Macrogoup: Central Oak-Pine

Description:

A hardwood forest largely dominated by oaks, often mixed with pine. White, red, chestnut, black, and scarlet oaks are typical, and American holly is sometimes present. Sassafras, birch, aspen, and hazelnut are common associates in earlier-successional areas. In the northern half of the range, conditions can grade to dry-mesic, reflected in the local abundance of beech. A heath shrub layer is common; the herbaceous layer is sparse. In southern-more occurrences in Maryland or Virginia, pines (shortleaf, Virginia, and particularly loblolly) may be important, even strongly dominant canopy trees. The pine component is usually an indication of past human disturbance.

Ecological Setting and Natural Processes:

These forests occur on sandy to gravelly glacial deposits and outwash from Long Island north, and on deep, acidic, coarse-textured soils on the flat to rolling landscapes of the coastal plain to the south. A thick duff layer and dry conditions make this system subject to periodic fires, which in turn encourage oak regeneration.

Similar Habitat Types:

In the northern 2/3 of its range, this system shares dry sandy coastal plain landscapes with Pitch Pine Barrens. From southern New Jersey south, it forms a mosaic with Southern Atlantic Coastal Plain Mesic Hardwood Forest, which occupies lower, moister positions in a stream-dissected landscape.

Crosswalk to State Name Examples:

Upland Forest - Dry Oak Forests (CT), North Atlantic Coastal Oak-Holly Forest (DE), Coastal Forest/Woodland (MA), Mesic Mixed Hardwood Forest (MD), Deciduous And Mixed Forest (ME), Appalachian Oak Pine Forest (NH), Mesic Coastal Plain Mixed Oak Forest (NJ), Coastal Oak-Beech Forest (NY), Sweet Gum - Oak Coastal Plain Forest (PA), Mixed Oak – American Holly Forest (RI), Coastal Plain Mixed Oak / Heath Forest (VA)

Crosswalk to State Wildlife Action Plans:

Upland Forest - Dry Oak Forests (CT), Hardwood Forest - Chestnut oak forests (DC), Coastal Plain Upland Forests (DE), Upland Forest (MA), Loblolly Pine – Oak Forests (MD), Deciduous and Mixed Forest (ME), Appalachian Oak Pine Forest (NH), Upland forests - deciduous forest (NJ), Coastal Hardwoods (NY), Deciduous/Mixed Forest (PA), Deciduous Forests - Deciduous Forest Oak/Holly (RI), Forest Habitat - Deciduous Forest (VA)
Placed to Visit this Habitat:
Nehantic State Forest | CT
Redden State Forest | DE
Great Bay National Wildlife Refuge | NH
Connetquot River State Park Preserve | NY
James River National Wildlife Refuge | VA

Associated Species:Appendix lists scientific names

BIRDS: barred owl, brown-headed nuthatch (south), black-and-white warbler, carolina wren, eastern towhee, great crested flycatcher, ovenbird, pine warbler, prairie warbler, scarlet tanager, veery (north), wood thrush

MAMMALS: masked shrew, meadow vole, red-backed vole, southern flying squirrel, white footed mice, woodland jumping mouse

HERPTILES: mole salamander, spotted turtle

PLANTS: Lion's-foot (Prenanthes serpentaria), Northern Blazingstar (Liatris scariosa), Redtop Panicgrass (Panicum rigidulum), Few-flower Nutrush (Scleria pauciflora), Eastern Slivery Aster (Symphyotrichum concolor), Purple Needlegrass (Aristida purpurascens), Post Oak (Quercus stellata), Pale Green Orchid (Platanthera flava), Large Whorled Pogonia (Isotria verticillata)

Species of Concern (G1-G4):Appendix lists scientific names

BIRDS: yellow-throated warbler

MAMMALS: delmarva fox squirrel

HERPTILES: eastern box turtle, green snake, marbled salamander

INSECTS: frosted elfin

PLANTS: Featherfoil (Hottonia inflata), Sandplain Flax (Linum intercursum), Bushy Rockrose (Helianthemum dumosum), Swamp-pink (Helonias bullata), Rose Coreopsis (Coreopsis rosea), Cranefly Orchid (Tipularia discolor), Allegheny Mountains Crowfoot (Ranunculus allegheniensis), Small Whorled Pogonia (Isotria medeoloides), Creeping St. John's-wort (Hypericum adpressum), Long-beaked Baldrush (Rhynchospora scirpoides), Tall Bushclover (Lespedeza stuevei)

© Robert Coxe (Delaware Species Conservation & Research Program)
Central Oak-Pine

Description:
An oak-dominated, mostly closed canopy forest that occurs as a matrix (dominant) type through the central part of our region. Oak species characteristic of dry to mesic conditions (e.g., red, white, black, and scarlet oak) and hickories are dominant in mature stands. Chestnut oak may be present but is generally less important than other oak species. Red maple, black birch, and yellow birch may be common associates. Heath shrubs are often present but not well developed. Local areas of limy bedrock, or colluvial pockets, may support forests that reflect the richer soils. With a long history of human habitation, many of the forests are mid-successional, in which pines (typically Virginia or white) or tuliptree may be codominant or dominant.

Ecological Setting and Natural Processes:
Moderate moisture and heat loading are characteristic for this oaky system. It occurs at low to mid elevations, where the topography is flat to gently rolling, occasionally steep. Substrate bedrock and soils are commonly but not always acidic. Chestnut was formerly a prominent tree in these forests.

Similar Habitat Types:
Drier oak-pine systems (Central Appalachian Dry Oak-Pine Forest, CA Pine-Oak Rocky Woodland) are often upslope; mesic covey or wetland systems may be embedded in low landscape positions. A split along purely geographic lines separates this system from similar Southern Appalachian Oak Forests in southern WV, in lieu of more natural ecological or floristic distinctions.

Crosswalk to State Name Examples:
Dry Subacidic Forest (CT), Central Appalachian Dry-Mesic Chestnut Oak-Northern Red Oak Forest (DE), Dry, Rich Acidic Oak Forest (MA), Acidic Oak - Hickory Forest (MD), Dry-Mesic Inland Mixed Oak Forest (NJ), Appalachian Oak-Hickory Forest (NY), Dry Oak-Heath Forest (PA), Black Oak-Scarlet Oak/Heath Forest (RI), Central Appalachian Dry-Mesic Chestnut Oak - Northern Red Oak Forest (VA), Oak/Hickory And Dry/Mesic Oak Forest (WV)

Crosswalk to State Wildlife Action Plans:
Hardwood Forest - Mixed oak-beech forests (DC), Mesic Deciduous Forests (MD), Upland forests - deciduous forest (NJ), Oak Forest (NY), Deciduous/Mixed Forest (upland) (PA), Forest Habitat - Deciduous Forest (VA), Oak/Hickory and Dry/Mesic Oak Forest (WV)
Places to Visit this Habitat:
Green Ridge State Forest | MD
Delaware Water Gap | NJ
Sprou Forest | PA
George Washington and Jefferson National Forest | VA
Monongahela National Forest | WV

Associated Species: Appendix lists scientific names

BIRDS: black-and-white warbler, broad-winged hawk, cerulean warbler, eastern wood-pewee, great crested flycatcher, louisiana waterthrush, ovenbird, red-bellied woodpecker, scarlet tanager, summer tanager (south), eastern whip-poor-will, wood thrush, veery, worm-eating warbler

MAMMALS: black bear, red-backed vole, short-tailed shrew, white footed mouse

HERPTILES: northern redback salamander, ringneck snake, redbelly snake, spotted salamander

PLANTS: American wintergreen (Pyrola americana), basil beebalm (Monarda clinopodia), blunt-lobed woodsia (Woodsia obtusa), bottlebrush grass (Elymus hystrix), common alexanders (Zizia aurea), early buttercup (Ranunculus fascicularis), shinleaf (Pyrola elliptica), sicklepod (Arabis canadensis)

Species of Concern (G1-G4): Appendix lists scientific names

BIRDS: golden-winged warbler

MAMMALS: eastern small-footed myotis, kittatiny red-backed vole, virginia big-eared bat

HERPTILES: big levels salamander, milk snake, peaks of otter salamander

INSECTS: American snout, Appalachian grizzled skipper, underwing moth (Catocala retexta), clouded underwing, dark stoneroot borer moth, flypoison borer moth, habilis underwing, northern metalmark, mournful underwing, yellow stoneroot borer moth

PLANTS: climbing fern (Lygodium palmatum), goldenseal (Hydrastis canadensis), small whorled pogonia (Isotria medeoloides)

Northeastern Interior Dry-Mesic Oak Forest

The average patch size for this habitat is 13 acres and the largest single patch is 20,946 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (783,733 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 15,675 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
**Central Appalachian Dry Oak-Pine Forest**

**Macrogroup:** Central Oak-Pine

**Description:**
An oak or oak-pine forest of dry sites, characterized by a variable mixture of drought tolerant oaks (chestnut oak, white oak, red oak, black oak, scarlet oak) and pines (pitch, white, Virginia). It occurs broadly in the Central Appalachians and northern Piedmont ecoregions, most commonly as a large (to very large) patch habitat. It has a much more limited range in New England, where hickories may be present. Community structure ranges from open woodlands to closed forest. Heath shrubs are common in the understory; the herb layer is often sparse and lacks diversity. In the absence of fire this system may tend to succeed to hemlock and locally common hardwoods.

**Ecological Setting and Natural Processes:**
A habitat of dry rolling hills, high sunny slopes and ridgetops, where soils are often thin, well-drained, and nutrient-poor. Bedrock substrates are variable, and can influence herb diversity. Disturbance agents include fire, windthrow, and ice damage, and gypsy moths can wreak havoc in the oak overstory periodically.

**Similar Habitat Types:**
Drier than, and often found upslope from the Northeast Interior Dry-Mesic Oak Forest system. Drier and more oaky, and again upslope from the Appalachian (Hemlock-)Northern Hardwood system. A more moderate and less exposed habitat than Central Appalachian Pine-Oak Rocky Woodland, which most often occurs as a small patch within it.

**Crosswalk to State Name Examples:**
Dry Acidic Oak Forest On Stratified Sand And Gravel (CT), Central Appalachian/Northern Piedmont Chestnut Oak Forest (DE), Mixed Oak Forest (MA), Mixed - Heath Forest (MD), Oak - Pine Forest (ME), Dry Red Oak - White Pine Forest (NH), Upland Forests - Mixed Deciduous-Coniferous Forest (NJ), Allegheny Oak Forest (NY), Dry Oak - Heath Woodland (PA), Deciduous Forests - Deciduous Forest Oak/Heath (RI), Central Appalachian / Piedmont White Pine - Xeric Oak Forest (VA), Dry Oak Forest (VT), Oak/Heath And Oak/White Pine Forests (WV)

**State Distribution:** CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV

**Total Habitat Acreage:** 3,845,317

**Percent Conserved:** 34.1%

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**Crosswalk to State Wildlife Action Plans:**
Upland Forest - Dry Oak Forests (CT), Hardwood Forest - Chestnut oak forests (DC), Upland Forest (MA), Dry Oak-Pine Forests (MD), Deciduous and Mixed Forest (ME), Appalachian Oak Pine Forest (NH), Upland forests - mixed deciduous-coniferous forest (NJ), Oak-Pine Forest (NY), Deciduous/Mixed Forest (upland) (PA), Deciduous Forests - Deciduous Forest Oak/Heath (RI), Forest Habitat - Mixed Forest (VA), Oak-Pine-Northern Hardwood Forest - Dry Oak Forest (VT), Oak/Heath and Oak/White Pine Forests (WV)
Places to Visit this Habitat:
Savage River State Forest | MD
Delaware Water Gap | NJ
Bald Eagle State Forest | PA
George Washington and Jefferson National Forest | VA
Monongahela National Forest | WV

Associated Species: Appendix lists scientific names
BIRDS: black-and-white warbler, eastern wood-pewee, ovenbird, pine warbler, prairie warbler, scarlet tanager, summer tanager (south), eastern whip-poor-will, worm-eating warbler
MAMMALS: black bear, red-backed vole, short-tailed shrew, southern flying squirrel, white footed mouse
HERPTILES: black racer, northern redback salamander, redbelly snake, ringneck snake, ring-neck snake, spotted salamander
PLANTS: allegheny crowfoot (Ranunculus allegheniensis), chestnut oak (Quercus prinus), deerberry (Vaccinium stamineum), downy arrowwood (Viburnum rafinesquianum), hound’s tongue (Cynoglossum boreale), mountain laurel (Kalmia latifolia), rattlesnake-weed (Hieracium venosum), scarlet oak (Quercus coccinea), spotted wintergreen (Chimaphila maculate)

Species of Concern (G1-G4): Appendix lists scientific names
BIRDS: cerulean warbler, golden-winged warbler
HERPTILES: black rat snake, five-lined skink, timber rattlesnake
INSECTS: New Jersey tea inchworm, orange sallow mothred-winged sallow moth, early hairstreak, red-winged sallow
PLANTS: Kate’s mountain clover (Trifolium virginicum), white alumroot (Heuchera alba), sword-leaved phlox (Phlox buckleyi), mountain parsley (Taenidia montana), climbing fumitory (Adlumia fungosa)

Central Appalachian Dry Oak-Pine Forest

© Eric Sorenson (Vermont Fish & Wildlife)

http://nature.ly/HabitatGuide
Central Appalachian Pine-Oak Rocky Woodland

Macrogoup: Central Oak-Pine

Description:
A mixed forest or woodland of pitch pine and/or Virginia pine mixed with dry-site oaks (primarily scrub oak, scarlet oak, and chestnut oak). Red pine and shortleaf pine may also occur. Some areas have a fairly well-developed heath shrub layer; a graminoid herb layer dominated by Pennsylvania sedge, poverty grass, and common hairgrass may be more prominent in others. The vegetation is patchy, with woodland as well as open portions, or even sparse cover on dry rocky hilltops and outcrops.

Ecological Setting and Natural Processes:
This forest occurs as relatively small patches on exposed ridgetops, hilltops and outcrops, at elevations ranging up to about 4000 feet. The substrate rock is granitic or other acidic lithology, including traprock in New England. Conditions are dry, and soils are thin and nutrient-poor. This system experiences moderately intense fires naturally every 5 to 25 years; fire history largely determines the vegetation character of individual occurrences.

Similar Habitat Types:
Patches of this habitat are most often on exposed sites within larger occurrences of Central Appalachian Dry Oak-Pine Forest. Overlaps with Northern Appalachian-Acadian Rocky Heath Outcrop at the northern end of its range, but lacks spruce and some other northern species. Oakier than Southern Appalachian Montane Pine Forest and Woodland, and without table mountain pine.

Crosswalk to State Name Examples:
Subacidic Rocky Summit/Outcrop (CT), Ridgetop Pitch Pine/Scrub Oak (MA), Montane Pine - Oak Woodland (MD), Oak - Pine Woodland (ME), Appalachian Oak - Pine Rocky Ridge (NH), Ridgetop Pitch Pine/Scrub Oak Forest (NJ), Pitch Pine-Oak-Heath Rocky Summit (NY), Pitch Pine - Scrub Oak Woodland (PA), Central Appalachian Xeric Chestnut Oak - Virginia Pine Woodland (VA), Pitch Pine-Oak-Heath Rocky Summit (VT), Dry Rocky Pine/Oak Forests and Woodlands (WV)

Crosswalk to State Wildlife Action Plans:
Unique and Man-Made - Traprock Ridges (CT), Rocky Cliffs, Ridgetops, Talus Slopes, and Other Similar Habitats (MA), Early Successional Forests - Shrub-dominated natural communities (MD), Dry Woodlands and Barrens (ME), Talus Slopes and Rocky Ridges - Rocky Ridges (NH), Upland forests - mixed deciduous-coniferous forest (NJ), Oak-Pine Forest (NY), Deciduous/Mixed Forest (upland) (PA), Thicket/Shrub Habitats - Naturally occurring barrens (PA), Forest Habitat - Mixed Forest (VA), Oak-Pine-Northern Hardwood Forest - Pitch Pine-Oak-Heath Rocky Summit (VT), Dry Rocky Pine/Oak Forests and Woodlands (WV)

State Distribution: CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV

Total Habitat Acreage: 566,276
Percent Conserved: 38.4%

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Places to Visit this Habitat:
Savage River State Forest | MD
Harriman State Park | NY
Bald Eagle State Forest | PA
George Washington and Jefferson National Forest | VA
Monongahela National Forest | WV

Associated Species: Appendix lists scientific names
BIRDS: black-and-white warbler, broad-winged hawk, ovenbird, pine warbler, prairie warbler, scarlet tanager, summer tanager (south), wood thrush, worm-eating warbler

MAMMALS: bobcat

HERPTILES: blue-spotted salamander, coal skink, black-bellied salamander, eastern box turtle, eastern hog-nosed snake, eastern rat snake, fence lizard, five-lined skink, four-toed salamander, marbled salamander, northern copperhead

PLANTS: ledge spike-moss (Selaginella rupestris), mountain laurel (Kalmia latifolia), mountain sandwort (Minuartia groenlandica), new jersey tea (Ceanothus americanus), northern blazingstar (Liatris scariosa), purple clematis (Clematis occidentalis), scarlet oak (Quercus coccinea), scrub oak (Quercus ilicifolia), yellow false foxglove (Aureolaria pedicularia)

Species of Concern (G1-G4): Appendix lists scientific names
BIRDS: cerulean warbler, peregrine falcon, eastern whip-poor-will

MAMMALS: allegheny woodrat, appalachian cottontail, eastern small-footed myotis, kittingty red-backed vole, long-tailed shrew, northern myotis, southern flying squirrel

HERPTILES: big levels salamander, green salamander, jefferson salamander, timber rattlesnake, white-spotted salamander

INSECTS: aureolaria seed borer, barrens chaetaglaea, barrens itame, barrens xylotype, blueberry sallow, edward's hairstreak, Gerhard's underwing moth, northern barrens tiger beetle, oblique zale, pine-devil moth, pink sallow, red-winged sallow, similar underwing, sleepy duskywing, southern pine sphinx, the buckmoth

Central Appalachian Pine-Oak Rocky Woodland

© Maine Natural Areas Program
http://nature.ly/HabitatGuide
Macrogoup: Central Oak-Pine

Description:
A forest-shrubland mosaic encompassing a range of woody vegetation on barrier islands, near-coastal strands, and bluffs at the outer edge of the coastal plain. Defined by its proximity to maritime environments, and usually species-poor, the vegetation includes narrow bands of forests or woodlands, often featuring stunted trees with contorted branches and dense vine layers. A range of trees may be present depending upon location and degree of protection from most extreme maritime influences. They may include some combination of pines (like pitch, Virginia, loblolly, and shortleaf pine) and oaks (scarlet, black, scrub, post) as well as eastern red cedar, black cherry, American holly, sassafras, and red maple. The shrub layer may be dense; the herb layer is often sparse.

Ecological Setting and Natural Processes:
Soils are generally fine to coarse sand with some organic material mixed into the top layers; there is sometimes a thick duff layer. Groundwater levels vary, and have a strong influence on vegetation composition and structure. This habitat type encompasses both upland and embedded wetland environments. Maritime forest vegetation is subject to stresses like salt spray, high winds, dune deposition, sand shifting and blasting, and occasional overwash.

Similar Habitat Types:
Maritime forests very often border and interfinger with dune, swale and sandy beach habitats. A similar system with more southern tree, shrub, and herb species has been described for the Central Atlantic Coastal Plain; it ranges south from southeast Virginia.

Crosswalk to State Name Examples:
Upland Woodland And Shrub - Coastal Shrublands (CT), Maritime Red Cedar Woodland (DE), Maritime Oak-Holly Forest/Woodland (MA), Maritime Forest (MD), Maritime Wooded Dune (NH), Coastal Dune Woodland (NJ), Maritime Holly Forest (NY), Maritime Woodland (RI), Maritime Loblolly Pine Forest (VA)

Crosswalk to State Wildlife Action Plans:
Upland Woodland and Shrub - Coastal Shrublands (CT), Beach and Dune Habitats (DE), Upland Forest (MA), Maritime Forests and Shrublands (MD), Coastal Hardwoods (NY), Forest Habitat - Mixed Forest (VA)
Places to Visit this Habitat:
Bluff Point State Park | CT
Cape Cod National Seashore | MA
Assateague Island National Seashore | MD
Mashomack Preserve | NY
Chincoteague National Wildlife Refuge | VA

Associated Species: Appendix lists scientific names

BIRDS: black-and-white warbler, blue-winged warbler, carolina wren, common yellowthroat, eastern towhee, gray catbird, ovenbird, prairie warbler, white-eyed vireo (south), yellow-breasted chat (south)

MAMMALS: eastern mole, gray squirrel, long-tailed weasel, meadow vole, white-footed mice

HERPTILES: eastern hognose snake

PLANTS: Northern Blazingstar (Liatris scariosa var. novae-angliae), Lion's-foot (Prenanthes serpentaria), Sundial Lupine (Lupinus perennis), Butterfly Milkweed (Asclepias tuberosa), Eggleaf Rosette Grass (Dichanthelium ovale var. ovale), Eastern Silvery Aster (Symphyotrichum concolor), Small White Leek (Allium tricoccum), Coastal Plain Blue-eyed-grass (Sisyrinchium fuscatum), Yellow Thistle (Cirsium horridulum var. horridulum)

Species of Concern (G1-G4): Appendix lists scientific names

HERPTILES: copperhead, eastern box turtle

INSECTS: coastal heathland cutworm, Delaware skipper, graphic moth, little glassywing, southern broken dash, the pink streak

PLANTS: Bushy Rockrose (Helianthemum dumosum), Broom Crowberry (Corema conradii), Nantucket Shadbush (Amelanchier nantucketensis), Slender Blue Flag (Iris prismatica)

The average patch size for this habitat is 4 acres and the largest single patch is 38 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (23,614 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 472 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
Acidic Cliff and Talus

Macrogroup: Cliff and Talus

Description:
A sparsely vegetated cliff or talus slope formed on granitic, sandstone, or other acidic bedrock. The lack of soil, highly acidic bedrock, and constant erosion, limits the vegetation to mosses, lichens, and herbs growing on bare rock or crevices, and to sparse trees and shrubs rooted in deeper soil pockets. Lichen cover may be extensive. In the Central Appalachians, red-cedar trees, poison ivy vines and rock polypody ferns are characteristic. Birch or spruce replaces red cedar in the north, where a shrubland of heaths and reindeer lichen may develop where cold air accumulates at the sheltered bottom of slopes. Areas of concentrated seepage are sometimes present. In the Cumberland region, a mosaic of cavelike “rockhouses” and associated sandstone box canyons are typical.

Ecological Setting and Natural Processes:
Landforms in this system are associated with steeper mountains and hills, river bluffs, and gorges. In some cases this system may take the form of upper-slope boulderfields without adjacent cliffs, where talus forms from freeze/thaw action on the bedrock. This system is prone to harsh climatic conditions; frequent disturbances include drought stress and wind and storm damage. Mass movement of rocks can also reset the ecological clock.

Similar Habitat Types:
Cliff and talus systems have also been modeled for those steep landforms on other (calcareous and circumneutral) lithologies.

Crosswalk to State Name Examples:
Acidic Cliffs/Talus (CT), Acidic Rock Cliff Community (MA), Acidic Cliff And Bluff (MD), Acidic Cliff - Gorge/Spruce Talus Woodland (ME), Boreal/Temperate Acidic Cliff (NH), Silicaceous Rock Outcrop Community (NJ), Cliff Community/Acidic Talus Woodland (NY), Birch (Black-Gum) Rocky Slope Woodland (PA), Central Appalachian / Piedmont Acidic Cliff (VA), Boreal/Temperate Acidic Cliff (VT), Rock Outcrops/Cliffs/Talus (WV)

State Distribution: CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV

Total Habitat Acreage: 561,802
Percent Conserved: 48.2%

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Crosswalk to State Wildlife Action Plans:
Unique and Man-Made - Traprock Ridges (CT), Rocky Cliffs, Ridgetops, Talus Slopes, and Other Similar Habitats (MA), Rock Outcrops and Cliffs (MD), Cliff Face and Rocky Outcrops (ME), Cliffs (NH), Cliff and Talus (NY), Rock Habitats (PA), Barren Habitat - Balds (VA), Cliffs and Talus Slopes - Boreal Acidic Cliff (VT), Cliffs and Talus Slopes - Open Talus (VT), Cliffs and Talus Slopes - Temperate Acidic Cliff (VT), Rock Outcrops/Cliffs/Talus (WV)
Places to Visit this Habitat:
Baxter State Park | ME
White Mountain National Forest | NH
Slide Mountain | NY
Elk State Forest | PA
Monongahela National Forest | WV

Associated Species:  *Appendix lists scientific names*

**BIRDS:** golden eagle, common raven, turkey vulture

**MAMMALS:** bobcat, eastern pipistrelle, porcupine

**HERPTILES:** broad-headed skink, eastern wormsnake, fence lizard, five-lined skink

**PLANTS:** boreal stitchwort (*minuartia rubella*), Carolina leaf-flower (*phyllanthus caroliniensis*), common butterwort (*pinguicula vulgaris*), fragrant cliff woodfern (*dryopteris fragrans*), Goldie’s woodfern (*dryopteris goldiana*), hoary draba (*draba cana*), Robbins’ milkvetch (*astragalus robbinsii var. minor*), rock sandwort (*minuartia stricta*), small-flower bittercress (*cardamine parviflora*), smooth yellow false foxglove (*aureolaria flava*), summer grape (*vitis aestivalis var. bicolor*), white mountain saxifrage (*saxifraga paniculata*),

**BIRDS:** peregrine falcon

**MAMMALS:** allegheny woodrat, rock vole

**HERPTILES:** northern copperhead, timber rattlesnake

**PLANTS:** green spleenwort (*Asplenium trichomanes-ramosum*), Alabama lipfern (*Cheilanthes alabamensis*), silverling (*Paronychia argyrocoma*)

**Species of Concern (G1-G4):  *Appendix lists scientific names***

**BIRDS:**

**MAMMALS:**

**HERPTILES:**

**PLANTS:**

Acidic Cliff and Talus

The average patch size for this habitat is 7 acres and the largest single patch is 2,038 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (10,430 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 209 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

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http://nature.ly/HabitatGuide
**Atlantic Coastal Plain Beach and Dune**

**Macrogoup: Coastal Grassland & Shrubland**

**Description:**
A sparsely vegetated beach, dune, or barrier island on unconsolidated sand and shell sediments on the Atlantic coast. A range of plant communities may be present, but trees and shrubs are restricted to sheltered areas. Constantly shifted by winds and floods, the dynamic disturbance regimes largely limit vegetation to pioneering, salt-tolerant, succulent annuals. Sea-rocket and Russian thistle are usually most numerous and characteristic. Areas that are permanently or semipermanently flooded with freshwater support pond or marsh-like vegetation, and are affected by salt spray or overwash during periodic storm events. Both upland and non-flooded wetland vegetation are included in this system and it is broadly defined in terms of floristic composition.

**Ecological Setting and Natural Processes:**
Extensive, exposed, sandy coastlines range from North Carolina to southern Maine (rocky coasts replace these). Dominant ecological processes include frequent salt spray, saltwater overwash, and sand movement. Although sand beaches extend landward above mean high tide, they are constantly impacted by waves and may be flooded by high spring tides and storm surges. Constant salt spray and rainwater maintain moist conditions.

**Similar Habitat Types:**
Difficulties modeling 2 maritime systems separately (Northern Atlantic Coastal Plain Dune and Swale, and Northern Atlantic Coastal Plain Sandy Beach) resulted in combining them into this one for mapping purposes.

**Crosswalk to State Name Examples:**
Coastal Sand Dunes/Intertidal Beaches And Shores (CT), Beach And Dune Habitats (DE), Maritime Dune Community (MA), Maritime Dune Grassland/Woodland (MD), Dune Grassland (ME), Coastal Interdunal Marsh/Swale (NH), Coastal Dune Shrubland/Grass Community (NJ), Maritime Dunes (NY), Maritime Herbaceous Dune (RI), North Atlantic Mixed Dune Grassland (VA)

**State Distribution:** CT, DE, MA, MD, ME, NH, NJ, NY, RI, VA

**Total Habitat Acreage:** 96,690

**Percent Conserved:** 37.5%

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**Crosswalk to State Wildlife Action Plans:**
Upland Herbaceous - Coastal Dune (CT), Tidal Wetland - Intertidal Beaches and Shores (CT), Beach and Dune Habitats (DE), Interdunal Wetlands (DE), Coastal Dunes, Beaches, and Small Islands - Maritime Beach Strand/Dune Communities (MA), Coastal Beaches, Dunes, and Mudflats (MD), Unconsolidated Shore (Beaches and Mudflats) (ME), Coastal Sand Dunes (NH), Beaches (NJ), Dunes (NJ), Maritime Dunes (NY), Maritime Dunes (NY), Sparsely Vegetated Habitats - Beach Grass Dune (RI), Intertidal - Estuarine Beaches Unspecified (RI), Barren Habitat - Beach (VA)
**Places to Visit this Habitat:**

Cape Henlopen State Park | DE  
Cape Cod National Seashore | MA  
Assateague Island National Seashore | MD  
Fire Island National Seashore | NY  
Chincoteague National Wildlife Refuge | VA

**Associated Species:** [Appendix lists scientific names]

**BIRDS:** american oystercatcher, arctic tern, barn owl, black skimmer, caspian tern, chick-will's-widow, common tern, gadwall, horned lark, ipswich sparrow, laughing gull, least tern, northern harrier, red knot, roseate tern, roseate tern, royal tern, vesper sparrow, willet

**MAMMALS:** eastern mole, long-tailed weasels, red fox

**HERPTILES:** american toad, eastern hognose snake, fowler's toad

**PLANTS:** American beachgrass (Ammophila breviligulata), coast-blist goosefoot (Chenopodium rubrum), oysterleaf (Mertensia maritima), saltmarsh aster (Symphyotrichum subulatum), sea lyme-grass (Leymus mollis ssp mollis), seabeach amaranth (Amaranthus pumilus), seabeach knotweed (Polygonum glaucom), seabeach needlegrass (Aristida tuberculosa), slender sea purslane (Sesuvium maritimum)

**Species of Concern (G1-G4):** [Appendix lists scientific names]

**BIRDS:** least tern, piping plover, red knot, roseate tern

**HERPTILES:** diamondback terrapin, eastern spadefoot

**INSECTS:** beach tiger beetle (Cicindela hirticollis), bethany beach firefly (Photuris bethaniensis)

**PLANTS:** beach plum (Prunus maritima), sand-heather (Hudsonia tomentosa)

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This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
**North Atlantic Coastal Plain Basin Swamp and Wet Hardwood Forest**

**Macrogoup: Coastal Plain Swamp**

**Description:**
A basin hardwood swamp of seasonally flooded coastal plain habitats from Long Island south to Virginia. Characteristic tree species include red maple, sweet gum, black gum, willow oak, and green ash. Loblolly pine is not uncommon south of Delaware Bay. Although supporting some seepage indicators, it is also affected by overland flow.

**Ecological Setting and Natural Processes:**
These swamps of poorly drained, relatively shallow depressions are often groundwater-influenced, but are also often configured in large patches along streams and rivers, especially in headwater settings. They occur on mineral soils overlain by a variable organic but non-peaty layer.

**Similar Habitat Types:**
Basins that support Northern Atlantic Coastal Plain Basin Peat Swamps are usually more hydrologically isolated than these often active river area-connected swamps, which also lack Atlantic white cedar.

**Crosswalk to State Name Examples:**
Northeastern Pin Oak-Swamp White Oak Forest (DE), Coastal Plain - Piedmont Acidic Seepage Swamp (MD), Cape May Lowland Swamp (NJ), Red Maple-Sweetgum Swamp (NY), Wetlands - Forested Wetlands And Bogs (PA), Outer Piedmont / Inner Coastal Plain Upland Depression Swamp (VA)

**State Distribution:** DC, DE, MD, NJ, NY, PA, RI, VA

**Total Habitat Acreage:** 974,772

**Percent Conserved:** 18.9%

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**Crosswalk to State Wildlife Action Plans:**
Coastal Plain Forested Floodplains and Riparian Swamps (DE), Forested Seepage Wetlands (MD), Forested wetlands - hardwood swamps (NJ), Coastal Red Maple-Black Gum Swamp (NY), Wetlands - Forested Wetlands and Bogs (PA), Wetland Habitat - Forested (VA)
Places to Visit this Habitat:
Bombay Hook National Wildlife Refuge | DE
Pocomoke River State Forest | MD
Wharton State Forest | NJ
Chincoteague National Wildlife Refuge | VA
Presquile National Wildlife Refuge | VA

Associated Species: Appendix lists scientific names
BIRDS: american black duck, hooded warbler, prothonotary warbler, red-shouldered hawk, wood duck
MAMMALS: river otter, mink
HERPTILES: barking treefrog, carpenter frog, cope’s gray treefrog, new jersey chorus frog, southern leopard frog, tiger salamander
INSECTS: bar-winged skimmer, golden-winged skimmer, mantled baskettail, southern sprite, sparkling jewelwing, sphagnum sprite
PLANTS: american lotus (Nelumbo lutea), awned meadowbeauty (Rhexia aristosa), awned mountainmint (Pycnanthemum setosum), big-head rush (Juncus megacephalus), blue maiden-cane (Amphicarpum purshii), canby's lobelia (Lobelia canbyi),new jersey rush (Juncus caesariensis), nuttall's lobelia (Lobelia nuttallii), pale false foxglove (Agalinis skinneriana), red turtlehead (Chelone obliqua)

Species of Concern (G1-G4): Appendix lists scientific names
HERPTILES: Mabee’s salamander
INSECTS: Bethany beach firefly, A slug moth, banner clubtail, checkered white, eastern pinebarrens tiger beetle, elfin skimmer, Franck’s sphinx, golden aster flower moth, great purple hairstreak, Hessel's hairstreak, Laura's clubtail, Martha's pennant, pale bluet, sable clubtail, selys' sundragon, treetop emerald, violet dart, Virginia piedmont water boatman
PLANTS: cypress swamp sedge (Carex joorii), rose coreopsis (Coreopsis rosea)

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
North Atlantic Coastal Plain Tidal Swamp

Macrogroup: Coastal Plain Swamp

Description:
A tidally flooded hardwood forest and shrubland in lower river floodplains and estuaries of the North Atlantic Coastal Plain. Deciduous hardwood species predominate, especially ash (green or pumpkin), black gum, or water tupelo, along with red maple, American elm, and black willow. Alder and silky dogwood are common shrubs. Lianas and vines are common: poison ivy, greenbrier, and Virginia creeper. Species richness in the herbaceous layer is exceptionally high due to microtopographic features. Regularly flooded hollows primarily support flood-tolerant swamp species such as orange jewelweed, arrow arum, and various smartweeds. Water hemlock, and smallspike false nettle are typical of elevated hummocks.

Ecological Setting and Natural Processes:
Occurs as small patches in the uppermost portions of tidal rivers that have sufficiently fresh water and short enough flooding to support trees. Stands form distinct pockets and fringes on poorly-drained, slightly acidic tidal muck with high silt and clay content. Most common in the Chesapeake Bay region, but reaching as far up as the lower Hudson River.

Similar Habitat Types:
In Chesapeake and Delaware Bays, found usually at the upper limit of brackish or fresh and oligohaline tidal marshes. Southern Atlantic Coastal Plain Tidal Wooded Swamp is similar, with a different (but overlapping) suite of species due to biogeographic differences.

Crosswalk to State Name Examples:
Wind-Tidal Cypress-Gum Swamp (DE), Tidal Hardwood Swamp (MD), Freshwater Tidal Swamp (NJ), Freshwater Tidal Swamp (NY), Northern Coastal Plain Tidal Bald Cypress Forest (VA)
Places to Visit this Habitat:
Cape Henlopen State Park | DE
Blackwater Wildlife Refuge | MD
Cape May National Wildlife Refuge | NJ
Edwin B. Forsythe National Wildlife Refuge | NJ
Chincoteague National Wildlife Refuge | VA

Associated Species: *Appendix lists scientific names*
BIRDS: barred owl, chuck-will's widow, prothonotary warbler, red-shouldered hawk, white-eyed vireo, willow flycatcher, wood duck

HERPTILES: eastern narrow-mouthed toad

INSECTS: bar-winged skimmer, blue-faced meadowhawk, brown spiketail, fine-lined emerald, golden-winged skimmer, sparkling jewelwing

PLANTS: bayonet rush (Juncus militaris), maidencane (Panicum hemitomon), seaside alder (Alnus maritima), southern bladderwort (Utricularia juncea), catchfly-grass (Leersia lenticularis), clustered beakrush (Rhynchospora glomerata), cuckoo-flower (Cardamine pratensis), erect coinleaf (Centella erecta), gibbous panic-grass (Sacciolepis striata), red bay (Persea palustris), showy tick-trefoil (Desmodium canadense), star duckweed (Lemna trisulca)

Species of Concern (G1-G4): *Appendix lists scientific names*
INSECTS: Bethany beach firefly, blackwater bluet, Lemmer's noctuid moth, palamedes swallowtail

PLANTS: American frog's-bit (Limnobium spongia), american waterwort (Elatine americana), awned mountainmint (Pycnanthemum setosum), giant peatmoss (Sphagnum torreyanum), marsh rattlesnake master (Eryngium aquaticum), Nuttall's lobelia (Lobelia nuttallii), pale false foxglove (Agalinis skinneriana), reniform sedge (Carex reniformis), shoreline sedge (Carex hyalinolepis), sweet pinesap (Monotropsis odorata), tropical water-hyssop (Bacopa innominata), watermeal (Wolffiap papulifera)

© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)
Macrogoup: Coastal Plain Swamp

Description:
A forested swamp of peat-accumulating basins in the coastal plain from southern Maine down to the Delmarva Peninsula. Atlantic white cedar is characteristic and often dominant; red maple may also be an important species, especially after logging. Black spruce is occasional in examples in the northern part of the region. Herbaceous species are typically more abundant than dwarf shrubs in the understory, which includes alder, great laurel, high-bush blueberry, winterberry, swamp azalea, and sphagnum moss. The saturated hydrology is evidenced by sphagnum-based hummock-and-hollow microtopography.

Ecological Setting and Natural Processes:
Basins are often configured along streams and rivers of the coastal plain. Relatively shallow water-saturated peat overlies mineral sediments in these swamps. Standing water generally occurs for half of the growing season or longer. The acidic soils are poor in nitrogen and phosphorus and often have a high iron content.

Similar Habitat Types:
May be similar compositionally to other acidic swamps in shallow basins in the region (like North-Central Appalachian Acidic Swamp), except for the prominence of Atlantic white cedar. The peat layer is deeper, and the canopy trees shorter and less dense, in the more northerly Boreal-Laurentian-Acadian Acidic Basin Fen.

Crosswalk to State Name Examples:
Acidic Atlantic White Cedar Basin Swamp (CT), Coastal Plain Atlantic White Cedar-Red Maple Swamp (DE), Coastal Atlantic White Cedar Swamp (MA), Atlantic White Cedar Swamp (ME), Atlantic white cedar-yellow birch-pepperbush swamp (NH), Forested Wetlands - White Cedar Swamps (NJ), Coastal Plain Atlantic White Cedar Swamp (NY), Atlantic White Cedar Swamp (RI)

Crosswalk to State Wildlife Action Plans:
Forested Inland Wetland - Atlantic White Cedar Swamps (CT), Atlantic White Cedar Non-tidal Wetlands (DE), Forested Swamps (MA), Forested wetlands - white cedar swamps (NJ), Atlantic White Cedar Swamp (NY), Forested Wetlands - Forested Coniferous Wetland White Cedar (RI)
Places to Visit this Habitat:
- Pachaug State Forest | CT
- James Branch Nature Preserve | DE
- Freetown-Fall River State Forest | MA
- Brendan T. Byrne State Forest | NJ
- Wharton State Forest | NJ

Associated Species: Appendix lists scientific names

**BIRDS:**
- northern waterthrush
- veery
- wood duck

**INSECTS:**
- ebony boghaunter
- elfin skimmer
- great purple hairstreak
- owlet moth
- pennsylvania firefly
- spatterdock darner
- sphagnum sprite

**PLANTS:**
- bayonet rush (Juncus militaris)
- bushy bluestem (Andropogon glomeratus)
- coast sedge (Carex exilis)
- fibrous bladderwort (Utricularia fibrosa)
- heartleaf twayblade (Listera cordata)
- seaside alder (Alnus maritima)
- smooth winterberry holly (Ilex laevigata)
- southern bladderwort (Utricularia juncea)
- ten-angle pipewort (Eriocaulon decangulare)
- tickseed sunflower (Bidens coronata)
- white beakrush (Rhynchospora alba)

**HERPTILES:**
- blue-spotted salamander
- carpenter frog
- four-toed salamander
- spotted turtle

**INSECTS:**
- coastal swamp metarranthis moth
- Hessel's hairstreak
- pitcher plant borer moth
- plant hopper
- spatterdock darner
- sphagnum sprite
- a firefly (photuris tremulans)
- a moth (Exyra fax)

**PLANTS:**
- swamp-pink (Arethusa bulbosa)
- yellow nodding ladies'-tresses (Spiranthes ochroleuca)

Species of Concern (G1-G4): Appendix lists scientific names

**HERPTILES:**
- blue-spotted salamander
- carpenter frog
- four-toed salamander
- spotted turtle

**INSECTS:**
- coastal swamp metarranthis moth
- Hessel's hairstreak
- pitcher plant borer moth
- plant hopper
- spatterdock darner
- sphagnum sprite
- a firefly (photuris tremulans)
- a moth (Exyra fax)

**PLANTS:**
- swamp-pink (Arethusa bulbosa)
- yellow nodding ladies'-tresses (Spiranthes ochroleuca)

North Atlantic Coastal Plain Basin Peat Swamp

http://nature.ly/HabitatGuide
**Macrogoup: Emergent Marsh**

**Description:**
A freshwater emergent or submergent marsh dominated by herbaceous vegetation and associated with isolated basins, edges of streamways, and seepage slopes. Typical plants include cattails, marsh fern, touch-me-not, pondweeds, water lilies, pickerelweed, and tall rushes, species that tolerate sustained inundations and do not persist through the winter. Scattered shrubs are often present and usually total less than 25% cover. Trees are generally absent and, if present, are scattered. Zonation within a marsh is associated with water depth and length of inundation. This is a very broadly defined system, with many variants distributed widely in the Northeast.

**Ecological Setting and Natural Processes:**
Freshwater marshes are associated with lakes, ponds, headwater basins and slow-moving streams, impoundments, ditches, or any low lying basin that collects water. Such basins are often flat-bottomed and shallow, or marsh vegetation forms a ring around the edge of deeper basins. They typically occur on muck over mineral soil, and as part of a larger wetland complex that may include forested or shrubby swamps, peatlands, and/or open water.

**Similar Habitat Types:**
Very often occurs with Laurentian-Acadian Wet Meadow-Shrub Swamp, acidic or circumneutral forested swamps, peatlands, and floodplain vegetation in large, diverse complexes.

**Crosswalk to State Name Examples:**
Herbaceous Inland Wetland - Freshwater Marshes (CT), Bulrush Deepwater Marsh (DE), Deep Emergent Marsh (MA), Cattail Marsh (ME), Emergent Marsh (NH), Robust Emergent Marsh (NJ), Deep Emergent Marsh/Backwater Slough (NY), Cattail Marsh (PA), Emergent Marsh (RI), American Lotus Aquatic Bed (VA), Cattail Marsh (VT), Emergent Marsh (MD)

**State Distribution:**
CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV

**Total Habitat Acreage:** 906,723
**Percent Conserved:** 21.6%

<table>
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<th>State Acreage</th>
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<th>GAP 3 (acres)</th>
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**Crosswalk to State Wildlife Action Plans:**
Herbaceous Inland Wetland - Freshwater Marshes (CT), Marshes and Wet Meadows - Deep Emergent Marsh (MA), Emergent Marsh and Wet Meadows (ME), Marsh and Shrub Wetlands (NH), Freshwater Marsh (NY), Wetlands - Emergent Freshwater (PA), Emergent Wetlands - Freshwater Wetland Unspecified (RI), Marshes and Sedge Meadows - Cattail Marsh (VT)
Places to Visit this Habitat:
Moosehorn National Wildlife Refuge | ME
Wharton State Forest | NJ
Five Ponds Wilderness Area | NY
Green Mountain National Forest | VT
Canaan Valley National Wildlife Refuge | WV

Associated Species:  

**BIRDS:**  
- american bittern, american black duck, blue-winged teal, common gallinule, great blue heron, least bittern, marsh wren, pied-billed grebe, sora, swamp sparrow, virginia rail, wood duck

**MAMMALS:**  
- eastern cottontail, meadow jumping mouse, mink, moose, muskrat, raccoon, southern bog lemming, virginia possum, water shrew

**HERPTILES:**  
- blue-spotted salamander, northern leopard frog, northern spring peeper, red-spotted newt, spotted turtle

**INSECTS:**  
- bar-winged Skimmer, ringed emerald, spatterdock darner

**PLANTS:**  
- autumnal water-starwort (Callitriche hermaphroditica), floating pennywort (Hydrocotyle ranunculoidea), hardstem bulrush (Schoenoplectus acutus), marsh felwort (Lomatogonium rotatum), marsh hedge-nettle (Stachys pilosa), whorled pennywort (Hydrocotyle verticillata)

**Species of Concern (G1-G4):**  

**BIRDS:**  
- black tern, king rail, northern harrier

**MAMMALS:**  
- water shrew

**HERPTILES:**  
- wood turtle, blanding’s turtle

**INSECTS:**  
- bogbean buckmoth, broadtailed shadowdragon, eyed brown, granitosa fern moth, little bluet, Martha’s pennant, scarlet bluet, spatterdock darner, two-spotted skipper

**PLANTS:**  
- blue maiden-cane (Amphicarpum purshii), fly-poison (Amianthium muscitoxicum), northeastern bladderwort (Utricularia resupinata), ohio goldenrod (Oligoneuron ohicense), Robbins' spikerush (Eleocharis robbinsii), sago pondweed (Potamogeton pectinatus), Sartwell's sedge (Carex sartwellii), slender arrowhead (Sagittaria teres), Walter's sedge (Carex striata), watermeal (Wolffia papulifera)

The average patch size for this habitat is 3 acres and the largest single patch is 1,258 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (39,208 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 784 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
**Macrogroup:** Glade, Barren and Savanna

**Description:**
An open woodland of distinct vegetation associated with serpentinite, soapstone, dunite, and other ultramafic rock substrates in Maryland, southern Pennsylvania, and Virginia. The open, stunted canopy, often less than 5 meters high, is composed of pitch pine, Virginia pine, white oak, post oak, and/or blackjack oak. Fire suppression probably leads to stronger dominance by pines. Extreme edaphic conditions lead to xerophytic (extremely dry) growing environments, resulting in relatively open structure and a ground cover dominated by prairie grasses and a variety of forbs. Endemics such as serpentine aster and roundleaf fameflower are diagnostic.

**Ecological Setting and Natural Processes:**
The unusual and extreme soil chemistry determines the distinctive flora of the type, but fire frequency determines the physiognomy of particular examples over time, and many have succeeded to forest cover as a result of fire suppression. This, along with a history of intense habitat fragmentation and quarrying, have left most remnant patches small and in degraded condition.

**Similar Habitat Types:**
Similar systems are ones that are distinct because of their association with particular bedrock lithologies and atypical moisture regimes: Appalachian Shale Barrens, Southern Ridge and Valley Calcareous Glade and Woodland, and Great Lakes Alvar, among others. Generally set in a landscape of dry to dry-mesic oak or oak-pine forest patches.

**Crosswalk to State Name Examples:**
Serpentine Barren (MD), Serpentine Virginia Pine - Oak Forest (PA), Southern Blue Ridge Ultramafic Woodland (VA)

**State Distribution:**
DE, MD, PA, VA

**Total Habitat Acreage:** 11,954

**Percent Conserved:** 19.7%

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<td>10</td>
<td>0</td>
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<td>6</td>
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**Crosswalk to State Wildlife Action Plans:**
Barrens and Dry Glades (MD), Grassland Habitats - Naturally occurring barrens (PA), Forest Habitat - Mixed Forest (VA)
Places to Visit this Habitat:
Patapsco Valley State Park | MD
Soldiers Delight Natural Environment Area | MD
Goat Hill Serpentine Barrens | PA
Ridley Creek State Park | PA
Valley Forge State Forest | PA

Associated Species: 
BIRDS: blue-winged warbler, eastern whip-poor-will, northern bobwhite, prairie warbler, white-eyed vireo, yellow-breasted chat
INSECTS: black-waved flannel moth, juniper hairstreak, Packard’s lichen moth, southern variable dart moth
PLANTS: bluehearts (Buchnera americana), maryland golden-aster (Chrysopsis mariana), plains frostweed (Helianthemum bicknellii), marsh blazingstar (Liatris spicata), grooved yellow flax (Linum sulcatum), staggerbush (Lyonia mariana), small’s ragwort (Packera anonyma), pink milkwort (Polygala incarnata), sand blackberry (Rubus cuneifolius), pink wild bean (Strophostyles umbellata), bushy aster (Symphyotrichum dumosum), porcupine sedge (Carex hystericina), tufted hairgrass (Deschampsia cespitosa)

Species of Concern (G1-G4):
INSECTS: Broad-lined catopyrrha, Eastern sedge barrens leafhopper, Falcate orangetip, Joyful holomelina moth, Mottled duskywing, Pure lichen moth, Small tolype
PLANTS: broadleaf beardgrass (Gymnopogon ambiguus), dwarf prairie willow (Salix humilis var. tristis), prostrate blue violet (Viola walteri), richardson’s sedge (Carex richardsonii), roundleaf fameflower (Talinum teretifolium), serpentine aster (Aster depauperatus), striped gentian (Gentiana villosa)

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http://nature.ly/HabitatGuide
**North-Central Appalachian Large River Floodplain**

**Description:**
A complex of wetland and upland vegetation on floodplains of medium to large rivers in Atlantic drainages. They are typical of larger rivers but they can occur on smaller rivers where the stream gradient is low and a broad floodplain develops. The vegetation complex includes floodplain forests in which silver maple, sycamore, box elder, and cottonwood are characteristic, as well as herbaceous sloughs, shrub wetlands, ice scours, riverside prairies, and woodlands. Most areas are underwater each spring; microtopography determining how long the various habitats are inundated. Depositional and erosional features may both be present depending on the particular floodplain.

**Ecological Setting and Natural Processes:**
Floodplains form on land adjacent to a stream or river that experiences periodic flooding when the river overflows its banks. A variety of microtopographic features form as a result of annual river activity. This broadly-defined system includes vegetation on deep alluvial deposits, on depositional levees and bars, in backwater sloughs, and (rarely) on bedrock where rivers cut through resistant geology.

**Similar Habitat Types:**
Shares dynamic processes with all other large river floodplain systems. Most similar to the silver maple-dominated Northern Appalachian-Acadian Large River type. Human impacts on this and other floodplain habitats regionally have made large, high quality occurrences rare.

**Crosswalk to State Name Examples:**
Floodplain Forest (CT), Silver Maple-Elm Floodplain Forest (DE), Major-River Floodplain Forest (MA), Montane - Piedmont Bottomland Forest (MD), Silver maple-wood nettle-ostich fern floodplain forest (NH), Floodplain Forest (NJ), Floodplain Forest (NY), Silver Maple Floodplain Forest (PA), Silver Maple/Sycamore Floodplain Forest (RI), Piedmont / Central Appalachian Floodplain Swamp (VA), Silver Maple-Ostrich Fern Riverine Floodplain Forest (VT), Floodplain Forests And Swamps (WV)

State Distribution: CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV

Total Habitat Acreage: 254,862

Percent Conserved: 19.8%
Places to Visit this Habitat:
Rachel Carson National Wildlife Refuge | ME
Iroquois National Wildlife Refuge | NY
Allegheny National Forest Non-Reserved | PA
George Washington and Jefferson National Forest | VA
Bald Mountain Natural Area | VT

Associated Species: Appendix lists scientific names
BIRDS: alder flycatcher, bald eagle, cerulean warbler, northern waterthrush, red-shouldered hawk, veery, warbling vireo, willow flycatcher, wood duck, yellow warbler, yellow-throated vireo

MAMMALS: big brown bat, eastern pipistrelle, little brown myotis, long-tailed weasel, mink, moose, northern long-eared bat, northern short-tailed shrew, raccoon, red bat, river otter, silver-haired bat, virginia possum

HERPTILES: copperhead, leopard frog, northern water snake, marbled salamander, mole salamander, pickerel frog

INSECTS: brook snaketail, lake emerald, riffle snaketail, riverine clubtail

PLANTS: basil beebalm (Monarda clinopodia), green dragon (Arisaema dracontium), canada moonseed (Menispermum canadense), nodding trillium (Trillium flexipes), smooth bur-marigold (Bidens laevis)

Species of Concern (G1-G4): Appendix lists scientific names
BIRDS: american bittern, prothonotary warbler

HERPTILES: blandings turtle, jefferson salamander, wood turtle

INSECTS: cobblestone tiger beetle, Newman’s brocade, A ground beetle, little bluet, Maine snaketail, riverine clubtail

PLANTS: american lotus (Nelumbo lutea), coast violet (Viola brittoniana), eastern prairie white-fringed orchid (Platanthera leucophaea), heartleaf plantain (Plantago cordata), limestone wild petunia (Ruellia strepens), long’s bulrush (Scirpus longii), maryland bur-marigold (Bidens bidentoides), navel-shape corn-salad (Valerianella umbilicata), stalked bulrush (Scirpus pedicellatus), tidal spikerush (Eleocharis aestuans)

Predicted Habitat Loss to Development
This chart shows the predicted loss of habitat over the next five decades (15,637 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 313 acres per year.

Habitat Connectedness Index
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

North-Central Appalachian Large River Floodplain
http://nature.ly/HabitatGuide
Macrogoup: Northern Hardwood & Conifer

Description:
A hardwood forest of the coastal plain with a significant component of mesophytic (moist but non-wetland) species, such as American beech or southern sugar maple. Upland and bottomland oaks at the mid range of moisture tolerance are usually also present, particularly white oak, but sometimes also southern red oak, cherrybark oak, or Shumard oak. Loblolly pine is sometimes present, but it is unclear if it is a natural component or has entered only as a result of past cutting. Understories are usually well-developed. Shrub and herb layers may be sparse or moderately dense. Ranging south from New Jersey to Georgia, these mostly large patch coastal plain forests occupy a variety of moist sites that are naturally sheltered from frequent fire.

Ecological Setting and Natural Processes:
Found on lower slopes, along streams and rivers, on mesic flats between drier pine-dominated uplands and floodplains, and on local raised areas within bottomland terraces or wet flats. Soils are variable in texture and pH, excluding only the coarsest sands. Fire is not an important disturbance in this system.

Similar Habitat Types:
Often adjacent to North Atlantic Coastal Plain Hardwood Forests (in lower landscape position). Differences from mesic forests of the Piedmont are sometimes fairly subtle; substantial floristic differences, however, can exist between examples of this system on acidic and basic substrates.

Crosswalk to State Name Examples:
Coastal Plain Oak - Beech Forest (MD), Southern Coastal Plain Mesic Mixed Hardwood Forest (VA)

Crosswalk to State Wildlife Action Plans:
Hardwood Forest - Mixed oak-beech forests (DC), Coastal Plain Upland Forests - Tuliptree Rich Wood (Coastal Plain variant) (DE), Mesic Deciduous Forests (MD), Forest Habitat - Deciduous Forest (VA)
Places to Visit this Habitat:
- Blackbird State Forest | DE
- Redden State Forest | DE
- Patuxent Wildlife Research Refuge | MD
- Belleplain State Forest | NJ
- Caledon State Park | VA

Associated Species: *Appendix lists scientific names*


Species of Concern (G1-G4): *Appendix lists scientific names*

**INSECTS:** seth forest water scavenger beetle (*Hydrochus spangleri*)

**PLANTS:** Canby's bulrush (*Schoenoplectus etuberculatus*), Canby's lobelia (*Lobelia canbyi*), early paspalum (*Paspalum praecox*), spiked hoary-pea (*Tephrosia spicata*), Virginia heartleaf (*Hexastylis virginica*)

---

**Habitat Patch Distribution**

The average patch size for this habitat is 4 acres and the largest single patch is 1,277 acres. This chart shows the proportion of the habitat in each patch-size class.

**Age Class Distribution**

This chart shows the average age of trees associated with this habitat based on forest inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

**Predicted Habitat Loss to Development**

This chart shows the predicted loss of habitat over the next five decades (120,282 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 2,406 acres per year.

**Habitat Connectedness Index**

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
Description:

A hardwood forest of sugar maple, American beech, and yellow birch, sometimes mixed with, and sometimes dominated by, eastern hemlock. Northern red oak and white oak occur commonly, but do not dominate. Black cherry, black birch, white pine, and tuliptree are typical on nutrient rich or historically disturbed sites. This forest system is broadly defined, and is the only one to occur in at least parts of all 13 states of the Northeast and Mid-Atlantic. It is the dominant forest type in the central and northern part of its range (Allegheny Mountains northward through central New England), and occurs as smaller patches in more protected locations to the south.

Ecological Setting and Natural Processes:

This habitat type is an ecological generalist in much of its range, occupying low to mid-elevations on a variety of landforms and bedrock types. Drier, typic, and moist/cool variants occur along a gradient from higher, more exposed sites to lower, more protected ones. To the south, the hemlock woolly adelgid and a warming climate may push this system to more closely resemble Southern Appalachian Oak Forests.

Similar Habitat Types:

The hardwood mix in this system has a more Appalachian character than those found in cooler Laurentian-Acadian Northern Hardwood Forests. The L-A Pine-Hemlock-Northern Hardwood Forest is similar to this system, but also favors cooler settings. Northeastern Coastal and Interior Pine-Oak Forest replaces it in lower relief areas on the coastal plain, and is more pine-rich.

Crosswalk to State Wildlife Action Plans:

Upland Forest - Coniferous Forests (CT), Upland Forest (MA), Northern Conifer – Hardwood Forests (MD), Deciduous and Mixed Forest (ME), Hemlock Hardwood Pine Forests (NH), Upland forests - mixed deciduous-coniferous forest (NJ), Mixed Northern Hardwoods (NY), Deciduous/Mixed Forest (upland) (PA), Deciduous Forests - Deciduous Forest Beech-Maple (RI), Forest Habitat - Mixed Forest (VA), Northern Hardwood Forest - Hemlock-Northern Hardwood Forest (VT), Hemlock forests (WV)
Places to Visit this Habitat:
Tunxis State Forest | CT
Savage River State Forest | MD
Alleghany State Park | NY
Allegheny National Forest Non-Reserved | PA
Monongahela National Forest | WV

Associated Species: Appendix lists scientific names
BIRDS: barred owl, blackburnian warbler, black-throated blue warbler, black-throated green warbler, chesnut-sided warbler, eastern wood-pewee, hermit thrush, louisiana waterthrush, ovenbird, ruffed grouse, scarlet tanager, wood thrush

MAMMALS: black bear, fisher, gray fox, northern flying squirrel, porcupine, smoky shrew, southern flying squirrel, white-footed mouse, woodland jumping mouse

HERPTILES: northern redbelly snake

PLANTS: broad beech fern (Thelypteris hexagonoptera), flowering dogwood (Cornus florida), four-leaved milkweed (Asclepias quadrifolia), perfoliate bellwort (Uvularia perfoliata), round-leaved tick trefoil (Desmodium rotundifolium), spicebush (Lindera benzoin), squawroot (Conopholis americana), pinedrops (Pterospora andromedea)

Species of Concern (G1-G4): Appendix lists scientific names
BIRDS: brown creeper, canada warbler, northern goshawk

MAMMALS: allegheny woodrat, indiana myotis, southern rock vole, southern water shrew, virginia northern flying squirrel

HERPTILES: cheat mountain salamander, eastern massasauga, green salamander, mountain earth snake, northern spring salamander

INSECTS: early hairstreak butterfly, spicebush swallowtail butterfly, west virginia white

PLANTS: American ginseng (Panax quinquefolius), appalachian blue violet (Viola appalachiensis), black bugbane (Actaea racemosa), Case's ladies'-tresses (Spiranthes casei), hairy beardtongue (Penstemon hirsutus), laurentian bladder fern (Cystopteris laurentiana), mountain bugbane (Actaea podocarpa), small skullcap (Scutellaria parvula)

Appalachian (Hemlock)-Northern Hardwood Forest

Decade

Acreage

2010 2020 2030 2040 2050 2060

Predicted Habitat Loss to Development

Habitat Connectedness Index

Degree of Fragmentation

(0=Highly Fragmented & 100= Highly Connected)

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

The average patch size for this habitat is 19 acres and the largest single patch is 39,064 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (667,316 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 13,346 acres per year.

http://nature.ly/HabitatGuide
Macrogoup: Northern Swamp

Description:
A conifer or mixed conifer-hardwood swamp of poorly drained acidic substrates throughout central New England and the Central Appalachians, encompassing a broad range of basin, seepage, and stream-associated wetland communities. Hemlock is usually present and may be dominant. It is often mixed with deciduous wetland trees such as red maple or black gum. Spruce is rarely present. Basin swamps tend to be more nutrient-poor than seepage swamps; in some settings, the two occur adjacent to each other with the basin swamp vegetation surrounded by seepage swamp vegetation on its upland periphery.

Ecological Setting and Natural Processes:
Occurs at low to mid elevations (generally <2000 feet) in poorly drained depressions that may be in proximity to a stream. The acidic substrate is mineral soil, often with a component of organic muck; if peat is present, it usually forms a thin layer over the mineral soil rather than a true peat substrate.

Similar Habitat Types:
Similar to the Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp system, but with vegetation characteristic of a warmer climate. North-Central Interior and Appalachian Rich Swamps occur in the same region, but in more enriched hydrologic settings. Small patch poor fens may be embedded within larger wetland complexes of this type.

Crosswalk to State Name Examples:
Acidic Red Maple-Ericaceous Basin Swamp (CT), Red Maple/Tussock Sedge Wooded Marsh (DE), Hemlock/Inland Atlantic White Cedar Swamp (MA), Montane - Piedmont Acidic Seepage Swamp (MD), Red Maple - Skunk Cabbage Swamp (NH), Inland Red Maple Swamp (NJ), Red Maple-Hardwood Swamp (NY), Red Maple - Mixed Shrub Palustrine Woodland (PA), Hemlock/Hardwood Swamp (RI), Central Appalachian Low-Elevation Acidic Seepage Swamp (VA), Red Maple-White Pine-Huckleberry Swamp (VT)

Crosswalk to State Wildlife Action Plans:
Forested Inland Wetland - Red/Black Spruce Swamps (CT), Forested Swamps (MA), Upland Depression Swamps (MD), Forested wetlands - hardwood swamps (NJ), Mixed Hardwood Swamp (NY), Wetlands - Forested Wetlands and Bogs (PA), Forested Wetlands - Forested Deciduous Wetland Unspecified (RI), Wetland Habitat - Forested (VA), Softwood Swamps - Hemlock Swamp (VT)
PlACES TO VISIT this HABITAT:
Pachaug State Forest | CT  
Douglas State Forest | MA  
Great Swamp National Wildlife Refuge | NJ  
Stewart State Forest | NY  
Delaware State Forest | PA

ASSOCIATED SPECIES:  *Appendix lists scientific names*

**BIRDS:**  blue-headed vireo, great-crested flycatcher, green heron, green-winged teal, northern waterthrush, veery, wood duck, yellow-bellied flycatcher

**MAMMALS:**  black bear, golden mouse, northern flying squirrel, snowshoe hare

**HERPTILES:**  spotted turtle

**INSECTS:**  arctic skipper, belted whiteface, boreal bluet, common sanddragon, emerald spreadwing, great blue skimmer, harlequin darner

**PLANTS:**  bog rosemary (*Andromeda polifolia*), boreal bog sedge (*Carex magellanica*), bushy cinquefoil (*Potentilla paradoxa*), canada lily (*Lilium canadense*), common labrador tea (*Ledum groenlandicum*), creeping snowberry (*Gaultheria hispidula*), hairy hedge nettle (*Stachys pilosa*), smooth gooseberry (*Ribes hirtellum*), swamp dock (*Rumex verticillatus*), sweet bayberry (*Myrica gale*)

**BIRDS:**  loggerhead shrike, olive-sided flycatcher

**INSECTS:**  Amber-winged spreadwing, attenuated bluet, bog elfin, bog oligia, broad-lined catopyrrha, chain fern corer moth, macrochilo louisiana, northern brocade moth, white corporal

**PLANTS:**  Collins' sedge (*Carex collinsii*), dwarf azalea (*Rhododendron atlanticum*), golden puccoon (*Lithospermum caroliniense*), incurved umbrella sedge (*Cyperus aristatus*), many-fruit false-loosestrife (*Ludwigia polycarpa*), mitchell's sedge (*Carex mitchelliana*), tall beakrush (*Rhynchospora macrostachya*), tall bentgrass (*Agrostis altissima*)

**Species of Concern (G1-G4):**  *Appendix lists scientific names*

**BIRDS:**  loggerhead shrike, olive-sided flycatcher

**INSECTS:**  Amber-winged spreadwing, attenuated bluet, bog elfin, bog oligia, broad-lined catopyrrha, chain fern corer moth, macrochilo louisiana, northern brocade moth, white corporal

**PLANTS:**  Collins' sedge (*Carex collinsii*), dwarf azalea (*Rhododendron atlanticum*), golden puccoon (*Lithospermum caroliniense*), incurved umbrella sedge (*Cyperus aristatus*), many-fruit false-loosestrife (*Ludwigia polycarpa*), mitchell's sedge (*Carex mitchelliana*), tall beakrush (*Rhynchospora macrostachya*), tall bentgrass (*Agrostis altissima*)

**Predicted Habitat Loss to Development**

<table>
<thead>
<tr>
<th>Decade</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1,450,000</td>
</tr>
<tr>
<td>2020</td>
<td>1,400,000</td>
</tr>
<tr>
<td>2030</td>
<td>1,350,000</td>
</tr>
<tr>
<td>2040</td>
<td>1,300,000</td>
</tr>
<tr>
<td>2050</td>
<td>1,250,000</td>
</tr>
<tr>
<td>2060</td>
<td>1,200,000</td>
</tr>
</tbody>
</table>

**This chart shows the predicted loss of habitat over the next five decades (104,239 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 2,085 acres per year.**

**Age Class Distribution**

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Percent of Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 20</td>
<td>10</td>
</tr>
<tr>
<td>20 to 40</td>
<td>30</td>
</tr>
<tr>
<td>40 to 60</td>
<td>40</td>
</tr>
<tr>
<td>60 to 80</td>
<td>10</td>
</tr>
<tr>
<td>80 to 100</td>
<td>5</td>
</tr>
<tr>
<td>100 to 140</td>
<td>1</td>
</tr>
</tbody>
</table>

**This chart shows the average age of trees associated with this habitat based on forest inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.**

**Habitat Connectedness Index**

<table>
<thead>
<tr>
<th>Degree of Fragmentation</th>
<th>Percent of Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 25</td>
<td>80</td>
</tr>
<tr>
<td>25 to 50</td>
<td>60</td>
</tr>
<tr>
<td>50 to 75</td>
<td>40</td>
</tr>
<tr>
<td>75 to 100</td>
<td>20</td>
</tr>
</tbody>
</table>

**This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.**

North-Central Appalachian Acidic Swamp

http://nature.ly/HabitatGuide
Macrogoup: Northern Swamp

Description:
A hardwood or occasionally mixed swamp of alkaline wetlands associated with limestone or other calcareous substrate in the southern portion of the region. Red maple and black ash are the dominant deciduous trees in most examples. Conifers may include larch, but typically not northern white cedar, which is characteristic of more northern wetlands. The canopy can be variable, as there may be shrubby or herbaceous openings within the swamp. A diverse ground cover is made up of some combination of herbs indicative of nutrient-rich conditions, ferns, and bryophytes characteristic of fens.

Ecological Setting and Natural Processes:
This forested wetland occurs at low to mid elevations. They are found in poorly drained depressions or at the margins of stream valley bottoms, where higher pH and/or nutrient levels are associated with a rich flora. The substrate is primarily mineral soil, but there may be some peat development. Basin settings may still be hydrologically connected to nearby streams.

Similar Habitat Types:
Similar to Laurentian-Acadian Alkaline Conifer-Hardwood Swamp, but with vegetation characteristic of a warmer climate. North-Central Appalachian Acidic Swamps include mixed swamps in the same part of the Northeast, but in less enriched settings, with different tree dominance and a less rich flora. Small patch rich fens may be embedded within the larger swamp complex.

Crosswalk to State Name Examples:
Circumneutral Maple/Ash Basin Swamp (CT), Central Appalachian Basic Seepage Swamp (DE), Red Maple-Black Ash Swamp (MA), Montane Basic Seepage Swamp (MD), Red Maple - Black Ash Swamp (NH), Calcareous Seepage Swamp (NJ), Red Maple-Tamarack Peat Swamp (NY), Red Maple - Black Ash Palustrine Forest (PA), Red Maple/Ash Swamp (RI), Central Appalachian Basic Seepage Swamp (VA), Hardwood Swamps - Calcareous Red Maple-Tamarack Swamp (VT), Wetlands - Scrub/Shrub Swamps (PA)

Crosswalk to State Wildlife Action Plans:
Forested Inland Wetland - unspecified (CT), Forested Swamps (MA), Forested Seepage Wetlands (MD), Mixed Hardwood Swamp (NY), Wetlands - Forested Wetlands and Bogs (PA), Wetlands - Scrub/Shrub Swamps (PA), Forested Wetlands - Forested Deciduous Wetland Unspecified (RI), Hardwood Swamps - Calcareous Red Maple-Tamarack Swamp (VT)
Places to Visit this Habitat:
Salmon River State Forest | CT
Willowdale State Forest | MA
Wallkill River National Wildlife Refuge | NJ
Montezuma National Wildlife Refuge | NY
Canaan Valley National Wildlife Refuge | WV

Associated Species:  Appendix lists scientific names
BIRDS:  alder flycatcher, american black duck, blue-winged teal, least flycatcher, northern waterthrush, red-shouldered hawk, swamp sparrow, willow flycatcher, wood duck

MAMMALS:  beaver

HERPTILES:  four-toed salamander, longtail salamander, northern cricket frog, red-eyed slider, southern leopard frog, spotted salamander

INSECTS:  Acadian hairstreak, bog tiger moth, frosted whiteface, Kennedy's emerald

PLANTS:  big shellbark hickory (Carya laciniosa), bitternut hickory (Carya cordiformis), dwarf dogwood (Cornus canadensis), four-flower loosestrife (Lysimachia quadriflora), naked bishop's-cap (Mitella nuda), pumpkin ash (Fraxinus profunda), purple avens (Geum rivale), southern leopard frog (Lithobates saccatus), swamp sparrow, willow flycatcher, wood duck

Species of Concern (G1-G4):  Appendix lists scientific names
INSECTS:  sable clubtail (Gomphus rogersii)

PLANTS:  autumn willow (Salix serissima), Engelmann's spikerush (Eleocharis engelmannii), Hill's pondweed (Potamogeton hillii), many-headed sedge (Carex sychnocephala), prairie straw sedge (Carex suberecta), short-fruit rush (Juncus brachycarpus), spreading globeflower (Trollius laxus), weak stellate sedge (Carex seorsa)

North-Central Interior and Appalachian Rich Swamp

The average patch size for this habitat is 5 acres and the largest single patch is 3,380 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (58,581 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 1,172 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.
Macrogroup: Tidal Marsh

Description:
A complex of tidally influenced marshes from the coastal shore on up the tidal rivers of the Northern Atlantic Coastal Plain. This habitat includes salt marsh, brackish marsh, and freshwater tidal marsh. A salt marsh profile features a low regularly flooded marsh dominated by salt marsh cordgrass; a higher irregularly flooded marsh dominated by saltmeadow cordgrass and saltgrass; low hypersaline pannes characterized by saltwort; and a salt scrub ecotone characterized by marsh elder, groundsel-tree, and switchgrass. Brackish areas support salt marsh cordgrass, giant cordgrass, narrowleaf cattail, and bulrush. Freshwater tidal areas include wild rice marshes, and forbs such as water hemp, and rosemallow.

Ecological Setting and Natural Processes:
The salt/brackish/oligohaline-freshwater gradient tracks the degree to which intertidal flats are removed from the open ocean. Brackish marshes can occur along upper edges of salt marshes and along tidal rivers. Freshwater tidal marshes occur on the upper reaches of large rivers influenced by tidal flooding beyond the reach of the salt wedge. Marshes of lower salinity levels are best developed in Chesapeake and Delaware Bays.

Similar Habitat Types:
These marshes are generally more extensive than those along the coast north of the coastal plain (Acadian Coastal Salt Marsh). They experience lunar tides, as opposed to the irregular wind-driven tides of the Atlantic Coastal Plain Embayed Region Freshwater and Brackish Marshes of southeast Virginia, and tend to be more productive than marshes there.

Crosswalk to State Name Examples:
Salt/Brackish Intertidal Marsh (CT), North Atlantic High/Low Salt Marsh (DE), Estuarine Intertidal: Salt Marsh (MA), Tidal Mesohaline Marsh (MD), Spartina Saltmarsh (ME), Salt Marshes (NH), Salt Marsh Complex (NJ), High/Low Salt Marsh (NY), Freshwater Tidal Mixed High Marsh (PA), Salt Marsh (RI), High/Low Salt Marsh (VA), Intertidal Flat (NH)

Crosswalk to State Wildlife Action Plans:
Tidal Wetland - Tidal Wetlands (CT), Emergent Tidal Wetlands (DC), Freshwater Tidal Forested and Scrub-Shrub Wetlands (DE), Freshwater Tidal Marshes (DE), Estuaries (MA), Tidal Marshes (MD), Estuarine Emergent Saltmarsh (ME), Salt Marshes (NH), Tidal salt marsh (NJ), Salt Marsh (NY), Wetlands - Emergent Estuarine (PA), Intertidal - Estuarine Intertidal Emergent Brackish Marsh (RI), Wetland Habitat - Emergent (VA)
Places to Visit this Habitat:
Bombay Hook National Wildlife Refuge | DE
Assateague Island National Seashore | MD
Edwin B. Forsythe National Wildlife Refuge | NJ
Fire Island National Seashore | NY
Chincoteague National Wildlife Refuge | VA

Associated Species: Appendix lists scientific names

**BIRDS:**
- american oystercatcher, arctic tern, black skimmer, black-crowned night-heron, clapper rail, common tern, forster's tern, glossy ibis, great egret, gull-billed tern, little blue heron, marsh wren, northern harrier, osprey, royal tern, tricolored heron, willet, yellow-crowned night-heron

**MAMMALS:**
- north american least shrew

**INSECTS:**
- big bluet, Needham's skimmer, salt marsh skipper

**PLANTS:**
- american sea-blite (Suaeda calceoliformis), dwarf glasswort (Salicornia bigelovii), large marsh pink (Sabatia dodecandra), salt reedgrass (Spartina cynosuroides), salt marsh false foxglove (Agalinis maritima), sea pink (Sabatia stellaris), seacoast angelica (Angelica lucida), seaside heliotrope (Heliotropium curassavicum)

Species of Concern (G1-G4): Appendix lists scientific names

**BIRDS:**
- black rail, king rail, least tern, red knot, roseate tern, saltmarsh sparrow, seaside sparrow

**HERPTILES:**
- diamondback terrapin, loggerhead, rainbow snake

**INSECTS:**
- checkered white, maritime sunflower borer moth, seaside goldenrod borer moth, spartina borer moth

**PLANTS:**
- large salt marsh aster (Aster tenuifolius), Parker's pipewort (Eriocaulon parkeri), roland's sea-blite (Suaeda rolandii), salt marsh goosegrass (Puccinellia fasciculata), saltmarsh fleabane (Pluchea odorata), salt-marsh sedge (Carex recta), saltmarsh spikerush (Eleocharis halophila), seabeach dock (Rumex pallidus), seabeach knotweed (Polygonum glaucum), sea-chickweed (Honckenya peploides), seaside alder (Alnus maritima)

North Atlantic Coastal Plain Tidal Salt Marsh

Habitat Connectedness Index

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Predicted Habitat Loss to Development

This chart shows the predicted loss of habitat over the next five decades (54,284 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 1,086 acres per year.

Age Class Distribution

This chart shows the average age of trees associated with this habitat based on forest Inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

Habitat Patch Distribution

The average patch size for this habitat is 11 acres and the largest single patch is 19,464 acres. This chart shows the proportion of the habitat that is in each patch-size class.
**Macrogroup: Wet Meadow / Shrub Marsh**

**Description:**
A shrub-dominated swamp or wet meadow on mineral soils characteristic of the glaciated Northeast and scattered areas southward. Examples often occur in association with lakes and ponds or streams, and can be small and solitary pockets or, more often, part of a larger wetland complex. The habitat can have a patchwork of shrub and herb dominance. Typical species include willow, red-osier dogwood, alder, buttonbush, meadowsweet, bluejoint grass, tall sedges, and rushes. Trees are generally absent or thinly scattered.

**Ecological Setting and Natural Processes:**
Shrub swamps and wet meadows are associated with lakes and ponds and along headwater and larger streams where the water level does not fluctuate greatly. They are commonly flooded for part of the growing season but generally do not have standing water throughout the season. This is a dynamic system that may return to marsh in beaver-impounded areas or succeed to wooded swamp with sediment accumulation or water subsidence.

**Similar Habitat Types:**
Most often occurs with Laurentian-Acadian Freshwater Marsh, acidic or circumneutral forested swamps, peatlands, and floodplain vegetation in large, diverse complexes.

**Crosswalk to State Name Examples:**
Shrub Inland Wetland - Shrub Thickets (CT), Eastern Tussock Sedge Meadow (DE), Shrub Swamp (MA), Shrub Swamp (MD), Mixed Graminoid - Shrub Marsh (ME), Mixed Tall Graminoid - Scrub-Shrub Marsh (NH), Streamside/Lakeside Shrub Swamp (NJ), Sedge Meadow/Shrub Swamp (NY), Tussock Sedge Marsh (PA), Shrub Swamp (RI), Ridge And Valley Calcareous Spring Marsh (VA), Sedge Meadow (VT)

**Crosswalk to State Wildlife Action Plans:**
Shrub Inland Wetland - Shrub Thickets (CT), Marshes and Wet Meadows - Wet Meadow (MA), Emergent Marsh and Wet Meadows (ME), Marsh and Shrub Wetlands (NH), Forested wetlands - scrub-shrub (NJ), Wet Meadow/Shrub Swamp (NY), Wetlands - Scrub/Shrub Swamps (PA), Emergent Wetlands - Emergent Marsh Shallow/ Wet Meadow (RI), Marshes and Sedge Meadows - Sedge Meadow (VT)
Places to Visit this Habitat:
Redden State Forest | DE
Chesapeake Forest Lands | MD
Wharton State Forest | NJ
Debar Mountain Wild Forest | NY
Canaan Valley National Wildlife Refuge | WV

Associated Species: Appendix lists scientific names

BIRDS: alder flycatcher, american woodcock, common yellowthroat, least bittern, nashville warbler, northern waterthrush, ruddy duck, sedge wren, swamp sparrow, tennessee warbler, veery, wilson’s warbler, wilson’s snipe, yellow warbler

MAMMALS: eastern cottontail, meadow jumping mouse, new england cottontail, northern bog lemming, northern short-tailed shrew, raccoon, smoky shrew, snowshoe hare, southern bo g lemming, star-nosed mole, virginia possum, water shrew

HERPTILES: blue-spotted salamander, northern leopard frog, ribbon snake, spotted turtle

PLANTS: northern adder's-tongue (Ophioglossum pusillum), auricled twayblade (Listera auriculata), greater marsh-bellflower (Campanula uliginosa), swamp birch (Betula pumila), swamp lousewort (Pedicularis lanceolata)

Species of Concern (G1-G4): Appendix lists scientific names

BIRDS: american bittern, black tern, rusty blackbird, three-toed woodpecker

MAMMALS: southern bog lemming

HERPTILES: Blanding's turtle, bog turtle, jefferson salamander, pine barrens treefrog, wood turtle

INSECTS: Clayton's copper butterfly, comet darner, don skipper, ebony boghaunter, elderberry long-horned beetle, helicta satyr, incurvate emerald, mottled darner, mulberry wing, tomah mayfly

PLANTS: bead pinweed (Lechea pulchella), branching bur-reed (Sparganium androcladum), Long's bulrush (Scirpus longii), Ogden's pondweed (Potamogeton ogdenii), Pursh's goldenrod (Solidago uliginosa), stout smartweed (Polygonum robustius), Walter's paspalum (Paspalum dissectum)

The average patch size for this habitat is 4 acres and the largest single patch is 1,460 acres. This chart shows the proportion of the habitat that is in each patch-size class.

This chart shows the average age of trees associated with this habitat based on forest inventory data. For non-forested systems or small habitats the average age is influenced by the surroundings.

This chart shows the predicted loss of habitat over the next five decades (26,569 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 531 acres per year.

This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.