade), *Platanthera flava* var. *flava* (pale-green orchid), *Populus heterophylla* (swamp cottonwood), *Triadenum walteri* (greater marsh-St. John's-wort)

**Characteristic Species:** *Cirsium muticum* (swamp thistle), *Cypripedium reginae* (showy lady's-slipper), *Euphorbia purpurea* (glade spurge), *Itea virginica* (Virginia-willow), *Platanthera flava* var. *flava* (pale-green orchid), *Populus heterophylla* (swamp cottonwood)

**Management Concerns:** Cape May faces extensive development pressures as a popular vacation spot. Road networks also pose a threat to this community.

**Reference Sites:** Cape May Lowlands Swamp, NJ; Indian Trail, NJ; Fort Dix, NJ

**Global and State Conservation Ranks and Reasons:** G1 (18-Nov-1997). NJ: S1. This swamp forest community is confined to southern New Jersey, found only on Cape May. The habitat, stream headwaters of the Cape May geologic formation, is naturally of limited extent. There are only 3 known occurrences, with a low expectation for other discoveries. Occurrences range in size from 50-100 acres. Cape May faces extensive development pressures as a popular vacation spot.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.687352](http://vegbank.org/natureserve/element_global.2.687352)

**References:** Bernard 1963, Breden 1989, Breden et al. 2001, Eastern Ecology Working Group n.d.

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Tree canopy	Broad-leaved deciduous tree	<i>Fraxinus profunda</i> (pumpkin ash)
Tree canopy	Broad-leaved deciduous tree	<i>Liquidambar styraciflua</i> (sweetgum)
Tree canopy	Broad-leaved deciduous tree	<i>Nyssa sylvatica</i> (blackgum)
Tall shrub/sapling	Broad-leaved deciduous shrub	<i>Clethra alnifolia</i> (coastal sweet-pepperbush)

## CHESAPEAKE RED MAPLE SWAMP

*Acer rubrum* - *Fraxinus pennsylvanica* / *Saururus cernuus* Forest

**Range:** This red maple swamp community occurs in the Coastal Plain of the Chesapeake Bay region and in New Jersey.

**Environmental Description:** This red maple swamp community of the Coastal Plain of the Chesapeake Bay region occurs on poorly drained to very poorly drained, base-rich alluvial soils that are seasonally to semipermanently flooded. A thin organic horizon overlies sandy or silt clay loam soils. This swamp has pronounced hummock-and-hollow microtopography.

**Vegetation Description:** The tree canopy is closed to partially open and dominated by *Acer rubrum* (red maple), *Fraxinus pennsylvanica* (green ash), and *Quercus lyrata* (overcup oak). Associated canopy species may include *Nyssa sylvatica* (blackgum), *Quercus phellos* (willow oak), and *Populus heterophylla* (swamp cottonwood). The shrub layer includes *Lindera benzoin* (northern spicebush), *Leucothoe racemosa* (swamp doghobble), *Ilex verticillata* (common winterberry), *Viburnum* (viburnum) spp., and

*Fraxinus pennsylvanica* (green ash) saplings. The herbaceous layer is characterized by *Saururus cernuus* (lizard's-tail), *Peltandra virginica* (green arrow-arum), *Boehmeria cylindrica* (small-spike false nettle), *Triadenum walteri* (greater marsh-St. John's-wort), *Cinna arundinacea* (sweet woodreed), *Pilea pumila* (Canadian clearweed), *Impatiens capensis* (orange jewelweed), *Osmunda cinnamomea* (cinnamon fern), *Osmunda regalis* (royal fern), *Leersia oryzoides* (rice cutgrass), *Leersia virginica* (white cutgrass), *Glyceria striata* (fowl mannagrass), *Commelina virginica* (swamp dayflower), *Rumex verticillatus* (swamp dock), *Carex* (sedge) spp., and *Polygonum arifolium* (halberd-leaf tearthumb).

**Characteristic Species:** *Saururus cernuus* (lizard's-tail)

**Reference Sites:** Lizard Tail Swamp, NJ

**Global and State Conservation Ranks and Reasons:** GNR (21-Mar-2000). DE: SNR, NJ: SNR. This association requires global ranking.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.685450](http://vegbank.org/natureserve/element_global.2.685450)

**References:** Bowman 2000, Breden et al. 2001, Eastern Ecology Working Group n.d., Fleming 2001, Harrison 2004, Harrison and Stango 2003, Meininger 1998, Thomson et al. 1999, VDNH 2003

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Tree canopy	Broad-leaved deciduous tree	<i>Fraxinus pennsylvanica</i> (green ash)
Tree canopy	Broad-leaved deciduous tree	<i>Quercus lyrata</i> (overcup oak)
Tall shrub/sapling	Broad-leaved deciduous shrub	<i>Lindera benzoin</i> (northern spicebush)
Herb (field)	Forb	<i>Saururus cernuus</i> (lizard's-tail)

## COASTAL LOBLOLLY PINE WETLAND FOREST

*Pinus taeda* / *Morella cerifera* / *Osmunda regalis* var. *spectabilis* Forest

**Range:** This community ranges from the coast of Delaware and New Jersey to North Carolina.

**Environmental Description:** This maritime/coastal wetland forest occurs in backdune depressions with high water and as an estuarine fringe along bays and sounds. Tree diameters range from 12-36 cm dbh. This community occurs primarily on the bay side of islands, barrier spits and on mainlands adjacent to salt marsh. 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. In North Carolina, it may extend well inland fringing bays and sounds on wet saturated flats that are flooded by storm tides. Trees tend to occur on slightly elevated hummocks, with standing water evident in hollows.

**Vegetation Description:** Examples are characterized by a closed to partially open canopy dominated by *Pinus taeda* (loblolly pine). Other canopy associates may be absent or may include *Acer rubrum* (red maple), *Persea palustris* (swampbay), or *Liquidambar styraciflua* (sweetgum). The understory is made up of vines, strongly dominated by *Smilax rotundifolia* (roundleaf greenbrier), with lesser amounts of *Toxicodendron radicans* (eastern poison-ivy) and *Parthenocissus quinquefolia* (Virginia creeper). 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. *Morella cerifera* (wax-myrtle) is a typical shrub of this community. The herbaceous layer is usually relatively sparse, characterized most frequently by ferns such as *Woodwardia areolata* (netted chainfern), *Osmunda regalis* var. *spectabilis* (royal fern), or *Osmunda cinnamomea* (cinnamon fern), and farther south (in North Carolina) by *Chasmanthium laxum* (slender spikegrass). *Polygonum pensylvanicum* (Pennsylvania smartweed) may also occur. On Assateague Island National Seashore, *Pinus taeda*

(loblolly pine) dominates the canopy, with occasional *Acer rubrum* (red maple). *Smilax rotundifolia* (roundleaf greenbrier) is the strongly dominant vine of the understory, with lesser amounts of *Toxicodendron radicans* (eastern poison-ivy) and *Parthenocissus quinquefolia* (Virginia creeper). *Morella cerifera* (wax-myrtle) is also a minor component of this vegetation. *Phragmites australis* (common reed), *Rubus argutus* (southern blackberry), *Panicum virgatum* (switchgrass), and *Polygonum pensylvanicum* (Pennsylvania smartweed) also occur within this community on Assateague Island National Seashore.

**Characteristic Species:** *Morella cerifera* (wax-myrtle)

**Management Concerns:** As a community in large part restricted to barrier islands, it is faced with threats to barrier islands in general: intense development pressures where it remains unprotected. *Phragmites australis* (common reed) occasionally occurs in this community.

**Reference Sites:** Prime Hook, DE; Dias Creek NWR, NJ; Mad Horse Creek WMA, NJ; Timber Creek, NJ

**Global and State Conservation Ranks and Reasons:** G3 (31-Jan-2005). DE: SNR, NJ: S1?. This community is restricted to barrier islands and coastal areas of the mainland that are directly influenced by the maritime climate. The range is restricted and includes coastal areas from Cape May, New Jersey, to northern North Carolina.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.684829](http://vegbank.org/natureserve/element_global.2.684829)

**References:** Bartgis 1986, Bratton and Davison 1987, Breden et al. 2001, Brush et al. 1980, Eastern Ecology Working Group n.d., Eyre 1980, Fleming et al. 2001, Harrison 2004, Higgins et al. 1971, Hill 1986, Schafale 2000, Schafale and Weakley 1990, Shreve et al. 1910

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Needle-leaved tree	<i>Pinus taeda</i> (loblolly pine)
Tall shrub/sapling	Broad-leaved evergreen shrub	<i>Morella cerifera</i> (wax-myrtle)
Herb (field)	Vine/Liana	<i>Smilax glauca</i> (whiteleaf greenbrier)
Herb (field)	Vine/Liana	<i>Smilax rotundifolia</i> (roundleaf greenbrier)
Herb (field)	Vine/Liana	<i>Toxicodendron radicans</i> (eastern poison-ivy)
Herb (field)	Fern or fern ally	<i>Osmunda cinnamomea</i> (cinnamon fern)
Herb (field)	Fern or fern ally	<i>Osmunda regalis</i> (royal fern)

## COASTAL PLAIN CALCAREOUS SEEPAGE SWAMP

*Acer rubrum* - *Fraxinus pennsylvanica* / *Bidens laevis* - *Pilea fontana* Forest

**Range:** This calcareous seepage swamp occurs on the Virginia Coastal Plain and in New Jersey.

**Environmental Description:** This calcareous seepage swamp occurs on the Virginia Coastal Plain and in one documented location in New Jersey on groundwater-saturated stream bottoms in ravines that have cut into Tertiary shell deposits or limesands. Braided streams and hummock-and-hollow microtopography are characteristic of the environmental setting.

**Vegetation Description:** The tree canopy is characterized by *Fraxinus pennsylvanica* (green ash), *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), and others. The shrub layer is comprised of *Lindera benzoin* (northern spicebush), *Morella cerifera* (wax-myrtle), and *Cornus foemina* (stiff dogwood). Vines are abundant, characterized by *Decumaria barbara* (woodvamp). The herbaceous layer is characterized by *Carex bromoides* (brome-like sedge), *Packera aurea* (golden ragwort), *Scirpus lineatus* (drooping bulrush), *Thelypteris palustris* (eastern marsh fern), *Pedicularis lanceolata* (swamp lousewort), *Carex tetanica* (rigid sedge), *Liparis loeselii* (yellow wide-lip orchid), and *Carex granularis* (limestone meadow sedge) on drier hummocks, and *Saururus cernuus* (lizard's-tail), *Bidens laevis* (smooth

beggarticks), *Pilea fontana* (lesser clearweed), *Glyceria striata* (fowl mannagrass), and *Impatiens capensis* (orange jewelweed) in wetter hollows and seepage rivulets.

**Noteworthy Associated Plant and/or Animal Species:** *Helonias bullata* (swamp-pink)

**Characteristic Species:** *Bidens laevis* (smooth beggarticks), *Decumaria barbara* (woodvamp), *Fraxinus pennsylvanica* (green ash), *Pilea fontana* (lesser clearweed)

**Reference Sites:** Mantua Creek, NJ

**Global and State Conservation Ranks and Reasons:** GNR (15-Nov-2000). NJ: SNR.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.687899](http://vegbank.org/natureserve/element_global.2.687899)

**References:** Eastern Ecology Working Group n.d., Fleming 2001, Fleming et al. 2001, Harrison 2004, VDNH 2003

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Tree canopy	Broad-leaved deciduous tree	<i>Fraxinus pennsylvanica</i> (green ash)
Herb (field)	Vine/Liana	<i>Decumaria barbara</i> (woodvamp)
Herb (field)	Forb	<i>Bidens laevis</i> (smooth beggarticks)
Herb (field)	Forb	<i>Pilea fontana</i> (lesser clearweed)

## RED MAPLE - SWEETGUM SWAMP

*Liquidambar styraciflua* - *Acer rubrum* - *Quercus phellos* / *Leucothoe racemosa* Forest

**Range:** This association is a seasonally flooded forest of shallow basins and other depressions of the Coastal Plain of the Chesapeake Bay region, New Jersey and Pennsylvania where it occurs in the Delaware Estuary.

**Environmental Description:** This type occurs in seasonally flooded shallow basins or depressions. Substrates are acidic, gleyed to mottled, sandy or clay loams. The water table may be perched.

**Vegetation Description:** Characteristic tree species include *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), and *Nyssa sylvatica* (blackgum), which are nearly constant in the canopy. Associates include *Ilex opaca* (American holly), *Magnolia virginiana* (sweetbay), *Nyssa biflora* (swamp blackgum), *Sassafras albidum* (sassafras), *Quercus palustris* (pin oak), *Pinus taeda* (loblolly pine), and *Quercus phellos* (willow oak), and occasionally *Quercus falcata* (southern red oak), *Quercus lyrata* (overcup oak), or *Betula nigra* (river birch). The shrub layer is characterized by *Leucothoe racemosa* (swamp doghobble), *Vaccinium corymbosum* (highbush blueberry), *Clethra alnifolia* (coastal sweet-pepperbush), *Lindera benzoin* (northern spicebush), *Ilex verticillata* (common winterberry), and *Rhododendron viscosum* (swamp azalea). *Smilax rotundifolia* (roundleaf greenbrier) is a particularly characteristic vine. The herbaceous layer is generally sparse but may include *Mitchella repens* (partridgeberry), *Osmunda cinnamomea* (cinnamon fern), *Woodwardia areolata* (netted chainfern), *Onoclea sensibilis* (sensitive fern), *Osmunda regalis* (royal fern), *Carex albolutescens* (greenish-white sedge), *Scirpus cyperinus* (woolgrass bulrush), *Juncus effusus* (soft rush), and *Polygonum* (smartweed, knotweed) spp.

**Characteristic Species:** *Leucothoe racemosa* (swamp doghobble), *Quercus phellos* (willow oak), *Smilax rotundifolia* (roundleaf greenbrier)

**Reference Sites:** Brendan Byrne State Forest, NJ; Fort Dix, Inner Coastal Plain, NJ; Delhaas Woods, and Black Ditch County Park, Bucks County, PA

**Global and State Conservation Ranks and Reasons:** GNR (1-Dec-1997). DE: SNR, NJ: S3, PA: SNR.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.687145](http://vegbank.org/natureserve/element_global.2.687145)

**References:** Bowman 2000, Breden 1989, Breden et al. 2001, Brush et al. 1980, Clancy 1996, Eastern Ecology Working Group n.d., Edinger et al. 2002, Fleming et al. 2001, Harrison 2004, Harrison and Stango 2003, Hunt 1998, Sneddon and Anderson 1994, Sneddon et al. 1996, Thomson et al. 1999, Tyndall et al. 1990, VDNH 2003

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Tree canopy	Broad-leaved deciduous tree	<i>Liquidambar styraciflua</i> (sweetgum)
Tree canopy	Broad-leaved deciduous tree	<i>Nyssa sylvatica</i> (blackgum)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Leucothoe racemosa</i> (swamp doghobble)

### SOUTHERN NEW ENGLAND RED MAPLE SEEPAGE SWAMP

*Acer rubrum* - *Fraxinus (pennsylvanica, americana)* / *Lindera benzoin* / *Symplocarpus foetidus* Forest

**Range:** This vegetation occurs in southern New England south to the mid-Atlantic states and west to Pennsylvania. It occurs in New Jersey, Pennsylvania and possibly Delaware in the Delaware Estuary.



Photo by Pennsylvania Natural Heritage Program

**Environmental Description:** This association is an acidic seepage swamp of southern New England and adjacent areas dominated by *Acer rubrum* (red maple). It generally occurs in seasonally saturated situations on slightly sloping hillsides, along small streams, or in basins that receive overland flooding in addition to groundwater influence. In general, these swamps are acidic and have some seepage indicators but are not particularly species-rich. Soils are shallow to moderately deep mucks over mineral soils.

**Vegetation Description:** *Acer rubrum* (red maple) dominates the canopy; *Fraxinus pennsylvanica* (green ash) or *Fraxinus americana* (white ash) are usually also found in the canopy. *Fraxinus nigra* (black ash) is not generally associated with this type and, if present, occurs only as scattered individuals. Other canopy associates may include *Liriodendron tulipifera* (tuliptree), *Quercus bicolor* (swamp white oak), and *Ulmus rubra* (slippery elm). Conifers, such as *Tsuga canadensis* (eastern hemlock) or *Pinus strobus* (eastern white pine), are generally absent or occur in very low abundance. The shrub layer may be fairly open to quite dense, depending on the amount of canopy closure. Shrub species commonly include *Ilex verticillata* (common winterberry), *Rhododendron viscosum* (swamp azalea), *Clethra alnifolia* (coastal sweet-pepperbush), *Lindera benzoin* (northern spicebush), and less commonly *Vaccinium corymbosum* (highbush blueberry), *Lyonia ligustrina* (maleberry), *Toxicodendron vernix* (poison-sumac), *Viburnum dentatum* (southern arrow-wood), and *Viburnum nudum var. cassinoides* (northern wild raisin). The herbaceous layer is variable in cover, and *Symplocarpus foetidus* (skunk-cabbage) and *Osmunda cinnamomea* (cinnamon fern) are nearly always present. Other herbaceous species include *Impatiens*

*capensis* (orange jewelweed), *Carex stricta* (tussock sedge), *Veratrum viride* (American false hellebore), *Pilea pumila* (Canadian clearweed), *Osmunda regalis* (royal fern), *Onclea sensibilis* (sensitive fern), *Thelypteris palustris* (eastern marsh fern), and *Glyceria* (mannagrass) spp. Microtopography is generally pronounced, resulting from tip-ups. Tree seedlings and *Sphagnum* (peatmoss) mosses are common on hummocks but do not in general form extensive carpets. Additional nonvascular species can include *Plagiomnium cuspidatum* and *Calliergon* (calliergon moss) spp.

**Characteristic Species:** *Acer rubrum* (red maple), *Fraxinus americana* (white ash), *Fraxinus pennsylvanica* (green ash), *Osmunda cinnamomea* (cinnamon fern), *Symplocarpus foetidus* (skunk-cabbage)

**Reference Sites:** Clayton County Park, Delaware County, PA

**Global and State Conservation Ranks and Reasons:** G4G5 (25-Jun-1998). DE?:SNA, NJ: S3S5, PA: SNR.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.688675](http://vegbank.org/natureserve/element_global.2.688675)

**References:** Breden 1989, Breden et al. 2001, Cowardin et al. 1979, Eastern Ecology Working Group n.d., Edinger et al. 2002, Enser 1993, Golet et al. 1993, Harrison 2004, MENHP 1991, Metzler and Barrett 2001, Rawinski 1984, Reschke 1990, Sperduto and Nichols 2004, Swain and Kearsley 2001, Thompson 1996, Thompson and Sorenson 2000

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree (canopy & subcanopy)	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Clethra alnifolia</i> (coastal sweet-pepperbush)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Ilex verticillata</i> (common winterberry)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Lindera benzoin</i> (northern spicebush)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Rhododendron viscosum</i> (swamp azalea)
Herb (field)	Fern or fern ally	<i>Osmunda cinnamomea</i> (cinnamon fern)

### SOUTHERN RED MAPLE - BLACK GUM SWAMP FOREST

*Acer rubrum* - *Nyssa sylvatica* - *Magnolia virginiana* / *Viburnum nudum* var. *nudum* / *Osmunda cinnamomea* - *Woodwardia areolata* Forest

**Range:** This community ranges from southeastern New York and New Jersey to southeastern Virginia on the Coastal Plain. In Virginia, it extends into the extreme eastern portion of the Piedmont.

**Environmental Description:** This association is generally restricted to groundwater-saturated stream bottoms, seeping toeslopes, and poorly drained depressions with seasonally perched water tables. Sites typically have hummock-and-hollow microtopography with braided channels, *Sphagnum* (peatmoss)-covered hummocks, mucky depressions, and areas of exposed sand and gravel. Soils are extremely acidic and very low in base status.

**Vegetation Description:** Canopy closure ranges from closed to quite open. Plot data from 20 Virginia and Maryland stands indicate that *Acer rubrum* (red maple) and *Nyssa sylvatica* (blackgum) are consistently dominant overstory species. *Magnolia virginiana* (sweetbay) is a frequent overstory associate and usually dominant in the subcanopy layer, or codominant with *Ilex opaca* (American holly). *Liriodendron tulipifera* (tuliptree) is a frequent but minor overstory associate. Shrub layers tend to be dense and diverse, characteristically containing *Viburnum nudum* var. *nudum* (southern wild raisin), *Vaccinium corymbosum* (highbush blueberry), *Smilax rotundifolia* (roundleaf greenbrier), *Ilex verticillata* (common winterberry), and *Lindera benzoin* (northern spicebush). In parts of the range, *Clethra alnifolia* (coastal sweet-pepperbush) is a dominant shrub, while in New Jersey, *Chamaedaphne calyculata* (leatherleaf) and *Gaylussacia frondosa* (dangleberry) are present. Additional, less constant shrub

associates are *Rhododendron viscosum* (swamp azalea), *Leucothoe racemosa* (swamp doghobble), *Chionanthus virginicus* (fringetree), *Viburnum dentatum* (southern arrow-wood), *Toxicodendron vernix* (poison-sumac), and *Carpinus caroliniana* (American hornbeam). The herb layer varies from dense to sparse. *Osmunda cinnamomea* (cinnamon fern) and *Woodwardia areolata* (netted chainfern) are generally the most constant and abundant herbs, but *Symplocarpus foetidus* (skunk-cabbage) is a patch-dominant in approximately two-thirds of the Virginia and Maryland stands. Additional characteristic herbs occurring at low cover include *Arisaema triphyllum* ssp. *pusillum* (Jack-in-the-pulpit), *Carex folliculata* (northern long sedge), *Carex seorsa* (weak stellate sedge), *Chelone glabra* (white turtlehead), *Impatiens capensis* (orange jewelweed), *Lycopus virginicus* (Virginia water-horehound), *Mitchella repens* (partridgeberry), *Osmunda regalis* var. *spectabilis* (royal fern), *Platanthera clavellata* (small green wood orchid), and *Viola cucullata* (marsh blue violet).

**Noteworthy Associated Plant and/or Animal Species:** *Helonias bullata* (swamp-pink)

**Characteristic Species:** *Arisaema triphyllum* ssp. *pusillum* (Jack-in-the-pulpit), *Carex folliculata* (northern long sedge), *Carex seorsa* (weak stellate sedge), *Chelone glabra* (white turtlehead), *Ilex verticillata* (common winterberry), *Impatiens capensis* (orange jewelweed), *Lindera benzoin* (northern spicebush), *Lycopus virginicus* (Virginia water-horehound), *Mitchella repens* (partridgeberry), *Osmunda regalis* var. *spectabilis* (royal fern), *Platanthera clavellata* (small green wood orchid), *Smilax rotundifolia* (roundleaf greenbrier), *Vaccinium corymbosum* (highbush blueberry), *Viburnum nudum* var. *nudum* (southern wild raisin), *Viola cucullata* (marsh blue violet), *Woodwardia areolata* (netted chainfern)

**Dynamics/Successional Trajectory:** Trees tend to be slow-growing and of less than optimal stature in the wet, unstable habitats. Additionally, these swamps tend to border dry, sandy uplands supporting fire-prone oak/heath forests. Occasional fires, burning into the swamps from the uplands during dry periods, may have once influenced the composition and physiognomy of this type. However, fire has now been excluded from almost all areas within the range. An exception is at Fort A.P. Hill Military Reservation, where military training results in frequent incendiary fires in a roughly 5000-ha area. Stands of this community are very susceptible to flooding from beaver activities, which usually results in the destruction or extreme alteration of a stand. In New Jersey, this community is often situated adjacent to *Chamaecyparis thyoides* (Atlantic white-cedar)-dominated swamp and may replace it after logging.

**Management Concerns:** This community is vulnerable to alteration or destruction by beavers and various anthropogenic activities, including hydrologic modifications.

**Reference Sites:** Widespread, NJ and DE, including Fort Dix, NJ

**Global and State Conservation Ranks and Reasons:** G3? (30-Mar-2004). DE: SNR, NJ: S4S5, PA: SNR. The type is restricted to an uncommon wetland habitat in a limited region

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.686944](http://vegbank.org/natureserve/element_global.2.686944)

**References:** Breden 1989, Breden et al. 2001, Eastern Ecology Working Group n.d., Edinger et al. 2002, Ehrenfeld and Gulick 1981, Fike 1999, Fleming et al. 2001, Fleming pers. comm., Harrison 2004, Harrison and Stango 2003, Harvill 1967, Heckscher 1994, Hill 1986, McCormick 1979, Patterson pers. comm., Robichaud and Buell 1973, Sipple and Klockner 1984, VDNH 2003, Windisch 1995b

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Tree canopy	Broad-leaved deciduous tree	<i>Liquidambar styraciflua</i> (sweetgum)
Tree canopy	Broad-leaved deciduous tree	<i>Nyssa sylvatica</i> (blackgum)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Clethra alnifolia</i> (coastal sweet-pepperbush)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Vaccinium corymbosum</i> (highbush blueberry)
Herb (field)	Fern or fern ally	<i>Osmunda cinnamomea</i> (cinnamon fern)
Herb (field)	Fern or fern ally	<i>Woodwardia areolata</i> (netted chainfern)