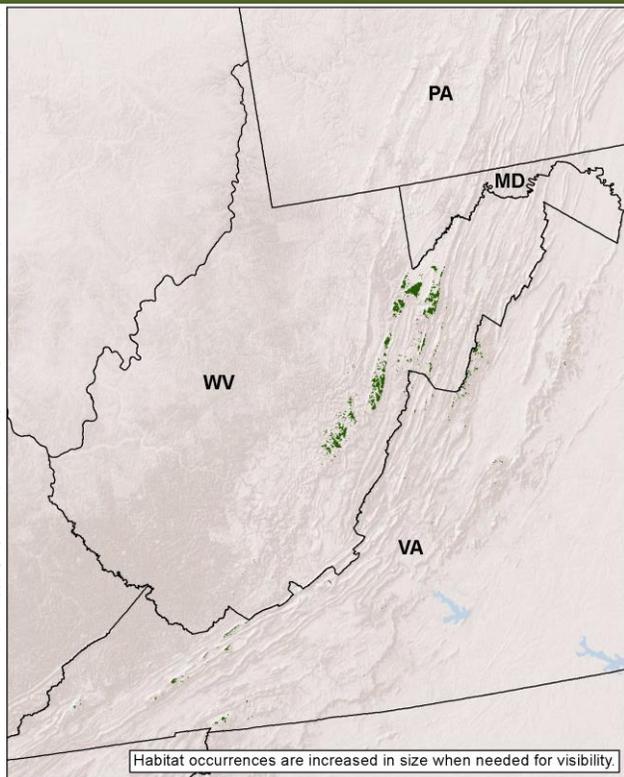


Central and Southern Appalachian Spruce-Fir Forest



Macrogroup: Boreal Upland Forest

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



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Description:

A high elevation conifer forest dominated by red spruce and either Fraser fir (in very southwestern Virginia) or balsam fir (to the north). Mountain ash, yellow birch, hemlock, and red oak are locally common. Mosses, ferns, and forbs make up a typically lush ground cover; in many examples a dense shrub layer develops in which hobblebush and mountain cranberry, and occasionally evergreen rhododendrons, are prevalent. This is the characteristic forest of the cold, wet, windy highest peaks in the central and southern Appalachians. Some very large patches of this system remain, but unnatural fires fueled by logging slash turned large expanses of it into grass-shrub-hardwood scrub that has not recovered to conifer dominance after 90 years.

Ecological Setting and Natural Processes:

Found in rocky soils on exposed high elevation landforms, from 3200 feet at the northern end of its range to over 5500 feet. Strong winds, rime ice, severe cold, and other weather extremes are important natural disturbances, fire less so. Human-caused stresses have also had major effects on this habitat type: an introduced pest has killed all the mature Fraser firs, and air pollutants and climate change pose existential threats.

Similar Habitat Types:

Similar to the spruce-fir system of the northern Appalachians, but has less frequent natural fire, a more moderate climate, and flora and fauna of a more southern character, though some species are shared. There is a gradual transition to southern and central Appalachian northern hardwood forests below. Balds and outcrops may occur within larger examples.

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Coniferous Forest (VA), Red Spruce Forests (WV)

State Distribution: VA, WV

Total Habitat Acreage: 64,954

Percent Conserved: 87.5%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	90%	58,553	16,660	35,088	6,805
VA	10%	6,401	3,626	1,452	1,323

Crosswalk to State Name Examples:

Central Appalachian Red Spruce Forest (VA), Red Spruce Forests (WV)

Places to Visit this Habitat:

Appalachian Trail Corridor | VA
 George Washington and Jefferson National Forest | VA
 Dolly Sods Wilderness | WV
 Monongahela National Forest | WV
 Otter Creek Wilderness | WV

Associated Species: *Appendix lists scientific names*

BIRDS: blackburnian warbler, black-capped chickadee, black-throated green warbler, canada warbler, dark-eyed junco, golden-crowned kinglet, hermit thrush, magnolia warbler, purple finch, red-breasted nuthatch, swainson's thrush, winter wren

PLANTS: canada mayflower (*Maianthemum canadense*), catawba rhododendron (*Rhododendron catawbiense*), great laurel (*Rhododendron maximum*), hobblebush (*Viburnum lantanoides*), lowbush blueberry (*Vaccinium angustifolium*), mountain wood-fern (*Dryopteris campyloptera*), mountain wood-sorrel (*Oxalis montana*), shining clubmoss (*Huperzia lucidula*), southern mountain-cranberry (*Vaccinium erythrocarpum*), staghorn clubmoss (*Lycopodium clavatum*)

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

BIRDS: yellow-bellied sapsucker

MAMMALS: allegheny woodrat, appalachian cottontail, carolina northern flying squirrel, long-tailed shrew, southern pygmy shrew, southern rock vole, southern water shrew, virginia northern flying squirrel

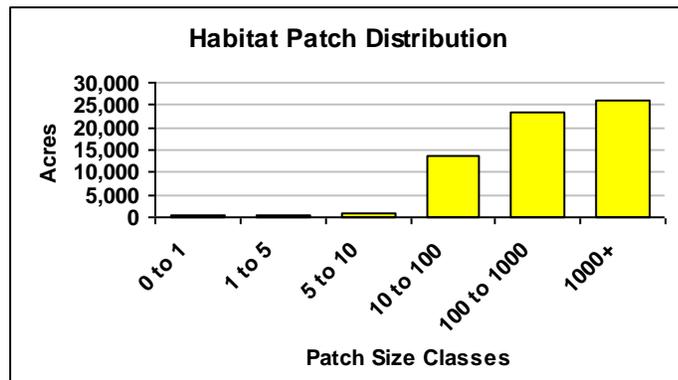
HERPTILES: cheat mountain salamander, pygmy salamander, weller's salamander, white-spotted salamander

INSECTS: pink-edged sulphur, spruce-fir moss spider

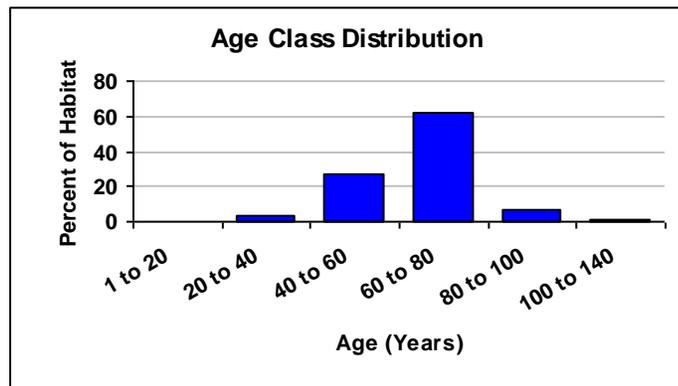
PLANTS: beaked dodder (*Cuscuta rostrata*), carolina saxifrage (*Saxifraga caroliniana*), fraser fir (*Abies fraseri*), gray's lily (*Lilium grayi*), large cranberry (*Vaccinium macrocarpon*), large-leaved phlox (*Phlox amplifolia*), long-stalked holly (*Ilex collina*), silverling (*Paronychia argyrocoma*), small mountain bittercress (*Cardamine clematitis*), white alumroot (*Heuchera alba*)



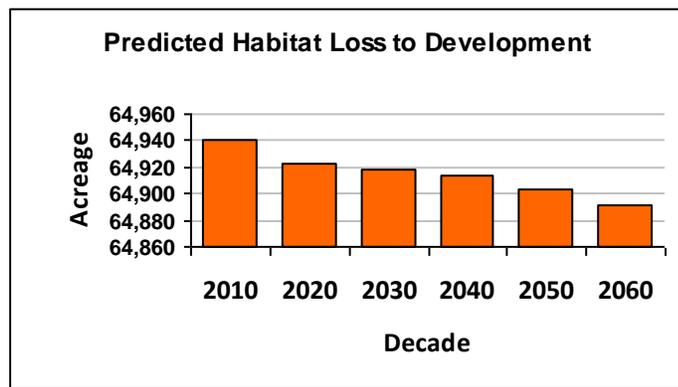
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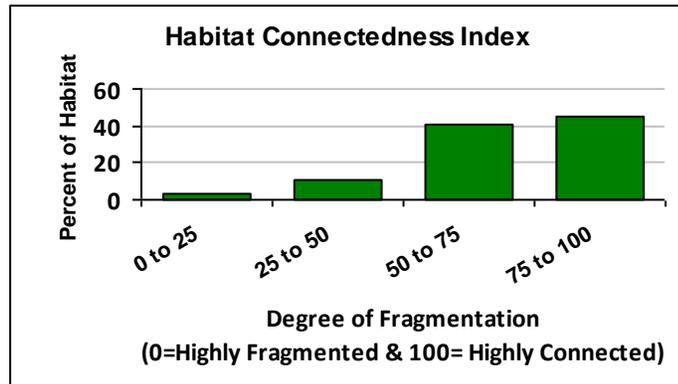
The average patch size for this habitat is 34 acres and the largest single patch is 6,790 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (49 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 1 acres per year.



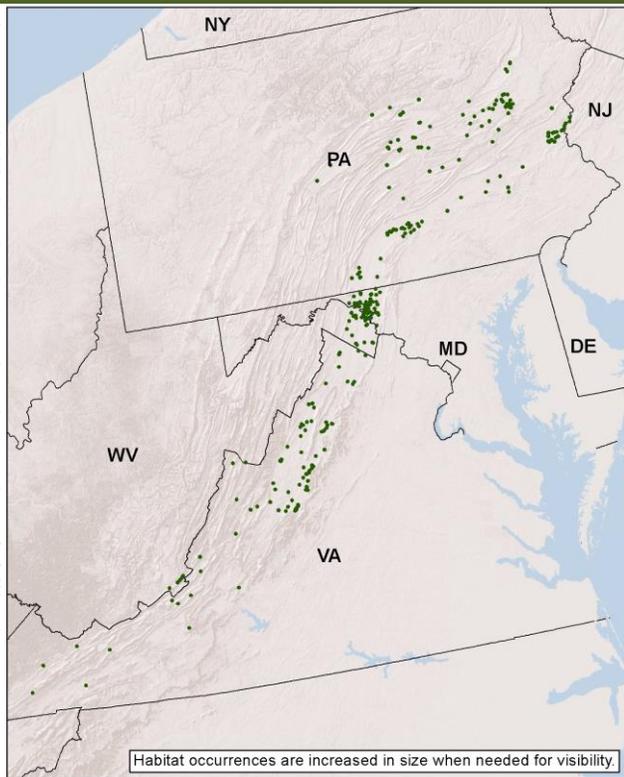
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Central Interior Highlands and Appalachian Sinkhole and Depression Pond



Macrogroup: Central Hardwood Swamp

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



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Description:

A small pond and wetland habitat with variable vegetation found in basins of sinkholes or other isolated depressions on uplands from the Ozarks east to the northern Piedmont. Water depth may vary greatly on a seasonal basis and may be a meter deep or more in the winter. Some examples become dry in the summer. Structure varies from open water to herb-dominated to shrub-dominated, where buttonbush is a typical component. Tree-dominated examples typically contain oaks, sycamore, green ash, silver maple, and/or black gum. Many of these ponds have their geologic origin as a more-or-less complete karst collapse feature.

State Distribution: MD, NJ, PA, VA, WV

Total Habitat Acreage: 1,458

Percent Conserved: 7.9%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	45%	653	9	23	621
VA	28%	415	54	11	350
MD	16%	232	5	8	219
WV	10%	150	5	0	145
NJ	1%	8	0	0	8

Ecological Setting and Natural Processes:

Soils are very poorly drained, and surface water may be present for extended periods of time, occasionally becoming dry. Soils may be deep (1 meter or more), consisting of peat or muck, with parent material of peat, muck or alluvium.

Similar Habitat Types:

Core distribution for this system is in the Ozarks and the hilly plateaus of western Kentucky and Tennessee. Because of their association with limestone geology, these ponds often sit in a fragmented agricultural landscape.

Crosswalk to State Name Examples:

Upland Depression Swamps (MD), Shenandoah Valley Sinkhole Pond (Typic Type) (VA)

Crosswalk to State Wildlife Action Plans:

Upland Depression Swamps (MD), Wetlands - Forested Wetlands and Bogs (PA), Wetland Habitat - Forested (VA), Floodplain Forests and Swamps (WV)

Places to Visit this Habitat:

C & O Canal National Historical Park | MD
George Washington and Jefferson National Forest | VA

Associated Species: *Appendix lists scientific names*

BIRDS: belted kingfisher, eastern kingbird, green heron, red-shouldered hawk, willow flycatcher, wood duck

PLANTS: blackfoot quillwort (*Isoetes melanopoda*), dwarf burrhead (*Echinodorus tenellus*), northern st. john's-wort (*Hypericum boreale*), pretty dodder (*Cuscuta indecora*), seven-angle pipewort (*Eriocaulon aquaticum*)

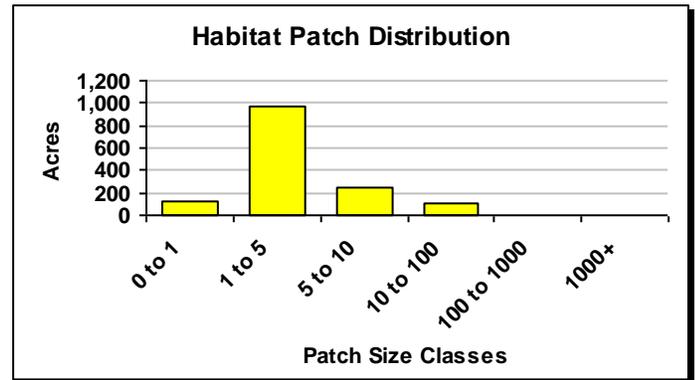
Species of Concern (G1-G4): *Appendix lists scientific names*

INSECTS: *Nannaria ericacea* (a millipede)

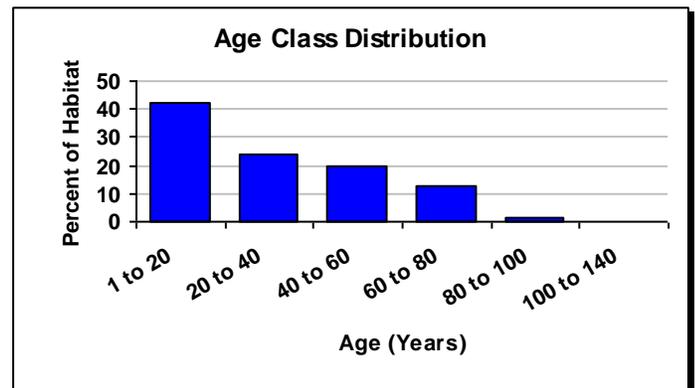
PLANTS: northeastern Bulrush (*Scirpus ancistrochaetus*), Virginia Sneezeweed (*Helenium virginicum*)



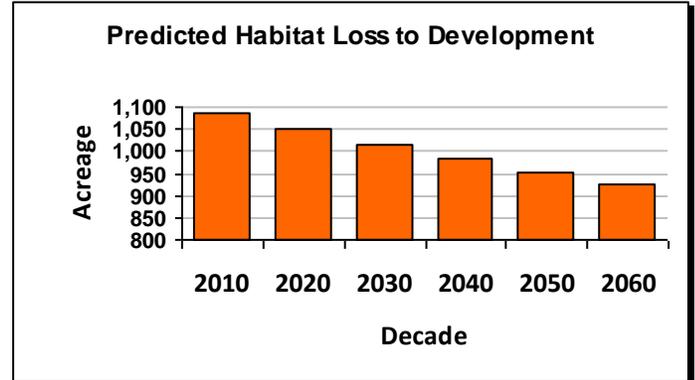
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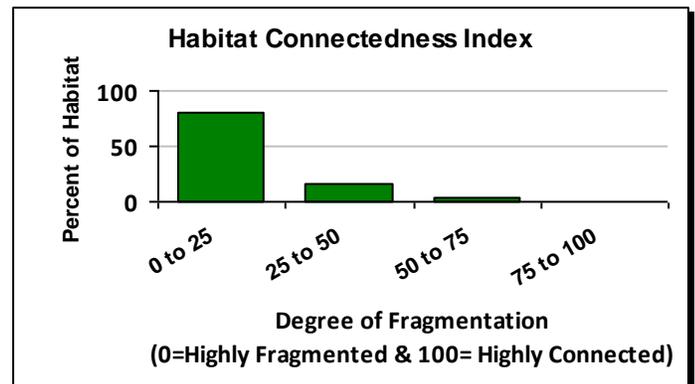
The average patch size for this habitat is 2 acres and the largest single patch is 15 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (159 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 3 acres per year.



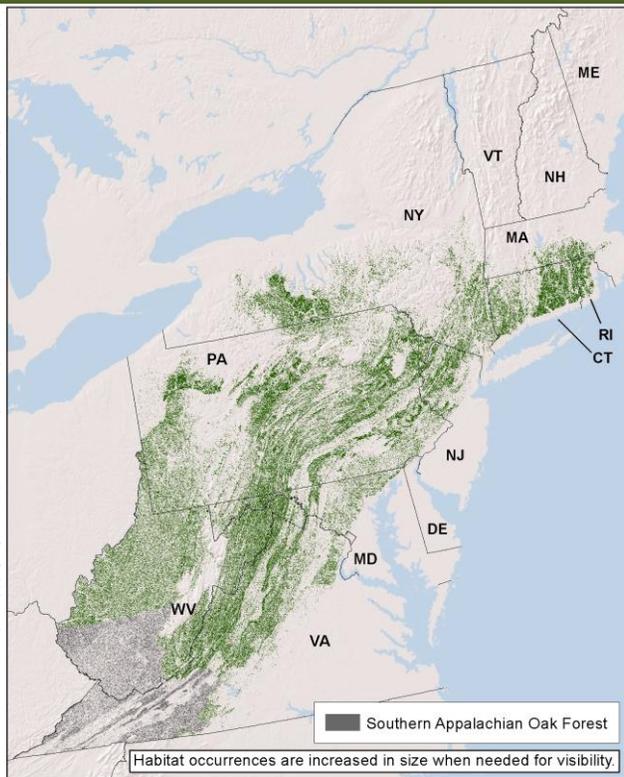
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Northeastern Interior Dry-Mesic Oak Forest



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



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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 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)

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

Total Habitat Acreage: 17,032,701

Percent Conserved: 19.1%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	37%	6,264,459	220,896	1,188,152	4,855,411
WV	22%	3,732,111	40,981	289,214	3,401,916
VA	15%	2,588,383	299,870	452,215	1,836,298
NY	11%	1,811,589	19,982	155,854	1,635,753
CT	6%	965,419	38,892	123,495	803,032
MD	4%	678,802	60,757	111,810	506,235
NJ	3%	559,819	117,260	47,837	394,722
MA	1%	242,876	5,771	34,365	202,741
RI	1%	179,468	8,231	29,188	142,049
DE	0%	8,229	59	2,573	5,596
DC	0%	1,546	0	0	1,546

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)

Places to Visit this Habitat:

Green Ridge State Forest | MD
 Delaware Water Gap | NJ
 Sprout 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, 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-lobe 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

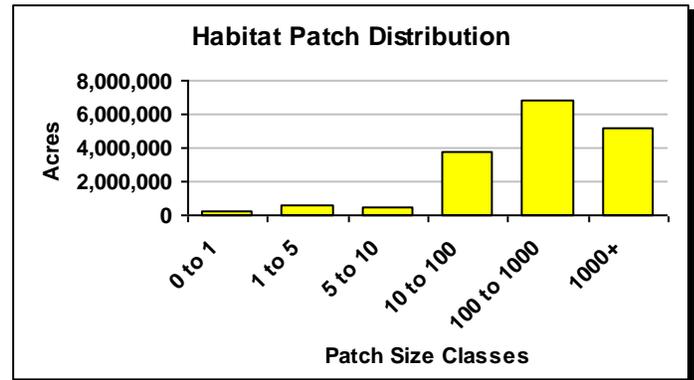
HERPTILES: big levels salamander, milk snake, peaks of otter salamander

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

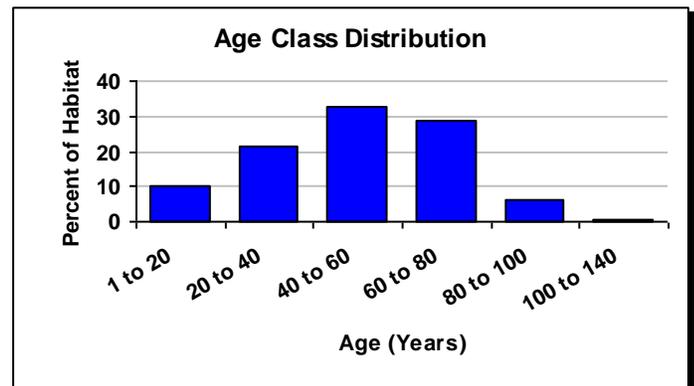
PLANTS: climbing fern (*Lygodium palmatum*), goldenseal (*Hydrastis canadensis*), small whorled pogonia (*Isotria medeoloides*)



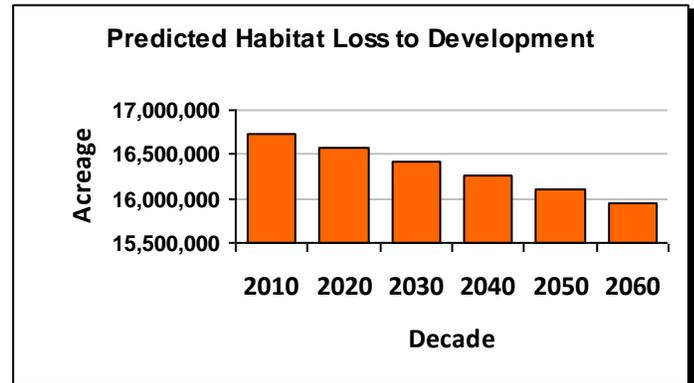
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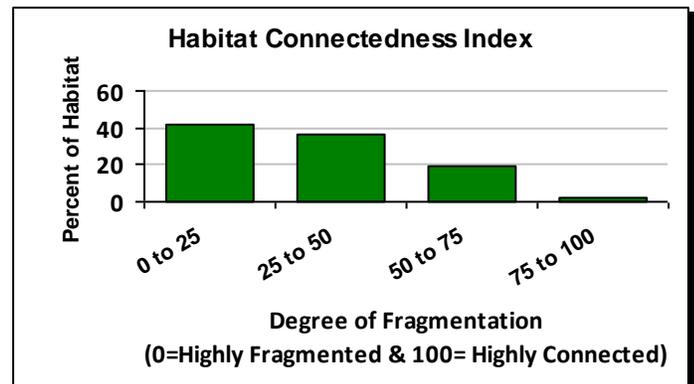
The average patch size for this habitat is 13 acres and the largest single patch is 20,946 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.

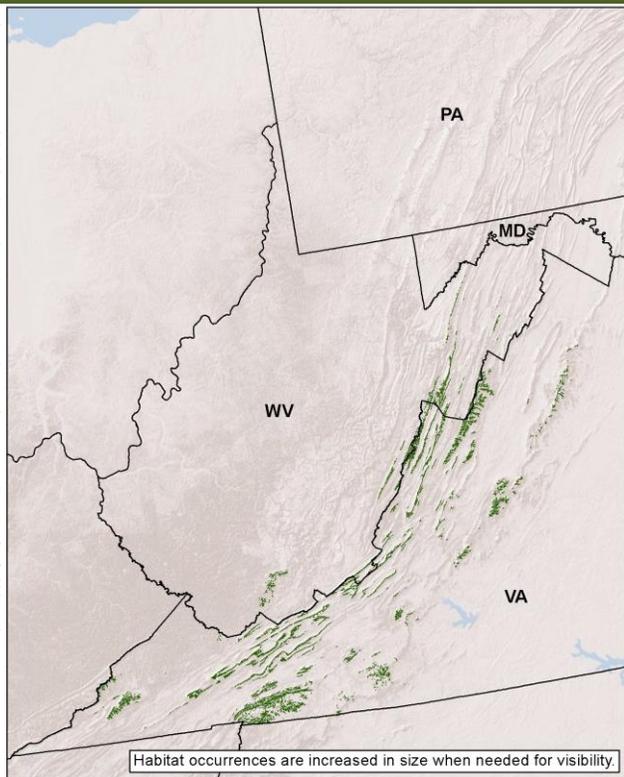


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



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Description:

A high elevation hardwood forest dominated by red oak and white oak, with the individuals often stunted or wind-flagged. Chestnut oak and xeric hickories are also sometimes present. Chestnut trees were important in this system historically, but are now found only as stumps and sprouts. Early azalea and other heath shrubs, along with mountain holly, are common in understory vegetation, though graminoid species and ferns dominate in some examples. At the northern end of its range in our region, patches of this habitat type are often less than 10 acres, but can be much larger on very long or broadly convex ridges.

State Distribution: VA, WV

Total Habitat Acreage: 147,890

Percent Conserved: 63.7%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
VA	86%	126,521	31,074	52,139	43,307
WV	14%	21,369	714	10,296	10,359

Ecological Setting and Natural Processes:

This forest mostly occurs on exposed, inhospitable sites from about 3000 to 4500 feet. The weathered soils are thin, nutrient-poor, low in organic matter, and acidic. High winds and ice storms are commonplace, which probably explains the stunted appearance of many of these communities. Lightning-caused fires may suppress heath shrub development in the understory.

Similar Habitat Types:

This system grades upslope (or around slope to less exposed areas) into Southern Appalachian Northern Hardwoods or Appalachian (Hemlock-)Northern Hardwoods. At lower elevation it most often grades into Central Appalachian Dry Oak-Pine Forest or Allegheny Cumberland Dry Oak Forest and Woodland, depending on location.

Crosswalk to State Name Examples:

Southern Appalachian Montane Mixed Oak Forest (VA), Oak/Heath And Oak/White Pine Forests (WV)

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Deciduous Forest (VA), Oak/Heath and Oak/White Pine Forests (WV)

Places to Visit this Habitat:

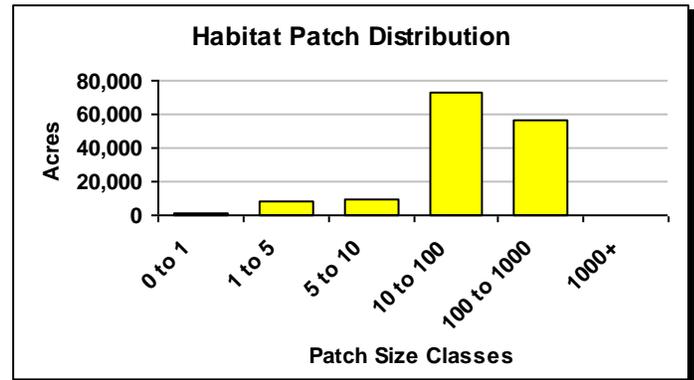
Appalachian Trail Corridor | VA
 Blue Ridge Parkway National Park | VA
 George Washington and Jefferson National Forest | VA
 George Washington National Forest | WV
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

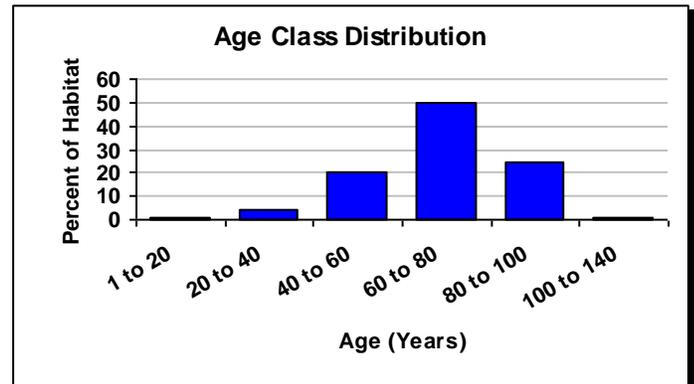
BIRDS: black-and-white warbler, eastern towhee, eastern wood-pewee, ovenbird, summer tanager

MAMMALS: eastern spotted skunk, southern pygmy shrew

PLANTS: old-pasture Bluegrass (*Poa saltuensis*), Porter's reedgrass (*Calamagrostis porteri*), purple clematis (*Clematis occidentalis*), three-toothed cinquefoil (*Sibbaldiopsis tridentata*)



The average patch size for this habitat is 12 acres and the largest single patch is 902 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.

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

BIRDS: magnolia warbler, peregrine falcon, northern saw-whet owl, yellow-bellied sapsucker

MAMMALS: allegheny woodrat

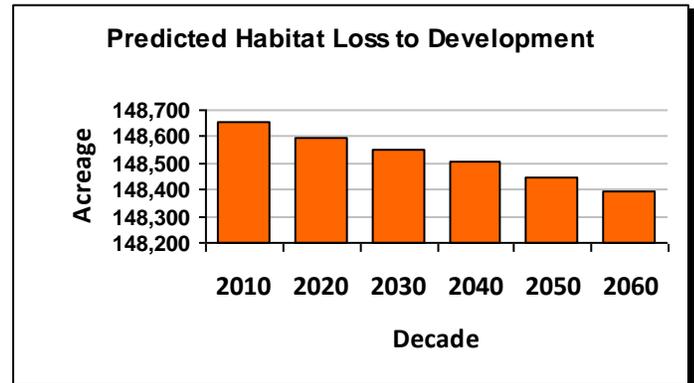
HERPTILES: big levels salamander, peaks of otter salamander, shovelnose salamander, timber rattlesnake, white-spotted salamander, wood turtle

INSECTS: black-tipped darner, boreal fan moth, currant spanworm, jefferson's short-nosed scorpionfly, northern pygmy clubtail

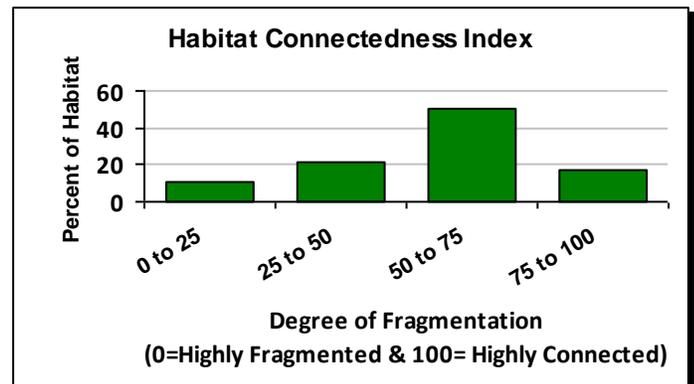
PLANTS: carolina lily (*Lilium michauxii*), creeping aster (*Eurybia surculosa*), eastern turkeybeard (*Xerophyllum asphodeloides*), large-leaved phlox (*Phlox amplifolia*), mountain fetterbush (*Pieris floribunda*), northern spleenwort (*Asplenium septentrionale*), ovate catchfly (*Silene ovata*)



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This chart shows the predicted loss of habitat over the next five decades (262 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 5 acres per year.



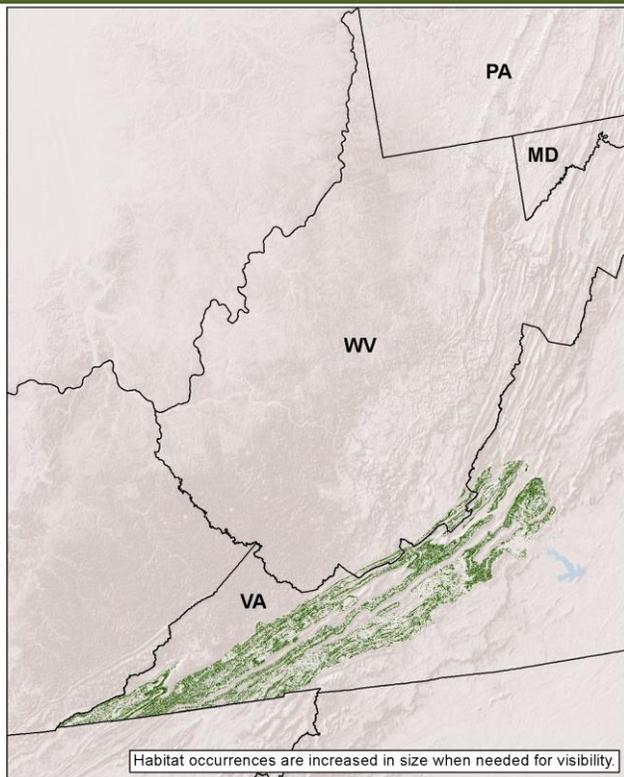
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Southern Ridge and Valley / Cumberland Dry Calcareous Forest



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



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Description:

A hardwood forest of dry to dry-mesic calcareous substrates dominated by combinations of oaks (white, red, black, post, chinkapin), hickories, sugar maple, black maple, white ash, and sometimes pine and/or red-cedar. Tulip poplar and black locust are common trees in logged stands. Understory and herb layers vary from lush to sparse. These forests are the matrix vegetation type under natural conditions. Much of this system is currently composed of successional forests that have arisen after repeated cutting, clearing, and cultivation of the original forests. Endemic to the southern part of the Ridge and Valley province, it reaches only into the southwestern part of our region.

State Distribution: VA, WV

Total Habitat Acreage: 914,360

Percent Conserved: 9.5%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
VA	97%	882,509	11,153	70,795	800,561
WV	3%	31,851	267	4,659	26,925

Ecological Setting and Natural Processes:

Occurs on a variety of landscape positions including ridgetops and upper and midslopes, but on deeper soils than glade systems in the same area. Its range is primarily underlain by circumneutral substrates (limestone, dolomite, calcareous sandstones and shales), which influence the vegetation composition. Fire frequency and intensity are factors determining the relative mixture of hardwood and evergreen trees in this system.

Similar Habitat Types:

Southern Ridge and Valley Calcareous Glade and Woodland is a similar and overlapping system, but occurs as small patches of low canopy cover, on shallower soils at lower land positions. Allegheny-Cumberland Dry Oak Forest and Woodland is often on more acidic ridges upslope; Southern Appalachian Oak Forest and Southern and Central Appalachian Cove Forest are often below.

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Deciduous Forest (VA), Calcareous Forests and Woodlands (WV)

Crosswalk to State Name Examples:

Appalachian Sugar Maple - Chinkapin Oak Dry Calcareous Forest (VA), Calcareous Forests And Woodlands (WV)

Places to Visit this Habitat:

Blue Ridge Parkway National Park | VA
 Falls Ridge Preserve | VA
 George Washington and Jefferson National Forest | VA
 Natural Tunnel State Park | VA

Associated Species: *Appendix lists scientific names*

BIRDS: cerulean warbler, ovenbird, red-bellied woodpecker, scarlet tanager, summer tanager

HERPTILES: black kingsnake, coal skink, common map turtle, loggerhead musk turtle, spiny softshell

PLANTS: chinkapin oak (*Quercus muhlenbergii*), common eastern shooting-star (*Dodecatheon meadia*), hoary puccoon (*Lithospermum canescens*), mountain death-camas (*Zigadenus elegans*), northern leatherflower (*Clematis viorna*), purple sedge (*Carex purpurifera*), robin's-plantain (*Erigeron pulchellus*), round-leaved ragwort (*Senecio obovatus*), slender muhly (*Muhlenbergia tenuiflora*), small-headed sunflower (*Helianthus microcephalus*), stiff-haired sunflower (*Helianthus hirsutus*)

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

BIRDS: appalachian Bewick's wren, black vulture

MAMMALS: allegheny woodrat, eastern small-footed myotis, gray myotis, indiana myotis, virginia big-eared bat

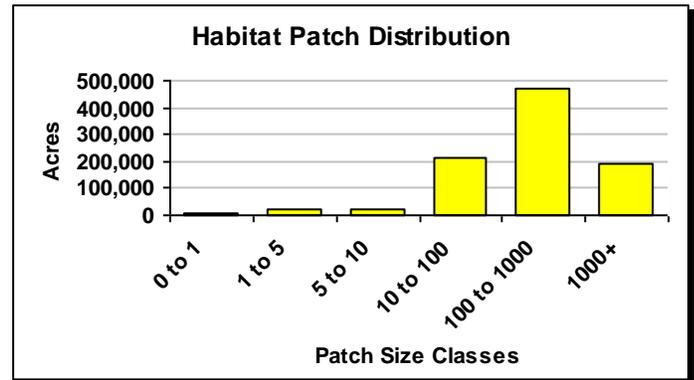
HERPTILES: hellbender, pinesnake, southern zigzag salamander

INSECTS: over 75 species of rare cave invertebrates, northern metalmark, cherokee clubtail

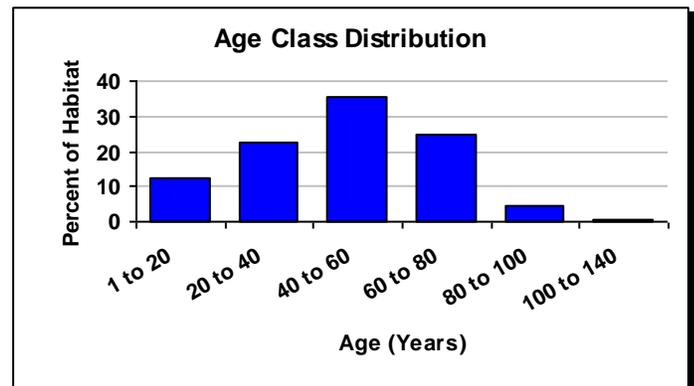
PLANTS: Addison's leatherflower (*Clematis addisonii*), appalachian bugbane (*Actaea rubifolia*), blue ridge ragwort (*Packera millefolia*), butternut (*Juglans cinerea*), Canby's mountain-lover (*Paxistima canbyi*), carey's saxifrage (*Saxifraga careyana*), carolina saxifrage (*Saxifraga caroliniana*), cedar sedge (*Carex juniperorum*), Cooper's milk-vetch (*Astragalus neglectus*), flat-stemmed spikerush (*Eleocharis compressa*)



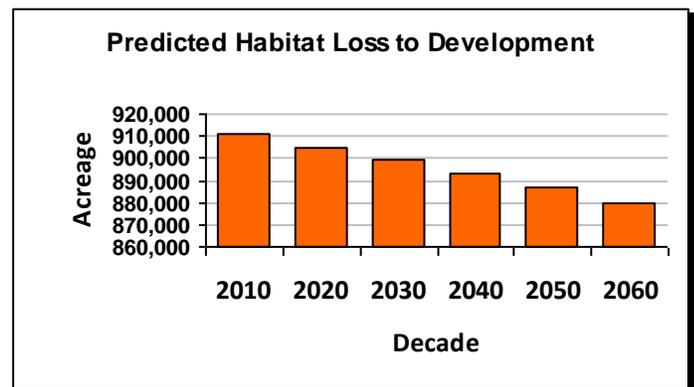
© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)



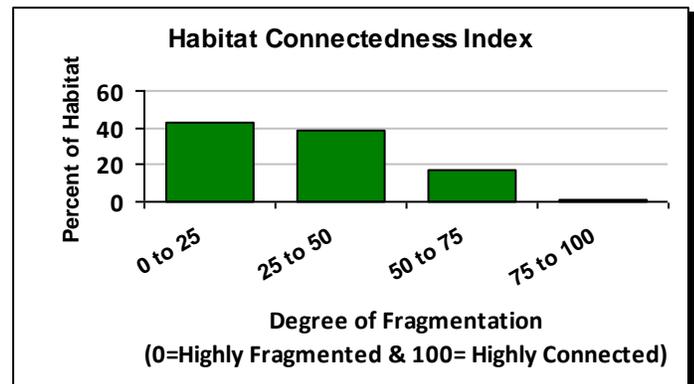
The average patch size for this habitat is 22 acres and the largest single patch is 4,828 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (31,219 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 624 acres per year.

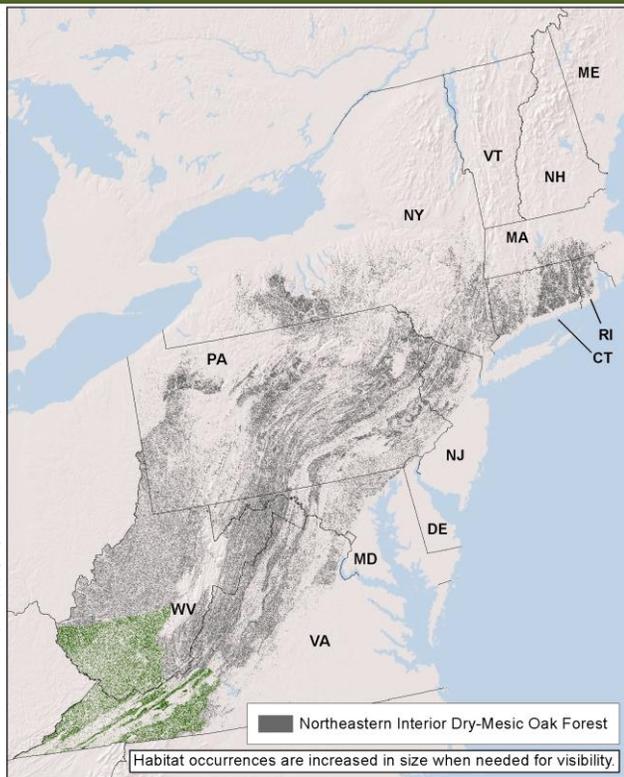


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Brian Streets (West Virginia Division of Natural Resources)

Description:

An oak forest of low to mid-elevations and low to moderate moisture dominated by white, red, black, chestnut, and scarlet oaks, with varying amounts of hickory, black gum, and red maple. Centered in the Southern Blue Ridge, it is found only in the very southwestern part of our region. Chestnut was commonly a dominant or codominant until its elimination in the early 1900s. Some areas have dense evergreen heath shrubs of mountain laurel or great rhododendron; others have deciduous heath layers of blueberry and/or huckleberry. Successional communities with heavy tuliptree, pine, and black locust are also included in this system. Oaks can be long-lived with typical age of mortality ranging from 200 to 400 years for most species. White oaks can live as long as 600 years

Ecological Setting and Natural Processes:

Vegetation varies with substrate types, which can range from acidic to circumneutral or basic, and consist of deep residual soils that are often rocky. This system is naturally dominated by stable, uneven-aged forests, with gap-phase regeneration driving canopy dynamics.

Similar Habitat Types:

Similar to Northeastern Interior Dry-Mesic Oak Forests, and separated from that system along purely geographic lines, in lieu of more natural ecological or floristic distinctions. The Allegheny-Cumberland Dry Oak Forest and Woodland system is often mapped above, the South-Central Interior Mesophytic Forest or Southern and Central Appalachian Cove Forest system below.

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Deciduous Forest (VA), Oak/Heath and Oak/White Pine Forests (WV)

State Distribution: VA, WV

Total Habitat Acreage: 2,869,246

Percent Conserved: 13.4%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	50%	1,438,548	29,185	76,587	1,332,776
VA	50%	1,430,698	32,298	245,038	1,153,363

Crosswalk to State Name Examples:

Southern Appalachian Montane Mixed Oak Forest (VA), Oak/Heath And Oak/White Pine Forests (WV)

Places to Visit this Habitat:

Blue Ridge Parkway National Park | VA
 George Washington and Jefferson National Forest | VA
 Cabwaylingo State Forest | WV
 Monongahela National Forest | WV
 New River Gorge National River | WV

Associated Species: *Appendix lists scientific names*

BIRDS: cerulean warbler, louisiana waterthrush, ovenbird, red-bellied woodpecker, scarlet tanager, summer tanager, wood thrush, yellow-throated vireo

MAMMALS: golden mouse, meadow jumping mouse, southern bog lemming

HERPTILES: blanchard's cricket frog, cave salamander, common black-bellied salamander, midland mud salamander, mudpuppy, red salamander, upland chorus frog, upland chorus frog

PLANTS: celandine poppy (*Stylophorum diphyllum*), curtiss' milkwort (*Polygala curtissii*), field sedge (*Carex conoidea*), loesel's twayblade (*Liparis loeselii*), mcdowell's sunflower (*Helianthus occidentalis*), narrow melicgrass (*Melica mutica*), rusty blackhaw (*Viburnum rufidulum*), large-flower heartleaf (*Hexastylis shuttleworthii*), dwarf rattlesnake plantain (*Goodyera repens*)

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

MAMMALS: allegheny woodrat, eastern small-footed myotis, indiana myotis, long-tailed shrew, Rafinesque's big-eared bat, southern pygmy shrew, virginia big-eared bat

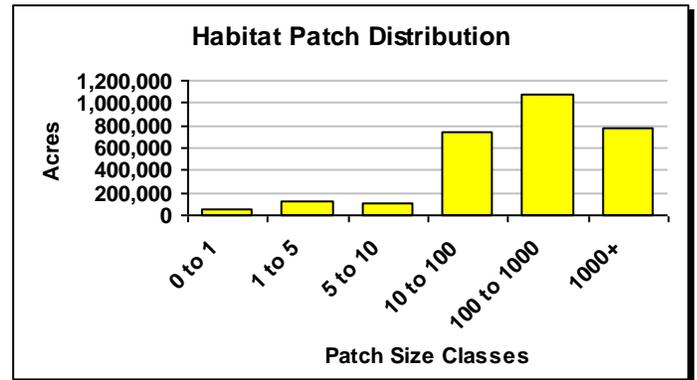
HERPTILES: bog turtle, timber rattlesnake

INSECTS: Appalachian grizzled skipper, diana fritillary, frosted elfin, green-faced clubtail, persius dusky wing, regal fritillary

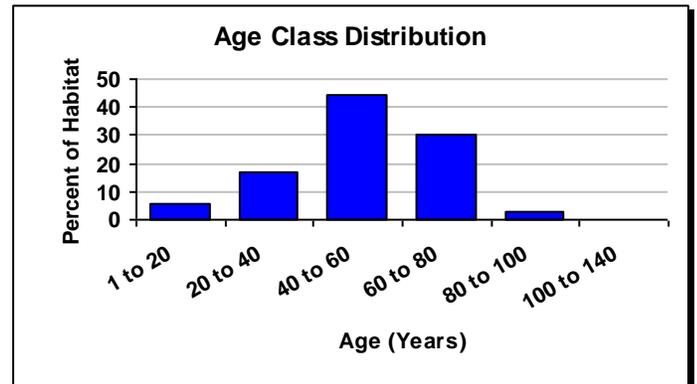
PLANTS: Addison's leatherflower (*Clematis addisonii*), smooth hedge-nettle (*Stachys tenuifolia*), smooth hedge-nettle (*Stachys tenuifolia*), small anthered-bittercress (*Cardamine micranthera*), canby's mountain-lover (*Paxistima canbyi*), carolina saxifrage (*Saxifraga caroliniana*), smooth coneflower (*Echinacea laevigata*), sword-leaved phlox (*Phlox buckleyi*), virginia spiraea (*Spiraea virginiana*)



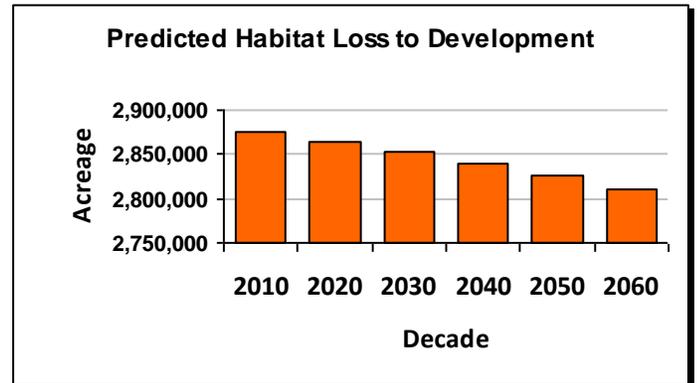
© Jim Vanderhorst (West Virginia Division of Natural Resources)



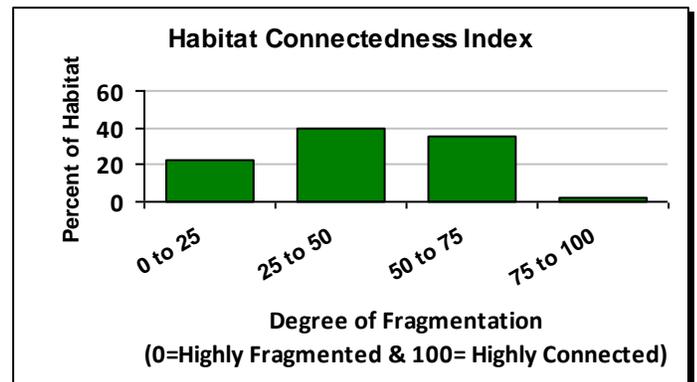
The average patch size for this habitat is 10 acres and the largest single patch is 9,777 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.



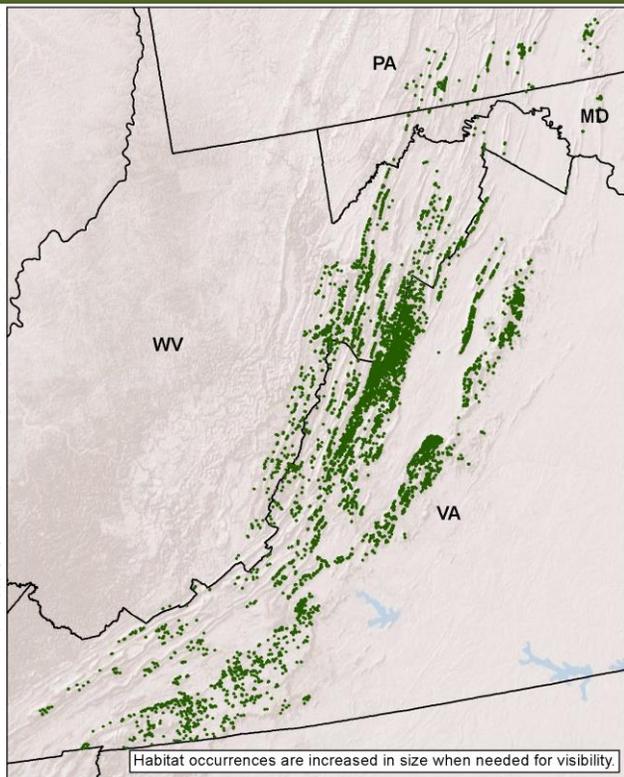
This chart shows the predicted loss of habitat over the next five decades (65,652 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 1,313 acres per year.



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: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)

Description:

A conifer forest of slopes and ridges at high elevations in the Southern Appalachians. Table mountain pine is typical and often dominant, occurring with pitch pine, Virginia pine, or Carolina hemlock. Chestnut oak, scarlet oak, and scrub oak are usually present and are sometimes abundant in examples that have not burned recently. A dense heath shrub layer is typical; herbs are usually sparse but may be more abundant and shrubs less dense when fires occurred more frequently. Periodic fire presumably also maintained a more open woodland canopy structure in these communities. In some areas pines may be able to maintain dominance due to edaphic conditions, such as very shallow soil or extreme exposure, but most sites appear eventually to succeed to oak in the absence of fire.

Ecological Setting and Natural Processes:

This system occurs on the most extreme of convex landforms-- sharp ridges and adjacent upper slopes. At the northern end of its range in the central Appalachians, it is found from elevations of about 1750 to 4000 feet. Underlying rocks are acidic and soils are infertile, shallow and droughty. A thick duff layer and volatile heath shrubs create a strongly fire-prone habitat. Disturbance from southern pine beetle outbreaks can be system-changing.

Similar Habitat Types:

Settings are similar to those for Central Appalachian Pine-Oak Rocky Woodland and Central and Southern Appalachian Montane Oak Forest, and if the pines are lost, the distinction between those systems (and other adjacent oak or oak-pine systems) and the current one becomes blurred.

Crosswalk to State Wildlife Action Plans:

Dry Oak-Pine Forests (MD), Coniferous Forest (upland) (PA), Forest Habitat - Coniferous Forest (VA), Dry Rocky Pine/Oak Forests and Woodlands (WV)

State Distribution: MD, PA, VA, WV

Total Habitat Acreage: 33,532

Percent Conserved: 69.8%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
VA	75%	25,281	12,297	6,698	6,286
WV	21%	7,014	230	3,390	3,394
PA	3%	1,079	161	511	407
MD	0%	159	48	67	43

Crosswalk to State Name Examples:

Dry Oak-Pine Forests (MD), Coniferous Forest (Upland) (PA), Carolina Hemlock Forest (VA), Dry Rocky Pine/Oak Forests And Woodlands (WV)

Places to Visit this Habitat:

Rocky Gap State Park | MD
 Buchanan State Forest | PA
 Michaux State Forest | PA
 George Washington and Jefferson National Forest | VA
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: golden-crowned kinglet, red-breasted nuthatch

PLANTS: bristly sarsaparilla (*Aralia hispida*), canada frostweed (*Helianthemum canadense*), fragile fern (*Cystopteris fragilis*), green alder (*Alnus viridis*), heart-leaved paper birch (*Betula papyrifera* var. *cordifolia*), roundleaf dogwood (*Cornus rugosa*), sharp-scaled mannagrass (*Glyceria acutiflora*), virginia least trillium (*Trillium pusillum* var. *virginianum*), yellow nodding ladies'-tresses (*Spiranthes ochroleuca*)

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

BIRDS: black vulture, peregrine falcon

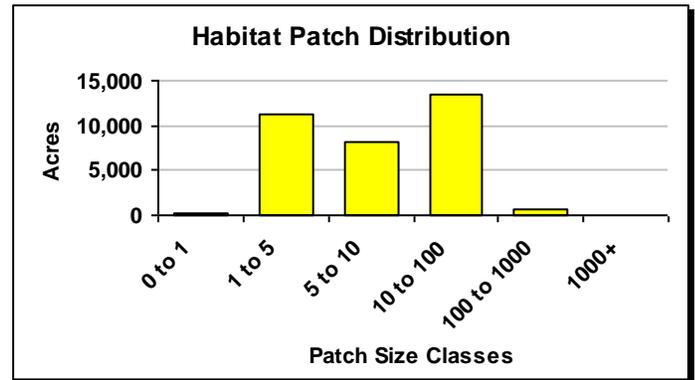
HERPTILES: big levels salamander, white-spotted salamander

INSECTS: boreal fan moth

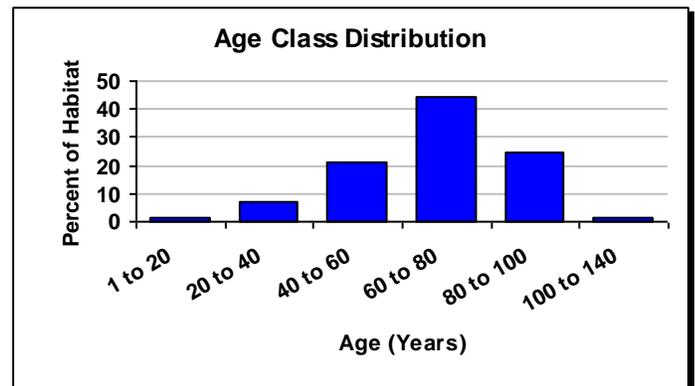
PLANTS: silverling (*Paronychia argyrocoma*)



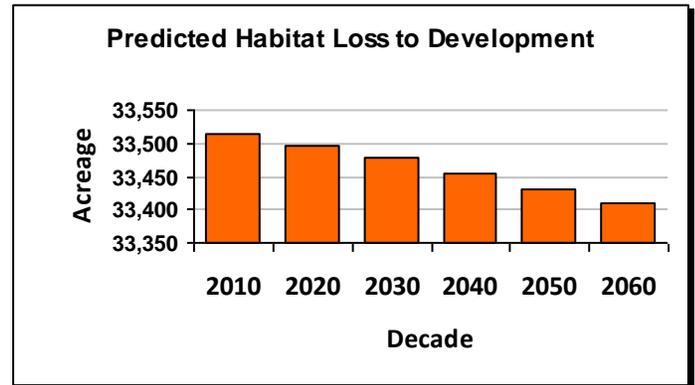
© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)



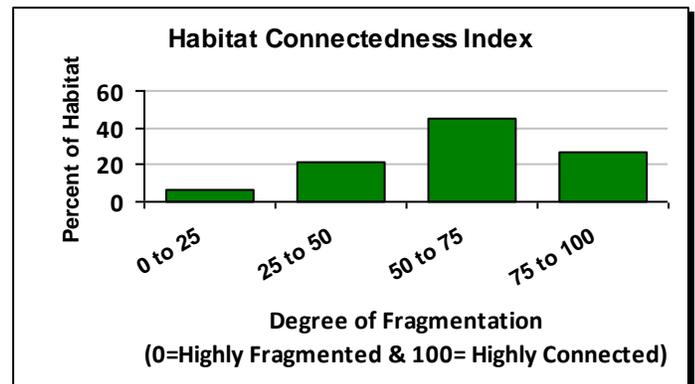
The average patch size for this habitat is 5 acres and the largest single patch is 228 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (107 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 2 acres per year.

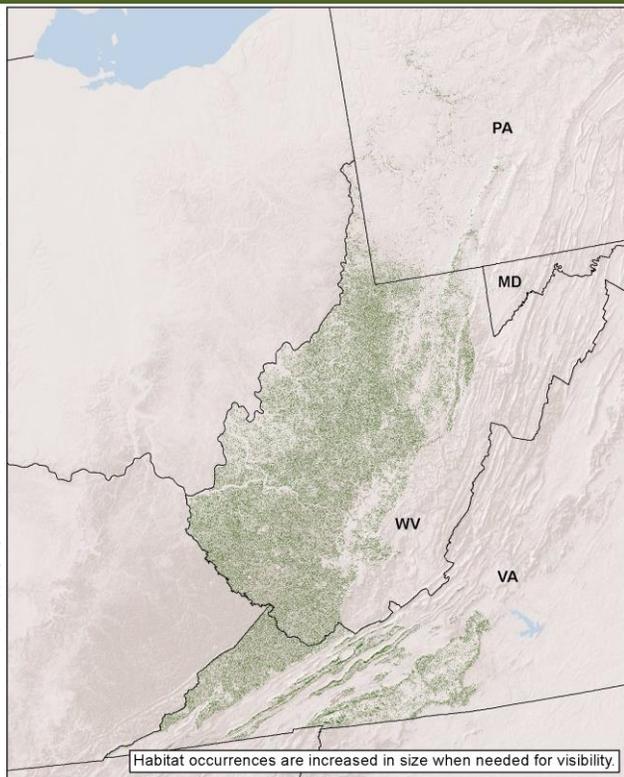


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Jim Vanderhorst (West Virginia Division of Natural Resources)

Description:

A dry hardwood forest dominated by white oak, southern red oak, chestnut oak, scarlet oak, and black oak, with lesser amounts of red maple, pignut hickory, mockernut hickory, and sometimes sprouts of American chestnut. Scattered and small inclusions of shortleaf or Virginia pine may occur, particularly along to escarpments or following fire. Pitch pine and table mountain pine are also sometimes present, particularly in West Virginia. In the absence of fire, white pine may become established. Heath shrub layers are common. Chestnut was also common in these forests before chestnut blight eradicated it from the canopy.

State Distribution: PA, VA, WV

Total Habitat Acreage: 2,261,249

Percent Conserved: 8.4%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	75%	1,699,961	17,370	56,536	1,626,054
VA	22%	500,416	13,318	93,888	393,209
PA	3%	60,873	1,615	6,190	53,067

Ecological Setting and Natural Processes:

Occurs as small to large patches at higher topographic positions on mostly acidic substrates in the Allegheny and Cumberland plateaus, and acidic ridges in southwestern Virginia. Soils are dry and nutrient-poor. Fire has been the most ecologically significant disturbance historically.

Similar Habitat Types:

Similar in range and expression to Southern Appalachian Oak Forest and might be thought of as a subtype of that type on more exposed acidic ridges and plateaus. Also often found above Northeastern Interior Dry-Mesic Oak Forests in the northern part of its range. The similar Central Appalachian Dry Oak-Pine system is mapped in forests to the east.

Crosswalk to State Name Examples:

Deciduous/Mixed Forest (Upland) (PA), Forest Habitat - Deciduous Forest (VA), Hill Country Deciduous Forests (WV)

Crosswalk to State Wildlife Action Plans:

Deciduous/Mixed Forest (upland) (PA), Forest Habitat - Deciduous Forest (VA), Hill Country Deciduous Forests (WV)

Places to Visit this Habitat:

Forbes State Forest | PA
 Clinch Mountain Wildlife Management Area | VA
 George Washington and Jefferson National Forest | VA
 Monongahela National Forest | WV
 New River Gorge National River | WV

Associated Species: *Appendix lists scientific names*

BIRDS: cerulean warbler, eastern whip-poor-will, ovenbird, kentucky warbler, louisiana waterthrush, summer tanager, willow flycatcher, yellow-throated warbler

MAMMALS: prairie vole, silver-haired bat, southern bog lemming, virginia big-eared bat

HERPTILES: eastern hog-nosed snake, northern coal skink, red salamander, smallmouth salamander

PLANTS: maryland senna (*Senna marilandica*), nodding trillium (*Trillium flexipes*), southern adder's-tongue (*Ophioglossum vulgatum*), spring coralroot (*Corallorhiza wisteriana*)

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

BIRDS: cerulean warbler, golden-winged warbler

MAMMALS: allegheny woodrat, eastern small-footed myotis, indiana myotis, long-tailed shrew, northern myotis

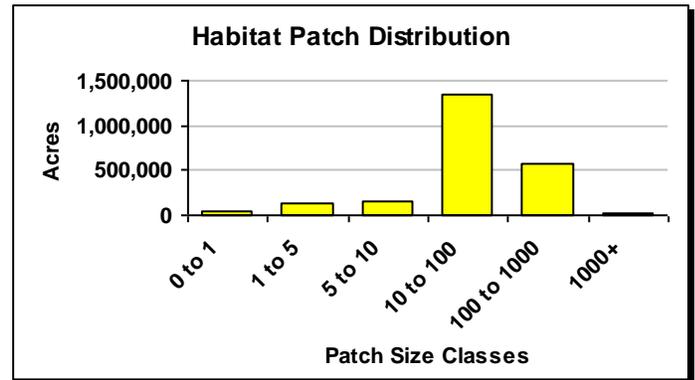
HERPTILES: black mountain salamander, bog turtle, green salamander, hellbender, shovelnose salamander, timber rattlesnake

INSECTS: a cave springtail, common roadside-skipper, deceptive cave beetle, diana fritillary, elusive clubtail, gemmed satyr, gold-banded skipper, long-headed cave beetle, mottled duskywing, northern barrens tiger beetle

PLANTS: roundleaf catchfly (*Silene rotundifolia*), running buffalo clover (*Trifolium stoloniferum*), spreading pogonia (*Cleistes bifaria*), yellow-flowered leafcup (*Smallanthus uvedalius*), virginia mallow (*Sida hermaphrodita*)



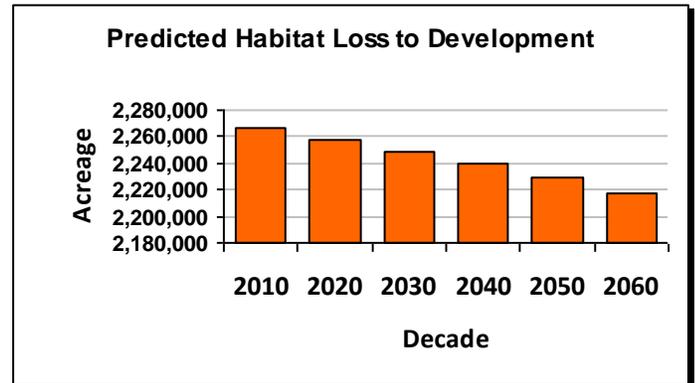
© Jim Vanderhorst (West Virginia Division of Natural Resources)



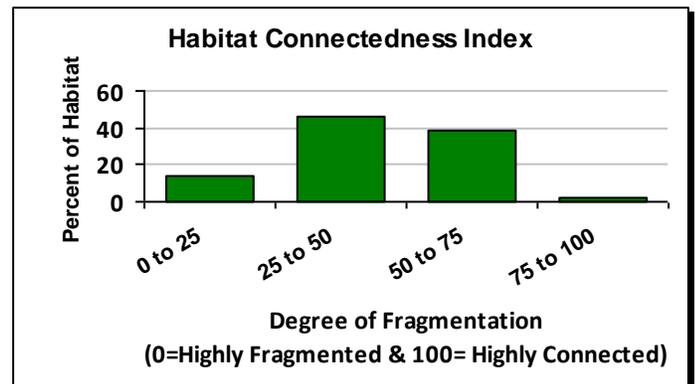
The average patch size for this habitat is 9 acres and the largest single patch is 2,688 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (47,983 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 960 acres per year.



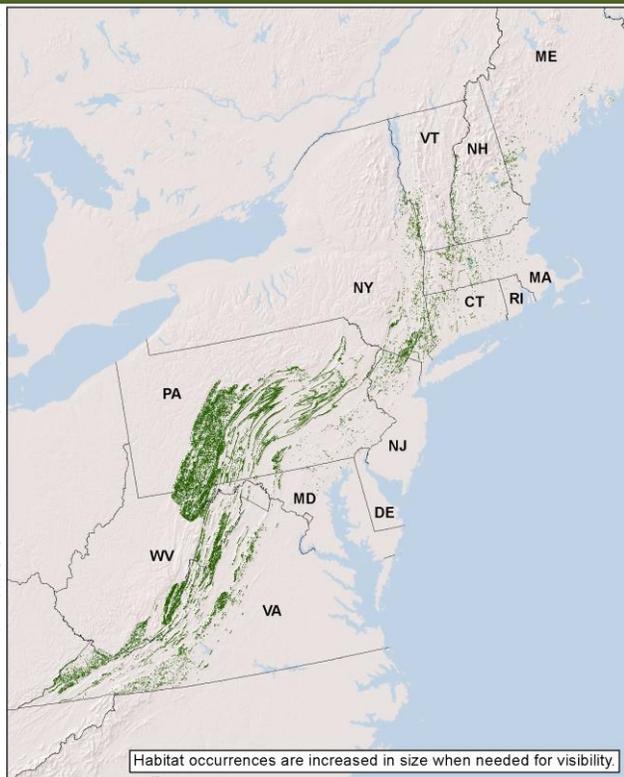
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Central Appalachian Pine-Oak Rocky Woodland



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Elizabeth Thompson (Vermont Land Trust)

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.

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%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	55%	310,493	14,587	101,740	194,166
VA	17%	93,666	25,531	25,815	42,321
WV	12%	70,182	3,064	17,481	49,637
MD	5%	28,081	1,416	6,178	20,488
NY	4%	24,145	2,574	6,526	15,045
MA	2%	8,545	463	2,840	5,241
NJ	1%	8,243	3,245	1,440	3,558
NH	1%	7,739	286	1,353	6,099
VT	1%	6,188	192	377	5,619
CT	1%	4,918	653	957	3,309
ME	1%	4,009	321	233	3,455
RI	0%	38	0	5	33
DE	0%	24	1	10	14
DC	0%	4	0	0	4

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)

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 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)

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

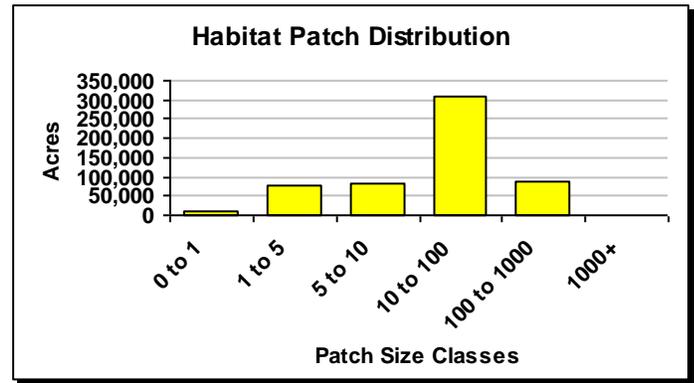
MAMMALS: allegheny woodrat, appalachian cottontail, eastern small-footed myotis, kittatiny red-backed vole, long-tailed shrew, northern myotis, southern flying squirrel

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

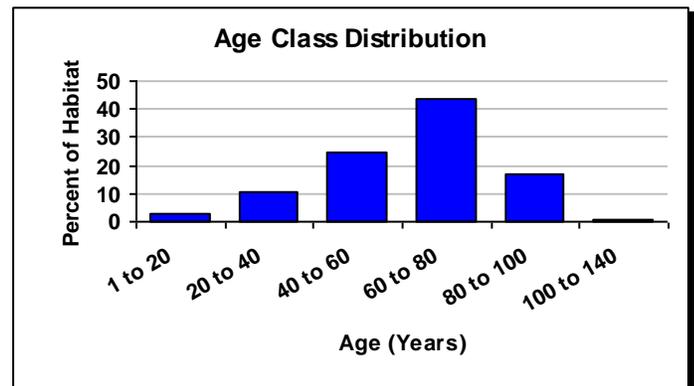
INSECTS: aureolaria seed borer, barrens chaetagnalea, barrens itame, barrens xylotype, blueberry sawfly, edward's hairstreak, Gerhard's underwing moth, northern barrens tiger beetle, oblique zale, pine-devil moth, pink sawfly, red-winged sawfly, similar underwing, sleepy duskywing, southern pine sphinx,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



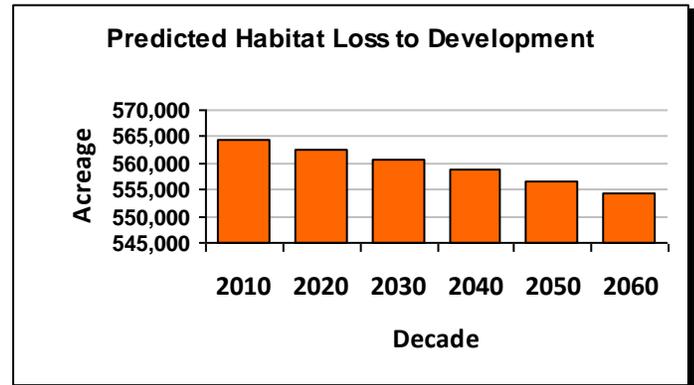
© Maine Natural Areas Program



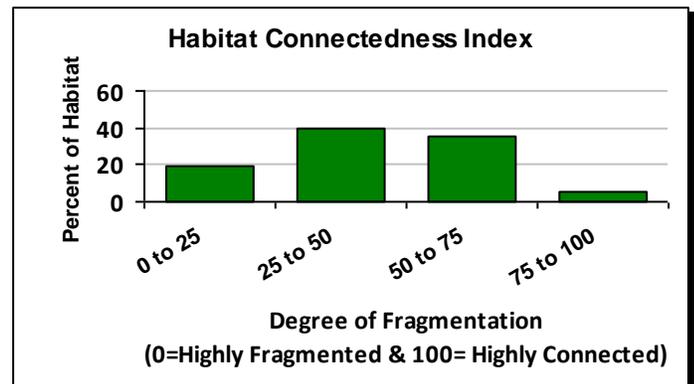
The average patch size for this habitat is 7 acres and the largest single patch is 1,202 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (9,984 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 200 acres per year.



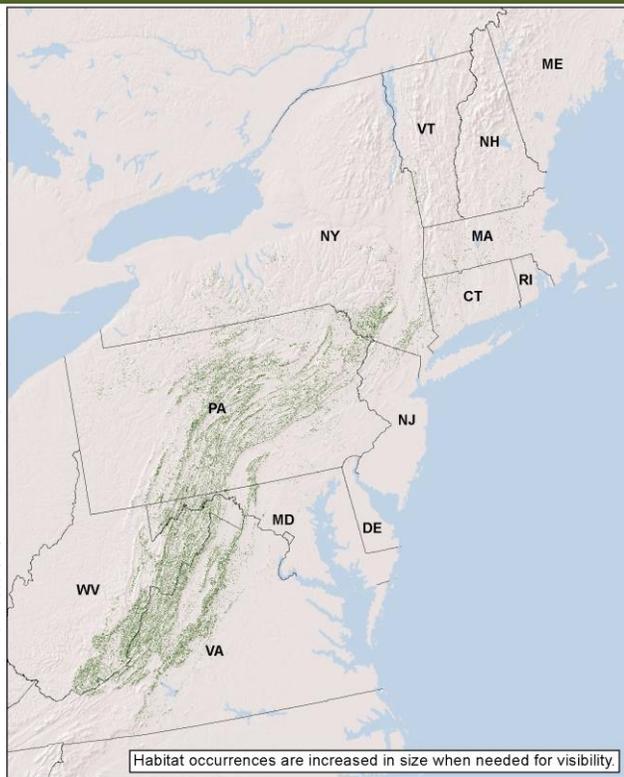
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Central Appalachian Dry Oak-Pine Forest



Macrogroup: Central Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Elizabeth Thompson (Vermont Land Trust)

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.

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%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	39%	1,496,364	72,782	473,996	949,587
VA	26%	982,148	193,537	237,912	550,699
WV	20%	777,259	19,512	163,916	593,831
NY	8%	316,571	14,301	42,043	260,226
MD	3%	127,564	18,158	29,060	80,346
MA	1%	48,100	2,590	14,475	31,035
CT	1%	27,933	3,177	5,067	19,688
VT	1%	25,031	874	1,934	22,223
NJ	1%	23,303	9,633	3,516	10,154
NH	0%	15,155	270	2,413	12,472
ME	0%	4,783	156	398	4,229
RI	0%	938	16	124	799
DE	0%	164	2	33	129
DC	0%	4	0	0	4

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 Oak - 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)

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 oak, 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 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

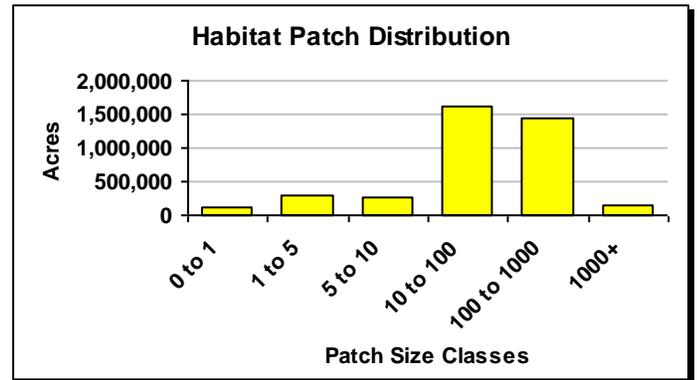
HERPTILES: black rat snake, five-lined skink, timber rattlesnake

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*)



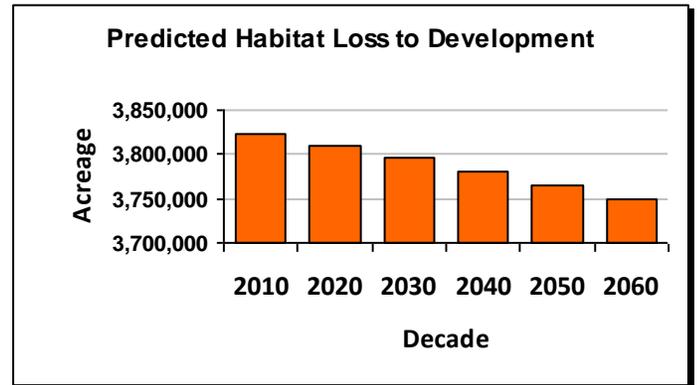
© Eric Sorenson (Vermont Fish & Wildlife)



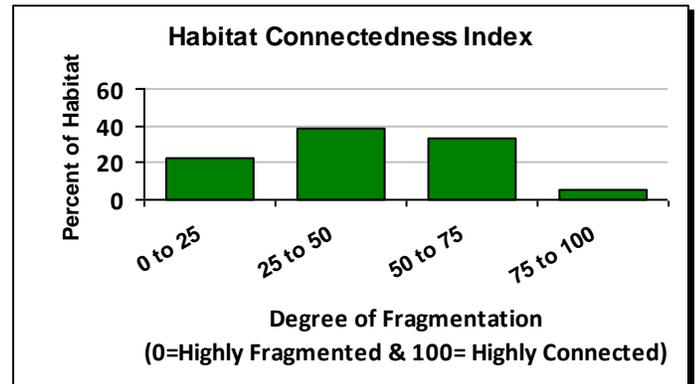
The average patch size for this habitat is 7 acres and the largest single patch is 4,519 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (74,813 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 1,496 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: Cliff and Talus

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© West Virginia Division of Natural Resources

Description:

A sparsely vegetated cliff or steep talus slope formed on calcareous sandstone or shale or other moderately calcareous bedrock. The vegetation varies from sparse to patchy as the lack of soil and constant erosion restricts vegetation growth to rock crevices or soil pockets. Trees are typically present and may form woodland or even forest vegetation. Basswood, ash, and bladdernut are woody indicators of the enriched setting; northern white cedar is sometimes present. The herb layer is typically not extensive but includes at least some species that are indicators of high nutrient conditions.

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

Total Habitat Acreage: 56,454

Percent Conserved: 35.7%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NY	27%	15,195	3,598	2,068	9,528
PA	17%	9,864	512	4,339	5,013
WV	15%	8,404	301	1,969	6,133
VA	13%	7,441	1,501	1,187	4,752
VT	11%	6,359	206	565	5,589
MA	7%	3,683	470	1,276	1,937
CT	3%	1,842	296	233	1,313
NJ	2%	1,389	740	129	520
NH	2%	1,010	58	263	689
ME	2%	858	246	49	563
MD	1%	409	150	6	252

Ecological Setting and Natural Processes:

Vertical or near-vertical cliffs and steep talus slopes where weathering and/or bedrock lithology produce circumneutral to calcareous pH and heightened nutrient availability. Substrates include calcareous sandstone, calcareous shale, or other sedimentary mixtures containing limestone or dolomite. This system occurs at low to mid elevations from central New England south to Virginia and West Virginia.

Similar Habitat Types:

Cliff and talus systems have also been modeled for those steep landforms on other (calcareous and acidic) lithologies.

Crosswalk to State Name Examples:

Circumneutral Cliffs (CT), Circumneutral Rock Cliff Community (MA), Basic Cliff (MD), Cliffs (NH), Traprock Glade/Rock Outcrop Community (NJ), Talus Cave Community (NY), Calcareous Opening/Cliff (PA), Northern White-Cedar Cliff Woodland (VA), Cliffs And Talus Slopes - Temperate Calcareous Cliff (VT), Rock Outcrops/Cliffs/Talus (WV)

Crosswalk to State Wildlife Action Plans:

Rocky Cliffs, Ridgetops, Talus Slopes, and Other Similar Habitats (MA), Rock Outcrops and Cliffs (MD), Cliffs (NH), Cliff and Talus (NY), Rock Habitats (PA), Forest Habitat - Mixed Forest (VA), Cliffs and Talus Slopes - Temperate Calcareous Cliff (VT), Rock Outcrops/Cliffs/Talus (WV)

Places to Visit this Habitat:

Kaaterskill Forest | NY
 Sproul State Forest | PA
 George Washington and Jefferson National Forest | VA
 Bald Mountain Natural Area | VT
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: bank swallow, eastern phoebe, raven, turkey vulture

MAMMALS: bobcat, porcupine, red-backed vole, rock vole, short-tailed shrew

HERPTILES: black rat snake, copperhead, fence lizard, five-lined skink, timber rattlesnake

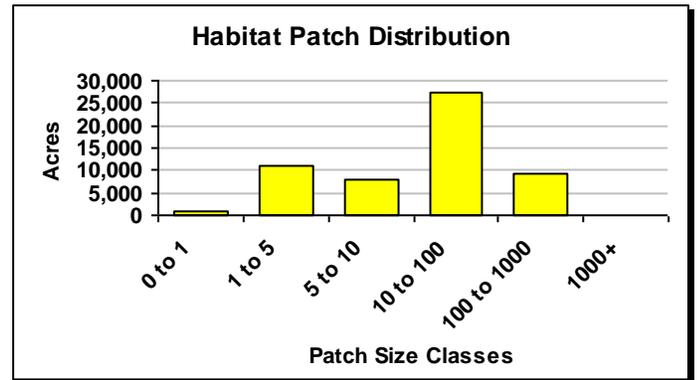
PLANTS: cliff muhly (*Muhlenbergia sobolifera*), climbing fumitory (*Adlumia fungosa*), downy arrow-wood (*Viburnum rafinesquianum*), glade fern (*Diplazium pycnocarpon*), ledge spike-moss (*Selaginella rupestris*), linear-leaved milkweed (*Asclepias verticillata*), michaux's stitchwort (*Minuartia michauxii*), narrowleaf vervain (*Verbena simplex*), northern stickseed (*Hackelia deflexa*), purple clematis (*Clematis occidentalis*), rock crowfoot (*Ranunculus micranthus*), upland boneset (*Eupatorium sessilifolium*), wallrue spleenwort (*Asplenium ruta-muraria*)

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

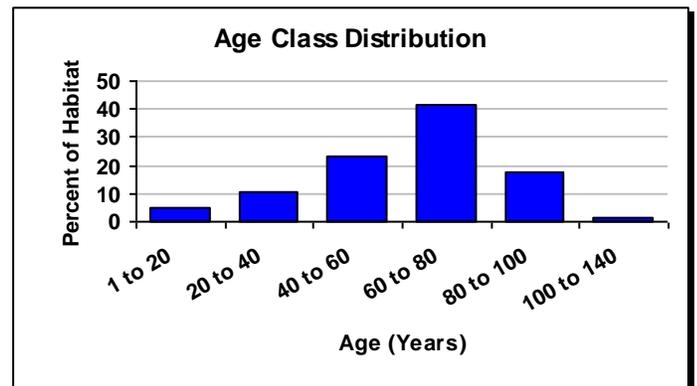
PLANTS: back's sedge (*Carex backii*), black maple (*Acer nigrum*), goldie's wood fern (*Dryopteris goldiana*)



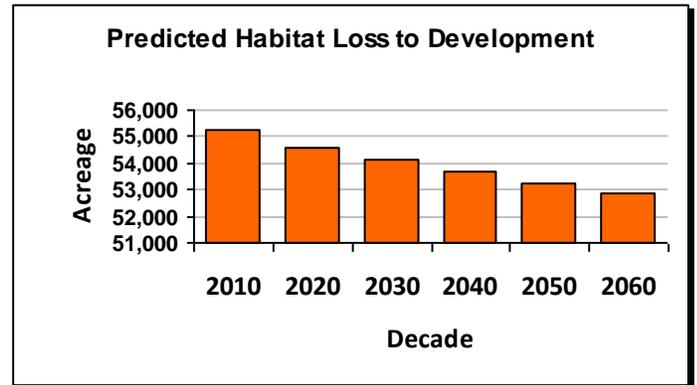
© West Virginia Division of Natural Resources



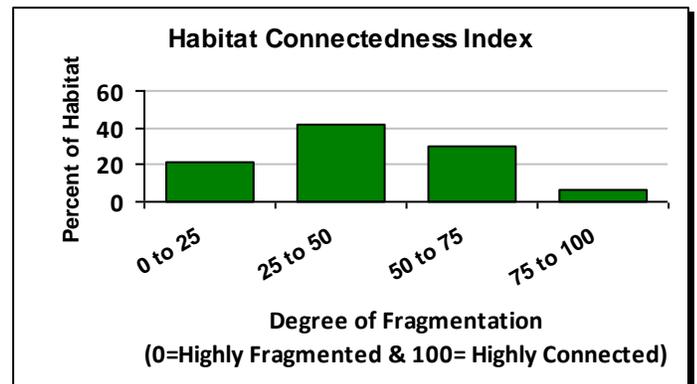
The average patch size for this habitat is 6 acres and the largest single patch is 408 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (2,372 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 47 acres per year.

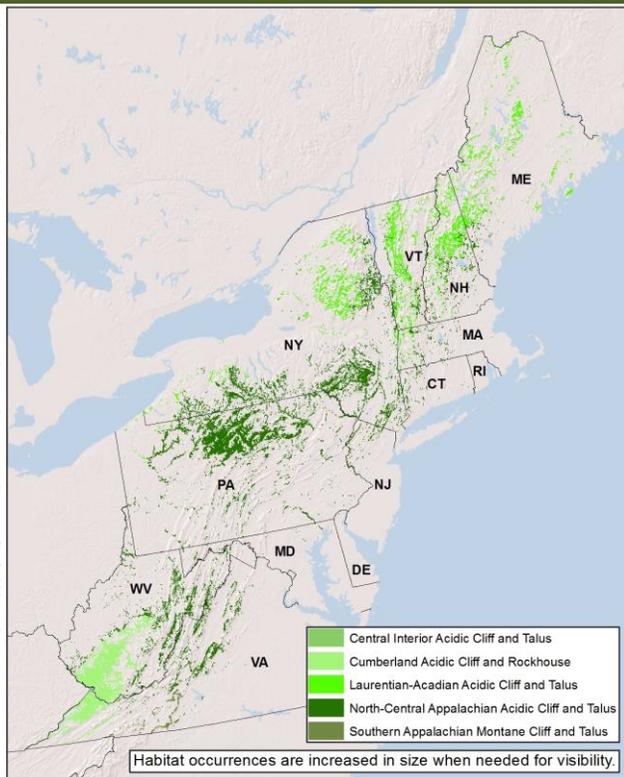


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Cliff and Talus

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Eric Sorenson (Vermont Fish & Wildlife)

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 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), 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)

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%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	36%	204,775	28,707	101,430	74,638
NY	19%	107,441	35,533	15,398	56,510
WV	16%	90,419	3,952	8,344	78,122
VA	8%	43,020	6,885	7,542	28,592
NH	6%	35,115	17,793	7,648	9,674
ME	6%	35,028	14,019	4,641	16,368
VT	6%	34,675	6,169	7,047	21,459
MA	1%	6,149	1,715	1,313	3,121
NJ	0%	2,675	1,324	531	820
CT	0%	2,061	300	457	1,303
MD	0%	437	72	180	185
DE	0%	4	0	0	4
RI	0%	3	0	0	3
DC	0%	1	0	0	1

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), Siliceous 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)

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 wormsneak, 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*)

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

BIRDS: peregrine falcon

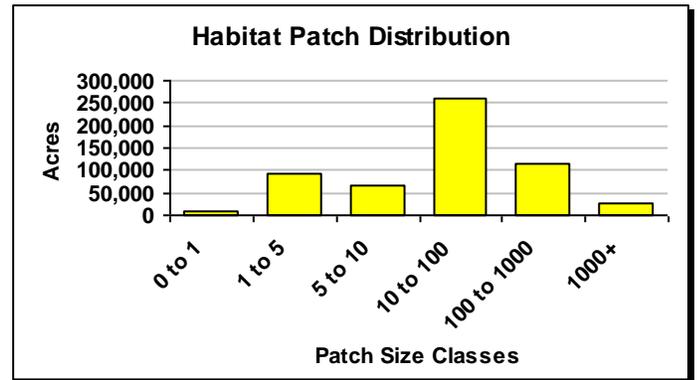
MAMMALS: allegheny woodrat, rock vole

HERPTILES: northern copperhead, timber rattlesnake

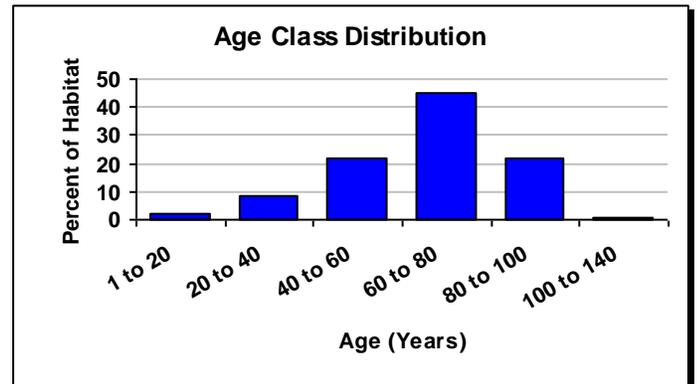
PLANTS: green spleenwort (*Asplenium trichomanes-ramosum*), Alabama lipfern (*Cheilanthes alabamensis*), silverling (*Paronychia argyrocoma*)



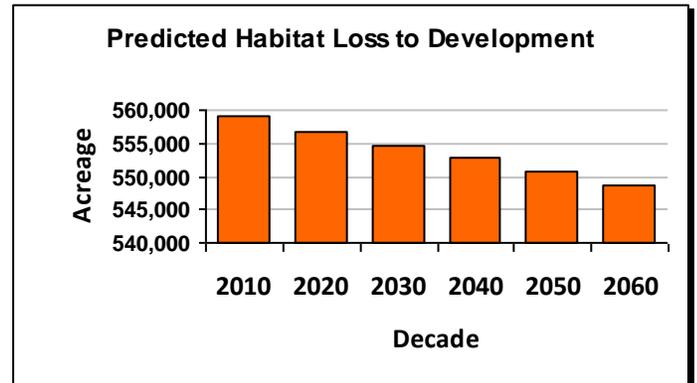
© Maine Natural Areas Program



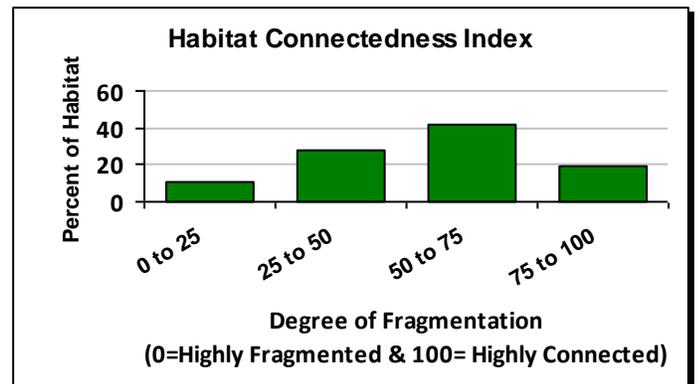
The average patch size for this habitat is 7 acres and the largest single patch is 2,038 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.

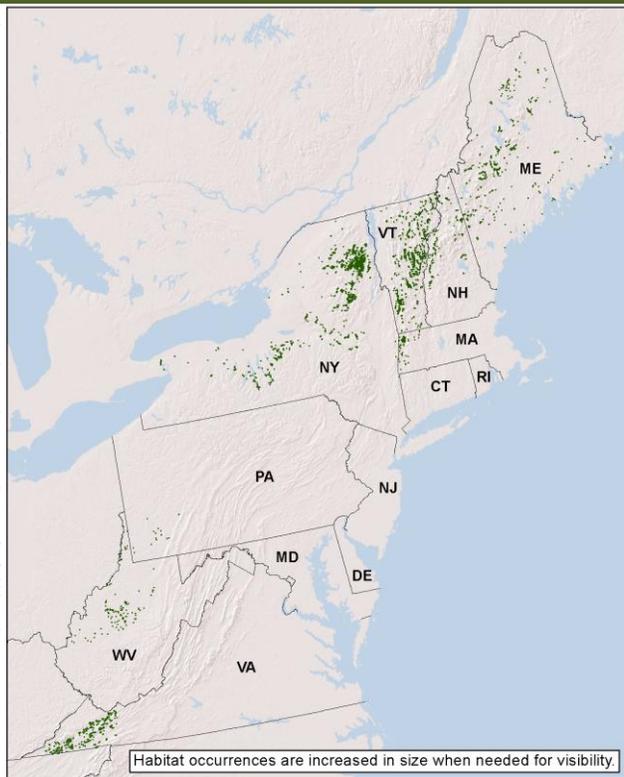


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Cliff and Talus

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Elizabeth Thompson (Vermont Land Trust)

Description:

A sparsely vegetated cliff or talus slope formed on limestone, dolomite, dolostone, or other calcareous bedrock. The high alkalinity (pH>7) increases nutrient availability, but the lack of soil, constant erosion, and harsh edaphic conditions limits vegetation to herbs, ferns, and sparse trees growing in rock crevices or soil pockets. Northern white cedar is characteristic and may dominate on some cliffs, sometimes reaching ages upwards of 800-1000 years. Ash and basswood and bladdernut are other woody indicators of the enriched setting, as are ferns like spleenwort and cliffbrake, and wiry herbs such as rock whitow grass. This system includes the narrow zone of vegetation at the horizontal cliff top where growing conditions are harsh and often gladelike or grassy.

Ecological Setting and Natural Processes:

Near-vertical cliffs and talus slopes occurring on limestone or other calcareous rock, associated with steep hill slopes, bluffs, and river gorges. Wind and water erosion, mass movement, and fire are primary system dynamics. Harsh edaphic conditions limit the vegetation cover. Occurs widely with distinct variants in the Appalachians, Ridge and Valley Province and adjacent Cumberland Plateau, and the north-central interior west of the Appalachians.

Similar Habitat Types:

Cliff and talus systems have also been modeled for those steep landforms on other (acidic and circumneutral) lithologies.

Crosswalk to State Wildlife Action Plans:

Cliff Face and Rocky Outcrops (ME), Cliffs (NH), Cliff and Talus (NY), Rock Habitats (PA), Barren Habitat - Balds (VA), Cliffs and Talus Slopes - Boreal Calcareous Cliff (VT)

State Distribution: MA, ME, NH, NY, PA, VA, VT, WV

Total Habitat Acreage: 56,251

Percent Conserved: 48.2%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NY	39%	21,973	14,474	2,291	5,208
VT	28%	15,736	1,169	3,588	10,979
ME	14%	7,886	1,108	1,286	5,492
VA	7%	3,892	272	380	3,240
NH	7%	3,757	748	586	2,423
MA	3%	1,868	895	267	706
WV	2%	1,020	6	1	1,013
PA	0%	118	7	8	103

Crosswalk to State Name Examples:

Calcareous Rock Cliff Community (MA), Cliff Face And Rocky Outcrops (ME), Montane - Subalpine Circumneutral Cliff (NH), Calcareous Cliff Community (NY), Rock Habitats (PA), Appalachian Xeric Calcareous Cliff (VA), Boreal/Temperate Calcareous Cliff (VT)

Places to Visit this Habitat:

Mount Greylock State Reservation | MA
 White Mountain National Forest | NH
 Dix/Giant Mountain Wilderness | NY
 High Peaks Wilderness Area | NY
 Green Mountain National Forest | VT

Associated Species: *Appendix lists scientific names*

BIRDS: eastern phoebe, golden eagle, raven, turkey vulture

PLANTS: birds-eye primrose (*Primula mistassinica*), blake's milk-vetch (*Astragalus robbinsii* var. *minor*), braya (*Braya humilis*), bulrush sedge (*Carex scirpoidea*), butterwort (*Pinguicula vulgaris*), few-flowered spikerush (*Eleocharis pauciflora*), fragile rock-brake (*Cryptogramma stelleri*), fragrant cliff woodfern (*Dryopteris fragrans*), hyssop-leaved fleabane (*Erigeron hyssopifolius*), lyre-leaved rock-cress (*Arabis lyrata*), roseroot (*Sedum rosea*), smooth cliff brake (*Pellaea glabella*), smooth rock-cress (*Arabis laevigata*), smooth woodsia (*Woodsia glabella*), supple panic grass (*Panicum flexile*), wall-rue (*Asplenium rutamuraria*), yellow mountain saxifrage (*Saxifraga aizoides*)

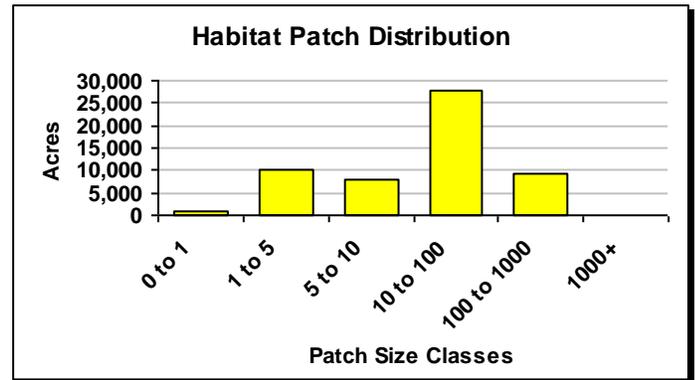
Species of Concern (G1-G4): *Appendix lists scientific names*

BIRDS: peregrine falcon

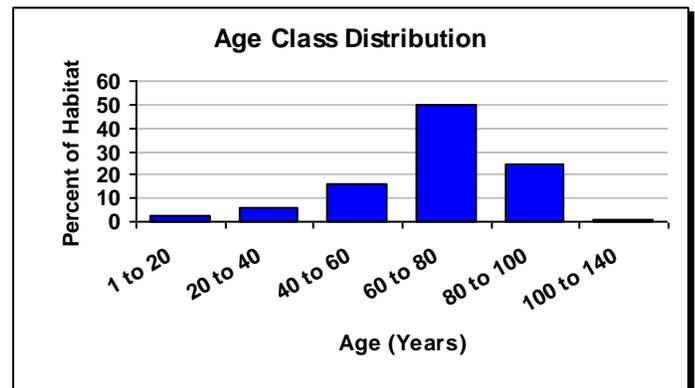
PLANTS: Drummond's rock-cress (*Arabis drummondii*), green spleenwort (*Asplenium trichomanes ramosum*), purple mountain saxifrage (*Saxifraga oppositifolia*), rock whitlow-grass (*Draba arabisans*)



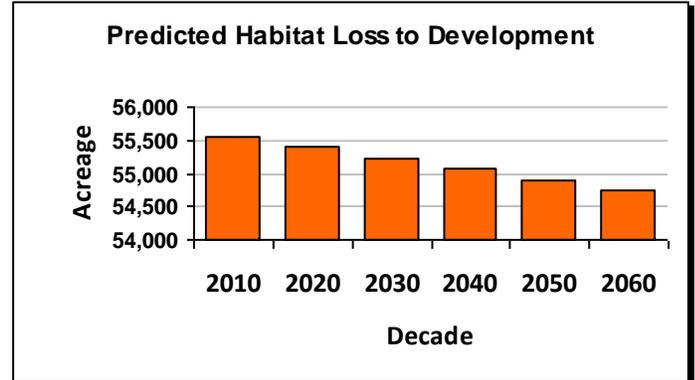
© Eric Sorenson (Vermont Fish & Wildlife)



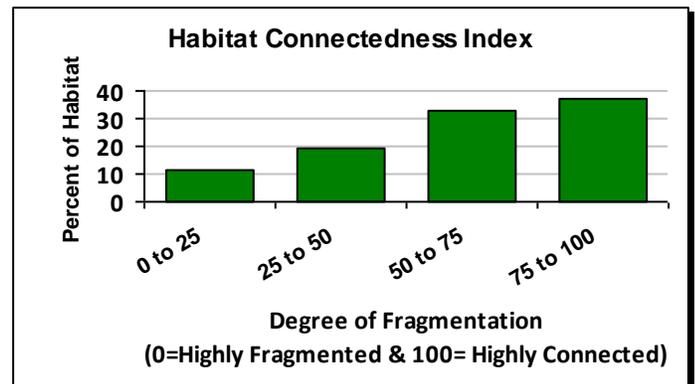
The average patch size for this habitat is 6 acres and the largest single patch is 612 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (824 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 16 acres per year.



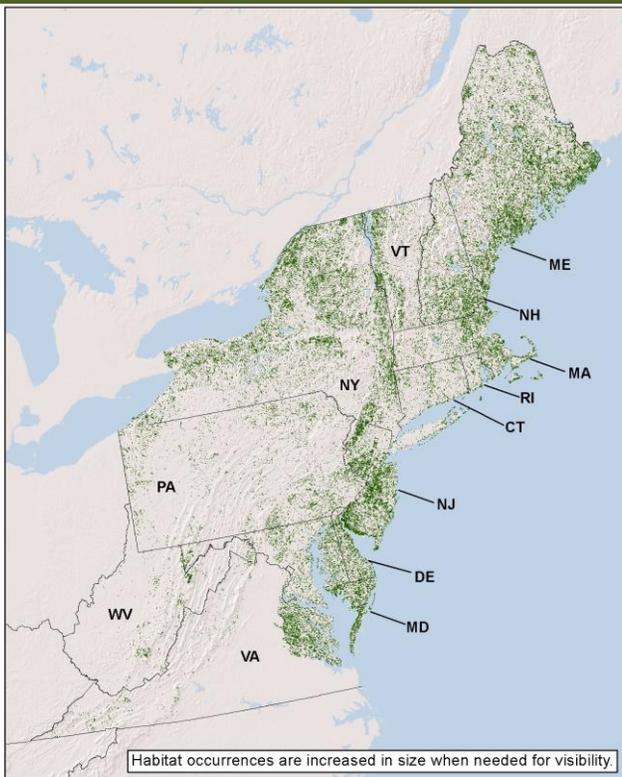
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Laurentian-Acadian Freshwater Marsh



Macrogroup: Emergent Marsh

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Maine Natural Areas Program

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.

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%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
ME	25%	225,999	13,432	26,406	186,161
NY	25%	224,007	25,309	27,887	170,811
NJ	11%	98,802	17,497	9,039	72,265
VA	7%	61,229	1,285	3,949	55,995
MA	6%	57,011	4,217	12,825	39,969
MD	6%	52,867	2,802	10,177	39,888
PA	5%	48,783	3,585	4,395	40,802
NH	5%	48,642	2,373	10,747	35,523
VT	4%	39,373	2,385	5,542	31,445
DE	2%	21,773	1,518	3,960	16,294
CT	2%	16,321	1,506	2,964	11,851
WV	1%	6,766	156	244	6,366
RI	1%	5,089	413	1,010	3,666
DC	0%	61	0	0	61

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)

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 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: *Appendix lists scientific names*

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 ranunculoides*), hardstem bulrush (*Schoenoplectus acutus*), marsh felwort (*Lomatogonium rotatum*), marsh hedge-nettle (*Stachys pilosa*), whorled pennywort (*Hydrocotyle verticillata*)

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

BIRDS: black tern, king rail, northern harrier

MAMMALS: water shrew

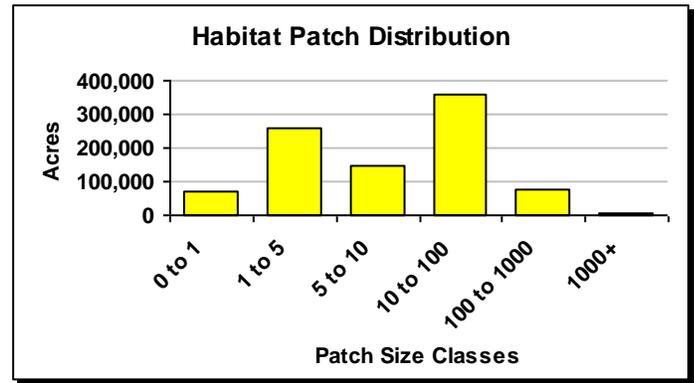
HERPTILES: wood turtle, blanding's turtle

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

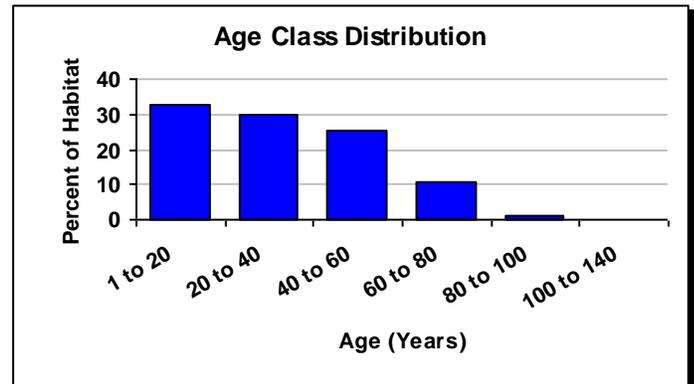
PLANTS: blue maiden-cane (*Amphicarpum purshii*), fly-poison (*Amianthium muscitoxicum*), northeastern bladderwort (*Utricularia resupinata*), ohio goldenrod (*Oligoneuron ohioense*), Robbins' spikerush (*Eleocharis robbinsii*), sago pondweed (*Potamogeton pectinatus*), Sartwell's sedge (*Carex sartwellii*),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



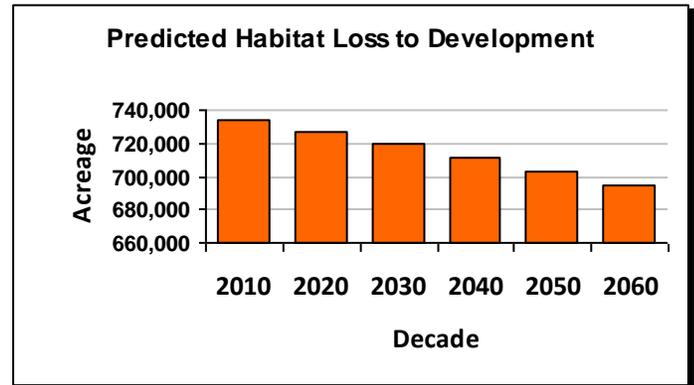
© Maine Natural Areas Program



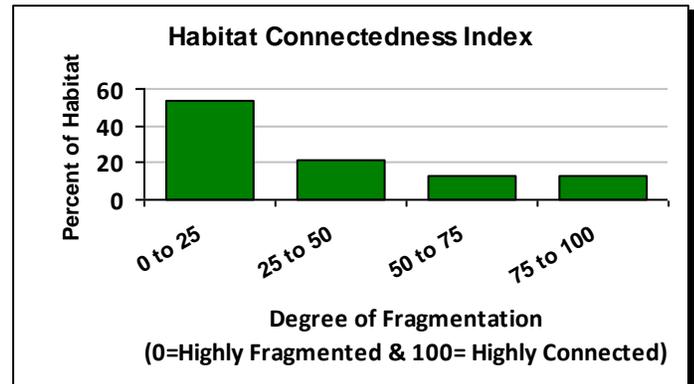
The average patch size for this habitat is 3 acres and the largest single patch is 1,258 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.



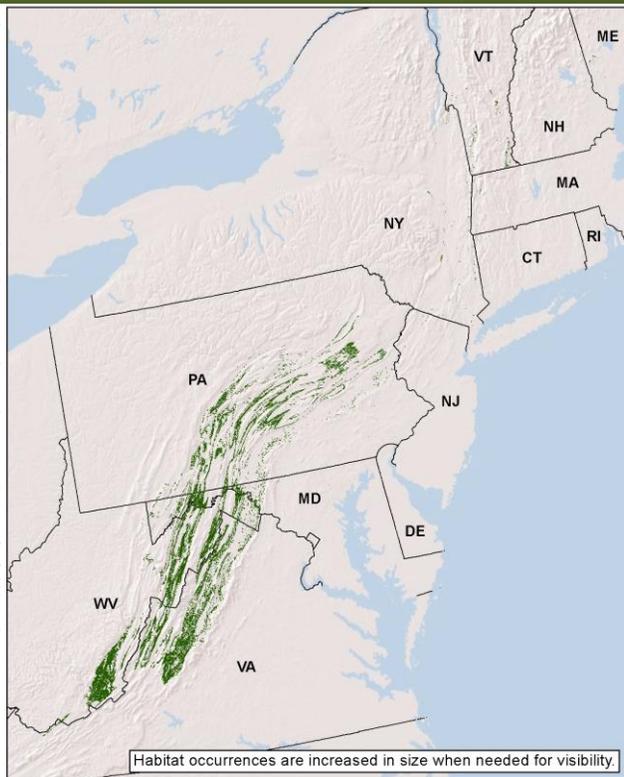
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Central Appalachian Alkaline Glade and Woodland



Macrogroup: Glade, Barren and Savanna

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© West Virginia Division of Natural Resources

Description:

A mosaic of woodlands and open glades on thin soils over limestone, dolostone or similar calcareous rock with its core distribution in the Central Appalachians, but extending well up into New England. In some cases, the woodlands grade into closed-canopy forests. Eastern red-cedar is a common tree, filling in in the absence of fire, and chinquapin oak is indicative of the limestone substrate. In the northern part of its range, northern white cedar may replace red cedar. Other locally occurring trees and shrubs are sugar maple, red and white oak, pignut hickory, eastern redbud, and hackberry. Prairie grasses are often dominant in the herb layer, and forb richness is often high, supporting species such as tall larkspur, american harebell, columbine, and four-leafed milkweed.

Ecological Setting and Natural Processes:

A moderately dry patch community that forms in shallow soils at high landscape positions (upper slopes, ridgetops), at elevations up to about 2500 feet. It is known widely through the region. Fire is sometimes an important natural disturbance vector, but open physiognomies may also be maintained by drought and landslides. Lower elevation examples are often in highly fragmented agricultural landscapes.

Similar Habitat Types:

Similar to Southern Ridge and Valley Calcareous Glade and Woodland, but on higher and more convex landforms, and farther north. As conditions become less dry, soil deepens, and the canopy closes, this system usually grades into Northeast Interior Dry-Mesic Oak Forest, or Appalachian or (farthest north) Laurentian-Acadian Northern Hardwoods.

Crosswalk to State Wildlife Action Plans:

Upland Forest - Calcareous Forests (CT), Upland Woodland and Shrub - Red Cedar Glades (CT), Rocky Cliffs, Ridgetops, Talus Slopes, and Other Similar Habitats (MA), Barrens and Dry Glades (MD), Grassland Habitats - Naturally occurring barrens (PA), Forest Habitat - Mixed Forest (VA), Calcareous Forests and Woodlands (WV), Limestone Barrens and Glades (WV)

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

Total Habitat Acreage: 413,498

Percent Conserved: 11.6%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	37%	154,340	2,525	9,145	142,669
PA	29%	118,776	1,377	7,485	109,914
VA	27%	110,933	6,795	15,842	88,296
MD	6%	25,052	2,341	1,489	21,222
VT	1%	2,464	221	214	2,029
NY	0%	1,297	107	157	1,033
MA	0%	202	57	0	145
ME	0%	183	1	28	154
NJ	0%	144	28	0	115
CT	0%	92	1	0	91
NH	0%	15	2	2	12

Crosswalk to State Name Examples:

Upland Woodland And Shrub - Red Cedar Glades (CT), Yellow Oak Dry Calcareous Forest (MA), Montane Dry Calcareous Forest And Woodland (MD), Limestone Glade (NJ), Limestone Woodland/Red Cedar Rocky Summit (NY), Yellow Oak - Redbud Woodland (PA), Ridge And Valley Dolomite Woodland (VA), Limestone Barrens And Glades (WV)

Places to Visit this Habitat:

Green Ridge State Forest | MD
 Nesciopeck State Park | PA
 George Washington and Jefferson National Forest | VA
 George Washington National Forest | WV
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: cerulean warbler, eastern whip-poor-will, golden-winged warbler, prairie warbler, yellow-breasted chat

INSECTS: compton tortoiseshell

PLANTS: barren strawberry (*Waldsteinia fragarioides*), downy arrow-wood (*Viburnum rafinesquianum*), chinquapin oak (*Quercus muehlenbergii*), glade flax (*Linum sulcatum* var. *sulcatum*), hairy beardtongue (*Penstemon hirsutus*), hairy pinweed (*Lechea mucronata*), orange-grass st. john's-wort (*Hypericum gentianoides*), prairie ragwort (*Packera plattensis*), running serviceberry (*Amelanchier humilis*), smoke hole bergamot (*Monarda fistulosa* ssp. 1), violet bushclover (*Lespedeza violacea*), western hairy rockcress (*Arabis hirsuta*), western wallflower (*Erysimum capitatum*)

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

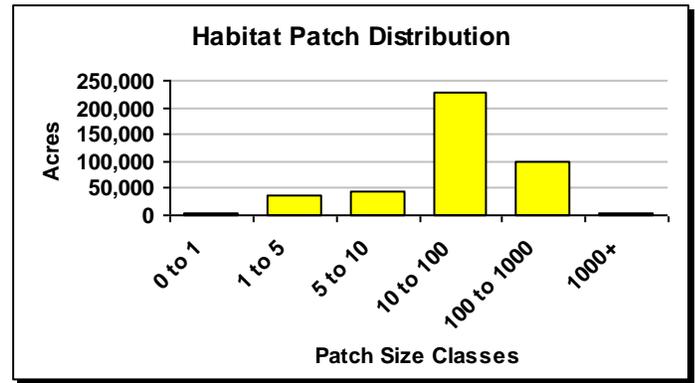
HERPTILES: Wehrle's salamander, west virginia spring salamander

INSECTS: Carolyn's cave springtail, cavern sheet-web Spider, Hubbard's cave beetle, Maddens cave beetle, natural bridge cave beetle, Seneca cave beetle, and many other cave beetle, mites, springtails and spiders

PLANTS: cliff stonecrop (*Sedum glaucophyllum*), hidden spike-moss (*Selaginella eclipes*), tall larkspur (*Delphinium exaltatum*), three-lobed violet (*Viola triloba*)



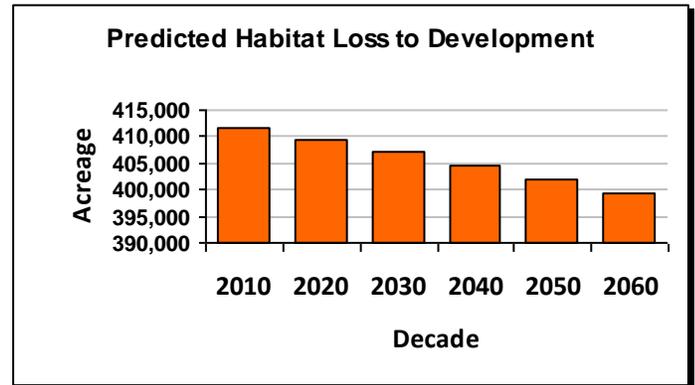
© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)



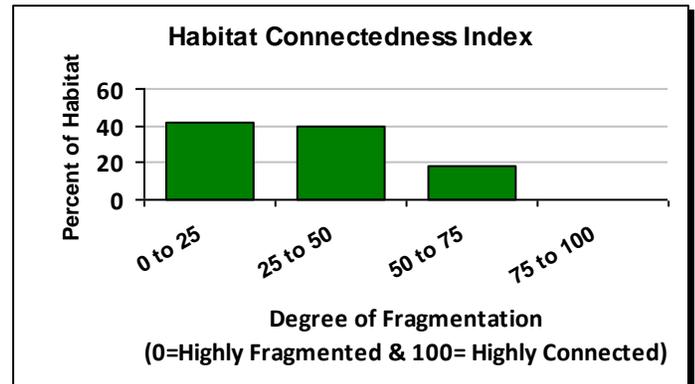
The average patch size for this habitat is 9 acres and the largest single patch is 1,190 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.



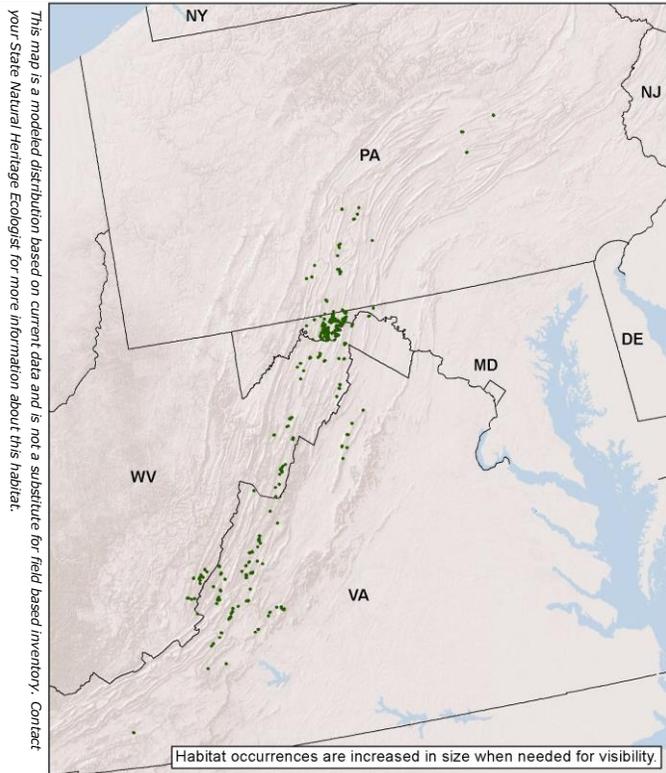
This chart shows the predicted loss of habitat over the next five decades (12,363 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 247 acres per year.



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



© West Virginia Division of Natural Resources

Description:

A mosaic of woodlands, shrublands, and large open areas of sparse vegetation formed on dry, exposed, steep slopes of unstable shale scree. Dominant trees are primarily stunted red and chestnut oak, scrub oak, pignut hickory, and Virginia pine; on higher-pH substrates the common trees include red-cedar and white ash. Many of these may occur as shrubs, along with prickly pear and various heaths. Shale barren endemics such as shale barren rockcress, shale barren evening primrose and Kate's mountain clover, are diagnostic in the herb layer. This is the distinctive shale barrens of the central Appalachians.

State Distribution: MD, PA, VA, WV

Total Habitat Acreage: 5,169

Percent Conserved: 61.5%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
MD	42%	2,163	375	1,200	588
VA	33%	1,728	874	469	385
WV	17%	871	64	132	674
PA	8%	407	40	23	345

Crosswalk to State Name Examples:

Shale Barren (MD), Virginia Pine - Mixed Hardwood Shale Woodland (PA), Central Appalachian Shale Barren (Northern Type) (VA), Shale Barrens (WV)

Ecological Setting and Natural Processes:

Occurs at low to mid elevations (about 800 to 2500 feet) on dry, rocky, steep slopes of fissile shale or solid rock. Slopes are often above steeply cut stream or river beds, commonly with south to west aspects. The lack of soil creates extreme conditions for plant growth. Introduced weeds and quarrying pose the most serious threats to this system.

Similar Habitat Types:

Similar in form and structure to this system, though lacking its many endemics and near endemics, are barrens and talus systems to the west and south, such as Southern Appalachian Montane Cliff and Talus, Central Interior Highlands Dry Acidic Glade and Barrens, and Southern and Central Appalachian Mafic Glade and Barrens.

Crosswalk to State Wildlife Action Plans:

Barrens and Dry Glades (MD), Rock Habitats (PA), Forest Habitat - Mixed Forest (VA), Shale Barrens (WV)

Places to Visit this Habitat:

C & O Canal National Historical Park | MD
 Green Ridge State Forest | MD
 Shawnee State Park | PA
 George Washington and Jefferson National Forest | VA
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: eastern whip-poor-will, pine warbler, prairie warbler, worm-eating warbler

INSECTS: barrens moth, lead colored lichen moth, Packard's lichen moth, silvery blue, yellow-headed lichen moth

PLANTS: bigseed dodder (*Cuscuta indecora*), bluntnose spurge (*Euphorbia obtusata*), eaton's lipfern (*Cheilanthes eatonii*), goose-foot corn-salad (*Valerianella chenopodiifolia*), michaux's stitchwort (*Minuartia michauxii*), narrowleaf bluecurls (*Trichostema setaceum*), ozark milk-vetch (*Astragalus distortus*), ozark milk-vetch (*Astragalus distortus*), prairie violet (*Viola pedatifida*), slender goldenrod (*Solidago erecta*), virginia mountainmint (*Pycnanthemum virginianum*), white meadowsweet (*Spiraea betulifolia*), woodland agrimony (*Agrimonia rostellata*)

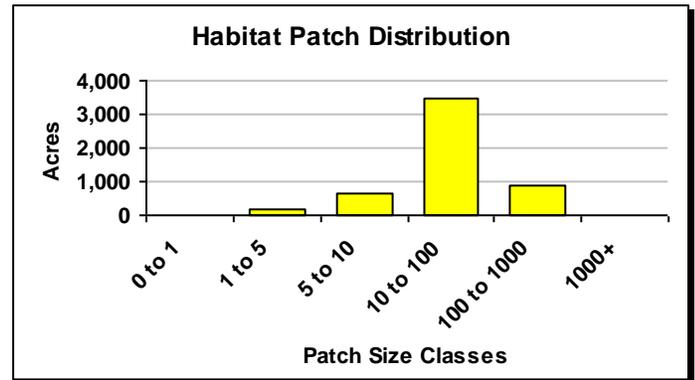
Species of Concern (G1-G4): *Appendix lists scientific names*

INSECTS: Allegheny river cruiser, Appalachian grizzled skipper, northern oak hairstreak, Olympia marble

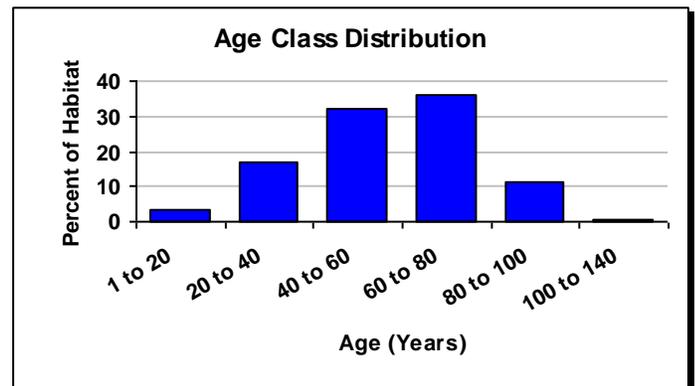
PLANTS: alleghany plum (*Prunus alleghaniensis*), allegheny stonecrop (*Sedum telephioides*), appalachian woodsia (*Woodsia appalachiana*), kate's mountain clover (*Trifolium virginicum*), moss phlox (*Phlox subulata*), shale barren bindweed (*Calystegia spithamea*), shale barren evening-primrose (*Oenothera argillicola*), shale barren rockcress (*Arabis serotina*), shalebarren goldenrod (*Solidago arguta*), shale-barren skullcap (*Scutellaria parvula*), shalebarren wild buckwheat (*Eriogonum allenii*), white-hair leatherflower (*Clematis albicoma*), yellow nailwort (*Paronychia virginica*)



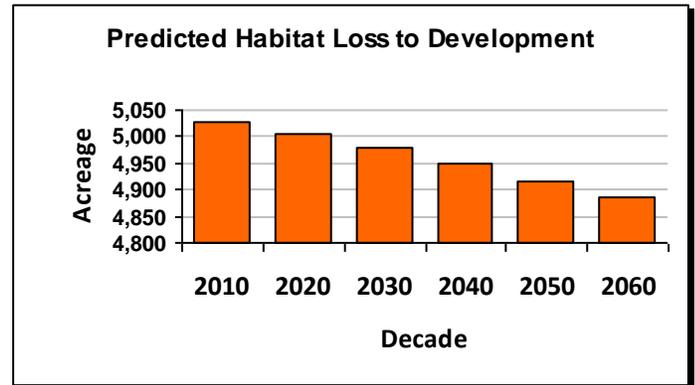
© Jim Vanderhorst (West Virginia Division of Natural Resources)



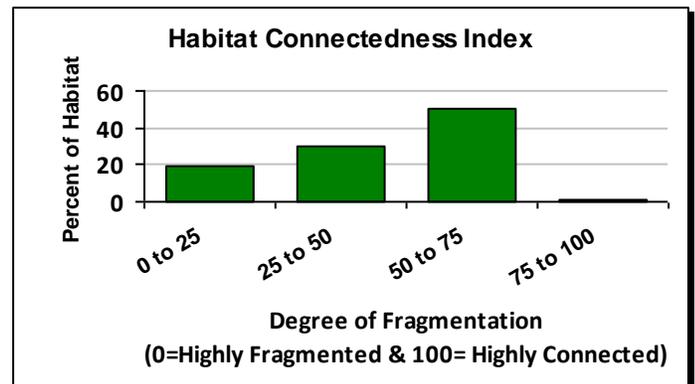
The average patch size for this habitat is 14 acres and the largest single patch is 296 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (141 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 3 acres per year.

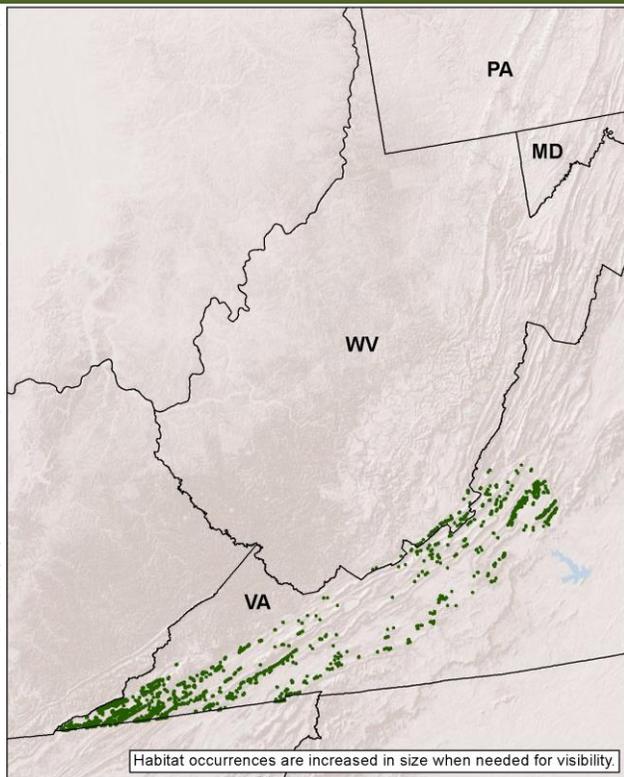


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Glade, Barren and Savanna

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Chris Ludwig (Virginia Department of Conservation & Recreation Natural Heritage Program)

Description:

A mosaic of open glades and woodlands occurring on shallow, high pH, limestone soils of the Ridge and Valley region from Virginia southward. Chinquapin oak is typical where there is canopy. The flat to rolling terrain and dry soils may have been especially susceptible to periodic fires that helped maintain the prairie-like openings and savanna-like woodlands. Today, much of the system is currently more closed and brushy, suggesting fire suppression.

State Distribution: VA, WV

Total Habitat Acreage: 9,418

Percent Conserved: 9.8%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
VA	98%	9,195	513	388	8,294
WV	2%	224	1	19	204

Ecological Setting and Natural Processes:

These glades occur in broad valley bottoms, rolling basins, and adjacent lower slopes where soils are shallow over flat-lying limestone strata. Patches often border remnant calcareous forests in primarily agricultural zones.

Similar Habitat Types:

Other calcareous glades of the same region (Central Appalachian Alkaline Glade and Woodland, lower canopy openings in Southern Ridge and Valley/Cumberland Dry Calcareous Forest) occur on hillslopes. They are subject to different erosional processes, zonal vegetation patterns, and generally different ecological dynamics.

Crosswalk to State Name Examples:

Southern Ridge And Valley Dry Calcareous Forest (VA)

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Mixed Forest (VA)

Places to Visit this Habitat:

George Washington and Jefferson National Forest | VA
Jefferson National Forest | WV

Associated Species: *Appendix lists scientific names*

PLANTS: Big bluestem (*Andropogon gerardii*), Canada bluets (*Houstonia canadensis*), eastern indian-paintbrush (*Castilleja coccinea*), ebony sedge (*Carex eburnea*), false aloe (*Manfreda virginica*), false boneset (*Brickellia eupatorioides*), hairy wild-petunia (*Ruellia humilis*), indian grass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*), Pitcher's stitchwort (*Minuartia patula* var. *patula*), rough dropseed (*Sporobolus clandestinus*), sheathed dropseed (*Sporobolus vaginiflorus*), side-oats grama (*Bouteloua curtipendula*), stiff goldenrod (*Solidago rigida*), tall gay-feather (*Liatris aspera*), western silky aster (*Aster pratensis*), white blue-eyed-grass (*Sisyrinchium albidum*)

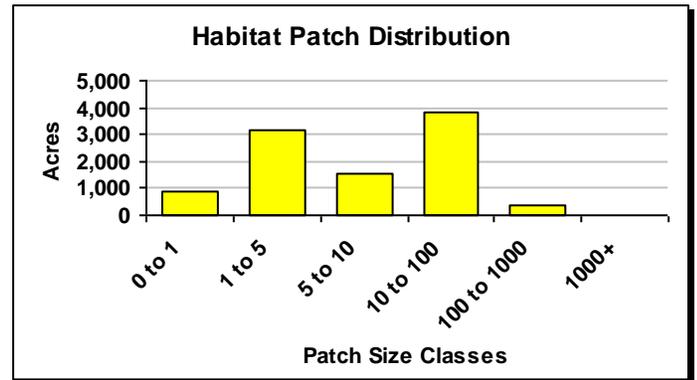
Species of Concern (G1-G4): *Appendix lists scientific names*

INSECTS: Cherokee Clubtail (*Gomphus consanguis*)

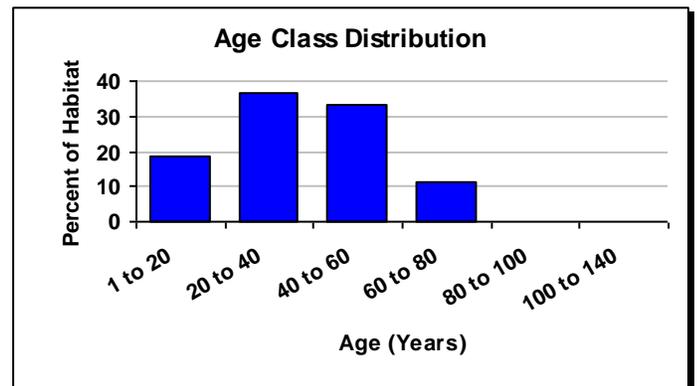
PLANTS: Wild Hyacinth (*Camassia scilloides*)



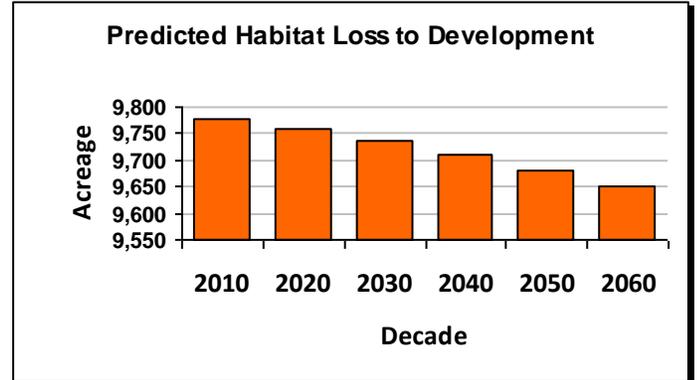
© Chris Ludwig (Virginia Department of Conservation & Recreation Natural Heritage Program)



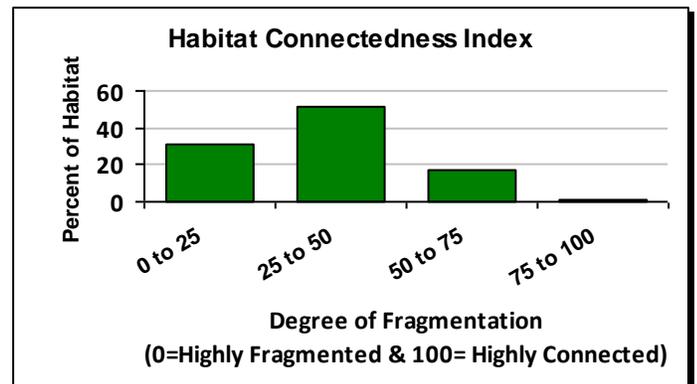
The average patch size for this habitat is 2 acres and the largest single patch is 183 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (127 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 3 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.

North-Central Appalachian Large River Floodplain



Macrogroup: Large River Floodplain

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Bruce A. Sorrie (Massachusetts Division of Fisheries & Wildlife/Natural Heritage & Endangered Species Program)

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.

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%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NY	56%	142,677	10,582	15,936	116,158
PA	24%	59,967	2,733	5,826	51,409
ME	4%	11,047	479	2,413	8,155
MA	4%	10,054	1,693	2,251	6,110
NJ	4%	9,846	4,177	520	5,149
NH	2%	4,646	131	778	3,737
CT	2%	4,024	251	980	2,793
MD	1%	3,708	708	298	2,702
VT	1%	3,430	199	324	2,906
VA	1%	3,290	56	131	3,103
WV	1%	1,982	9	70	1,903
DC	0%	90	1	0	89
DE	0%	82	10	30	42
RI	0%	19	0	2	17

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-ostrich 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)

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 Wildlife Action Plans:

Forested Inland Wetland - Floodplain Forests (CT), Floodplains (DC), Riparian Forests (MA), Floodplain Forests (MD), Floodplains - Major river silver maple floodplains (NH), Floodplains (NJ), Floodplain Forests (NY), Riparian Thickets/Forests (PA), Wetland Habitat - Forested (VA), Floodplain Forests - Silver Maple-Sensitive Fern Riverine Floodplain Forest (VT), Floodplain Forests and Swamps (WV)

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

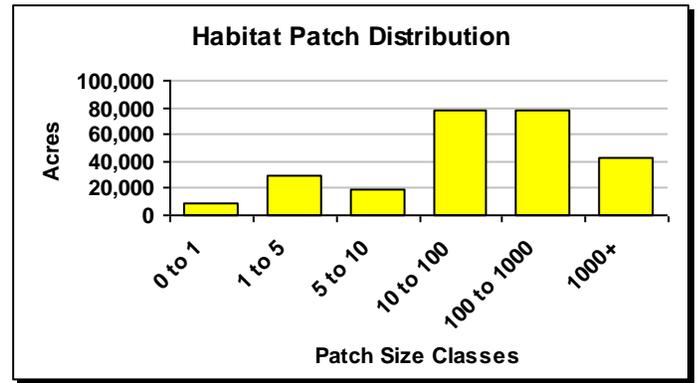
HERPTILES: blandings turtle, jefferson salamander, wood turtle

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

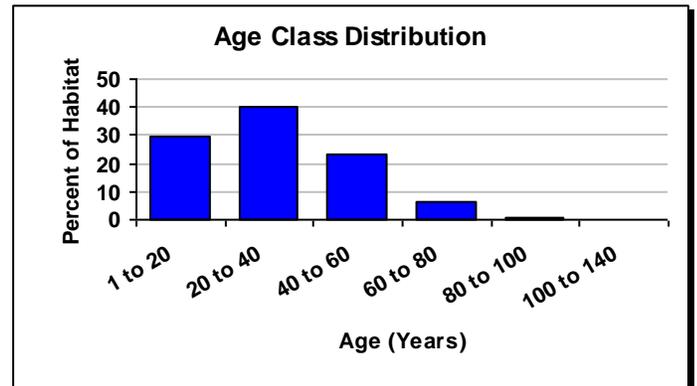
PLANTS: american lotus (*Nelumbo lutea*), coast violet (*Viola brittoniana*), eastern prairie white-fringed orchid (*Platanthera leucophaea*), heartleaf plantain (*Plantago cordata*), limestone wild petunia (*Ruellia strepens*), long's bulrush (*Scirpus longii*), maryland bur-marigold (*Bidens bidentoides*),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



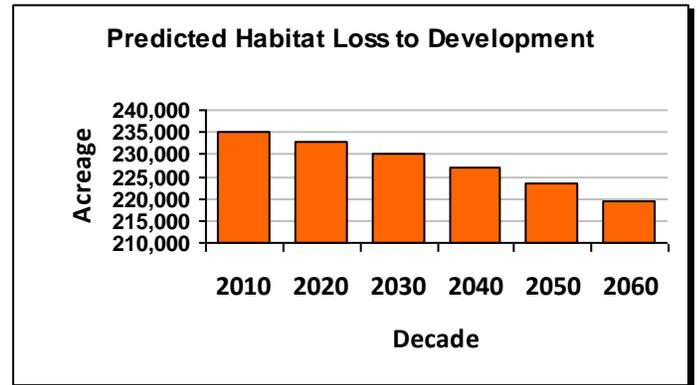
© Michael Batchler



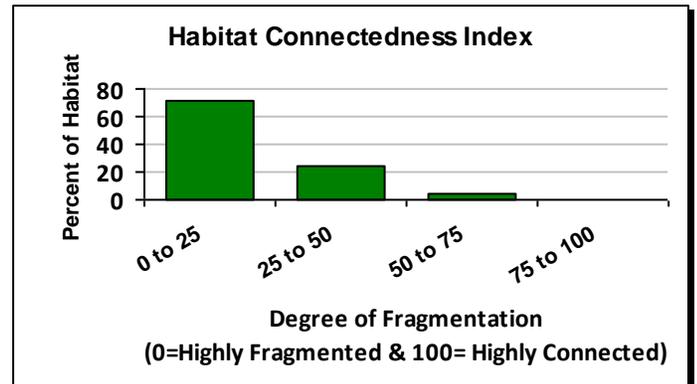
The average patch size for this habitat is 5 acres and the largest single patch is 3,512 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (15,637 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 313 acres per year.

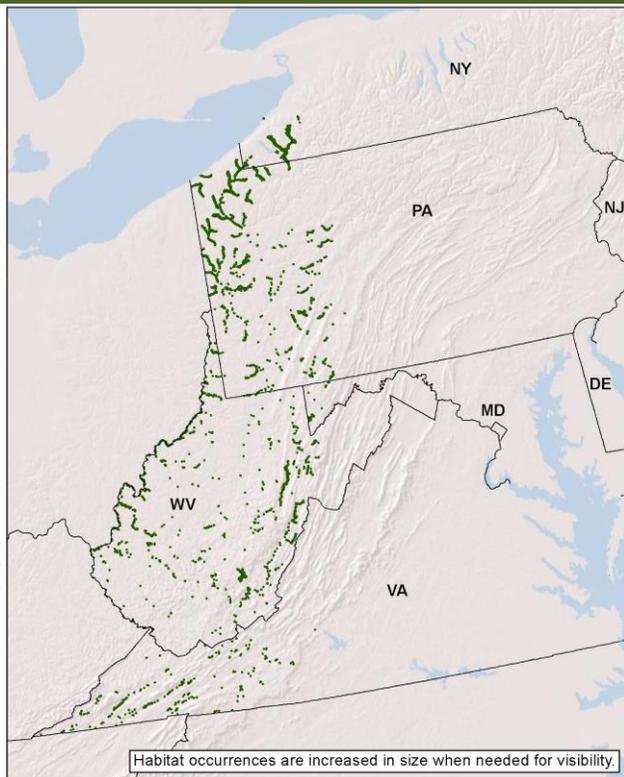


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Large River Floodplain

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)

Description:

A complex of wetland and upland vegetation on floodplains of medium to large rivers in the Ohio River drainages. Vegetation is variable, dominants often include silver maple, sycamore, green ash, American elm, sweet gum, pin oak, and swamp white oak. Understory species are mixed, but include sedges and shrubs such as buttonbush. A single occurrence may extend from river's edge across the outermost extent of the floodplain or to where it meets a wet meadow or upland system. Examples may contain well-drained levees, terraces and stabilized bars, herbaceous sloughs and shrub wetlands. Most areas are inundated at some point each spring; microtopography determines how long the various habitats are inundated.

Ecological Setting and Natural Processes:

Occurs along large rivers or streams where topography and alluvial processes have resulted in a well-developed floodplain. Soils range from very well-drained sandy substrates to very dense clays. Occasional severe floods can alter the system; exotic shrubs and herbs are a greater threat to floodplain communities than to other terrestrial habitats.

Similar Habitat Types:

Natural processes are similar to those of other large river floodplain systems. Vegetation may be most similar to Central Appalachian Large River Floodplains. Only a small northeastern portion of the large geographic extent of this system is in our region.

Crosswalk to State Wildlife Action Plans:

Riparian Thickets/Forests (PA), Wetland Habitat - Forested (VA), Floodplain Forests and Swamps (WV)

State Distribution: MD, NY, PA, VA, WV

Total Habitat Acreage: 70,068

Percent Conserved: 15.6%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	54%	37,533	1,842	6,623	29,068
NY	29%	20,643	8	951	19,685
WV	14%	9,906	90	1,294	8,522
VA	2%	1,672	44	110	1,518
MD	0%	314	4	0	310

Crosswalk to State Name Examples:

Montane - Piedmont Bottomland Forest (MD), Riparian Thickets/Forests (PA), Piedmont / Central Appalachian River Birch - Sycamore Forest (VA), Floodplain Forests And Swamps (WV)

Places to Visit this Habitat:

Conewango Swamp Wildlife Management Area | NY
 Hartson Swamp Wildlife Management Area | NY
 Erie National Wildlife Refuge - Seneca Division | PA
 Meadow River Wildlife Management Area | WV
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: american bittern, bald eagle, cerulean warbler, green heron, prothonotary warbler, virginia rail, warbling vireo, willow flycatcher

HERPTILES: eastern hog-nosed snake, eastern massasauga, eastern ribbonsnake, northern leopard frog, red-eared slider, spiny softshell, upland chorus frog

INSECTS: blue-faced meadowhawk, broad-winged skipper

PLANTS: greater bladderwort (*Utricularia macrorhiza*), green arrow-arum (*Peltandra virginica*), hairy swamp loosestrife (*Decodon verticillatus*), harbinger-of-spring (*Eriogonum bulbosum*), northern water-plantain (*Alisma triviale*), poison-sumac (*Toxicodendron vernix*), purple-rocket (*Iodanthus pinnatifidus*), river seedbox (*Ludwigia leptocarpa*), shootingstar (*Dodecatheon meadia*), sword bogmat (*Wolffiella gladiata*)

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

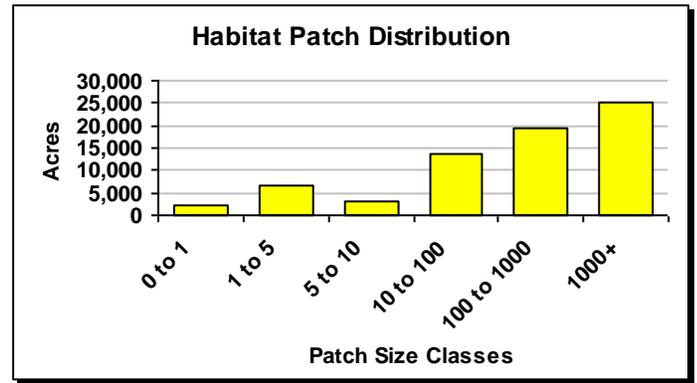
HERPTILES: green salamander, hellbender, jefferson salamander

INSECTS: eyed brown, two-spotted skipper

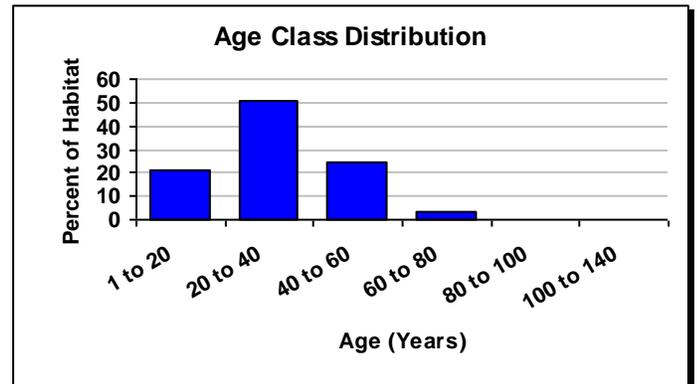
PLANTS: Appalachian sedge (*Carex appalachica*), hard-stemmed bulrush (*Schoenoplectus acutus*), large marsh St. John's-wort (*Triadenum tubulosum*), nodding rattlesnake-root (*Prenanthes crepidinea*), stout smartweed (*Polygonum robustius*)



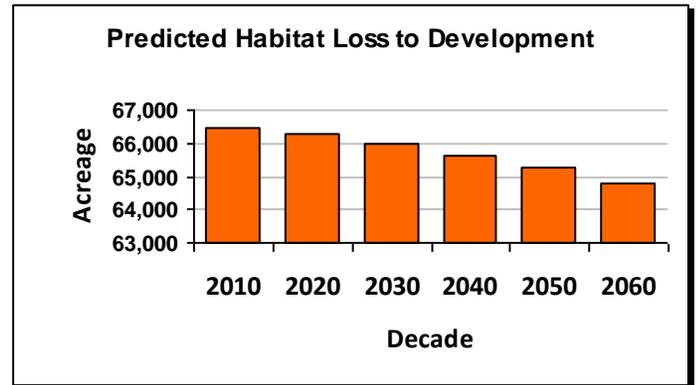
© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)



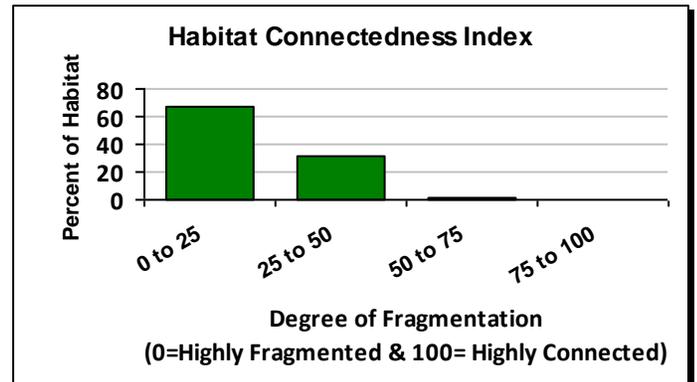
The average patch size for this habitat is 7 acres and the largest single patch is 2,249 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (1,659 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 33 acres per year.



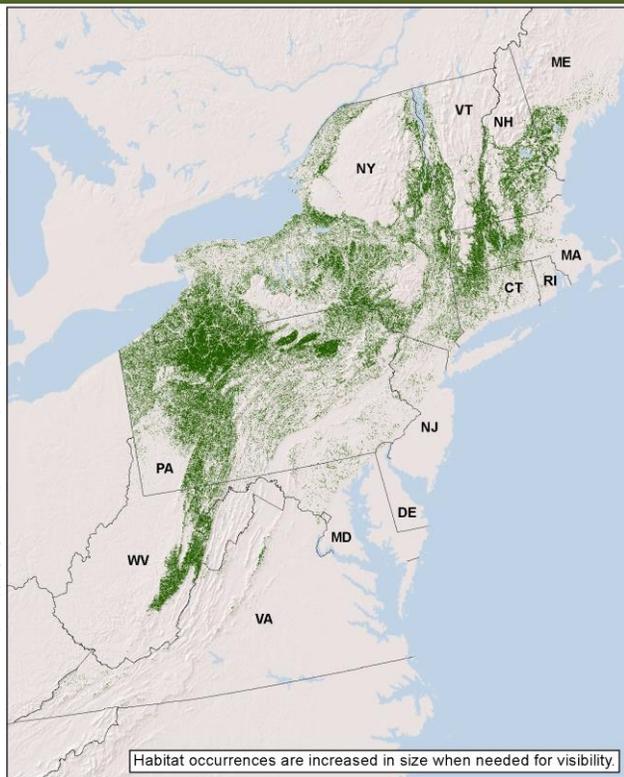
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Appalachian (Hemlock)-Northern Hardwood Forest



Macrogroup: Northern Hardwood & Conifer

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Maine Natural Areas Program

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.

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

Total Habitat Acreage: 20,995,362

Percent Conserved: 20.1%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
PA	39%	8,222,612	277,012	1,806,913	6,138,687
NY	34%	7,076,972	152,324	658,583	6,266,065
NH	6%	1,198,529	27,144	159,115	1,012,270
MA	5%	1,146,700	28,973	293,801	823,926
WV	5%	1,124,973	87,413	350,843	686,717
VT	3%	618,372	11,962	31,754	574,655
CT	3%	584,654	33,138	82,288	469,229
ME	2%	458,159	4,591	19,974	433,594
MD	1%	282,180	22,613	51,901	207,666
VA	1%	137,971	46,141	23,812	68,018
NJ	1%	127,379	35,274	8,106	84,000
RI	0%	11,945	435	4,496	7,014
DE	0%	3,633	40	1,308	2,285
DC	0%	1,283	0	0	1,283

Crosswalk to State Name Examples:

Cove Forest (CT), Northern Hardwoods-Hemlock-White Pine Forest (MA), Eastern Hemlock - Hardwood Forest (MD), Hemlock Forest (ME), Hemlock - Oak - Northern Hardwood Forest (NH), Mesic Hemlock-Hardwood Forest (NJ), Hemlock-Northern Hardwood Forest (NY), Hemlock (White Pine) - Northern Hardwood Forest (PA), Appalachian Hemlock - Northern Hardwood Forest (VA), Northern Hardwood Forest - Hemlock-Northern Hardwood Forest (VT), Hemlock Forests (WV)

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 wooly 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-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
 Allegany 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

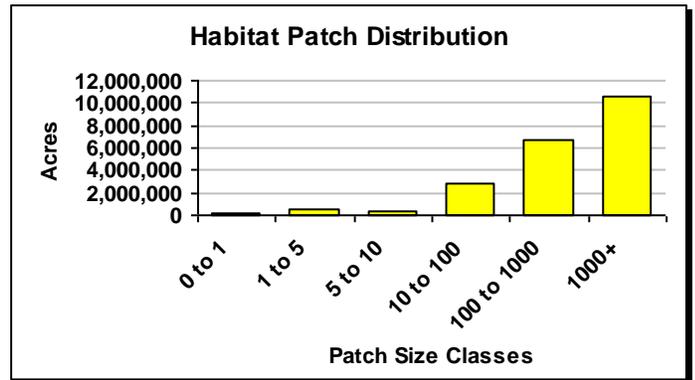
HERPTILES: Cheat Mountain salamander, eastern massasauga, green salamander, mountain earth snake, northern spring salamander

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*)



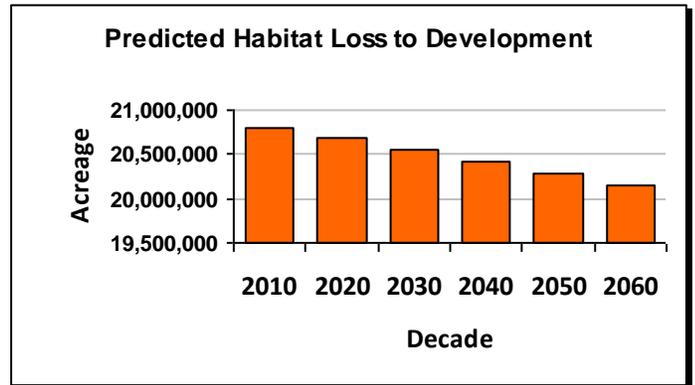
© Maine Natural Areas Program



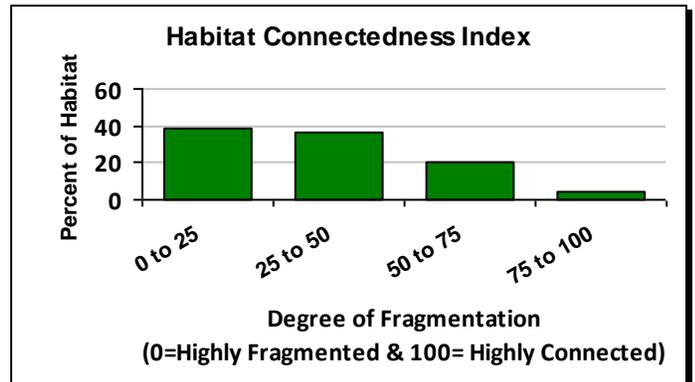
The average patch size for this habitat is 19 acres and the largest single patch is 39,064 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.



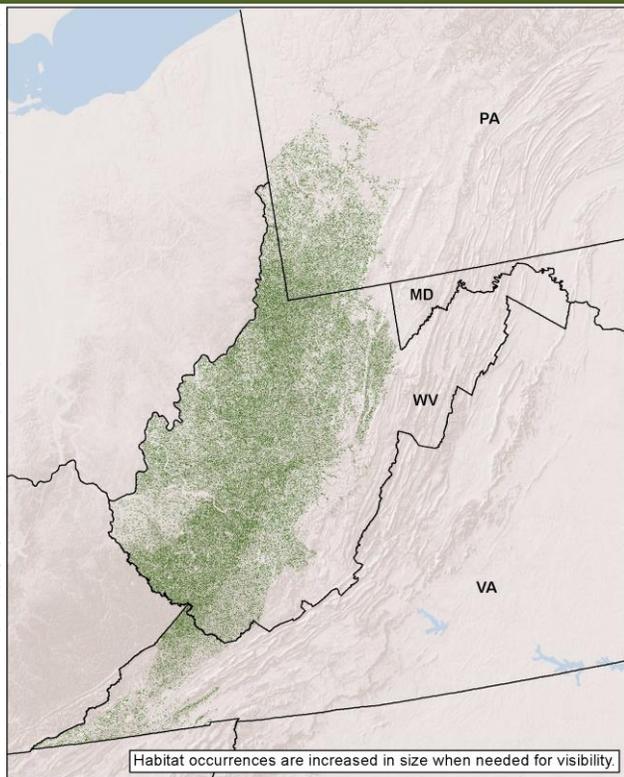
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this chart shows the proportion of the habitat in each connectedness class.

South-Central Interior Mesophytic Forest



Macrogroup: Northern Hardwood & Conifer

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Brian Streets (West Virginia Division of Natural Resources)

Description:

A high-diversity, predominately hardwood forests that occurs on deep and enriched lowland soils or in somewhat protected landscape positions such as coves or lower slopes. Dominant species include sugar maple, beech, tuliptree, basswood, red oak, cucumber tree, and black walnut. Hemlock may be a component of some stands. Trees may grow very large in undisturbed areas. The herb layer is rich, often with abundant spring ephemerals. The core distribution of this system lies in the unglaciated Cumberland and Allegheny plateaus-- it occurs in our region only in the western and southern part.

State Distribution: PA, VA, WV

Total Habitat Acreage: 3,543,609

Percent Conserved: 4.4%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	78%	2,777,629	25,263	91,525	2,660,841
PA	15%	533,048	7,033	23,375	502,640
VA	7%	232,931	2,499	7,084	223,348

Ecological Setting and Natural Processes:

A non-montane system widespread in western West Virginia that most often occurs as large patches on enriched soils in depositional settings (coves and other concave landforms). Corresponds to Lucy Braun's "Mixed Mesophytic Forest."

Similar Habitat Types:

Northeastern Interior Dry-Mesic Oak Forests or Southern Appalachian Oak Forests usually occupy the slopes above this habitat. Two similar systems are Southern and Central Appalachian Cove Forests and North-Central Interior Beech-Maple Forests; the first occurs from the Allegheny Mountains eastward, and the second is found to the north.

Crosswalk to State Wildlife Action Plans:

Deciduous/Mixed Forest (upland) (PA), Forest Habitat - Deciduous Forest (VA), Mixed Mesophytic Forest (WV)

Crosswalk to State Name Examples:

Mixed Mesophytic Forest (PA), Dry-Mesic Calcareous Forest (Southern Ridge And Valley / Cumberlands Type) (VA), Mixed Mesophytic Forest (WV)

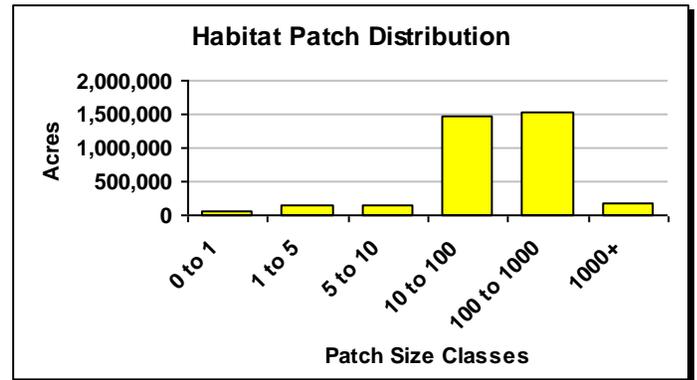
Places to Visit this Habitat:

Raccoon Creek State Park | PA
 George Washington and Jefferson National Forest | VA
 Kanawha State Forest | WV
 Monongahela National Forest | WV
 New River Gorge National River | WV

Associated Species: *Appendix lists scientific names*

BIRDS: acadian flycatcher, barred owl, blue-gray gnatcatcher, eastern wood-pewee, hooded warbler, kentucky warbler, louisiana waterthrush, scarlet tanager, summer tanager, wood thrush, yellow-throated vireo

PLANTS: sweet pepper-bush (*Clethra alnifolia*), Walter's Sedge (*Carex striata*)



The average patch size for this habitat is 10 acres and the largest single patch is 5,040 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.

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

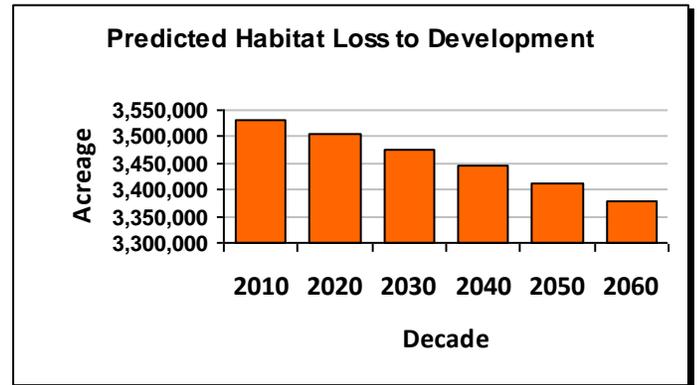
BIRDS: Bachman's sparrow

MAMMALS: Rafinesque's big-eared bat

HERPTILES: green salamander, Kirtland's snake

INSECTS: Cave spider (*Nesticus holsingeri*), cave springtail (*Arrhopalites pavo*), cherokee clubtail, ground beetle, (*Brachoria cedar*), silken cave beetle, Thomas' cave beetle

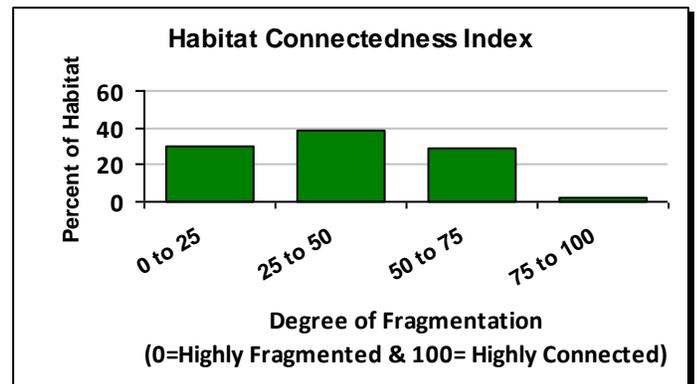
PLANTS: snow trillium (*Trillium nivale*), American gromwell (*Lithospermum latifolium*), blue monkshood (*Aconitum uncinatum*), rock skullcap (*Scutellaria saxatilis*), running buffalo Clover (*Trifolium stoloniferum*), eastern featherbells (*Stenanthium gramineum*)



This chart shows the predicted loss of habitat over the next five decades (152,322 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 3,046 acres per year.



© Gary P. Fleming (Virginia Department of Conservation & Recreation Natural Heritage Program)

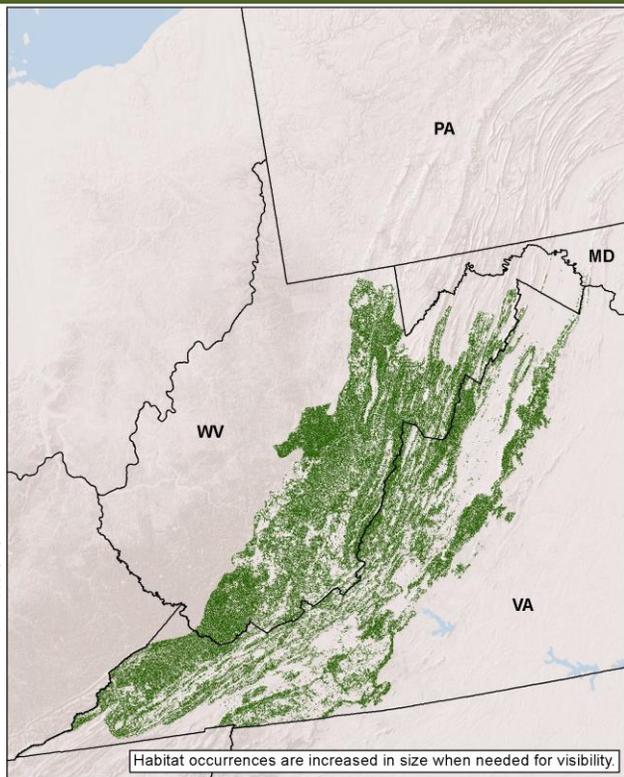


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Northern Hardwood & Conifer

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Brian Streets (West Virginia Division of Natural Resources)

Description:

A hardwood or mixed forest with a high diversity of mesophytic (moisture loving but non-wetland) trees. Canopy species commonly include yellow buckeye, sugar maple, white ash, basswood, tuliptree, cucumber tree, and American beech, sometimes in a single stand. Hemlock is sometimes present, mostly in acidic coves. Shrub and herb layers are similarly rich, and calcium-bearing and circumneutral bedrock tends to support the richest examples. This forest is typical of sheltered, shady places in the Blue Ridge and central Appalachian Mountains, forming large patches (tens to hundreds of acres) on concave slopes that accumulate nutrients and moisture. These are communities of high diversity and often great structural complexity.

Ecological Setting and Natural Processes:

Found on sheltered coves and concave slopes. Soils are often rocky and may be coarse or fine-textured, and may be residual, alluvial, or colluvial. Single tree gap-phase regeneration drives stand dynamics; occasional more extreme wind or ice disturbance may operate at a larger scale. Fire is probably not often a significant factor.

Similar Habitat Types:

The South-Central Interior Mesophytic Forest system is similar to this one but occurs west of the Allegheny Mountains. Dry-mesic forests like Appalachian (Hemlock-)Northern Hardwood and Southern Appalachian Oak tend to occur immediately above, and riparian or floodplain systems just below cove landforms.

Crosswalk to State Wildlife Action Plans:

Mesic Deciduous Forests (MD), Forest Habitat - Deciduous Forest (VA), Mixed Mesophytic Forest (WV)

State Distribution: MD, VA, WV

Total Habitat Acreage: 1,014,832

Percent Conserved: 33.0%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	56%	571,349	25,693	118,872	426,784
VA	44%	443,212	84,241	105,502	253,469
MD	0%	271	47	47	177

Crosswalk to State Name Examples:

Mesic Deciduous Forests (MD), Appalachian Rich Cove Forest (VA), Mixed Mesophytic Forest (WV)

Places to Visit this Habitat:

Blue Ridge Parkway National Park | VA
 George Washington and Jefferson National Forest | VA
 Holly River State Park | WV
 Kumbrabow State Forest | WV
 Monongahela National Forest | WV

Associated Species: *Appendix lists scientific names*

BIRDS: acadian flycatcher, black-throated blue warbler, cerulean warbler, hooded warbler, louisiana waterthrush, scarlet tanager, blue-headed vireo, swainson's warbler, wood thrush, worm-eating warbler, yellow-throated vireo

MAMMALS: allegheny woodrat, appalachian cottontail, eastern small-footed myotis, indiana myotis, long-tailed shrew, southern pygmy shrew, southern rock vole, virginia big-eared bat, virginia northern flying squirrel

HERPTILES: common map turtle, eastern hog-nosed snake, eastern ribbonsnake, eastern wormsnake, mountain earth snake, northern coal skink, spiny softshell

PLANTS: Loesel's Twayblade (*Liparis loeselii*), Ostrich Fern (*Matteuccia struthiopteris*), Herb-Robert (*Geranium robertianum*), Linear-leaved Willowherb (*Epilobium leptophyllum*)

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

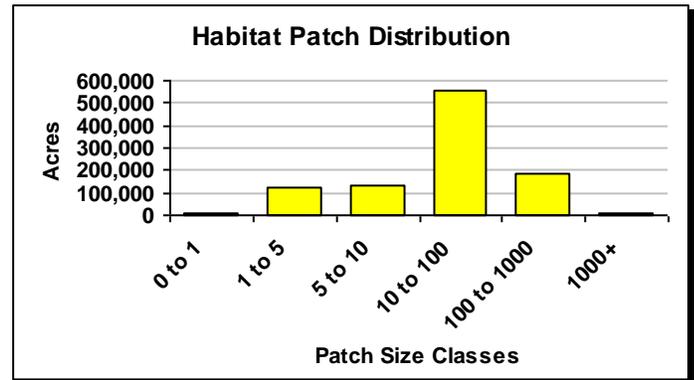
HERPTILES: big levels salamander, black mountain salamander, blue ridge two-lined salamander, bog turtle, cheat mountain salamander, common black-bellied salamander, green salamander, midland mud salamander, northern pygmy salamander, peaks of otter salamander, red salamander, shenandoah salamander, shovelnose salamander, upland chorus frog, white-spotted salamander

INSECTS: American emerald, northern spreadwing

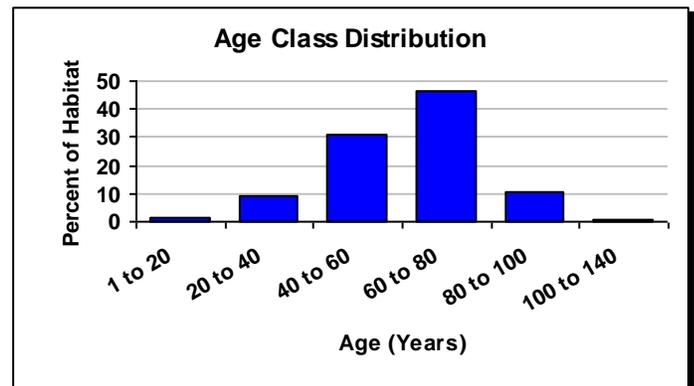
PLANTS: appalachian blue violet (*Viola appalachiensis*), appalachian gentian (*Gentiana austromontana*), blue ridge bittercress (*Cardamine flagellifera*), blue wild indigo (*Baptisia australis*), fire-pink (*Silene virginica*) running buffalo clover (*Trifolium stoloniferum*), smoke hole bergamot (*Monarda fistulosa*)



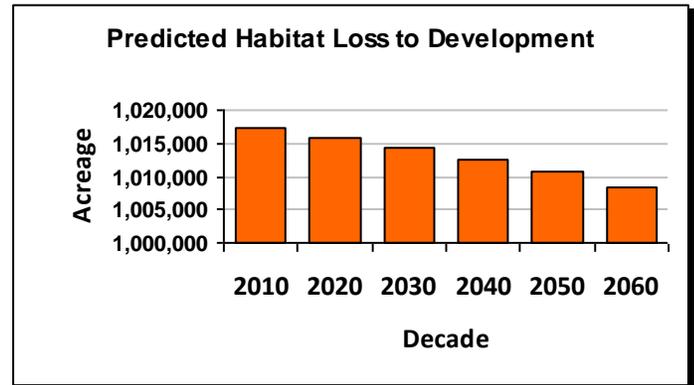
© Jim Vanderhorst (West Virginia Division of Natural Resources)



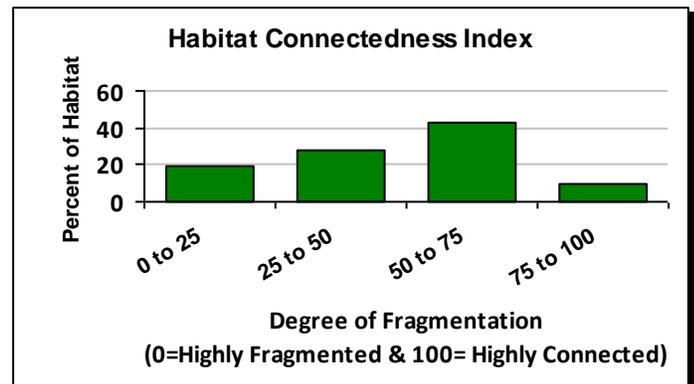
The average patch size for this habitat is 7 acres and the largest single patch is 1,905 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.



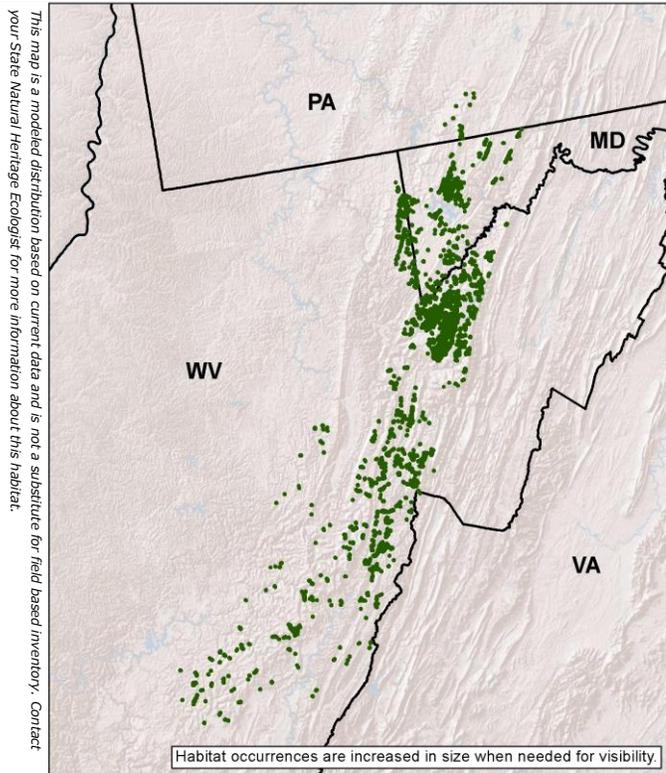
This chart shows the predicted loss of habitat over the next five decades (8,843 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 177 acres per year.



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: Northern Swamp



© Elizabeth Byers (West Virginia Division of Natural Resources)

Description:

A wetland complex of forested swamps, shrub swamps, wet meadows and open marshes occurring at high elevations (2400 to 5000 feet) along the high plateau of the Allegheny Mountains. They are mostly in West Virginia, and range in size from a few hectares to about 6000 hectares. Forested swamps are dominated by red spruce, with red maple, hemlock, and yellow birch. Where calcareous bedrock influences seepage water, balsam fir and black ash are typical. Common shrubs are nannyberry, great rhododendron, alder, blueberry, bushy St. Johnswort, winterberry, and black chokeberry. Peat mosses and haircap mosses form a well-developed bryophyte layer. Bogs may occur in undisturbed portions of larger wetlands.

Ecological Setting and Natural Processes:

These wetlands form where drainage is impounded in high, flat-lying basins by natural dams of resistant sandstone. They are maintained by a mix of seepage, low-energy flooding, beaver activity, and plentiful rainfall. The poorly-drained soils, typically peat-based and acidic to circumneutral, are drained by low-gradient, meandering, headwater streams. Cold air frost pockets are common.

Similar Habitat Types:

The colder climates of high elevations, and the distinct environmental setting, drive the structure and composition of these wetlands and distinguish them from others in the region.

Crosswalk to State Wildlife Action Plans:

Bog and Fen Wetland Complexes (MD), High Allegheny Bogs and Fens (WV), High Allegheny Swamp (WV)

State Distribution: MD, PA, VA, WV

Total Habitat Acreage: 27,695

Percent Conserved: 52.0%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	85%	23,437	11,076	2,253	10,109
MD	15%	4,143	959	118	3,066
PA	0%	112	0	4	108
VA	0%	3	3	0	0

Crosswalk to State Name Examples:

Bog And Fen Wetland Complexes (MD), Mixed Forb – Graminoid Wet Meadow (PA), Central Appalachian / High Allegheny Seepage Bog (VA), High Allegheny Bogs And Fens (WV)

Places to Visit this Habitat:

Canaan Valley State Park | WV
Canaan Valley National Wildlife Refuge | WV

Associated Species: *Appendix lists scientific names*

BIRDS: alder flycatcher, american woodcock, blackburnian warbler, black-throated green warbler, red-shouldered hawk, wilson's snipe

MAMMALS: snowshoe hare

PLANTS: retrorse sedge (*Carex retrorsa*), creeping snowberry (*Gaultheria hispidula*), cyperus-like sedge (*Carex pseudocyperus*), downy willowherb (*Epilobium strictum*), dwarf mistletoe (*Arceuthobium pusillum*), hoary sedge (*Carex canescens*), purple fringeless orchid (*Platanthera peramoena*), rough-leaved aster (*Eurybia radula*), twinflower (*Linnaea borealis*)

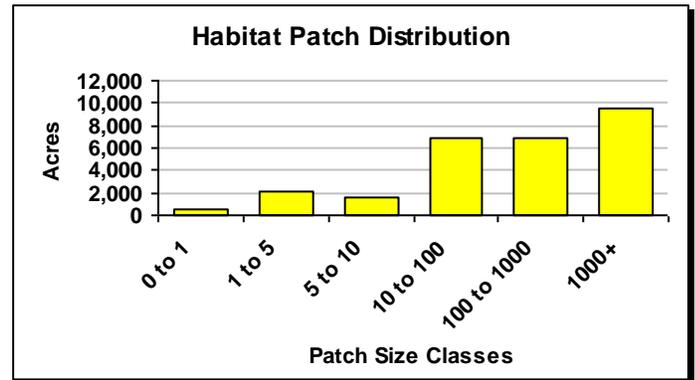
Species of Concern (G1-G4): *Appendix lists scientific names*

BIRDS: american bittern

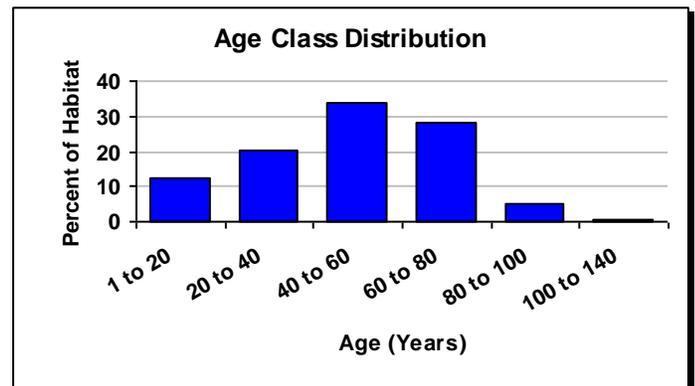
HERPTILES: bog turtle



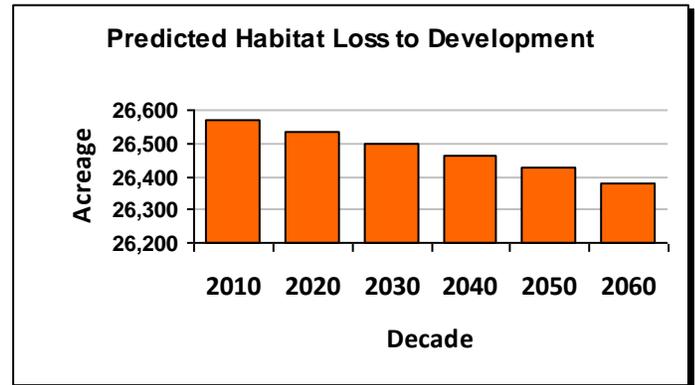
© Elizabeth Byers (West Virginia Division of Natural Resources)



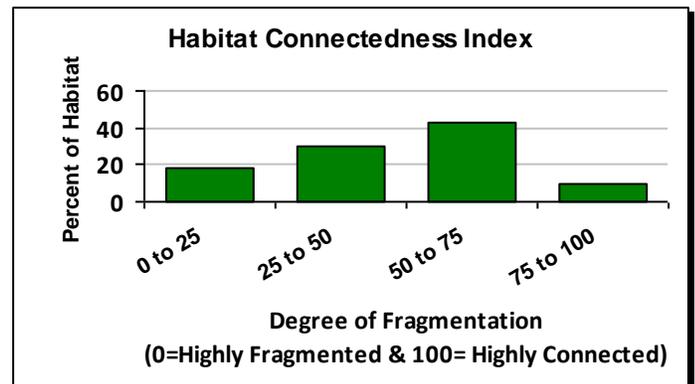
The average patch size for this habitat is 9 acres and the largest single patch is 6,345 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (194 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 4 acres per year.



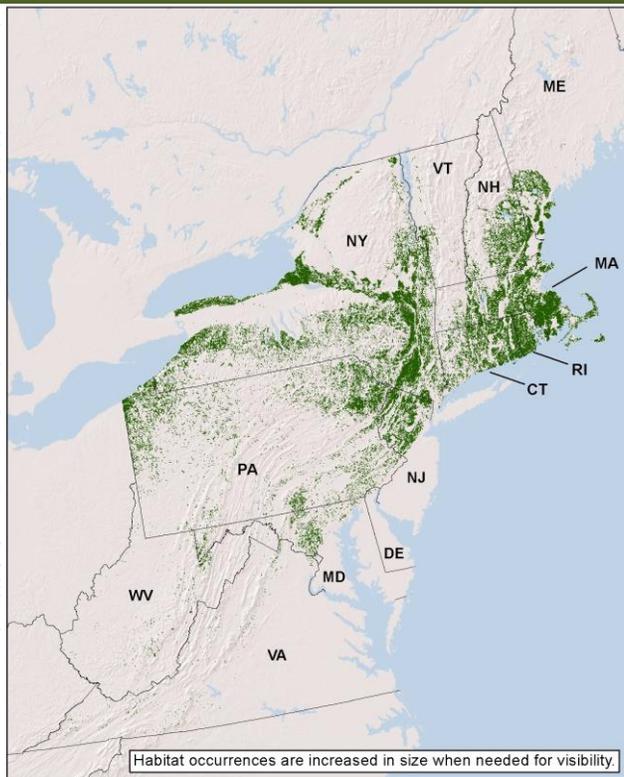
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

North-Central Appalachian Acidic Swamp



Macrogroup: Northern Swamp

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Shane Gebauer (New York Natural Heritage Program)

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.

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

Total Habitat Acreage: 1,505,822

Percent Conserved: 19.1%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NY	38%	573,190	12,114	41,979	519,097
MA	18%	272,643	13,012	62,775	196,856
PA	14%	213,320	15,593	42,685	155,042
CT	7%	112,088	6,555	17,448	88,085
NJ	6%	86,025	18,977	6,977	60,071
NH	6%	85,981	3,020	15,884	67,078
RI	4%	67,734	6,254	13,470	48,010
ME	4%	61,849	1,027	4,633	56,189
MD	1%	15,080	424	2,666	11,991
VT	1%	10,235	149	544	9,542
VA	0%	4,111	113	498	3,500
WV	0%	3,060	22	180	2,857
DE	0%	358	6	137	215
DC	0%	147	0	0	147

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)

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 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 darter

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*)

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

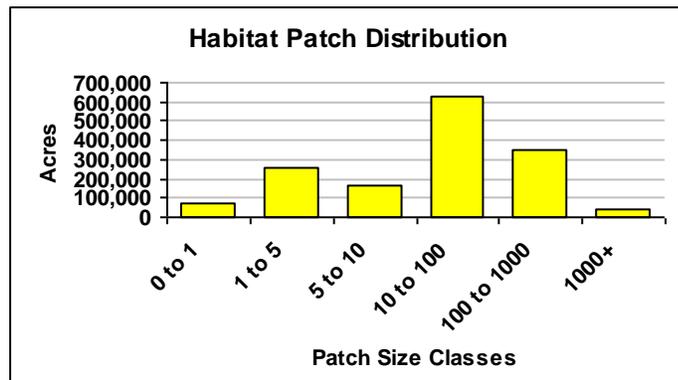
BIRDS: loggerhead shrike, olive-sided flycatcher

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

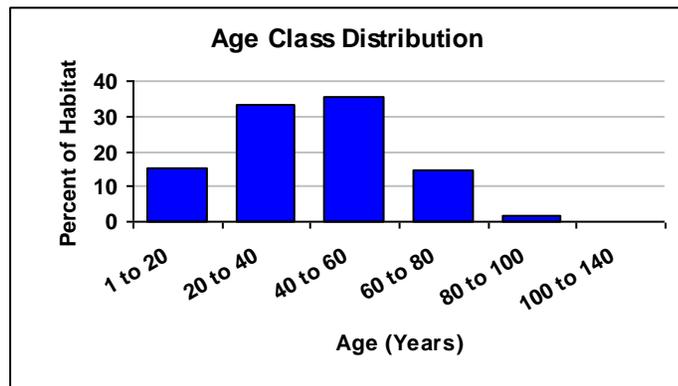
PLANTS: Collins' sedge (*Carex collinsii*), dwarf azalea (*Rhododendron atlanticum*), golden puccoon (*Lithospermum caroliniense*), incurved umbrella-sedge (*Cyperus aristatus*), many-fruit false-loosestrife (*Ludwigia polycarpa*), mitchell's sedge (*Carex mitchelliana*), tall beakrush (*Rhynchospora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



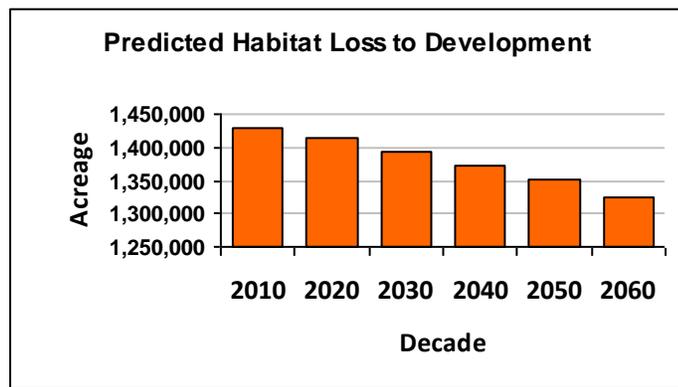
© Hal Malde



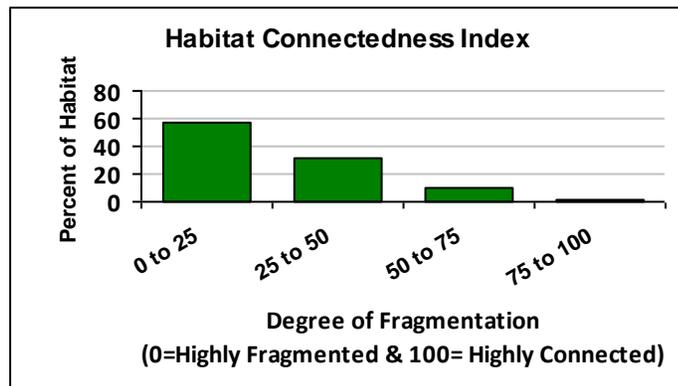
The average patch size for this habitat is 4 acres and the largest single patch is 2,811 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (104,239 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 2,085 acres per year.

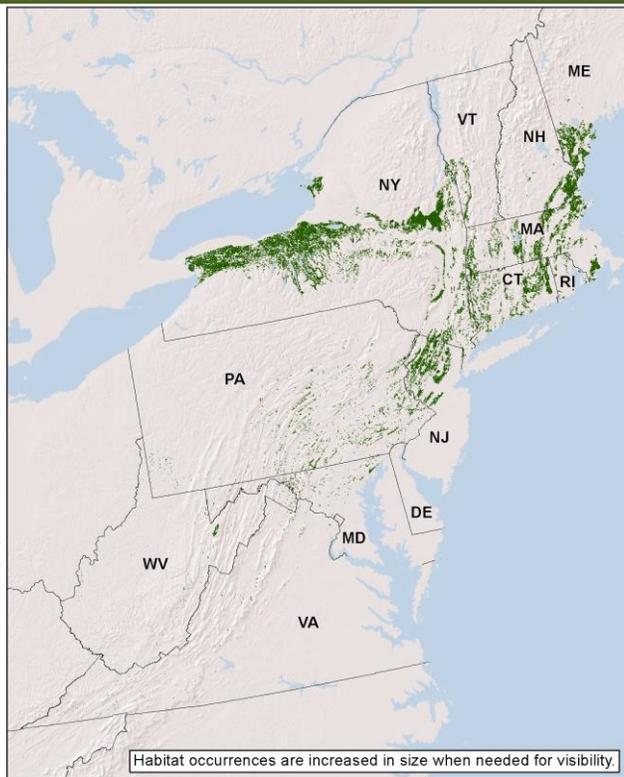


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Northern Swamp

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Elizabeth Thompson (Vermont Land Trust)

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.

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

Total Habitat Acreage: 830,818

Percent Conserved: 12.0%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
NY	57%	477,197	8,788	23,091	445,318
MA	12%	97,085	3,219	20,942	72,924
NJ	8%	65,853	14,570	3,360	47,923
CT	7%	61,367	3,321	7,547	50,499
ME	6%	50,962	1,159	2,184	47,618
NH	3%	28,320	1,780	4,476	22,064
PA	3%	28,125	1,271	1,786	25,068
VT	1%	8,935	118	649	8,167
RI	1%	5,679	255	737	4,687
MD	1%	4,219	298	270	3,651
VA	0%	1,932	79	49	1,804
WV	0%	1,096	46	45	1,006
DE	0%	28	0	4	25
DC	0%	19	0	0	19

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)

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 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*), roundleaf goldenrod (*Solidago patula*), showy lady's-slipper (*Cypripedium reginae*), yellow sedge (*Carex flava*)

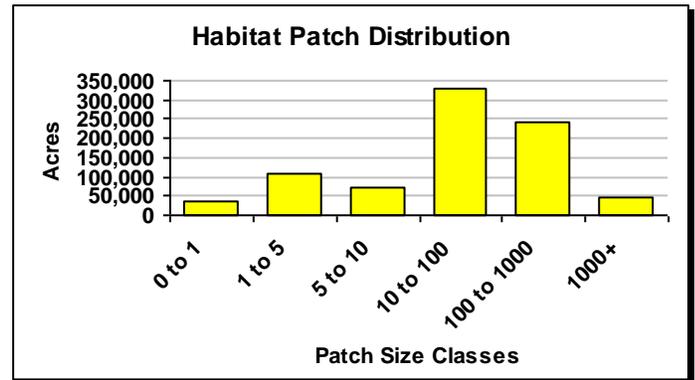
Species of Concern (G1-G4): *Appendix lists scientific names*

INSECTS: sable clubtail (*Gomphus rogersii*)

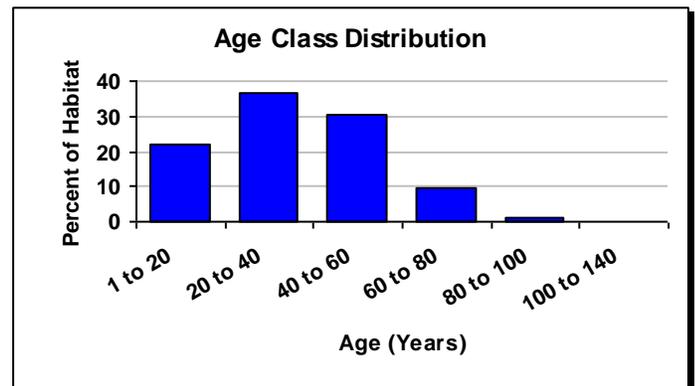
PLANTS: autumn willow (*Salix serissima*), Engelmann's spikerush (*Eleocharis engelmannii*), Hill's pondweed (*Potamogeton hillii*), many-headed sedge (*Carex sychnocephala*), prairie straw sedge (*Carex suberecta*), short-fruit rush (*Juncus brachycarpus*), spreading globeflower (*Trollius laxus*),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



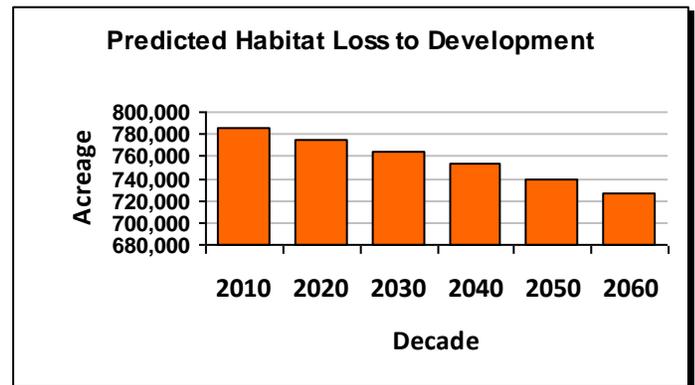
© Elizabeth Thompson (Vermont Land Trust)



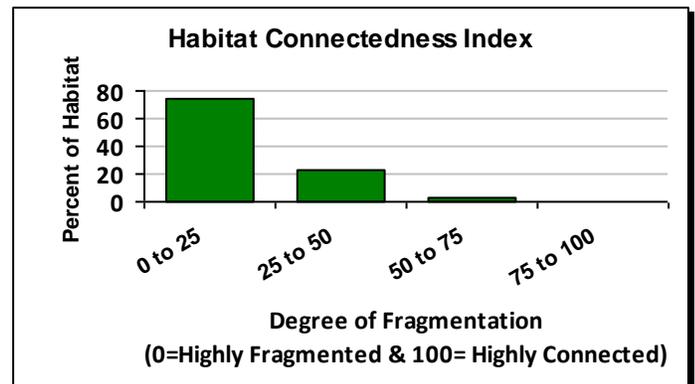
The average patch size for this habitat is 5 acres and the largest single patch is 3,380 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.

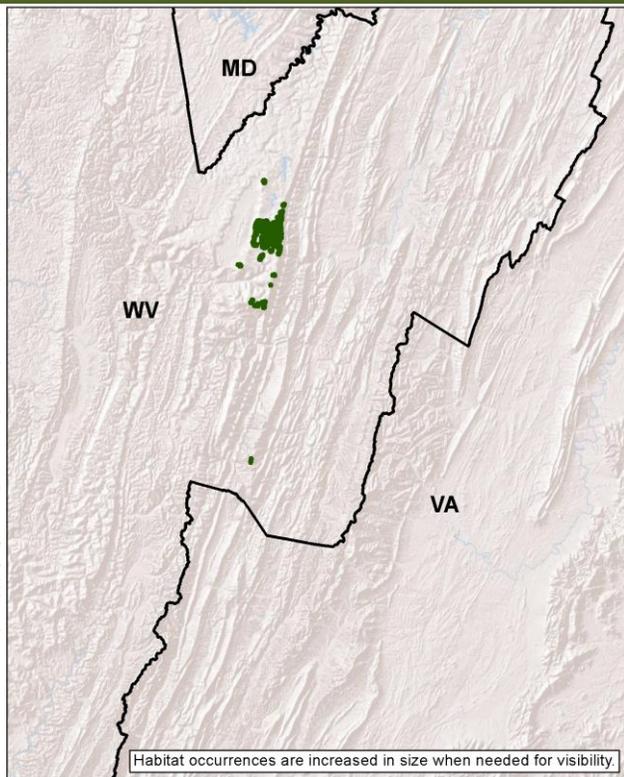


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Outcrop & Summit Scrub

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Jim Vanderhorst (West Virginia Division of Natural Resources)

Description:

An open shrubland or grassland of high-elevation summits and upper slopes in the southern Appalachians. Shrub-dominated balds are a mosaic of evergreen or mixed shrubland dominated by catawba rhododendron with mountain-laurel and black huckleberry, and deciduous shrubland dominated by blackberry or American mountain-ash, minniebush, and southern mountain-cranberry. Common herbs in open areas are mountain oat-grass, various sedges, and forbs like three-toothed cinquefoil and Blue Ridge St. Johns-wort.

State Distribution: WV

Total Habitat Acreage: 3,198

Percent Conserved: 71.5%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
WV	100%	3,198	1,842	444	912

Ecological Setting and Natural Processes:

In our region, mapped only at higher elevations in the Allegheny Mountains in eastern West Virginia, where the largest occurrence is the heath balds in the Dolly Sods Wilderness Area. This system is associated with rocky, cold, windswept settings, and its ecological dynamics are driven by shallow rocky soils, fires, grazing, and microclimatic impacts such as frequent high-velocity winds and ice storms.

Similar Habitat Types:

Adjacent and downslope forests are generally Central and Southern Appalachian Spruce-Fir Forest and Appalachian (Hemlock)-Northern Hardwood Forest.

Crosswalk to State Name Examples:

Crosswalk to State Wildlife Action Plans:

Places to Visit this Habitat:

Dolly Sods Expansion National Wilderness Area | WV
Bear Rocks Preserve | WV

Associated Species: *Appendix lists scientific names*

PLANTS: Catawba rhododendron (*Rhododendron catawbiense*), mountain-laurel (*Kalmia latifolia*), black huckleberry (*Gaylussacia baccata*), blackberry (*Rubus canadensis*), American mountain-ash (*Sorbus americana*), minniebush (*Menziesia pilosa*), *Vaccinium erythrocarpum*, mountain oat-grass (*Danthonia compressa*), various sedges (*Carex brunnescens* ssp. *sphaerostachya*, *Carex debilis* var. *rudgei*, *Carex pensylvanica*), three-toothed cinquefoil (*Sibbaldiopsis tridentata*) and Blue Ridge St. Johns-wort (*Hypericum mitchellianum*)

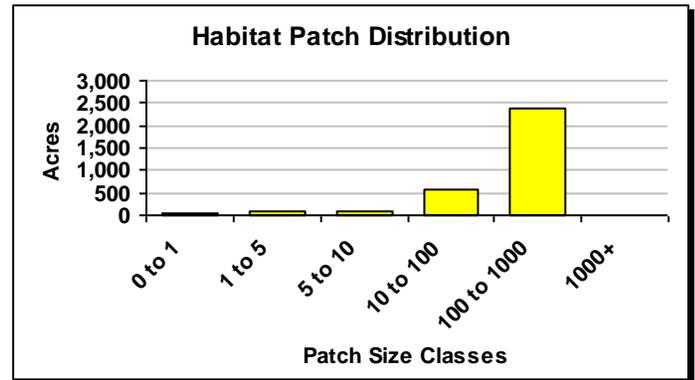
Species of Concern (G1-G4): *Appendix lists scientific names*

INSECTS: Pink-edged Sulphur (WV,VA, MD High Altitude Population - *Colias interior* pop 1)

PLANTS: chamomile grape-fern (*Botrychium matricariifolium*), summer sedge (*Carex aestivalis*), purple clematis (*Clematis occidentalis* var. *occidentalis*), white alumroot (*Heuchera alba*), *Stellaria* (*Stellaria borealis* ssp. *borealis*), Death camas (*Zigadenus leimanthoides*)



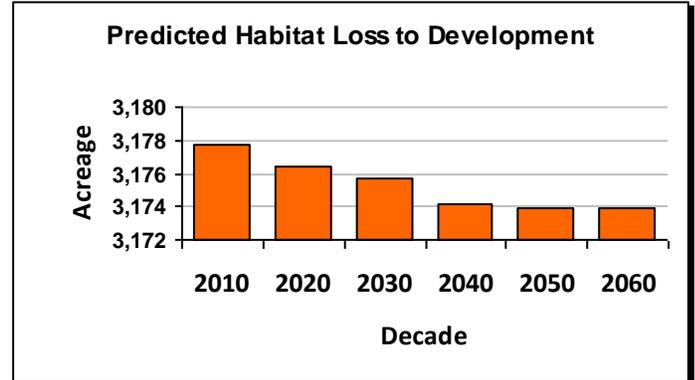
© Brian Streets (West Virginia Division of Natural Resources)



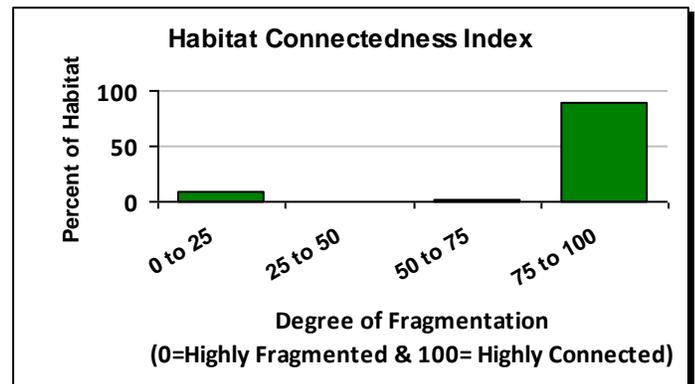
The average patch size for this habitat is 16 acres and the largest single patch is 641 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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 (4 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is .08 acres per year.

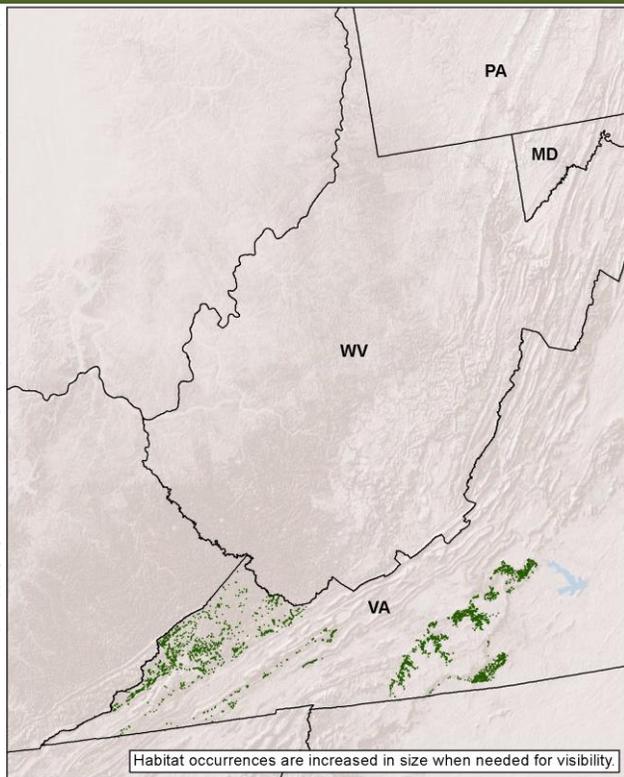


This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.



Macrogroup: Southern Oak-Pine

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Mike Schafale (North Carolina Natural Heritage Program)

Description:

An open forest or woodland of acidic substrates at low elevations in southwest Virginia. Vegetation is dominated by Virginia and shortleaf pine; occasionally with pitch pine. Hardwoods may be abundant, especially dry-site oaks such as southern red oak, chestnut oak, and scarlet oak, but also pignut hickory, red maple, and others. A heath shrub layer may be well developed. Herbs are usually sparse, though communities of this system may have been grassy when fires were more frequent. The ecological character and natural distribution of this system has been obscured over the years by human settlement, universal logging, pine beetle outbreaks, and fire suppression. Pine-dominated forests have been both created and destroyed in different places by these disturbances.

Ecological Setting and Natural Processes:

Occurs on a variety of acidic bedrock types and a variety of landforms, mostly below about 2300 feet. Frequent, low-intensity fires coupled with severe fires may have been solely responsible for maintaining this system under natural conditions. Occurrences may have covered thousands of acres in the past, but most relatively intact remnants are probably small patches. Peripheral to our region, in southwestern Virginia only.

Similar Habitat Types:

Usually intermixed with Southern Appalachian Oak Forest. Southern and Central Appalachian Cove Forest may be present in more mesic areas. Allegheny-Cumberland Dry Oak Forest and Woodland is often on ridges above. Where the range of this system overlaps with that of Southern Appalachian Montane Pine Forest and Woodland, the latter may occur at higher elevations above it.

Crosswalk to State Wildlife Action Plans:

Forest Habitat - Coniferous Forest (VA)

State Distribution: VA, WV

Total Habitat Acreage: 22,261

Percent Conserved: 7.1%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
VA	100%	22,257	282	1,303	20,672
WV	0%	4	0	0	4

Crosswalk to State Name Examples:

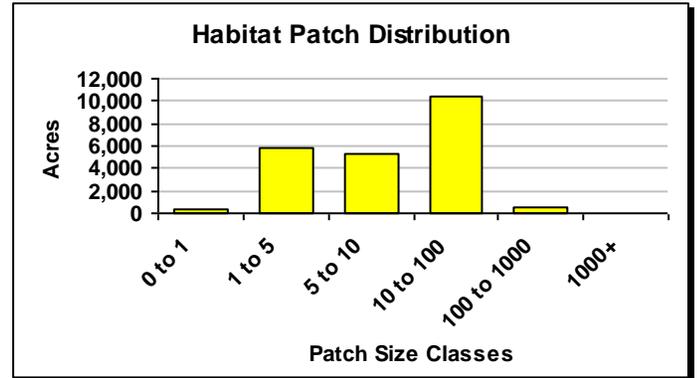
Cumberland Mountains Shortleaf Pine Woodland (VA)

Places to Visit this Habitat:

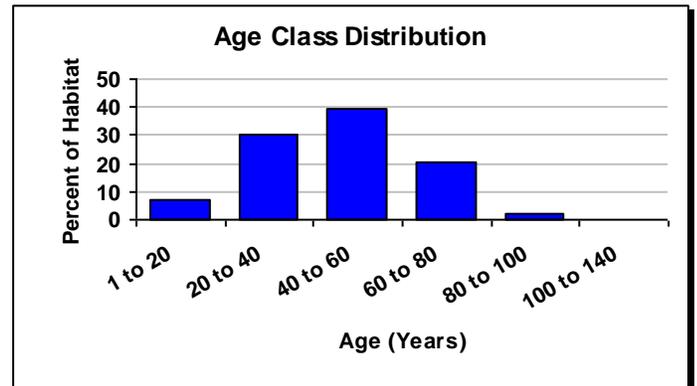
Blue Ridge Parkway National Park | VA
 George Washington and Jefferson National Forest | VA
 New River Trail State Park | VA

Associated Species: *Appendix lists scientific names*

BIRDS: alder flycatcher, swainson's warbler



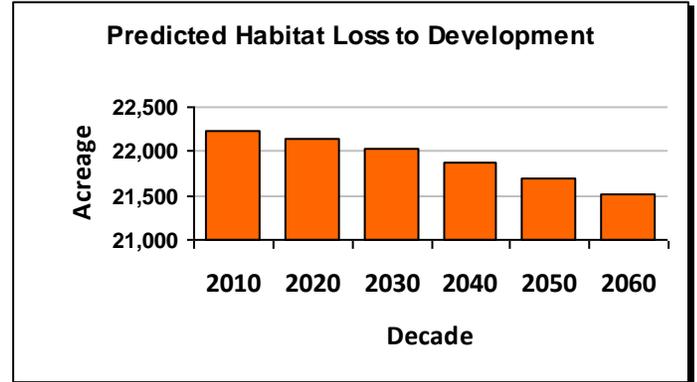
The average patch size for this habitat is 5 acres and the largest single patch is 110 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.

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

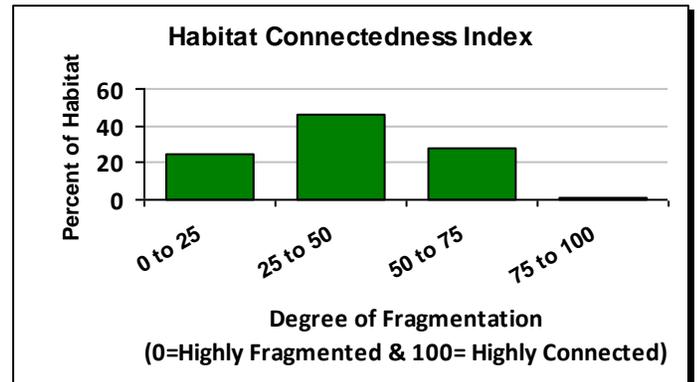
PLANTS: Piratebush (*Buckleya distichophylla*)



This chart shows the predicted loss of habitat over the next five decades (719 acres) if loss continues at the same rate as 1990-2000. The average rate of loss is 14 acres per year.



© Mike Schafale (North Carolina Natural Heritage Program)



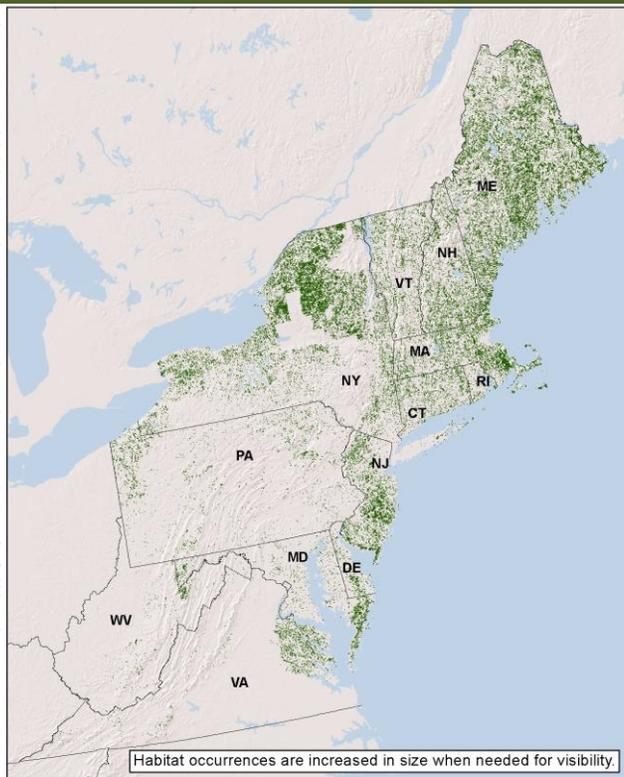
This metric measures how connected or fragmented the land directly surrounding (18 square miles) the habitat is, this the chart shows the proportion of the habitat in each connectedness class.

Laurentian-Acadian Wet Meadow-Shrub Swamp



Macrogroup: Wet Meadow / Shrub Marsh

This map is a modeled distribution based on current data and is not a substitute for field based inventory. Contact your State Natural Heritage Ecologist for more information about this habitat.



© Maine Natural Areas Program

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.

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

Total Habitat Acreage: 990,077

Percent Conserved: 25.5%

State	State Habitat %	State Acreage	GAP 1&2 (acres)	GAP 3 (acres)	Unsecured (acres)
ME	30%	297,075	11,928	39,478	245,668
NY	30%	293,979	59,329	38,332	196,318
MA	8%	76,718	4,358	17,980	54,380
NJ	7%	68,351	16,148	9,221	42,983
NH	6%	59,721	3,582	12,416	43,723
VT	4%	42,135	989	5,797	35,350
VA	4%	40,237	574	2,543	37,121
PA	4%	39,797	2,410	4,691	32,696
MD	3%	29,043	1,395	10,655	16,993
CT	2%	23,347	1,741	3,387	18,219
DE	1%	11,617	1,182	2,441	7,994
RI	1%	5,130	497	1,390	3,244
WV	0%	2,928	29	320	2,579

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 bog 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

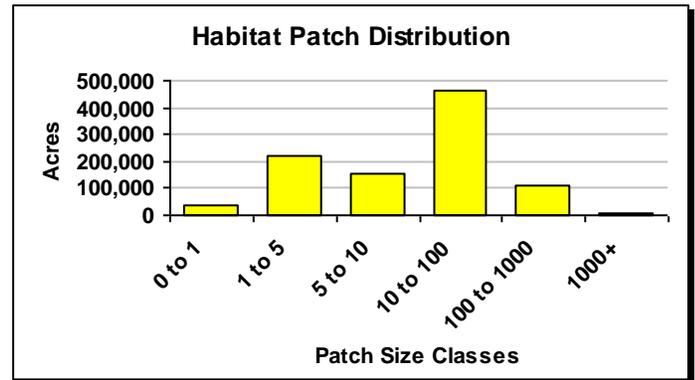
HERPTILES: Blanding's turtle, bog turtle, jefferson salamander, pine barrens treefrog, wood turtle

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

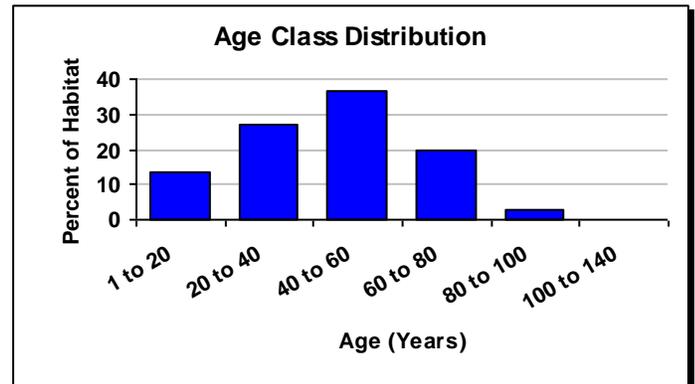
PLANTS: bead pinweed (*Lechea pulchella*), branching bur-reed (*Sparganium angrocladum*), Long's bulrush (*Scirpus longii*), Ogden's pondweed (*Potamogeton ogdenii*), Pursh's goldenrod (*Solidago uliginosa*), stout smartweed (*Polygonum robustius*), Walter's paspalum (*Paspalum dissectum*)



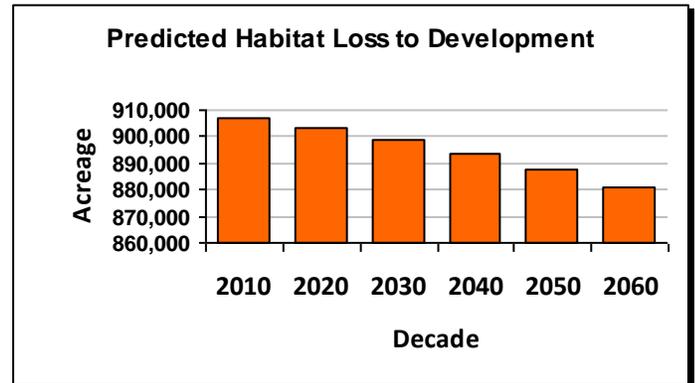
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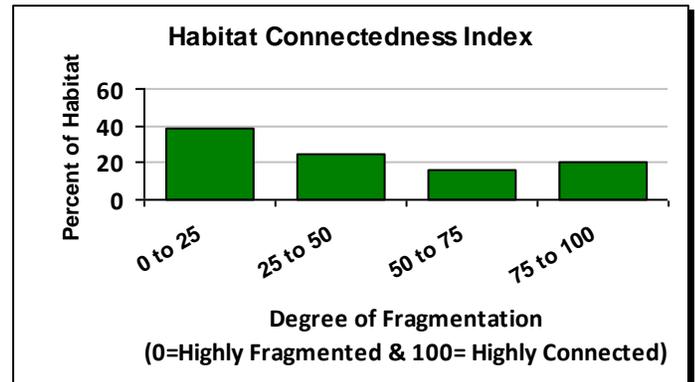
The average patch size for this habitat is 4 acres and the largest single patch is 1,460 acres. This chart shows the proportion of the habitat that is in each patch-size class.



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.