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# The vascular flora of Breaks Interstate Park, Pike County, Kentucky, and Dickenson County, Virginia

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THE VASCULAR FLORA OF BREAKS INTERSTATE PARK,  
PIKE COUNTY, KENTUCKY, AND DICKENSON COUNTY, VIRGINIA

By

Julie Bennett Clark

Thesis Approved:



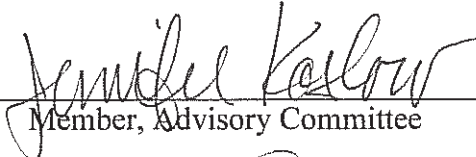
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Date April 11, 2012

THE VASCULAR FLORA OF BREAKS INTERSTATE PARK,  
PIKE COUNTY, KENTUCKY, AND DICKENSON COUNTY, VIRGINIA

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Submitted to the Faculty of the Graduate School of  
Eastern Kentucky University  
in partial fulfillment of the requirements  
for the degree of  
MASTER OF SCIENCE  
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## DEDICATION

This thesis is dedicated to Chip Clark,  
the best field assistant, friend, and husband  
that I could ask for.

I would also like to dedicate this thesis to my wonderful  
parents, Wallace and Betty Bennett, who provide  
endless support and encouragement.

## ACKNOWLEDGMENTS

I would like to thank my advisor and professor, Dr. Ronald Jones, for his guidance throughout this project. I greatly appreciate his assistance in the field, in the lab, and in the editing of this thesis. Dr. Jones donated large amounts of his time and expertise in helping with specimen identification and exhibited great patience while I juggled work and this project. I would also like to thank my other committee members, Dr. Charles Elliott and Dr. Jennifer Koslow, for their editing and assistance with this thesis.

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grateful to him for starting this floristic project in the 1980s and for depositing many of his specimens in the VPI herbarium.

My parents, Betty and Wallace Betty Bennett, provided endless support throughout this long process and encouraged me to continue pursuing my goal. With much love and appreciation, I thank them for everything. My brother, Gary Bennett, and sister, Kim Bennett, were great sources of motivation. Having witnessed both of them pursue and accomplish many educational goals served as encouragement for me to keep plugging along.

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## ABSTRACT

The vascular flora of Breaks Interstate Park was documented during two growing seasons, 2008 and 2009; with supplemental collections made in 2010 and 2011. The project area is located in eastern Kentucky and western Virginia at the northeastern terminus of Pine Mountain along the Appalachian Plateau. A total of 118 families, 341 genera, and 549 species, varieties, and subspecies were documented from Breaks Interstate Park. Six main vegetative communities were described: mesophytic forest, upper slopes and ridgetops, ponds/wetlands, river bottomland and floodplain/streamside, sandstone outcrops, and disturbed/open areas. Eleven rare species with state rankings were identified: *Adlumia fungosa*, *Hydrastis canadensis*, *Juglans cinerea*, *Meehania cordata*, *Monotropis odorata*, *Panax quinquefolius*, *Prosartes maculata*, *Saxifraga caroliniana*, *Silene rotundifolia*, *Spiranthes lucida*, and *Triphora trianthophora*. In addition, six taxa with Kentucky rankings were found on the Virginia side of the park. Ninety-one non-native species were documented (17% of the flora), and of this list, 48 species are considered invasive in Kentucky or Virginia. Specimens of vascular plant species were collected and voucher specimens will be housed in the Eastern Kentucky University Herbarium.

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# CHAPTER 1

## INTRODUCTION

Breaks Interstate Park, established in 1954, is located in the Jefferson National Forest in Pike County, Kentucky, and Dickenson County, Virginia. The park is administered by both Kentucky and Virginia, and is one of two interstate parks in the United States. The park is located 47 kilometers (29 miles) southeast of Pikeville, KY, and 26 kilometers (16 miles) west of Grundy, VA. The main entrance to the park is accessed off VA 80 (State Hwy 80) between Haysi, VA and Elkhorn City, KY. The park encompasses 1,862 hectares (4,600 acres). The Russell Fork River cuts a deep gorge through the park, which is referred to as the "Grand Canyon of the South." The 8-kilometer (5-mile) long gorge is 503 meters (1,650 feet) deep and is the largest gorge east of the Mississippi River. The river's Class IV and V rapids are a challenging pursuit for skilled paddlers. The annual fall kayak race, known as the "Lord of the Fork," times individual's runs through the Russell Fork gorge. Along with the Russell Fork River, the Cinchfield Railroad (now the CSX Transportation Kingsport Subdivision) runs through the gorge and through three tunnels. According to the Breaks Interstate Park website, the park area was ancient hunting grounds of the Shawnee and Cherokee, and Daniel Boone, is credited with being the first person of European descent to discover "the Breaks" in 1767 (Breaks Interstate Park 2012). Hiking, mountain biking, horseback riding, pedal boats, festivals, and family reunions are common activities in the park. Forty kilometers (25 miles) of trails traverse the property. The park restaurant and swimming pool are popular with locals and tourists alike. Accommodations include the lodge, cabins, and campsites (Breaks Interstate Park 2012).

Breaks Interstate Park was chosen as the location of this thesis project for several reasons. Few comprehensive floristic studies have been conducted in the Cumberland Plateau

and Cumberland Mountains of the Appalachian Plateau. No county floras exist for either Pike County, KY, or Dickenson County, VA, or for any adjacent counties in the two states. Jones (2005) ranked regions of Kentucky most in need of floristic studies, and recommended that the southern section of the Appalachian Plateau (encompassing Bell, Breathitt, Harlan, Knott, Knox, Lee, Letcher, Perry, and Pike Counties) be given highest priority, not only because of the scarcity of studies, but because of the likelihood that high quality communities (old-growth forests, mixed mesophytic forests, fens and plateau wetlands, oak-pine forests, and oak-pine barrens) might still exist in the area. Several floristic or vegetation studies have been conducted in nearby or similar sites in Kentucky, including studies of Pine Mountain (McIntosh 2009, Braun 1935), the Cumberland Mountains (Braun 1942), Lilley Cornett Woods (McEwan et al. 2005, Sole, et al. 1983, Martin and Shepherd 1973), and Cumberland Gap (Pounds et al. 1989, Hinkle 1975). Floristic studies of similar areas on the Cumberland Plateau of Tennessee include the North Chickamauga Creek Gorge State Natural Area (Huskins and Shaw 2010) and Fall Creek Falls State Park (Fleming and Wofford 2004, Caplenor 1965).

Several different formulae are available for predicting the number of vascular plants species in a particular area, and based on these formulae, between 587 and 637 different taxa are expected to be found in the 1,862 hectares that comprise the Park (Huskins and Shaw 2010, Wade and Thompson 1991). The location of the Park in the rich Appalachian highlands, together with preliminary information compiled by park employees, along with sporadic collecting from a variety of collectors over the last several decades, suggest that a large diversity of species is likely present.

Several sources of botanical information on Breaks Interstate Park and the surrounding area are available, including the herbarium specimens and databases maintained at the Eastern Kentucky University Herbarium (EKY) and Massey Herbarium at Virginia Polytechnic University (VPI). Several atlases of vascular plant distributions are also available, including Clark and Weckman (2008) and Campbell (2006) for Kentucky, and Virginia Botanical

Associates (2012) for Virginia, but these do not usually provide specific information on the Park. The databases maintained by the Kentucky State Nature Preserves Commission (KSNPC) and the Virginia Department of Conservation and Recreation Natural Heritage Program (VDCR) have data on the rare and endangered species in the region. A query of the EKY database (Note: the acronym EKY is used when referring to the herbarium, and EKV when referring to the university) revealed 754 records for Pike County, but only 29 records, representing 24 species from the Park, whereas the digital atlas of the Virginia flora lists 769 species for Dickenson County, Virginia (Virginia Botanical Associates 2012). During the 1980s a checklist of plant species of Breaks Interstate Park was assembled by former park naturalist Ken Markley. This checklist was never published, and contains 809 names, but many are noted by question marks, and it is not known how many are vouchered at Virginia herbaria. The list does not indicate if the plants were collected in Kentucky or Virginia. Markley and former Superintendent James Childress also prepared a list in the 1980s of “Common Blooming Plants and Trees in the Park,” which includes the months when each listed plant is in bloom and the trail or location of 42 herbs and 24 trees (Markley and Childress 1981-1989). Therefore, although some floristic data were available for the Park, the information has never been compiled and made available in an accessible form. The major objectives of this research project were to 1) prepare a list of vascular plant species for Breaks Interstate Park, based on collections obtained during this study, as well as collections from the park already deposited in area herbaria; 2) provide descriptive accounts of the plant communities; and 3) to describe the presence and status of rare plant species and exotic species in the park.

## CHAPTER 2

### STUDY AREA

#### **Location, Topography, Physiography, Ecoregion**

Breaks Interstate Park is located on the border of southeastern Kentucky and southwestern Virginia, and includes approximately 620 hectares (ha) in Pike County, KY and 1,241 hectares (ha) in Dickenson County, VA (Figure 1)<sup>1</sup>. The Park is found within the Elkhorn City, KY-VA U.S. Geological Survey topographic and geologic quadrangles (USGS 1978, Alvord and Miller 1972; Fig. 2). Elevations range from 280 meters (920 feet) at Russell Fork to 603 m (1,978 ft) at the Clinchfield Overlook inside the park. In addition to the typical high ridges and steep slopes that characterize the area, other types of terrain include floodplains, rolling hills, drainages, and nearly level areas in developed sections of the park (Figures 2 and 3).

Breaks Interstate Park is located in the Cumberland Mountains Section of the Appalachian Plateaus Physiographic Province (Fenneman 1938). This unglaciated region is a mountainous plateau with steep slopes, narrow ridgetops and valleys, and deep coves. Ridges are dissected with high gradient streams composed of cobble and boulder substrates (Woods, et al. 2002). The following streams are located within the Park: Russell Fork River, Grassy Creek, Center Creek, Laurel Branch, and Camp Branch (Fig. 2). Pine Mountain begins at Russell Fork River within the park and extends southwest about 201 km (125 miles) to near Jellico, Tennessee.

The Park is located in the Level IV Dissected Appalachian Plateau Ecoregion, within the Level III Central Appalachians Ecoregion (Woods, et al. 2002; Fig. 4). According to Woods, et al. (2002), mixed mesophytic forests are the dominant type of vegetation on cool north- and east-facing slopes and coves, while drier upper slopes and south- and west-facing slopes are

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<sup>1</sup> Refer to Appendix A for all figures.



dominated by mixed oak and pine forests. Red maple (*Acer rubrum*) has become a frequent component of second-growth forests and former American chestnut (*Castanea dentata*) sites. Agricultural land is limited by the rugged landscape and nutrient-poor soils. Logging, gas and oil production, and coal mining, both surface and underground, are common in the region but not within park boundaries. Acidic drainage and sedimentation from mining have impacted aquatic biodiversity and productivity in many streams. The ecoregion is mostly forested and vegetation composition varies based on aspect, slope, topographic variation, and past land usage (Woods et al. 2002).

### **Geology and Soils**

Alvord and Miller (1972) described the geology of the Elkhorn City, KY-VA Quadrangle. The project area is composed of alluvium along Russell Fork, the Breathitt Formation on upper slopes and ridgetops, and the middle and upper sandstone members of the Lee Formation on lower slopes. The Pennsylvanian-aged Breathitt and Lee Formations located throughout the park are composed of sandstones, conglomerates, shales, siltstones, and coal (Alvord and Miller 1972). Greb et al. (2006) describe how the mountainous landscape of the region was formed from the Cenozoic weathering of strata pushed to the surface during the Pennsylvanian geologic period. Many strata were overturned during this upthrust, such as coal beds being below their associated underclays. The break in Pine Mountain worn down by the Russell Fork River is the origin of the name “Breaks” (Adkins 2009).

The soil in the park is comprised of upland soils, mostly Ultisols and Inceptisols, formed from residuum and colluvium (Woods et al. 2002). The Pike County side of the Park, which includes the northwest face of Pine Mountain, is composed of the Kimper-Sharondale-Berks-Shelecta general soil map unit. These soils occur on ridgetops and side slopes and are deep and moderately deep, moderately to extremely steep, and well-drained with a loamy subsoil (Kelley 1990). The Park's soil composition was defined using the Web Soil Survey (USDA 2012), which

delineated the area into soil complexes and mapping units: 20 for Dickenson County and 13 Pike County. The soils accounting for the largest percentages are presented in Table 1. The largest percentage of land area (approximately 16 percent) is composed of Alticrest fine sandy loam, 15 to 35 percent slopes, rocky. This soil unit is characterized by somewhat excessively drained soils on slopes and ridges. No map units in Dickenson County meet the definition of a hydric soil (Adkins 2009).

Table 1. Main soil mapping units within Breaks Interstate Park.

| Map Unit Name  | Approximate % of Park |
|--|-----------------------|
| Dickenson County   |                       |
| Alticrest fine sandy loam, 15 to 35 percent slopes, rocky                | 16.3                  |
| Ramsey-Alticrest-Rock outcrop complex, 35 to 80 percent slopes           | 16                    |
| Alticrest fine sandy loam, 35 to 55 percent slopes, rocky                | 11.7                  |
| Cloverlick-Shelocta complex, 55 to 70 percent slopes, very stony         | 7.3                   |
| Pike County  |                       |
| Kimper-Sharondale-Muskingum complex, 35 to 80 percent slopes, very stony | 12                    |

Source: United States Department of Agriculture - Natural Resources Conservation Service. 2012. Web soil survey. <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>.

## **Climate**

The Dickenson County Soil Survey (Adkins 2009) provided climate information for Grundy, Virginia, which is located near Breaks Interstate Park. The data were recorded from 1971 to 2000. In the winter months (December through January) the average daily temperature was 2.6° Celsius (C). The average daily maximum temperature was 9.2°C and the average daily minimum temperature was -4°C. In the summer months (June through August) the average daily

temperature was 22.9°C. The average daily maximum temperature was 29.8°C and the average daily minimum temperature was 16.1°C. The yearly average precipitation was 117 cm (45.98 inches), and the average number of days per year with 0.25 cm (0.10 inches) of precipitation or more was 88 days. The yearly average snowfall amount was 50 cm (19.7 inches). Average length of the growing season was 181 days (Adkins 2009).

## **Vegetation**

General overviews of the vegetation of the Breaks Interstate Park region have been provided by Braun (1950), Küchler (1964), and Smalley (1984). (Note: Table 2 provides a list of scientific names for species frequently mentioned in the text.) The forests of this region have typically been classified as the Mixed Mesophytic Forest by these previous authors, but in a recent interpretation, Dyer (2006) includes the Park area in a more generalized forest region, the Mesophytic Forest Region. Smalley (1984) provides a general synopsis of the vegetation, which can be summarized as; 1) mesic slopes, with a canopy of eastern hemlock, American beech, yellow-poplar, red maple, and white oak, with occasional white basswood, northern red oak, yellow birch, sweet birch, blackgum, cucumbertree, Fraser magnolia, and other hickories and oaks, and an understory of bigleaf and umbrella magnolias, sourwood, flowering dogwood, American holly, and rhododendrons; and 2) dry slopes and ridges, with a canopy of oaks (chestnut, white, scarlet, post, black, blackjack), pines (shortleaf, pitch, and Virginia), and hickories (pignut and mockernut), with occasional red maple, sourwood, blackgum, eastern red-cedar, and eastern white pine, and a subcanopy of mountain laurel, sumac, and vacciniums. Formerly American chestnut was a prominent member of these upland communities until the fungal infection caused by the chestnut blight resulted in the dying off of the species in the late 1920's and 1930's (Caudill 1963). Jones (2005) describes similar communities for these Appalachian uplands, distinguishing 1) Mixed deciduous forests, similar to the mesic forests described by Smalley above, but including other subcanopy species such as buffalo-nut, sweet

Table 2. Scientific names for woody species frequently mentioned in the text.

|  |  |  |
|--|--|--|
| <b>ash</b><br>white ( <i>Fraxinus americana</i> )  | <b>magnolia</b><br>bigleaf ( <i>Magnolia macrophylla</i> )<br>cucumber ( <i>M. acuminata</i> )<br>Fraser ( <i>M. fraseri</i> )<br>umbrella ( <i>M. tripetela</i> )   | <b>witchhazel</b><br>( <i>Hamamelis virginiana</i> )                       |
| <b>azaleas, wild</b><br>( <i>Rhododendron</i> spp.)  |  | <b>yellow-poplar or tulip-poplar</b><br>( <i>Liriodendron tulipifera</i> ) |
| <b>basswood</b><br>white ( <i>Tilia americana</i> var. <i>heterophylla</i> )   | <b>maple</b><br>red ( <i>Acer rubrum</i> )<br>sugar ( <i>A. saccharum</i> )  |  |
| <b>beech, American</b> ( <i>Fagus grandifolia</i> )  | <b>oak</b><br>black ( <i>Quercus velutina</i> )<br>blackjack ( <i>Q. marilandica</i> )<br>chestnut ( <i>Q. montana</i> )<br>oaks ( <i>Quercus</i> spp.)<br>post ( <i>Q. stellata</i> )<br>northern red ( <i>Q. rubra</i> )<br>scarlet ( <i>Q. coccinea</i> )<br>white ( <i>Q. alba</i> ) |  |
| <b>birch</b><br>sweet ( <i>Betula lenta</i> )<br>yellow ( <i>B. allegheniensis</i> )   |  |  |
| <b>blueberries</b><br>Vacciniums ( <i>Vaccinium</i> spp.)  | <b>pepperbush, sweet</b><br>( <i>Clethra acuminata</i> )   |  |
| <b>buffalo-nut</b><br>( <i>Pyralaria pubera</i> )  | <b>pine</b><br>pitch ( <i>Pinus rigida</i> )<br>shortleaf ( <i>P. echinata</i> )<br>Virginia ( <i>P. virginiana</i> )<br>white ( <i>P. strobus</i> )   |  |
| <b>chestnut, American</b> ( <i>Castanea dentata</i> )  | <b>redbud</b> ( <i>Cercis canadensis</i> )   |  |
| <b>dogwood</b><br>flowering ( <i>Cornus florida</i> )  | <b>red-cedar, eastern</b> ( <i>Juniperus virginiana</i> )  |  |
| <b>grapes, wild</b> ( <i>Vitis</i> spp.)   | <b>rhododendron</b> ( <i>Rhododendron</i> spp.)  |  |
| <b>greenbriers</b> ( <i>Smilax</i> spp.)   | <b>sassafras</b><br>( <i>Sassafras albidum</i> )   |  |
| <b>gum</b><br>black ( <i>Nyssa sylvatica</i> )   | <b>serviceberry, downy</b><br>( <i>Amelanchier arborea</i> )   |  |
| <b>hemlock, eastern</b> ( <i>Tsuga canadensis</i> )  | <b>sourwood</b><br>( <i>Oxydendrum arboreum</i> )  |  |
| <b>hickory</b><br>bitternut ( <i>Carya cordiformis</i> )<br>hickories ( <i>Carya</i> spp.)<br>mockernut ( <i>C. tomentosa</i> )<br>pignut ( <i>C. glabra</i> )<br>shagbark ( <i>C. ovata</i> ) | <b>sumac</b><br>sumac ( <i>Rhus</i> spp.)  |  |
| <b>holly</b><br>American ( <i>Ilex opaca</i> )   | <b>wintergreen</b><br>( <i>Gaultheria procumbens</i> )   |  |
| <b>laurel, mountain</b><br>( <i>Kalmia latifolia</i> )   |  |  |

Nomenclature source: Jones, R.L. 2005. Plant life of Kentucky.

pepperbush, and wild azaleas; 2) Mixed oak forests, on sites of more intermediate moisture regime, dominated by white oak, bitternut hickory, northern red oak, white ash, shagbark hickory, and sugar maple, with many species of Ericaceae, greenbriers, redbud, and wild grapes in the understory; and 3) Xeric oak forests, similar to that described for dry ridges and slopes by Smalley (1984) above, but with many species of Ericaceae, wintergreen, serviceberry, sassafras, and witchhazel in the understory.

Evans et al. (2006) provided a more specific listing of Kentucky plant communities that are likely to be found in the Breaks Interstate Park area, including Appalachian mesophytic forest, Hemlock-mixed forest, Appalachian sub-xeric forest, Appalachian pine-oak forest, Virginia pine forest, Dry sandstone cliff, Moist sandstone cliff, and Cumberland Plateau gravel/cobble bar. Fleming and Patterson (2012) provide a very detailed listing of the natural communities of Virginia.

## **Land Use**

According to Woods et al. (2002), land use in the Dissected Appalachian Plateau Ecoregion consists of natural resource extraction and farming. Logging is common in the largely forested region. Flat land is limited; therefore, farming occurs on floodplains and terraces where drainage is suitable to hay, tobacco, and corn production. Pastureland is also limited. Coal is mined in a variety of ways, including surface mining, mountain-top removal, contour mining, and deep mining. Gas and oil are also extracted, and gas pipelines extend across the hilly topography (Woods et al. 2002).

Austin Bradley, Director of Park Services at Breaks Interstate Park, and Terry Owens, former Park Naturalist and current Director of Park Maintenance were very helpful in supplying information on the human history and management of the Park, and the following discussion in the remainder of this section is based on this information. Underground coal mining (likely not

surface mining) may have occurred prior to 1954 when the Park was established, on what is now park property. The Domus Mines located on the mountain, west of Russell Fork, operated in the early 1900s. From the Clinchfield Overlook, a loading bin is visible next to the railroad, and remnants of a coal chute down the mountain can be discerned when leaves are absent (WMTH 2012). Another small mine is rumored to have been located in the "Notches" area of the Park, but no confirming evidence has been found.

Most, if not all, of the Breaks Interstate Park property has been logged at some point. The Yellow Poplar Timber Company was responsible for much of the large-scale logging in the Park and the remainder was logged by small companies and private individuals clearing their fields. The only places that may have experienced more limited logging are remote areas around the Towers and the "Hickory Flats" historic settlement at the site of the present-day Mountain Bike Trail, where several large trees appear to have been left standing.

Small-scale farming was conducted in Breaks Interstate Park by several families in the Hickory Flats area, and even today (2012), there is a field that is mowed for hay. Potter's Flats, located across the Russell Fork on the Kentucky side of the property, was settled and gardened. A current house located between the Mountain Bike trailhead and several cottages was historically gardened for subsistence.

The Clinchfield Railroad (now CSX) is responsible for mitigating any impacts that are caused by its route through Breaks Interstate Park. Noise pollution is likely the main impact; however, park visitors often comment that they enjoy hearing the train whistle. From some park vantage points, the trains can be seen entering and exiting the three tunnels on the Park. The main visitor conflict with the railroad is the illegal crossing (by foot) of the railroad trestle over the river at Pool Point. Park personnel reprimand people caught crossing the bridge.

Currently, approximately 15% of Breaks Interstate Park is developed. Land use at the park includes numerous facilities, including a lodge, cottages, cabins, staff housing, restaurant,

conference center, swimming pool, amphitheater, and visitor center, as well as maintained camp sites, hiking trails, mountain bike trails, and horse stables and horseback riding trails (Fig. 5).

## CHAPTER 3

### MATERIALS AND METHODS

Vascular plants were documented during two growing seasons (April 2008 to October 2009), along with 2 additional trips in 2010 and 2 trips in 2011. A total of 34 trips were made to the Park. An attempt was made to survey portions of all major sections of the Park. Using the topographic map, geology map, and park trail map, collection sites were selected based on accessibility, variability of habitat, elevation, aspect, soil moisture conditions, and the degree of vegetative cover (i.e., open vs. forested). Main collection areas were visited on a periodic basis. The most frequently visited sites or trails were: 1) Garden Hole, 2) Beaver Pond and stables vicinity, 3) Laurel Lake, 4) Camp Branch Trail to Russell Fork, 5) Mountain Bike Trail Circuit, 6) Pine Mountain Trail, 7) Potter's Flats and Russell Fork, 8) Center Creek to Grassy Creek to Russell Fork, 9) Geological Trail, 10) River Access and 11) Prospector's Trail (Fig. 5).

The sampling procedure involved a modified version of the random meander technique, which was described by Cropper (1993) as "walking in a random manner throughout the study area, visiting the full range of potential habitats and recording every plant seen." Before each collecting trip, a route was planned to access several habitat types and cover different sections of the Park. Also, the previous year's notes were reviewed in order to focus on different habitats and areas of the Park than were sampled at the same time the previous year.

Standard collecting and herbarium techniques were used to obtain floristic data. Specimens with reproductive features were selected if possible (with spores, cones, flowers, or fruits), and collected in duplicate. Specimens were then processed at Eastern Kentucky University (pressed, dried, frozen, and labeled). For rare species or species for which there were not more than 20 individuals found, a photograph was taken instead of collecting the actual



specimen. Notes were taken on precise location (including latitude and longitude), habitats, and noteworthy features of the specimens. Notes were also taken on canopy and subcanopy species for each major habitat type, and utilized for the community descriptions. Selected large trees greater than 75 centimeters (cm) diameter at breast height (dbh) were measured and documented.

Additional species listings were obtained by examining specimens collected prior to this study and housed at EKY or VPI. The EKY specimens were located using the EKY database. An unpublished list of species collected from the Park by Ken Markley was provided by VPI Curator, Dr. Thomas Wieboldt, and a target list of species that had not been documented in the current study was then prepared. This list was sent to Dr. Wieboldt who kindly searched for the specimens and located a total of 97 sheets. These specimens were then mailed to EKY for examination and confirmation of their identifications.

Regional manuals and field guides were used for plant identification, including Jones (2005), Gleason and Cronquist (1991), Barnes and Francis (2004), Beal and Thieret (1986), and Wharton and Barbour (1971). Nomenclature follows that of Jones (2005). Those providing assistance and verification of specimens identifications included Dr. Ross Clark (woody plants, *Ilex*), Dr. Julian Campbell (Poaceae and Cyperaceae), and Dr. Ronald Jones (all groups). Labels were prepared for each specimen, and included the following information: genus and species, specimen number, collection location, latitude and longitude of location, date collected, and collector. Voucher specimens will be deposited at EKY, with a duplicate set deposited at VPI.

Rare species occurrence reports specifically generated for this project by the Kentucky State Nature Preserves Commission (KSNPC) and the Virginia Department of Conservation and Recreation (VDCR) were reviewed, and those species and their habitats were targeted during collecting trips. Rare plants found were noted and their status ascertained. Rare species status is based on KSNPC (2010) and Townsend (2009).

## CHAPTER IV

### RESULTS

#### Flora

For this study, 1,200 collections were made and specimens from two herbaria were confirmed. The floristic inventory of Breaks Interstate Park resulted in the identification of 549 different species or lesser taxa, representing 118 families and 341 genera. The taxa can be further broken down into 37 pteridophytes, 6 gymnosperms, 394 dicots, and 112 monocots. Eighty-six species records are based on specimens from other collectors (81 VPI, 5 ECU). The number of species documented for Virginia was 447, and the number for Kentucky was 200 (Table 3); however, this reflects an overlap where some species were collected in both states. A separate species list was not generated for each state, but rather for the Park as a whole. Families with the largest number of taxa were Asteraceae (72 species), Poaceae (41 species), Fabaceae (25 species), Cyperaceae (24 species), Rosaceae (23 species). These five families accounted for 34 percent of the total flora. No federally-listed threatened or endangered species were found, but 11 species with state rankings were identified (Table 4). The number of non-native species identified was 91, accounting for about 17 percent of the flora.

Table 3. Differences between Kentucky and Virginia for Breaks Interstate Park plant species lists. Note: A separate species list was not compiled for each state individually but rather for the Park as a whole; therefore, this chart reflects an overlap where some species were collected in both states and also an unrepresentation where some species were only collected in one state even though they may also occur in the other.

|                    | <b>Kentucky</b> | <b>Virginia</b> |
|--------------------|-----------------|-----------------|
| Species            | 200             | 447             |
| Rare Species       | 1               | 10              |
| State Records      | 0               | 0               |
| Non-native Species | 41              | 62              |

Table 4. State-listed rare species identified from Breaks Interstate Park. State Status Key: T = Threatened, S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure. VPI designation refers to Virginia Tech Herbarium (VPI) specimens.

| Species                          | Collection Location                    | State Status |
|----------------------------------|--|--------------|
| <i>Adlumia fungosa</i> (VPI)     | Dickenson County, VA                   | S3 (VA)      |
| <i>Hydrastis canadensis</i>      | Pike County, KY & Dickenson County, VA | S3 (VA)      |
| <i>Juglans cinerea</i>           | Pike County, KY (County Record)        | T (KY)       |
| <i>Meehania cordata</i> (VPI)    | Dickenson County, VA                   | S3 (VA)      |
| <i>Monotropis odorata</i> (VPI)  | Dickenson County, VA                   | S3 (VA)      |
| <i>Panax quinquefolius</i> (VPI) | Dickenson County, VA                   | S3/S4 (VA)   |
| <i>Prosartes maculata</i> (VPI)  | Dickenson County, VA                   | S3 (VA)      |
| <i>Saxifraga caroliniana</i>     | Dickenson County, VA                   | S3 (VA)      |
| <i>Silene rotundifolia</i> (VPI) | Dickenson County, VA                   | S2 (VA)      |
| <i>Spiranthes lucida</i>         | Dickenson County, VA (County Record)   | S1 (VA)      |
| <i>Triphora trianthophora</i>    | Dickenson County, VA                   | S1 (VA)      |

Virginia state status source: Townsend, J.F. 2009. Natural Heritage Resources of Virginia: Rare plants. Natural Heritage Technical Report 09-07. Kentucky state status source: Kentucky State Nature Preserves Commission. 2010. Rare and extirpated biota and natural communities of Kentucky.

## Vegetation

### Communities

Based on distinct habitats, moisture regime, vegetative cover, and frequency of disturbance, six main community types were identified in Breaks Interstate Park: mesophytic forest, upper slopes and ridgetops, ponds/wetlands, river bottomland and floodplain / streamside, sandstone outcrops, and disturbed / open areas. Most communities were dominated by a mix of deciduous and coniferous trees, except for ponds and open areas, where herbaceous vegetation was most dominant.

### Mesophytic forest

The mesophytic forest community is the predominant community found at Breaks Interstate Park. This mesic community occurs on well-drained slopes and in coves and ravines. Overall dominant canopy species are hemlock (*Tsuga canadensis*), beech (*Fagus grandifolia*), tulip-poplar (*Liriodendron tulipifera*), pignut hickory (*Carya glabra*), northern red oak (*Quercus rubra*), white oak (*Quercus alba*), chestnut oak (*Quercus montana*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), and white ash (*Fraxinus americana*). Species of shrubs and small trees in the subcanopy are striped maple (*Acer pensylvanicum*), pawpaw (*Asimina triloba*), sweet birch (*Betula lenta*), maple-leaved viburnum (*Viburnum acerifolium*), sweet pepperbush (*Clethra acuminata*), flowering dogwood (*Cornus florida*), rosebay laurel (*Rhododendron catawbiense*), great-laurel (*Rhododendron maximum*), yellow buckeye (*Aesculus flava*), wild hydrangea (*Hydrangea arborescens*), spicebush (*Lindera benzoin*), umbrella magnolia (*Magnolia tripetala*), and cucumber magnolia (*Magnolia acuminata*). There is a 1961 herbarium record of *Betula alleghaniensis* from the east boundary of the Park, which is notable because the species is typically found further south on the Cumberland Plateau.

Species composition varies throughout the circuit of mountain bike trails located in the northeast section of Breaks Interstate Park. *Tsuga canadensis* and *Fagus grandifolia* are dominant in some areas. Other slopes have a canopy of *Quercus montana*, *Tsuga canadensis*, *Liriodendron tulipifera*, *Quercus alba*, and *Carya glabra*. The east-facing aspect of the Mountain Bike Trail is dominated by *Liriodendron tulipifera*, *Acer saccharum*, and *Acer rubrum*. Prospector's Trail has a canopy composed of *Quercus montana*, *Q. rubra*, *Tsuga canadensis*, *Acer saccharum*, *Fraxinus americana*, and *Liriodendron tulipifera*. Subcanopy species consist of *Rhododendron maximum*, *R. catawbiense*, witch hazel (*Hamamelis virginiana*), *Acer pensylvanicum*, *Magnolia* spp., *Asimina triloba*, *Cornus florida*, *Acer rubrum*, and *Betula lenta*. Dominant canopy species along the Pine Mountain Trail are *Liriodendron tulipifera*, *Acer*

*saccharum*, basswood (*Tilia americana*), *Tsuga canadensis*, *Quercus alba*, *Carya* spp. and *Fagus grandifolia*. Subcanopy species include *Asimina triloba*, *Aesculus flava*, and *Cornus florida*.

Species composition along some of the other trails in Breaks Interstate Park include the NW-facing slope along the Laurel Branch Trail, a mesic community of *Rhododendron maximum*, *Fagus grandifolia*, *Tsuga canadensis*, *Acer rubrum*, and *Liriodendron tulipifera*. The W-facing River Trail consists of *Quercus rubra*, *Q. montana*, shagbark hickory (*Carya ovata*), *C. glabra*, and *Acer saccharum* in the canopy. The rocky, NW-facing slopes along the Grassy Creek Trail are dominated by *Rhododendron maximum*, *T. canadensis*, and *Acer rubrum*. In contrast to forested areas supporting an assemblage of species, the Park also houses some almost pure stands of *Tsuga canadensis*, as well as dense thickets of *Rhododendron maximum*.

#### Upper Slopes and Ridgetops

The drier upper slopes of Breaks Interstate Park are dominated by *Quercus alba*, *Quercus montana*, and pitch pine (*Pinus rigida*) in the canopy, and *Acer rubrum*, scarlet oak (*Quercus coccinea*), *Carya glabra*, and *Tsuga canadensis* are also sometimes present in the canopy. The subcanopy is composed of mountain-laurel (*Kalmia latifolia*), sourwood (*Oxydendrum arboreum*), *Hamamelis virginiana*, sassafras (*Sassafras albidum*), strawberry bush (*Euonymus americanus*), American holly (*Ilex opaca*) and Fraser magnolia (*Magnolia fraseri*). The ridgetop community refers to xeric ridgetops populated by Virginia pine (*Pinus virginiana*), *Pinus rigida*, and oaks (*Quercus montana*, *Q. coccinea*, *Q. velutina*) in the canopy, and frequently *Tsuga canadensis*. Subcanopy components include *Ilex opaca*, trailing arbutus (*Epigaea repens*), blackgum (*Nyssa sylvatica*), *Kalmia latifolia*, *Hamamelis virginiana*, *Sassafras albidum*, highbush blueberry (*Vaccinium corymbosum*), lowbush blueberry (*Vaccinium pallidum*), and *Oxydendrum arboreum*.

### Ponds/Wetlands

The two bodies of open water within Breaks Interstate Park, Laurel Lake and Beaver Pond, support aquatic plants in the water column (*Potamogeton nodosus* and *P. pusillus*) and on the surface (*Lemna minor* and *Lysimachia nummularia*). Wetland vegetation is abundant along the margins, in particular, sedges (*Carex atlantica*, *C. intumescens*, *C. lurida*, *C. tribuloides*, *C. vulpinoidea*), rushes (*Juncus acuminatus*, *J. coriaceous*, *J. effusus*), and bulrushes (*Scirpus cyperinus*, *S. polyphyllus*). Canopy located around the water bodies includes *Fagus grandifolia* and *Tsuga canadensis*. Subcanopy species consist of *Sassafras albidum*, *Oxydendrum arboreum*, *Cornus florida*, winged sumac (*Rhus copallina*), hazelnut (*Corylus americana*), and downy serviceberry (*Amelanchier arborea*). A semi-open, wetland is located off the Park's Loop Trail, directly adjacent to a spring-fed stream. Several individuals of club-spur orchid (*Platanthera clavellata*) occur in the wet spot, along with New York fern (*Thelypteris noveboracensis*), *Carex intumescens*, and mosses. Surrounding canopy species include *Quercus alba* and *Tsuga canadensis*.

### River bottomland and floodplain/Streamside

Within Breaks Interstate Park, Potter's Flats, a bottomland area in Russell Fork's floodplain that slopes up to the railroad tracks, has a canopy composition of *Liriodendron tulipifera*, *Tsuga canadensis*, *Acer rubrum*, *Pinus virginiana*, and *Quercus rubra*. Subcanopy components include *Magnolia tripetala*, *A. rubrum*, *Asimina triloba*, tree-of-heaven (*Ailanthus altissima*), and *Rhododendron maximum*. Sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), and Japanese knotweed (*Polygonum cuspidatum*) are dominant species close to the river. Further upstream, the west bank of Russell Fork, near Towers Tunnel, is composed of black locust (*Robinia pseudoacacia*), *Platanus occidentalis*, silky dogwood (*Cornus amomum*), and common winterberry (*Ilex verticillata*).

Woody species commonly found along streams (e.g., Camp Branch, Grassy Creek, Laurel Branch, Center Creek, Russell Fork) include river birch (*Betula nigra*), *Ilex verticillata*, *Cornus amomum*, alder (*Alnus serrulata*), American hornbeam (*Carpinus caroliniana*), *Platanus occidentalis*, withe-rod (*Viburnum cassinoides*), persimmon (*Diospyros virginiana*), maleberry (*Lyonia ligustrina*), pinkster-flower (*Rhododendron periclymenoides*), *Liquidambar styraciflua*, and buttonbush (*Cephalanthus occidentalis*). Sections of Laurel Branch, one of the smaller streams on the property, is largely shaded by *Tsuga canadensis* and *Rhododendron maximum*.

### Sandstone Outcrops

Sandstone outcrops, rock shelters and ledges are common on the Breaks Interstate Park's steeper slopes. Various fern species, including *Asplenium* spp. (*A. montanum*, *A. pinnatifidum*, *A. trichomanes*), *Dryopteris marginalis* and *Polypodium appalachianum* are found on these rocks. They also provide habitat for rare species such as *Adlumia fungosa*, which climbs over high sandstone cliffs above Russell Fork (VPI record). A rock shelter along a NW-facing section of Grassy Creek Trail is surrounded by *Rhododendron maximum*, *Tsuga canadensis*, *Acer rubrum*, and redbud (*Cercis canadensis*). Elsewhere, rocky, SW-facing slopes are composed of *Pinus virginiana* and *Kalmia latifolia*. A W-facing section of Prospectors Trail, located at the base of upland sandstone outcrops, supports a canopy of *Quercus rubra*, black walnut (*Juglans nigra*), and *Acer rubrum*.

### Disturbed/Open Areas

An open field off the Breaks Interstate Park's Mountain Bike Trail is mowed for hay. Herbaceous species include beaked panic grass (*Panicum anceps*), purpletop (*Tridens flavus*), ox-eye daisy (*Chrysanthemum leucanthemum*), rabbit-tobacco (*Pseudognaphalium obtusifolium*), and other grasses and forbs. The picnic shelter and field along Center Creek is mowed, but *Robinia pseudoacacia*, *Platanus occidentalis*, and *Liriodendron tulipifera* are scattered along the

streambank. Semi-open and disturbed areas on Potter's Flats and the trail/road leading from here to the Pine Mountain Trail support *Juglans nigra*, *Liriodendron tulipifera*, and multiflora rose (*Rosa multiflora*), Japanese honeysuckle (*Lonicera japonica*), Pennsylvania blackberry (*Rubus pensilvanicus*), and *Lindera benzoin*.

Roadside corridors throughout developed sections of Breaks Interstate Park act as edge habitats and support many of the species found in woodland interiors, such as *Tsuga canadensis*, *Fagus grandifolia*, *Quercus coccinea*, *Oxydendrum arboreum*, and *Acer rubrum*. Species identified along roadsides but not noticed in any other habitats include big-tooth aspen (*Populus grandidentata*), southern red oak (*Quercus falcata*), and mexican plum (*Prunus mexicana*). The State Hwy 80 roadside along the outside edge of the Park is open area composed of a variety of herbaceous species. Unfortunately, the open area is also a location where invasive species have become established, such as kudzu (*Pueraria montana*) and Japanese knotweed (*Polygonum cuspidatum*).

### **Large Trees**

Although no areas of old-growth forest were identified, many large trees do occur in Breaks Interstate Park. Species frequently found in the dbh range of 80–100 cm were beech, white oak, scarlet oak, and chestnut oak, with chestnut oak reaching the greatest sizes (about 110 cm dbh). The majority of large trees were found along the Rattlesnake Trail, which is a trail off the Mountain Bike Trail on the eastern side of the Park (Fig. 5). The area known as "Hickory Flats" near the Mountain Bike Trail was an old homestead and mostly field at one time. There are several large trees in this area where trees were not removed from the field (A. Bradley, personal communication). The majority of the park's acreage has been logged at some point in the past, with the possible exclusion of the Hickory Flats homestead and very remote areas around the Towers, a high, sandstone rock formation on the opposite side of Russell Fork from the main section of the Park.



## CHAPTER V

### DISCUSSION

#### **Flora**

The 549 different taxa identified during this study represent 93 percent of the expected species richness using the Cumberland Plateau TN Curve (Huskins and Shaw 2010), 88 percent using the Corrected KY Regional Curve (Huskins and Shaw 2010), and 86 percent using the Species Area Curve (Wade and Thompson 1991). Based on species curve calculations, the area surveyed is slightly less floristically rich than predicted. Reasons for this could be attributed to many factors: the Park is open to the public and is regularly used, an increase in invasive plants spreading into the Park is forcing out native species, and the absence of limestone geology. Overall, species richness is similar to other floristic studies conducted in the surrounding physiographic region (see Table 5). Four of these studies were selected for more detailed comparisons of major groupings (Table 6). In general the results were very similar, but Breaks Interstate Park has a considerably higher percentage of pteridophytes.

Table 5. A comparison of floristic studies conducted on the Cumberland Plateau or Cumberland Mountains.

| <b>Study</b>   | <b>Size of Study Area (hectares)</b> | <b>Number of Species Reported</b> |
|--|--------------------------------------|-----------------------------------|
| State Forest Additions, Pine Mountain, KY (McIntosh 2009)                  | 351                                  | 514                               |
| Big Everidge Hollow, KY (McEwan, et al. 2005)                              | 52                                   | 263                               |
| Lilley Cornett Woods, KY (Sole et al. 1983)                                | 220                                  | 516                               |
| Cumberland Gap National Historical Park, KY, TN, and VA (Hinkle 1975)      | 4,272                                | 566                               |
| Breaks Interstate Park, KY & VA (This Study)                               | 1,862                                | 549                               |
| North Chickamauga Creek Gorge State Natural Area, TN (Huskins & Shaw 2010) | 2,862                                | 604                               |
| Fall Creek Falls State Park, TN (Fleming & Wofford 2004)                   | 8,900                                | 879                               |

Table 6. Comparison of major groups among floristic studies conducted on the Cumberland Plateau or Cumberland Mountains.

|                 | State Forest Additions, Pine Mountain, KY (McIntosh 2009) | Lilley Cornett Woods, KY (Sole et al. 1983) | Breaks Interstate Park, KY & VA (This Study) | North Chickamauga Creek Gorge State Natural Area, TN (Huskins & Shaw 2010) | Fall Creek Falls State Park, TN (Fleming & Wofford 2004) |
|-----------------|---|---|--|--|--|
| Study Area Size | 351 Ha  | 220 Ha                                      | 1,862 Ha                                     | 2,862 Ha   | 8,900 Ha   |
| Pteridophytes   | 29 (5.6%)   | 13(2.5%)                                    | 37 (6.7%)                                    | 23 (3.8%)  | 39 (4.4%)  |
| Gymnosperms     | 7   | 6   | 6  | 5  | 7  |
| Dicotyledonae   | 380   | 382   | 394  | 439  | 637  |
| Monocotyledonae | 98  | 115   | 112  | 137  | 196  |
| Total Taxa      | 514   | 516   | 549  | 604  | 879  |

### State Conservation Species

Records provided by the KSNPC revealed known localities for the following rare species in or near Breaks Interstate Park: rock harlequin (*Corydalis sempervirens*), Allegheny chinkapin (*Castanea pumila*), threadfoot (*Podostemum ceratophyllum*), northern white cedar (*Thuja occidentalis*), narrow-leaved meadow-sweet (*Spiraea alba*), brook saxifrage (*Boykinia aconitifolia*), Allegheny-vine (*Adlumia fungosa*). The VDCR Natural Heritage program provided localities of these rare species in the vicinity of the park: roundleaf catchfly (*Silene rotundifolia*), bittercress (*Cardamine flagellifera*), shining ladies'-tresses (*Spiranthes lucida*), freshwater cordgrass (*Spartina pectinata*), nodding pogonia (*Triphora trianthophora*), red turtlehead (*Chelone obliqua*), Virginia spiraea (*Spiraea virginiana*). Five of these species were identified from the Park. *Castanea pumila*, a state threatened species in Kentucky, was found on the Virginia side of the park; however, Virginia does not have a state status for the species. Herbarium (VPI) specimens of *Adlumia fungosa* and *Silene rotundifolia* were confirmed, both

from the Virginia side of the park. *Spiranthes lucida* and *Triphora trianthophora* were found in the Virginia section.

Eleven rare species, each with a ranking from the state where found, were identified at Breaks Interstate Park. Six taxa with Kentucky rankings (*Castanea dentata*, *Castanea pumila*, *Solidago curtissii*, *Melampyrum lineare* var. *pectinatum*, *Sambucus racemosa* subspecies *pubens*, *Woodsia scopulina*) were found on the Virginia side of the park but not on the Kentucky side, and therefore, were not included in the list of rare species encountered. Below is collection information on the rare species found in the Park, including information on state rankings (Townsend 2009, KSNPC 2010), known county locations (Virginia Botanical Associates 2012, KSNPC 2006), and habitat (Jones 2005).

Climbing fumatory (*Adlumia fungosa*) - Vulnerable (S3) in VA, Endangered in KY

This collection record is from the VPI herbarium. *Adlumia fungosa* was documented climbing and sprawling over vegetation and the lower portion of high sandstone cliffs along Russell Fork, 2.4 km (1.5 miles) above Garden Hole in Dickenson County, VA. The species was abundant when Thomas F. Wieboldt collected it on 25 August 1982. The current status of the population is unknown. The species is known from 17 counties in Virginia, 2 counties in Kentucky, and historically, 2 other counties in Kentucky. Habitat for the species is sandstone outcrops and stream banks of mixed mesophytic forests.

Goldenseal (*Hydrastis canadensis*) - Vulnerable (S3) in VA, No status in KY

*Hydrastis canadensis* was collected in the rich woods of Garden Hole, Dickenson County, VA, and also on the Pine Mountain Trail, north-facing slope in a semi-open area of the woods, in Pike County, KY. The species was rarely observed during this study. The species is known from 19 counties in Virginia. Habitat is mesic forests.

Butternut (*Juglans cinerea*) - Vulnerable (S3) in VA, Threatened in KY

*Juglans cinerea* was collected from the steep, wooded, upper slope located between the State Hwy 80 pull-off and the railroad trestle over Russell Fork. It was also noted on the Pine Mountain Trail. Both locations are from Pike County, KY. The species was rarely observed during this study. The species has been recorded in 63 counties in Virginia and 17 counties in Kentucky. It is a county record for Pike County. Habitat is bottomlands, ravines, and moist slopes.

Meehan's mint (*Meehania cordata*) - Vulnerable (S3) in VA, No status in KY

This collection record is from the VPI herbarium. The specimen was collected on 14 May 1986 by Ken Markley in Garden Hole, in the rich hollow above the parking area near the river. The location is in Dickenson County, VA. The current status of the population is unknown. The species is known from 13 counties in Virginia and occurs in mesic forests.

Sweet pinesap (*Monotropis odorata*) - Vulnerable (S3) in VA, Threatened in KY

This collection record is from the VPI herbarium. Doug Ogle collected the species from Prospector's Trail, 183 meters (200 yards) south of State Line Overlook, and also at the base of a cliff along Prospector's Trail. Both records are from Dickenson County, VA, but the collection date was not recorded. The species is known from 18 counties in Virginia, and in Kentucky it is currently known from five counties and historically known in one county. Habitat consists of upland beech and oak-pine forests.

Ginseng (*Panax quinquefolius*) - Vulnerable (S3)/Apparently Secure (S4), No status in KY

This collection record is from the VPI herbarium. Ken Markley collected this specimen on 10 September 1985 along the Towers Overlook Trail to the right of a fallen chestnut log. The

current status of the population is unknown. The species has been recorded from the majority of counties in Virginia and occurs in mesic forests.

Spotted mandarin (*Prosartes maculata*) - Vulnerable (S3) in VA, Special Concern in KY

This collection record is from the VPI herbarium. It was collected in Dickenson County, VA on 14 May 1986 by Ken Markley at the cottage compound junction, along the east wood's edge. The current status of the population is unknown. The species is known from 9 counties in Virginia, currently known from 3 counties in Kentucky, and 3 counties have a historic observation in Kentucky. Habitat for the species is old-growth mesophytic woods.

Carolina saxifrage (*Saxifraga caroliniana*) - Vulnerable (S3) in VA, No status in KY

*Saxifraga caroliniana* is synonymous with *Micranthes caroliniana* (Gray) Small. The specimen was collected in Dickenson County, VA, from the N-facing slope of Garden Hole, along the trail running parallel to Russell Fork. The species has been recorded in 9 counties in Virginia. Mesic forests are habitat.

Round-leaf catchfly (*Silene rotundifolia*) - Imperiled (S2), No status in KY

This VPI herbarium specimen was collected by Thomas F. Wieboldt on 23 August 1982 in Dickenson County, VA. The specimen was found in crevices of a dry cliff face on the SW side of Russell Fork in the Breaks, 2 miles (3.2 kms) ESE of Elkhorn City. The species is known from 3 counties in Virginia. Sandstone rockhouses, ledges and cliffs are habitat.

Shining ladies'-tresses (*Spiranthes lucida*) - Critically Imperiled (S1), Threatened in KY

*Spiranthes lucida* was documented by photograph because only 1 individual was found along Russell Fork near the mouth of Camp Branch. The specimen is from Dickenson County, VA. The species was only found at this location during the study; however, it has been recorded

by other observers at various points along Russell Fork in the Park. The species is known from 10 counties in Virginia and appears to be a county record for Dickenson County. Nine counties in Kentucky have observation records for the species. Habitat for the species is stream banks.

Three-birds orchid (*Triphora trianthophora*) - Critically Imperiled (S1), No status in KY

*Triphora trianthophora* was found at the edge of flat, open, hemlock woods, next to a parking lot and sidewalk, across the road from the Park Visitor Center in Dickenson County, VA. Only one individual was found during the study. The species is known from 10 counties in Virginia. Typical habitat is mesic forests, over sandstone and limestone.

### **Exotic Species**

Of the 91 non-native species found within Breaks Interstate Park, 48 of these are considered invasive plants. Thirty-four of the 48 non-native species have been given an invasive ranking in Virginia (VDCR 2009), and 40 of the 48 have a ranking in Kentucky (Kentucky Exotic Pest Plant Council 2012; Table 7). Based on observations during sampling for this study, the invasive species most often encountered in the Park and that appear to spread readily are:

*Ailanthus altissima*, *Elaeagnus umbellata*, *Ligustrum sinense*, *Lonicera japonica*, *Polygonum cuspidatum*, *Pueraria montana*, and *Rosa multiflora*. In particular, *Polygonum cuspidatum* has spread over the shore along Russell Fork on Potter's Flats, on the Kentucky side of the Park. The Park is not currently actively managing any invasive plants. The area appearing to have the highest abundance of invasive plants is along State Hwy 80, but the Park is not currently experiencing any issues with exotic species spreading from the road right-of-way into the interior of the woods or the Park (A.Bradley, pers.comm.).

Table 7. Invasive species identified from Breaks Interstate Park. Status key: Virginia, Highly = Highly Invasive Species, Moderately = Moderately Invasive Species, Occasionally = Occasionally Invasive Species. Kentucky, Severe = Severe Threat, Significant = Significant Threat, Lesser = Lesser Threat (Kentucky Exotic Pest Plant Council 2012).

| <b>Invasive Species</b>           | <b>Status in Virginia</b> | <b>Status in Kentucky</b> |
|-----------------------------------|---------------------------|---------------------------|
| <i>Agrostis gigantea</i>          | Occasionally              | No status                 |
| <i>Ailanthus altissima</i>        | Highly                    | Severe                    |
| <i>Albizia julibrissin</i>        | Moderately                | Significant               |
| <i>Arthraxon hispidus</i>         | Moderately                | Significant               |
| <i>Barbarea vulgaris</i>          | No status                 | Lesser                    |
| <i>Chenopodium ambrosioides</i>   | No status                 | Lesser                    |
| <i>Chrysanthemum leucanthemum</i> | No status                 | Significant               |
| <i>Cichorium intybus</i>          | No status                 | Lesser                    |
| <i>Commelina communis</i>         | Occasionally              | Lesser                    |
| <i>Coronilla varia</i>            | Occasionally              | Severe                    |
| <i>Dactylis glomerata</i>         | Occasionally              | No status                 |
| <i>Daucus carota</i>              | No status                 | Significant               |
| <i>Dianthus armeria</i>           | No status                 | Lesser                    |
| <i>Echinochloa crus-galli</i>     | No status                 | Lesser                    |
| <i>Elaeagnus umbellata</i>        | Highly                    | Severe                    |
| <i>Festuca arundinacea</i>        | No status                 | Severe                    |
| <i>Glechoma hederacea</i>         | Moderately                | Significant               |
| <i>Hedera helix</i>               | Moderately                | Significant               |
| <i>Hemerocallis fulva</i>         | No status                 | Lesser                    |
| <i>Holcus lanatus</i>             | Moderately                | Lesser                    |
| <i>Ipomoea coccinea</i>           | Occasionally              | No status                 |
| <i>Ipomoea hederacea</i>          | Moderately                | Significant               |
| <i>Lapsana communis</i>           | Occasionally              | No status                 |
| <i>Lespedeza bicolor</i>          | Occasionally              | Significant               |
| <i>Ligustrum sinense</i>          | Highly                    | Severe                    |
| <i>Lonicera japonica</i>          | Highly                    | Severe                    |
| <i>Lonicera morrowii</i>          | Highly                    | Severe                    |
| <i>Lysimachia nummularia</i>      | Moderately                | No status                 |
| <i>Melilotus alba</i>             | Occasionally              | Severe                    |
| <i>Melilotus officinalis</i>      | Occasionally              | Severe                    |
| <i>Mentha × piperita</i>          | No status                 | Significant               |
| <i>Microstegium vimineum</i>      | Highly                    | Severe                    |
| <i>Paulownia tomentosa</i>        | Moderately                | Severe                    |
| <i>Perilla frutescens</i>         | Occasionally              | No status                 |
| <i>Poa pratensis</i>              | No status                 | Significant               |
| <i>Polygonum caespitosum</i>      | Moderately                | Significant               |
| <i>Polygonum cuspidatum</i>       | Highly                    | Severe                    |
| <i>Polygonum persicaria</i>       | No status                 | Significant               |
| <i>Pueraria montana</i>           | Highly                    | Severe                    |
| <i>Ranunculus bulbosus</i>        | No status                 | Lesser                    |
| <i>Rosa multiflora</i>            | Highly                    | Severe                    |
| <i>Rubus phoenicolasius</i>       | Highly                    | No status                 |



Table 7 (continued)

| <b>Invasive Species</b> | <b>Status in Virginia</b> | <b>Status in Kentucky</b> |
|-------------------------|---------------------------|---------------------------|
| <i>Rumex acetosella</i> | Moderately                | Lesser                    |
| <i>Rumex crispus</i>    | Moderately                | No status                 |
| <i>Setaria viridis</i>  | No status                 | Significant               |
| <i>Spiraea japonica</i> | Moderately                | Significant               |
| <i>Stellaria media</i>  | Moderately                | Severe                    |
| <i>Vinca minor</i>      | Occasionally              | Significant               |

Status in Virginia source: Virginia Department of Conservation and Recreation Division of Natural Heritage. 2009. Invasive alien plant species of Virginia. Status in Kentucky source: Kentucky Exotic Pest Plant Council. 2012. List of severely invasive plant threats to Kentucky.

## **Vegetation**

The communities described for Breaks Interstate Park in the Results section of this report are very similar to those previously described for the area by Smalley (1984), Braun (1950), and K uchler (1964). Vegetation descriptions by Jones (2005) for the Mixed deciduous forests and Mixed oak forests of the Appalachian uplands are also very similar to the observations in this study. Because no quantitative sampling was done, it is not possible to make more detailed comparisons to the more specific listings of communities types presented in Evans et al. (2006) and Fleming and Patterson (2012).

### **Noteworthy Habitat—Garden Hole**

Within Breaks Interstate Park, the mesic slopes of Garden Hole were found to be particularly rich in species diversity and wildflower composition. The vegetative community is especially noteworthy in the spring season when the herbaceous stratum hosts a profusion of purple trillium (*Trillium erectum*), big white trillium (*Trillium grandiflorum*), squirrel corn (*Dicentra canadensis*), dutchman's breeches (*Dicentra cucullaria*), wild ginger (*Asarum canadense*), bloodroot (*Sanguinaria canadensis*), jack-in-the-pulpit (*Arisaema triphyllum*), and many other wildflower species. Dominant canopy trees are hemlock, sugar maple, and yellow-

poplar; dominant subcanopy trees are magnolia species and rhododendron. This exceptionally diverse habitat is worthy of protection.

### **Invasive Pests**

The hemlock woolly adelgid (HWA, *Adelges tsugae*) found in eastern North America originated from southern Japan. Without the natural controls found in its native range, the HWA has become a pest by infesting hemlocks and feeding on the young twigs at base of needles (USDA Forest Service 2005, 2011). The HWA was observed on hemlocks during this study, in both Virginia and Kentucky. In Breaks Interstate Park, the pest was infecting hemlocks along the Mountain Bike Trail and the Pine Mountain Trail, but it is likely present in other areas of the Park as well. Park personnel have not witnessed much die-back from HWA infestations, but it is being monitored. If a greater infestation occurs, the Park will consider treating individual trees (A. Bradley, pers. comm.). A number of other invasive pests pose potential threats for the park's vegetation, including the Emerald Ash Borer (EAB, *Agrilus planipennis*). Ash trees are attacked and eventually killed when EAB larvae feed on the tissue between the bark and sapwood, preventing the transport of water and nutrients (McCullough and Schneeberger 2008). The EAB is not currently known to be infesting ash trees in Pike or Dickenson County (USDA 2012). The Southern pine beetle (SPB, *Dendroctonus frontalis*) attacks loblolly, shortleaf, Virginia, and pitch pines. The destructive larvae chew into the inner bark and cambian layer and can girdle the tree (University of Kentucky 2010). While Pike and Dickenson Counties are within SPB's geographic range (Coulson and Klepzig 2011), the most recent outbreak (1999-2003) does not appear to have affected pine trees at the Park to any great extent.

## CHAPTER VI

### SUMMARY AND CONCLUSION

The objectives of this research were to compile an inventory of each vascular plant species found within Breaks Interstate Park, identify locations of rare plants, and describe vegetative communities. Reasons for the study included the potential for high species richness due to varying topography and the park's location within the Mixed Mesophytic Forest. Also, the study could be useful in the park's future management plans by noting where rare species and exceptional habitats are located.

A total of 549 species, varieties and subspecies comprising 341 genera and 118 families were documented from Breaks Interstate Park. Eleven rare species with state rankings were identified. In addition, six taxa with Kentucky rankings were found on the Virginia side of the park. Communities identified were mesophytic forest, upper slopes and ridgetops, ponds/wetlands, river bottomland and floodplain/streamside, sandstone outcrops, and disturbed/open areas. The number of non-native species found was 91, and of this list, 48 species are considered invasive in either Kentucky or Virginia. While the sampling effort for this research was sufficient to obtain a representative species list, Breaks Interstate Park is very rugged, and many remote areas warrant further exploration. Additional floristic surveys, especially in areas of the park not routinely visited, would be useful and should contribute additional taxa to the inventory.

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## **APPENDIX A: FIGURES**



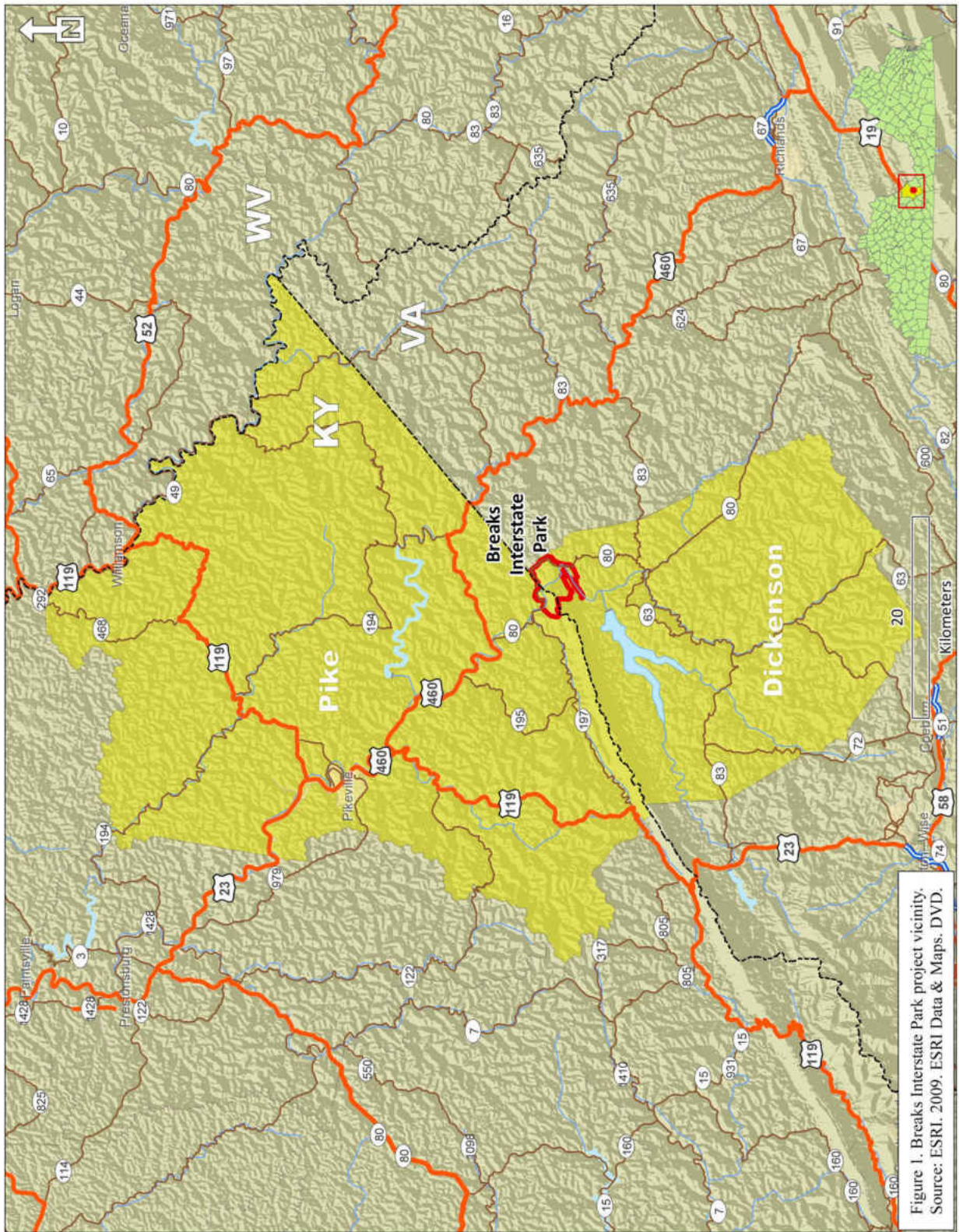


Figure 1. Breaks Interstate Park project vicinity.  
 Source: ESRI, 2009. ESRI Data & Maps, DVD.

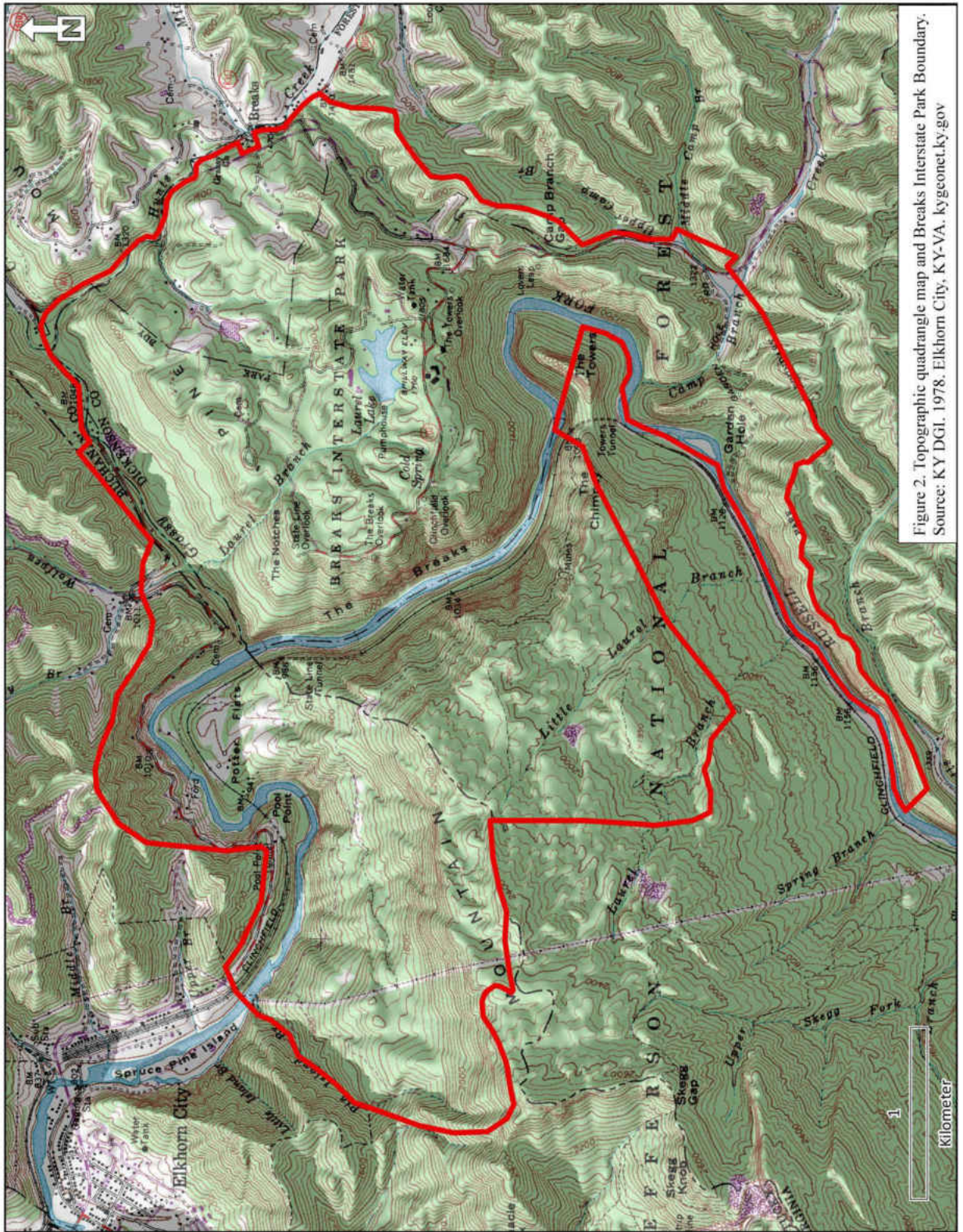


Figure 2. Topographic quadrangle map and Breaks Interstate Park Boundary. Source: KY DGI, 1978. Elkhorn City, KY-VA. kygeonet.ky.gov

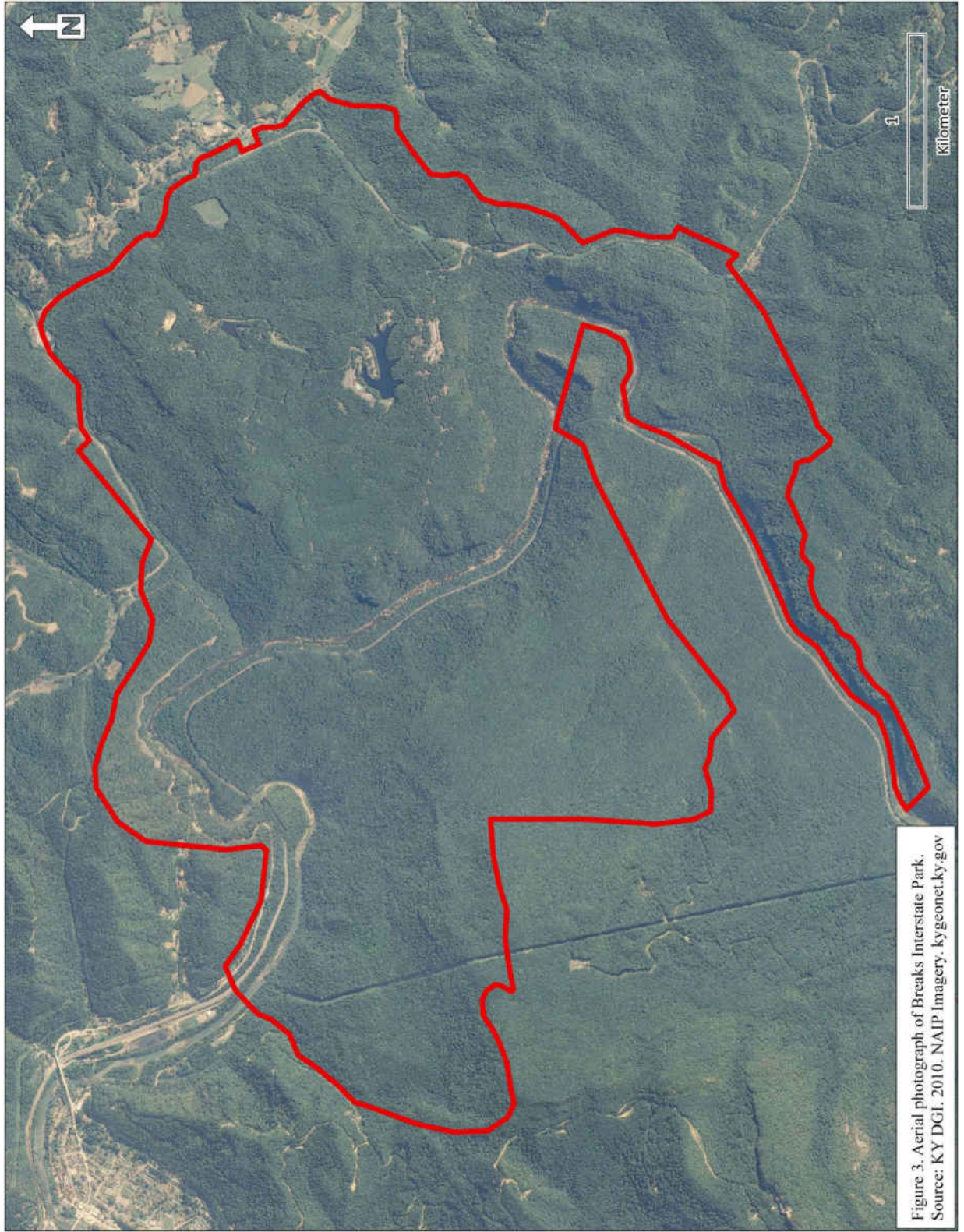
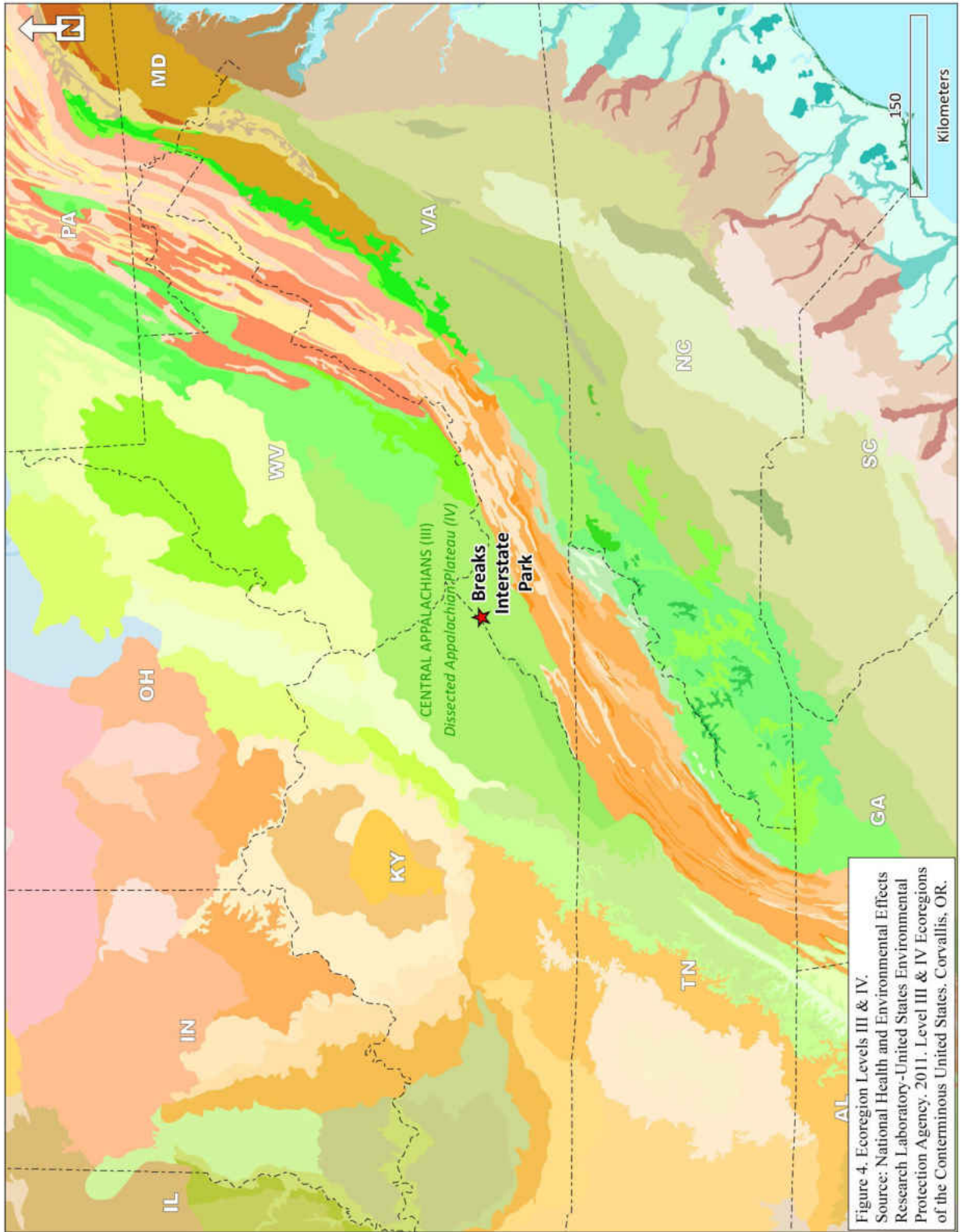
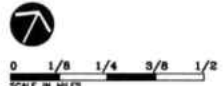
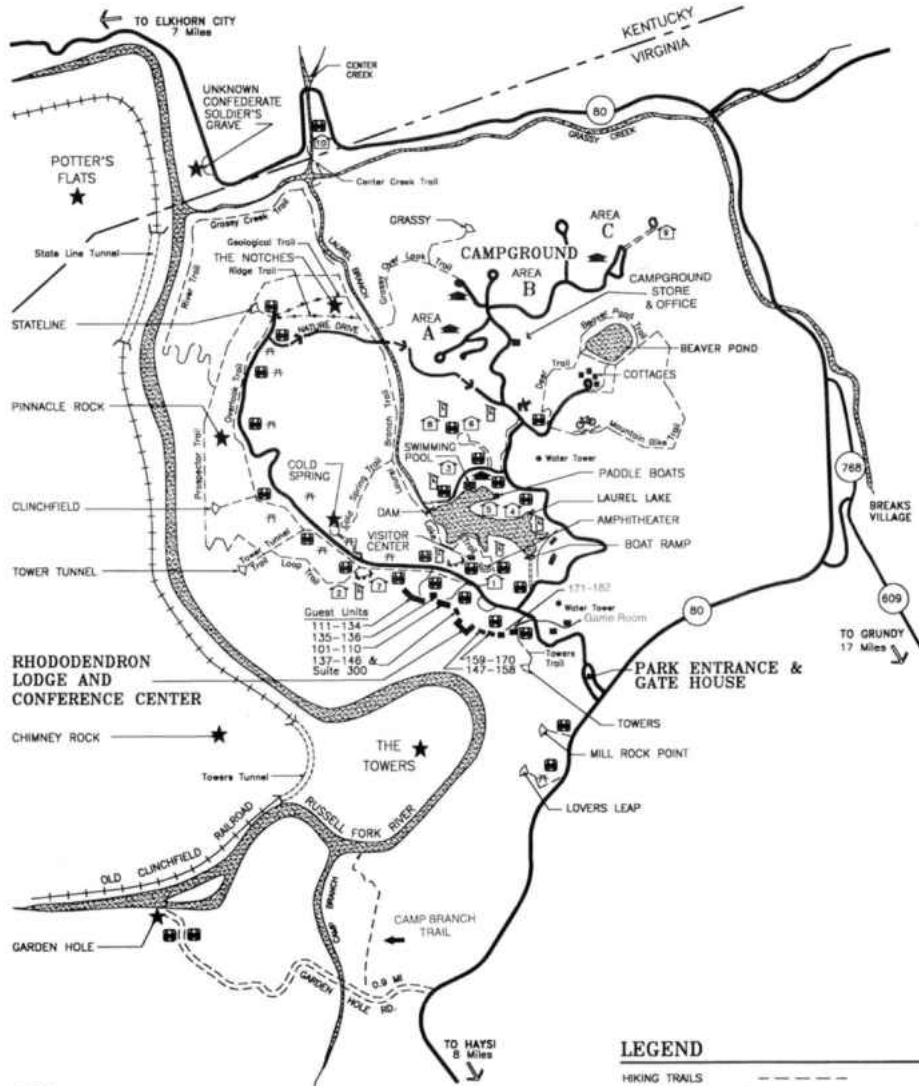


Figure 3. Aerial photograph of Breaks Interstate Park.  
Source: KY DGI, 2010. NAIP Imagery. [kygeonet.ky.gov](http://kygeonet.ky.gov)



# BREAKS INTERSTATE PARK

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 Website: www.breakspark.com  
 E-Mail: bjp@mounet.com



| DISTANCE FROM GATE HOUSE TO |           |
|-----------------------------|-----------|
| RHODODENDRON LODGE          | 0.6 MILES |
| VISITORS CENTER             | 0.7 MILES |
| CAMPGROUND STORE & OFFICE   | 1.4 MILES |
| TOWERS OVERLOOK             | 0.2 MILES |
| CLINCHFIELD OVERLOOK        | 1.0 MILES |
| STATELINE OVERLOOK          | 1.6 MILES |

**EMERGENCY**  
865-4413

## LEGEND

- HIKING TRAILS ————
- TRAILS (SELF GUIDED) —+—+—+—
- PAVED ROADS ————
- STATE ROUTE —(80)—
- ONE WAY ROAD —+—
- UNPAVED ROADS =====
- PARKING AREA [P]
- PICNIC SHELTERS [3]
- BATHHOUSE [B]
- RESTROOMS [R]
- POINT OF INTEREST [★]
- OVERLOOK [O]
- PICNIC TABLES [T]
- PLAYGROUND [G]
- HORSE STABLES [H]
- MOUNTAIN BIKE TRAIL [B]

Figure 5. Park Map  
 Source: Breaks Interstate Park. 2004. <http://www.breakspark.com/about/park-map.html>.

**APPENDIX B:**  
**An Annotated List of the Vascular Flora of Breaks Interstate Park**

## Appendix B

### An Annotated List of the Vascular Flora of Breaks Interstate Park

This list contains 549 species, varieties and subspecies comprising 341 genera and 118 families. The taxonomic arrangement and nomenclature follow Jones (2005). Within each major category (Pteridophytes, Gymnosperms, Dicotyledonae, and Monocotyledonae), the families, genera, and species are arranged alphabetically.

Each taxon's entry includes: scientific name (genus, species, author), collection number, and collection habitat and locality. Records not based on collections by the author are indicated by VPI (Virginia Tech's Massey Herbarium) or EKY (Eastern Kentucky University Herbarium).

Taxa monitored, based on KSNPC (2010) or VDCR (2009) are indicated by (!), and the state status (Endangered, Threatened, or Special Concern in KY; S1, S2, S3, or S4 in VA) given following the location description. Virginia State Status: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure.

Taxa preceded by (\*) are naturalized, non-native, or escaped from cultivation. Specified country or region of origin are taken from Jones (2005).

#### Pteridophytes

##### Aspleniaceae

*Asplenium bradleyi* D.C.Eaton.

River Trail, upriver from large rock house on rock ledge. Dickenson County, VA.  
Collected 29 June 1987 by Ken Markley. VPI.

*Asplenium montanum* Willd.

Sandstone overlook below spring along Loop Trail. Dickenson County, VA. Ken Markley, 14 September 1984. VPI.

*Asplenium pinnatifidum* Nutt.

Ciff above river near state line. Dickenson County, VA. Ken Markley, 27 September 1984. VPI.

*Asplenium platyneuron* (L.) BSP. #209

Mountain Bike Trail, forested east-facing slope. Dickenson County, VA.

*Asplenium rhizophyllum* L. #643

Prospectors Trail, at base of upland sandstone outcrop, forested west-facing slope. Dickenson County, VA.

*Asplenium trichomanes* L.

Moist, shady sandstone rocks, SW side of Russell Fork in the Breaks. Dickenson County, VA. Thomas F. Wieboldt #4441, 23 August 1982. VPI.

*Asplenium* × *trudellii* Wherry

50 feet above Russell Fork (100 yds down from state line on Potter's Flats side of river) on sandstone cliff face. Pike County, KY. Ken Markley, 11 October 1984. VPI.

Dennstaedtiaceae

*Dennstaedtia punctilobula* (Michx.) T.Moore.

Rt. 734, road slope at east end of Laurel Lake. Dickenson County, VA. Ken Markley, 14 September 1984. VPI.

*Pteridium aquilinum* (L.) Kuhn.

Dry oak-pine woods above cliff, edge of forest on overlooks. Dickenson County, VA. Ken Markley, 14 September 1984. VPI.

Dryopteridaceae

*Athyrium filix-femina* subsp. *asplenioides* (Michx.) Hulten

Just off road on knoll above maintenance area. Dickenson County, VA. Ken Markley. Date unknown. VPI.

*Cystopteris protrusa* (Weath.) Blasdell

Slope above road in Garden Hole. Dickenson County, VA. Ken Markley, 5 October 1984. VPI

*Deparia acrostichoides* (Sw.) M.Kato. #820

Camp Branch floodplain. Dickenson County, VA.

*Diplazium pycnocarpon* (Spreng.) M.Broun. #149, 358, 747

Pine Mountain Trail, northeast-facing mesic slope. Pike County, KY. On rocky hillside near parking area for Geological Trail, Dickenson County, VA.

*Dryopteris goldiana* (Hook.) A.Gray

Dickenson County, VA. Habitat and locality unknown. Ken Markley, 15 October 1984. VPI.

*Dryopteris intermedia* (Muhl. Ex Willd.) A.Gray. #223, 426

Laurel Branch Trail, NW-facing slope, mesic community of rhododendron, beech, hemlock, red maple, tulip-poplar; rocky banks and boulder substrate of Camp Branch. Dickenson County, VA.

*Dryopteris marginalis* (L.) A.Gray. #1, 190, 887

Ridgetop to Geological Trail; Prospector's Trail, NW-facing, community of hemlock, sugar maple, rhododendron. Dickenson County, VA. West side of Russell Fork, boulder/rock shelter habitat. Pike County, KY.

*Onoclea sensibilis* L. #264

Along river at the river access off State Hwy 80. Pike County, KY.

*Polystichum acrostichoides* (Michx.) Schott. #134, 662

Pine Mountain Trail, near ridgetop, NE slope, community of hemlock, witch hazel, white oak. Pike County, KY.

*Woodsia obtusa* (Spreng.) Torr.

North side of Stateline Tunnel, among crossties and boulders. Dickenson County, VA. Ken Markley, 27 September 1984. VPI.



*Woodsia scopulina* D.C.Eaton

Scattered along N-facing sandstone cliffs above Russell Fork about 1 mile above Garden Hole. Dickenson County, VA. Thomas F. Wieboldt #4484, 25 August 1982. VPI.

Equisetaceae

*Equisetum arvense* L. #98, 288

Along stream south of Garden Hole Rd. Dickenson County, VA. Along Russell Fork at the river access off State Hwy 80. Pike County, KY.

Hymenophyllaceae

*Trichomanes boschianum* Sturm. #892

Along west side of Russell Fork. Pike County, KY.

Lycopodiaceae

*Huperzia lucidula* (Michx.) Trevis. #552

Grassy Creek Trail, wooded slope. Dickenson County, VA.

*Lycopodium digitatum* Dill. #137, 317, 598

Potter's Flats Trail, N-facing slope, community of tulip-poplar, red maple, flowering dogwood, Virginia pine, sourwood. Pike County, KY. Laurel Lake Trail; Beaver Pond Trail. Dickenson County, VA.

*Lycopodium obscurum* L. #449

Grassy Overlook Trail, upland community of rhododendron, hemlock, American holly, magnolia spp. Dickenson County, VA.

Lygodiaceae

*Lygodium palmatum* (Bernh.) Sw.

East end of Laurel Lake near powerline right-of-way. Dickenson County, VA. Ken Markley, 12 August 1984. VPI.

Ophioglossaceae

*Botrychium dissectum* Spreng. #553

Grassy Creek Trail, mesic woods. Dickenson County, VA.

Osmundaceae

*Osmunda claytoniana* L. #205

Mountain Bike Trail, NE-facing, cove community dominated by spicebush. Dickenson County, VA.

*Osmunda cinnamomea* L. #886

Along west side of Russell Fork, boulders/rock shelter habitat. Pike County, KY.

*Osmunda regalis* L. #429, 779, 867

Along Russell Fork near mouth of Camp Branch and downstream at tree line. Dickenson County, VA.

Polypodiaceae

*Pleopeltis polypodioides* (L.) E.G. Andrews & Windham

On white oak in ravine about half way below State Line Tunnel. Dickenson County, VA. Ken Markley, 11 October 1984. VPI.

*Polypodium appalachianum* Haufler & Windham. #224, 427, 888  
Grassy Creek Trail, NW-facing, on rock shelter, community of rhododendron, hemlock, red maple, redbud; rocky banks and boulder substrate of Camp Branch. Dickenson County, VA. Along west side of Russell Fork, boulder/rock shelter habitat. Pike County, KY.

#### Pteridaceae

*Adiantum pedatum* L. #90, 704  
Garden Hole Trail, N-facing slope, rich woods; Rattlesnake Trail, NW-facing, community of tulip-poplar, spicebush, sugar maple. Dickenson County, VA.

*Cheilanthes lanosa* (Michx.) D.C.Eaton  
Below very dry cliffs off State Hwy 80. Pike County, KY. Ken Markley, 15 October 1984. VPI.

#### Selaginellaceae

*Selaginella apoda* (L.) Spring  
Center Creek below shelter. Pike County, KY. Ken Markley, 15 October 1984. VPI.

#### Thelypteridaceae

*Phegopteris hexagonoptera* (Michx.) Fee. #771, 840  
Potter's Flats along Russell Fork. Pike County, KY. Near beginning of Mountain Bike Trail, E-facing, community of tulip-poplar, red maple. Dickenson County, VA.

*Thelypteris noveboracensis* (L.) Nieuwl. #361, 458, 730  
Pine Mountain Trail, N-facing, community of tulip-poplar, sugar maple, pawpaw, beech; along stream by horse stables. Pike County, KY. Rattlesnake Trail, community of tulip-poplar, pawpaw, spicebush; Deer Trail in bottomland woods. Dickenson County, VA.

### **Gymnosperms**

#### Cupressaceae

*Juniperus virginiana* L. #15, 729, 891  
Near lodge/shelters; Beaver Pond. Dickenson County, VA. Along railroad tracks. Pike County, KY.

#### Pinaceae

\**Picea abies* (L.) H.Karst. #607, 6  
Along Beaver Pond. Dickenson County, VA.  
Cultivated specimen.

*Pinus rigida* Mill  
Below Pinnacle Rock, Overlook Trail. Dickenson County, VA. Ken Markley, 24 May 1986. VPI.

*Pinus strobus* L. #339  
Laurel Lake Trail. Dickenson County, VA.

*Pinus virginiana* Mill. #19  
Tower overlook. Dickenson County, VA.

*Tsuga canadensis* (L.) Carriere. #13  
Near lodge. Dickenson County, VA.

## **Dicotyledonae**

### Acanthaceae

*Justicia americana* (L.) Vahl. # 374, 423, 868  
Trail along Grassy Creek; along Russell Fork near mouth of Camp Branch. Dickenson County, VA. Gravel bar in Russell Fork, downstream from Grassy Creek confluence. Pike County, KY.

### Aceraceae

*Acer negundo* L.  
Breaks Interstate Park. Dickenson County, VA. Ken Markley, 24 November 1986. VPI.

*Acer nigrum* F.Michx.  
Garden Hole, rich hollow, 150 yards from road, up (dry) creek bed. Dickenson County, VA. Ken Markley, 27 June 1986. VPI.

*Acer pensylvanicum* L. #125  
Prospector's Trail, community of rhododendron, witch hazel, striped maple, chestnut oak, northern red oak. Dickenson County, VA.

*Acer rubrum* L. #18  
Tower overlook, ridgetop. Dickenson County, VA.

*Acer saccharum* Marshall. #527  
Pine Mountain Trail, wooded slope. Pike County, KY.

### Amaranthaceae

*Amaranthus spinosus* L. #626  
Dry hillside by stables. Dickenson County, VA.

### Anacardiaceae

*Rhus copallina* L. #329, 499, 571  
Laurel Lake Trail; Beaver Pond, along pond and road. Dickenson County, VA.

*Rhus typhina* L. #245  
Along State Hwy 80 roadside at pulloff. Pike County, KY.

*Toxicodendron radicans* (L.) Kuntze. #185  
Pine Mountain Trail, near ridgetop, NE slope, community of hemlock, witch hazel, white oak. Pike County, KY.

### Annonaceae

*Asimina triloba* (L.) Dunal. #124  
Prospector's Trail, community of magnolia sp. pawpaw, flowering dogwood, white ash, tulip-poplar, red oak sp., striped maple, red maple, sweet birch. Dickenson County, VA.

### Apiaceae

*Cryptotaenia canadensis* (L.) DC. #710  
Garden Hole along Russell Fork. Dickenson County, VA.

\**Daucus carota* L. #262  
Along river at the river access off Rt 80. Pike County, KY.  
Naturalized from Eurasia.

*Erigenia bulbosa* (Michx.) Nutt.  
Along Russell Fork at Garden Hole. Dickenson County, VA. D.W. Ogle & C.H. Owens,  
30 March 1979. VPI.

*Osmorhiza claytonia* (Michx.) C.B. Clarke. #240, 263  
Steep wooded slope between State Hwy 80 and railroad trestle over river; along river at  
the river access. Pike County, KY.

*Sanicula canadensis* L. #239  
Steep wooded slope between State Hwy 80 and railroad trestle. Pike County, KY.

*Taenidia integerrima* (L.) Drude  
Highest point on Garden Hole road. Dickenson County, VA. Ken Markley, 14 May 1986.

*Thaspium barbinode* (Michx.) Nutt. #160  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

### Apocynaceae

*Apocynum cannabinum* L. #372, 866  
Along State Hwy 80 roadside on east side of park; along Russell Fork, downstream from  
mouth of Camp Branch. Dickenson County, VA.

\**Vinca minor* L. #9  
Along park entrance road. Dickenson County, VA.  
Introduced from Europe.

### Aquifoliaceae

*Ilex opaca* Aiton. #22, 138  
Ridgetop community along Ridge Trail. Dickenson County, VA. N-facing slope on  
Potter's Flats Trail, community of tulip-poplar, sugar maple, hickory spp. Pike County,  
KY.

*Ilex verticillata* (L.) A. Gray. #713, 826, 890  
West bank of Russell Fork, near Towers Tunnel, community of black locust, sycamore,  
silky dogwood; along Russell Fork, downstream from mouth of Camp Branch.  
Dickenson County, VA.

### Araliaceae

*Aralia racemosa* L. #505  
Garden Hole, trail parallel to river, rich woods. Dickenson County, VA.

*Aralia spinosa* L. #606

By road at woodland edge across from head of Mountain Bike Trail. Dickenson County, VA.

\**Hedera helix* L. #9b

Along park entrance road. Dickenson County, VA.  
Introduced from Europe.

!*Panax quinquefolius* L.

Towers Overlook Trail to the right of fallen chestnut log. Dickenson County, VA. Ken Markley, 10 September 1985. VPI. S3/S4 Status.

#### Aristolochiaceae

*Aristolochia macrophylla* Lam. #599

Garden Hole, rich woods. Dickenson County, VA.

*Asarum canadense* L. #68

Garden Hole, rich woods. Dickenson County, VA.

*Hexastylis virginica* (L.) Small. #654

Pine Mountain Trail, upland hillside, NE-facing, canopy of tulip-poplar, hemlock, sugar maple. Pike County, KY.

#### Asclepiadaceae

*Asclepias quadrifolia* Jacq. #181

Gravel path looping from water tank to main road, upland community of hemlock, red maple, scarlet oak. Dickenson County, VA.

*Asclepias syriaca* L. #290, 378

Along Center Creek in picnic area. Pike County, KY; shore at confluence of Grassy Creek and Russell Fork. Dickenson County, VA.

*Asclepias tuberosa* L.

Potter's Flats, 100 yards from railroad bridge. Dickenson County, VA. Ken Markley, 3 July 1986. VPI.

#### Asteraceae

*Achillea millefolium* L. #211, 400

Beaver Pond Trail, community of sassafras, beech, sourwood, hemlock, dogwood; grassy opening in woods off road leading to stables. Dickenson County, VA.

*Ageratina altissima* (L.) R.M.King & H.Rob. #536

Trail from State Hwy 80 to railroad trestle over Russell Fork River to Potters Flats. Pike County, KY.

*Ambrosia artemisiifolia* L. #557

State Hwy 80 roadside at head of trail leading down to railroad trestle. Pike County, KY.

*Ambrosia trifida* L.

State Hwy 80 between park village, Rt. 768 and park entrance Rt. 702. Dickenson County, VA. Kenneth T. Markley, 5 September 1986. VPI.

*Antennaria solitaria* Rydb. #640

Prospectors Trail, upland wood of pine and mountain laurel, on rocks, SW-facing slope. Dickenson County, VA.

*Arnoglossum atriplicifolium* (L.) H. Rob.

Old road below Beaver pond, near horse stable. Dickenson County, VA. Kenneth T. Markley, 26 August 1987. VPI.

*Bidens bipinnata* L.

Stateline Overlook parking area at head of Ridge Trail. Dickenson County, VA. Kenneth T. Markley, 2 September 1986. VPI.

*Bidens frondosa* L. #808

Laurel Lake. Dickenson County, VA.

\**Chrysanthemum leucanthemum* L. #210, 368, 696

Mountain Bike Trail, E-facing, community of tulip-poplar, sugar maple, red maple, flowering dogwood; grassy opening in woods off road leading to stables; along State Hwy 80 roadside on east side of park; open field off Rattlesnake Trail. Dickenson County, VA.

Naturalized from Eurasia.

\**Cichorium intybus* L. #367

Along State Hwy 80 roadside on east side of park. Dickenson County, VA.

Naturalized from Europe.

*Cirsium discolor* (Muhl. ex Willd.) Spreng. #493

Along Beaver Pond and road next to pond. Dickenson County, VA.

*Conoclinium coelestinum* (L.) DC. #521, 769

Along Camp Branch. Dickenson County, VA. Potter's Flats along Russell Fork. Pike County, KY.

*Coreopsis major* Walter. #351, 409, 732

Pine Mountain Trail, W-facing slope, community of sugar maple, hickory sp., hemlock, flowering dogwood, white oak; along Russell Fork and road along river at river access off State Hwy 80. Pike County, KY. Trail to Clinchfield Overlook. Dickenson County, VA.

*Doellingeria infirma* (Michx.) Nees. #872

Prospectors Trail, SW-facing with witch hazel, chestnut oak. Dickenson County, VA.

*Elephantopus carolinianus* Raeusch. #452

Open field by Beaver Pond. Dickenson County, VA.

*Erigeron annuus* (L.) Pers. #357

Pine Mountain Trail. Pike County, KY.

*Erigeron philadelphicus* L. #80, 141  
Garden Hole Trail, N-facing slope. Dickenson County, VA. Open area along trail leading to Pine Mountain Trail, bordered by young woods of *Rubus* spp., *Rosa* spp., and tulip-poplar seedlings. Pike County, KY.

*Erigeron pulchellus* Michx.  
Maintenance area road at south entrance. Dickenson County, VA. Kenneth T. Markley, 12 May 1986. VPI.

*Erigeron strigosus* Muhl. ex Willd. #252, 453, 869  
In woods between State Hwy 80 and railroad trestle over river. Pike County, KY. Along Garden Hole Road; along road by horse stables; along Russell Fork near mouth of Camp Branch. Dickenson County, VA.

*Eupatorium fistulosum* Barratt. #432  
Along Russell Fork near mouth of Camp Branch. Dickenson County, VA.

*Eupatorium perfoliatum* L. #430, 476  
Along Russell Fork near mouth of Camp Branch; along Russell Fork near confluence with Grassy Creek. Dickenson County, VA.

*Eupatorium purpureum* L. #796, 805  
River Trail; woods along park road and near lodges. Dickenson County, VA.

*Eupatorium serotinum* Michx. #484, 800  
Along road parallel to Russell Fork at river access. Pike County, KY. Mountain Bike Trail/Rattlesnake Trail. Dickenson County, VA.

*Eurybia divaricata* (L.) G.L.Nesom. #510, 765, 806  
Along trail in Garden Hole; woods along park road and near lodges. Dickenson County, VA. Potter's Flats along Russell Fork. Pike County, KY.

\**Galinsoga parviflora* Cav. #403, 463, 589  
Low spot in open woods near stables; along road by stables. Dickenson County, VA. Naturalized from tropical America.

*Helenium autumnale* L. #470, 788, 824  
Along park road; Russell Fork/Grassy Creek Confluence, along shore; along Russell Fork, downstream from mouth of Camp Branch. Dickenson County, VA.

*Helianthus divaricatus* L. #440  
Along State Hwy 80 roadside. Dickenson County, VA.

*Helianthus microcephalus* Torr. & A.Gray. #475, 489, 509, 787  
Along Russell Fork near confluence with Grassy Creek; along trail in Garden Hole. Dickenson County, VA. Along road parallel to Russell Fork at river access. Pike County, KY.

*Hieracium caespitosum* Dumort. #332, 464  
Laurel Lake Trail; along road by campground store. Dickenson County, VA.

*Hieracium venosum* L. #118  
Prospector's Trail, community of chestnut oak, tulip-poplar, mountain-laurel, red maple.  
Dickenson County, VA.

*Ionactis linariifolius* (L.) Greene  
On sandstone ledges above Russell Fork in rock crevices, about 300 feet downstream  
from mouth of Camp Branch. Dickenson County, VA. Kenneth Markley, 1 September  
1988. VPI.

*Krigia biflora* (Walter) S.F.Blake. #168, 180  
Path leading up hillside to water tank, S-facing slope, community of hemlock, sourwood,  
rhododendron, red maple. Dickenson County, VA.

*Lactuca floridana* (L.) Gaertn. #801  
Mountain Bike Trail/Rattlesnake Trail. Dickenson County, VA.

\**Lapsana communis* L. #231  
Steep wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.  
Adventive from Eurasia.

*Packera anonyma* (Alph. Wood) W.A.Weber & A.Love. #167b, 253  
Steep wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

*Packera aurea* (L.) A.Love & D.Love. #57, 102, 167  
Along park entrance road; along Camp Branch, south of Garden Hole Rd. Dickenson  
County, VA.

*Packera obovata* (Muhl. ex Willd.) W.A.Weber & A.Love. #5  
Along park entrance road. Dickenson County, VA.

*Pityopsis graminifolia* (Michx.) Nutt.  
Clinchfield Overlook. Dickenson County, VA. D.W. Ogle, 18 September 1983. VPI.

*Polymnia canadensis* L. #188, 784  
River Trail, W-facing, community of northern red oak, shagbark hickory, chestnut oak; at  
edge of woods. Dickenson County, VA. Uphill from Center Creek. Pike County, KY.

*Prenanthes altissima* L. #535, 852  
Russell Fork River/Potters Flats. Pike County, KY. Abandoned road at Lover's Leap  
Overlook, open area with road cut in rock outcrops. Dickenson County, VA.

*Pseudognaphalium obtusifolium* (L.) Hilliard & B.L.Burt. #560, 844  
Open meadow off Mountain Bike Trail. Dickenson County, VA.

*Rudbeckia hirta* L. #370, 462, 466  
Along State Hwy 80 roadside on east side of park; on hillside by Laurel Lake; along road  
by campground store. Dickenson County, VA.

*Rudbeckia laciniata* L. #421, 459, 524  
Along Russell Fork near mouth of Camp Branch; along road by horse stables; along  
Camp Branch. Dickenson County, VA.



*Sericocarpus asteroides* (L.) BSP.

Breaks Interstate Park. Dickenson County, VA. Ken Markley. Date unknown. VPI.

*Smallanthus uvedalius* (L.) Mack. #408, 741, 767

Along Russell Fork and road parallel to river at river access; Potter's Flats along Russell Fork. Pike County, KY.

*Solidago caesia* L. #542, 594, 842

Wooded hillside leading down to railroad trestle. Pike County, KY. Along gravel road leading to stables; woods along park road and near lodges; Mountain Bike Trail, NW-facing, community of red maple, pignut hickory. Dickenson County, VA.

*Solidago canadensis* L. #479, 487, 563

Along Garden Hole Road; along Laurel Lake; in drain, upstream from Beaver Pond. Dickenson County, VA. Along road parallel to Russell Fork at river access. Pike County, KY.

*Solidago curtisii* Torr. & A.Gray. #468

Along roadside in main section of park. Dickenson County, VA.

*Solidago faucibus* Wieboldt. #507, 832

Along trail in Garden Hole. Dickenson County, VA. Along Center Creek streambank. Pike County, KY.

*Solidago flexicaulis* L. #502, 605, 794

Along trail in Garden Hole; River Trail. Dickenson County, VA.

*Solidago nemoralis* Aiton. #520

Along Camp Branch. Dickenson County, VA.

*Solidago odora* Aiton. #819

Camp Branch floodplain. Dickenson County, VA.

*Solidago rugosa* Mill. #811

Camp Branch floodplain. Dickenson County, VA.

*Solidago speciosa* Nutt. #847

Edge of open meadow and dry woods off Mountain Bike Trail. Dickenson County, VA.

*Solidago sphacelata* Raf. #738

River access off State Hwy 80. Pike County, KY.

*Solidago ulmifolia* Muhl. #486

Along road parallel to Russell Fork at river access. Pike County, KY.

*Symphyotrichum cordifolium* (L.) G.L.Nesom. #554, 601, 851

Grassy Creek Trail leading to Russell Fork; trail in Garden Hole; abandoned road at Lover's Leap Overlook, open area with road cut in rock outcrops. Dickenson County, VA. Steep, wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

*Symphyotrichum divaricatum* (Nutt.) G.L.Nesom. #504  
Along trail in Garden Hole. Dickenson County, VA.

*Symphyotrichum dumosum* (L.) G.L.Nesom. #825  
Along Russell Fork, downstream from mouth of Camp Branch. Dickenson County, VA.

*Symphyotrichum lateriflorum* (L.) A.Love & D.Love. #600, 603, 843  
Garden Hole; Mountain Bike Trail, NE-facing slope, community of white oak, scarlet oak, hemlock. Dickenson County, VA.

*Symphyotrichum lowrianum* (Porter) G.L.Nesom. #602, 608  
Garden Hole. Dickenson County, VA.

*Symphyotrichum ontarione* (Wiegand) G.L.Nesom  
Collected from southern edge of island at Garden Hole, in cobbles and sand. Dickenson County, VA. John F. Townsend #4097. 16 September 2008. VPI.

*Symphyotrichum phlogifolium* (Muhl. ex Willd.) G.L.Nesom  
NE corner of Breaks Park, open sandstone slope. Buchanan County, VA. R. Kral #14232, 14 September 1961. VPI.

*Symphyotrichum pilosum* (Willd.) G.L.Nesom  
Breaks Interstate Park roadside. Dickenson County, VA. D.W. Ogle, 17 October 1981. VPI.

*Symphyotrichum prenanthoides* (Muhl. ex Willd.) G.L.Nesom. #551, 616, 813  
Grassy Creek Trail leading to Russell Fork; along horse trail; Camp Branch floodplain. Dickenson County, VA.

*Symphyotrichum undulatum* (L.) G.L.Nesom. #592  
Trail around Beaver Pond. Dickenson County, VA.

*Symphyotrichum urophyllum* (DC) G.L.Nesom. #558  
Trail around Beaver Pond. Dickenson County, VA.

\**Taraxacum officinale* (L.) Weber. #14  
Weedy community near lodge. Dickenson County, VA.  
Naturalized from Eurasia.

\**Tussilago farfara* L. #6, 633  
Side road near park entrance. Garden Hole hillside, near river. Dickenson County, VA.  
Naturalized from Europe.

*Verbesina alternifolia* (L.) Britton. #491, 802, 810  
Along road parallel to Russell Fork at river access. Pike County, KY. Mountain Bike Trail/Rattlesnake Trail; Camp Branch floodplain. Dickenson County, VA.

*Verbesina occidentalis* (L.) Walter. #540, 562  
Potters Flats vicinity. Pike County, KY. Along Beaver Pond. Dickenson County, VA.

*Vernonia gigantea* (Walter) Trel. #482, 495  
Along road parallel to Russell Fork at river access. Pike County, KY. Along Beaver Pond and road next to pond. Dickenson County, VA.

#### Balsaminaceae

*Impatiens capensis* Meerb. #436  
Along Garden Hole Road. Dickenson County, VA.

*Impatiens pallida* Nutt. #457, 506  
Along stream by horse stables; along trail in Garden Hole. Dickenson County, VA.

#### Berberidaceae

*Caulophyllum giganteum* (Farw.) Loconte & W.H.Blackw. #650  
Garden Hole, on W-facing upper hillslope with hemlock and maple spp. Dickenson County, VA.

*Podophyllum peltatum* L. #31, 666  
Lake Trail; Mountain Bike Trail in young woods with flowering dogwood, spicebush, red maple, tulip-poplar. Dickenson County, VA.

#### Betulaceae

*Alnus serrulata* (Aiton) Willd. #281, 412  
Along Russell Fork and road parallel to river at river access. Pike County, KY.

*Betula alleghaniensis* Britton  
East boundary of Breaks Interstate Park, on sandy slope. Dickenson County, VA.  
R. Kral #12661, 14 June 1961. VPI.

*Betula lenta* L. #3, 284, 580  
Ridge and Geological Trails; open field near Beaver Pond. Dickenson County, VA.  
Along Russell Fork at river access off State Hwy 80. Pike County, KY.

*Betula nigra* L. #513  
Along Laurel Lake. Dickenson County, VA.

*Carpinus caroliniana* Walter. #282, 529  
Along Russell Fork at the river access; steep wooded trail from State Hwy 80 to railroad trestle. Pike County, KY.

*Corylus americana* Walter. #569, 596  
Trail around Beaver Pond. Dickenson County, VA.

*Ostrya virginiana* (Mill.) K.Koch.  
Breaks Interstate Park on Russell Fork downstream from mouth of Camp Branch.  
Dickenson County, VA. D.W. Ogle, 29 June 1987. VPI.

#### Bignoniaceae

*Bignonia capreolata* L. #222, 753  
Grassy Creek Trail, NW-facing, rocky, community of rhododendron, hemlock, red maple, redbud. Dickenson County, VA. Pine Mountain Trail, N-facing, with sugar maple and basswood. Pike County, KY.

*Campsis radicans* (L.) Seem. ex Bureau. #291, 379  
Along Center Creek at Center Creek trailhead. Pike County, KY.

\**Paulownia tomentosa* (Thunb.) Steud. #109  
Parking lot and steps at overlook off State Hwy 80. Pike County, KY.  
Naturalized from China.

#### Boraginaceae

*Cynoglossum virginianum* L.  
Between log cabin and amphitheater. Dickenson County, VA. Ken Markley, 12 May 1986. VPI.

*Myosotis verna* Nutt. #171  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw, spicebush, American hornbeam. Dickenson County, VA.

#### Brassicaceae

\**Barbarea vulgaris* R.Br. #140, 672, 677  
Open area along trail (leading to Pine Mountain Trail), bordered by young woods of *Rubus* spp., *Rosa* spp., and tulip-poplar seedlings; Potter's Flats, along Russell Fork, with abundant young sycamore and Japanese knotweed. Pike County, KY.  
Naturalized from Eurasia.

\**Brassica juncea* (L.) Czern. #679  
Potter's Flats, along Russell Fork, with abundant young sycamore and Japanese knotweed. Pike County, KY.  
Adventive from Asia.

\**Brassica rapa* L. #32, 56  
State Hwy 80 roadside between park entrance and Garden Hole. Dickenson County, VA.  
Introduced from Europe.

*Cardamine douglassii* (Torr.) Britton. #860  
Along Russell Fork at the river access. Pike County, KY.

\**Cardamine hirsuta* L. #11, 646  
Near rock wall along park entrance road; Cold Spring Trail, open area next to parking lot. Dickenson County, VA.  
Naturalized from Eurasia.

*Cardamine pensylvanica* Muhl. ex Willd. #721  
Along Center Creek. Pike County, KY.

*Cardamine rotundifolia* Michx.  
Collected from large rock within bed of Camp Branch. This stream part of NW-facing, mesic slope, southeast of Russell Fork. Dickenson County, VA. John F. Townsend #3990, 2 June 2008. VPI.

*Dentaria diphylla* Michx. #70  
Garden Hole. Dickenson County, VA.

*Dentaria laciniata* Muhl. ex Willd. #636  
Garden Hole, on wooded hillside near river. Dickenson County, VA.

\**Draba verna* L. #8  
Along park entrance road. Dickenson County, VA.  
Naturalized from Eurasia.

*Lepidium virginicum* L. #107  
Parking lot and steps at overlook off State Hwy 80. Pike County, KY.

\**Rorippa sylvestris* (L.) Besser. #275, 278  
Along Russell Fork at the river access. Dickenson County, VA.  
Adventive from Eurasia.

\**Sinapsis arvensis* L. #196  
Stables area along open, grassy road, stream and wall. Dickenson County, VA.  
Adventive from Europe.

\**Sisymbrium officinale* L. #195  
Stables area along open, grassy road, stream and wall. Dickenson County, VA.  
Naturalized from Eurasia.

\**Thlaspi alliaceum* L. #881  
River access, in Russell Fork floodplain. Pike County, KY.  
Naturalized from Europe.

### Campanulaceae

*Campanula divaricata* Michx. #762  
Steep, wooded hillside off State Hwy 80 leading down to railroad trestle. Pike County, KY.

*Campanulastrum americanum* (L.) Small. #752  
Pine Mountain Trail, N-facing, community of sugar maple and basswood. Pike County, KY.

*Lobelia cardinalis* L. #434, 781  
Along Center Creek in picnic shelter area; along Russell Fork with sycamore, rhododendron, beech, hemlock. Pike County, KY.

*Lobelia inflata* L. #399, 537, 750  
Grassy opening in woods off road leading to stables; head of Cold Spring Trail near parking area; Mountain Bike Trail/Rattlesnake Trail. Dickenson County, VA. Trail near railroad, leading up to Pine Mountain Trail, NE-facing, young forest of tulip-poplar and black locust. Pike County, KY.

*Lobelia siphilitica* L. #478, 816  
Along Garden Hole Road; Camp Branch floodplain. Dickenson County, VA.

*Triodanis perfoliata* (L.) Nieuwl. #200, 695  
Bottomland, open area along old road near stables with black walnut and tulip-poplar; flat, open field off Rattlesnake Trail. Dickenson County, VA.

### Caprifoliaceae

\**Lonicera japonica* Thunb. #145, 485

Trail off railroad tracks leading to Pine Mountain Trail, open, young-growth woods dominated by black walnut and *Rosa* spp.; along road parallel to Russell Fork at river access. Pike County, KY.  
Naturalized from Asia.

\**Lonicera morrowii* A.Gray. #63, 319, 336

At park entrance sign and roadside; Laurel Lake Trail. Dickenson County, VA.  
Naturalized from Japan.

*Sambucus canadensis* L. 236

Along State Hwy 80 roadside at pulloff. Pike County, KY.

*Sambucus racemosa* subsp. *pubens* (Michx.) House

Prospectors Trail, 0.25 miles from Laurel Branch. Several shrubs with fruit along trail. Dickenson County, VA. Ken Markley, 25 June 1987. VPI.

*Viburnum acerifolium* L. #123, 136

Prospector's Trail, community of red maple, hickory sp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut. Dickenson County, VA. Potter's Flats Trail leading to Pine Mountain Trail, N-facing slope, community of tulip-poplar, red maple, flowering dogwood, Virginia pine, sourwood. Pike County, KY.

*Viburnum cassinoides* L. #862, 902

Along Russell Fork, downstream from mouth of Camp Branch; along west side of Russell Fork. Dickenson County, VA.

*Viburnum dentatum* L. #863, 900

Along Russell Fork, downstream from mouth of Camp Branch; along west side of Russell Fork. Dickenson County, VA.

*Viburnum prunifolium* L.

Gorge of Russell Fork below the Towers Dickenson County, VA. D.W. Ogle & Ken Markley, 2 September 1987. VPI.

### Caryophyllaceae

\**Cerastium glomeratum* Thuill. #880

In weedy area of road by stables. Dickenson County, VA.  
Naturalized from Eurasia.

\**Dianthus armeria* L. #699, 718

Flat, open field off Rattlesnake Trail; along Russell Fork at confluence with Grassy Creek, river birch community. Dickenson County, VA.  
Naturalized from Europe.

\**Saponaria officinalis* L. #407, 474, 766

Along Russell Fork and road in river access; Potter's Flats along Russell Fork. Pike County, KY. Along Russell Fork near confluence with Grassy Creek, along shore. Dickenson County, VA.  
Naturalized from Eurasia.

! *Silene rotundifolia* Nutt.

Crevices of dry cliff face, SW-side of Russell Fork in the Breaks. Dickenson County, VA. Thomas F. Wieboldt #4445, 23 August 1982. VPI. S2 Status.

*Silene virginica* L. #82

Garden Hole Trail, N-facing slope. Dickenson County, VA.

\* *Stellaria media* (L.) Vill. #144, 644, 719

Trail off railroad tracks leading to Pine Mountain Trail, open woods dominated by tulip-poplar and black walnut. Pike County, KY. Prospectors Trail, at base of upland sandstone outcrop, on rock, W-facing, community of red oak, walnut, red maple; along Russell Fork at confluence with Grassy Creek, river birch community; weedy area of road by stables. Dickenson County, VA.

Naturalized from Eurasia.

*Stellaria pubera* Michx. #37, 42, 649

Garden Hole, roadside hillslope; Lake Trail. Dickenson County, VA.

#### Celastraceae

*Euonymus americanus* L. #177, 254, 673

S-facing hill along roadside, at path to water tank. Dickenson County, VA. Hillside trail leading from State Hwy 80 to railroad bridge. Pike County, KY.

#### Chenopodiaceae

\* *Chenopodium ambrosioides* L. #624

By horse stables. Dickenson County, VA.

Naturalized from tropical America.

*Chenopodium simplex* (Torr.) Raf. #187

River Trail, W-facing, community of northern red oak, shagbark hickory, chestnut oak. Dickenson County, VA.

#### Clethraceae

*Clethra acuminata* Michx. # 198, 320, 356

Stables area along grassy road; Laurel Lake Trail. Dickenson County, VA. Pine Mountain Trail. Pike County, KY.

#### Clusiaceae

*Hypericum punctatum* Lam. #397, 590, 754

Grassy opening in woods off road to stables; along Russell Fork near mouth of Camp Branch; bottomland open woods next to gravel road, near stables. Dickenson County, VA. Pine Mountain Trail, N-facing, community of sugar maple and basswood. Pike County, KY.

*Hypericum stragulum* W.P.Adams & N.Robson. #251, 401, 870

Wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY. NE-facing, gentle slope down to Beaver Pond; open woods next to rooms. Dickenson County, VA.

#### Convolvulaceae

*Calystegia sepium* (L.) R.Br. #294

Center Creek in picnic area. Pike County, KY.

\**Ipomoea coccinea* L. #490

Weedy area near Russell Fork at river access. Pike County, KY.  
Naturalized from tropical America.

\**Ipomoea hederacea* Jacq.

Garden near cottages. Dickenson County, VA. Ken Markley, 6 October 1986. VPI.  
Naturalized from tropical America.

*Ipomoea lacunosa* L.

Garden near cottages. Dickenson County, VA. Ken Markley, 6 October 1986. VPI.

*Ipomoea pandurata* (L.) G.Mey. #416, 492

Along Russell Fork streambank at river access. Pike County, KY.

#### Cornaceae

*Cornus alternifolia* L.f. #112

Garden Hole, rich woods. Dickenson County, VA.

*Cornus amomum* Mill. #220, 259, 716

Confluence of Grassy Creek and Russell Fork, on shore; along Russell Fork near mouth of Camp Branch. Dickenson County, VA. Along Russell Fork at river access. Pike County, KY.

*Cornus florida* L. #65

Roadside at head of Overlook Trail. Dickenson County, VA.

#### Crassulaceae

*Sedum ternatum* Michx. #53, 433

Prospector's Trail near Laurel Branch Trail; rocky banks and boulder substrate of Camp Branch. Dickenson County, VA.

#### Cucurbitaceae

*Sicyos angulatus* L. #623

Dry hillside by stables. Dickenson County, VA.

#### Cuscutaceae

*Cuscuta gronovii* Willd. #525

Along Camp Branch. Dickenson County, VA.

#### Diapensiaceae

*Galax urceolata* (Poir.) Brummitt. #219, 334

Intersection of Grassy Creek Trail and River Trail, on rocks, with witch hazel, red maple, beech; Laurel Lake Trail. Dickenson County, VA.

#### Ebenaceae

*Diospyros virginiana* L. #258, 302, 414

Center Creek in picnic area; along Russell Fork streambank at river access. Pike County, KY.



Elaeagnaceae

\**Elaeagnus umbellata* Thunb. #104, 191, 431

Along Camp Branch, south of Garden Hole Rd.; Laurel Lake Trail; along Russell Fork near mouth of Camp Branch; along road and woodland edge near park naturalist's house. Dickenson County, VA.  
Naturalized from east Asia.

Ericaceae

*Epigaea repens* L. #7

Tower Overlook Trail. Dickenson County, VA.

*Kalmia latifolia* L. #217, 682

Mountain Bike Trail, ridgetop community of witchhazel, American chestnut saplings, black oak, red maple, hemlock. Dickenson County, VA. Potter's Flats, along Russell Fork. Pike County, KY.

*Lyonia ligustrina* (L.) DC. #827, 865

Along Russell Fork, downstream from mouth of Camp Branch. Dickenson County, VA.

*Oxydendrum arboreum* (L.) DC. #321, 577

Laurel Lake Trail; open field near Beaver Pond. Dickenson County, VA.

*Rhododendron catawbiense* Michx. #133, 733

Prospector's Trail, community of red maple, hickory sp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut; trail to Clinchfield Overlook. Dickenson County, VA.

*Rhododendron maximum* L. #186, 207, 226

Geological Trail; Mountain Bike Trail, ridgetop community of mountain laurel, witchhazel, American chestnut saplings, black oak, red maple, hemlock; Grassy Creek Trail, NW-facing, rocky, community of rhododendron, hemlock, red maple, redbud. Dickenson County, VA.

*Rhododendron periclymenoides* (Michx.) Shinn. #79, 127, 780

Garden Hole Trail, N-facing slope; Tower Tunnel Trail, ridgetop community of mountain laurel, Virginia pine, magnolia sp., witch hazel, maple spp. Dickenson County, VA.  
Along west side of Russell Fork, boulder and rock shelter habitat. Pike County, KY.

*Vaccinium corymbosum* L. #121, 183, 561

Lover's Leap, W-facing; Prospector's Trail, community of red maple, hickory sp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut; bottomland open woods next to gravel road, up the road from stables; Towers Overlook. Dickenson County, VA.

*Vaccinium pallidum* Aiton. #722

Clinchfield Overlook. Dickenson County, VA.

*Vaccinium stamineum* var. *stamineum* L. #675

Potter's Flats woods. Pike County, KY.

Euphorbiaceae

*Euphorbia corollata* L. #418, 473, 768

Along Russell Fork River at river access off KY 80; Potter's Flats along Russell Fork. Pike County, KY. Trail along Grassy Creek leading to river. Dickenson County, VA.

Fabaceae

\**Albizia julibrissin* Durazz. #255, 389

Along Russell Fork at river access. Pike County, KY. Grassy opening in woods off road to stables. Dickenson County, VA.

Naturalized from tropical Asia.

*Amphicarpaea bracteata* (L.) Fernald. #761, 831

Wooded area along main park road near cottage and rooms. Dickenson County, VA. Along wooded section of Center Creek. Pike County, KY.

*Apios americana* Medik. #260, 417, 420

Russell Fork streambank at river access. Pike County, KY. Russell Fork near mouth of Camp Branch. Dickenson County, VA.

*Cercis canadensis* L. #67, 875

Roadside near intersection of Nature Drive and Route 702; Rattlesnake Trail, NE-facing, community of hemlock, American holly, beech. Dickenson County, VA.

*Chamaecrista nictitans* (L.) Moench.

Gravel road edge near Beaver Pond. Dickenson County, VA. Kenneth T. Markley, 15 August 1986. VPI.

\**Coronilla varia* L. #292, 371, 676

Center Creek in picnic area; Potter's Flats, along Russell Fork, with abundant young sycamore and Japanese knotweed. Pike County, KY. State Hwy 80 roadside on E side of park. Dickenson County, VA.

Naturalized from the Mediterranean.

*Desmodium ciliare* (Muhl. ex Willd.) DC. #488

Along road parallel to Russell Fork at river access. Pike County, KY.

*Desmodium glabellum* (Michx.) DC. #523

Along Camp Branch. Dickenson County, VA.

*Desmodium glutinosum* (Muhl. ex Willd.) Alph. Wood. #380, 758

Along Nature Drive roadside near campground entrance; mesic woods near cottage and rooms, SW-facing, with hemlock, beech, sugar maple. Dickenson County, VA.

*Desmodium nudiflorum* (L.) DC. #467

Along roadside in main section of park. Dickenson County, VA.

*Desmodium pauciflorum* (Nutt.) DC. #814

Camp Branch floodplain. Dickenson County, VA.

*Desmodium paniculatum* (L.) DC. #471, 498

Along road inside main area of park; along Beaver Pond and road next to pond.  
Dickenson County, VA.

\**Lespedeza bicolor* Turcz. #783

Center Creek picnic area. Pike County, KY.  
Native of Japan.

\**Melilotus alba* Medik. #296, 363

Center Creek in picnic area; along railroad tracks running parallel to State Hwy 80 and  
Russell Fork. Pike County, KY.  
Naturalized from Eurasia.

\**Melilotus officinalis* (L.) Pall. #267

Along Russell Fork at river access. Pike County, KY.  
Naturalized from Eurasia.

\**Pueraria montana* var. *lobata* (Willd.) Maesen & S.M.Almeida. #295

Center Creek in picnic area. Pike County, KY.  
Naturalized from Japan.

*Robinia hispida* L. #126

Prospector's Trail, community of rhododendron spp., witch hazel, striped maple, chestnut  
oak, northern red oak. Dickenson County, VA.

*Robinia pseudoacacia* L. #108

Parking lot and steps at overlook off State Hwy 80. Pike County, KY.

\**Trifolium campestre* Schreb. #179, 698

Lover's Leap, W-facing; flat, open field off Rattlesnake Trail. Dickenson County, VA.  
Eurasian & African weed.

\**Trifolium hybridum* L. #265, 273

Along Russell Fork at the river access. Pike County, KY.  
A European cultigen.

\**Trifolium pratense* L. #369, 725

Along State Hwy 80 roadside on east side of park; in open field next to Beaver Pond.  
Dickenson County, VA.  
A European cultigen.

\**Trifolium repens* L. #199, 213

Bottomland, semi-open area along road near stables with black walnut and tulip-poplar;  
stables area along grassy road, stream and wall. Dickenson County, VA.  
A Eurasian cultigen.

*Vicia caroliniana* Walter. #40, 41

Roadside approaching Cold Spring Trail. Dickenson County, VA.

\**Vicia sativa* L. #670  
In vicinity of horse stables. Dickenson County, VA.  
Naturalized from Europe.

*Vicia villosa* Roth. #192  
Stables area along grassy road, stream and wall. Dickenson County, VA.

### Fagaceae

*Castanea dentata* (Marshall) Borkh. #208, 328, 585.  
Mountain Bike Trail, NW-facing, community of beech, chestnut oak, northern red oak, red maple, hemlock; Laurel Lake Trail; along road and woodland edge near park naturalist's house. Dickenson County, VA.

\**Castanea mollissima* Blume. #388  
Along road in front of park naturalist's house. Dickenson County, VA.  
Naturalized from east Asia.

*Castanea pumila* (L.) Mill. #615.  
At woodland edge, by stream, across from stables. Dickenson County, VA.

\**Castanea sativa* Mill.  
Potter Flats, along State Hwy 80, abandoned homesite. Pike County, KY. Bryce D. Fields #895, 18 July 1996. EKY.  
An escape, native to Eurasia.

*Fagus grandifolia* Ehrh. #757  
Mesic woods near cottage and rooms, SW-facing, with hemlock, beech, sugar maple. Dickenson County, VA.

*Quercus alba* L. #706  
Old homestead and road, with tulip-poplar and red maple. Dickenson County, VA.

*Quercus coccinea* Münchh. #581  
Along road and woodland edge near park naturalist's house. Dickenson County, VA.

*Quercus falcata* Michx. #848  
Abandoned road at Lover's Leap Overlook, open area with road cut in rock outcrops. Dickenson County, VA.

*Quercus montana* Willd. #744  
Grassy Overlook Trail. Dickenson County, VA.

*Quercus rubra* L. #618  
Dry hillside by stables. Dickenson County, VA.

*Quercus stellata* Wangenh.  
KY 80, short distance W of KY-VA state line on dry S-facing steep slopes above Russell Fork. Breaks Interstate Park. Pike County, KY. Elizabeth M. Browne and Edward T. Brown, Jr. #8451, 21 May 1964. EKY.

*Quercus velutina* Lam. #572, 724  
Trail around Beaver Pond. Dickenson County, VA.

Fumariaceae

*Adlumia fungosa* (Aiton) Greene ex BSP.  
Near State Line Tunnel. Dickenson County, VA. D.W. Ogle, 24 May 1981. VPI. S3  
Status.

*Corydalis flavula* (Raf.) DC.  
Circuit from campground to Laurel Branch to Grassy Creek to Russell Fork to Stateline  
Overlook. Dickenson County, VA. D.W. Ogle, 22 April 1979. VPI.

*Dicentra canadensis* (Goldie) Walp. #635  
Garden Hole hillside. Dickenson County, VA.

*Dicentra cucullaria* (L.) Bernh. #628  
Garden Hole hillside. Dickenson County, VA.

Gentianaceae

*Gentiana villosa* L.  
Beaver Pond, along wooded side of lake. Dickenson County, VA. Ken Markley, 11  
October 1986. VPI.

*Obolaria virginica* L. #874  
Rattlesnake Trail. Dickenson County, VA.

*Sabatia angularis* (L.) Pursh.  
Right-of-way to powerline maintenance area road. Dickenson County, VA. Ken Markley,  
25 July 1986. VPI.

Geraniaceae

*Geranium carolinianum* L. #157, 214  
Pool Point on rocks above river. Pike County, KY. Beaver Pond Trail, community of  
sassafras, beech, sourwood, hemlock, dogwood. Dickenson County, VA.

*Geranium maculatum* L. #61  
Garden Hole. Dickenson County, VA.

Grossulariaceae

*Ribes cynosbati* L. #2  
Ridge and Geological Trails. Dickenson County, VA.

Hamamelidaceae

*Hamamelis virginiana* L. #20, 139  
Ridgetop community along Ridge Trail. Dickenson County, VA. N-facing slopes on  
Potter's Flat's trail, community of tulip-poplar, American holly, sugar maple, hickory spp.  
Pike County, KY.

*Liquidambar styraciflua* L. #737  
River access. Pike County, KY.

### Hippocastanaceae

*Aesculus flava* Ait. #653

Edge habitat between powerline and forest, E-facing slope. Pike County, KY.

### Hydrangeaceae

*Hydrangea arborescens* L. #221, 377

Grassy Creek Trail, NW-facing, rocky, community of rhododendron, hemlock, red maple, redbud. Dickenson County, VA.

*Philadelphus hirsutus* Nutt. #566

Along Beaver Pond. Dickenson County, VA.

### Hydrophyllaceae

*Phacelia bipinnatifida* Michx. # 86, 95, 645

Garden Hole Trail, N-facing slope; wetland south of Garden Hole Rd.; Prospectors Trail, rocky hillslope on sandstone, N-facing, community of rhododendron, white oak, hickory spp. Dickenson County, VA.

### Juglandaceae

*Carya glabra* (Mill.) Sweet. #250, 587

Steep wooded slope between State Hwy 80 and railroad trestle. Pike County, KY. Along road and woodland edge near park naturalist's house. Dickenson County, VA.

*Carya ovata* (Mill.) K.Koch. #803

River Trail. Dickenson County, VA.

*Carya tomentosa* (Poir.) Nutt. #338, 584, 736

Laurel Lake Trail; along road and woodland edge near park naturalist's house. Dickenson County, VA. River access. Pike County, KY.

*Juglans cinerea* L. #526

Steep wooded slope between State Hwy 80 and railroad trestle. Pike County, KY.  
Threatened.

*Juglans nigra* L. #393

Grassy opening in woods off road to stables. Dickenson County, VA.

### Lamiaceae

*Collinsonia canadensis* L. #604, 773, 804

Gardenhole; woods along park road and near lodges. Dickenson County, VA. Potter's Flats along Russell Fork, with sycamore, black locust, rhododendron spp., hemlock. Pike County, KY.

*Cunilla origanoides* (L.) Britton. #793

River Trail. Dickenson County, VA.

\**Glechoma hederacea* L. #10, 161

Along main park road; Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw, spicebush, American hornbeam. Dickenson County, VA.  
Naturalized from Europe.

\**Lamium purpureum* L. #48, 49

State Hwy 80 roadside between park entrance and Garden Hole. Dickenson County, VA.  
Naturalized from Eurasia.

!*Meehania cordata* (Nutt.) Britton

Garden Hole, rich hollow above parking area near river. Dickenson County, VA. Ken Markley, 14 May 1986. VPI. S3 Status.

\**Mentha × piperita* L. #386, 435

Laurel Lake. Dickenson County, VA. Center Creek in picnic shelter area. Pike County, KY.  
Naturalized from Europe.

*Monarda clinopodia* L. #306, 376, 705

Laurel Lake Trail; trail along Grassy Creek; Rattlesnake Trail, NW-facing, community of tulip-poplar, spicebush, sugar maple; Camp Branch Trail. Dickenson County, VA.

\**Perilla frutescens* (L.) Britton. #539

Trail from State Hwy 80 to railroad trestle and Potters Flats. Pike County, KY.  
Naturalized from India.

*Prunella vulgaris* L. #382, 446

Center Creek at Center Creek Trailhead. Pike County, KY. Head of Cold Spring Trail. Dickenson County, VA.

*Pycnanthemum incanum* (L.) Michx. #390

Grassy opening in woods off road to stables. Dickenson County, VA.

*Salvia lyrata* L. #154, 170, 279

Pine Mountain Trail, NE-facing slope, community of hemlock, tulip-poplar, sugar maple, redbud; Russell Fork at the river access. Pike County, KY.

*Scutellaria elliptica* Muhl. #684

Mountain Bike Trail - Ladies' Loop, in low, wet area, NE-facing slope, community of sugar maple, tulip-poplar, red maple. Dickenson County, VA.

\**Scutellaria lateriflora* L. #445, 515

Vicinity of horse stables; Laurel Lake. Dickenson County, VA.  
Naturalized from Eurasia.

*Stachys cordata* Riddell. #709

Garden Hole along Russell Fork. Dickenson County, VA.

*Teucrium canadense* L. #384

Russell Fork River at river access. Pike County, KY.

#### Lauraceae

*Lindera benzoin* (L.) Blume. #23

Ridge and Geological Trails. Dickenson County, VA.

*Sassafras albidum* (Nutt.) Nees.  
Pinnacle Rock parking area. Dickenson County, VA. Ken Markley, 24 May 1986. VPI.

Linaceae

*Linum virginianum* L. #251b  
Steep, wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

Magnoliaceae

*Liriodendron tulipifera* L.  
East boundary of Breaks State Park; small tree in sandy cove. Dickenson County, VA. R. Kral #12663, 14 June 1961. VPI.

*Magnolia acuminata* (L.) L. #533, 627  
Trail from State Hwy 80 to Pine Mountain Trail. Pike County, KY. Along road and woodland edge near park naturalist's house. Dickenson County, VA.

*Magnolia fraseri* Walter. #131  
Tower Tunnel Trail, ridgetop community of mountain laurel, Virginia pine, magnolia sp., witch hazel, maple sp. Dickenson County, VA.

*Magnolia tripetala* L. #89, 337, 701  
Garden Hole Trail, N-facing slope; Laurel Lake Trail; Grassy Creek Trail; Rattlesnake Trail, community of sugar maple, white oak, hickory spp. Dickenson County, VA.

Monotropaceae

*Monotropa hypopithys* L.  
Park naturalist's residence in maintenance area, 50 feet northwest from front porch of house, rich dry woods above rock wall. Dickenson County, VA. Kenneth Markley & Michael Newsome, 4 July 1989. VPI.

*Monotropa uniflora* L. #751  
Old home site off Potter's Flats trail, N-facing, community of tulip-poplar, cherry, hickory spp. Pike County, KY.

!*Monotropis odorata* Schwein. ex Elliott  
Prospector's Trail, 200 yards south of State Line Overlook; base of cliff along Prospector's Trail. Dickenson County, VA. Doug Ogle. Date unknown. VPI. S3 Status.

Moraceae

*Morus rubra* L. # 528, 735  
Potters Flats; river access. Pike County, KY.

Nyssaceae

*Nyssa sylvatica* Marshall. # 531, 731  
Pine Mountain Trail. Pike County, KY; Trail to Clinchfield Overlook. Dickenson County, VA.

Oleaceae

*Chionanthus virginicus* L.  
Along Russell Fork, downstream 250 ft from drop off at River Trail. Dickenson County, VA. Doug Ogle, 16 May 1987. VPI.



\**Forsythia viridissima* Lindl. #4, 564  
Beaver Pond; near park entrance. Dickenson County, VA.  
Eurasian.

*Fraxinus americana* L. #583  
Along road and woodland edge near park naturalist's house. Dickenson County, VA.

*Fraxinus pennsylvanica* Marshall. #703, 884  
Wet, seepy area off Rattlesnake Trail. Dickenson County, VA. Along west side of  
Russell Fork, boulder/rock shelter habitat. Pike County, KY.

\**Ligustrum sinense* Lour. #17, 234, 437  
Near lodge and picnic shelters; Beaver Pond; Dickenson, County, VA. Steep, wooded  
hillside between State Hwy 80 and railroad trestle; along Center Creek in picnic shelter  
area. Pike County, KY.  
Native of China.

#### Onagraceae

*Circaea lutetiana* (L.) Asch. & Magnus. #392, 743  
Grassy opening in woods off road to stables; Laurel Branch Trail. Dickenson County, VA

*Ludwigia alternifolia* L. #385  
Laurel Lake. Dickenson County, VA.

*Ludwigia palustris* (L.) Elliott. #591  
In Beaver Pond. Dickenson County, VA.

*Oenothera fruticosa* L. #700, 708, 711  
Open field off Rattlesnake Trail; roadside intersection of Garden Hole and State Hwy 80;  
along Garden Hole road. Dickenson County, VA.

*Oenothera parviflora* L. #481  
Along road parallel to Russell Fork at river access. Pike County, KY.

#### Orobanchaceae

*Conopholis americana* (L.) Wallr. #87, 668  
Garden Hole Trail, N-facing slope; hemlock woods, along trail leading to horse stables.  
Dickenson County, VA.

*Epifagus virginiana* (L.) Barton. #512, 829  
Laurel Lake; Camp Branch Trail. Dickenson County, VA.

#### Oxalidaceae

*Oxalis grandis* Small. #163  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

*Oxalis stricta* L. #106, 305  
Parking lot and steps at overlook off State Hwy 80. Pike County, KY. Laurel Lake Trail.  
Dickenson County, VA.

Papaveraceae

*Sanguinaria canadensis* L. # 117, 629, 873

Garden Hole hillside; Mountain Bike Trail. Dickenson County, VA.

Phrymaceae

*Phryma leptostachya* L. #748

Laurel Branch Trail. Dickenson County, VA.

Phytolaccaceae

*Phytolacca americana* L. #404

Low spot in open woods off gravel road to stables. Dickenson County, VA.

Plantaginaceae

\**Plantago lanceolata* L. #298

Center Creek in picnic area. Pike County, KY.

Naturalized from Eurasia.

*Plantago rugelii* Decne. #428

Rocky banks and boulder substrate of Camp Branch. Dickenson County, VA.

*Plantago virginica* L.

Grassy woods border southwest of Rt. 702 between Tower Tunnel Overlook parking lot and Shelter No. 2. Dickenson County, VA. Kenneth T. Markley, 22 May 1986. VPI.

Polemoniaceae

*Phlox glaberrima* L. #549

Grassy Creek Trail leading to Russell Fork River. Dickenson County, VA.

*Phlox maculata* L. #419, 770

Along Russell Fork near mouth of Camp Branch. Dickenson County, VA. Potter's Flats along Russell Fork. Pike County, KY.

*Phlox stolonifera* Sims. #97

Along Camp Branch south of Garden Hole Rd. Dickenson County, VA.

Polygonaceae

\**Polygonum caespitosum* Blume. #454, 508, 778

Road by horse stables; along trail in Garden Hole. Dickenson County, VA. Along Russell Fork. Pike County, KY.

Naturalized from Asia.

\**Polygonum cuspidatum* Siebold & Zucc. #242, 354, 413

Along State Hwy 80 roadside at pulloff; along Russell Fork streambank at river access. Pike County, KY. Confluence of Grassy Creek and Russell Fork River. Pike County, KY and Dickenson County, VA.

From East Asia.

\**Polygonum persicaria* L. #849

Old road at Lover's Leap Overlook, open area with road cut. Dickenson County, VA.

Naturalized from Europe.

*Polygonum punctatum* Elliott. #544, 815  
Potters Flats. Pike County, KY. Camp Branch floodplain. Dickenson County, VA.

*Polygonum sagittatum* L. #494  
Beaver Pond. Dickenson County, VA.

*Polygonum scandens* L. #556  
State Hwy 80 roadside at head of trail leading down to railroad trestle. Pike County, KY.

*Polygonum virginianum* L. #460, 469, 501  
Along road by horse stables; trail between park road and swimming pool; along trail in Garden Hole. Dickenson County, VA.

\**Rumex acetosella* L. #697  
Open field off Rattlesnake Trail. Dickenson County, VA.  
Naturalized from Eurasia.

\**Rumex crispus* L. #293  
Center Creek in picnic area. Pike County, KY.  
Naturalized from Europe.

\**Rumex obtusifolius* L. #283, 625  
Along Russell Fork at the river access. Pike County, KY. Next to horse stables.  
Dickenson County, VA.  
Naturalized from Europe.

#### Portulacaceae

*Claytonia caroliniana* Michx. #55, 91, 630  
Garden Hole hillside; Prospector's Trail; trail in Garden Hole, N-facing slope. Dickenson County, VA.

#### Primulaceae

\**Lysimachia nummularia* L. #496  
Beaver Pond. Dickenson County, VA.  
Naturalized from Europe.

*Lysimachia tonsa* (Alph. Wood) R.Knuth. #350, 746  
Pine Mountain Trail, west-facing slope, community of sugar maple, hickory sp., hemlock, flowering dogwood, white oak. Pike County, KY. Rocky hillside near parking area for Geological Trail. Dickenson County, VA.

#### Pyrolaceae

*Chimaphila maculata* (L.) Pursh. #178, 693  
Path leading up hillside to water tank, S-facing slope, community of hemlock, sourwood, rhododendron, red maple; Rattlesnake Trail, N-facing, community of hemlock, spicebush, sourwood, sugar maple. Dickenson County, VA.

#### Ranunculaceae

*Actaea pachypoda* Elliott. #115, 545  
Prospector's Trail; Grassy Creek Trail leading to Russell Fork. Dickenson County, VA.

*Anemone quinquefolia* L. #85, 116, 661

Garden Hole Trail, N-facing slope. Dickenson County, VA. Pine Mountain Trail, NE-facing, with hemlock and red maple. Pike County, KY.

*Anemone virginiana* L. #280, 373, 395

Along Russell Fork at the river access. Pike County, KY. Along State Hwy 80 roadside on east side of park; along gravel road next to Beaver Pond. Dickenson County, VA.

*Anemonella thalictroides* (L.) Spach. #38, 631

Garden Hole hillside. Dickenson County, VA.

*Aquilegia canadensis* L.

One mile up river from Garden Hole, damp shaley cliff. Dickenson County, VA. Ken Markley, 30 April 1986. VPI.

*Cimicifuga racemosa* (L.) Nutt. #366, 503

In woods off park road leading to swimming pool; along trail in Garden Hole. Dickenson County, VA.

*Clematis virginiana* L. #447

Laurel Lake at dam. Dickenson County, VA.

*Delphinium tricorne* Michx. #111

Garden Hole. Dickenson County, VA.

*Hepatica acutiloba* DC. #634

Garden Hole, on hillside, near river, and along trail parallel to river. Dickenson County, VA.

*Hydrastis canadensis* L. #73, 658

Garden Hole. Dickenson County, VA. Pine Mountain Trail, semi-open, N-facing, with tulip-poplar, honeysuckle spp., spicebush. Pike County, KY. S3 Status.

*Ranunculus abortivus* L. #99, 155

Camp Branch south of Garden Hole Rd. Dickenson County, VA. Pine Mountain Trail, NE-facing slope, community of hemlock, tulip-poplar, sugar maple, redbud. Pike County, KY.

\**Ranunculus bulbosus* L. #307, 669

Laurel Lake Trail; in vicinity of horse stables. Dickenson County, VA. Naturalized from Europe.

*Ranunculus hispidus* Michx. #50, 54, 647

Roadside along entrance road; State Hwy 80 roadside between park entrance and Garden Hole; Garden Hole, roadside on hillslope. Dickenson County, VA.

*Ranunculus recurvatus* Poir. #77, 81

Trail in Garden Hole, N-facing slope. Dickenson County, VA.

*Thalictrum dioicum* L.

Garden Hole. Dickenson County, VA. Kenneth T. Markley. Date unknown. VPI.

*Trautvetteria caroliniensis* (Walter) Vail. #720, 764, 882  
Along Grassy Creek. Dickenson County, VA. Potter's Flats along Russell Fork. Along west side of Russell Fork, boulder/rock shelter habitat. Pike County, KY.

Rhamnaceae

*Rhamnus caroliniana* Walter  
Breaks Interstate Park. Dickenson County, VA. James L. Childress, 11 July 1988. VPI.

Rosaceae

*Agrimonia parviflora* Aiton. #461  
Along road by horse stables. Dickenson County, VA.

*Agrimonia pubescens* Wallr. #439  
Along Garden Hole Road. Dickenson County, VA.

*Agrimonia rostellata* Wallr. #759  
Mesic woods near cottage and rooms, SW-facing, with hemlock, beech, sugar maple. Dickenson County, VA.

*Amelanchier arborea* (F. Michx.) Fernald. #25, 315, 664  
Lover's Leap, West-facing; Laurel Lake Trail. Dickenson County, VA.; Pine Mountain ridgetop, in opening along trail/ATV road. Pike County, KY.

*Fragaria virginiana* Duchesne.  
Beaver Pond, open field above lake. Dickenson County, VA. Ken Markley, 29 April 1986. VPI.

*Geum canadense* Jacq. #394, 739  
Along dirt/gravel road intersection, past stables. Dickenson County, VA. River access. Pike County, KY.

\**Malus pumila* Mill. #582  
Along Beaver Pond. Dickenson County, VA.  
Cultivar from Eurasia.

*Physocarpus opulifolius* (L.) Maxim.  
Railroad tracks near State Line Tunnel along Russell Fork River. Dickenson County, VA. D.W. Ogle, 23 May 1981. VPI.

*Potentilla canadensis* L. #120  
Prospector's Trail, community of red maple, hickory sp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut. Dickenson County, VA.

*Potentilla simplex* Michx. #156, 304  
Potter's Flats, somewhat bottomland, community of Virginia pine, sweetgum, tulip-poplar, sycamore, red maple. Pike County, KY. Laurel Lake Trail. Dickenson County, VA.

*Prunus americana* Marshall. #597  
Along Beaver Pond. Dickenson County, VA.

*Prunus angustifolia* Marshall. #878  
Trail past stables and near intersection of trails. Dickenson County, VA.

*Prunus mexicana* S.Watson. #206  
Bottomland, open area along old road, past stables, with black walnut and tulip-poplar.  
Dickenson County, VA.

*Prunus serotina* Ehrh. #532  
Trail from KY 80 to railroad trestle and Potters Flats. Pike County, KY.

*Rosa carolina* L. #189  
River Trail, W-facing, community of northern red oak, chestnut oak, pignut hickory,  
redbud, sugar maple. Dickenson County, VA.

\**Rosa multiflora* Thunb. #142  
ATV trail off railroad tracks leading to Pine Mountain Trail, open, young-growth woods  
dominated by black walnut and *Rosa* spp. Pike County, KY.  
Naturalized from Asia.

*Rubus allegheniensis* Porter  
Behind visitor center. Dickenson County, VA. Ken Markley, 4 May 1986. VPI.

*Rubus flagellaris* Willd. #162  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

*Rubus odoratus* L. #749, 859  
Garden Hole along Russell Fork. Dickenson County, VA.

*Rubus occidentalis* L.  
Across road from bathhouse C in campground, at wood's edge. Dickenson County, VA.  
Ken Markley, 26 June 1986. VPI.

*Rubus pensilvanicus* Poir. #143  
Open area along ATV trail leading to Pine Mountain Trail, bordered by young growth of  
*Rubus* spp., *Rosa* spp., and tulip-poplar seedlings. Pike County, KY.

\**Rubus phoenicolasius* Maxim. #184, 246  
Disturbed, rock slide area in vicinity of Pine Mountain Trail, E-facing. Dickenson  
County, VA. On steep, wooded hillside between State Hwy 80 and railroad trestle. Pike  
County, KY.  
Naturalized from Asia.

\**Spiraea japonica* L.f. #898, 899  
Along west side of Russell Fork. Dickenson County, VA.  
Naturalized from Japan.

#### Rubiaceae

*Cephalanthus occidentalis* L. #257, 789  
Along Russell Fork at river access off State Hwy 80. Pike County, KY. Russell  
Fork/Grassy Creek confluence, along shore. Dickenson County, VA.

*Diodia teres* Walter. #415  
Along Russell Fork streambank at river access off State Hwy 80. Pike County, KY.

*Galium latifolium* Michx.  
Geological Trail near post #24. Dickenson County, VA. Kenneth T. Markley, 27 May 1986. VPI.

*Galium triflorum* Michx. #574  
In drain, upstream from Beaver Pond. Dickenson County, VA.

*Houstonia caerulea* L. #100  
Along Russell Fork at end of Camp Branch Trail. Dickenson County, VA.

*Houstonia longifolia* Gaertn. #212, 691, 871  
Mountain Bike Trail, SE-facing, clearing in forest, community of *Rosa* spp., red maple, spicebush; Mountain Bike Trail in hemlock woods, NW-facing; Prospectors Trail, S-facing. Dickenson County, VA.

*Mitchella repens* L. #225, 657  
Intersection of Grassy Creek Trail and River Trail, on rocks, with witch hazel, red maple, beech. Dickenson County, VA. Pine Mountain Trail, N-facing slope with hemlock and tulip-poplar. Pike County, KY.

#### Salicaceae

*Populus grandidentata* Michx.  
Breaks Interstate Park on road near State Line and Clinchfield Overlooks. Dickenson County, VA. D.W. Ogle, 29 May 1981. VPI.

*Salix caroliniana* Michx. #261  
Along Russell Fork at river access off State Hwy 80. Pike County, KY.

#### Santalaceae

*Pyrularia pubera* Michx.  
KY 80, short distance W of KY-VA state line on dry S-facing steep slope above Russell Fork of Big Sandy River. Breaks Interstate Park, Pike County, KY. Elizabeth M. Browne and Edward T. Brown, Jr. #8450, 21 May 1964. EKY.

#### Saxifragaceae

*Heuchera americana* L. #119, 158, 683  
Prospector's Trail, community of rhododendron, witch hazel, striped maple, chestnut oak, northern red oak. Dickenson County, VA. Pine Mountain Trail, NE-facing, community of sugar maple, magnolia sp., white ash, spicebush; Potter's Flats, next to railroad. Pike County, KY.

*Heuchera parviflora* Bartl. #472, 785  
Grassy Creek Trail, NW-facing, community of hemlock, rhododendron, red maple. Dickenson County, VA.

*Mitella diphylla* L. #51, 52  
Prospector's Trail near Laurel Branch Trail. Dickenson County, VA.

*Penthorum sedoides* L. #576  
Along Beaver Pond. Dickenson County, VA.

!*Saxifraga caroliniana* A.Gray. #92, 114  
Garden Hole Trail, N-facing slope. Dickenson County, VA. S3 Status.

*Tiarella cordifolia* L. #35, 36, 78  
Garden Hole. Dickenson County, VA.

#### Scrophulariaceae

*Aureolaria laevigata* (Raf.) Raf. #465, 514  
Along road by campground store; along Laurel Lake. Dickenson County, VA.

*Melampyrum lineare* var. *pectinatum* (Pennell) Fernald  
Second curve area below Clinchfield Overlook, 20 feet from road, very sandy soil under  
*Pinus virginiana*. Dickenson County, VA. Ken Markley, 29 September 1987. VPI.

*Mimulus ringens* L. #383  
Along Russell Fork at river access off State Hwy 80. Pike County, KY.

*Pedicularis canadensis* L. #33, 96  
Along Laurel Branch Trail; head of Camp Branch Trail. Dickenson County, VA.

*Penstemon canescens* (Britton) Britton. #165  
Garden Hole roadside, S-facing slope, community of red maple, beech, redbud,  
buckeye, northern red oak. Dickenson County, VA.

\**Verbascum thapsus* L. #274, 381  
Along Russell Fork at river access off State Hwy 80; along Center Creek at Center Creek  
Trail head. Pike County, KY.  
Naturalized from Europe.

\**Veronica agrestis* L. #24  
Along Camp Branch, south of Garden Hole Road. Dickenson County, VA.

\**Veronica officinalis* L.  
KY 80, short distance W of KY-VA state line on dry S-facing steep slope above Russell  
Fork of Big Sandy River. Breaks Interstate Park. Pike County, KY. Elizabeth M. Browne  
and Edward T. Brown, Jr. #8455, 21 May 1964. EKY.  
Naturalized from Europe.

\**Veronica serpyllifolia* L. #169  
Garden Hole roadside, S-facing slope, community of red maple, beech, redbud,  
buckeye, northern red oak. Dickenson County, VA.  
Naturalized from Europe.



Simaroubaceae

\**Ailanthus altissima* (Mill.) Swingle. #355, 854

Pine Mountain Trail, N-facing, community of sugar maple, tulip-poplar, hemlock; Potter's Flats, thick undergrowth in woods of tulip-poplar, pawpaw, red maple. Pike County, KY.

Cultivated from eastern Asia and widely escaping.

Solanaceae

*Solanum carolinense* L. #218, 586

Confluence of Grassy Creek and Russell Fork, on sandy shore; along gravel road, towards stables. Dickenson County, VA.

Tiliaceae

*Tilia americana* L. #128, 755

Tower Tunnel Trail, ridgetop community of mountain laurel, Virginia pine, magnolia sp., witch hazel, maple sp. Dickenson County, VA. Pine Mountain Trail, NE-facing, upland forest of red maple, scarlet oak, sugar maple. Pike County, KY.

Ulmaceae

*Ulmus americana* L. #256

Along Russell Fork at river access off State Hwy 80. Pike County, KY.

Urticaceae

*Boehmeria cylindrica* (L.) Sw. #405

Low spot in open woods off gravel road to stables. Dickenson County, VA.

*Laportea canadensis* (L.) Wedd. #362

Pine Mountain Trail, N-facing, community of tulip-poplar, rhododendron, hemlock. Pike County, KY.

*Pilea pumila* (L.) A.Gray. #450

Along road by horse stables, Dickenson County, VA.

Valerianaceae

*Valerianella umbilicata* (Sull.) Alph. Wood. #164

Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw, spicebush, American hornbeam. Dickenson County, VA.

Verbenaceae

*Verbena urticifolia* L. #353

Pine Mountain Trail, W-facing slope, community of sugar maple, hickory sp., hemlock, flowering dogwood, white oak. Pike County, KY.

Violaceae

*Viola blanda* Willd. #660

Pine Mountain Trail, NE-facing, with hemlock and red maple. Pike County, KY.

*Viola canadensis* L. #59, 60, 651

Laural Lake Trail; Garden hole, on W-facing upper slope with hemlock and maple sp. Dickenson County, VA.

*Viola hastata* Michx. #45, 641, 877  
Prospectors Trail, W-facing upland hillside, with rhododendron sp., tulip-poplar community; Rattlesnake Trail, NE-facing, community of hemlock, American holly, beech. Dickenson County, VA.

*Viola palmata* L.  
Hollow above lake No. 2. Dickenson County, VA. Ken Markley, 29 April 1986. VPI.

*Viola pubescens* Aiton. #76, 637  
Garden Hole hillside. Dickenson County, VA.

*Viola rostrata* Pursh. #648, 876  
Garden Hole, roadside hillslope; Rattlesnake Trail, NE-facing, community of hemlock, American holly, beech. Dickenson County, VA.

*Viola sororia* Willd. #34, 663  
Laurel Lake Trail. Dickenson County, VA. Pine Mountain ridgetop, in powerline right-of-way, open/shrubby habitat. Pike County, KY.

#### Viscaceae

*Phoradendron leucarpum* (Raf.) Reveal & M.C. Johnst. #66  
In chestnut oak at parking lot of Loop Trail. Dickenson County, VA.

#### Vitaceae

*Vitis cinerea* (Engelm. in A.Gray) Engelm. ex Millardet. #233, 289  
Along State Hwy 80 roadside at pulloff; Center Creek picnic area. Pike County, KY.

*Vitis rotundifolia* Michx. #243, 314, 885  
Along State Hwy 80 roadside at pulloff; along west side of Russell Fork, boulder / rock shelter habitat. Pike County, KY. Laurel Lake Trail. Dickenson County, VA.

*Vitis vulpina* L. #197, 570  
Stables vicinity; along Beaver Pond. Dickenson County, VA.

#### **Monocotyledonae**

#### Alismataceae

*Alisma subcordatum* Raf. #782  
In Center Creek, open area with scattered black locust, sycamore, tulip-poplar. Pike County, KY.

#### Araceae

*Arisaema triphyllum* subsp. *triphyllum* (L.) Schott. #71, 88  
Garden Hole Trail, N-facing slope. Dickenson County, VA.

#### Commelinaceae

\**Commelina communis* L. #352, 396  
Pine Mountain Trail, W-facing slope, community of sugar maple, hickory spp., hemlock, flowering dogwood, white oak. Pike County, KY. At stable buildings. Dickenson County, VA.  
Naturalized from Asia.

\**Commelina diffusa* Burm.f. #359  
Pine Mountain Trail. Pike County, KY.  
Naturalized from Old World.

Convallariaceae

*Maianthemum racemosum* (L.) Link. #113, 375  
Garden Hole; trail along Grassy Creek. Dickenson County, VA.

*Polygonatum biflorum* (Walter) Elliott. #110, 655  
Garden Hole. Dickenson County, VA. Pine Mountain Trail, NE-facing upland hillside,  
canopy of tulip-poplar, hemlock, sugar maple. Pike County, KY.

Cyperaceae

*Carex albicans* Willd. ex Spreng. #642  
Prospectors Trail, on rock at base of sandstone outcrop, W-facing upland community of  
red oak, walnut, red maple. Dickenson County, VA.

*Carex atlantica* L.H.Bailey. #308, 340  
Laurel Lake Trail. Dickenson County, VA.

*Carex baileyi* Britton. #172, 271  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA. Along Russell Fork at river  
access off State Hwy 80. Pike County, KY.

*Carex cephalophora* Muhl. ex Willd. #26, 689  
Mountain Bike Trail, ridgetop community of chestnut oak, red maple, sassafras,  
blackgum, sourwood, hemlock. Dickenson County, VA.

*Carex crinita* Lam. #674  
Along Center Creek at picnic shelter area off State Hwy 80. Pike County, KY.

*Carex gracillima* Schwein. #175  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

*Carex intumescens* Rudge. #343, 411, 702  
Laurel Lake Trail; wet, seepy area off Rattlesnake Trail. Dickenson County, VA. Along  
Russell Fork and road parallel to river at river access off State Hwy 80. Pike County, KY.

*Carex lurida* Wahlenb. #333, 728  
Laurel Lake Trail; Beaver Pond. Dickenson County, VA.

*Carex plantaginea* Lam. #638  
Garden Hole, near Russell Fork. Dickenson County, VA.

*Carex prasina* Wahlenb. #94  
Wetland area south of Garden Hole Road. Dickenson County, VA.

*Carex rosea* Schkuhr ex Willd. #204, 241, 685  
Mountain Bike Trail, NE-facing, cove community dominated by spicebush;  
Mountain Bike Trail - Ladies' Loop, NE-facing slope, in wet area, community of sugar  
maple, tulip-poplar red maple. Dickenson County, VA. Steep, wooded hillside between  
State Hwy 80 and railroad trestle. Pike County, KY.

*Carex scabrata* Schwein. #173  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

*Carex sparganioides* Muhl. ex Willd. #174  
Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw,  
spicebush, American hornbeam. Dickenson County, VA.

*Carex stipata* Muhl. ex Willd. #313  
Laurel Lake Trail. Dickenson County, VA.

*Carex tribuloides* Wahlenb. #723  
Beaver Pond. Dickenson County, VA.

*Carex vulpinoidea* Michx. #331, 726, 897  
Laurel Lake Trail; Beaver Pond. Dickenson County, VA. Along west side of Russell  
Fork. Pike County, KY.

*Cyperus esculentus* L. #547  
Grassy Creek Trail. Dickenson County, VA.

*Cyperus flavescens* L. #455, 835  
Along road by horse stables. Dickenson County, VA. Along Center Creek streambank  
near parking lot. Pike County, KY.

*Cyperus lancastris* Porter. #621, 740  
Dry hillside by stables. Dickenson County, VA. Russell Fork at river access off State  
Hwy 80. Pike County, KY.

*Cyperus strigosus* L. #448, 451  
Along Laurel Lake by pedalboat dock; Beaver Pond. Dickenson County, VA.

*Eleocharis obtusa* (Willd.) Schult.  
Potter's Flats, Russell Fork River ford. Pike County, KY. Ken Markley, 3 July 1986. VPI.

\**Kyllinga gracillima* Miq. #809, 837  
Laurel Lake. Dickenson County, VA. Along Center Creek streambank near parking lot.  
Pike County, KY.  
Naturalized from Asia.

*Scirpus cyperinus* (L.) Kunth. #518  
Along Laurel Lake. Dickenson County, VA.

*Scirpus polyphyllus* Vahl. #410, 522, 742

Along Russell Fork at river access off State Hwy 80. Pike County, KY. Along Camp Branch; Beaver Pond; seepy area near Cold Spring trailhead. Dickenson County, VA.

#### Dioscoreaceae

*Dioscorea villosa* L. #129, 148

Prospector's Trail, community of red maple, hickory spp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut. Dickenson County, VA. Pine Mountain Trail, NE-facing, community of sugar maple, magnolia spp., white ash, spicebush. Pike County, KY.

#### Hemerocallidaceae

\**Hemerocallis fulva* (L.) L. #232

Steep, wooded hillside between State Hwy 80 roadside and railroad trestle. Pike County, KY.

From Eurasia.

#### Hypoxidaceae

*Hypoxis hirsuta* (L.) Coville. #176, 681, 688

Old road/powerline, near picnic shelter #4, S-facing, community of sourwood, scarlet oak, red maple, beech; Mountain Bike Trail - Ladies' Loop, NE-facing slope, wet area, community of sugar maple, tulip-poplar, red maple. Dickenson County, VA. Potter's Flats, along Russell Fork, with abundant young sycamore and Japanese knotweed. Pike County, KY.

#### Iridaceae

*Iris cristata* Soland. ex Aiton. #84, 656

Garden Hole Trail, N-facing slope. Dickenson County, VA. Pine Mountain Trail, N-facing slope with hemlock and tulip-poplar. Pike County, KY.

*Sisyrinchium angustifolium* Mill. #159

Pine Mountain Trail, NE-facing, community of tulip-poplar, beech, pawpaw, redbud. Pike County, KY.

#### Juncaceae

*Juncus acuminatus* Michx. #309, 593

Laurel Lake Trail; in drain, upstream from Beaver Pond. Dickenson County, VA.

*Juncus coriaceous* Mack. #593b, 712

Along Beaver Pond; west bank of Russell Fork, near Towers Tunnel, community of black locust, sycamore, *Cornus amomum*. Dickenson County, VA.

*Juncus diffusissimus* Buckley

Potter's Flats, along Russell Fork, upstream of ford. Dickenson County, VA. Ken Markley, 3 July 1986. VPI.

*Juncus effusus* L. #266, 325

Along Russell Fork at the river access off State Hwy 80. Pike County, KY. Laurel Lake Trail. Dickenson County, VA.

*Juncus marginatus* Rostk.

Small, springy seepage area along jeep trail up Falls Branch, 1 mile NE of Bartlick, VA. Dickenson County, VA. Thomas F. Wieboldt #4497, 25 August 1982. VPI.

*Juncus tenuis* Willd. #237, 686

Steep wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY. Mountain Bike Trail - Ladies' Loop, NE-facing slope, wet area, community of sugar maple, tulip-poplar, red maple. Dickenson County, VA.

*Luzula acuminata* Raf. #12, 72

At rock wall along park entrance road. Dickenson County, VA.

#### Liliaceae

*Clintonia umbellulata* (Michx.) Morong.

Laurel Branch Trail between Nature Drive and Cold Spring Trail. Dickenson County, VA. Ken Markley, 27 May 1986. VPI.

*Erythronium americanum* Ker Gawl. #632

Garden Hole hillside. Dickenson County, VA.

*Medeola virginiana* L. #166

Camp Branch floodplain, community of tulip-poplar, yellow buckeye, pawpaw, spicebush, American hornbeam. Dickenson County, VA.

#### Melanthiaceae

*Chamaelirium luteum* (L.) A.Gray

Rt. 787, Nature Drive, 150 feet south of bridge. Dickenson County, VA. Ken Markley, 27 May 1986. VPI.

#### Orchidaceae

*Aplectrum hyemale* (Muhl. Es Willd.) Torr.

Woods between shelter No. 4 and maintenance area. Dickenson County, VA. Ken Markley, 27 May 1986. VPI.

*Cleistis bifaria* (Fernald) Catling & Gregg

North end of Pool Point trestle on railroad right-of-way, growing in grassy area on south side of railroad. Pike County, KY. D.W. Ogle, 20 June 1983. VPI.

*Cypripedium acaule* Aiton. #667, photographic documentation

Just off Mountain Bike Trail in hemlock stand. Dickenson County, VA.

*Cypripedium parviflorum* var. *pubescens* (Willd.) O.W.Knight. #665, photographic documentation

Mountain Bike Trail in young woods with flowering dogwood, spicebush, red maple, tulip-poplar. Dickenson County, VA.

*Galearis spectabilis* (L.) Raf. #27, photographic documentation

Along Camp Branch in bottomland area, across road from Camp Branch trailhead. Dickenson County, VA.

*Goodyera repens* (L.) R.Br. #443  
Laurel Branch Trail, community of rhododendron, sweet birch, and hemlock. Dickenson County, VA.

*Liparis liliifolia* (L.) Rich. Ex Lindl.  
About 100 feet southeast of Tunnel Overlook parking area, at wood's edge. Dickenson County, VA. Ken Markley, 24 May 1986. VPI.

*Platanthera clavellata* (Michx.) Luer. #760, photographic documentation  
Loop Trail, semi-open wetland in woods, adjacent to spring-fed stream, with white oak and hemlock. Dickenson County, VA.

*Spiranthes cernua* (L.) Rich.  
Loop Trail behind shelter No. 2. Dickenson County, VA. Ken Markley, 6 October 1986. VPI.

!*Spiranthes lucida* (H.H.Eaton) Ames. #717, photographic documentation  
Along Russell Fork near mouth of Camp Branch. Dickenson County, VA. S1 Status.

*Spiranthes ovalis* Lindl. #839, photographic documentation  
At edge of woods on small hillside next to paved road and single-story lodge. Dickenson County, VA.

*Tipularia discolor* (Pursh) Nutt. #444, 756  
SW-facing mesic woods near cottage and rooms, just off sidewalk near rock wall, with hemlock, beech, sugar maple. Dickenson County, VA.

!*Triphora trianthophora* (Sw.) Rydb. #853, photographic documentation  
At edge of flat, open, hemlock woods, next to parking lot and sidewalk, across road from Visitor Center. Dickenson County, VA. S1 Status.

#### Poaceae

\**Agrostis gigantea* Roth.  
Potter's Flats near lane. Dickenson County, VA. Ken Markley. 3 July 1986. VPI.  
Naturalized from Europe.

*Andropogon gerardii* Vitman. #546, 776, 797  
Grassy Creek Trail leading to Russell Fork; River Trail. Dickenson County, VA. Along Russell Fork. Pike County, KY.

\**Anthoxanthum odoratum* L. #201  
Bottomland, open area along old road past stables, with black walnut and tulip-poplar. Dickenson County, VA.  
Naturalized from Europe.

\**Arthraxon hispidus* (Thunb.) Makino. #555, 833  
Grassy Creek Trail leading to Russell Fork. Dickenson County, VA. Along Center Creek streambank near parking lot. Pike County, KY.  
Naturalized from Asia.

\**Avena sativa* L. #193, 406  
Stables vicinity; low spot in open woods off gravel road to stables. Dickenson County, VA.  
Introduced from Europe.

\**Bromus commutatus* Schrad. #229  
Steep, wooded hillside between State Hwy 80 and railroad trestle over river. Pike County, KY.  
Naturalized from Europe.

\**Bromus hordeaceus* L. #152  
E-facing disturbed, rock slide area off Pine Mountain Trail. Dickenson County, VA.  
Adventive from Europe.

*Chasmanthium latifolium* (Michx.) H.O.Yates. #774  
Along Russell Fork. Pike County, KY.

*Cinna arundinacea* L. #565, 579, 821  
Along Beaver Pond; Camp Branch floodplain. Dickenson County, VA.

\**Dactylis glomerata* L. #150, 230, 619  
Disturbed, rock slide area off Pine Mountain Trail, E-facing; by horse stables. Dickenson County, VA. Steep, wooded hillside between State Hwy 80 pulloff and railroad trestle. Pike County, KY.  
Naturalized from Europe.

*Danthonia spicata* (L.) P.Beauv. #238, 247  
Steep wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

*Dichanthelium clandestinum* (L.) Gould. #303, 322, 690  
Center Creek in picnic area. Pike County, KY. Laurel Lake Trail; Mountain Bike Trail. Dickenson County, VA.

*Dichanthelium commutatum* (Schult.) Gould. #203, 680  
Mountain Bike Trail, SE-facing clearing in forest, community of *Rosa* spp., red maple, spicebush. Dickenson County, VA. Potter's Flats, along Russell Fork. Pike County, KY.

*Dichanthelium dichotomum* (L.) Gould. #323, 595  
Laurel Lake Trail; along Beaver Pond. Dickenson County, VA.

*Dichanthelium linearifolium* (Scribn.) Gould.  
Dry banks on dirt road. Potter's Flats in Breaks Interstate Park. Pike County, KY.  
Raymond Athey #4630, 1 July 1982. EKY.

*Dichanthelium polyanthes* (Schult.) Mohlenbr. #249  
Steep wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

*Dichanthelium sphaerocarpon* (Elliott) Gould. #153  
Disturbed, rock slide area off Pine Mountain Trail, E-facing. Dickenson County, VA.



*Dichanthelium villosissimum* (Nash) Freckmann. #248, 249c  
On wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

\**Digitaria ischaemum* (Schreb.) Schreb. ex Muhl. #622  
Dry hillside by stables. Dickenson County, VA.  
Naturalized from Eurasia.

\**Echinochloa crus-galli* (L.) P.Beauv.  
Old road from Beaver Pond to open field, 0.5 miles from pond. Dickenson County, VA.  
Ken Markley, 26 August 1987. VPI.  
Naturalized from Europe.

*Elymus riparius* Wiegand. #483  
Along road parallel to Russell Fork at river access off State Hwy 80. Pike County, KY.

\**Festuca arundinacea* Schreb. #202, 299  
Bottomland, open area along old road past stables with black walnut and tulip-poplar.  
Dickenson County, VA. Center Creek in picnic area. Pike County, KY.  
Naturalized from Europe.

*Festuca subverticillata* (Pers.) E.B.Alexeev. #182, 216  
Gravel path leading to water tank, upland community of hemlock, red maple, scarlet oak;  
Mountain Bike Trail, ridgetop community of chestnut oak, red maple, sassafras,  
blackgum, sourwood, hemlock. Dickenson County, VA.

*Glyceria striata* (Lam.) Hitchc. #272, 578  
Along Russell Fork at river access off State Hwy 80. Pike County, KY. Along Beaver  
Pond. Dickenson County, VA.

\**Holcus lanatus* L. #391, 671, 707  
Grassy opening in woods off road leading to stables; in vicinity of horse stables; trail  
intersection past stables. Dickenson County, VA.  
Naturalized from Europe.

*Leersia oryzoides* (L.) Sw. #834  
Along Center Creek streambank near parking lot. Pike County, KY.

\**Lolium perenne* L.  
1978 old strip area/gas well, below Gateway mkt. Dickenson County, VA. Ken  
Markley, 26 May 1987. VPI.  
Naturalized from Europe.

\**Microstegium vimineum* (Trin.) A.Camus.  
Open, gravelly riverbed along Russell Fork. Dickenson County, VA. Thomas F.  
Wieboldt #4450, 23 August 1982. VPI.  
Naturalized from Asia.

\**Miscanthus sinensis* Anderss.  
Railroad trestle near State Line Tunnel, along Russell Fork River. Dickenson County,  
VA. Doug Ogle, 23 May 1981. VPI.  
Naturalized from China.

*Panicum anceps* Michx. #845  
Open meadow off Mountain Bike Trail. Dickenson County, VA.

*Panicum rigidulum* Bosc ex Nees. #519  
Along Laurel Lake. Dickenson County, VA.

*Paspalum laeve* Michx. #836  
Along Center Creek streambank near parking lot. Pike County, KY.

*Paspalum pubiflorum* Rupr. #480  
Along road parallel to Russell Fork at river access. Pike County, KY.

*Poa alsodes* A.Gray. #93  
Garden Hole Trail, N-facing slope. Dickenson County, VA.

*Poa cuspidata* Nutt. #130  
Prospector's Trail, community of red maple, hickory spp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut. Dickenson County, VA.

\**Poa pratensis* L. #147  
Potter's Flats, open area, possibly old homestead, remains of concrete building, community of black walnut, tulip-poplar, *Rosa* spp. Pike County, KY.  
Cultivated and naturalized from northern U.S. and Europe.

\**Secale cereal* L. #316, 344, 346  
Laurel Lake Trail at shelter construction site; Laurel Lake Trail. Dickenson County, VA.  
A long-cultivated crop plant.

\**Setaria pumila* (Poir.) Roem. & Schult. #567  
Bottomland open woods next to gravel road, up from stables. Dickenson County, VA.  
Naturalized from Europe.

\**Setaria viridis* (L.) P.Beauv. #364  
Along railroad tracks running parallel to State Hwy 80 and Russell Fork. Pike County, KY.  
Naturalized from Eurasia.

*Tridens flavus* (L.) Hitchc. #846  
Open meadow off Mountain Bike Trail. Dickenson County, VA.

\**Triticum aestivum* L. #194  
Stables vicinity along grassy road. Dickenson County, VA.  
A Eurasian cultigen.

#### Potamogetonaceae

*Potamogeton nodosus* Poir. #318, 330, 822  
Laurel Lake. Dickenson County, VA.

*Potamogeton pusillus* L. #347, 348  
Laurel Lake. Dickenson County, VA.

### Smilacaceae

*Smilax glauca* Walter. #244

Wooded hillside between State Hwy 80 and railroad trestle. Pike County, KY.

*Smilax rotundifolia* L. #122, 530, 573

Prospector's Trail, community of red maple, hickory spp., chestnut oak, tulip-poplar, northern red oak, redbud, black walnut; trail around Beaver Pond. Dickenson County, VA. Trail from State Hwy 80 to railroad trestle and Potter's Flats. Pike County, KY.

### Trilliaceae

*Trillium erectum* L. #69

Garden Hole. Dickenson County, VA.

*Trillium grandiflorum* (Michx.) Salisb. #46, 47, 62

State Hwy 80 roadside between park entrance and Garden Hole; Garden Hole. Dickenson County, VA.

### Typhaceae

*Sparganium americanum* Nutt. #327, 387

Along Laurel Lake. Dickenson County, VA.

*Typha latifolia* L. #516

Along Laurel Lake. Dickenson County, VA.

### Uvulariaceae

*Prosartes lanuginosa* (Michx.) D. Don.

Garden Hole, rich hollow, near top. Dickenson County, VA. Ken Markley, 30 April 1986. VPI.

!*Prosartes maculata* (Buckley) A. Gray

Cottage compound junction, east wood's edge. Dickenson County, VA. Ken Markley, 14 May 1986. VPI. S3 Status.

*Uvularia grandiflora* Sm. #101

Along Camp Branch, south of Garden Hole Rd. Dickenson County, VA.

*Uvularia perfoliata* L. #692

Rattlesnake Trail, N-facing, community of hemlock, spicebush, sourwood, sugar maple. Dickenson County, VA.