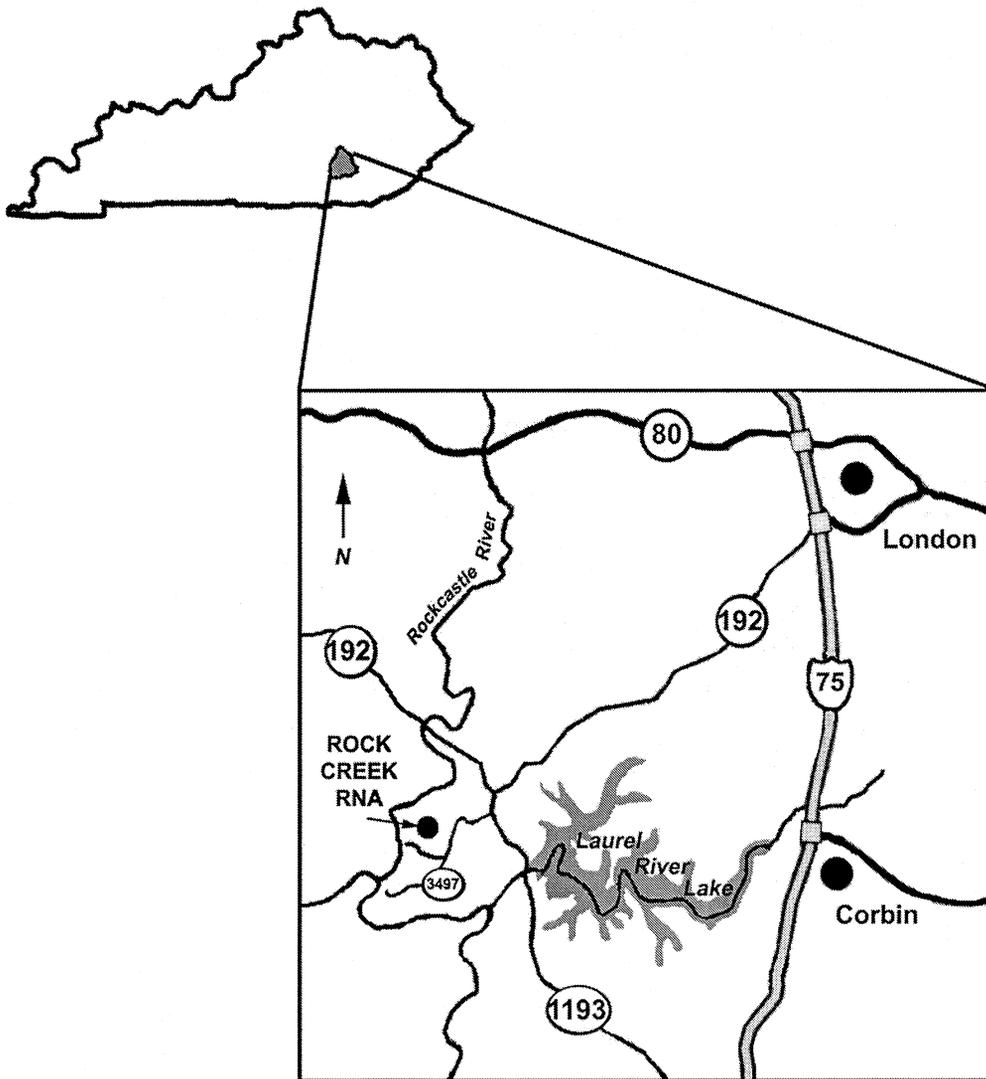




Botanical Survey of Rock Creek Research Natural Area, Kentucky

Ralph L. Thompson
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Abstract

A 10-year survey of vascular plants was made of Rock Creek Research Natural Area, a 77-ha deep, narrow gorge of old-growth Hemlock-Mixed Mesophytic Forest located in Laurel County, Kentucky, on the Daniel Boone National Forest. The study documented 350 specific and infraspecific taxa in 223 genera and 93 families. Thirteen are nonindigenous naturalized species. Vascular plants include 6 Lycopodiophyta, 25 Polypodiophyta, 5 Pinophyta, and 314 Magnoliophyta; 255 are annual, biennial, and perennial herbs and 95 are woody vines, shrubs, and trees. Seventeen rare and special interest species have been recorded, including 4 that are listed by the state. The floristic survey provides a baseline reference for relative abundance, species richness, plant associations, habitats, and generalized life-forms within the Rock Creek Research Natural Area.

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Foreword

The Forest Service Research Natural Areas Program maintains a network of 289 established areas and more than 300 candidate areas representing typical and unique natural ecosystems on national forests in the United States. These areas are managed in minimally disturbed conditions for research, monitoring, education, and protection of natural diversity and ecological processes.

Within the 14-state territory of the Northeastern Research Station, six Research Natural Areas (RNA's) have been established, and 29 candidate areas are being considered for establishment within the next few years. Several of these areas have been the scene of active field research for many years while others are virtually unstudied.

Although the RNA program began more than 65 years ago, systematic research and monitoring on RNA's began only recently. As the Forest Service moves in the direction of ecological management, RNA's will provide essential information for comparison with similar areas managed for production of commodities.

To encourage and expedite research on RNA's, the Northeastern Research Station is commissioning a series of botanical reconnaissance surveys for each of the established and candidate RNA's. This program began in 1991 with funding support from the RNA Matching Grant Program sponsored by the Chief of the Forest Service.

The Study Area

Rock Creek Research Natural Area (RCRNA) is located in Laurel County, Kentucky, within the London Ranger District of the Daniel Boone National Forest (latitude: 36° 59' 30" N, longitude: 84° 19' 00" W). In 1939, a 77-ha tract was designated as a federal Research Natural Area by the USDA Forest Service to preserve a stand of old-growth Hemlock-Mixed Mesophytic Forest (Hemingway 1938). The only RNA established in Kentucky, RCRNA is a deep, narrow gorge about 460 m wide and 2 km long from its two principal headwater ravines to its confluence at the floodplain junction with the Rockcastle River. The outer boundary is a conglomerate sandstone cliff (average depth: 48 m) with several cliff line gaps (Winstead and Nicely 1976). The upper boundary approximates the 305-m contour (Fig. 1). The gorge and side ravines include cliffs, rock-shelters, talus slopes, slump boulders, ravine benches, cliff rim, waterfalls, seeps, and a sandstone bridge. Elevations range from 215 to 310 m.

RCRNA is located in the Southwestern Escarpment Subsection of the Northern Cumberland Plateau Section of the Eastern Broadleaf Forest Province (Keys et al. 1995). Braun (1950) referred to this area as the Rugged Cliff Section of the Cumberland Plateau within the Appalachian Plateaus Province as designated by Fenneman (1938).

The old-growth vegetation of RCRNA was described by Braun (1950), Winstead and Nicely (1976), and Cameron and Winstead 1978). This floristic survey is the first descriptive study of the vascular plants within the RCRNA.

Geology, Soils, and Climate

The Rock Creek gorge and vicinity have been described as part of the Lee Formation of the Lower Pennsylvanian System (Puffett 1962). The Rockcastle Conglomerate Member of conglomerate sandstones is found at 274 to 305 m. Beneath these sandstones at 213 to 274 lie a Beattyville Shale Member of gray, carbonaceous shales intermixed with sandstones and siltstones (Puffett 1962).

Ross et al. (1981) mapped and described the soils of Laurel County, Kentucky. Shelocta residual stony silt loam soils from colluvial conglomerate sandstones, siltstones, and shales are found throughout RCRNA below 305 m. The Shelocta Series consists of well-drained, very strongly acid soils on steep gorge and ravine slopes of 30 to 60 percent. These soils are covered with rockfall talus and range in depth from 61 to 152 cm. Alluvial silty clays predominate at the junction of Rock Creek and the Rockcastle River.

Climatic data are from London, Kentucky, located 29 km northeast of RCRNA, from 1955 to 1968. The mean annual temperature is 12.7° C, with July and August the warmest months and January and February the coldest. The mean annual precipitation is 118 cm and is fairly well distributed throughout the year except for periods of summer drought. Most precipitation is in the form of rainfall; mean annual snow accumulation is 46 cm. The mean growing season is 181 days from the last freeze in April to the first freeze in October (Ross et al. 1981).

The Survey

Within the designated boundaries of RCRNA, a comprehensive survey of vascular plants was conducted in the Rock Creek gorge and side and headwater ravines. The survey comprised 40 daylong collection trips from 1985 to 1995 (April to November). There were no collection trips in 1991 or 1992. Plants were processed according to standard herbarium techniques. Voucher specimens were deposited in the Berea College Herbarium (BEREA), with duplicates at the Eastern Kentucky University Herbarium (EKY). Plant identification was made from Strausbaugh and Core (1978), Gleason and Cronquist (1991), and Holmgren (1998). The annotated plant list in this report is arranged alphabetically by family and species. Nomenclature for taxa is from Gleason and Cronquist (1991) except for the Fabaceae, which follows Isley (1998).

In the Appendix, relative abundance categories (frequency of occurrence) in RCRNA are modified from Thompson et al. (1996): Abundant—dominant, codominant, or characteristic (thousands of individuals or colonies); Frequent—easily or generally encountered but not dominant (hundreds of individuals or colonies); Occasional—widely scattered throughout the survey area (26 to 100 individuals or colonies); Infrequent—found in several locations but difficult to locate (5 to 25 individuals or colonies); Rare—difficult to find and limited to one or two localities (1 to 5 individuals or colonies). Relative abundance refers to the overall distribution of each taxon within the total boundaries of RCRNA and is inclusive of all specific habitats.

Categories for generalized life-forms (annuals, biennials, perennials, woody vines, suffrutescent shrubs, shrubs, and trees) follow relative abundance values. Codes for habitat types are given after generalized life-forms in conjunction with existing major plant associations (plant community types) of the Hemlock-Mixed Mesophytic Forest. Flahault and Shroter (1910) defined the association as “a plant community of definite floristic composition, uniform habitat conditions, and uniform physiognomy.” These floristic units are delineated from habitat diversity (physiographic features, topography, slope aspect, elevation, lithology), forest physiognomy, and repetitious floristic composition of the canopy, subcanopy, shrub, and herb layers from field reconnaissance and sampling data.

Herbarium collection numbers in the Appendix are those of Ralph L. Thompson or J. Richard Abbott. Thompson's collection numbers list the year followed by a hyphen and the specimen number(s) in italics. Abbott's collection numbers are in the 5,000's. The names of other field workers who participated in the botanical survey of RCRNA were placed on the actual herbarium labels.

Vegetation Types

The forest vegetation of the Rock Creek RNA is classified as an old-growth Hemlock-Mixed Mesophytic Forest because of the dominance of eastern hemlock (*Tsuga canadensis*) and several mixed-hardwood canopy species in different size

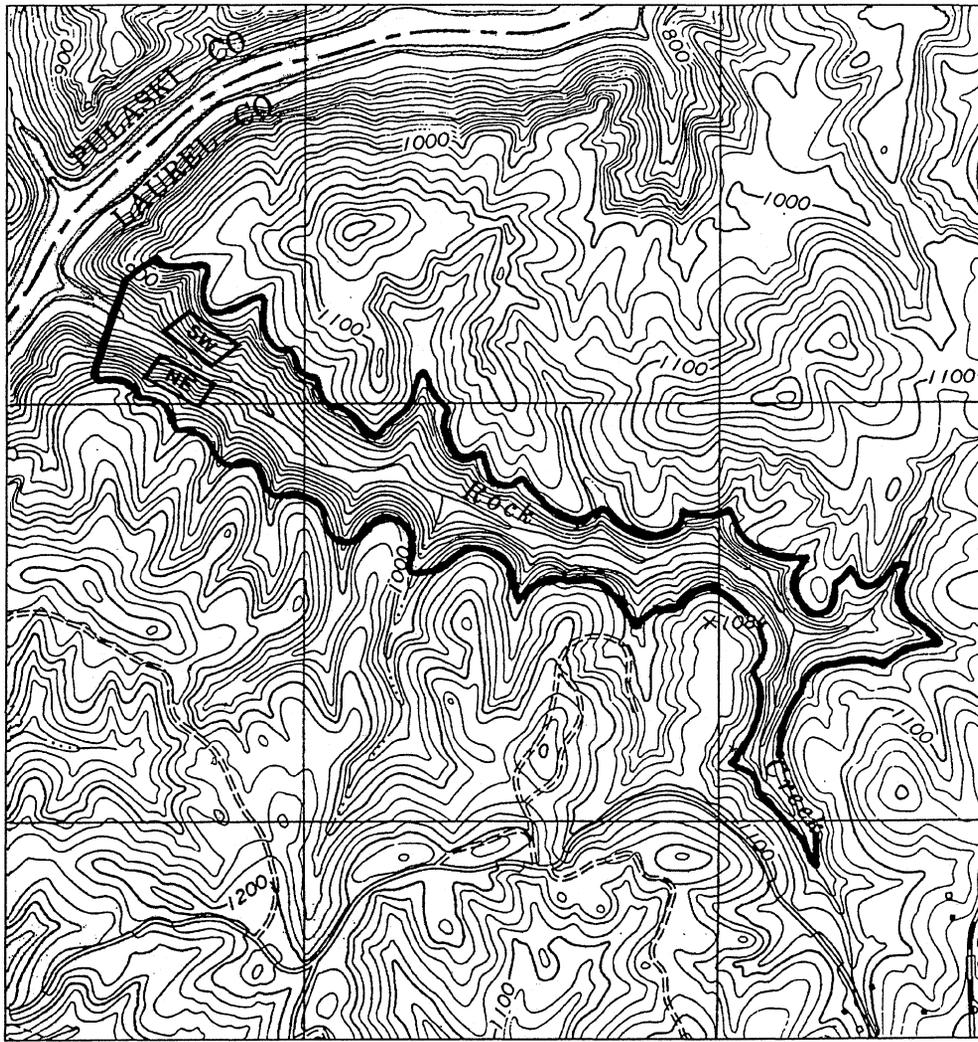


Figure 1.—Rock Creek Research Natural Area, Laurel County, Kentucky. Adapted from Sawyer Quadrangle, 1980, and Daniel Boone National Forest maps. Belt transects indicated by SW and NE rectangles. Scale = 1:14,000.

classes (Braun 1950). According to Küchler (1964), the vegetation would be representative of Type 103, the Mixed Mesophytic Forest (*Acer-Aesculus-Fagus-Liriodendron-Quercus-Tilia*). In a 1990 survey, Rock Creek gorge was listed as Cove Hardwoods-Hemlock (Code 41), and the upper ravines were designated as Hemlock-Hardwoods (Code 2) by the USDA For. Serv. (1990). The RCRNA gorge vegetation can be classified as the Yellow Poplar-Eastern Hemlock (Type 58) with a mosaic of mixed mesophytic hardwoods following Eyre (1980). Weakley et al. (1998) classified the forest vegetation of the RCRNA as representative of the *Tsuga canadensis* (*Liriodendron tulipifera*, *Fagus grandifolia*) Cumberland Plateau Forest within the Daniel Boone National Forest.

A riverine floodplain forest comparable to the River Birch-Sycamore Forest (Type 61) of Eyre (1980) is at the junction of Rock Creek contiguous to the Rockcastle River. This riparian forest would be representative of the classification of

Betula nigra-Platanus occidentalis Forest of Weakley et al. (1998). There is an upland Mixed Pine-Oak/Heath Association (i.e., ericaceous community) at the RCRNA boundary on the upper SW and NE cliff line rim. This forest is representative of the Mixed Pine-Oak Forest described by Braun (1950) and is similar in species composition to the *Pinus virginiana/Kalmia latifolia-Vaccinium* forest and the *Gaylussacia brachycera-Vaccinium arboreum* Shrubland of Weakley et al. (1998).

Previous Vegetation Studies at RCRNA

RCRNA is dominated by eastern hemlock and several mixed hardwood canopy species (Braun 1950; Winstead and Nicely 1976; Cameron and Winstead 1978). The first reported survey of the vegetation at Rock Creek gorge (RNA) was conducted by Emma Lucy Braun, though the exact site is unknown. Braun (1950) found 12 tree species in a random sample of 117 canopy trees. The most important were

eastern hemlock, yellow-poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), sweet birch (*Betula lenta*), American beech (*Fagus grandifolia*), American holly (*Ilex opaca*), American chestnut (*Castanea dentata*), and blackgum (*Nyssa sylvatica*). Braun attributed the development of the extreme type of gorge Hemlock-Mixed Mesophytic Forest at Rock Creek Natural Area to the narrowness of the gorge, its precipitous cliffs, and the NW-trending ravine system.

In a preliminary study near the upper middle of Rock Creek gorge, Winstead and Nicely (1976) listed 13 species from 100 trees sampled along two 750-m transects by the random-pairs method. The most important canopy trees were eastern hemlock, yellow-poplar, sweet birch, red maple, northern red oak (*Quercus rubra*), American holly, and blackgum.

Cameron and Winstead (1978) described the forest structure and composition at Rock Creek gorge from an analysis of 412 trees from a series of 1.25-ha circular plots. The forest comprised 329 trees/ha with a mean basal area of 23.3 m²/ha. The gorge vegetation was described as a stable Climax Mixed Mesophytic Forest in which the dominant trees also were found in the seedling and sampling classes. There was mixed variation in species composition between the drier west-facing slope and the more mesic east-facing slope. There were 12 tree species on the east-facing slope with a higher density of eastern hemlock; 18 tree species were recorded on the west-facing slope. The top tree species in importance were eastern hemlock, sourwood (*Oxydendrum arboreum*), sweet birch, yellow-poplar, American holly, red maple, big-leaf magnolia (*Magnolia macrophylla*), American beech, northern red oak, white oak (*Quercus alba*), and chestnut oak (*Quercus prinus*). Great laurel (*Rhododendron maximum*) and mountain laurel (*Kalmia latifolia*) were the predominant shrubs. Other important shrubs included mountain white-alder (*Clethra acuminata*), mountain camellia (*Stewartia ovata*), and witch-hazel (*Hamamelis virginiana*).

Hemlock-Mixed Mesophytic Forest (Hemlock-Beech-Maple-Yellow Poplar-Oak)

The vascular plant survey was made within the marked boundaries of RCRNA. To document large trees of the Hemlock-Mixed Mesophytic Forest, the diameter at breast height (d.b.h.) of 157 canopy trees (22 species) was measured in Rock Creek gorge in 1989. Canopy trees with a d.b.h. of 90 to 122 cm were eastern hemlock, American beech, yellow-poplar, sugar maple, and white oak (Table 1). These diameters were comparable to those for eastern hemlock, yellow-poplar, and red maple as measured by Winstead and Nicely (1976).

During this descriptive survey, the widest part of lower Rock Creek gorge near the junction with the Rockcastle River was selected for a sampling of the canopy species, associated trees, and woody understory on a NE-trending slope and a SW-trending slope (Fig.1). Tree counts for species composition were made after the 2-m-wide belt transect described in Phillips (1959). A series of these transects was used to sample 272 trees at d.b.h. on the mesic NE-trending

slope from upper cliff line, middle, and lower slope to the Rock Creek streambed (Table 2), and 220 trees at d.b.h. on the more subxeric SW-trending upper cliffline, middle, and lower slope to the Rock Creek streambed (Table 3).

NE-trending Slope

Fourteen canopy tree species were recorded on the mesic NE-trending slope (Table 2). Eastern hemlock, American beech, sugar maple, and yellow-poplar accounted for 78 percent of the species composition (Table 2). Great laurel is the preeminent shrub forming nearly impenetrable, extensive thickets on both NE and SW lower slopes to the V-shaped Rock Creek shale streambed. Other important shrubs are mountain white-alder, pawpaw (*Asimina triloba*), witch-hazel, spicebush (*Lindera benzoin*), mountain camellia, and wild hydrangea (*Hydrangea arborescens*). Indicator vines include poison-ivy (*Toxicodendron radicans*), muscadine grape (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), fox grape (*Vitis vulpina*), and cross-vine (*Bignonia capreolata*). Characteristic ferns on the NE-trending slope are Christmas fern (*Polystichum acrostichoides*), fancy wood fern (*Dryopteris intermedia*), New York fern (*Thelypteris noveboracensis*), broad-beech fern (*T. hexagonoptera*), maidenhair fern (*Adiantum pedatum*), brittle bladder fern (*Cystopteris protrusa*), and rattlesnake fern (*Botrychium virginianum*). Important flowering herbs include heart-leaf foamflower (*Tiarella cordifolia*), purple trillium (*Trillium erectum*), Indian cucumber-root (*Medeola virginiana*), violets (*Viola* spp.), showy orchid (*Orchis spectabilis*), may-apple (*Podophyllum peltatum*), wild ginger (*Asarum canadense*), fragrant bedstraw (*Galium triflorum*), white wood aster (*Aster divaricatus*), wreath goldenrod (*Solidago caesia*), several sedges (e.g., *Carex austrocaroliniana*, *C. digitalis*, *C. laxiculmis*, *C. planispicata*, *C. styloflexa*), and members of the Poaceae (Appendix).

SW-trending Slope

Canopy trees of the more subxeric SW-trending slope from the SW cliff escarpment were similar in species composition to those of the upland Mixed Pine-Oak Forest (Braun 1950). Eighteen canopy tree species were documented on the SW-trending slope (Table 3). White oak, American beech, eastern hemlock, chestnut oak, yellow-poplar, and red maple accounted for 70 percent of the species composition (Table 3). The predominant shrubs were great laurel on the lower and middle slopes interspersed with mountain laurel at the upper slope. Other important subcanopy trees and shrubs included serviceberry (*Amelanchier arborea*), flowering dogwood (*Cornus florida*), strawberry bush (*Euonymus americanus*), maple-leaf viburnum (*Viburnum acerifolium*), hillside blueberry (*Vaccinium pallidum*), mountain white-alder, and mountain camellia. Characteristic woody vines were poison-ivy, Virginia creeper, glaucous catbrier (*Smilax glauca*), and common greenbrier (*S. rotundifolia*).

Although herbaceous species richness is greater on the more diverse NE-trending slope, many of the species on that slope also are found on the SW-trending slope. Characteristic species on the SW-trending slope include the

following perennials: spotted wintergreen (*Chimaphila maculata*), spring bluets (*Hedyotis caerulea*), dwarf crested iris (*Iris cristata*), pink lady's slipper (*Cypripedium acaule*), rattlesnake plantain (*Goodyera pubescens*), cranefly orchid (*Tipularia discolor*), little brown jug (*Hexastylis arifolia*), and beech-drops (*Epifagus virginiana*).

NE- and SW-trending Rockhouse Recesses, Overhangs, and Cliffsides

Rockhouse habitats range from wet overhangs to dry cliff recesses on both NE-trending and SW-trending aspects. Diagnostic shrubs and vines of cliff rockhouse shelters are wild hydrangea, poison-ivy, mountain white-alder, cross-vine, Virginia creeper, glaucous greenbrier, common greenbrier, witch-hazel, and partridge-berry (*Mitchella repens*).

Characteristic ferns of exposed cliff crevices, ledges, and wet-to-dry cliff overhangs are hay-scented fern (*Dennstaedtia punctilobula*), mountain spleenwort (*Asplenium montanum*), maidenhair spleenwort (*A. trichomanes*), lobed spleenwort (*A. pinnatifidum*), marginal wood fern (*Dryopteris marginalis*), and fancy wood fern. Indicator herbs of moist to dry underhangs and vertical cliff rockfaces include Canada columbine (*Aquilegia canadensis*), small-flowered alumroot (*Heuchera parviflora*), round-leaved catchfly (*Silene rotundifolia*), wild stonecrop (*Sedum ternatum*), heart-leaf foamflower, two-leaved miterwort (*Mitella diphylla*), and Indian turnip (*Arisaema triphyllum*). Rare species include Braun's rockhouse white snakeroot (*Eupatorium luciae-brauniae*), mountain meadow-rue (*Thalictrum mirabile*), white wood sorrel (*Oxalis montana*), and round-leaf yellow violet (*Viola rotundifolia*). Indicator ferns and fern allies restricted to damp rockhouse recesses are rock club-moss (*Lycopodium porophilum*), meadow spike-moss (*Selaginella apoda*), and Appalachian filmy fern (*Trichomanes boschianum*).

NE- and SW-trending Conglomeratic Sandstone Slump Blocks

Weathering of conglomeratic sandstones from the cliffsides has created extensive rockfall talus slopes and large slump blocks or boulders throughout the gorge and side ravines. These habitats tend to be moist, moss covered, and colonized by several important species. Characteristic species include shining clubmoss (*Lycopodium lucidulum*), walking fern (*Asplenium rhizophyllum*), bulblet bladder-fern (*Cystopteris bulbifera*), common polypody (*Polypodium virginianum*), wild stonecrop, Canada columbine, small-flowered alumroot, foamflower, early bluegrass (*Poa cuspidata*), slender wedge-grass (*Sphenopholis obtusata*), partridge-berry, and red-based tussock sedge (*Carex pedunculata*).

SW and NE Mixed Pine-Oak/Heath Forest

The most subxeric community within the boundaries of RCRNA is found in a narrow belt along the top of the SW vertical bluff and cliff rim and the upper NW-trending cliff rim.

Exposed conglomeratic sandstone glades are colonized by several lichens (*Cladina* spp.; *Cladonia* spp.; *Parmelia* spp.; *Umbilicaria* spp.). A subclimax heath community is derived from the extensive upland Mixed Pine-Oak Forest; it is especially pronounced with ericaceous thickets on the SW-trending aspect. This habitat is rich floristically and many species have become established through diaspore dispersal beneath the SW and NE cliff lines on benches, crevices, and ledges downward to the SW and NE upper slopes. The remainder of the vegetation surrounding the NE cliff edge boundary consists of Hemlock-Mixed Hardwood Forest that becomes contiguous with upland Oak-Hickory Forest and Pine-Oak Forest (Braun 1950).

Pitch pine, short-leaf pine, Virginia pine (*P. virginiana*), chestnut oak, black oak (*Quercus velutina*), white oak, scarlet oak, red maple, sourwood, pignut hickory, blackgum, and white sassafras are important canopy trees. Subcanopy trees and shrubs include serviceberry, flowering dogwood, maple-leaf viburnum, and rusty black haw (*Viburnum rufidulum*). Important ericaceous shrubs characteristic of heath shrubland are mountain laurel, sparkleberry (*Vaccinium arboreum*), hillside blueberry (*V. pallidum*), deerberry (*V. stamineum*), highbush blueberry (*V. corymbosum*), and great laurel. Box huckleberry (*Gaylussacia brachycera*), black huckleberry (*G. baccata*), tea-berry (*Gaultheria procumbens*), and trailing arbutus (*Epigaea repens*) form extensive low shrub thickets in exposed areas.

Ferns and fern allies include ebony spleenwort (*Asplenium platyneuron*), bracken fern (*Pteridium aquilinum* var. *latiusculum*), southern ground-cedar (*Lycopodium digitatum*), and wiry ground-cedar (*L. tristachyum*). Characteristic herbs include little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), oat poverty grass (*Danthonia compressa*), black-seed needlegrass (*Piptochaetium avenaceum*), tall whipgrass (*Scleria triglomerata*), green sedge (*Carex virescens*), hoary pea (*Tephrosia virginiana*), tickseed sunflower (*Coreopsis major*), cut-leaf goldenrod (*Solidago arguta*), grass-leaved golden aster (*Chrysopsis graminifolia*), spotted wintergreen, and pink lady's slipper.

Riverine Floodplain Forest (River Birch-Sycamore)

The alluvial riparian habitat of Rock Creek at the junction of the Rockcastle River consists of diagnostic canopy species of the Riverine Floodplain Forest (River Birch-Sycamore) of Eyre (1980). Canopy composition includes river birch (*Betula nigra*), American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), black willow (*Salix nigra*), and sweetgum (*Liquidambar styraciflua*). The overstory and understory species are adapted to annual seasonal flooding and to the alluvial sandstone soils present. Important shrubs and woody vines include smooth alder (*Alnus serrulata*), buttonbush (*Cephalanthus occidentalis*), poison-ivy, muscadine grape, fox grape, trumpet creeper (*Campsis radicans*), cross-vine, and common greenbrier.

Streamside seeps and terrace thickets provide diverse habitats for several wetland species. Sensitive fern (*Onoclea sensibilis*), cinnamon-fern (*Osmunda cinnamomea*), and royal fern (*O. regalis*) are found along streambank seeps. Important flowering herbs of terraces include pale jewelweed (*Impatiens pallida*), orange jewelweed (*I. capensis*), false nettle (*Boehmeria cylindrica*), stinging nettle (*Laportea canadensis*), Virginia wild rye (*Elymus virginicus*), giant cane (*Arundinaria gigantea*), deer-tongue panicum (*Panicum clandestinum*), cardinal flower (*Lobelia cardinalis*), great blue lobelia (*L. siphilitica*), hog peanut (*Amphicarpaea bracteata*), monkey flower (*Mimulus alatus*), seedbox (*Ludwigia alternifolia*), yellow-green sedge (*Carex lurida*), leek-green sedge (*C. prasina*), and weak sedge (*C. debilis*).

During the summer and fall, exposed sand and mudflats from the lowering of the the Rockcastle River and Rock Creek have enhanced the establishment of numerous native and exotic herbs. Characteristic herbs are creeping lovegrass (*Eragrostis hypnoides*), Carolina lovegrass (*E. pectinacea*), river beadgrass (*Paspalum fluitans*), old-witch grass (*Panicum dichotomiflorum*), smooth crabgrass (*Digitaria ischaemum*), cocklebur (*Xanthium strumarium*), common ragweed (*Ambrosia artemisiifolia*), devil's beggarticks (*Bidens frondosa*), yerba-de-tajo (*Eclipta prostrata*), smartweeds (*Polygonum* spp.), spotted eyebane (*Euphorbia nutans*), nutsedges (*Cyperus* spp.), and carpetweed (*Mollugo verticillata*).

Rare and Special Interest Species at RCRNA

In this study, distribution and abundance references for rare and significant taxa are Brown and Athey (1992), Medley (1993), USDI Fish and Wildlife Service (FWS 1993), Campbell et al. (1994), and Kentucky State Nature Preserves Commission (KSNPC 1996). Campbell et al. (1994) listed the rare and special interest species in the London Ranger District during a cooperative inventory of the Daniel Boone National Forest. Several of the rare and special interest taxa cited by Campbell et al. are found at RCRNA, which lies in the southern half of the district. Other special interest taxa were based on field observations of those taxa throughout their geographical range in Kentucky. Since there are no federally protected species at RCRNA, these taxa fall into two categories: those listed by the state and special interest species.

Species Listed by the State

Small Yellow Lady's Slipper (*Cypripedium calceolus* var. *parviflorum*). This northern species was reported at Rock Creek on a moist oak-hickory upper slope as a sight record in 1986 by R. Thompson (Campbell et al. 1994). Another small population was discovered in 1989 and a voucher (*Thompson 89-624*) was collected on a side ravine contiguous to a NE pine-oak ericaceous stand. The KSNPC (1996) has designated this Appalachian taxon as Threatened (T). Medley (1993) reported this rare orchid from the Appalachian Plateaus and the Cumberland Mountains. Browne and Athey (1992) recorded it from the Cumberland Plateau Province.

American Chestnut (*Castanea dentata*). The KSNPC (1996) has designated this Appalachian taxon as Endangered (E) because of the effects of the chestnut blight (*Endotheca parasitica*). In RCRNA as elsewhere, American chestnut (*Thompson 89-785*) persists primarily from stump and root sprouts.

South Carolina Sedge (*Carex austrocaroliniana*). The first Kentucky state record of this southern Appalachian sedge was documented at RCRNA in 1985 (*Thompson 85-64, BERA*), according to Campbell et al. (1994). The KSNPC (1996) has given this sedge Special Concern (S) status. Medley (1993) records it as rare but locally frequent in the Cliff Section of the Cumberland Plateau and in the Cumberland Mountains. This sedge was not listed for Kentucky by Browne and Athey (1992).

Lucy Braun's Rockhouse White Snakeroot (*Eupatorium luciae-brauniae*). Campbell et al. (1994) cited the specimen (*Thompson 89-1767, BERA*) at RCRNA where it is restricted to sandstone rockhouse shelters. Medley (1993) recorded this rare species in five counties of the Cliff Section of the Cumberland Plateau. The KSNPC (1996) listed it as Special Concern (S) taxon for monitoring purposes based on its rareness and limited geographical range in Kentucky. Previously, it had been recorded as Endangered (E) in Kentucky (Warren et al. 1986). The Fish and Wildlife Service (FWS 1993) initially listed this southern species in Category C2; later it was withdrawn as a federal candidate.

Species of Special Interest

Red-based Tussock Sedge (*Carex pedunculata*). The second collection for Kentucky of this northern sedge was on a conglomerate ledge in 1985 (*Thompson 85-77, BERA*) at RCRNA (Campbell et al. 1994). Medley (1993) designated it as rare in the Cliff Section of the Cumberland Plateau. Browne and Athey (1992) did not record this sedge for Kentucky.

Flat-spiked Sedge (*Carex planispicata*). Naczi (1999) described this widespread sedge [Syn: *Carex grisea* Wahlenb var. *rigida* L. H. Bailey; *C. amphibola* Steud. var. *rigida* (L. H. Bailey) Fern.] as a new species. He listed lower slopes adjacent to streams and upper floodplain habitats in mesic deciduous forests in the eastern United States. Medley (1993) reported the distribution of *C. planispicata* [as *C. amphibola* var. *rigida* in his dissertation] from the Bluegrass, eastern Knobs escarpment, and the Cliff Section of the Cumberland Plateau. Naczi annotated two specimens of flat-spiked sedge from the NE mesic slope of RCRNA (*Abbott 5166; Thompson 87-359*).

Bent-tip Lax-flowered Sedge (*Carex styloflexa*). This sedge was first documented at RCRNA in 1986 (*Thompson 86-145*). It is a rare southern sedge in the Cliff Section and Knobs Region of eastern Kentucky (Medley 1993; Campbell et al. 1994).

Box Huckleberry (*Gaylussacia brachycera*). At RCRNA, box huckleberry was collected in the upland pine-oak ericaceous forest on cliff rims (*Thompson 85-393, 89-777*).

This Appalachian species is found only in the southern Cliff Section of the Cumberland Plateau (Medley 1993) along cliff edges and ridgetops at the northern and central geographical range limits (Campbell et al. 1994). Browne and Athey (1992) reported it from the Cumberland Plateau Province. The KSNPC designated box huckleberry as a Special Concern (S) taxon in 1986 (Warren et al. 1986), but did not list it in 1996 (KSNPC 1996).

Rock-clubmoss (*Lycopodium porophyllum*). In the Rock Creek gorge, rock-clubmoss is rare and found in damp soil under several conglomeratic sandstone rockhouse overhangs (Thompson 89-822, 95-367). This species is reported as colonizing rocky sandstone cliffs edges in the central-eastern United States (Gleason and Cronquist 1991).

Wiry Ground-cedar (*Lycopodium tristachyum*). At RCRNA, wiry ground-cedar is restricted to SSW dry pine-oak ericaceous upper rim thickets (Thompson 95-403). The clubmoss is reported as infrequent on oak-pine heaths in the Cumberland Mountains and Appalachian Plateaus (Medley 1993).

White Wood Sorrel (*Oxalis montana*). Campbell et al. (1994) cited a specimen (Thompson 86-164, BERE) collected in a moist ravine of RCRNA in 1986. This northern sorrel is reported as rare in mixed mesophytic forests in the Cliff Section of the Cumberland Plateau and Cumberland Mountains of eastern Kentucky (Medley 1993; Campbell et al. 1994). Browne and Athey (1992) reported it only for the Cumberland Plateau Province.

American Ginseng (*Panax quinquefolius*). A collection of this rare north-central species from RCRNA (Thompson 85-252, BERE) in the London Ranger District was cited by Campbell et al. (1994). American ginseng is now rare in Kentucky because of excessive root harvesting (Medley 1993; Campbell et al. 1994).

Dwarf Ginseng (*Panax trifolius*). This northern species is reported from the tributaries of the Rockcastle River of the Cliff Section in the London Ranger District. A voucher from RCRNA (Thompson 85-49, BERE) was cited by Campbell et al. (1994). Medley (1993) reported dwarf ginseng as rare to uncommon in mesophytic forests of the Cumberland Plateau.

Cumberland Azalea (*Rhododendron cumberlandense*). The Cumberland Azalea was collected in the subxeric SW mixed pine-oak/heath community at RCRNA (Thompson 85-417, 89-1126). This Appalachian endemic is recorded as infrequent in dry-mesic forests from nine counties of the Cumberland Mountains and Cumberland Plateau (Medley 1993). It is reported from the Cumberland Plateau Province by Browne and Athey (1992).

Mountain Camellia (*Stewartia ovata*). Scattered populations of mountain camellia were collected in the NE ravine and gorge slopes in Mixed Mesophytic Forest and Mixed Pine-Oak ericaceous stands (Thompson 85-256, 89-1812). Medley (1993) reported this Appalachian endemic

from one county in the Cumberland Mountains and three counties from the Cliff Section of the Cumberland Plateau. Gleason and Cronquist (1991) listed this southern Appalachian species from eastern Kentucky, northern Virginia, and southern to northern Alabama.

Mountain Meadow-rue (*Thalictrum mirabile*). This southern Appalachian species is found in moist to wet sandy soil of rockhouse recesses in Rock Creek gorge (Thompson 85-371, 89-835). Medley (1993) presented the range of *Thalictrum mirabile* (under *T. clavatum*) as seeps and rockhouses under sandstone bluffs. Gleason and Cronquist (1991) gave its distribution from eastern Kentucky and Tennessee to Alabama. The KSNPC classified it as a Special Concern taxon in 1986 (Warren et al. 1986), but did not list it in 1996 (KSNPC 1996).

Appalachian Bristle-fern (*Trichomanes boschianum*). The rare bristle-fern at RCRNA is found under damp to wet rockhouse overhangs (Thompson 89-1766, BERE). RCRNA was one of three sites listed for this fern in the London Ranger District by Campbell et al. (1994). Medley (1993) reported it as rare to infrequent in sandstone rockhouse shelters in the Dripping Springs Escarpment of the Shawnee Hills, Cumberland Mountains, and Cliff Section of the Cumberland Plateau. The KSNPC classified the Appalachian bristle-fern as a Special Concern (S) species in Kentucky (Warren et al. 1986), but delisted it in 1996 (KSNPC 1996).

Results and Discussion

RCRNA vascular flora comprises 350 specific and infraspecific taxa in 223 genera and 93 families. Only 3.7 percent are nonindigenous naturalized species (Table 4; Appendix). Species include 6 Lycopodiophyta, 25 Polypodiophyta, 5 Pinophyta, and 314 Magnoliophyta (Table 4); 255 are annual, biennial, and perennial herbs, and 95 are woody vines, shrubs, and trees (Table 5). The largest families in species richness are the Asteraceae, Poaceae, Cyperaceae, Aspleniaceae, Ericaceae, Ranunculaceae, and Rosaceae (Table 6). Seventeen rare and special interest species have been documented, including 4 listed by the state and 13 other special interest species.

A total of 492 canopy trees from 22 species was inventoried on the NE and SW slopes (Table 7). The order of importance was eastern hemlock, American beech, yellow-poplar, white oak, sugar maple, red maple, chestnut oak, sweet birch, pignut hickory, and pitch pine. The first six species account for 74.1 percent of the species composition (Table 7).

The tree species in this survey differed considerably in importance from those in previous vegetation studies in RCRNA (Braun 1950; Winstead and Nicely 1976; Cameron and Winstead 1978). For example, sugar maple was important in this study but was not reported in the other three studies. The sampling site and sampling technique might have accounted for the differences. The sampling sites of Winstead and Nicely (1976) and Cameron and Winstead (1978) were in the upper one-third of Rock Creek gorge. In

this survey, the sampling site was located at the widest area of gorge near its junction with the Rockcastle River. The long belt-transect method allowed sampling from the bottom of the vertical cliffline to the creekbed of Rock Creek through upper, middle, and lower slopes.

Species richness at RCRNA results from environmental and ecological factors that contribute to diversity within the Hemlock-Mixed Mesophytic Forest. The subxeric Mixed Pine-Oak/Heath Forest and the alluvial Riverine Floodplain Forest add significantly to species richness. The relative richness of the 77-ha gorge at RCRNA is only 78.8 percent of that expected for the region as calculated from Wade and Thompson (1991). This low relative species richness may be characteristic of this old-growth forest stand, which has experienced few natural and anthropogenic disturbances.

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Table 1.—Measurements of 157 large trees within Rock Creek Research Natural Area, Kentucky

Species	Diameter at breast height (cm)
<i>Acer rubrum</i>	45.7, 62.2, 70.0, 76.1, 87.7, 91.9, 92.4
<i>Acer saccharum</i>	30.6, 36.2, 42.8, 56.7, 67.4, 88.5, 90.7
<i>Betula lenta</i>	21.4, 23.0, 26.4, 31.2, 33.0, 33.4, 36.5, 36.8, 37.8, 38.4, 39.6, 42.8, 66.3, 84.9
<i>Carya glabra</i>	56.0
<i>Fagus grandifolia</i>	57.8, 59.9, 63.3, 67.7, 77.6, 81.3, 87.4, 90.3, 92.4, 94.5, 95.7
<i>Fraxinus americana</i>	51.4, 53.9
<i>Ilex opaca</i>	12.5, 13.4, 19.8, 27.0, 31.8, 32.3, 35.3
<i>Liquidambar styraciflua</i>	27.8, 34.3, 48.0
<i>Liriodendron tulipifera</i>	50.1, 65.0, 65.2, 86.7, 95.2, 99.2, 100.1, 100.2, 105.5, 112.0, 113.8, 117.3, 119.2, 122.0
<i>Magnolia acuminata</i>	17.3, 34.0
<i>Magnolia macrophylla</i>	13.0, 14.0, 14.7, 19.4, 20.0, 21.8, 26.4, 26.8, 27.2, 28.2, 28.5, 31.3, 32.6
<i>Magnolia tripetala</i>	11.4, 12.1, 13.0
<i>Nyssa sylvatica</i>	42.1, 43.1, 53.0
<i>Oxydendrum arboreum</i>	17.6, 19.0, 20.1, 23.8, 28.4, 28.8, 31.5, 33.0, 39.4
<i>Pinus echinata</i>	41.9, 43.8, 44.2, 50.4, 50.5
<i>Pinus rigida</i>	40.7, 42.2, 46.8, 48.1, 49.7
<i>Quercus alba</i>	53.4, 62.8, 76.4, 77.4, 81.4, 89.3, 89.7, 94.0, 113.8
<i>Quercus prinus</i>	61.7, 62.4, 64.5, 65.9, 70.5, 94.5
<i>Quercus rubra</i>	47.5, 54.2, 63.3, 71.2, 78.1
<i>Sassafras albidum</i>	45.6
<i>Tilia americana</i>	40.5, 47.3, 53.8, 54.0, 55.3
<i>Tsuga canadensis</i>	72.9, 73.7, 73.8, 74.0, 77.6, 79.8, 80.1, 80.3, 83.0, 83.4, 84.5, 85.3, 85.8, 87.9, 88.0, 88.4, 89.8, 90.0, 91.4, 94.8, 95.3, 97.5, 98.4, 100.5, 102.1

Table 2.—Canopy trees (272 > 10 cm d.b.h.) sampled by 2-m-wide belt transects on NE-trending slope near junction of Rock Creek gorge with Rockcastle River

Species	Number of trees	Percent composition
<i>Tsuga canadensis</i>	85	31.3
<i>Fagus grandifolia</i>	64	23.5
<i>Acer saccharum</i>	35	12.9
<i>Liriodendron tulipifera</i>	28	10.3
<i>Acer rubrum</i>	16	5.9
<i>Betula lenta</i>	11	4.0
<i>Magnolia acuminata</i>	8	2.9
<i>Tilia americana</i>	7	2.6
<i>Magnolia macrophylla</i>	6	2.2
<i>Quercus rubra</i>	5	1.8
<i>Ilex opaca</i>	3	1.1
<i>Carya cordiformis</i>	2	0.7
<i>Oxydendrum arboreum</i>	1	0.4
<i>Aesculus flava</i>	1	0.4

Table 3.—Canopy trees (220 > 10 cm d.b.h.) sampled by 2-m-wide belt transects on SW-trending slope near junction of Rock Creek gorge with Rockcastle River

Tree species	Number of trees	Percent composition
<i>Quercus alba</i>	45	20.5
<i>Fagus grandifolia</i>	28	12.7
<i>Tsuga canadensis</i>	24	10.9
<i>Quercus prinus</i>	20	9.1
<i>Liriodendron tulipifera</i>	19	8.6
<i>Acer rubrum</i>	18	8.2
<i>Carya glabra</i>	14	6.4
<i>Pinus rigida</i>	12	5.5
<i>Nyssa sylvatica</i>	10	4.6
<i>Betula lenta</i>	6	2.7
<i>Magnolia macrophylla</i>	5	2.3
<i>Quercus coccinea</i>	4	1.8
<i>Pinus virginiana</i>	4	1.8
<i>Oxydendrum arboreum</i>	4	1.8
<i>Quercus rubra</i>	3	1.4
<i>Acer saccharum</i>	2	0.9
<i>Sassafras albidum</i>	1	0.4
<i>Ilex opaca</i>	1	0.4

Table 4.—Classification of vascular plants at Rock Creek Research Natural Area

Division	Families	Genera	Species	Native	Exotic	Species composition	
						Number	Percent
Lycopodiophyta	2	2	6	6	0	1.7	
Polypodiophyta	8	14	25	25	0	7.2	
Pinophyta	2	3	5	5	0	1.4	
Magnoliophyta	81	204	314	301	13	89.7	
Magnoliopsida	72	161	235	225	10	67.1	
Liliopsida	9	43	79	76	3	22.6	
Total	93	223	350	337	13	100.0	

Table 5.—Characteristics of native and exotic vascular plants at Rock Creek Research Natural Area

Plant	Generalized life-form				Total flora	Individual category	Total flora
	Annual	Biennial	Perennial	Woody			
	Number				Number	Percent	
Native							
Ferns and fern allies	0	0	31	0	31	9.2	8.9
Sedge	0	0	23	0	23	6.8	6.6
Rush	0	0	4	0	4	1.2	1.1
Grass	3	0	23	1	27	8.0	7.7
Forb	33	3	123	0	159	47.2	45.4
Shrub	0	0	0	30	30	8.9	8.6
Tree	0	0	0	52	52	15.4	14.9
Woody vine	0	0	0	11	11	3.3	3.1
Subtotal	36	3	204	94	337	100.0	96.3
Exotic							
Grass	3	0	0	0	3	23.1	0.9
Forb	7	0	2	0	9	69.2	2.6
Shrub	0	0	0	0	0	0.0	0.0
Tree	0	0	0	0	0	0.0	0.0
Woody vine	0	0	0	1	1	7.7	0.3
Subtotal	10	0	2	1	13	100.0	3.7
Total	46	3	206	95	350	100.00	100.0

Table 6.—Species richness in the 14 largest plant families at the Rock Creek Research Natural Area

Family	Genera	Species	Native	Exotic
 <i>Number</i>			
Asteraceae	18	31	29	2
Poaceae	20	30	27	3
Cyperaceae	3	23	23	0
Aspleniaceae	6	15	15	0
Ericaceae	7	12	15	0
Ranunculaceae	8	10	10	0
Rosaceae	7	9	9	0
Orchidaceae	7	8	8	0
Fagaceae	3	8	8	0
Violaceae	2	8	8	0
Polygonaceae	2	8	3	5
Liliaceae	7	7	7	0
Lamiaceae	6	7	7	0
Rubiaceae	5	7	7	0
Total	101	183	173	10

Table 7.—Canopy trees (492 > 10 cm d.b.h.) recorded on NE and SW-trending slopes near junction of Rock Creek gorge with Rockcastle River

Species	Number of trees	Percent composition
<i>Tsuga canadensis</i>	109	22.2
<i>Fagus grandifolia</i>	92	18.7
<i>Liriodendron tulipifera</i>	47	9.6
<i>Quercus alba</i>	45	9.2
<i>Acer saccharum</i>	37	7.5
<i>Acer rubrum</i>	34	6.9
<i>Quercus prinus</i>	20	4.1
<i>Betula lenta</i>	17	3.5
<i>Carya glabra</i>	14	2.8
<i>Pinus rigida</i>	12	2.4
<i>Magnolia macrophylla</i>	11	2.3
<i>Nyssa sylvatica</i>	10	2.0
<i>Magnolia acuminata</i>	8	1.6
<i>Quercus rubra</i>	8	1.6
<i>Tilia americana</i>	7	1.4
<i>Oxydendrum arboreum</i>	5	1.0
<i>Pinus virginiana</i>	4	0.8
<i>Ilex opaca</i>	4	0.8
<i>Quercus coccinea</i>	4	0.8
<i>Carya cordiformis</i>	2	0.4
<i>Aesculus flava</i>	1	0.2
<i>Sassafras albidum</i>	1	0.2

Appendix

Vascular Flora of Rock Creek Research Natural Area

Hemlock-Mixed Mesophytic Forest Habitat Code: NE=northeast-trending slopes, talus, seeps; SW=southwest-trending slopes, talus, seeps; RH=rockhouse recesses, overhangs, cliffs, ledges, crevices; CB= conglomerate sandstone slump blocks; PO=upland rim mixed pine-oak/heath forest; and RF=riverine floodplain forest, seeps, mudflats, thickets.

LYCOPODIOPHYTA (Lycopods)

LYCOPODIACEAE (Club-moss Family)

Lycopodium digitatum Dillen. ex A. Braun. (Southern Ground-cedar). [Syn: *Diphasiastrum digitatum* (Dillen. ex A. Braun) Holub]. Rare; perennial. PO. *Thompson 85-433, 85-1001.*

Lycopodium lucidulum Michx. (Shining Clubmoss). [Syn: *Huperzia lucidula* (Michx.) Trevisan]. Occasional; perennial, NE, CB. *Thompson 89-618, 95-404.*

Lycopodium obscurum L. (Ground-pine). Rare; perennial, NE, PO. *Thompson 89-534, 95-421*

Lycopodium porophyllum Lloyd & Underw. (Rock-clubmoss). [Syn: *Huperzia porophila* (Lloyd & Underw.) Holub]. Rare; perennial, RH. *Thompson 89-822, 95-367.*

Lycopodium tristachyum Pursh. (Wiry Ground-cedar). [Syn: *Diphasiastrum tristachyum* (Pursh) Holub]. Rare; perennial, PO. *Thompson 95-403.*

SELAGINELLACEAE (Spikemoss Family)

Selaginella apoda (L.) Spring in Mart. (Meadow-spikemoss). [Syn: *S. apus* Spring]. Rare; perennial, RH. *Thompson 89-1772, 95-337.*

POLYPODIOPHYTA (True Ferns)

ADIANTACEAE (Maidenhair Fern Family)

Adiantum pedatum L. (Northern Maidenhair Fern). Occasional; perennial, NE, RH. *Thompson 95-420.*

ASPLENIACEAE (Spleenwort Family)

Asplenium montanum Willd. (Mountain Spleenwort). Frequent; perennial, NE, SW, RH, CB. *Thompson 86-1, 95-364.*

Asplenium pinnatifidum Nutt. (Lobed Spleenwort). Rare; perennial, RH. *Thompson 95-334.*

Asplenium platyneuron (L.) BSP. (Ebony Spleenwort). Rare; perennial, SW, PO. *Thompson 85-456.*

Asplenium rhizophyllum L. (Walking Fern). [Syn: *Camptosorus rhizophyllum* (L.) Link]. Rare; perennial, CB, NE. *Thompson 85-114, Thompson 85-1000.*

Asplenium trichomanes L. (Maidenhair Spleenwort). Rare; perennial, NE, RH, CB. *Thompson 95-332.*

Athyrium filix-femina (L.) Roth var. *asplenioides* (Michx.) Farw. (Southern Lady Fern). [Syn: *Athyrium filix-femina* (L.) Mertens var. *asplenioides* (Michx.) Farw.]. Occasional, perennial, NE, RH. *Abbott 5158; Thompson 86-925.*

Athyrium pycnocarpon (Spreng.) Tidestrom. (Common Glade-fern). [Syn: *Diplazium pycnocarpon* (Sprengel) M. Broun]. Rare; perennial, NE. *Thompson 89-2702.*

Athyrium thelypteroides (Michx.) Desv. (Silvery Glade-fern). [Syn: *Deparia acrostichoides* (Swartz) M. Kato]. Infrequent; perennial, NE. *Abbott 5158; Thompson 89-2298.*

Cystopteris bulbifera (L.) Bernh. (Bulblet Bladder-fern). Rare; perennial, NE, RH. *Thompson 85-246.*

Cystopteris protrusa (Weatherby) Blasdell. (Southern Brittle-fern). [Syn: *Cystopteris fragilis* (L.) Bernh. var. *protrusa* Weatherby]. Infrequent; perennial, NE, RH, CB. *Thompson 95-343.*

Dryopteris intermedia (Muhl. ex Willd.) A. Gray. (Evergreen Wood-fern). [Syn: *D. spinulosa* (Muell.) Watt. var. *intermedia* (Muhl. ex Willd.) Underw.]. Abundant, perennial, NE, SW, RH, CB. *Thompson 85-926, 95-419.*

Dryopteris marginalis (L.) A. Gray. (Marginal Wood-fern). Occasional; perennial, NE, SW, RH, CB. *Thompson 85-16, 89-2701.*

Polystichum acrostichoides (Michx.) Schott. (Christmas Fern). Frequent; perennial, NE, SW, CB. *Thompson 85-209.*

Thelypteris noveboracensis (L.) Nieuwl. (New York Fern). [Syn: *Dryopteris noveboracensis* (L.) A. Gray]. Frequent; perennial, NE, SW. *Thompson 85-367, 85-611.*

Thelypteris hexagonoptera (Michx.) Nieuwl. (Broad-beech Fern). [Syn: *Phegopteris hexagonoptera* (Michx.) Fee]. Occasional; perennial, NE, SW. *Thompson 85-248.*

DENNSTAEDTIACEAE (Bracken Fern Family)

Dennstaedtia punctilobula (Michx.) T. Moore. (Hay-scented Fern). Occasional; perennial, NE, SW, RH. *Thompson 85-924, 95-365.*

Pteridium aquilinum (L.) Kuhn in Decken var. *latiusculum* (Desv.) Underwood ex Heller (Bracken Fern). [Syn: *Pteridium latiusculum* (Desv.) Fries]. Infrequent; perennial, SW, PO. *Thompson 95-423.*

HYMENOPHYLLACEAE (Filmy Fern Family)

Trichomanes boschianum Sturm. (Appalachian Bristle-fern). Rare; perennial, RH. *Thompson 89-1766.*

OPHIOGLOSSACEAE (Adder's Tongue Family)

Botrychium dissectum Spreng. (Dissected Grape-fern). [Syn: *B. dissectum* Spreng. var. *obliquum* (Muhl. ex Willd.) Clute]. Rare; perennial, SW. *Thompson 85-989*.

Botrychium virginianum (L.) Swartz. (Rattlesnake-fern). Infrequent; perennial, NE, SW. *Thompson 85-223*.

ONOCLEACEAE (Sensitive Fern Family)

Onoclea sensibilis L. (Sensitive Fern). Rare; perennial, RF. *Thompson 85-280, 85-837*.

OSMUNDACEAE (Royal Fern Family)

Osmunda cinnamomea L. (Cinnamon-fern). Infrequent; perennial. SW, RH, RF. *Thompson 87-404*.

Osmunda regalis L. var. *spectabilis* (Willd.) A. Gray. (Showy Royal Fern). Rare; perennial, RF. *Thompson 87-361, 89-1172*.

POLYPODIACEAE (Polypody Family)

Polypodium virginianum L. (Common Polypody). [Syn: *P. vulgare* L. var. *virginianum* (L.) D.C. Eat.].

Frequent; perennial, CB. *Thompson 85-21, 89-834*.

PINOPHYTA (Gymnosperms)

CUPRESSACEAE (Cedar Family)

Juniperus virginiana L. (Eastern Redcedar). Infrequent; understory tree, SW, PO. *Thompson 95-435*.

PINACEAE (Pine Family)

Pinus echinata Mill. (Short-leaf Pine). Frequent; canopy tree, SW, PO. *Thompson 89-1013*.

Pinus rigida Mill. (Pitch Pine). Abundant; canopy tree, SW, PO. *Thompson 89-1821, 95-431*.

Pinus virginiana Mill. (Virginia pine). Abundant; canopy tree, SW, PO. *Thompson 85-394*.

Tsuga canadensis (L.) Carr. (Eastern Hemlock). Abundant; canopy tree, NE, SW. *Thompson 89-3127*.

MAGNOLIOPHYTA (Flowering Plants)

LILIOPSIDA (Monocots)

ARACEAE (Arum Family)

Arisaema triphyllum (L.) Schott. ssp. *triphyllum* (Indian Turnip). [Syn: *Arisaema atrorubens* (Ait.) Blume].

Frequent; perennial, NE, RH. *Thompson 85-38*.

CYPERACEAE (Sedge Family)

Carex albicans Spreng. var. *albicans*. (White Covered Sedge). [Syn: *Carex artitecta* Mack.]

Infrequent, perennial, SW. *Thompson 89-613, 89-630*.

Carex austrocaroliniana L. Bailey. (South Carolina Sedge). Infrequent; perennial, NE. *Thompson 85-64, 89-586*.

Carex communis L. Bailey. (Colonial Sedge). Rare; perennial, NE. *Abbott 4908*.

Carex debilis Michx. var. *debilis* (White-edge Sedge). Infrequent; perennial, RF. *Thompson 87-383*.

Carex digitalis Willd. var. *digitalis*. (Digitate Sedge). Occasional; perennial, SW. *Thompson 89-1189*.

Carex intumescens Rudge. (Inflated Sedge). Rare; perennial, NE, RF. *Thompson 85-459*.

Carex laxiculmis Schwein. var. *laxiculmis* (Loose-stem Sedge). Infrequent; perennial, NW. *Abbott 5182; Thompson 90-307*.

Carex laxiflora Lam. var. *laxiflora*. (Loose-flowered Sedge). [Syn: *C. anceps* Muhl.]. Occasional; perennial, NE. *Abbott 5167, Thompson 87-402*.

Carex lucorum Willd. (Shining Sedge). [Syn: *C. pensylvanica* Lam. var. *lucorum* (Willd. ex Link) Fern.].

Occasional; perennial, NE, RH. *Thompson 85-306, 95-346*.

Carex lurida Wahlenb. (Yellow-green Sedge). Rare; perennial, NE, RF. *Thompson 85-483, 89-1188*.

Carex pedunculata Muhl. ex Willd. (Red-based Tussock Sedge). Rare; perennial, NE, RH. *Thompson 85-77, 89-588*.

Carex planispicata Naczi. (Flat-spike Sedge). [Syn: *Carex grisea* Wahlenb. var. *rigida* L. H. Bailey; *C. amphibola* Steud. var. *rigida* (L. H. Bailey)]. Rare; perennial, NE. *Abbott 5166; Thompson 87-359*.

Carex plantaginea Lam. (Plantain-leaf Sedge). Occasional; perennial, NE. *Thompson 85-66, 89-583*.

Carex platyphylla Carey. (Broad-leaf Sedge). Rare; perennial, NE. *Abbott 5162*.

Carex prasina Wahlb. (Leek-green Sedge). Infrequent; perennial, NE, RF. *Thompson 87-372, 95-347*.

Carex rosea Willd. (Rose Sedge). Rare, perennial, SW. *Thompson 85-224*.

Carex striatula Michx. (Parallel-lined Sedge). [Syn: *C. laxiflora* Lam. var. *angustifolia* Dewey]. Rare; perennial, NE. *Thompson 86-148*.

Carex styloflexa Buckl. (Bent-tip Lax-flowered Sedge). Occasional; perennial, NE. *Abbott 4900; Thompson 89-638*,

Carex virescens Muhl. ex Willd. (Green Sedge). Infrequent; perennial, SW, PO. *Thompson 89-1410, 95-335*.

Cyperus esculentus L. (Edible Nutgrass). Rare; perennial, RF. *Thompson 85-783, 88-2800*.

Cyperus erythrorhizos Muhl. (Red-rooted Flatsedge). Rare; perennial, RF. *Thompson 85-810, 88-2806*.

Cyperus strigosus L. (False Nutsedge). Rare; perennial, RF. *Thompson 88-2849, 89-2326*.

Scleria triglomerata Michx. (Tall Whipgrass). Infrequent; perennial, PO. *Thompson 89-1773*.

DIOSCOREACEAE (Yam Family)

Dioscorea quaternata J.F. Gmel. (Wild Yam). Occasional; perennial, NE, SW. *Abbott 5160; Thompson 85-31*.

JUNCACEAE (Rush Family)

- Juncus effusus* L. var. *solutus* Fern. & Weig. (Soft Rush). Rare; perennial, RF. *Thompson 89-1389*.
Juncus tenuis Willd. var. *tenuis* (Slender Path Rush). Rare; perennial, RH. *Thompson 95-409*.
Luzula acuminata Raf. (Tapered Woodrush). Rare; perennial, NE. *Thompson 89-584*.
Luzula echinata (Small) F.J. Herm. (Common Woodrush). [Syn: *L. campestris* (L.) DC. var. *echinata* (Small) Fern. & Wieg.]. Occasional; perennial, NE, SW, RH. *Thompson 85-290*.

IRIDACEAE (Iris Family)

- Iris cristata* Ait. (Dwarf Crested Iris). Infrequent; perennial, NE, SW. *Thompson 89-604*.

LILIACEAE (Lily Family)

- Chamaelirium luteum* (L.) A. Gray. (Devil's Bit). Rare; perennial, PO. *Thompson 86-154* (pistillate), *89-836* (staminate).
Disporum lanuginosum (Michx.) Nichols. (Yellow Mandarin). Infrequent; perennial, NE. *Thompson 85-121*.
Erythronium americanum Ker-Gawl. (Yellow Trout Lily). Infrequent; perennial, NE. *Thompson 85-24*.
Medeola virginiana L. (Indian Cucumber-root). Occasional; perennial, NE, SW. *Thompson 85-279*.
Polygonatum biflorum (Walt.) Ell. (Solomon's Seal). Infrequent; perennial, NE. *Thompson 89-840*.
Smilacina racemosa (L.) Desf. (False Solomon's Seal). [Syn: *Maianthemum racemosum* (L.) Link]. Infrequent; perennial, NE, SW. *Thompson 85-390, 85-677*.
Trillium erectum L. (Red Trillium). Infrequent; perennial, NE. *Thompson 85-5, 85-56*.

ORCHIDACEAE (Orchid Family)

- Aplectrum hyemale* (Muhl.) Nutt. (Puttyroot Orchid). Rare; perennial, SW. *Thompson 85-990*.
Cypripedium acaule Ait. (Pink Lady's Slipper). Infrequent; perennial, SW, PO. *Abbott 5170; Thompson 95-344*.
Cypripedium calceolus L. var. *parviflorum* (Salisb.) Fern. (Small Yellow Lady's Slipper). [Syn: *Cypripedium parviflorum* Salisb.]. Rare; perennial, PO. *Thompson 89-624*.
Goodyera pubescens (Willd.) R. Br. (Downy Rattlesnake-plantain). [Syn: *Peramium pubescens* (Willd.) MacM.]. Infrequent; perennial, SW. *Thompson 87-1335, 88-2839*.
Liparis liliifolia (L.) L.C. Rich. ex Lindl. (Large Twayblade). Rare; perennial, SW. *Thompson 85-600*.
Malaxis unifolia Michx. (Green Adder's-mouth). Rare; perennial, PO. *Thompson 85-373*.
Orchis spectabilis L. (Showy Orchid). [Syn: *Galearis spectabilis* (L.) Raf.]. Infrequent; perennial, NE. *Thompson 87-379, 95-418*.
Tipularia discolor (Pursh) Nutt. (Crane-fly Orchid). [Syn: *Tipularia unifolia* BSP.]. Infrequent; perennial, SW, PO. *Thompson 85-7, 89-1805*.

POACEAE (Grass Family)

- Agrostis perennans* (Walter) Tuckerm. (Autumn-bent). Infrequent; perennial, SW. *Thompson 86-1017*.
Andropogon virginicus L. (Broomsedge). Infrequent; perennial, PO. *Thompson 89-2301*.
Arundinaria gigantea (Walt.) Muhl. (Giant Cane). Rare; woody grass, RF. *Thompson 85-834*.
Brachyelytrum erectum (Schreb. ex Spreng.) P. Beauv. (Short-glumed Woodgrass). Occasional; perennial, NE, SW. *Thompson 85-672, 89-1825*.
Cinna arundinacea L. (Common Woodreed). Infrequent; perennial, RF. *Thompson 85-784*.
Danthonia compressa Austin ex Peck. (Mountain Oatgrass). Occasional; perennial, PO. *Thompson 85-359, 89-1137*.
Danthonia sericea Nutt. (Downy Oatgrass). Occasional; perennial, PO. *Thompson 89-1116*.
Digitaria ischaemum (Schreber) Muhl. (Smooth Crabgrass). Occasional; naturalized annual. *Thompson 89-2312*.
Echinochloa crusgalli L. (Barnyard-grass). Infrequent; naturalized annual, RF. *Thompson 85-853*.
Elymus virginicus L. (Virginia Wild Rye). Occasional; perennial, RF. *Thompson 85-523*.
Eragrostis hypnoides (Lam.) BSP. (Creeping Lovegrass). Frequent; annual, RF. *Thompson 88-2848, 94-987*.
Eragrostis pectinacea (Michx.) Nees. (Carolina Lovegrass). Frequent; annual, RF. *Thompson 86-861*.
Glyceria striata (Lam.) A.S. Hitchc. (Fowl-mannagrass). Infrequent; perennial, RF. *Thompson 85-376*.
Leersia oryzoides (L.) Sw. (Rice Cut-grass). Infrequent; perennial, RF. *Thompson 85-860*.
Leersia virginica Willd. (White Grass). Occasional; perennial, NE, RF. *Thompson 85-679, 85-728*.
Microstegium vimineum (Trin.) A. Camus. Eulalia. [Syn: *Eulalia viminea* (Trin.) Ktze.]. Abundant; naturalized annual, NE, RF, SW. *Thompson 85-682, 85-855*.
Muhlenbergia frondosa (Poir.) Fern. (Leafy Muhly). [Syn *M. commutata* (Scribn.) Bush]. Rare; perennial, RF. *Thompson 85-836*.
Panicum boscii Poir. (Broad-leaf Panicum). [Syn: *Dichantherium boscii* (Poir.) Gould & Clark]. Occasional; perennial, NE, SW, RH. *Thompson 85-396, 89-661*.
Panicum clandestinum L. (Deer-tongue Panicum). [Syn: *Dichantherium clandestinum* (L.) Gould]. Infrequent; perennial, RF. *Thompson 86-263, 89-2364*.
Panicum commutatum Schultes. (Variable Panicum). [Syn: *Dichantherium commutatum* (Schultes) Gould]. Infrequent; perennial, SW. *Thompson 86-152, 89-773*.

Panicum dichotomiflorum Michx. (Spreading Witchgrass). Occasional; annual, RF. *Thompson 85-789.*

Panicum dichotomum L. (Bushy Panicum). [Syn: *Dichantherium dichotomum* (L.) Gould; *D. microcarpon* (Muhl. ex Ell.) Gould]. Frequent; perennial, RF, RH. *Thompson 95-362.*

Panicum laxiflorum Lam. (Loose-leaf Panicum). [Syn: *Dichantherium laxiflorum* (Lam.) Gould; *P. xalapense* Kunth]. Occasional, perennial, SW, PO. *Thompson 89-680, 89-772.*

Panicum polyanthes Schultes. (Many-flowered Panicum). [Syn: *Dichantherium sphaerocarpon* (Ell.) Gould]. Infrequent; perennial, NE, RF. *Thompson 85-443, 89-1143.*

Paspalum fluitans (Ell.) Kunth. (River Beadgrass) [Syn: *P. mucronatum* Muhl.]. Infrequent; perennial, RF. *Thompson 94-990.*

Piptochaetium avenaceum (L.) Parodi. (Blackseed Needlegrass). [Syn: *Stipa avenacea* L.]. Rare, perennial, PO. *Thompson 85-213, 89-670.*

Poa alsodes A. Gray. (Grove Bluegrass). Occasional; perennial, NE, CB. *Thompson 89-823.*

Poa cuspidata Nutt. (Short-leaf Bluegrass). [Syn: *P. brachyphylla* Schultes]. Occasional; perennial, NE, CB. *Thompson 85-30, 89-631.*

Schizachyrium scoparium (Michx.) Nash. (Little Bluestem). [Syn: *Andropogon scoparius* Michx.]. Occasional; perennial, PO. *Thompson 89-2343.*

Sphenopholis obtusata (Michx.) Scribn. var. *major* (Torr.) Erdman. (Slender Wedge-grass). [Syn: *S. intermedia* (Rydb.) Rydb.]. Occasional; perennial, SW, CB. *Abbott 5171; Thompson 85-251.*

SMILACACEAE (Catbrier Family)

Smilax bona-nox L. (Bristly Greenbrier). Infrequent; woody vine, RF. *Thompson 94-994.*

Smilax ecirrhata (Engelm. ex Kunth.) S. Wats. (Upright Smilax). Infrequent; perennial, NE. *Thompson 85-29.*

Smilax glauca Walt. (Glaucous Greenbrier). Frequent; woody vine, SW, RH, PO. *Thompson 85-22.*

Smilax rotundifolia L. (Common Greenbrier). Frequent; woody vine, NE, SW, RF. *Thompson 85-382.*

MAGNOLIOPHYTA (Flowering Plants)

MAGNOLIOPSIDA (Dicots)

ACERACEAE (Maple Family)

Acer negundo L. (Boxelder). Occasional; canopy tree, RF. *Thompson 85-511.*

Acer rubrum L. (Red Maple). Abundant; canopy tree, SW, NE, PO. *Thompson 85-410, 89-553.*

Acer saccharinum L. (Silver Maple). Frequent; canopy tree, RF. *Thompson 85-513.*

Acer saccharum Marsh. (Sugar Maple). Abundant; canopy tree, NE, SW. *Thompson 85-478.*

ANACARDIACEAE (Cashew Family)

Rhus copallinum L. (Winged Sumac). Rare; shrub, PO. *Thompson 85-617.*

Toxicodendron radicans (L.) Kuntze. (Poison-ivy). [Syn: *Rhus radicans* L.]. Abundant; woody vine, RF, NE, SW, CB, RH, PO. *Thompson 89-176.*

ANNONACEAE (Custard-apple Family)

Asimina triloba (L.) Dunal. (Pawpaw). Occasional; understory tree, NE. *Thompson 85-267, 85-529.*

APIACEAE (Celery Family)

Osmorhiza claytonii (Michx.) C. B. Clarke. (Bland Sweet Cicely). Infrequent; perennial, NE. *Thompson 85-120.*

Sanicula canadensis L. (Canada-sanicle). Infrequent; biennial, NE. *Thompson 89-635.*

Sanicula gregaria E. Bickn. (Cluster-sanicle). Infrequent; biennial, NE. *Thompson 89-734.*

AQUIFOLIACEAE (Holly Family)

Ilex opaca Ait. (American Holly). Frequent; canopy tree, NE, SW, PO. *Thompson 87-382, 89-776.*

ARALIACEAE (Ginseng Family)

Aralia racemosa L. (American Spikenard). Rare; perennial, NE. *Thompson 95-414.*

Aralia spinosa L. (Hercules' Club). Infrequent; understory tree, RF. *Thompson 85-428, 85-623.*

Panax quinquefolius L. (American Ginseng). Rare; perennial, NE. *Thompson 85-252.*

Panax trifolius L. (Dwarf Ginseng). Infrequent; perennial, NE. *Abbott 4901; Thompson 85-49.*

ARISTOLOCHACEAE (Birthwort Family)

Aristolochia serpentaria L. (Virginia Snakeroot). Infrequent; perennial, SW. *Thompson 90-1764.*

Asarum canadense L. (Wild Ginger). Occasional; perennial, NE, SW. *Thompson 85-46.*

Hexastylis arifolia (Michx.) Small. (Little Brown Jug). Infrequent; perennial, NE, SW. *Thompson 86-4, 89-539.*

ASTERACEAE (Aster Family)

Ambrosia artemisiifolia L. (Common Ragweed). Occasional; annual, RF. *Thompson 85-604.*

Antennaria plantaginifolia (L.) Richards. (Pussy-toes). Infrequent; perennial, PO. *Thompson 85-50.*

Aster divaricatus L. (White Heart-leaved Aster). Occasional; perennial, SW, RH. *Thompson 85-775.*

Aster lateriflorus (L.) Britt. (Calico Aster). Infrequent; perennial, RF, NE. *Thompson 88-2817.*

Aster solidagineus Michx. (Narrow-leaved White Aster). [Syn: *Sericocarpus linifolius* (L.) BSP.]. Rare; perennial, PO. *Thompson 95-432.*

Aster surculosus Michx. (Suckering Aster). Rare; perennial, PO. *Thompson 89-2368.*

Aster undulatus L. (Wavy-leaved Aster). Occasional; perennial, SW. *Thompson 85-620, 85-705.*

Bidens comosa (A. Gray) Wieg. (Purple-stem Bur-marigold). [Syn: *B. acuta* (Wieg.) Britt.]. Frequent; annual, RF. *Thompson 88-2845*.

Bidens frondosa L. (Devil's Beggar-ticks). Occasional; annual, RF. *Thompson 85-907, 89-2360*.

Chrysopsis graminifolia (Michx.) Ell. (Grass-leaved Golden Aster). [Syn: *Heterotheca graminifolia* (Michx.) Shinners]. Rare; perennial, PO. *Thompson 89-2340*.

Chrysopsis mariana (L.) Ell. (Golden Aster). [Syn: *Heterotheca mariana* (L.) Shinners]. Rare; perennial, PO. *Thompson 88-2821, 89-2339*.

Conyza canadensis (L.) Cronq. (Horseweed). [Syn: *Erigeron canadensis* L.]. Rare; annual, RF. *Thompson 85-606, 94-993*.

Coreopsis major Walt. (Tickseed Sunflower). Infrequent; perennial, PO, SW. *Thompson 89-1120*.

Eclipta prostrata (L.) L. (Yerba de Tajo). [Syn: *E. alba* (L.) Hassk.]. Occasional; naturalized annual, RF. *Thompson 85-826, 85-902*.

Erechtites hieracifolia (L.) Raf. ex DC. (Fireweed). Rare; annual, RF. *Thompson 85-779*.

Erigeron strigosus Muhl. ex Willd. (Daisy Fleabane). Rare; perennial, RF. *Thompson 95-416*.

Eupatorium fistulosum Barratt. (Hollow-stem Joe-Pye Weed). [Syn: *Eupatoriadelphus fistulosus* (L.) King & Robins.]. Rare; perennial, RF. *Thompson 85-687*.

Eupatorium luciae-brauniae Fern. (Rockhouse White Snakeroot). [Syn: *Ageratina luciae-brauniae* (Fern.) King & Robins.]. Occasional; perennial, RH. *Thompson 89-1767, 95-407*.

Eupatorium purpureum L. (Purple Joe-pye Weed). [Syn: *Eupatoriadelphus purpureus* (L.) King & Robins.]. Infrequent; perennial, NE. *Thompson 95-411*.

Eupatorium rotundifolium L. (Hairy Thoroughwort). [Syn: *E. pubescens* Muhl.]. Infrequent; perennial, PO. *Thompson 89-2341, 95-410*.

Eupatorium rugosum Houtt. (White Snakeroot). [Syn: *Ageratina altissima* (L.) King & Robins.]. Occasional; perennial, NE, SW. *Thompson 85-704, 85-851*.

Eupatorium serotinum Michx. (Late Thoroughwort). Rare; perennial. RF. *Thompson 85-780, 89-2304*.

Galinsoga quadriradiata Ruiz & Pavon. (Common Quickweed). [Syn: *G. ciliata* (Raf.) Blake]. Rare; naturalized annual, RF. *Thompson 85-900*.

Gnaphalium purpureum L. (Purple Cudweed). Infrequent; annual, RF. *Thompson 85-292, 94-991*.

Lactuca floridana (L.) Gaertn. (Florida Blue Lettuce). Infrequent; biennial, RF. *Thompson 85-688*.

Prenanthes serpentaria Pursh. (Lion's Foot). Infrequent; perennial, SW. *Thompson 88-2825, 89-2307*.

Solidago arguta Ait. (Cut-leaf Goldenrod). Occasional; perennial, PO. *Thompson 89-2369, 95-433*.

Solidago caesia L. (Axillary Goldenrod). Occasional; perennial, SW, NE, CB. *Thompson 89-2327*.

Solidago gigantea Ait. (Late Tall Goldenrod). [Syn: *Solidago serotina* Ait.]. Infrequent; perennial, RF. *Thompson 85-693*.

Verbesina occidentalis (L.) Walt. (Western Crownbeard). [Syn: *Phaethusa occidentalis* (L.) Britt.]. Infrequent; perennial, RF. *Thompson 85-695*.

Xanthium strumarium L. var. *canadense* (P. Mill.) Torr. & A. Gray (Common Cocklebur). [Syn: *X. pennsylvanicum* Wallr.]. Abundant; annual, RF. *Thompson 85-910*.

BALSAMINACEAE (Touch-Me-Not Family)

Impatiens capensis Meerb. (Spotted Jewelweed). [Syn: *Impatiens biflora* Walt.]. Abundant; annual, RF. *Thompson 85-614, 85-677*.

Impatiens pallida Nutt. (Pale Jewelweed). Frequent; annual, RF, NE. *Thompson 85-811*.

BERBERIDACEAE (Barberry Family)

Caulophyllum thalictroides (L.) Michx. (Blue Cohosh). Infrequent; perennial, NE. *Thompson 85-62*.

Podophyllum peltatum L. (May-apple). Occasional; perennial, NE, RH. *Thompson 89-612*.

BETULACEAE (Birch Family)

Alnus serrulata (Ait.) Willd. (Smooth Alder). Frequent; shrub, RF. *Thompson 85-400*.

Betula lenta L. (Cherry Birch). Abundant; canopy tree, NE, SW. *Abbott 5176; Thompson 85-476*.

Betula nigra L. (River Birch). Abundant; canopy tree, RF. *Thompson 85-329, 85-520*.

Carpinus caroliniana Walt. (American Hornbeam). Occasional; understory tree, RF. *Thompson 87-365*.

Ostrya virginiana (P. Mill.) K. Koch. (Eastern Hophornbeam). Infrequent; understory tree, SW, PO. *Thompson 85-850*.

BIGNONIACEAE (Trumpet-creeper Family)

Bignonia capreolata L. (Cross-vine). [Syn: *Anisostichus capreolata* (L.) Bureau]. Frequent; woody vine, NE, RF, RH. *Thompson 85-518*.

Campsis radicans (L.) Seem. ex Bureau. (Trumpet-creeper). [Syn: *Bignonia radicans* L.]. Occasional; woody vine, RF. *Thompson 85-549*.

BRASSICACEAE (Mustard Family)

Cardamine angustata O.E. Schulz. (Appalachian Toothwort). [Syn: *Dentaria heterophylla* Nutt.]. Occasional; perennial, NE, SW. *Thompson 85-37, 85-61*.

Cardamine pensylvanica Muhl. ex Willd. (Pennsylvania Bitter-cress). Occasional; annual, RF. *Thompson*

85-109, 85-316.
Rorippa palustris (L.) Bess. ssp. *fernaldiana* (Butters & Abbe) Stuckey. (Common Yellow-cress). [Syn: *R. islandica* (Oeder) Borbas ssp. *fernaldiana* (Butters & Abbe) Hulten]. Infrequent; annual, RF. Thompson 85-488, 88-2807.

BUXACEAE (Boxwood Family)
Pachysandra procumbens Michx. (Allegheny-spurge). Infrequent; perennial, NE, RF. Abbott 4895; Thompson 85-116.

CAMPANULACEAE (Bellflower Family)
Lobelia cardinalis L. ssp. *cardinalis* (Cardinal Flower). Infrequent; perennial, RF. Thompson 85-791.
Lobelia inflata L. (Indian Tobacco). Rare; annual, RF. Thompson 89-1783, 94-992.
Lobelia siphilitica L. var. *siphilitica* (Great Blue Lobelia). Infrequent; perennial, RF. Thompson 85-858.

CAPRIFOLIACEAE (Honeysuckle Family)
Lonicera japonica Thunb. (Japanese Honeysuckle). Infrequent; naturalized woody vine, RF. Thompson 85-673.
Sambucus canadensis L. (Common Elderberry). Occasional; shrub, RF. Thompson 85-401.
Viburnum acerifolium L. (Maple-leaf Viburnum). Frequent; shrub, SW, PO. Thompson 87-403.
Viburnum rufidulum Raf. (Rusty Blackhaw). Infrequent; shrub, SW, PO. Thompson 89-1827.

CARYOPHYLLACEAE (Pink Family)
Silene rotundifolia Nutt. (Round-leaf Catchfly). Abundant; perennial, RH. Thompson 95-406.
Stellaria pubera Michx. (Star Chickweed). Occasional; perennial, NE. Thompson 85-6.

CELASTRACEAE (Staff-Tree Family)
Euonymus americana L. (Strawberry-bush). Abundant, woody vine, SW, NE, PO. Thompson 87-384, 89-2349.

CHENOPODIACEAE (Goosefoot Family)
Chenopodium simplex (Torr.) Raf. (Maple-leaf Goosefoot). [Syn: *Chenopodium gigantospermum* Aellen]. Rare; annual, RH. Thompson 95-339, 95-408.

CLETHRACEAE (Clethra Family)
Clethra acuminata Michx. (Mountain White-alder). Abundant; shrub, NE, SW, RH. Thompson 85-922.

CLUSIACEAE (Mangosteen Family)
Hypericum gentianoides (L.) BSP. (Orange Pineweed). Rare; annual, PO. Thompson 89-2305, 95-427.
Hypericum mutilum L. (Small-flowered St. John's-wort). Infrequent; annual, RF. Thompson 88-2810.
Hypericum stragulum P. Adams & Robs. (St. Andrew's-cross). [Syn: *Ascyrum hypericoides* L. var. *multicaule* (Michx. ex Willd.) Fern]. Rare; suffrutescent shrub, PO. Thompson 89-1790.
Triadenum tubulosum (Walt.) Gleason. (Large Marsh St. John's-wort). [Syn: *Hypericum tubulosum* Walt.]. Infrequent; perennial, RF. Thompson 88-2812.
Triadenum walteri (S.G. Gmel.) Gleason. (Walter's Marsh St. John's-wort). [Syn: *Hypericum walteri* S.G. Gmel.]. Rare; perennial, RF. Thompson 85-795.

CONVOLVULACEAE
Ipomoea pandurata (L.) G.F.W. Mey. (Hedge Bindweed). Rare; perennial, PO. Thompson 95-428.

CORNACEAE (Dogwood Family)
Cornus alternifolia L. (Alternate-leaf Dogwood). Infrequent; shrub, SW. Abbott 5159.
Cornus amomum Mill. var. *schuetzeana* (C. A. Mey.) Rickett. (Silky Dogwood). [Syn: *Cornus amomum* Mill. ssp. *obliqua* (Raf.) J. S. Wilson]. Rare; shrub, RF. Thompson 85-848.
Cornus florida L. (Flowering Dogwood). Abundant; subcanopy tree, SW, NE, PO. Thompson 89-2352.
Nyssa sylvatica Marsh. var. *sylvatica* (Blackgum). Abundant; canopy tree, SW, NE, PO. Thompson 85-379, 89-668.

CRASSULACEAE (Stonecrop Family)
Sedum ternatum Michx. (Wild Stonecrop). [Syn: *Clausenellia ternata* (Michx.) A. & D. Love]. Frequent; perennial, NE, CB, RH. Thompson 85-63, 89-820.

CUSCUTACEAE (Dodder Family)
Cuscuta pentagona Engelm. (Field-dodder). [Syn: *Cuscuta arvensis* Bey. ex Engelm.; *C. campestris* Yuncker]. Infrequent; annual, parasitic on *Impatiens capensis* and *I. pallida*., RF. Thompson 88-2833.

DIAPENSIACEAE (Diapensia Family)
Galax aphylla L. (Galax). [Syn: *Galax urceolata* (Poir.) Brummitt]. Rare; evergreen perennial, SW. Thompson 89-992.

EBENACEAE (Ebony Family)
Diospyros virginiana L. (Common Persimmon). Occasional; canopy tree, PO. Thompson 85-424.

ERICACEAE (Heath Family)
Epigaea repens L. (Trailing Arbutus). Abundant; suffrutescent shrub, SW, PO. Thompson 85-362.
Gaultheria procumbens L. (Mountain Tea). Frequent; suffrutescent shrub, SW, PO. Thompson 89-1382, 95-429.

Gaylussacia baccata (Wangenh.) K. Koch. (Black Huckleberry). Frequent; shrub, PO. *Thompson 89-780, 89-1776.*

Gaylussacia brachycera (Michx.) A. Gray. (Box-huckleberry). Abundant; evergreen shrub, PO. *Thompson 85-393, 89-777.*

Kalmia latifolia L. (Mountain-laurel). Abundant; evergreen shrub, SW, PO. *Thompson 86-150, 95-426.*

Oxydendrum arboreum (L.) DC. (Sourwood). Abundant; canopy tree, NE, SW, PO. *Thompson 89-1381.*

Rhododendron cumberlandense E. L. Braun (Cumberland Azalea). [Syn: *R. bakeri* (Lemmon & McKay) Hume]. Infrequent; shrub, PO. *Thompson 85-417, 89-1126.*

Rhododendron maximum L. (Great White Laurel). Abundant; evergreen shrub, NE, SW, RH, CB. *Thompson 85-355, 89-1125.*

Vaccinium arboreum Marsh. (Sparkleberry). Frequent; shrub, PO. *Abbott 5172; Thompson 95-430.*

Vaccinium corymbosum L. (Highbush-blueberry). Occasional; shrub, SW, PO. *Abbott 5172; Thompson 85-378.*

Vaccinium pallidum Ait. (Hillside-blueberry). [Syn: *V. vacillans* Kalm ex Torr.]. Frequent; shrub, SW, PO. *Thompson 89-608, 89-1203.*

Vaccinium stamineum L. (Deerberry). [Syn: *V. neglectum* Small]. Frequent; shrub, SW, PO. *Thompson 89-603, 95-425.*

EUPHORBIACEAE (Spurge Family)

Acalypha gracilens A. Gray. (Short-stalked Copperleaf). Occasional; annual, RF. *Thompson 94-989.*

Euphorbia nutans Lagasca. (Eyebane). [Syn: *Chamaesyce maculata* (L.) Small., *Euphorbia maculata* L.] Infrequent; annual, RF. *Thompson 94-988.*

Euphorbia corollata L. (Flowering Spurge). Rare; perennial, PO. *Thompson 85-597; 89-1761.*

Phyllanthus caroliniensis Walt. ssp. *caroliniensis* (Carolina Leaf-flower). Rare; annual, RF. *Thompson 85-905, 94-996.*

FABACEAE (Bean Family)

Amphicarpaea bracteata (L.) Fern. (Hog-peanut). Frequent; perennial, RF. *Thompson 86-1018, 89-2351.*

Apios americana Medik. (Wild Bean). [Syn: *A. tuberosa* Moench]. Occasional; perennial, RF. *Thompson 89-1810.*

Cercis canadensis L. (Eastern Redbud). Frequent; subcanopy tree, SW, PO. *Thompson 85-4.*

Tephrosia virginiana (L.) Pers. (Hoary Pea). Infrequent; perennial, PO. *Thompson 89-1128, 95-434.*

FAGACEAE (Beech Family)

Castanea dentata (Marsh.) Borkh. (American Chestnut). Occasional; persisting as tree sprouts, SW, PO. *Thompson 89-785, 95-348.*

Fagus grandifolia Ehrh. (American Beech). Abundant; canopy tree, NE, SW. *Thompson 85-276.*

Quercus alba L. (White Oak). Abundant; canopy tree, SW, NE, PO. *Thompson 85-258.*

Quercus coccinea Muenchh. (Scarlet Oak). Frequent; canopy tree, SW, PO. *Thompson 85-356.*

Quercus falcata Michx. (Southern Red Oak). Occasional; canopy tree, SW, PO. *Thompson 95-360.*

Quercus prinus L. (Chestnut Oak). [Syn: *Q. montana* Willd.]. Abundant; canopy tree, SW, PO. *Thompson 85-370.*

Quercus rubra L. (Northern Red Oak). [Syn: *Q. borealis* Michx. f.]. Abundant; canopy tree, NE, SW. *Thompson 85-408, 95-412.*

Quercus velutina Lam. (Black Oak). Abundant; canopy tree, SW, PO. *Thompson 85-357.*

GERANIACEAE (Geranium Family)

Geranium maculatum L. (Wild Geranium). Infrequent; perennial, NE. *Thompson 85-111.*

GROSSULARIACEAE (Gooseberry Family)

Itea virginica L. (Virginia Willow). Rare; shrub, RF. *Thompson 85-302, 85-522.*

HAMAMELIDACEAE (Witch-Hazel Family)

Hamamelis virginiana L. (Witch-hazel). Occasional; shrub, SW, NE, RH. *Thompson 89-1145.*

Liquidambar styraciflua L. (Sweetgum). Frequent; canopy tree, RF, NE. *Thompson 85-413.*

HIPPOCASTANACEAE (Horse-Chestnut Family)

Aesculus flava Ait. (Yellow Buckeye). [Syn: *A. octandra* Marsh.]. Occasional; canopy tree, NE, SW. *Thompson 85-501.*

HYDRANGEACEAE (Hydrangea Family)

Hydrangea arborescens L. (Wild Hydrangea). Frequent; shrub, NE, RF. *Thompson 85-314, 85-396.*

HYDROPHYLLACEAE (Waterleaf Family)

Hydrophyllum canadense L. (Canada Waterleaf). Rare; perennial, NE. *Thompson 85-497.*

JUGLANDACEAE (Walnut Family)

Carya cordiformis (Wangenh.) K. Koch. (Bitternut Hickory). Occasional; canopy tree, NE, SW. *Thompson 85-541.*

Carya glabra (Miller) Sweet. (Pignut Hickory). [Syn: *Carya ovalis* (Wangenh.) Sarg.]. Abundant; canopy tree, SW, PO. *Thompson 85-399, 89-1409.*

Carya ovata (Miller) K. Koch var. *ovata* (Shagbark Hickory). Frequent; canopy tree, PO. *Thompson 89-1426*.
Carya tomentosa (Poir.) Nutt. (Mockernut Hickory). [Syn: *C. alba* (L.) Nutt ex Ell.]. Occasional; canopy tree, SW, PO. *Thompson 85-432, 89-1764*.
Juglans nigra L. (Black Walnut). Rare; canopy tree, NE. *Thompson 85-325, 89-1405*.

LAMIACEAE (Mint Family)
Collinsonia canadensis L. (Northern Horse-balm). Rare; perennial, NE. *Thompson 85-658*.
Hedeoma pulegioides (L.) Pers. (American Pennyroyal). Rare; annual, CB. *Thompson 85-801*.
Lycopus virginicus L. (Virginia Bugleweed). Infrequent; perennial, RF. *Thompson 88-2823, 89-2361*.
Meehania cordata (Nutt.) Britt. (Meehan's Mint). Occasional; perennial, NE. *Thompson 89-721*.
Scutellaria elliptica Muhl. ex Spreng. (Hairy Skullcap). Rare; perennial, NE. *Thompson 89-1141*.
Scutellaria lateriflora L. (Mad-dog Skullcap). Occasional; perennial, RF. *Thompson 85-800*.
Trichostema dichotomum L. (Blue Curls). Infrequent; annual, CB. *Thompson 85-793, 89-2366*.

LAURACEAE (Laurel Family)
Lindera benzoin (L.) Blume. (Spicebush). Abundant; shrub, NE, RF. *Thompson 89-1814*.
Sassafras albidum (Nutt.) Nees. (White Sassafras). Frequent; canopy tree, SW, PO. *Thompson 85-361*.

LYTHRACEAE (Loosestrife Family)
Rotala ramosior (L.) Koehne. (Tooth-cup). Infrequent; annual, RF. *Thompson 85-768*.

MAGNOLIACEAE (Magnolia Family)
Liriodendron tulipifera L. (Yellow-poplar). Abundant; canopy tree, NE, SW, PO, RF. *Thompson 85-398*.
Magnolia acuminata L. (Cucumbertree). Occasional; canopy tree, NE, SW. *Abbott 5178; Thompson 85-696*.
Magnolia macrophylla Michx. (Big-leaf Magnolia). Abundant; canopy tree, NE, SW. *Thompson 85-397*.
Magnolia tripetala L. (Umbrella Magnolia). Infrequent; small tree, NE, SW. *Thompson 85-269*.

MOLLUGINACEAE (Carpet-Weed Family)
Mollugo verticillata L. (Carpet-weed). Occasional; naturalized annual, RF. *Thompson 88-2811*.

MONOTROPACEAE (Indian Pipe Family)
Monotropa hypopithys L. (Pine-sap). [Syn: *Hypopithys americana* (DC.) Small]. Rare; perennial, PO. *Thompson 86-277, 89-1807*.
Monotropa uniflora (L.) A. Gray. (Indian Pipe). Occasional; perennial, NE. *Thompson 86-279, 95-345*.

MORACEAE (Mulberry Family)
Morus rubra L. (Red Mulberry). Infrequent; canopy tree, NE, SW. *Thompson 85-426*.

OLEACEAE (Olive family)
Fraxinus americana L. (White Ash). Frequent; canopy tree, SW, PO. *Thompson 85-260, 85-365*.
Fraxinus pennsylvanica Marsh. (Green Ash). [Syn: *F. pennsylvanica* Marsh. var. *subintegerrima* (Vahl.) Fern.]. Occasional; canopy tree, RF. *Thompson 85-322, 85-527*.

ONAGRACEAE (Evening-primrose Family)
Circaea lutetiana L. var. *canadensis* L. (Enchanter's Nightshade). [Syn: *C. quadrisulcata* (Maxim.) Franch. & Savigny ssp. *canadensis* (L.) A. & D. Love]. Infrequent; perennial, NE. *Thompson 89-1430, 95-413*.
Ludwigia alternifolia L. (Seedbox Water-primrose). Rare; perennial, RF. *Thompson 89-2325*.
Ludwigia decurrens Walt. (Wing-stem Willow-primrose). [Syn: *Jussiaea decurrens* (Walt.) DC.]. Rare; perennial, RF. *Thompson 85-856*.
Ludwigia palustris (L.) Eil. (Marsh-purslane). Rare; perennial. *Thompson 85-663*.

OROBANCHACEAE (Broom-Rape Family)
Conopholis americana (L.) Wallr. f. (Cancer-root). [Syn: *Orobanche americana* L.]. Infrequent; perennial, parasitic on *Quercus rubra*, NE, SW. *Thompson 86-142, 89-614*.
Epifagus virginiana (L.) W. Bart. (Beech-drops). [Syn: *Leptamniium virginianum* (L.) Raf.]. Frequent; perennial, parasitic on *Fagus grandifolia*, NE, SW. *Thompson 85-932, 88-2836*.

OXALIDACEAE (Wood Sorrel Family)
Oxalis montana Raf. (Northern Wood-sorrel). [Syn: *O. acetosella* L. ssp. *montana* (Raf.) Hulten ex D. Love]. Infrequent; perennial, NE, RH. *Abbott 5163; Thompson 95-340*.

PAPAVERACEAE (Poppy Family)
Sanguinaria canadensis L. (Bloodroot). Rare; perennial, NE. *Thompson 85-8, 85-122*.

PASSIFLORACEAE
Passiflora lutea L. var. *glabriflora* Fern. (Yellow Passion Flower). Infrequent; perennial, RF. *Thompson 89-2300, 95-436*.

PHYTOLACCACEAE (Pokeweed Family)
Phytolacca americana L. (American Pokeweed). [Syn: *P. decandra* L.]. Rare; perennial, NE, RH. *Thompson 95-359*.

PLATANACEAE (Plane-Tree Family)
Platanus occidentalis L. (American Sycamore). Frequent; canopy tree, RF. *Thompson 85-411*.

POLYGALACEAE
Polygala curtisii A. Gray. (Appalachian Milkwort). Rare; annual, PO. *Thompson 95-422*.

Polygala verticillata L. (Whorled Milkwort). Rare; annual, PO. *Thompson 89-1388, 95-424.*

POLYGONACEAE (Smartweed Family)

Polygonum cespitosum Blume var. *longisetum* (de Bruyn) Steward. (Asiatic Water Pepper). Occasional; naturalized annual, RF. *Thompson 85-796.*

Polygonum lapathifolium L. Dock-leaf Smartweed. [Syn: *Persicaria lapathifolia* (L.) S.F. Gray] Rare; naturalized annual, RF. *Thompson 85-792.*

Polygonum pensylvanicum (L.) Small. (Pennsylvania Smartweed). [Syn: *Persicaria pensylvanica* (L.) G. Maza]. Infrequent; annual, RF. *Thompson 85-797, 88-2808.*

Polygonum persicaria L. (Lady's Thumb). [Syn: *Persicaria maculata* (Raf.) S.F. Gray]. Occasional, naturalized annual, RF. *Thompson 85-842.*

Polygonum punctatum Ell. (Dotted Smartweed). [Syn: *Persicaria punctata* (Ell.) Small]. Occasional; annual, RF. *Thompson 85-660.*

Polygonum virginianum L. (Jumpseed) [Syn: *Tovara virginiana* (L.) Raf.]. Rare; perennial, NE, RF. *Thompson 86-861.*

Rumex crispus L. (Curly Dock). Infrequent; naturalized perennial, RF. *Thompson 89-935.*

Rumex obtusifolius L. (Broad-leaf Dock). Infrequent; naturalized perennial, RF. *Thompson 89-1389.*

PORTULACACEAE (Purslane Family)

Claytonia caroliniana Michx. (Carolina Spring-beauty). Infrequent; perennial, NE. *Thompson 89-622.*

PRIMULACEAE (Primrose Family)

Anagallis arvensis L. (Scarlet Pimpernel). Rare; naturalized annual, RF. *Thompson 89-1805.*

Samolus floribundus HBK. (Water Pimpernel). [Syn: *S. parviflorus* Raf.]. Rare; perennial, RF. *Thompson 85-799, 89-1205.*

PYROLACEAE (Shinleaf Family)

Chimaphila maculata (L.) Pursh. (Spotted Wintergreen). Occasional; suffrutescent shrub, SW, PO. *Thompson 85-374, 89-1186.*

RANUNCULACEAE (Buttercup Family)

Actaea alba (L.) Mill. (White Baneberry). [Syn: *A. pachypoda* Ell.]. Infrequent; perennial, NE. *Thompson 85-598, 86-16.*

Anemonella thalictroides (L.) Spach. (Rue-anemone). [Syn: *Thalictrum thalictroides* (L.) Eames & Boivin]. Infrequent; perennial, NE. *Thompson 85-15, 85-33.*

Aquilegia canadensis L. (Wild Columbine). Occasional; perennial, RH, CB. *Abbott 5174; Thompson 95-405.*

Cimicifuga racemosa (L.) Nutt. (Black Cohosh). Rare; perennial, NE. *Thompson 85-286, 89-1380.*

Clematis virginiana L. (Virgin's Bower). Infrequent; woody vine, RF. *Thompson 85-656.*

Hepatica americana (DC.) Ker-Gawl. (Round-lobed Hepatica). [Syn: *H. nobilis* P. Mill. var. *obtusata* (Pursh) Steyerl.]. Rare; perennial, NE. *Thompson 85-58, 89-537.*

Ranunculus hispidus Michx. (Hairy Buttercup). Infrequent; perennial, NE, RF. *Abbott 4903.*

Ranunculus recurvatus Poir. (Hooked Crowfoot). Infrequent; perennial, NE, RF. *Thompson 87-377.*

Thalictrum dioicum L. (Early Meadow-rue). Occasional, perennial, NE, SW. *Thompson 85-40.*

Thalictrum mirabile Small. (Mountain Meadow-rue). Frequent; perennial, RH. *Abbott 4899; Thompson 95-333.*

ROSACEAE (Rose Family)

Agrimonia parviflora Ait. (Small-flowered Agrimony). Infrequent; perennial, RF. *Thompson 85-663.*

Amelanchier arborea (Michx. f.) Fern. (Downy Serviceberry). Abundant; subcanopy tree, SW, PO. *Thompson 85-19, 85-220.*

Aronia arbutifolia (L.) Pers. (Red Chokecherry). [Syn: *Pyrus arbutifolia* (L.) L. f.]. Rare; shrub, RF. *Abbott 5173.*

Geum virginianum L. (Virginia Avens). Infrequent; perennial, SW. *Thompson 85-495.*

Potentilla canadensis L. (Canada Cinquefoil). Rare; perennial, SW, PO. *Thompson 85-44.*

Potentilla norvegica L. (Strawberry-weed). Rare; perennial, RF. *Thompson 85-492, 85-788.*

Prunus serotina Ehrh. (Wild Black Cherry). Infrequent; canopy tree, SW, PO. *Thompson 85-453.*

Rubus allegheniensis Porter ex Bailey. (Allegheny Blackberry). Frequent; perennial, SW, RF. *Abbott 5161; Thompson 85-431.*

Rubus occidentalis L. (Black Raspberry). Occasional; perennial, RF, RH. *Thompson 85-481.*

RUBIACEAE (Madder Family)

Cephalanthus occidentalis L. (Buttonbush). Infrequent; shrub, RF. *Thompson 85-517.*

Diodia virginiana L. (Virginia Buttonweed). Occasional; annual, RF. *Thompson 85-813.*

Galium circaeazans Michx. (Wild Liquorice). Infrequent; perennial, SW. *Thompson 89-1824.*

Galium triflorum Michx. (Fragrant Bedstraw). Frequent; perennial, NE, SW. *Thompson 89-1432.*

Hedyotis caerulea (L.) Hook. (Field Bluets). [Syn: *Houstonia caerulea* L.]. Rare; perennial, SW, PO. *Thompson 89-541.*

Hedyotis purpurea (L.) Torr. & Gray. (Summer Bluets). [Syn: *Houstonia purpurea* L.]. Rare; perennial, NE.

Thompson 85-249, 89-703.
Mitchella repens L. (Partridge-berry). Abundant; suffrutescent shrub, NE, SW, RH, CB. *Thompson 86-147, 95-340.*

SALICACEAE (Willow Family)
Salix nigra Marsh. (Black Willow). Occasional; canopy tree, RF. *Thompson 85-226.*

SAXIFRAGACEAE (Saxifrage Family)
Heuchera parviflora Bartl. (Small-flowered Alum-root). Abundant; perennial, NE, RH, CB. *Thompson 88-2814.*
Mitella diphylla L. (Two-leaved Miterwort). Infrequent; perennial, NE, CB. *Thompson 89-689.*
Penthorum sedoides L. (Ditch-stonecrop). Rare; perennial, RF. *Thompson 85-490.*
Tiarella cordifolia L. (Heart-leaf Foamflower). Abundant; perennial, NE, RH, CB. *Thompson 89-620.*

SCROPHULARIACEAE (Figwort Family)
Aureolaria laevigata (Raf.) Raf. (Appalachian Foxglove). [Syn: *Gerardia laevigata* Raf.]. Infrequent; perennial, PO. *Thompson 85-670, 89-2337.*
Chelone glabra L. (White Turtlehead). Rare; perennial, RF. *Abbott 5164.*
Lindernia dubia (L.) Pennell. False Pimpernel. [Syn: *L. anagallidea* (Michx.) Pennell var. *dubia* (L.) Pennell]. Infrequent; annual, RF. *Thompson 85-769, 86-912.*
Mimulus alatus Ait. (Sharp-winged Monkey-flower). Rare; perennial. RF. *Thompson 94-995.*
Penstemon pallidus Small. (Eastern White Beard-tongue). [Syn: *P. brevisepalus* Pennell]. Rare; perennial, CB. *Thompson 87-371.*

SOLANACEAE (Nightshade Family)
Solanum nigrum L. var. *virginianum* L. (Black Nightshade). [Syn: *S. americanum* P. Mill.]. Rare; annual, RF. *Thompson 85-781, 88-2834.*

THEACEAE (Tea Family)
Stewartia ovata (Cav.) Weatherby. (Mountain Camellia). Frequent; shrub, NE, SW. *Thompson 85-256, 89-1812.*

TILIACEAE (Basswood Family)
Tilia americana L. var. *americana*. (American Basswood). [Syn: *T. americana* L. var. *neglecta* (Spach) Fosberg]. Abundant; canopy tree, NE, SW. *Thompson 85-318, 86-247.*
Tilia americana L. var. *heterophylla* (Vent.) Loud. (White Basswood). [Syn: *T. heterophylla* Vent.]. Occasional; canopy tree, NE. *Thompson 95-349.*

ULMACEAE (Elm Family)
Ulmus americana L. (American Elm). Infrequent; canopy tree, RF. *Thompson 85-412.*
Ulmus rubra Muhl. (Red Elm) [Syn: *U. fulva* Michx.]. Occasional; canopy tree, SW. *Thompson 85-514.*

URTICACEAE (Nettle Family)
Boehmeria cylindrica (L.) Sw. (False Nettle). Abundant; perennial, RF. *Thompson 85-867.*
Laportea canadensis (L.) Wedd. (Wood Nettle). Frequent; perennial, RF. *Thompson 85-516.*
Parietaria pensylvanica Muhl. ex Willd. (Pennsylvania Pellitory). Occasional; annual, RH. *Thompson 85-287, 89-1765.*
Pilea pumila (L.) A. Gray (Clearweed). Frequent, annual, RF, CB. *Thompson 85-849.*

VERBENACEAE (Vervain Family)
Phryma leptostachya L. (Lopseed). Rare; perennial, RF. *Thompson 85-500, 89-1780.*
Verbena urticifolia L. (White Vervain). Infrequent; perennial, RF. *Thompson 85-582.*

VIOLACEAE (Violet Family)
Hybanthus concolor (T. Forst.) Spreng. (Green Violet). [Syn: *Cubelium concolor* (T.F. Forst.) Raf.]. Rare; perennial, NE. *Thompson 85-219.*
Viola blanda Willd. (Sweet White Violet). Occasional; perennial, NE, SW, RH. *Thompson 86-9.*
Viola canadensis L. (Canada White Violet). Frequent; perennial, NE. *Thompson 85-18, 86-6.*
Viola hastata Michx. (Spear-leaf Violet). Occasional; perennial, NE, SW. *Thompson 85-9, 85-48.*
Viola pubescens Ait. (Forest Yellow Violet). [Syn: *V. pensylvanica* Michx.; *V. eriocarpa* (Nutt.) Schwein]. Infrequent; perennial, NE, SW. *Thompson 85-53.*
Viola rostrata Pursh. (Long-spur Violet). Occasional; perennial, NE, SW. *Thompson 85-3.*
Viola rotundifolia Michx. (Round-leaf Yellow Violet). Infrequent; perennial, NE, RH. *Thompson 85-10.*
Viola sororia Willd. (Downy Wood Violet). [Syn: *V. papilionacea* Pursh]. Frequent; perennial, SW, NE. *Thompson 86-8, 87-363.*

VITACEAE (Grape Family)
Parthenocissus quinquefolia (L.) Planch. (Virginia-creeper). Frequent; woody vine, SW, NE, PO. *Thompson 85-409, 85-477.*
Vitis aestivalis Michx. (Summer Grape). Frequent; woody vine, SW, PO. *Thompson 86-140, 89-1779.*
Vitis rotundifolia Michx. (Muscadine Grape). Abundant; woody vine, RF, NE, SW. *Thompson 85-415, 95-363.*
Vitis vulpina L. (Frost Grape). [Syn: *Vitis cordifolia* Michx.]. Occasional; woody vine, RF, NE. *Thompson 85-428.*

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Botanical survey of Rock Creek Research Natural Area, Kentucky. Gen.
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Forest Service, Northeastern Research Station. 23 p.

A 10-year survey of vascular plants was made of Rock Creek Research Natural Area, a 77-ha deep, narrow gorge of old-growth Hemlock-Mixed Mesophytic Forest located in Laurel County, Kentucky, on the Daniel Boone National Forest. The study documented 350 specific and infraspecific taxa in 223 genera and 93 families. Thirteen are nonindigenous naturalized species. Vascular plants include 6 Lycopodiophyta, 25 Polypodiophyta, 5 Pinophyta, and 314 Magnoliophyta; 255 are annual, biennial, and perennial herbs and 95 are woody vines, shrubs, and trees. Seventeen rare and special interest species have been recorded, including 4 that are listed by the state. The floristic survey provides a baseline reference for relative abundance, species richness, plant associations, habitats, and generalized life-forms within the Rock Creek Research Natural Area.

Keywords: Vascular plants; species richness; plant associations; old-growth forests; hemlock-mixed mesophytic forests.





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