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Floristic Inventory of Gauley River National Recreation Area, West Virginia

Technical Report NPS/NER/NRTR—2010/149



ON THE COVER

Clockwise from upper left: Carolina rose (*Rosa carolina* var. *carolina*), smooth blue aster (*Symphyotrichum laeve* var. *concinnum*), smooth azalea (*Rhododendron arborescens*), and fire pink (*Silene virginica* var. *virginica*).

Photographs by: Brian P. Streets.

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U.S. Department of the Interior
National Park Service
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Executive Summary

A floristic inventory of the Gauley River National Recreation Area, located in south-central West Virginia, was conducted from 2006–2009 by the West Virginia Natural Heritage Program. Prior to field work, literature and databases were reviewed to compile a list of vascular plants already known to occur in the park. Six hundred eighty-two vascular plant taxa were identified during the 2006–2009 surveys, including 266 taxa not previously documented from the study area. The documented flora of the Gauley River National Recreation Area now consists of 787 taxa representing 748 species (some with multiple subspecies or varieties) in 112 plant families. Seven hundred five taxa (90% of the flora) are native to West Virginia, two taxa (0.3%) are introduced, 75 taxa (9.5%) are exotic, and five taxa (0.6%) are adventive. Sixty-four taxa are listed as invasive in West Virginia. Thirty-six taxa are tracked as rare, threatened, or endangered in West Virginia, including five that are considered globally rare. One federally listed threatened species, Virginia meadowsweet (*Spiraea virginiana*), is known from the park. Six hundred thirty-one taxa (80% of the reported flora) are represented by known collections from the park. Seventeen collections from the 2006–2009 surveys are considered Fayette County records and 121 are considered Nicholas County records. A collection of one species, downy danthonia (*Danthonia sericea*), is a state record.

Introduction

The National Park Service (NPS) Inventory and Monitoring Program has established a goal to document 90% of the estimated species of vertebrates and vascular plants that occur in each park (NPS IMP 1999). Authoritative documentation of the occurrence of vascular plants is best established by collections of voucher specimens. Another goal of the Inventory and Monitoring Program is to document the distribution and abundance of species of special concern, including threatened, endangered, and other globally or state rare species. Methods and databases developed by NatureServe and the network of Natural Heritage Programs are designed for documenting occurrences of these species of special concern. A scoping meeting, held in Glen Jean, WV, in 2000, hosted by the Inventory and Monitoring Program and attended by West Virginia natural scientists, identified a floristic inventory of Gauley River National Recreation Area (GARI) as one of the inventory priorities for the West Virginia parks in the NPS Eastern Rivers and Mountains Network (NPS IMP 2000). In 2006, a floristic inventory, including surveys for vascular plant species of special concern, was funded by the Inventory and Monitoring Program to be conducted in concurrence with vegetation mapping for the park.

The floristic inventory for GARI was completed by the West Virginia Natural Heritage Program (WVNHP), part of the Wildlife Resources Section of the Division of Natural Resources. The WVNHP conducts inventories for, maps, and maintains databases on the natural biological diversity of the state, including natural ecological communities and rare plants and animals. The WVNHP is part of a network that includes programs from each of the 50 United States, all Provinces of Canada, and several Latin American countries, with the non-profit organization NatureServe acting as network coordinator. NatureServe and the network of Natural Heritage Programs are the leading source of detailed information on biological diversity in the Americas.

Data on the taxonomy, biology, and distribution of natural ecological communities and rare, threatened, and endangered animal and plant species are maintained in Biotics (NatureServe 2007; WVDNR 2010), a georeferenced database developed and maintained by NatureServe and the network of Natural Heritage Programs. In Biotics, natural ecological communities and rare, threatened, and endangered species are known as elements (NatureServe 2002). The area of land where the element is or was known to occur is the element occurrence. Biotics utilizes both spatial and tabular data to document these occurrences. NatureServe assigns global conservation ranks for federally and state listed rare, threatened, and endangered species. Global ranks are based on worldwide occurrence and distribution information, including data obtained from state Natural Heritage Programs. WVNHP maintains a list of rare, threatened, and endangered plants in West Virginia and assigns state conservation ranks for taxa based on documented occurrences within the state (WVNHP 2007). WVNHP also assigns element occurrence ranks which estimate the relative viability of individual element occurrences (NatureServe 2002). Federal threatened and endangered status is determined by the U.S. Fish and Wildlife Service (USFWS) based on criteria set forth by the Endangered Species Act (USFWS 1973). Definitions for state ranks, global ranks, and federal threatened and endangered status are provided in Appendix A.

This project was undertaken to provide information to improve the protection and management of the plant resources of GARI. The primary objectives of this study were to 1) document the vascular plant diversity of the park, 2) contribute specimens to the NPS reference herbarium in

Glen Jean, WV, and to the West Virginia University Herbarium in Morgantown, WV, and 3) survey and document occurrences of rare, threatened, and endangered plant species found within the park. This information will help assess global and regional plant species distributions and abundances, identify management priorities, and serve as a baseline for establishment of monitoring programs for the park.

Study Area

The Gauley River National Recreation Area (GARI), established as a unit of the National Park Service in 1988, is located in Fayette and Nicholas counties in south-central West Virginia (Figure 1). The proclamation boundary of the park encompasses approximately 4,555 ha (11,257 ac), but currently only about 1,845 ha (4,559 ac) are in federal ownership. The park and its vicinity are mapped on the Ansted and Summersville Dam USGS 1:24,000 topographic maps. Elevations in the park range from 207–611 m (679–2,005 ft).

Ecoregional assignment of the park varies depending on the mapping system and version used. The U.S. Forest Service (Keys et al. 1995) includes the park in the Western Coal Fields (M221Ca) and Eastern Coal Fields (M221Cb) subsections of the Northern Cumberland Mountains Section (M221C). Another ecoregion map produced by the U.S. Forest Service (Bailey et al. 1994) places the park in the Allegheny Mountains Section (M221B) and Cumberland Mountains Section (M221C) of the Central Appalachian Broadleaf Forest-Coniferous Forest-Meadow Province. The Nature Conservancy (TNC [2009]) places the park in the Cumberlands and Southern Ridge and Valley Ecoregion. The U.S. Environmental Protection Agency (Woods et al. 2003) includes the park in the Dissected Appalachian Plateau and in the Forested Hills and Mountains Level 3 ecoregions, both of which are nested within the Central Appalachians Level 4 Ecoregion.

The climate of the park is a humid continental type characterized by marked seasonal temperature changes and relatively uniform precipitation throughout the year. Mean monthly temperature normals at nearby Summersville Lake (elevation 536 m [1,760 ft]) range from -1.8°C (28.8°F) in January to 21.4°C (70.5°F) in July (NOAA 2002). Normal annual precipitation at Summersville Lake is 120.60 cm (47.48 in) and monthly precipitation normals range from 7.75 cm (3.05 in) in February to 14.05 cm (5.53 in) in July (NOAA 2002).

Bedrock geology of the park is mapped as the New River and Kanawha formations of the Pottsville Group (Cardwell et al. 1968). These are nearly horizontal strata consisting of Pennsylvanian-aged sedimentary rocks. The older New River Formation is primarily sandstone with some shale, siltstone, and coal. It is capped by the resistant, cliff-forming Nuttall sandstone. The New River Formation is exposed in all topographic positions in the eastern end of the park and has weathered to form rolling plateaus dissected by shallow, steep-sided gorges with prominent cliff bands overlooking bedrock- and boulder-controlled rapids in the river channels. The younger Kanawha Formation is approximately 50% sandstone with lesser amounts of shale, siltstone, and coal. The Kanawha Formation lies on top of the New River Formation and its exposures become more extensive in the western end of the park. The Kanawha Formation is less resistant than the New River Formation and its landforms have greater topographic relief characterized by ridges rather than plateaus.

The park surrounds a 40-km (25-mi) reach of the Gauley River downstream from Summersville Dam and a 9-km (6-mi) reach of the Meadow River upstream from its confluence with the Gauley River. The Gauley and Meadow rivers are Rosgen type B2/1c streams (Bennett and McDonald 2006). Type B2/1c streams have less than two percent slope, have moderate width/depth ratios, are moderately entrenched, are dominated by boulders with bedrock controls,

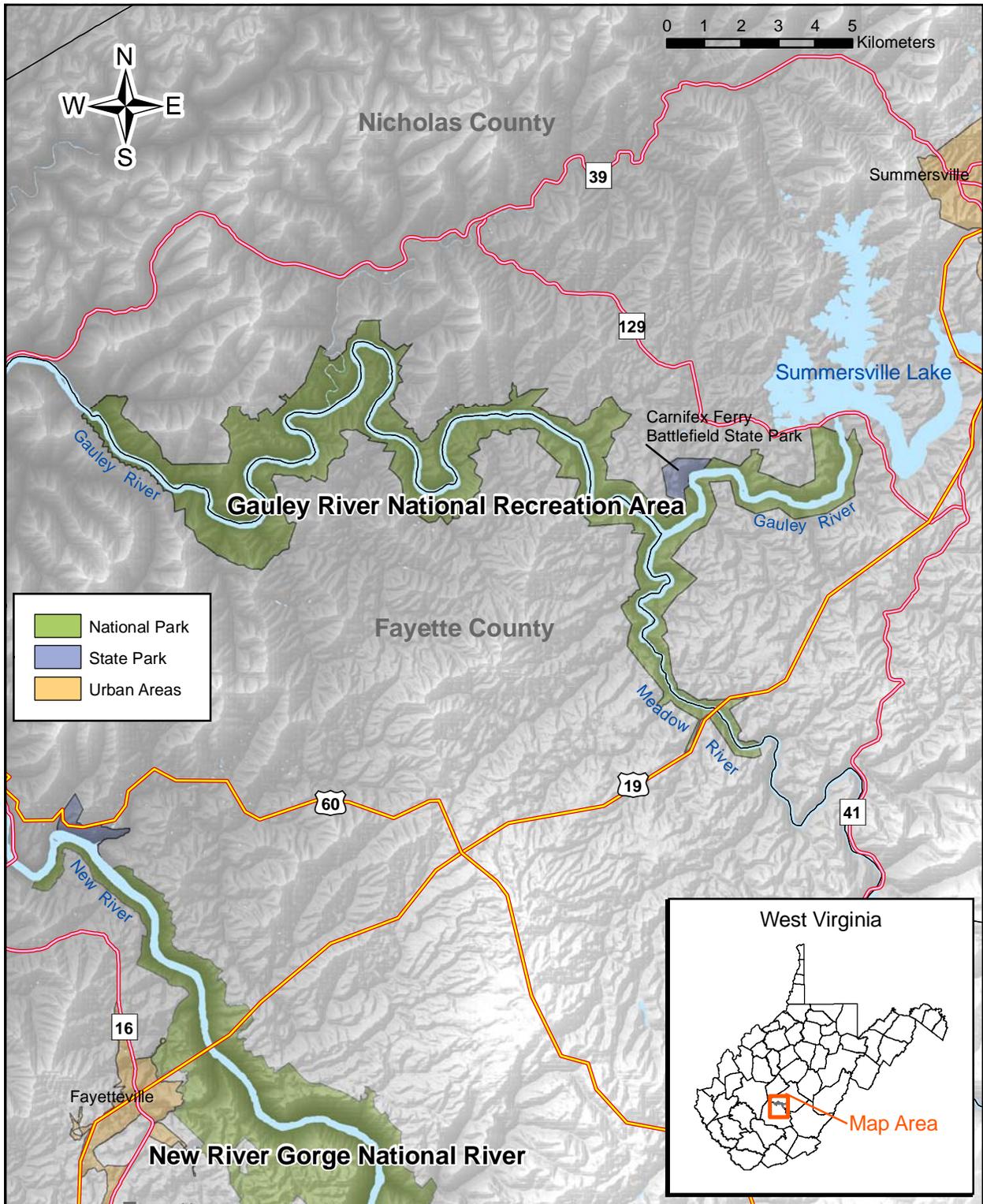


Figure 1. Gauley River National Recreation Area and vicinity in Fayette and Nicholas counties, West Virginia.

and have bed features that often produce extensive rapids (Rosgen 1996). Since 1966, flows of the Gauley River have been regulated by Summersville Dam, just upstream from the park.

Summersville Dam was constructed for flood-control purposes; however, releases from the dam have also been scheduled around weekends in September and October to facilitate a whitewater boating industry on the Gauley River since 1985. The Meadow River is a free-flowing river, but peak flows in the park are somewhat moderated by a large wetland complex about 50 km (31 mi) upstream (Bennett and McDonald 2006).

Soils in the park are mapped by USDA Soil Conservation Service soil surveys of Fayette and Nicholas counties—which use somewhat different taxonomic systems. Soils in Fayette County (Gorman and Espy 1975) are mapped as the Dekalb-Gilpin-Ernest association in the eastern $\frac{3}{4}$ of the park and as the Muskingum-Shelocta association in the western $\frac{1}{4}$ of the park. Soils in Nicholas County (Carpenter 1992) are mapped as Gilpin-Buchanan in the eastern $\frac{3}{4}$ of the park and as Gilpin-Pineville-Lily-Buchanan in the western $\frac{1}{4}$ of the park.

GARI is included in the mixed mesophytic region of the eastern deciduous forest biome (Braun 1950). The vegetation of the park is characterized by extensive upland deciduous and mixed evergreen-deciduous forests with smaller areas of cliff and riparian habitats. Most forests in the eastern two-thirds of the park have a large component of eastern hemlock (*Tsuga canadensis*), while those in the western third are primarily deciduous. Common upland trees include (in decreasing order of frequency) red maple (*Acer rubrum*), eastern hemlock, tuliptree (*Liriodendron tulipifera*), blackgum (*Nyssa sylvatica*), northern red oak (*Quercus rubra*), American holly (*Ilex opaca* var. *opaca*), sweet birch (*Betula lenta*), white oak (*Quercus alba*), American beech (*Fagus grandifolia*), sourwood (*Oxydendrum arboreum*), sugar maple (*Acer saccharum* var. *saccharum*), chestnut oak (*Quercus prinus*), sassafras (*Sassafras albidum*), white ash (*Fraxinus americana*), mockernut hickory (*Carya alba*), black oak (*Quercus velutina*), mountain magnolia (*Magnolia fraseri*), and cucumber-tree (*Magnolia acuminata*). Many forested areas, especially in the eastern end of the park, have nearly impenetrable shrub layers dominated by great laurel (*Rhododendron maximum*). Additional trees that are common in riparian habitats include river birch (*Betula nigra*), American sycamore (*Platanus occidentalis*), and sweetgum (*Liquidambar styraciflua*). The riparian habitats in the park are especially distinctive and harbor a high concentration of rare herb and shrub species, including the federally listed threatened Virginia meadowsweet (*Spiraea virginiana*).

The forests in GARI are almost entirely second or third growth following logging, but a few remnant older trees and small old-growth patches occur in the park and in adjacent Carnifex Ferry Battlefield State Park (Fortney et al. 1995). Logging was limited to areas near the river, which facilitated removal of logs by drifting prior to 1885; but the building of railroads and large band mills opened up more extensive lands to logging after 1885 (Brooks 1910). Some federally owned tracts were logged just prior to acquisition and some private holdings within GARI were logged even more recently.

Several botanical studies have been conducted at GARI but the reports covering these studies are mostly unpublished. Norris (1992) surveyed the park and reported on populations of 11 rare plant species. The West Virginia Natural Heritage Program (2004) resurveyed the park in 2003, focusing on nine of the rare plant species identified in the Norris (1992) report. A recovery plan

for Virginia meadowsweet (Ogle 1991) provides some site-specific information on the discovery and occurrence of this threatened species in the park. The West Virginia Division of Natural Resources has monitored populations of Virginia meadowsweet in the park for over a decade (Harmon et al. 2008). Grafton (1993) tallied plant species frequencies and identified forest cover types along seven transects in the park. Fortney et al. (1995) conducted a reconnaissance vegetation study (focusing on tree species) that included two plots and a tree core sampling site within GARI and three plots along a transect in Carnifex Ferry Battlefield State Park adjacent to GARI. The West Virginia Natural Heritage Program (Walton and Anderson 1997) sampled 30 vegetation plots in riparian areas of the park and recognized five community types. Wood (1999) established permanent plots in the gorge of the Meadow River in GARI and in Carnifex Ferry Battlefield State Park to monitor plant communities dominated by eastern hemlock, which are threatened by the hemlock woolly adelgid (*Adelges tsugae*)—a nonnative insect pest. The hemlock woolly adelgid was first detected at GARI in 2004 and infestations had increased by 2006, but tree mortality attributable to this pest was not yet evident in 2007 (Wood et al. 2009). Vegetation classification and mapping of GARI (Vanderhorst et al. 2010) were conducted in concurrence with the floristic survey described in this report.

Methods

Review of Existing Data

Literature and databases were reviewed to assemble a list of vascular plant taxa previously documented from GARI prior to field work. Four research projects (Norris 1992, Grafton 1993, WVNHP 2004, Walton and Anderson 1997) have documented vascular plant taxa at GARI. The Biotics database (WVDNR 2010) was queried to determine occurrences of rare, threatened, or endangered plants known from GARI. NPSpecies (NPS 2003), the NPS database for documenting the occurrence of species in national park units, was queried to determine known plant collections from the park. In addition, the West Virginia Curatorial Database System (Harmon 2007a), a database of species checklists, collection label information, and distribution data for fungi, bryophytes, and vascular plant species of West Virginia (maintained by the WVNHP), was queried for vascular plant collections known from the park. A limited number of plant collections from GARI at the herbaria at West Virginia University in Morgantown, WV, and WVNHP in Elkins, WV, were examined—misidentified specimens were annotated by the authors.

Floristic Inventory

A systematic, collection-based floristic inventory of the park began during the spring of 2006 and continued through the fall of 2009. Walk-through surveys were conducted throughout each of the growing seasons to thoroughly represent seasonal variation, ecological diversity, and the geographical range of the park. A running checklist of plants identified from the study area was created and updated during each field visit. The project goal was to collect two diagnostic voucher specimens for each vascular plant taxon found in the park, one for the NPS herbarium in Glen Jean, WV, and the second for the West Virginia University herbarium in Morgantown, WV. Additional duplicate collections were made of numerous taxa that were difficult to identify in the field. Collection was constrained by ethical collection guidelines set by The Plant Conservation Roundtable (1986) in order to avoid significant impacts to populations of rare, threatened, and endangered plants. Diagnostic reproductive material was collected whenever possible. Plant material was collected in plastic bags in the field and promptly pressed and dried. Field notes for collection sites included plant name, location (driving directions and either corrected GPS or hand-mapped coordinates), slope, aspect, elevation, habitat, associated species, collector(s), and collection date.

In addition to the floristic surveys, considerable floristic information was gathered while sampling plots for vegetation classification and mapping of GARI (Vanderhorst et al. 2010). An attempt was made to identify and estimate abundance of all vascular plant taxa occurring in 400 m² (4,305 ft²) vegetation plots. One hundred eighty-three vegetation classification plots were sampled within the park boundaries from 2006–2009. Many of the collections for the floristic inventory of GARI were made from these plots, and the plots also represent a larger number of georeferenced observation records for plant taxa. Plot data included environmental comments, landscape comments, slope, aspect, elevation, and information on geology, landform, topographic position, hydrology, and soils. Locational coordinates for 113 vegetation plots and 184 collection sites outside of plots were determined using Trimble GeoXT or Garmin GPS72

GPS units. Sites without GPS coordinates were mapped by hand on USGS topographic maps. All collection sites and vegetation plots were mapped using ESRI ArcGIS software (Figure 2).

Preliminary identifications of most plants were made in the field using *The Flora of West Virginia*, 2nd ed. (Strausbaugh and Core 1977), and the *Manual of Vascular Plants of Northeastern United States and Canada*, 2nd ed. (Gleason and Cronquist 1991). All collections were also examined and keyed in the WVNHP herbarium to verify or revise field determinations. Additional floristic references consulted in the herbarium included *The Flora of the Carolinas, Virginia, Georgia, and Surrounding Area* (Weakley 2006), *The Plants of Pennsylvania* (Rhoads and Block 2000), *Plant Life of Kentucky* (Jones 2005), and all pertinent volumes of the *Flora of North America* (Flora of North America Editorial Committee 1993+). Several problem taxa were taken to the West Virginia University herbarium in Morgantown, WV, and compared to identified voucher specimens.

Identifications of *Carex* specimens were completed using the *Flora of North America*, Vol. 23 (Ball and Reznicek 2002). Identifications of *Dichanthelium* specimens were completed using the *Flora of North America*, Vol. 25 (Freckmann and Lelong 2003). Collections of *Desmodium* were identified using a vegetative key developed by Krings (2004). *Heuchera* determinations were made using the *Key to Heuchera in West Virginia* (Norris 1999). *Monarda* specimens were determined using *The Flora of the Carolinas, Virginia, Georgia, and Surrounding Area* (Weakley 2006).

Herbarium labels were created for all plant collections using Theo, a Microsoft Access database developed by the New York Natural Heritage Program (NYNHP [Gebaur et al. 2002]). Label data include county, scientific name, plant family, common name, location (map directions and UTM coordinates), elevation, habitat, associated plants, collector's name, collection date, and determiner's name when different from the collector. Specimens deposited in the NPS herbarium in Glen Jean, WV, were mounted on acid-free, museum-quality mounting paper. All other collections were submitted unmounted with labels to the herbarium of West Virginia University in Morgantown, WV, where they will be mounted, accessioned, and curated.

Rare, Threatened, and Endangered Plant Surveys

Rare, threatened, and endangered status was determined according to the most up-to-date version of the list maintained by WVNHP (2007). When populations of listed plants were encountered, the area was surveyed and field forms were filled out to record information including population (size, number of individuals, and phenology), location (directions and either corrected GPS or hand mapped coordinates), and environmental data (slope, aspect, elevation, habitat, and associated species). Locational data for each rare, threatened, or endangered plant Element Occurrence (EO) were entered in Biotics Mapper, and tabular data on each rare, threatened, or endangered plant EO were entered in Biotics Tracker. Element Occurrence Records existing in Biotics prior to this study were updated with information gained during the 2006–2009 surveys. The Biotics database is maintained by WVNHP and exchanged with the central Biotics database maintained by NatureServe.

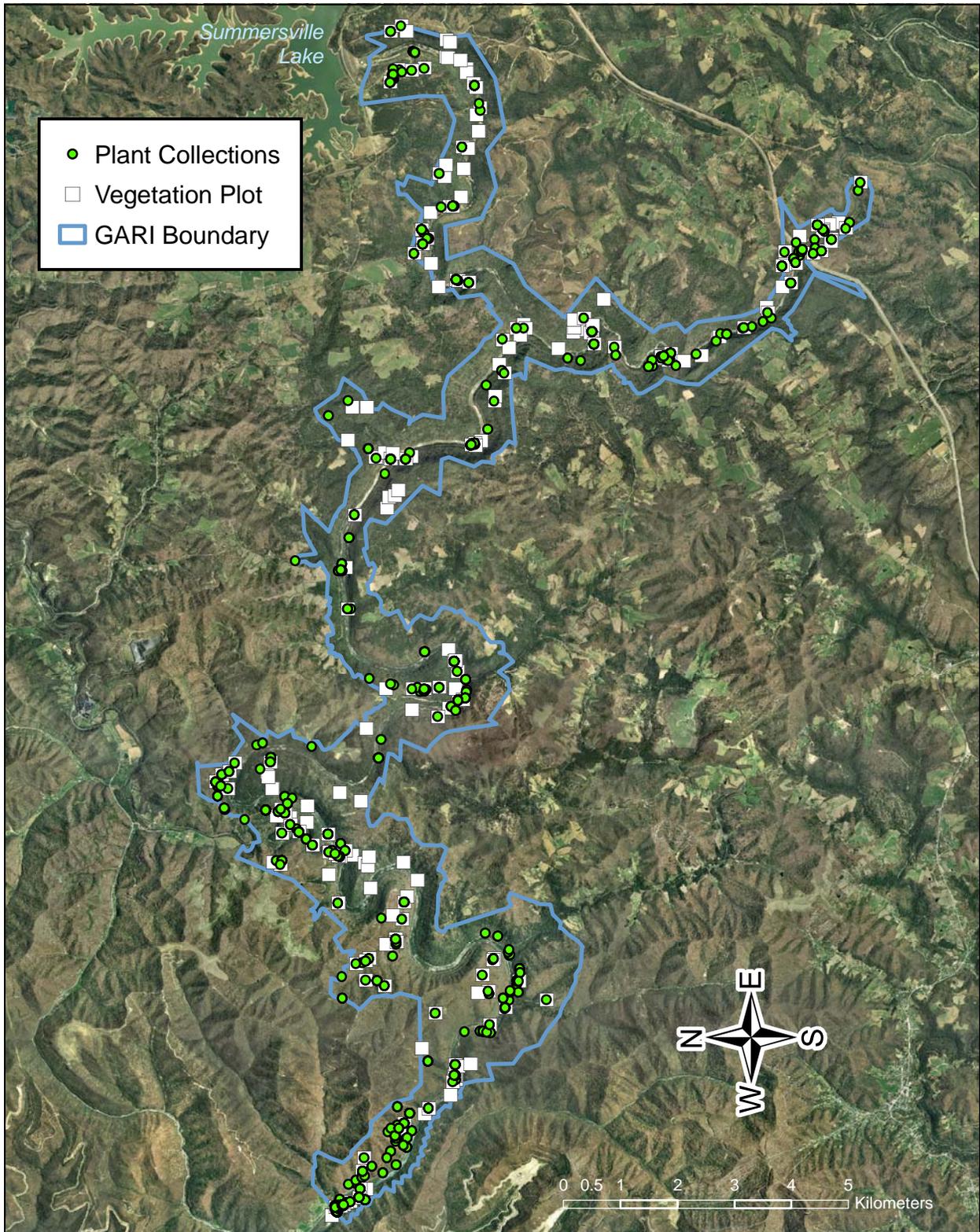


Figure 2. Locations of plant collection sites and vegetation plots in Gauley River National Recreation Area, 2006–2009.

Annotated Checklist

An annotated checklist of vascular plants documented from GARI (Appendix B) was produced using a Microsoft Access database. The checklist is a compilation of taxa documented during the literature review, database queries, herbaria investigations, and field surveys. Data entered for each taxon include plant family, scientific name, common name, nativity, invasive status, estimated abundance, whether it is listed as rare, threatened, or endangered (and, if it is, state and global ranks and federal status), collector(s) name and collection number(s), whether a 2006–2009 collection is a county or state record, whether it occurred in a 2006–2009 vegetation plot, and other studies in which it was documented from GARI (including synonymy if listed by another name).

Names used in this report and associated databases follow the Checklist and Atlas of the Vascular Flora of West Virginia (Harmon et al. 2006), except in the cases of *Carex* and *Dichanthelium*, where the nomenclature was based on the Flora of North America (1993+). Due to changes in taxonomic concepts and nomenclature over time and disagreement among botanists, many of the names used by sources for this project (reports, publications, databases, and herbarium specimens) do not correspond to the accepted names used in this report. A concerted effort was made to translate these names to our accepted names without making assumptions which might misrepresent taxonomic determinations.

Collections of taxa that were not known from West Virginia prior to the 2006–2009 GARI floristic surveys are considered state records. Collections of taxa that were not previously known from Fayette and/or Nicholas counties are considered county records. Taxa not previously known from Fayette and/or Nicholas counties that were identified but not collected during the 2006–2009 surveys are considered “potential” county records. Known state and county distributions prior to the 2006–2009 GARI floristic surveys were determined according to the Checklist and Atlas of the Vascular Flora of West Virginia (Harmon et al. 2006). The checklist is a collection of county-based dot maps showing distribution of vascular plants based on vouchered herbarium specimens.

Nativity is a representation of a species’ likelihood of occurrence in West Virginia prior to European settlement. Nativity was ascertained from the Checklist and Atlas of the Vascular Flora of West Virginia (Harmon et al. 2006). A list of nativity categories and their definitions is provided in Appendix C.

Invasive status within the state was determined using the Checklist of Invasive Plant Species of West Virginia (Harmon 2007b). Invasive plants are species which tend to encroach into natural ecosystems in which they are not native and represent a possible threat to native plants in these habitats. A list of invasive categories and their definitions is provided in Appendix D.

Abundance of each taxon was estimated by the senior author based on the number of occurrences and their geographical distribution in the park, assigning ranks as defined by NPSpecies (Wotawa 2004). Definitions of abundance ranks are provided in Appendix E.

Results

Review of Existing Data

Norris (1992) listed 62 vascular plant taxa within the GARI proclamation boundary. His survey was limited primarily to riverbanks, roads, and trails, and focused on relocating and mapping populations of 11 plant species listed as rare, threatened, or endangered by the WVNHP (2007). Grafton (1993) identified 413 taxa of vascular plants in GARI. This taxa count excludes observations in the Bluestone National Scenic River that are included in the same report. Fourteen of the taxa documented by Grafton in GARI are tracked as rare, threatened, or endangered by WVNHP (2007). Walton and Anderson (1997) identified 194 taxa during their study of riparian communities at GARI, six of which are tracked as rare, threatened, or endangered by WVNHP (2007). As a follow up to Norris (1992), WVNHP (2004) documented precise locations for four rare, threatened, or endangered plant species in GARI using a global positioning system. The NPSpecies database (NPS 2003) listed collections for 48 vascular plant taxa from the study area. After careful review of the location data, only 37 of the 48 are considered by the authors to be within the proclamation boundary of the park. Seven are tracked as rare, threatened, or endangered by WVNHP (2007). A careful examination of the West Virginia Curatorial Database System (Harmon 2007a) shows that there were 130 different vascular plant taxa vouchered from GARI prior to the 2006–2009 field surveys. Twenty-seven of these are tracked as rare, threatened, or endangered (WVNHP 2007). Sixteen collections housed at the herbaria at West Virginia University and West Virginia Natural Heritage Program were annotated, i.e. the identifications were revised, by the authors or staff at West Virginia University (Table 1). These annotations will change some of the determinations previously reported in the literature and databases (Norris 1992, Grafton 1993, NPSpecies 2003, WVNHP 2004, Harmon 2007a).

Floristic Inventory

Six hundred eighty-two plant taxa were identified in the park during the 2006–2009 field surveys, of which 266 are new records for the study area. One thousand one hundred sixteen collections representing 600 different vascular plant taxa were collected within the park. One hundred twenty-one plant taxa collected for this project are Nicholas County records and 17 are Fayette County records. Eighty-eight taxa identified in plots during the concurrent vegetation classification and mapping project were not collected due to height inaccessibility or because they were observed only in vegetative condition, lacking flowers or fruits which are usually considered essential diagnostic elements of quality herbarium specimens. Species identified in plots but not collected include 36 potential Nicholas County records and seven potential Fayette County records. An analysis of state distribution (Harmon et al. 2006) for the county records shows that most county records are found in some surrounding counties; therefore, most are relatively minor range extensions. Two county record collections, hemlock rosette grass (*Dichanthelium acuminatum* ssp. *columbianum*) in Fayette County and common chickweed (*Stellaria media* ssp. *pallida*) in Fayette and Nicholas counties, are not known from the surrounding counties. The former, listed under its synonym American panic grass (*Dichanthelium sabulorum* var. *thinium*) in Harmon et al. (2006), was known historically from three counties in WV and is considered state rare by WVNHP (2007). Common chickweed is

Table 1. Annotations made to specimens collected from the Gauley River National Recreation Area housed at the herbaria of West Virginia University (WVU) and West Virginia Natural Heritage Program (WVNHP).

Original Determination	Collector and Collection Numbers*	Herbarium and Accession Numbers	Annotation	Annotator and date
<i>Carex debilis</i> var. <i>debilis</i>	Grafton s.n.	WVU 86540	<i>Carex debilis</i> var. <i>rudgei</i>	Brian Streets 3/17/2010
<i>Helianthemum bicknellii</i> (hoary frostweed)	Richardson s.n.	WVU 74895	<i>Helianthemum propinquum</i> (low frostweed)	Amanda Philipps 6/9/2006
<i>Helianthemum bicknellii</i> (hoary frostweed)	Richardson s.n.	WVU 4896	<i>Helianthemum propinquum</i> (low frostweed)	Donna Ford-Werntz 6/21/2006
<i>Liatris aspera</i> (tall blazing star)	Grafton s.n.	WVU 129902	<i>Liatris scariosa</i> var. <i>scariosa</i> (devil's bite)	Jim Vanderhorst 3/17/2010
<i>Liatris graminifolia</i> (shaggy blazing star)	Streets 101	WVNHP 6319	<i>Liatris scariosa</i> var. <i>scariosa</i> (devil's bite)	Jim Vanderhorst 3/17/2010
<i>Liatris scariosa</i> (devil's bite)	Norris s.n.	WVNHP 6190	<i>Liatris scariosa</i> var. <i>scariosa</i> (devil's bite)	Jim Vanderhorst 3/17/2010
<i>Liatris scariosa</i> var. <i>nieuwlandii</i> (Nieuwland's blazing star)	Putnam and McDonald s.n.	WVNHP 6227	<i>Liatris scariosa</i> var. <i>scariosa</i> (devil's bite)	Jim Vanderhorst 3/17/2010
<i>Oenothera fruticosa</i> (narrowleaf evening primrose)	Norris and Mitchell s.n.	WVNHP 983	<i>Oenothera fruticosa</i> ssp. <i>glauca</i> (narrowleaf evening primrose)	Brian Streets 3/17/2010
<i>Symphiotrichum laeve</i> (smooth blue aster)	McDonald s.n.	WVNHP 6339	<i>Symphiotrichum laeve</i> var. <i>concinnum</i> (smooth blue aster)	Jim Vanderhorst 3/17/2010
<i>Symphiotrichum laeve</i> var. <i>laeve</i> (smooth blue aster)	Grafton s.n. (four collections)	WVU 125849, 133465, 135577, 135580	<i>Symphiotrichum laeve</i> var. <i>concinnum</i> (smooth blue aster)	Jim Vanderhorst 3/17/2010
<i>Symphiotrichum boreale</i> (northern bog aster)	Grafton s.n. (three collections)	WVU 125775, 125776, 125812	<i>Symphiotrichum laeve</i> var. <i>concinnum</i> (smooth blue aster)	Jim Vanderhorst 3/17/2010

* s.n., abbreviation for the latin "sine numero," indicates that no collection number was assigned by the collector.

known from four counties in WV (Harmon et al. 2006) and is an invasive plant ranked as a severe threat (Appendix D) according to Harmon (2007b). One taxon, downy danthonia (*Danthonia sericea*), collected from both Fayette and Nicholas counties during the 2006–2009 inventory, is a state record.

Rare, Threatened, and Endangered Species

A total of 36 rare, threatened, and endangered vascular plant taxa (WVNHP 2007) are currently documented from GARI, including seven taxa first documented during the 2006–2009 floristic inventory. A list of rare, threatened, and endangered plants found in the park, including their state and global conservation status ranks and federal status is provided in Table 2. Element Occurrence Records for all rare, threatened, and endangered plants known from GARI are maintained by WVNHP in the Biotics database (WVDNR 2010).

Discovery of hemlock rosette grass (*Dichantheium acuminatum* ssp. *columbianum* syn. *Dichantheium sabulorum* var. *thinium*) in GARI supports changing its state conservation rank from SH (historical) to S1 (extremely rare and critically imperiled). Discovery of downy danthonia (*Danthonia sericea*) in GARI, a state record, supports its addition to the list of rare, threatened, and endangered plant taxa (WVNHP 2007), with a state conservation rank of S1.

Annotations of eleven misidentified collections from the herbaria of West Virginia University and WVNHP (Table 1) effect their status as rare plants. Two collections previously identified as hoary frostweed (*Helianthemum bicknellii*) were annotated as low frostweed (*Helianthemum propinquum*); both of these taxa are tracked as rare plants (WVNHP 2007), but hoary frostweed is no longer considered documented to occur in GARI. One collection previously identified as Nieuwland's blazing star (*Liatris scariosa* var. *nieuwlandii*) was annotated as the more common devil's bite (*Liatris scariosa* var. *scariosa*), which is not tracked as a rare plant (WVNHP 2007); Nieuwland's blazing star is no longer considered documented to occur in GARI. Four collections previously identified as the nominate variety of smooth blue aster (*Symphyotrichum laeve* var. *laeve*), which is not tracked as a rare plant (WVNHP 2007), were annotated as a different variety of smooth blue aster (*Symphyotrichum laeve* var. *concinnum*), which is tracked as a rare plant (WVNHP 2007). One collection of smooth blue aster (*Symphyotrichum laeve*) identified to the species level was annotated to the rare variety of smooth blue aster (*Symphyotrichum laeve* var. *concinnum*), which is tracked as a rare plant (WVNHP 2007). Three collections previously identified as northern bog aster (*Symphyotrichum boreale*) were also annotated as the rare variety of smooth blue aster (*Symphyotrichum laeve* var. *concinnum*); both of these taxa are tracked as rare plants (WVNHP 2007), but northern bog aster is no longer considered documented to occur in GARI. All appropriate changes to existing Element Occurrence Records were made in Biotics (WVDNR 2010).

Floristic Summary

A list of 787 vascular plant taxa representing 748 species was compiled during the literature review and fieldwork for this report (Appendix B). The 39 taxa above the number of species represent multiple subspecies or varieties per species, or identifications made to multiple taxonomic ranks. For example, cypress panic grass (*Dichantheium dichotomum*) is listed at the species level based on the study by Walton and Anderson (1997), and three subspecies of this

Table 2. Rare, threatened, and endangered plant species in the Gauley River National Recreation Area.

Scientific Name	Common Name	State Rank*	Global Rank*	Federal Status*
<i>Adlumia fungosa</i>	allegheny vine	S2?	G4	
<i>Andropogon glomeratus</i> var. <i>glomeratus</i>	bushy bluestem	S2	G5T5	
<i>Aristida purpurascens</i> var. <i>purpurascens</i>	arrowfeather threeawn	S1	G5T5	
<i>Baptisia australis</i> var. <i>australis</i>	blue wild indigo	S3	G5TNR	
<i>Carex aestivalis</i> **	summer sedge	S2	G4	
<i>Carex bromoides</i> ssp. <i>bromoides</i> **	brome-like sedge	S3	G5T5	
<i>Carex cumberlandensis</i> **	Cumberland sedge	S2	GNR	
<i>Carex molesta</i>	troublesome sedge	S3	G4	
<i>Carex seorsa</i> **	weak stellate sedge	S1	G4	
<i>Cymophyllus fraserianus</i>	Fraser's cymophyllus	S3	G4	
<i>Desmodium pauciflorum</i>	fewflower ticktrefoil	S1	G5	
<i>Danthonia sericea</i> **	downy danthonia	S1	G5?	
<i>Dichanthelium acuminatum</i> ssp. <i>columbianum</i> **	hemlock rosette grass	S1	G5T5	
<i>Digitaria filiformis</i>	slender crabgrass	S1	G5	
<i>Eupatorium godfreyanum</i> **	Godfrey's thoroughwort	S2S3	G4	
<i>Helianthemum propinquum</i>	low frostweed	S1	G4	
<i>Helianthus occidentalis</i> ssp. <i>occidentalis</i>	fewleaf sunflower	S2	G5T5	
<i>Juglans cinerea</i>	butternut	S3	G4	
<i>Lechea tenuifolia</i>	narrowleaf pinweed	S1	G5	
<i>Liatris squarrulosa</i>	Appalachian blazing star	S1	G4G5	
<i>Lygodium palmatum</i>	American climbing fern	S3	G4	
<i>Marshallia grandiflora</i>	Monongahela Barbara's buttons	S2	G2	
<i>Monarda fistulosa</i> ssp. <i>brevis</i>	wild bergamot	S1	G5T1	
<i>Myosotis macrosperma</i>	largeseed forget-me-not	S2	G5	
<i>Packera paupercula</i>	balsam groundsel	S2	G5	
<i>Polygala curtissii</i>	Curtiss' milkwort	S2	G5	
<i>Prunus pumila</i> var. <i>depressa</i>	eastern sandcherry	S1	G5T5	
<i>Rhynchospora recognita</i>	globe beaksedge	S2	G5?	
<i>Rudbeckia fulgida</i> var. <i>fulgida</i>	orange coneflower	S2	G5T4?	
<i>Solidago simplex</i> ssp. <i>randii</i> var. <i>racemosa</i>	Rand's goldenrod	S2	G5T3?	
<i>Spiraea virginiana</i>	Virginia meadowsweet	S1	G2	LT
<i>Spiranthes lucida</i>	shining ladies'-tresses	S1S2	G5	
<i>Spiranthes vernalis</i>	spring ladies'-tresses	S3	G5	
<i>Stachys nuttallii</i>	heartleaf hedgenettle	S3	G5?	
<i>Symphotrichum laeve</i> var. <i>concinnum</i>	smooth blue aster	S2	G5T4	
<i>Thalictrum clavatum</i>	mountain meadow-rue	S2	G4	
<i>Viola appalachiensis</i>	Appalachian violet	S3	G3	

*See Appendix A for State Rank, Global Rank, and Federal Status definitions.

**Species first documented from Gauley River National Recreation Area during 2006–2009 surveys

species are listed based on our collections from the 2006–2009 surveys. In the same way, some taxa were identified at the species level in vegetation plots but were collected elsewhere and identified to subspecies or variety. One hundred twelve families are represented in five plant divisions, including 97 families in the Magnoliophyta (flowering plants), nine families in the Polypodiophyta (ferns), three families in the Lycopodiophyta (club mosses, and spike mosses), two families in the Pinophyta (conifers), and one family in the Equisetophyta (horsetails). The plant families with the largest representation are Asteraceae (121 taxa), Poaceae (76 taxa), Cyperaceae (60 taxa), Fabaceae (29 taxa), Rosaceae (29 taxa), Ranunculaceae (26 taxa), Lamiaceae (21 taxa), and Liliaceae (20 taxa). The largest genera represented are *Carex* (47 taxa), *Viola* (19 taxa), *Solidago* (18 taxa), *Dichanthelium* (17 taxa), *Symphotrichum* (14 taxa), *Polygonum* (10 taxa), *Galium* (9 taxa), *Eupatorium* (8 taxa), and *Juncus* (8 taxa).

The flora of GARI includes 705 native taxa, two introduced taxa, 75 exotic taxa, and five adventive taxa (Harmon et al. 2006). Sixty-four species found at GARI are considered to be invasive in West Virginia (Harmon 2007b), with 23 listed as severe threats, 30 listed as significant threats, five listed as lesser threats, and six listed on a watch list. Invasive ranks are defined in Appendix D.

Abundance rank, a representation of the estimated frequency of occurrence, was assigned for each vascular plant in the study area. The flora of GARI includes 24 abundant taxa, 208 common taxa, 418 uncommon taxa, and 32 rare taxa. One hundred five taxa documented from databases and previous studies were not rediscovered during the 2006–2009 surveys and their abundances were therefore listed as unknown. Abundance ranks are defined in Appendix E and are based on the definitions used by NPSpecies (Wotawa 2004).

Discussion and Management Recommendations

One of the objectives of this project was to meet the NPS (1999) goal to “document through existing, verifiable data and targeted field investigations the occurrence of at least 90 percent of the species of vascular plants.” Based on literature and database reviews and the field surveys, a total of 787 plant taxa have been reported from the park, but only 631 are documented by known collections. Currently, only 80% of the taxa in the Gauley flora checklist (Appendix B) have been vouchered with collections.

This floristic inventory covered the geography and ecological diversity of the park extremely well, in large part, because it was coupled with vegetation mapping for the park. However, 88 taxa identified in vegetation plots during 2006–2009 are not represented by collections from the study area. Eleven tree species and one vine were never collected due to height inaccessibility. Some taxa were never collected because they were observed only in vegetative condition, lacking flowers or fruits which are usually considered essential diagnostic elements of quality herbarium specimens. In retrospect, vegetative collections might have been better than none. Twenty-three species identified in vegetation plots or by other studies were collected elsewhere during the 2006–2009 surveys and were identified to variety or subspecies. These species appear in the checklist at multiple taxonomic ranks and may contribute to an “over count” of the taxa which actually occur in the park. Locations of plots with taxa that were not collected could be revisited to make collections and to reassess the correct determinations of these taxa. A database with complete plot data, including information on plot locations and species composition, was submitted as a product of vegetation mapping of the park (Vanderhorst et al. 2010).

The flora of the park includes five globally rare plants (Table 2), i.e. plants with global conservation status ranks of G1, G2, or G3, including infraspecific (T) and uncertain (?) ranks. Global conservation status ranks are assigned by NatureServe and are defined in Appendix A. For an area as small as GARI, this is a high number of globally rare taxa, and is indicative of the regional importance of the park for conservation of plant diversity. Occurrences of the federally listed threatened Virginia meadowsweet (*Spiraea virginiana*) along the Gauley and Meadow rivers in the park have excellent estimated viability (WVNHP 2010). Cover by this shrub remained stable or increased slightly from 1997 to 2006 at two monitoring sites in GARI, while it decreased over the same period at a site in Bluestone National Scenic River (Harmon et al. 2008). The population of Barbara’s buttons (*Marshallia grandiflora*) that occurs in patches scattered along the Gauley River throughout much of the park is the largest protected occurrence of this species in West Virginia, and possibly throughout its range. The occurrence of Rand's goldenrod (*Solidago simplex* ssp. *randii* var. *racemosa*) in the park is also one of the state’s largest populations; this species has high constancy in the riverscours communities in the park (Vanderhorst et al. 2010). Several populations of Appalachian violet (*Viola appalachensis*) are found scattered along the Gauley River. This beautiful blue-flowered violet is often overlooked because of its early flowering time, and may be more common in the park than current records indicate. Bill Grafton collected a specimen (WVU accession # 77641) of wild bergamot (*Monarda fistulosa* ssp. *brevis*) from the western end of the park. This specimen is over-mature and incomplete (lacking a root crown to help determine plant height) but appears to be correctly identified and was collected from the area of the park where it is most likely to occur. This taxon

is more common in the Bluestone National Scenic River (Streets et al. 2008) where the geology includes more extensive exposures of limestone and calcareous shale compared to GARI.

WVNHP maintains information on rare, threatened, and endangered species in its Biotics database. As new information on individual occurrences is obtained by NPS or other organizations or individuals, this information should be sent to WVNHP to add to Biotics. WVNHP will also continue to add information into Biotics based on its own surveys. State and global conservation ranks for species and Element Occurrence ranks within Biotics may change over time as new information is obtained or as population trends change. The park should request updated reports from Biotics as time passes, especially if activities are considered which may affect populations of rare, threatened, and endangered plants.

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Appendix A. State and global conservation rank and federal threatened and endangered status definitions.

State Ranks

State ranks are assigned by the West Virginia Natural Heritage Program and refer to the conservation status within West Virginia.

Rank	Definition
S1	Five or fewer documented occurrences, or very few remaining individuals within the state. Extremely rare and critically imperiled; or because of some factor(s) making it especially vulnerable to extirpation.
S2	Six to 20 documented occurrences, or few remaining individuals within the state. Very rare and imperiled; or because of some factor(s) making it vulnerable to extirpation.
S3	Twenty-one to 100 documented occurrences. May be somewhat vulnerable to extirpation.
S4	Common and apparently secure with more than 100 occurrences.
S5	Very common and demonstrably secure.
SH	Historical. Species which have not been relocated within the last 20 years. May be rediscovered.
SR	Reported from state, but not yet verified.
SX	Believed extirpated. Little likelihood of rediscovery.
SU	Possibly rare, but status uncertain until more data are gathered.
S?	Unranked, or, if following a number, rank uncertain (ex. S2?).

Global Ranks

Global ranks are assigned by NatureServe and refer to the conservation status across the global range of the element.

Global basic ranks

Rank	Definition
GX	Presumed Extinct (species) - Not located despite intensive searches and virtually no likelihood of rediscovery. Eliminated (ecological communities) - Eliminated throughout its range, with no restoration potential due to extinction of dominant or characteristic species.
GH	Possibly Extinct (species) - Missing; known from only historical occurrences but still some hope of rediscovery. Presumed Eliminated - (Historic, ecological communities)-Presumed eliminated throughout its range, with no or virtually no likelihood that it will be rediscovered, but with the potential for restoration, for example, American Chestnut Forest.
G1	Critically Imperiled - At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2	Imperiled - At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3	Vulnerable - At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4	Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5	Secure - Common; widespread and abundant.

Global variant ranks

Rank	Definition
G#G#	Range Rank - A numeric range rank (e.g., G2G3) is used to indicate the range of uncertainty in the status of a species or community. A G2G3 rank would indicate that there is a roughly equal chance of G2 or G3 and other ranks are much less likely. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).
GU	Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. Whenever possible, the most likely rank is assigned and a question mark qualifier may be added (e.g., G2?) to express minor uncertainty, or a range rank (e.g., G2G3) may be used to delineate the limits (range) of uncertainty.
GNR	Unranked - Global rank not yet assessed.
GNA	Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Global rank qualifiers

Rank	Definition
?	Inexact Numeric Rank - Denotes some uncertainty about the numeric rank (e.g. G3? - Believed most likely a G3, but some chance of either G2 or G4).
Q	Questionable taxonomy - Taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation priority.
C	Captive or Cultivated Only - At present extant only in captivity or cultivation, or as a reintroduced population not yet established.

Global infraspecific taxon conservation status rank - Infraspecific taxa refer to subspecies, varieties and other designations below the level of the species. Infraspecific taxon status ranks (T-ranks) apply to plants and animal species only; these T-ranks do not apply to ecological communities.

Rank	Definition
T#	Infraspecific Taxon (trinomial) - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above for global conservation status ranks. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T-rank cannot imply the subspecies or variety is more abundant than the species as a whole-for example, a G1T2 cannot occur. A vertebrate animal population, such as those listed as distinct population segments under the U.S. Endangered Species Act, may be considered an infraspecific taxon and assigned a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status. At this time, the T rank is not used for ecological communities.

Federal Threatened and Endangered Status

Federal status is determined by the U.S. Fish and Wildlife Service. These species are protected by the Endangered Species Act of 1973, as amended through the 108th Congress.

Status	Definition
LE	Listed Endangered. A species is threatened with extinction throughout all or a significant portion of its range.
LT	Listed Threatened. A species is likely to become endangered in the foreseeable future.

Appendix B. Annotated checklist of vascular plants known from Gauley River National Recreation Area, West Virginia.

Taxa are arranged alphabetically within families which are arranged alphabetically within Divisions. Divisions are arranged in phylogenetic order starting with fern allies, then ferns, then conifers, followed by the flowering plants.

Information on each taxon includes, in the following order and format:

Division

Family

Scientific name with authority (common name in parenthesis): nativity status (“native,” “adventive,” “introduced,” or “exotic” - see Appendix C for definitions); if it is invasive (“invasive”) and, if it is, invasive rank (“severe threat,” “significant threat,” “lesser threat,” or “watch list” - see Appendix D for definitions); estimated abundance (“abundant,” “common,” “uncommon,” “rare,” or “unknown abundance” - see Appendix E for definitions); if it is tracked by West Virginia Natural Heritage Program as rare, threatened, or endangered (“WVNHP tracked”) and, if it is, state rank (e.g. “S1”), global rank (e.g. “G2”), and federal status (“LT”) if listed (see Appendix A for rank and status definitions); if there are collections (collectors’ last names and collection numbers [“s.n.” if no collection number is indicated on the herbarium label]); if a collection from the 2006–2009 surveys is a state or county record (“Fayette County Record,” “Nicholas County Record,” or “WV State Record”) or, if the taxon documented during the 2006–2009 surveys had been collected, the collection would have been a county record (“Potential Fayette County Record” or “Potential Nicholas County Record”); if the taxon was identified in a vegetation plot during 2006–2009 (“identified in a vegetation plot during 2006–2009”); if there are literature source(s) documenting the taxon’s occurrence in the park (author and date citations including synonymy if another name was used, in parenthesis).

Collections by Streets, Vanderhorst, and Good are deposited in either or both of the herbaria at West Virginia University in Morgantown, WV and the National Park Service in Glen Jean, WV. Collections by Wieboldt are deposited in the Herbarium at Virginia Tech, Blacksburg, VA. Collections by Norris, Putnam, and McDonald are deposited in the herbarium of the West Virginia Natural Heritage Program in Elkins, WV. All other collections are deposited at West Virginia University.

Equisetophyta

Equisetaceae

Equisetum arvense L. (field horsetail): native; uncommon; Streets 2206; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lycopodiophyta

Isoëtaceae

Isoetes engelmannii A. Braun (Appalachian quillwort): native; rare; Streets 2084; Fayette County Record; identified in a vegetation plot during 2006–2009

Lycopodiaceae

Lycopodium annotinum L. (stiff clubmoss): native; unknown abundance; (Grafton 1993)

Lycopodium clavatum L. (running clubmoss): native; unknown abundance; Grafton s.n.

Lycopodium digitatum Dill. ex A. Braun (fan clubmoss): native; common; Streets 2639, Vanderhorst 7255, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Lycopodium flabelliforme*)

Lycopodium obscurum L. (rare clubmoss): native; uncommon; Streets 2878; Fayette County Record

Lycopodium tristachyum Pursh (deeproot clubmoss): native; uncommon; Streets 1989, Vanderhorst 7350; Fayette County Record; identified in a vegetation plot during 2006–2009

Selaginellaceae

Selaginella apoda (L.) Spring (meadow spikemoss): native; unknown abundance; Grafton s.n., Legg 14

Polypodiophyta

Adiantaceae

Adiantum pedatum L. (northern maidenhair): native; uncommon; Streets 3395; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Aspleniaceae

Asplenium montanum Willd. (mountain spleenwort): native; uncommon; Streets 2035, 2847B, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Asplenium pinnatifidum Nutt. (lobed spleenwort): native; unknown abundance; Grafton s.n.; (Grafton 1993, Norris 1992)

Asplenium platyneuron (L.) B.S.P. (ebony spleenwort): native; common; Streets 1726, 1801, 2025, 2114, 2567, 2622, 2634; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Asplenium rhizophyllum L. (walking fern): native; uncommon; Good 15, 24; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Camptosorus rhizophyllum*)

Asplenium trichomanes L. ssp. *trichomanes* (maidenhair spleenwort): native; rare; Streets 2204

Dennstaedtiaceae

Dennstaedtia punctilobula (Michx.) T. Moore (eastern hayscented fern): native; uncommon; Streets 3489; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Pteridium aquilinum (L.) Kuhn (western brackenfern): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Pteridium aquilinum (L.) Kuhn var. *latiusculum* (Desv.) Underwood ex Heller (western brackenfern): native; uncommon; Streets 2620, 3391; identified in a vegetation plot during 2006–2009

Dryopteridaceae

Athyrium filix-femina (L.) Mertens var. *angustum* (Willd.) G. Lawson (subarctic ladyfern): native; common; Vanderhorst 7239; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Athyrium angustum*)

Athyrium filix-femina (L.) Mertens var. *asplenioides* (Michx.) Farwell (asplenium ladyfern): native; uncommon; Streets 2068, 3270; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Athyrium asplenioides*, Walton and Anderson 1997 as *Athyrium asplenioides*)

Deparia acrostichoides (Sw.) M. Kato (silver false spleenwort): native; uncommon; Streets 2165; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Athyrium thelypteroides*)

Diplazium pycnocarpon (Spreng.) Broun (glade fern): native; uncommon; Streets 3397; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Athyrium pycnocarpon*)

Dryopteris goldiana (Hook. ex Goldie) Gray (Goldie's woodfern): native; uncommon; Streets 3292; Nicholas County Record; identified in a vegetation plot during 2006–2009

Dryopteris intermedia (Muhl. ex Willd.) Gray (intermediate woodfern): native; common; Streets 1705, 2069; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Dryopteris marginalis (L.) Gray (marginal woodfern): native; common; Streets 1704, Good 16, 26; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Onoclea sensibilis L. (sensitive fern): native; uncommon; Streets 1949, 3458; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Polystichum acrostichoides (Michx.) Schott (Christmas fern): native; abundant; Streets 1715, 2115, 2629; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Lygodiaceae

Lygodium palmatum (Bernh.) Sw. (American climbing fern): native; unknown abundance; WVNHP tracked, S3, G4; Legg 601; (WVDNR 2010)

Ophioglossaceae

Botrychium dissectum Spreng. (cutleaf grapefern): native; uncommon; Streets 2975; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Botrychium virginianum (L.) Sw. (rattlesnake fern): native; uncommon; Streets 1702; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Osmundaceae

Osmunda cinnamomea L. (cinnamon fern): native; uncommon; identified in a vegetation plot during 2006–2009

Osmunda claytoniana L. (interrupted fern): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Osmunda regalis L. var. *spectabilis* (Willd.) Gray (royal fern): native; common; Streets 1693, 2617, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Osmunda regalis*, Norris 1992 as *Osmunda regalis*, Walton and Anderson 1997 as *Osmunda regalis*)

Polypodiaceae

Polypodium virginianum L. (rock polypody): native; common; Streets 1777, 2511, 2621, 2680; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Thelypteridaceae

Phegopteris hexagonoptera (Michx.) Fée (broad beechfern): native; uncommon; Streets 2609; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Thelypteris noveboracensis (L.) Nieuwl. (New York fern): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Pinophyta

Cupressaceae

Juniperus virginiana L. var. *virginiana* (eastern redcedar): native; common; Streets 1914; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Juniperus virginiana*, Norris 1992 as *Juniperus virginiana*, Walton and Anderson 1997 as *Juniperus virginiana*)

Pinaceae

Pinus rigida P. Mill. (pitch pine): native; common; Streets 1917, 3319, 3320, 2561A; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Pinus strobus L. (eastern white pine): native; uncommon; identified in a vegetation plot during 2006–2009

Pinus virginiana P. Mill. (Virginia pine): native; common; Streets 1897, 2541, 3036, 3316, 3317, 3318; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Tsuga canadensis (L.) Carr. (eastern hemlock): native; abundant; Streets 3383, 3487; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Magnoliophyta

Acanthaceae

Justicia americana (L.) Vahl (American water-willow): native; common; Streets 2005, 2119, 2666; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Aceraceae

Acer negundo L. var. *negundo* (boxelder): native; uncommon; Streets 3322; Nicholas County Record; identified in a vegetation plot during 2006–2009

Acer nigrum Michx. f. (black maple): native; rare; identified in a vegetation plot during 2006–2009

Acer pensylvanicum L. (striped maple): native; abundant; Streets 2881; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Acer rubrum L. (red maple): native; abundant; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Acer rubrum L. var. *rubrum* (red maple): native; abundant; Streets 2510, 2914

Acer saccharum Marsh. var. *saccharum* (sugar maple): native; abundant; Vanderhorst 7351; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Acer saccharum*, Norris 1992 as *Acer saccharum*, Walton and Anderson 1997 as *Acer saccharum*)

Acer spicatum Lam. (mountain maple): native; uncommon; Streets 1842, 2928; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Acoraceae

Acorus calamus L. (calamus): native; unknown abundance; (Norris 1992)

Alismataceae

Alisma subcordatum Raf. (American water plantain): native; rare; Streets 2200, 2698; identified in a vegetation plot during 2006–2009

Sagittaria latifolia Willd. (broadleaf arrowhead): native; rare; Streets 2198; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Anacardiaceae

Rhus copallinum L. (flameleaf sumac): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Rhus copallina*)

Rhus copallinum L. var. *latifolia* Engl. (winged sumac): native; uncommon; Streets 2723, 3086, 2367A

Rhus glabra L. (smooth sumac): native; unknown abundance; (Grafton 1993)

Rhus typhina L. (staghorn sumac): native; uncommon; Streets 3385; (Grafton 1993)

Toxicodendron radicans (L.) Kuntze (eastern poison ivy): native; abundant; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Rhus radicans*)

Annonaceae

Asimina triloba (L.) Dunal (pawpaw): native; common; Streets 2906; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Apiaceae

Angelica triquinata Michx. (filmy angelica): native; rare; Streets 2197; Fayette County Record; identified in a vegetation plot during 2006–2009

Angelica venenosa (Greenway) Fern. (hairy angelica): native; unknown abundance; Grafton s.n.; (Grafton 1993)

Cicuta maculata L. var. *maculata* (spotted water hemlock): native; uncommon; Streets 2392; identified in a vegetation plot during 2006–2009

Cryptotaenia canadensis (L.) DC. (Canadian honewort): native; common; Streets 1888; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Daucus carota L. (Queen Anne's lace): exotic; invasive, lesser threat; common; Streets 2038, 3055; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Hydrocotyle americana L. (American marshpennywort): native; unknown abundance; Richardson s.n.

Osmorhiza claytonii (Michx.) C.B. Clarke (Clayton's sweetroot): native; common; Streets 1714, 2902; identified in a vegetation plot during 2006–2009

Osmorhiza longistylis (Torr.) DC. (longstyle sweetroot): native; uncommon; Streets 3488; (Grafton 1993)

Oxypolis rigidior (L.) Raf. (stiff cowbane): native; uncommon; Streets 2432, 3083, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Sanicula canadensis L. var. *canadensis* (Canadian blacksnakeroot): native; uncommon; Streets 2601; Nicholas County Record

Sanicula canadensis L. var. *grandis* Fern. (Canadian blacksnakeroot): native; uncommon; Streets 2592, 2118A; Nicholas County Record; identified in a vegetation plot during 2006–2009

Sanicula marilandica L. (Maryland sanicle): native; uncommon; Streets 1727; Nicholas County Record; identified in a vegetation plot during 2006–2009

Sanicula odorata (Raf.) K.M. Pryer & L.R. Phillippe (clustered blacksnakeroot): native; unknown abundance; (Grafton 1993 as *Sanicula gregaria*)

Sanicula trifoliata Bickn. (largefruit blacksnakeroot): native; uncommon; Streets 1947, 2517, 2551, 3401; identified in a vegetation plot during 2006–2009

Taenidia integerrima (L.) Drude (yellow pimpernel): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Zizia aptera (Gray) Fern. (meadow zizia): native; uncommon; Streets 1681, 2007, 2464, 2496; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Zizia trifoliata (Michx.) Fern. (meadow alexanders): native; uncommon; identified in a vegetation plot during 2006–2009

Apocynaceae

Apocynum cannabinum L. (Indianhemp): native; common; Vanderhorst 7354; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Vinca minor L. (common periwinkle): exotic; invasive, severe threat; uncommon; Streets 3311

Aquifoliaceae

Ilex montana Torr. & Gray ex Gray (mountain holly): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Ilex opaca Ait. var. *opaca* (American holly): native; abundant; Streets 3310; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Ilex opaca*, Walton and Anderson 1997 as *Ilex opaca*)

Ilex verticillata (L.) Gray (common winterberry): native; common; Streets 1919, 2356, 2433, 2670, Grafton s.n., Nicely 876; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Araceae

Arisaema triphyllum (L.) Schott (Jack in the pulpit): native; unknown abundance; (Grafton 1993, Norris 1992)

Arisaema triphyllum (L.) Schott ssp. *triphyllum* (Jack in the pulpit): native; common; Streets 2897; identified in a vegetation plot during 2006–2009

Araliaceae

Aralia racemosa L. ssp. *racemosa* (American spikenard): native; uncommon; Streets 3399; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aralia racemosa*)

Aralia spinosa L. (devil's walkingstick): native; uncommon; Streets 2179, 2625; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Panax quinquefolius L. (American ginseng): native; uncommon; Streets 2718; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Aristolochiaceae

Aristolochia macrophylla Lam. (pipevine): native; common; Streets 2872; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Aristolochia serpentaria L. (Virginia snakeroot): native; uncommon; Streets 3021, 3066; Nicholas County Record; identified in a vegetation plot during 2006–2009
Asarum canadense L. (Canadian wildginger): native; common; Streets 1779, 2488, Good 17; identified in a vegetation plot during 2006–2009; (Grafton 1993)
Hexastylis heterophylla (Ashe) Small (variableleaf heartleaf): native; unknown abundance; (Norris 1992 as *Asarum heterophyllum*)
Hexastylis virginica (L.) Small (Virginia heartleaf): native; common; Streets 1774, 1856, 2490; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Asarum virginicum*)

Asclepiadaceae

Asclepias incarnata L. (swamp milkweed): native; unknown abundance ; (Walton and Anderson 1997)
Asclepias quadrifolia Jacq. (fourleaf milkweed): native; uncommon; Streets 1729; identified in a vegetation plot during 2006–2009
Asclepias syriaca L. (common milkweed): native; common; Streets 2662, 3442
Asclepias tuberosa L. (butterfly milkweed): native; unknown abundance; (Norris 1992)
Asclepias tuberosa L. ssp. *tuberosa* (butterfly milkweed): native; uncommon; identified in a vegetation plot during 2006–2009

Asteraceae

Achillea millefolium L. var. *occidentalis* DC. (western yarrow): exotic; common; Streets 1907, 1966; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Achillea millefolium*)
Ageratina altissima (L.) King & H.E. Robins. var. *altissima* (white snakeroot): native; common; Streets 3077; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Eupatorium rugosum*, Walton and Anderson 1997 as *Eupatorium rugosum*)
Ambrosia artemisiifolia L. var. *elatior* (L.) Descourtils (annual ragweed): native; common; Streets 2379; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Ambrosia artemisiifolia*, Walton and Anderson 1997 as *Ambrosia artemisiifolia*)
Ambrosia trifida L. var. *trifida* (great ragweed): native; uncommon; Streets 3413; (Grafton 1993 as *Ambrosia trifida*, Walton and Anderson 1997 as *Ambrosia trifida*)
Antennaria plantaginifolia (L.) Richards. (woman's tobacco): native; uncommon; Streets 2479, 2866; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)
Antennaria solitaria Rydb. (singlehead pussytoes): native; uncommon; Streets 1747, 2886; identified in a vegetation plot during 2006–2009
Arnoglossum atriplicifolium (L.) H.E. Robins. (pale Indian plaintain): native; uncommon; Streets 2180, 3456; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Cacalia atriplicifolia*, Walton and Anderson 1997 as *Cacalia atriplicifolia*)
Artemisia vulgaris L. var. *vulgaris* (common wormwood): exotic; invasive, significant threat; uncommon; Streets 3087
Bidens bipinnata L. (Spanish needles): native; uncommon; Streets 3287
Bidens coronata (L.) Britt. (crowned beggarticks): native; unknown abundance; (Walton and Anderson 1997)
Bidens frondosa L. (devil's beggartick): native; uncommon; Streets 2364, 2396; identified in a vegetation plot during 2006–2009

Bidens vulgata Greene (big devils beggartick): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Chrysopsis mariana (L.) Ell. (Maryland goldenaster): native; uncommon; Streets 2174, 2725, Good 13, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Heterotheca mariana*, Walton and Anderson 1997 as *Heterotheca mariana*)

Cirsium altissimum (L.) Hill (tall thistle): native; uncommon; Streets 3459; Nicholas County Record

Conoclinium coelestinum (L.) DC. (blue mistflower): native; uncommon; Streets 3070; (Grafton 1993 as *Eupatorium coelestinum*)

Conyza canadensis (L.) Cronq. var. *canadensis* (Canadian horseweed): native; uncommon; Streets 3382, 3479; (Grafton 1993 as *Erigeron canadensis*)

Coreopsis grandiflora Hogg ex Sweet var. *harveyana* (Gray) Sherff (largeflower tickseed): introduced; unknown abundance; Grafton s.n.

Coreopsis lanceolata L. (lanceleaf tickseed): native; unknown abundance; (Grafton 1993)

Coreopsis major Walt. (greater tickseed): native; common; Streets 2557, 2672; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Coreopsis pubescens Ell. var. *pubescens* (star tickseed): native; uncommon; Streets 2214, 3082; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Coreopsis pubescens*)

Coreopsis tripteris L. (tall tickseed): native; common; Streets 2187, 2193, Vanderhorst 5946; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Crepis pulchra L. (smallflower hawksbeard): exotic; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Doellingeria infirma (Michx.) Greene (cornel-leaf whitetop): native; uncommon; Streets 3037, 3409; Nicholas County Record

Doellingeria umbellata (P. Mill.) Nees var. *umbellata* (parasol whitetop): native; uncommon; Streets 3410, Good 21, WVU 979; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster umbellatus*, Walton and Anderson 1997 as *Aster umbellatus*)

Elephantopus carolinianus Raeusch. (Carolina elephantsfoot): native; uncommon; Streets 2383; identified in a vegetation plot during 2006–2009

Erechtites hieraciifolia (L.) Raf. ex DC. var. *hieraciifolia* (American burnweed): native; uncommon; Streets 3485; (Grafton 1993 as *Erechtites hieracifolia*)

Erigeron annuus (L.) Pers. (eastern daisy fleabane): native; common; Streets 1967, 2579; (Grafton 1993)

Erigeron philadelphicus L. var. *philadelphicus* (Philadelphia fleabane): native; common; Streets 1790; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Erigeron philadelphicus*)

Erigeron pulchellus Michx. (robin's plantain): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Erigeron pulchellus Michx. var. *brauniae* Fern. (Braun's erigeron): native; common; Streets 1680, 2545, 2900, Grafton s.n.; identified in a vegetation plot during 2006–2009

Erigeron strigosus Muhl. ex Willd. var. *strigosus* (prairie fleabane): native; uncommon; Streets 1906

Eupatorium album L. (white thoroughwort): native; unknown abundance; (Walton and Anderson 1997)

Eupatorium fistulosum Barratt (trumpetweed): native; common; Streets 2348; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Eupatorium godfreyanum Cronq. (Godfrey's thoroughwort): native; common; WVNHP tracked, S2S3, G4; Streets 2646, 2693, 3387; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Eupatorium perfoliatum L. var. *perfoliatum* (common boneset): native; common; Streets 2194; identified in a vegetation plot during 2006–2009

Eupatorium purpureum L. var. *purpureum* (sweetscented joeypyeweed): native; common; Streets 3088; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Eupatorium purpureum*)

Eupatorium rotundifolium L. var. *ovatum* (Bigelow) Torr. (roundleaf thoroughwort): native; uncommon; Streets 3453, Grafton s.n.; identified in a vegetation plot during 2006–2009; Grafton 1993 as *Eupatorium pubescens*, Walton and Anderson 1997 as *Eupatorium pubescens*)

Eupatorium serotinum Michx. (lateflowering thoroughwort): native; uncommon; Streets 2373, 3072; (Grafton 1993)

Eupatorium sessilifolium L. (upland boneset): native; unknown abundance; (Grafton 1993)

Eurybia divaricata (L.) Nesom (white wood aster): native; abundant; Streets 3047, Grafton s.n., Wieboldt 9365, 9366; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster divaricatus*, Walton and Anderson 1997 as *Aster divaricatus*)

Eurybia macrophylla (L.) Cass. (bigleaf aster): native; uncommon; Streets 3048

Eurybia schreberi (Nees) Nees (Schreber's aster): native; uncommon; Streets 2164, 2217, 2709, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster schreberi*)

Euthamia graminifolia (L.) Nutt. var. *graminifolia* (flat-top goldentop): native; common; Streets 2855, 3054; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Solidago graminifolia*, Walton and Anderson 1997 as *Solidago graminifolia*)

Helenium autumnale L. var. *autumnale* (common sneezeweed): native; common; Streets 2190, 3069; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Helenium autumnale*, Walton and Anderson 1997 as *Helenium autumnale*)

Helenium flexuosum Raf. (purplehead sneezeweed): native; uncommon; Streets 2036

Helianthus decapetalus L. (thinleaf sunflower): native; common; Streets 2218, 3405; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Helianthus divaricatus L. (woodland sunflower): native; common; Streets 3029; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Helianthus giganteus L. (giant sunflower): adventive; uncommon; Streets 3085; (Walton and Anderson 1997)

Helianthus microcephalus Torr. & Gray (small woodland sunflower): native; uncommon; Streets 3080, 3090, 3455; Nicholas County Record; (Grafton 1993)

Helianthus occidentalis Riddell ssp. *occidentalis* (fewleaf sunflower): native; unknown abundance; WVNHP tracked, S2, G5T5; (Grafton 1993 as *Helianthus dowellianus*, WVDNR 2010)

Helianthus strumosus L. (paleleaf woodland sunflower): native; uncommon; Streets 2166, 3062; Nicholas County Record; (Walton and Anderson 1997)

Heliopsis helianthoides (L.) Sweet (smooth oxeye): native; uncommon; identified in a vegetation plot during 2006–2009

Hieracium caespitosum Dumort. (meadow hawkweed): exotic; invasive, significant threat; common; identified in a vegetation plot during 2006–2009

Hieracium gronovii L. (queendevil): native; uncommon; Streets 2374

Hieracium paniculatum L. (Allegheny hawkweed): native; uncommon; Streets 2714, 3394; Nicholas County Record; identified in a vegetation plot during 2006–2009

Hieracium scabrum Michx. var. *scabrum* (rough hawkweed): native; uncommon; Streets 3384; (Grafton 1993 as *Hieracium scabrum*)

Hieracium venosum L. (rattlesnakeweed): native; common; Streets 1739; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Ionactis linariifolius (L.) Greene (flaxleaf whitetop aster): native; common; Good 6, WVU 964, Wieboldt 9360; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster linariifolius*, Walton and Anderson 1997 as *Aster linariifolius*)

Krigia biflora (Walt.) Blake var. *biflora* (twoflower dwarf dandelion): native; uncommon; Grafton s.n.; identified in a vegetation plot during 2006–2009

Lactuca biennis (Moench) Fern. (tall blue lettuce): native; unknown abundance; (Grafton 1993)

Lactuca canadensis L. (Canada lettuce): native; uncommon; Streets 2645, Grafton s.n.; identified in a vegetation plot during 2006–2009

Lactuca floridana (L.) Gaertn. var. *floridana* (woodland lettuce): native; uncommon; Streets 3089, 3289; Nicholas County Record

Lactuca saligna L. (willowleaf lettuce): exotic; invasive, watch list; uncommon; Streets 3478

Lactuca serriola L. (prickly lettuce): exotic; invasive, watch list; unknown abundance; (Grafton 1993 as *Lactuca scariola*)

Lapsana communis L. (common nipplewort): exotic; invasive, significant threat; uncommon; Streets 3477

Leucanthemum vulgare Lam. (oxeye daisy): exotic; invasive, significant threat; common; Streets 1891, 2558, 2586; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Chrysanthemum leucanthemum*)

Liatris scariosa (L.) Willd. var. *scariosa* (devil's bite): native; common; Streets 101, 2167, 2192, 2223, Good 9, Grafton s.n., WVU 986, Putnam & McDonald s.n., Norris s.n.; identified in a vegetation plot during 2006–2009

Liatris squarrulosa Michx. (Appalachian blazing star): adventive; unknown abundance; WVNHP tracked, S1, G4G5; Wieboldt 9359; (WVDNR 2010)

Marshallia grandiflora Beadle & F.E. Boynt. (Monongahela Barbara's buttons): native; uncommon; WVNHP tracked, S2, G2; Streets 1916; Potential Fayette County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997, WVDNR 2010, WVNHP 2004)

Packera aurea (L.) A. & D. Löve (golden ragwort): native; common; Streets 1688, 2458; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Senecio aureus*, Norris 1992 as *Senecio aureus*, Walton and Anderson 1997 as *Senecio aureus*)

Packera obovata (Muhl. ex Willd.) W.A. Weber & A. Löve (roundleaf ragwort): native; uncommon; Streets 1795, 2887; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Senecio obovatus*, Walton and Anderson 1997 as *Senecio obovatus*)

Packera paupercula (Michx.) A. & D. Löve (balsam groundsel): native; common; WVNHP tracked, S2, G5; Streets 1689, 1808, 1819, Grafton s.n., Bush s.n.; Potential Fayette County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Senecio pauperculus*, Norris 1992 as *Senecio pauperculus*, Walton and Anderson 1997 as *Senecio pauperculus*, WVDNR 2010)

Polymnia canadensis L. (whiteflower leafcup): native; common; Streets 3411; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Prenanthes alba L. (white rattlesnakeroot): native; unknown abundance; (Walton and Anderson 1997)

Prenanthes altissima L. (tall rattlesnakeroot): native; uncommon; Streets 3457; (Grafton 1993)

Prenanthes serpentaria Pursh (cankerweed): native; unknown abundance; (Grafton 1993)

Pseudognaphalium obtusifolium (L.) Hilliard & Burt ssp. *obtusifolium* (rabbittobacco): native; uncommon; Streets 2375, 3464; (Grafton 1993 as *Gnaphalium obtusifolium*)

Rudbeckia fulgida Ait. var. *fulgida* (orange coneflower): native; uncommon; WVNHP tracked, S2, G5T4?; Streets 3272, Grafton s.n.; (WVDNR 2010)

Rudbeckia laciniata L. var. *laciniata* (cutleaf coneflower): native; common; Streets 2707, 3071; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Sericocarpus asteroides (L.) B.S.P. (toothed whitetop aster): native; uncommon; McDonald s.n.; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Aster paternus*)

Smallanthus uvedalius (L.) Mackenzie ex Small (hairy leafcup): native; uncommon; Streets 2856, 3283; (Grafton 1993 as *Polymnia uvedalia*)

Solidago altissima L. (Canada goldenrod): native; uncommon; Streets 2380, 3462; (Grafton 1993)

Solidago arguta Ait. (Atlantic goldenrod): native; uncommon; identified in a vegetation plot during 2006–2009

Solidago arguta Ait. var. *arguta* (Atlantic goldenrod): native; uncommon; Streets 3076, Good 1; Nicholas County Record; identified in a vegetation plot during 2006–2009

Solidago bicolor L. (white goldenrod): native; uncommon; Streets 3282; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Solidago caesia L. (wreath goldenrod): native; common; Streets 3046, 3277; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Solidago curtisii Torr. & Gray (mountain decumbent goldenrod): native; uncommon; Grafton s.n.; identified in a vegetation plot during 2006–2009

Solidago erecta Pursh (showy goldenrod): native; unknown abundance; Grafton s.n.; (Grafton 1993)

Solidago flexicaulis L. (zigzag goldenrod): native; uncommon; Streets 3281; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Solidago gigantea Ait. (giant goldenrod): native; uncommon; Streets 3057; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Solidago hispida Muhl. ex Willd. var. *hispida* (hairy goldenrod): native; uncommon; Potential Fayette County Record, Potential Nicholas County record; identified in a vegetation plot during 2006–2009

Solidago juncea Ait var. *juncea* (early goldenrod): native; uncommon; identified in a vegetation plot during 2006–2009

Solidago nemoralis Ait. var. *nemoralis* (gray goldenrod): native; uncommon; Streets 2376, 2724A, 3291; (Grafton 1993 as *Solidago nemoralis*)

Solidago odora Ait. var. *odora* (anisescented goldenrod): native; unknown abundance; Grafton s.n.; (Grafton 1993 as *Solidago odora*)

Solidago roanensis Porter (Roan Mountain goldenrod): native; uncommon; Streets 2713, 2724B; Nicholas County Record; identified in a vegetation plot during 2006–2009

Solidago rugosa P. Mill. (wrinkleleaf goldenrod): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Solidago rugosa P. Mill. ssp. *aspera* (Ait.) Cronq. (wrinkleleaf goldenrod): native; uncommon; Streets 3059, 3290; Nicholas County Record

Solidago simplex Kunth ssp. *randii* (Porter) Ringius var. *racemosa* (Greene) Ringius (Rand's goldenrod): native; common; WVNHP tracked, S2, G5T3?; Streets 2076, 2210, 2229, 2357, 2649, Vanderhorst 5942, 7248, Good 8, Wieboldt 9363, 9364, Grafton s.n., Moore s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Solidago racemosa*, Norris 1992 as *Solidago racemosa*, Walton and Anderson 1997 as *Solidago racemosa*, WVDNR 2010)

Solidago ulmifolia Muhl. ex Willd. var. *ulmifolia* (elmleaf goldenrod): native; uncommon; Streets 3052; (Grafton 1993 as *Solidago ulmifolia*)

Symphotrichum cordifolium (L.) Nesom (common blue wood aster): native; uncommon; Streets 2726; identified in a vegetation plot during 2006–2009

Symphotrichum dumosum (L.) Nesom var. *dumosum* (rice button aster): native; unknown abundance; (Grafton 1993 as *Aster dumosus*, Walton and Anderson 1997 as *Aster dumosus*)

Symphotrichum laeve (L.) A.& D. Löve var. *concinnum* (Willd.) Nesom (smooth blue aster): native; common; WVNHP tracked, S2, G5T4; Streets 2189, 2225, 2232, Wieboldt 9358, Grafton s.n., McDonald s.n.; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Symphotrichum lanceolatum (Willd.) Nesom ssp. *lanceolatum* var. *lanceolatum* (white panicle aster): native; uncommon; Streets 3274, Good 7, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster simplex*, Walton and Anderson 1997 as *Aster simplex*)

Symphotrichum lateriflorum (L.) A.& D. Löve (calico aster): native; uncommon; Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster lateriflorus*, Walton and Anderson 1997 as *Aster lateriflorus*)

Symphotrichum patens (Ait.) Nesom var. *patens* (late purple aster): native; uncommon; Streets 3278, 3451, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster patens*)

Symphyotrichum pilosum (Willd.) Nesom (hairy white oldfield aster): native; uncommon; identified in a vegetation plot during 2006–2009

Symphyotrichum pilosum (Willd.) Nesom var. *pilosum* (hairy white oldfield aster): native; uncommon; Streets 2371, WVU 978; (Grafton 1993 as *Aster pilosus*)

Symphyotrichum praealtum (Poir.) Nesom (willowleaf aster): native; rare; Eye s.n.; identified in a vegetation plot during 2006–2009

Symphyotrichum prenanthoides (Muhl. ex Willd.) Nesom (crookedstem aster): native; uncommon; Streets 3280; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Aster prenanthoides*, Walton and Anderson 1997 as *Aster prenanthoides*)

Symphyotrichum puniceum (L.) A.& D. Löve var. *puniceum* (purplestem aster): native; uncommon; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Aster puniceus*)

Symphyotrichum racemosum (Ell.) Nesom (smooth white oldfield aster): native; uncommon; Streets 2360, 2391, 3286; identified in a vegetation plot during 2006–2009

Symphyotrichum shortii (Lindl.) Nesom (Short's aster): native; unknown abundance; (Grafton 1993 as *Aster shortii*)

Symphyotrichum undulatum (L.) Nesom (waxy leaf aster): native; uncommon; Streets 3288; identified in a vegetation plot during 2006–2009

Taraxacum officinale G.H. Weber ex Wiggers ssp. *officinale* (common dandelion): Exotic; common; Streets 2472; identified in a vegetation plot during 2006–2009

Tussilago farfara L. (coltsfoot): exotic; invasive, significant threat; common; Vanderhorst7120; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Verbesina alternifolia (L.) Britt. ex Kearney (wingstem): native; uncommon; Streets 3061, 3374; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Verbesina occidentalis (L.) Walt. (yellow crownbeard): native; uncommon; Streets 2369; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Vernonia gigantea (Walt.) Trel. ssp. *gigantea* (giant ironweed): native; unknown abundance; (Grafton 1993 as *Vernonia altissima*, Walton and Anderson 1997 as *Vernonia altissima*)

Vernonia noveboracensis (L.) Michx. (New York ironweed): native; uncommon; Streets 2372, 3074

Xanthium strumarium L. (rough cocklebur): native; uncommon; identified in a vegetation plot during 2006–2009

Xanthium strumarium L. var. *glabratum* (DC.) Cronq. (rough cocklebur): native; uncommon; Streets 2390; Nicholas County Record; identified in a vegetation plot during 2006–2009

Balsaminaceae

Impatiens capensis Meerb. (jewelweed): native; common; Streets 2849, 3375; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Impatiens pallida Nutt. (pale touch-me-not): native; common; Streets 2848, 3402; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Berberidaceae

Caulophyllum thalictroides (L.) Michx. (blue cohosh): native; uncommon; Streets 2440, 2502; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Podophyllum peltatum L. (mayapple): native; uncommon; Streets 2465; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Betulaceae

Alnus serrulata (Ait.) Willd. (hazel alder): native; common; Streets 1697; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Betula alleghaniensis Britt. var. *alleghaniensis* (yellow birch): native; uncommon; Streets 2877; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Betula alleghaniensis*, Walton and Anderson 1997 as *Betula alleghaniensis*)

Betula lenta L. (sweet birch): native; common; Streets 2880; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Betula nigra L. (river birch): native; common; Streets 1820, 2492, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Carpinus caroliniana Walt. ssp. *virginiana* (Marsh.) Furlow (American hornbeam): native; common; Streets 1827, 2495, 2532; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Carpinus caroliniana*, Walton and Anderson 1997 as *Carpinus caroliniana*)

Corylus americana Walt. (American hazelnut): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Ostrya virginiana (P. Mill.) K. Koch var. *virginiana* (hophornbeam): native; common; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Ostrya virginiana*)

Bignoniaceae

Campsis radicans (L.) Seem. ex Bureau (trumpet creeper): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Catalpa bignonioides Walt. (southern catalpa): introduced; invasive, watch list; unknown abundance; Potential Nicholas County Record; (Grafton 1993, Walton and Anderson 1997)

Boraginaceae

Cynoglossum virginianum L. var. *virginianum* (wild comfrey): native; uncommon; Streets 3490; Nicholas County Record; identified in a vegetation plot during 2006–2009

Myosotis macrosperma Engelm. (largeseed forget-me-not): native; unknown abundance; WVNHP tracked, S2, G5; Norris & Mitchell s.n.; (Norris 1992, WVDNR 2010)

Brassicaceae

Alliaria petiolata (Bieb.) Cavara & Grande (garlic mustard): exotic; invasive, severe threat; common; Streets 2903

Arabis canadensis L. (sicklepod): native; uncommon; Streets 2862; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Arabis laevigata (Muhl. ex Willd.) Poir. var. *laevigata* (smooth rockcress): native; common; Streets 1757, 1797, 1884, 2438, 2608; Nicholas County Record; identified in a vegetation plot during 2006–2009

Barbarea vulgaris Ait. f. (garden yellowrocket): exotic; common; Streets 2922

Cardamine angustata O.E. Schulz (slender toothwort): native; common; Streets 2925; (Grafton 1993 as *Dentaria heterophylla*)

- Cardamine concatenata* (Michx.) Sw. (cutleaf toothwort): native; common; Streets 2442, 2499; identified in a vegetation plot during 2006–2009
- Cardamine diphylla* (Michx.) Wood (crinkleroot): native; common; Streets 2460; identified in a vegetation plot during 2006–2009
- Cardamine hirsuta* L. (hairy bittercress): native; common; Streets 2459, 2512, Vanderhorst 7122; identified in a vegetation plot during 2006–2009
- Cardamine parviflora* L. var. *arenicola* (Britt.) O.E. Schulz (sand bittercress): native; common; Streets 1758, 1780; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Cardamine pensylvanica* Muhl. ex Willd. (Pennsylvania bittercress): native; unknown abundance; Grafton s.n.
- Rorippa palustris* (L.) Bess. ssp. *palustris* (bog yellowcress): exotic; uncommon; Streets 2363; Nicholas County Record; identified in a vegetation plot during 2006–2009

Cabombaceae

- Brasenia schreberi* J.F. Gmel. (watershield): adventive; invasive, significant threat; rare; Streets 2697; Nicholas County Record

Campanulaceae

- Campanulastrum americanum* (L.) Small (American bellflower): native; common; Streets 1957, 3025; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Campanula americana*)
- Lobelia cardinalis* L. (cardinalflower): native; uncommon; Streets 2184, 3044; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Lobelia inflata* L. (Indian-tobacco): native; common; Streets 2042, 2677, 2691, 2684B; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Lobelia siphilitica* L. var. *siphilitica* (great blue lobelia): native; uncommon; Streets 3271; (Grafton 1993 as *Lobelia siphilitica*)

Caprifoliaceae

- Lonicera japonica* Thunb. (Japanese honeysuckle): exotic; invasive, severe threat; uncommon; Streets 3372A; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Lonicera morrowii* Gray (Morrow's honeysuckle): exotic; invasive, severe threat; common; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Lonicera tatarica* L. (Tatarian honeysuckle): exotic; invasive, severe threat; common; Streets 1886
- Sambucus nigra* L. ssp. *canadensis* (L.) R. Bolli (common elderberry): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Sambucus canadensis*)
- Sambucus racemosa* L. var. *racemosa* (red elderberry): native; uncommon; Streets 1843, 1887, 2451, 2506, 1921A; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Sambucus pubens*)
- Viburnum acerifolium* L. (mapleleaf viburnum): native; common; Streets 1736, 2524; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

- Viburnum nudum* L. var. *cassinoides* (L.) Torr. & Gray (withe-rod): native; common; Streets 1695, 1829, 1876, 2000, 2011, 2539, 2668, Vanderhorst 7253, Putnam s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Viburnum cassinoides*, Walton and Anderson 1997 as *Viburnum cassinoides*)
- Viburnum prunifolium* L. (blackhaw): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009
- Viburnum recognitum* Fern (southern arrowwood): native; unknown abundance; (Walton and Anderson 1997 as *Viburnum dentatum* var. *lucidum*)

Caryophyllaceae

- Cerastium fontanum* Baumg. ssp. *vulgare* (Hartman) Greuter & Burdet (big chickweed): exotic; invasive, significant threat; unknown abundance; (Grafton 1993 as *Cerastium vulgatum*)
- Cerastium glomeratum* Thuill. (sticky chickweed): exotic; invasive, significant threat; uncommon; Streets 1767; Nicholas County Record
- Dianthus armeria* L. (Deptford pink): exotic; invasive, watch list; uncommon; Streets 1924, 3447
- Paronychia canadensis* (L.) Wood (smooth forked nailwort): native; uncommon; Streets 3022, 2118B; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Silene stellata* (L.) Ait. f. (widowsfrill): native; uncommon; Streets 3028, 3279; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Silene virginica* L. var. *virginica* (fire pink): native; uncommon; Streets 1730; identified in a vegetation plot during 2006–2009
- Stellaria media* (L.) Vill. ssp. *pallida* (Dumort.) Aschers. & Graebn. (common chickweed): exotic; invasive, severe threat; uncommon; Streets 1781, 7123; Fayette County Record, Nicholas County record; identified in a vegetation plot during 2006–2009
- Stellaria pubera* Michx. (star chickweed): native; uncommon; Streets 2447; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Celastraceae

- Euonymus americana* L. (strawberry bush): native; common; Streets 2480, 3473; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Euonymus americanus*, Walton and Anderson 1997 as *Euonymus americanus*)

Cistaceae

- Helianthemum propinquum* Bickn. (low frostweed): native; unknown abundance; WVNHP tracked, S1, G4; Richardson s.n.; (WVDNR 2010)
- Lechea tenuifolia* Michx. (narrowleaf pinweed): native; unknown abundance; WVNHP tracked, S1, G5; (Grafton 1993, WVDNR 2010)

Clethraceae

- Clethra acuminata* Michx. (mountain sweetpepperbush): native; common; Streets 1996, 2012, 7254, 2847A, Grafton s.n., Nicely 875, Sharp s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Clusiaceae

- Hypericum densiflorum* Pursh (bushy St. Johnswort): native; common; Streets 2010, 2081; identified in a vegetation plot during 2006–2009

- Hypericum ellipticum* Hook. (pale St. Johnswort): native; unknown abundance; Potential Fayette County Record; (Walton and Anderson 1997)
- Hypericum hypericoides* (L.) Crantz (St. Andrew's cross): native; unknown abundance; (Grafton 1993 as *Ascyrum hypericoides*, Walton and Anderson 1997 as *Ascyrum hypericoides*)
- Hypericum hypericoides* (L.) Crantz ssp. *multicaule* (Michx. ex Willd.) Robson (St. Andrew's cross): native; common; Streets 2178, 2681; identified in a vegetation plot during 2006–2009
- Hypericum mutilum* L. (dwarf St. Johnswort): native; uncommon; Streets 2096, 2581; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Hypericum perforatum* L. (common St. Johnswort): exotic; invasive, watch list; uncommon; Streets 2647; (Walton and Anderson 1997)
- Hypericum prolificum* L. (shrubby St. Johnswort): native; common; Streets 3067; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Hypericum punctatum* Lam. (spotted St. Johnswort): native; common; Streets 2072, 2643; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Triadenum* Raf. (marsh St. Johnswort): native; rare; Streets 2088, 3474; identified in a vegetation plot during 2006–2009

Commelinaceae

- Commelina communis* L. var. *communis* (Asiatic dayflower): exotic; invasive, significant threat; uncommon; Streets 2163, 3068; Nicholas County Record
- Tradescantia subaspera* Ker-Gawl. (zigzag spiderwort): native; unknown abundance; (Grafton 1993)

Convolvulaceae

- Calystegia silvatica* (Kit.) Griseb. ssp. *fraterniflora* (Mackenzie & Bush) Brummitt (shortstalk false bindweed): native; unknown abundance; Norris s.n.
- Ipomoea pandurata* (L.) G.F.W. Mey. (man of the earth): native; common; Streets 2188, 2208, 2674B; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Cornaceae

- Cornus alternifolia* L. f. (alternateleaf dogwood): native; uncommon; Streets 2911, Good 20; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Cornus amomum* P. Mill. (silky dogwood): native; common; Streets 1921B, 2669, 3073, Nicely 880; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Cornus florida* L. (flowering dogwood): native; common; Streets 2468, 2471; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Nyssa sylvatica* Marsh. (blackgum): native; abundant; Streets 1830, 2572, 2918; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Crassulaceae

Penthorum sedoides L. (ditch stonecrop): native; uncommon; Streets 2086; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Sedum ternatum Michx. (woodland stonecrop): native; uncommon; Streets 1761, 2523; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Cuscutaceae

Cuscuta pentagona Engelm. var. *pentagona* (fiveangled dodder): native; uncommon; Streets 2224; identified in a vegetation plot during 2006–2009

Cyperaceae

Carex aestivalis M.A. Curtis ex Gray (summer sedge): native; common; WVNHP tracked, S2, G4; Streets 1955; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Carex albursina Sheldon (white bear sedge): native; uncommon; Streets 1752, 1788; identified in a vegetation plot during 2006–2009

Carex amphibola Steud. (eastern narrowleaf sedge): native; uncommon; Streets 1751, 2530, 2537; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex annectens (Bickn.) Bickn. (yellowfruit sedge): native; uncommon; Streets 1922, 1968

Carex atlantica Bailey ssp. *atlantica* (prickly bog sedge): native; rare; Streets 1869; identified in a vegetation plot during 2006–2009

Carex baileyi Britt. (Bailey's sedge): native; uncommon; Streets 3542; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex blanda Dewey (eastern woodland sedge): native; common; Streets 1720, 1791, 2626, 2967; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex bromoides Schkuhr ex Willd. ssp. *bromoides* (brome-like sedge): native; rare; WVNHP tracked, S3, G5T5; Streets 2882; Fayette County Record; (WVDNR 2010)

Carex caroliniana Schwein. (Carolina sedge): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex communis Bailey var. *communis* (fibrousroot sedge): native; uncommon; Streets 1737, 1852; identified in a vegetation plot during 2006–2009

Carex crinita Lam. var. *crinita* (fringed sedge): native; uncommon; Streets 2091; identified in a vegetation plot during 2006–2009

Carex cumberlandensis Naczi, Kral, & Bryson (Cumberland sedge): native; uncommon; WVNHP tracked, S2, GNR; Streets 1784, 2597; Nicholas County Record; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Carex debilis Michx. (white edge sedge): native; uncommon; identified in a vegetation plot during 2006–2009

Carex debilis Michx. var. *rudgei* Bailey (white edge sedge): native; uncommon; Streets 1865, 2565, Grafton s.n.; identified in a vegetation plot during 2006–2009

Carex digitalis Willd. var. *digitalis* (slender woodland sedge): native; abundant; Streets 1728, 1742, 1799, 1854, 1868, 1987, 2518, 2564, 2573, 2575, 2591, 2610, 2675, 2679, 2682, 2694, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Carex digitalis*)

Carex festucacea Schkuhr ex Willd. (fescue sedge): native; uncommon; Streets 1872; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex gracilescens Steud. (slender looseflower sedge): native; rare; Streets 1717; identified in a vegetation plot during 2006–2009

Carex gracillima Schwein. (graceful sedge): native; uncommon; Streets 1718, 2554; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Carex gynandra Schwein. (nodding sedge): native; rare; Streets 1885

Carex hirsutella Mackenzie (fuzzy wuzzy sedge): native; uncommon; Streets 2574; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex intumescens Rudge (greater bladder sedge): native; uncommon; Streets 1870; identified in a vegetation plot during 2006–2009

Carex jamesii Schwein. (James' sedge): native; uncommon; Streets 1719; identified in a vegetation plot during 2006–2009

Carex laxiculmis Schwein. (spreading sedge): native; uncommon; identified in a vegetation plot during 2006–2009

Carex laxiculmis Schwein. var. *laxiculmis* (spreading sedge): native; uncommon; Streets 1864, Grafton s.n.; identified in a vegetation plot during 2006–2009

Carex laxiflora Lam. (broad looseflower sedge): native; uncommon; Streets 1687, 1724, 1744, 1750, 1793, 1853, 2519, 2593, 2611, 2907, 2919; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex leptalea Wahlenb. ssp. *leptalea* (bristlystalked sedge): native; rare; Streets 1871; identified in a vegetation plot during 2006–2009

Carex lupulina Muhl. ex Willd. (hop sedge): native; uncommon; Streets 3379; (Grafton 1993)

Carex lurida Wahlenb. (shallow sedge): native; uncommon; Streets 1950, 2651; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex molesta Mackenzie ex Bright (troublesome sedge): native; unknown abundance; WVNHP tracked, S3, G4; Grafton s.n.; (WVDNR 2010)

Carex oligocarpa Schkuhr ex Willd. (richwoods sedge): native; rare; Streets 1772; Nicholas County Record

Carex pensylvanica Lam. (Pennsylvania sedge): native; uncommon; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Carex plantaginea Lam. (plantainleaf sedge): native; uncommon; Streets 1721, 2449, 2503, Legg s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex platyphylla Carey (broadleaf sedge): native; uncommon; Vanderhorst 7353; identified in a vegetation plot during 2006–2009

Carex prasina Wahlenb. (drooping sedge): native; uncommon; Streets 2928; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex radiata (Wahlenb.) Small (eastern star sedge): native; common; Streets 1725, 1851, 1972, 2527, 2568, 2594, 2604, 2968, Grafton s.n.; identified in a vegetation plot during 2006–2009

Carex rosea Schkuhr ex Willd. (rosy sedge): native; rare; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex scabrata Schwein. (eastern rough sedge): native; uncommon; Vanderhorst 7240; Nicholas County Record; identified in a vegetation plot during 2006–2009

Carex scoparia Schkuhr ex Willd. var. *scoparia* (broom sedge): native; rare; Streets 1928A

Carex seorsa Howe (weak stellate sedge): native; rare; WVNHP tracked, S1, G4; Streets 3494, 3541; Nicholas County Record; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Carex stipata Muhl. ex Willd. var. *stipata* (owlfruit sedge): native; uncommon; Streets 2926

Carex swanii (Fern.) Mackenzie (Swan's sedge): native; common; Streets 1855, 1866, 1956, 2553, 2613, 2641; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carex torta Boott ex Tuckerman (twisted sedge): native; common; Streets 1699, 1821, 2548, 2915, 2923; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Carex tribuloides Wahlenb. var. *tribuloides* (blunt broom sedge): native; uncommon; Streets 1965, 3380

Carex trisperma Dewey var. *trisperma* (threeseeded sedge): native; unknown abundance; (Grafton 1993)

Carex virescens Muhl. ex Willd. (ribbed sedge): native; uncommon; Streets 1740, 1908, 2861; identified in a vegetation plot during 2006–2009

Carex vulpinoidea Michx. (fox sedge): native; uncommon; Streets 2071, 2606

Carex willdenowii Schkuhr ex Willd. (Willdenow's sedge): native; uncommon; Streets 1850, 1953, 2555, 2570, 2590; identified in a vegetation plot during 2006–2009

Cymophyllus fraserianus (Ker-Gawl.) Kartesz & Gandhi (Fraser's cymophyllus): native; uncommon; WVNHP tracked, S3, G4; Streets 2516, Legg 814; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Carex fraseri*, WVDNR 2010)

Cyperus strigosus L. (strawcolored flatsedge): native; uncommon; Streets 2365, 3449; Nicholas County Record; identified in a vegetation plot during 2006–2009

Eleocharis acicularis (L.) Roemer & J.A. Schultes var. *acicularis* (needle spikerush): native; uncommon; Streets 2201; identified in a vegetation plot during 2006–2009

Eleocharis obtusa (Willd.) J.A. Schultes (blunt spikerush): native; uncommon; Streets 2093, 2354, 2702, Norris s.n.; identified in a vegetation plot during 2006–2009

Eleocharis tenuis (Willd.) J.A. Schultes (slender spikerush): native; common; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Rhynchospora capitellata (Michx.) Vahl (brownish beaksedge): native; uncommon; Streets 2040, 2077, 2650, Vanderhorst 5945b, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997, Grafton 1993)

Rhynchospora recognita (Gale) Kral (globe beaksedge): native; unknown abundance; WVNHP tracked, S2, G5?; McDonald s.n., Norris and Mitchell s.n.; (Norris 1992 as *Rhynchospora globularis*, WVDNR 2010)

Schoenoplectus smithii (Gray) Soják (Smith's bulrush): adventive; unknown abundance; Grafton s.n.

Schoenoplectus tabernaemontani (K.C. Gmel.) Palla (softstem bulrush): native; rare; Vanderhorst 7355; (Walton and Anderson 1997 as *Scirpus validus*)

Scirpus atrovirens Willd. (green bulrush): native; uncommon; Streets 1925, 1929, 1973, 2559, 2576, 2653; Nicholas County Record; identified in a vegetation plot during 2006–2009

Scirpus cyperinus (L.) Kunth (woolgrass): native; uncommon; Streets 2162, 2191, 2700; identified in a vegetation plot during 2006–2009

Scirpus expansus Fern. (woodland bulrush): native; unknown abundance; (Norris 1992)

Scirpus polyphyllus Vahl (leafy bulrush): native; uncommon; Streets 2097; identified in a vegetation plot during 2006–2009

Diapensiaceae

Galax urceolata (Poir.) Brummitt (beetleweed): native; uncommon; Streets 3452; identified in a vegetation plot during 2006–2009

Dioscoreaceae

Dioscorea quaternata J.F. Gmel. (fourleaf yam): native; common; identified in a vegetation plot during 2006–2009

Dioscorea villosa L. (wild yam): native; uncommon; (Grafton 1993)

Ebenaceae

Diospyros virginiana L. (common persimmon): native; uncommon; Streets 2845; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Elaeagnaceae

Elaeagnus umbellata Thunb. var. *parvifolia* (Royle) Schneid. (autumn olive): exotic; invasive, severe threat; common; Streets 2864; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Elaeagnus umbellata*, Walton and Anderson 1997 as *Elaeagnus umbellata*)

Ericaceae

Epigaea repens L. (trailing arbutus): native; uncommon; Streets 3393; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Gaultheria procumbens L. (eastern teaberry): native; common; Streets 1986, 1990; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Gaylussacia baccata (Wangenh.) K. Koch (black huckleberry): native; uncommon; Streets 1823, 1893; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Kalmia latifolia L. (mountain laurel): native; common; Streets 1743, 2846, 3392; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lyonia ligustrina (L.) DC. var. *ligustrina* (maleberry): native; uncommon; Streets 2079; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Lyonia ligustrina*, Walton and Anderson 1997 as *Lyonia ligustrina*)

Oxydendrum arboreum (L.) DC. (sourwood): native; abundant; Streets 3412; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Rhododendron arborescens (Pursh) Torr. (smooth azalea): native; common; Streets 1846, 1875, 2538; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Rhododendron calendulaceum (Michx.) Torr. (flame azalea): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Rhododendron catawbiense Michx. (Catawba rosebay): native; uncommon; Streets 1679, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

- Rhododendron maximum* L. (great laurel): native; abundant; Streets 1951, 2978; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Rhododendron periclymenoides* (Michx.) Shinnars (pink azalea): native; uncommon; Streets 2892; (Walton and Anderson 1997 as *Rhododendron nudiflorum*)
- Vaccinium corymbosum* L. (highbush blueberry): native; uncommon; Streets 2067, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Vaccinium pallidum* Ait. (Blue Ridge blueberry): native; uncommon; Streets 1993, 2173; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Vaccinium vacillans*)
- Vaccinium stamineum* L. (deerberry): native; uncommon; Streets 1723, 1824, 1994, 2172, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Euphorbiaceae

- Acalypha rhomboidea* Raf. (Virginia threeseed mercury): native; uncommon; Streets 3467; Nicholas County Record; (Grafton 1993, Walton and Anderson 1997)
- Acalypha virginica* L. (Virginia threeseed mercury): native; uncommon; Streets 3479; identified in a vegetation plot during 2006–2009
- Chamaesyce nutans* (Lag.) Small (eyebane): native; uncommon; Streets 2203, 3480; (Grafton 1993 as *Euphorbia maculata*)
- Euphorbia corollata* L. (flowering spurge): native; common; Streets 2168, 2215, Good 14, 22; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Fabaceae

- Albizia julibrissin* Durazz. (silktree): exotic; invasive, significant threat; rare; Streets 2661; Nicholas County Record
- Amphicarpaea bracteata* (L.) Fern. (American hogpeanut): native; common; Streets 3386; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Apios americana* Medik. (groundnut): native; uncommon; Streets 3371; identified in a vegetation plot during 2006–2009
- Baptisia australis* (L.) R. Br. ex Ait. f. var. *australis* (blue wild indigo): native; unknown abundance; WVNHP tracked, S3, G5TNR; (Grafton 1993 as *Baptisia australis*, WVDNR2010)
- Baptisia tinctoria* (L.) R. Br. ex Ait. f. (horseflyweed): native; common; Streets 2228, 2632; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Cercis canadensis* L. var. *canadensis* (eastern redbud): native; common; Streets 1733, 2437; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Cercis canadensis*)
- Chamaecrista nictitans* (L.) Moench ssp. *nictitans* var. *nictitans* (partridge pea): native; uncommon; Streets 2850; (Grafton 1993 as *Cassia nictitans*)
- Coronilla varia* L. (purple crownvetch): exotic; invasive, severe threat; common; Streets 1970, 2664; (Grafton 1993)
- Desmodium glabellum* (Michx.) DC. (Dillenius' ticktrefoil): native; uncommon; Streets 2384; Nicholas County Record

Desmodium glutinosum (Muhl. ex Willd.) Wood (pointedleaf ticktrefoil): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Desmodium nudiflorum (L.) DC. (nakedflower ticktrefoil): native; uncommon; Streets 2721, 7243; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Desmodium nuttallii (Schindl.) Schub. (Nuttall's ticktrefoil): native; uncommon; Streets 2852; Nicholas County Record

Desmodium paniculatum (L.) DC. var. *paniculatum* (panicledleaf ticktrefoil): native; uncommon; Streets 2370; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Desmodium paniculatum*)

Desmodium pauciflorum (Nutt.) DC. (fewflower ticktrefoil): native; unknown abundance; WVNHP tracked, S1, G5; Potential Fayette County Record, Potential Nicholas County record; (Walton and Anderson 1997, WVDNR 2010)

Desmodium rotundifolium DC. (prostrate ticktrefoil): native; uncommon; Streets 3075; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Kummerowia stipulacea (Maxim.) Makino (Korean clover): exotic; invasive, significant threat; unknown abundance; (Grafton 1993 as *Lespedeza stipulacea*)

Kummerowia striata (Thunb.) Schindl. (Japanese clover): exotic; invasive, lesser threat; uncommon; Streets 2377; Nicholas County Record

Lespedeza cuneata (Dum.-Cours.) G. Don (Chinese lespedeza): exotic; invasive, severe threat; common; Streets 2220, 2381, 2853; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lespedeza frutescens (L.) Hornem. (shrubby lespedeza): native; uncommon; Streets 2368; Nicholas County Record; identified in a vegetation plot during 2006–2009

Lespedeza hirta (L.) Hornem. ssp. *hirta* (hairy lespedeza): native; unknown abundance; (Grafton 1993 as *Lespedeza hirta*)

Lespedeza procumbens Michx. (trailing lespedeza): native; uncommon; Streets 2854; identified in a vegetation plot during 2006–2009

Lespedeza repens (L.) W. Bart. (creeping lespedeza): native; unknown abundance; (Grafton 1993, Walton and Anderson 1997)

Robinia pseudoacacia L. (black locust): native; common; Streets 1847, 2884; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Senna hebecarpa (Fern.) Irwin & Barneby (American senna): native; uncommon; Streets 2070, 2851, Breiding s.n.

Strophostyles helvula (L.) Ell. (trailing fuzzybean): native; uncommon; Streets 3482, Grafton s.n.

Tephrosia virginiana (L.) Pers. (Virginia tephrosia): native; uncommon; Streets 2171, 2727B, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Trifolium campestre Schreb. (field clover): exotic; invasive, significant threat; uncommon; Streets 1764, 1964, 2587

Trifolium pratense L. (red clover): exotic; invasive, lesser threat; uncommon; identified in a vegetation plot during 2006–2009

Vicia sativa L. ssp. *nigra* (L.) Ehrh. (garden vetch): exotic; invasive, significant threat; uncommon; Streets 1759; Nicholas County Record

Fagaceae

Castanea dentata (Marsh.) Borkh. (American chestnut): native; uncommon; Streets 3390; identified in a vegetation plot during 2006–2009

Fagus grandifolia Ehrh. (American beech): native; abundant; Streets 3398; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Quercus alba L. (white oak): native; abundant; Streets 2895, 2561B; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Quercus coccinea Muenchh. var. *coccinea* (scarlet oak): native; common; Streets 3050; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Quercus coccinea*)

Quercus muehlenbergii Engelm. (chinkapin oak): native; rare; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Quercus palustris Muenchh. (pin oak): native; unknown abundance; (Walton and Anderson 1997)

Quercus prinus L. (chestnut oak): native; abundant; Streets 3408; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Quercus rubra L. (northern red oak): native; abundant; Streets 2890; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Quercus velutina Lam. (black oak): native; common; Streets 2896; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Fumariaceae

Adlumia fungosa (Ait.) Greene ex B.S.P. (allegheny vine): native; uncommon; WVNHP tracked, S2?, G4; Streets 2686, 3484, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, WVDNR 2010)

Corydalis flavula (Raf.) DC. (yellow fumewort): native; uncommon; Streets 2875

Corydalis sempervirens (L.) Pers. (rock harlequin): native; unknown abundance; (Grafton 1993)

Dicentra canadensis (Goldie) Walp. (squirrel corn): native; uncommon; Streets 2498; identified in a vegetation plot during 2006–2009

Geraniaceae

Geranium maculatum L. (spotted geranium): native; common; Streets 1786, 2439; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Grossulariaceae

Ribes cynosbati L. (eastern prickly gooseberry): native; uncommon; Good 25; identified in a vegetation plot during 2006–2009

Hamamelidaceae

Hamamelis virginiana L. (American witchhazel): native; abundant; Streets 2893; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Liquidambar styraciflua L. (sweetgum): native; common; Streets 2494, 3450; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Hippocastanaceae

Aesculus flava Ait. (yellow buckeye): native; common; Streets 2916; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Hydrangeaceae

Hydrangea arborescens L. (wild hydrangea): native; common; Streets 1755; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Hydrophyllaceae

Hydrophyllum canadense L. (bluntleaf waterleaf): native; uncommon; Streets 1948; identified in a vegetation plot during 2006–2009

Hydrophyllum virginianum L. (Shawnee salad): native; unknown abundance; (Grafton 1993)

Phacelia bipinnatifida Michx. (fernleaf phacelia): native; uncommon; Streets 2487

Iridaceae

Iris cristata Ait. (dwarf crested iris): native; common; Streets 2905; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Iris pseudacorus L. (paleyellow iris): exotic; invasive, significant threat; uncommon; Streets 2161

Iris verna L. var. *smalliana* Fern. ex M.E. Edwards (dwarf violet iris): native; uncommon; Streets 3492, McCauley s.n.

Iris virginica L. var. *shrevei* (Small) E. Anders. (Shreve's iris): native; unknown abundance; (Grafton 1993 as *Iris virginica*)

Sisyrinchium angustifolium P. Mill. (narrowleaf blue-eyed grass): native; uncommon; Streets 1770; (Grafton 1993, Walton and Anderson 1997)

Juglandaceae

Carya alba (L.) Nutt. ex Ell. (mockernut hickory): native; common; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Carya tomentosa*)

Carya cordiformis (Wangenh.) K. Koch (bitternut hickory): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Carya glabra (P. Mill.) Sweet (pignut hickory): native; common; Streets 2885, 3020; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Carya ovalis (Wangenh.) Sarg. (red hickory): native; common; Streets 3023; identified in a vegetation plot during 2006–2009

Carya ovata (P. Mill.) K. Koch (shagbark hickory): native; common; Streets 2929; Fayette County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Juglans cinerea L. (butternut): native; uncommon; WVNHP tracked, S3, G4; Streets 2058, 2913; identified in a vegetation plot during 2006–2009; (Grafton 1993, WVDNR 2010)

Juglans nigra L. (black walnut): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Juncaceae

Juncus acuminatus Michx. (tapertip rush): native; uncommon; Streets 2358; identified in a vegetation plot during 2006–2009

Juncus diffusissimus Buckl. (slimpod rush): native; unknown abundance; Grafton s.n.

Juncus dudleyi Wieg. (Dudley's rush): native; uncommon; Streets 1923, 2233, 2633, Vanderhorst 5945c, Grafton s.n.; identified in a vegetation plot during 2006–2009

Juncus effusus L. (common rush): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

- Juncus effusus* L. var. *pylabei* (Laharpe) Fern. & Wieg. (common rush): native; uncommon; Streets 2978; Nicholas County Record
- Juncus marginatus* Rostk. (grassleaf rush): native; uncommon; Streets 2073, Vanderhorst 5943, 5944, Grafton s.n.; identified in a vegetation plot during 2006–2009
- Juncus subcaudatus* (Engelm.) Coville & Blake var. *subcaudatus* (woodland rush): native; rare; Vanderhorst 5945a
- Juncus tenuis* Willd. (poverty rush): native; common; Streets 2605, 2652, 2685, 2699, 2701; identified in a vegetation plot during 2006–2009
- Luzula acuminata* Raf. (hairy woodrush): native; uncommon; identified in a vegetation plot during 2006–2009
- Luzula echinata* (Small) F.J. Herm. (hedgehog woodrush): native; common; Streets 1775, 2540, 2588, 2889; identified in a vegetation plot during 2006–2009
- Luzula multiflora* (Ehrh.) Lej. ssp. *multiflora* var. *multiflora* (common woodrush): native; uncommon; identified in a vegetation plot during 2006–2009

Lamiaceae

- Clinopodium vulgare* L. (wild basil): native; common; Streets 3448
- Collinsonia canadensis* L. (richweed): native; uncommon; Streets 3403; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Cunila origanoides* (L.) Britt. (common dittany): native; uncommon; Streets 3078; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Glechoma hederacea* L. (ground ivy): exotic; invasive, severe threat; common; Streets 2461, 2529; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Hedeoma pulegioides* (L.) Pers. (American false pennyroyal): native; unknown abundance; (Grafton 1993)
- Isanthus brachiatus* (L.) B.S.P. (fluxweed): native; unknown abundance; Grafton s.n.
- Lamium purpureum* L. var. *purpureum* (purple deadnettle): exotic; invasive, significant threat; common; Streets 2873, 3312; identified in a vegetation plot during 2006–2009
- Lycopus uniflorus* Michx var. *uniflorus* (northern bugleweed): native; uncommon; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Lycopus uniflorus*)
- Lycopus virginicus* L. (Virginia water horehound): native; uncommon; Streets 2090, 2706; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Meehania cordata* (Nutt.) Britt. (Meehan's mint): native; uncommon; Streets 1711; identified in a vegetation plot during 2006–2009
- Monarda clinopodia* L. (white bergamot): native; uncommon; identified in a vegetation plot during 2006–2009
- Monarda fistulosa* L. ssp. *brevis* (Fosberg & Artz) Scora, comb. nov. ined. (wild bergamot): native; unknown abundance; WVNHP tracked, S1, G5T1; Grafton s.n.; (WVDNR 2010)
- Monarda fistulosa* L. ssp. *fistulosa* (wild bergamot): native; rare; Streets 1958; Fayette County Record

Physostegia virginiana (L.) Benth. ssp. *virginiana* (obedient plant): native; common; Streets 1997, 2057, 2614, Grafton s.n., Legg s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Dracocephalum virginianum* var. *granulosum*, Norris 1992 as *Dracocephalum virginianum*, Walton and Anderson 1997 as *Physostegia virginiana*)

Prunella vulgaris L. (common selfheal): exotic; common; Streets 1877, 1912, 2037; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Pycnanthemum incanum (L.) Michx. var. *incanum* (hoary mountainmint): native; uncommon; Streets 3273; Nicholas County Record

Salvia lyrata L. (lyreleaf sage): native; uncommon; Streets 1690; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Scutellaria elliptica Muhl. ex Spreng. var. *hirsuta* (Short & Peter) Fern. (hairy skullcap): native; uncommon; Streets 2688, 2595B; identified in a vegetation plot during 2006–2009

Scutellaria lateriflora L. var. *lateriflora* (blue skullcap): native; rare; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Scutellaria serrata Andr. (showy skullcap): native; unknown abundance; (Grafton 1993)

Stachys nuttallii Shuttlw. ex Benth. (heartleaf hedgenettle): native; unknown abundance; WVNHP tracked, S3, G5?; (Grafton 1993 as *Stachys riddellii*, WVDNR 2010)

Lauraceae

Lindera benzoin (L.) Blume var. *benzoin* (northern spicebush): native; uncommon; identified in a vegetation plot during 2006–2009

Lindera benzoin (L.) Blume var. *pubescens* (Palmer & Steyermark) Rehd. (northern spicebush): native; common; Streets 2876, 2901; identified in a vegetation plot during 2006–2009

Sassafras albidum (Nutt.) Nees (sassafras): native; abundant; Streets 2504; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Liliaceae

Allium canadense L. var. *canadense* (meadow garlic): native; uncommon; Streets 1946, 2891; Nicholas County Record

Clintonia umbellulata (Michx.) Morong (white clintonia): native; unknown abundance; (Grafton 1993)

Hemerocallis fulva (L.) L. (orange daylily): exotic; invasive, significant threat; uncommon; Streets 2216, 2663; identified in a vegetation plot during 2006–2009

Hypoxis hirsuta (L.) Coville (common goldstar): native; common; Streets 1683, 1748, 2207, McCauley s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Lilium canadense L. (Canada lily): native; uncommon; identified in a vegetation plot during 2006–2009

Lilium superbum L. (turk's-cap lily): native; uncommon; Streets 2089; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Maianthemum canadense Desf. (Canada mayflower): native; common; Streets 2924; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Maianthemum racemosum (L.) Link ssp. *racemosum* (feathery false lily of the valley): native; common; Streets 1746, 2898; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Smilacina racemosa*, Walton and Anderson 1997 as *Smilacina racemosa*)

Medeola virginiana L. (Indian cucumber): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Polygonatum biflorum (Walt.) Ell. (smooth Solomon's seal): native; uncommon; Streets 1745, 2899, 3469; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Polygonatum pubescens (Willd.) Pursh (hairy Solomon's seal): native; uncommon; Streets 1713, 2455, 2478; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Prosartes lanuginosa (Michx. f.) D. Don (yellow fairybells): native; uncommon; Streets 2501; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Disporum lanuginosum*)

Streptopus lanceolatus (Ait.) Reveal var. *roseus*(Michx.) Reveal(twistedstalk): native; uncommon; Potential Fayette County Record; identified in a vegetation plot during 2006–2009

Trillium erectum L. (red trillium): native; uncommon; Streets 1783, 2445, 2453; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Trillium grandiflorum (Michx.) Salisb. (snow trillium): native; uncommon; Streets 2485

Trillium undulatum Willd. (painted trillium): native; unknown abundance; (Grafton 1993)

Uvularia grandiflora Sm. (largeflower bellwort): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Uvularia perfoliata L. (perfoliate bellwort): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Uvularia puberula Michx. (mountain bellwort): native; unknown abundance; Grafton s.n.; (Walton and Anderson 1997)

Uvularia sessilifolia L. (sessileleaf bellwort): native; uncommon; Streets 2904, Legg s.n.; (Grafton 1993, Walton and Anderson 1997)

Linaceae

Linum striatum Walt. (ridged yellow flax): native; uncommon; Streets 2078, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Linum virginianum L. (woodland flax): native; uncommon; Streets 2041, 3440; (Grafton 1993, Walton and Anderson 1997)

Magnoliaceae

Liriodendron tulipifera L. (tuliptree): native; abundant; Streets 1794, 3024; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Magnolia acuminata (L.) L. (cucumber-tree): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Magnolia fraseri Walt. (mountain magnolia): native; common; Streets 2871; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Magnolia tripetala (L.) L. (umbrella-tree): native; common; Streets 1773, 2711; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Menispermaceae

Menispermum canadense L. (common moonseed): native; uncommon; Nicholas County Record; identified in a vegetation plot during 2006–2009

Monotropaceae

Monotropa hypopithys L. (pinesap): native; uncommon; identified in a vegetation plot during 2006–2009

Monotropa uniflora L. (Indianpipe): native; common; Streets 1954; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Moraceae

Morus rubra L. var. *rubra* (red mulberry): native; uncommon; Streets 2870; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Morus rubra*)

Oleaceae

Chionanthus virginicus L. (white fringetree): native; uncommon; Streets 1816, 2175; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Forsythia viridissima Lindl. (greenstem forsythia): exotic; unknown abundance; (Grafton 1993)

Fraxinus americana L. (white ash): native; common; Streets 2865, 2910; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Fraxinus pennsylvanica Marsh. (green ash): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Onagraceae

Circaea alpina L. ssp. *alpina* (small enchanter's nightshade): native; uncommon; Streets 2981, Grafton s.n.; (Grafton 1993 as *Circaea alpina*)

Circaea lutetiana L. ssp. *canadensis* (L.) Aschers. & Magnus (broadleaf enchanter's nightshade): native; common; Streets 1959, 2026, 2599, 2624, 2982; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Circaea quadrisulcata*)

Epilobium coloratum Biehler (purpleleaf willowherb): native; unknown abundance; (Grafton 1993)

Ludwigia alternifolia L. (seedbox): native; unknown abundance; Breiding s.n.; (Grafton 1993)

Ludwigia palustris (L.) Ell. (marsh seedbox): native; uncommon; Streets 2099, 2199, 2355, 2696, 2708; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Oenothera biennis L. (common evening-primrose): native; uncommon; Streets 2857, 3483, 3372B; Nicholas County Record; (Grafton 1993)

Oenothera fruticosa L. ssp. *glauca* (Michx.) Straley (narrowleaf evening-primrose): native; unknown abundance; Norris s.n., Grafton s.n.; (Grafton 1993 as *Oenothera tetragona*)

Orchidaceae

Aplectrum hyemale (Muhl. ex Willd.) Torr. (Adam and Eve): native; uncommon; Vanderhorst 7352; identified in a vegetation plot during 2006–2009

Cypripedium acaule Ait. (moccasin flower): native; uncommon; Streets 2549, 1836A; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Galearis spectabilis (L.) Raf. (showy orchid): native; uncommon; Streets 3321; (Grafton 1993 as *Orchis spectabilis*)

Goodyera pubescens (Willd.) R. Br. ex Ait. f. (downy rattlesnake plantain): native; common; Streets 2027, 2181, 2211, Vanderhorst 7244, Shriver 565, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Liparis liliifolia (L.) L.C. Rich. ex Ker-Gawl. (brown widelip orchid): native; unknown abundance; (Grafton 1993 as *Liparis lilifolia*)

Platanthera clavellata (Michx.) Luer (small green wood orchid): native; uncommon; identified in a vegetation plot during 2006–2009

Spiranthes cernua (L.) L.C. Rich. (nodding ladies'-tresses): native; uncommon; Streets 3439, 3472; (Grafton 1993)

Spiranthes lacera (Raf.) Raf. var. *gracilis* (Bigelow) Luer (northern slender ladies'-tresses): native; uncommon; Streets 2177

Spiranthes lucida (H.H. Eat.) Ames (shining ladies'-tresses): native; unknown abundance; WVNHP tracked, S1S2, G5; Grafton s.n.; (WVDNR 2010)

Orobanchaceae

Conopholis americana (L.) Wallr. f. (American squawroot): native; common; Streets 1732; identified in a vegetation plot during 2006–2009

Epifagus virginiana (L.) W. Bart. (beechdrops): native; common; Streets 3443; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Orobanche uniflora L. (oneflowered broomrape): native; uncommon; Streets 2921

Oxalidaceae

Oxalis dillenii Jacq. (slender yellow woodsorrel): native; uncommon; Streets 1766, 3065; identified in a vegetation plot during 2006–2009

Oxalis grandis Small (great yellow woodsorrel): native; uncommon; Streets 1760; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Oxalis montana Raf. (mountain woodsorrel): native; uncommon; Streets 2552; (Grafton 1993)

Oxalis stricta L. (common yellow oxalis): native; uncommon; identified in a vegetation plot during 2006–2009

Oxalis violacea L. (violet woodsorrel): native; uncommon; Streets 1731; identified in a vegetation plot during 2006–2009

Papaveraceae

Sanguinaria canadensis L. (bloodroot): native; uncommon; Streets 2489; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Stylophorum diphyllum (Michx.) Nutt. (celandine poppy): native; uncommon; Streets 1716, 2522; identified in a vegetation plot during 2006–2009

Passifloraceae

Passiflora lutea L. (yellow passionflower): native; rare; Streets 2120; identified in a vegetation plot during 2006–2009

Phytolaccaceae

Phytolacca americana L. var. *americana* (American pokeweed): native; common; Streets 2628, 3027; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Phytolacca americana*)

Plantaginaceae

Plantago lanceolata L. (narrowleaf plantain): exotic; uncommon; Streets 2582

Plantago rugelii Dcne. var. *rugelii* (blackseed plantain): native; common; Streets 2361, 3053; identified in a vegetation plot during 2006–2009

Platanaceae

Platanus occidentalis L. (American sycamore): native; common; Streets 3406; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Poaceae

Agrostis capillaris L. (colonial bentgrass): exotic; invasive, significant threat; unknown abundance; (Grafton 1993 as *Agrostis tenuis*)

Agrostis gigantea Roth (redtop): exotic; unknown abundance; (Walton and Anderson 1997 as *Agrostis alba*)

Agrostis perennans (Walt.) Tuckerman (upland bentgrass): native; common; Streets 2185, 2362, 2731; Nicholas County Record; identified in a vegetation plot during 2006–2009

Andropogon gerardii Vitman (big bluestem): native; common; Streets 2082, 2727A; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Andropogon glomeratus (Walt.) B.S.P. var. *glomeratus* (bushy bluestem): native; uncommon; WVNHP tracked, S2, G5T5; Streets 2695, Grafton s.n.; (WVDNR 2010)

Andropogon virginicus L. var. *virginicus* (broomsedge bluestem): native; unknown abundance; Grafton s.n.; (Grafton 1993 as *Andropogon virginicus*)

Anthoxanthum odoratum L. ssp. *odoratum* (sweet vernalgrass): exotic; invasive, watch list; common; Streets 1928B, 2654; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Anthoxanthum odoratum*)

Aristida purpurascens Poir. var. *purpurascens* (arrowfeather threeawn): native; unknown abundance; WVNHP tracked, S1, G5T5; Grafton s.n.; (Grafton 1993 as *Aristida purpurascens*, WVDNR 2010)

Arthraxon hispidus (Thunb.) Makino (small carpgrass): exotic; invasive, severe threat; uncommon; Streets 3465; Nicholas County Record

Brachyelytrum erectum (Schreb. ex Spreng.) Beauv. (bearded shorthusk): native; common; Streets 2596, 3276, Vanderhorst 7245; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Brachyelytrum septentrionale (Babel) G. Tucker (northern shorthusk): native; rare; Streets 3269; Fayette County Record; identified in a vegetation plot during 2006–2009

Bromus pubescens Muhl. ex Willd. (hairy woodland brome): native; common; Streets 2603; Nicholas County Record; identified in a vegetation plot during 2006–2009

Chasmanthium latifolium (Michx.) Yates (Indian woodoats): native; uncommon; Streets 3275; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Uniola latifolia*)

Cinna arundinacea L. (sweet woodreed): native; uncommon; Streets 2098, 3051; identified in a vegetation plot during 2006–2009

Dactylis glomerata L. ssp. *glomerata* (orchardgrass): exotic; invasive, significant threat; common; Streets 1762; Nicholas County Record

Danthonia compressa Austin ex Peck (flattened oatgrass): native; common; Streets 2578, 2660, 2730, 2972; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Danthonia sericea Nutt. (downy danthonia): native; uncommon; WVNHP tracked, S1, G5?; Streets 1992, 2562; WV state Record, Fayette County record, Nicholas County record; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Danthonia spicata (L.) Beauv. ex Roemer & J.A. Schultes (poverty oatgrass): native; uncommon; Streets 1896; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Deschampsia flexuosa (L.) Trin. var. *flexuosa* (wavy hairgrass): native; common; Streets 1692, 1815, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Deschampsia flexuosa*, Walton and Anderson 1997 as *Deschampsia flexuosa*)

Diarrhena americana Beauv. (American beakgrass): native; uncommon; Streets 2121, Vanderhorst 7238, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Dichanthelium acuminatum (Sw.) Gould & C.A. Clark ssp. *columbianum* (Scribn.) Freckmann & Lelong (hemlock rosette grass): native; rare; WVNHP tracked, S1, G5T5; Streets 1991; Fayette County Record; identified in a vegetation plot during 2006–2009; (WVDNR 2010)

Dichanthelium acuminatum Gould & C.A. Clark ssp. *fasciculatum* (Torr.) Freckmann & Lelong (western panicgrass): native; uncommon; Streets 1881, 1913, 2659; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Panicum lanuginosum*)

Dichanthelium acuminatum (Sw.) Gould & C.A. Clark ssp. *implicatum* (Scribn.) Freckmann & Lelong (western panicgrass): native; uncommon; Streets 2230; identified in a vegetation plot during 2006–2009

Dichanthelium boscii (Poir.) Gould & C.A. Clark (Bosc's panicgrass): native; common; Streets 1735, 2692, 2637A; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Panicum boscii*)

Dichanthelium clandestinum (L.) Gould (deertongue): native; common; Streets 2004; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Panicum clandestinum*, Walton and Anderson 1997 as *Panicum clandestinum*)

Dichanthelium commutatum (J.A. Schultes) Gould (variable panicgrass): native; common; identified in a vegetation plot during 2006–2009

Dichanthelium commutatum (J.A. Schultes) ssp. *ashei* (T.G. Pearson ex Ashe) Freckmann & Lelong (variable panic grass): native; uncommon; Streets 1800, 1857, 2678, 2687A, 2966; identified in a vegetation plot during 2006–2009

Dichanthelium commutatum (J.A. Schultes) Gould ssp. *commutatum* (variable panic grass): native; uncommon; Streets 1952, 2635, 2637B; identified in a vegetation plot during 2006–2009

Dichanthelium dichotomum (L.) Gould (cypress panicgrass): native; common; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Dichanthelium dichotomum (L.) Gould ssp. *dichotomum* (cypress panic grass): native; common; Streets 2006, 2074, 2563, 2584, 2589, 2638, 2689, 2710, 2611, 2907, 2919, Good 2, 12B; identified in a vegetation plot during 2006–2009

Dichanthelium dichotomum (L.) Gould ssp. *microcarpon* (Muhl. ex Elliott) Freckmann & Lelong (cypress panic grass): native; uncommon; Streets 1880, 2560, Vanderhorst 7247; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Panicum microcarpon*)

Dichanthelium dichotomum (L.) Gould ssp. *yadkinense* (Ashe) Freckmann & Lelong (cypress panic grass): native; uncommon; Streets 1883; identified in a vegetation plot during 2006–2009

Dichanthelium latifolium (L.) Gould & C.A. Clark (broadleaf rosette grass): native; uncommon; Streets 2612; Fayette County Record; identified in a vegetation plot during 2006–2009

Dichanthelium laxiflorum (Lam.) Gould (openflower rosette grass): native; common; Streets 1765, 1867, 1894, 2013, 2182, 2212, 2640, 2690, Grafton s.n.; identified in a vegetation plot during 2006–2009

Dichanthelium linearifolium (Scribn. ex Nash) Gould (slimleaf panicgrass): native; uncommon; Streets 2687B; Nicholas County Record; identified in a vegetation plot during 2006–2009

Dichanthelium ovale (Elliott) Gould & C.A. Clark ssp. *villosissimum* (Nash) Freckmann & Lelong (whitehair rosette grass): native; unknown abundance; Potential Nicholas County Record; (Walton and Anderson 1997 as *Panicum villosissimum*)

Dichanthelium polyanthes (Shult.) Mohlenbr. (roundseed panicgrass): native; common; Streets 1969, 1988, 2183, 2231, 2585, 2618, 2657, 2673; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Panicum polyanthes*)

Digitaria filiformis (L.) Koel. (slender crabgrass): native; unknown abundance; WVNHP tracked, S1, G5; Grafton s.n.; (Grafton 1993, WVDNR 2010)

Digitaria sanguinalis (L.) Scop. (hairy crabgrass): native; uncommon; Streets 3381; Nicholas County Record

Echinochloa muricata (Beauv.) Fern. var. *muricata* (rough barnyardgrass): exotic; uncommon; Streets 2382; Nicholas County Record

Elymus canadensis L. (Canada wildrye): native; uncommon; identified in a vegetation plot during 2006–2009

Elymus hystrix L. var. *hystrix* (eastern bottlebrush grass): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Hystrix patula*)

Elymus riparius Wieg. (riverbank wildrye): native; common; Streets 2176, 2394, 3084, 3414; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Elymus virginicus L. var. *virginicus* (Virginia wildrye): native; unknown abundance; (Grafton 1993 as *Elymus virginicus*)

Festuca subverticillata (Pers.) Alexeev (nodding fescue): native; abundant; Streets 1722, 1792, 2059, 2602; identified in a vegetation plot during 2006–2009

Glyceria striata (Lam.) A.S. Hitchc. (fowl mannagrass): native; common; Streets 2648, 2971; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Holcus lanatus L. (common velvetgrass): exotic; invasive, severe threat; uncommon; Streets 1927

Leersia oryzoides (L.) Sw. (rice cutgrass): native; uncommon; Streets 2353A; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Leersia virginica Willd. (whitegrass): native; common; Streets 2353B; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lolium arundinaceum (Schreb.) S.J. Darbyshire (tall fescue): exotic; invasive, severe threat; common; Streets 1763, 1909, 1915, 2655, 2665; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Festuca elatior*)

Lolium pratense (Huds.) S.J. Darbyshire (meadow ryegrass): exotic; invasive, significant threat; uncommon; identified in a vegetation plot during 2006–2009

Microstegium vimineum (Trin.) A. Camus (Nepalese browntop): exotic; invasive, severe threat; common; Streets 3404; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Eulalia viminea*)

Muhlenbergia frondosa (Poir.) Fern. (wirestem muhly): native; uncommon; Streets 2359, 2393; Nicholas County Record; identified in a vegetation plot during 2006–2009

Muhlenbergia mexicana (L.) Trin. (Mexican muhly): native; unknown abundance; (Grafton 1993)

Muhlenbergia schreberi J.F. Gmel. (nimblewill): native; uncommon; Streets 3064, 3468; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Muhlenbergia sylvatica Torr. ex Gray (woodland muhly): native; common; Streets 2351, 2395, 2729, Grafton s.n.; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Muhlenbergia tenuiflora (Willd.) B.S.P. (slender muhly): native; unknown abundance; Grafton s.n.; (Walton and Anderson 1997)

Panicum anceps Michx. ssp. *anceps* (beaked panicgrass): native; uncommon; Streets 2039

Panicum dichotomiflorum Michx. ssp. *dichotomiflorum* (fall panicgrass): native; unknown abundance; (Walton and Anderson 1997 as *Panicum dichotomiflorum*)

Panicum rigidulum Bosc ex Nees ssp. *elongatum* (Scribn.) Freckmann & Lelong (redtop panicgrass): native; uncommon; Streets 3378

Panicum rigidulum Bosc ex Nees ssp. *rigidulum* (redtop panicgrass): native; unknown abundance; Nicholas County Record; (Grafton 1993 as *Panicum agrostoides*)

Panicum virgatum L. (switchgrass): native; common; Streets 2102, 2728A, Wieboldt 9362; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Paspalum setaceum Michx. (thin paspalum): native; uncommon; Streets 3461; Nicholas County Record

Phleum pratense L. (timothy): exotic; invasive, significant threat; uncommon; Streets 1926

Poa alsodes Gray (grove bluegrass): native; common; Streets 1698, 2531, 2542, 2547, 2631; Nicholas County Record; identified in a vegetation plot during 2006–2009

Poa compressa L. (Canada bluegrass): exotic; invasive, severe threat; uncommon; identified in a vegetation plot during 2006–2009

Poa cuspidata Nutt. (early bluegrass): native; uncommon; Streets 1738, 1826, 2443, 2470, 2474, 2482, 2486, 2715; identified in a vegetation plot during 2006–2009

Poa pratensis L. ssp. *pratensis* (Kentucky bluegrass): exotic; invasive, severe threat; unknown abundance; Putnam s.n.

Poa sylvestris Gray (woodland bluegrass): native; uncommon; Streets 1771, 1789; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Saccharum alopecuroidum (L.) Nutt. (silver plumegrass): native; unknown abundance; Grafton s.n.; (Grafton 1993 as *Erianthus alopecuroides*)

Schizachyrium scoparium (Michx.) Nash var. *scoparium* (little bluestem): native; uncommon; Streets 2083, 2221, Good 11; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Andropogon scoparius*, Walton and Anderson 1997 as *Andropogon scoparius*)

Setaria pumila (Poir.) Roemer & J.A. Schultes ssp. *pumila* (yellow foxtail): exotic; invasive, lesser threat; uncommon; Streets 3463; (Grafton 1993 as *Setaria glauca*)

Sorghastrum nutans (L.) Nash (Indiangrass): native; uncommon; Streets 2170, Good 23, Wieboldt 9361; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Spartina pectinata Bosc ex Link (prairie cordgrass): native; unknown abundance; (Grafton 1993)

Sphenopholis nitida (Biehler) Scribn. (shiny wedgescale): native; uncommon; Streets 1753; Nicholas County Record; identified in a vegetation plot during 2006–2009

Tridens flavus (L.) A.S. Hitchc. var. *flavus* (purpletop tridens): native; uncommon; Streets 3056; (Grafton 1993 as *Triodia flava*)

Polemoniaceae

Phlox maculata L. ssp. *maculata* (wild sweetwilliam): native; uncommon; Streets 2616; Fayette County Record; identified in a vegetation plot during 2006–2009

Phlox maculata L. ssp. *pyramidalis* (Sm.) Wherry (wild sweetwilliam): native; uncommon; Streets 2001, 2008, 2075, 2704, Good 12A; Fayette County Record; identified in a vegetation plot during 2006–2009

Phlox paniculata L. (fall phlox): native; uncommon; Streets 2222, 3063; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Phlox stolonifera Sims (creeping phlox): native; uncommon; Streets 2930

Polygalaceae

Polygala curtissii Gray (Curtiss' milkwort): adventive; rare; WVNHP tracked, S2, G5; Streets 3441; (Norris 1992, WVDNR 2010)

Polygala polygama Walt. (racemed milkwort): native; uncommon; Streets 1878; Fayette County Record; identified in a vegetation plot during 2006–2009

Polygala sanguinea L. (purple milkwort): native; uncommon; Streets 1911

Polygala senega L. (Seneca snakeroot): native; unknown abundance; Potential Nicholas County Record; (Walton and Anderson 1997)

Polygala verticillata L. (whorled milkwort): native; uncommon; Streets 2577

Polygonaceae

Polygonum aviculare L. (prostrate knotweed): exotic; invasive, severe threat; uncommon; Streets 2367B; Nicholas County Record

Polygonum caespitosum Blume var. *longisetum* (de Bruyn) A.N. Steward (oriental ladysthumb): exotic; invasive, severe threat; common; Streets 1963, 2044, 2600, 2630; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997 as *Polygonum caespitosum*)

Polygonum convolvulus L. var. *convolvulus* (black bindweed): exotic; invasive, significant threat; uncommon; identified in a vegetation plot during 2006–2009

Polygonum cuspidatum Sieb. & Zucc. (Japanese knotweed): exotic; invasive, severe threat; uncommon; Streets 3060; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Polygonum hydropiperoides Michx. (swamp smartweed): native; uncommon; Streets 3476; identified in a vegetation plot during 2006–2009

Polygonum persicaria L. (spotted ladysthumb): exotic; invasive, significant threat; unknown abundance; (Grafton 1993)

Polygonum sagittatum L. (arrowleaf tearthumb): native; uncommon; Streets 3475; (Grafton 1993)

Polygonum scandens L. var. *cristatum* (Engelm. & Gray) Gleason (climbing false buckwheat): native; unknown abundance; (Grafton 1993 as *Polygonum cristatum*)

Polygonum scandens L. var. *scandens* (climbing false buckwheat): native; uncommon; Streets 3285; Nicholas County Record

Polygonum virginianum L. (jumpseed): native; uncommon; Streets 3370; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Tovara virginiana*, Walton and Anderson 1997 as *Tovara virginiana*)

Rumex crispus L. ssp. *crispus* (curly dock): exotic; invasive, significant threat; uncommon; Streets 1962, 2607; Nicholas County Record; identified in a vegetation plot during 2006–2009

Portulacaceae

Claytonia caroliniana Michx. (Carolina springbeauty): native; uncommon; Streets 2446, 2500; (Grafton 1993)

Potamogetonaceae

Potamogeton diversifolius Raf. (waterthread pondweed): native; unknown abundance; Grafton s.n.

Potamogeton foliosus Raf. ssp. *foliosus* (leafy pondweed): native; unknown abundance; Grafton s.n.

Primulaceae

Lysimachia ciliata L. (fringed loosestrife): native; uncommon; Streets 2002; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lysimachia lanceolata Walt. (lanceleaf loosestrife): native; common; Streets 2080, 2101, Legg s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lysimachia nummularia L. (creeping jenny): exotic; invasive, severe threat; common; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)

Lysimachia quadrifolia L. (whorled yellow loosestrife): native; common; Streets 2580; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Lysimachia terrestris (L.) B.S.P. (earth loosestrife): native; uncommon; Streets 2092, 2671; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Pyrolaceae

Chimaphila maculata (L.) Pursh (striped prince's pine): native; uncommon; Streets 2571; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Ranunculaceae

Aconitum uncinatum L. (southern blue monkshood): native; unknown abundance; (Grafton 1993)

Aconitum uncinatum L. ssp. *uncinatum* (southern blue monkshood): native; uncommon; Streets 3081

Actaea pachypoda Ell. (white baneberry): native; uncommon; Streets 2927; (Grafton 1993)

Actaea racemosa L. var. *racemosa* (black bugbane): native; common; Streets 3045; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Cimicifuga racemosa*)

Anemone lancifolia Pursh (mountain thimbleweed): native; uncommon; Streets 1707; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Anemone quinquefolia L. (nightcaps): native; unknown abundance; (Grafton 1993)

Anemone quinquefolia L. var. *quinquefolia* (nightcaps): native; uncommon; Streets 2435, 2491; identified in a vegetation plot during 2006–2009

Anemone virginiana L. var. *virginiana* (tall thimbleweed): native; uncommon; Streets 1961, 1985

Aquilegia canadensis L. (red columbine): native; uncommon; Streets 2874

Clematis virginiana L. (devil's darning needles): native; uncommon; Streets 2350; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Delphinium tricorne Michx. (dwarf larkspur): native; uncommon; Streets 1703, 2525; identified in a vegetation plot during 2006–2009

Hepatica nobilis Schreb. var. *acuta* (Pursh) Steyermark (sharplobe hepatica): native; common; Streets 2508; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Hepatica acutiloba*)

Hepatica nobilis Schreb. var. *obtusata* (Pursh) Steyermark (roundlobe hepatica): native; unknown abundance; (Grafton 1993 as *Hepatica americana*)

Hydrastis canadensis L. (goldenseal): native; uncommon; Streets 2717; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Ranunculus abortivus L. (littleleaf buttercup): native; uncommon; Streets 1785; Nicholas County Record; identified in a vegetation plot during 2006–2009

Ranunculus allegheniensis Britt. (Allegheny Mountain buttercup): native; uncommon; Streets 1749; identified in a vegetation plot during 2006–2009

Ranunculus hispidus Michx. var. *hispidus* (bristly buttercup): native; uncommon; Streets 2473, 2475; identified in a vegetation plot during 2006–2009

Ranunculus hispidus Michx. var. *nitidus* (Chapman) T. Duncan (bristly buttercup): native; uncommon; Streets 1694, 2514, 2462, Mitchell s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Ranunculus septentrionalis*, Walton and Anderson 1997 as *Ranunculus septentrionalis*)

Ranunculus recurvatus Poir. var. *recurvatus* (blisterwort): native; uncommon; Streets 1708, 1787; identified in a vegetation plot during 2006–2009

Thalictrum clavatum DC. (mountain meadow-rue): native; uncommon; WVNHP tracked, S2, G4; Streets 2658, Norris and Mitchell s.n.; identified in a vegetation plot during 2006–2009; (Norris 1992, WVDNR 2010, WVNHP 2004)

Thalictrum dioicum L. (early meadow-rue): native; unknown abundance; (Grafton 1993)

Thalictrum pubescens Pursh (king of the meadow): native; uncommon; Streets 1998; Fayette County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Thalictrum polygamum*)

Thalictrum revolutum DC. (waxyleaf meadow-rue): native; uncommon; Streets 2349; Nicholas County Record; identified in a vegetation plot during 2006–2009

- Thalictrum thalictroides* (L.) Eames & Boivin (rue anemone): native; uncommon; Streets 2444; identified in a vegetation plot during 2006–2009
- Trautvetteria caroliniensis* (Walt.) Vail var. *caroliniensis* (Carolina bugbane): native; common; Streets 1920, 2615, 2656, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Trautvetteria caroliniensis*)
- Xanthorrhiza simplicissima* Marsh. (yellowroot): native; common; Streets 1691, 2436, 2728B, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)

Rosaceae

- Agrimonia parviflora* Ait. (harvestlice): native; uncommon; Streets 2378, 3058; (Grafton 1993)
- Agrimonia pubescens* Wallr. (soft agrimony): native; uncommon; Streets 2719, 3026; Nicholas County Record
- Agrimonia rostellata* Wallr. (beaked agrimony): native; uncommon; Streets 2113, 3033, 3049; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Agrimonia striata* Michx. (roadside agrimony): native; rare; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009
- Amelanchier arborea* (Michx. f.) Fern. var. *arborea* (common serviceberry): native; abundant; Streets 2493; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Amelanchier arborea*, Walton and Anderson 1997 as *Amelanchier arborea*)
- Amelanchier stolonifera* Wieg. (running serviceberry): native; uncommon; Streets 3587, 3588; identified in a vegetation plot during 2006–2009
- Aruncus dioicus* (Walt.) Fern. (bride's feathers): native; uncommon; Streets 1892; (Grafton 1993)
- Crataegus macrosperma* Ashe (bigfruit hawthorn): native; unknown abundance; (Grafton 1993)
- Duchesnea indica* (Andr.) Focke (Indian strawberry): exotic; invasive, significant threat; common; Streets 1710; identified in a vegetation plot during 2006–2009
- Fragaria virginiana* Duchesne ssp. *virginiana* (Virginia strawberry): native; common; Streets 2867
- Geum canadense* Jacq. var. *canadense* (white avens): native; common; Streets 1960, 2598; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Geum canadense*)
- Geum virginianum* L. (cream avens): native; common; Streets 2117; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Malus pumila* P. Mill. (paradise apple): exotic; unknown abundance; (Grafton 1993 as *Pyrus malus*)
- Physocarpus opulifolius* (L.) Maxim. var. *opulifolius* (common ninebark): native; common; Streets 1828, 1873, Grafton s.n.; identified in a vegetation plot during 2006–2009; Grafton 1993 as *Physocarpus opulifolius*, Norris 1992 as *Physocarpus opulifolius*, Walton and Anderson 1997 as *Physocarpus opulifolius*)
- Porteranthus trifoliatus* (L.) Britt. (Bowman's root): native; uncommon; Streets 1741, 2550; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Potentilla canadensis* L. var. *canadensis* (dwarf cinquefoil): native; common; Streets 1734, 2484, 2894; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Potentilla canadensis*, Walton and Anderson 1997 as *Potentilla canadensis*)

- Potentilla simplex* Michx. (common cinquefoil): native; common; Streets 1685; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Prunus pensylvanica* L. f. var. *pensylvanica* (pin cherry): native; uncommon; Streets 2868; identified in a vegetation plot during 2006–2009
- Prunus pumila* L. var. *depressa* (Pursh) Gleason (eastern sandcherry): native; uncommon; WVNHP tracked, S1, G5T5; Streets 3491, Grafton s.n.; Potential Fayette County Record; identified in a vegetation plot during 2006–2009; (Norris 1992 as *Prunus pumila*, Walton and Anderson 1997 as *Prunus pumila*, WVDNR 2010, WVNHP 2004)
- Prunus serotina* Ehrh. var. *serotina* (black cherry): native; common; Streets 2869; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Prunus serotina*, Walton and Anderson 1997 as *Prunus serotina*)
- Rosa carolina* L. var. *carolina* (Carolina rose): native; uncommon; Streets 1918, 2209, 2219, 2619B, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Rosa carolina*, Walton and Anderson 1997 as *Rosa carolina*)
- Rosa multiflora* Thunb. ex Murr. (multiflora rose): exotic; invasive, severe threat; common; Streets 3543; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Rubus allegheniensis* Porter (Allegheny blackberry): native; uncommon; Streets 1768; identified in a vegetation plot during 2006–2009
- Rubus flagellaris* Willd. (northern dewberry): native; uncommon; Streets 1686, 1879, 1895, 2009, 2543, 2627; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Rubus occidentalis* L. (black raspberry): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Rubus odoratus* L. var. *odoratus* (purpleflowering raspberry): native; common; Streets 1890, 2623, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Rubus odoratus*)
- Rubus phoenicolasius* Maxim. (wine raspberry): exotic; invasive, severe threat; common; Streets 1889; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Spiraea alba* Du Roi var. *alba* (white meadowsweet): native; uncommon; Streets 2085; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Spiraea virginiana* Britt. (Virginia meadowsweet): native; uncommon; WVNHP tracked, S1, G2, Threatened; Streets 2226, 3407, Grafton s.n., Vanderhorst 5941, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997, WVDNR 2010, WVNHP 2004)

Rubiaceae

- Cephalanthus occidentalis* L. (common buttonbush): native; common; Streets 2100, 2667, Vanderhorst 7356, Grafton s.n., Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Diodia teres* Walt. var. *teres* (poorjoe): native; unknown abundance; (Grafton 1993)
- Galium aparine* L. (stickywilly): native; common; Streets 1782, 2520; identified in a vegetation plot during 2006–2009
- Galium circaezans* Michx. var. *circaezans* (licorice bedstraw): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

- Galium circaezans* Michx. var. *hypomalacum* Fern. (licorice bedstraw): native; common; Streets 2060, 2676, 2595A; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Galium concinnum* Torr. & Gray (shining bedstraw): native; uncommon; Streets 3471; Fayette County Record
- Galium lanceolatum* Torr. (lanceleaf wild licorice): native; common; Streets 2980, 2985, 2716; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Galium latifolium* Michx. (purple bedstraw): native; uncommon; identified in a vegetation plot during 2006–2009
- Galium pilosum* Ait. var. *puncticulosum* (Michx.) Torr. & Gray (hairy bedstraw): native; uncommon; Streets 3466; Nicholas County Record
- Galium tinctorium* L. (stiff marsh bedstraw): native; uncommon; Streets 2196; identified in a vegetation plot during 2006–2009
- Galium triflorum* Michx. (fragrant bedstraw): native; common; Streets 2983; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Houstonia caerulea* L. (azure bluet): native; common; Streets 1814; identified in a vegetation plot during 2006–2009; (Walton and Anderson 1997)
- Houstonia longifolia* Gaertn. (longleaf summer bluet): native; common; Streets 1798, 2566; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Houstonia purpurea* L. (Venus' pride): native; uncommon; Streets 2043; (Grafton 1993)
- Houstonia serpyllifolia* Michx. (thymeleaf bluet): native; common; Streets 2463, Vanderhorst 7121, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Mitchella repens* L. (partridgeberry): native; common; Streets 3293; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Salicaceae

- Populus grandidentata* Michx. (bigtooth aspen): native; uncommon; Streets 2879; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Salix alba* L. (white willow): exotic; invasive, lesser threat; unknown abundance; (Walton and Anderson 1997)
- Salix caroliniana* Michx. (coastal plain willow): native; uncommon; Streets 1825, 2920, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Salix eriocephala* Michx. (Missouri River willow): native; unknown abundance; Grafton s.n.
- Salix fragilis* L. (crack willow): exotic; unknown abundance; (Walton and Anderson 1997)
- Salix nigra* Marsh. (black willow): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Salix sericea* Marsh. (silky willow): native; uncommon; Streets 2912, 3314; identified in a vegetation plot during 2006–2009

Santalaceae

- Pyrrularia pubera* Michx. (buffalo nut): native; uncommon; Streets 1776, 2003, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Saxifragaceae

- Boykinia aconitifolia* Nutt. (Allegheny brookfoam): native; common; Streets 2703, Norris s.n.; identified in a vegetation plot during 2006–2009
- Heuchera americana* L. (American alumroot): native; unknown abundance; (Grafton 1993)
- Heuchera americana* L. var. *americana* (American alumroot): native; uncommon; Streets 1754, 1796, 2569, 2636, Grafton s.n.; identified in a vegetation plot during 2006–2009
- Heuchera villosa* Michx. var. *villosa* (hairy alumroot): native; uncommon; Streets 2205; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Heuchera villosa*)
- Mitella diphylla* L. (twoleaf miterwort): native; common; Streets 2509; identified in a vegetation plot during 2006–2009
- Saxifraga virginiana* Michx. var. *virginiana* (early saxifrage): native; uncommon; Streets 1756, 2441, 2481, 3313, 3315
- Tiarella cordifolia* L. (heartleaf foamflower): native; uncommon; Streets 1712, 1845, 2507, 2526, Good 19, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Scrophulariaceae

- Agalinis purpurea* (L.) Pennell (purple false foxglove): native; rare; Streets 3438
- Aureolaria flava* (L.) Farw. (smooth yellow false foxglove): native; uncommon; identified in a vegetation plot during 2006–2009
- Aureolaria laevigata* (Raf.) Raf. (entireleaf yellow false foxglove): native; uncommon; Streets 3079; (Grafton 1993)
- Aureolaria virginica* (L.) Pennell (downy yellow false foxglove): native; uncommon; Streets 3388; Nicholas County Record; identified in a vegetation plot during 2006–2009
- Chaenorhinum minus* (L.) Lange (dwarf snapdragon): exotic; unknown abundance; Grafton s.n.
- Chelone glabra* L. (white turtlehead): native; uncommon; Streets 3295; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Lindernia dubia* (L.) Pennell var. *dubia* (yellowseed false pimpernel): native; common; Streets 2352; identified in a vegetation plot during 2006–2009
- Mimulus alatus* Ait. (sharpwing monkeyflower): native; uncommon; Streets 2195; identified in a vegetation plot during 2006–2009
- Mimulus ringens* L. var. *ringens* (Allegheny monkeyflower): native; uncommon; Streets 2705, 3376; identified in a vegetation plot during 2006–2009
- Paulownia tomentosa* (Thunb.) Sieb. & Zucc. ex Steud. (princesstree): exotic; invasive, significant threat; common; Streets 2883, Vanderhorst 7256; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Pedicularis canadensis* L. ssp. *canadensis* (Canadian lousewort): native; common; Streets 1696, 2546; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Pedicularis canadensis*, Walton and Anderson 1997 as *Pedicularis canadensis*)
- Scrophularia lanceolata* Pursh (lanceleaf figwort): native; uncommon; Streets 3284; Nicholas County Record
- Verbascum thapsus* L. (common mullein): exotic; invasive, significant threat; uncommon; Streets 2644; (Grafton 1993)
- Veronica arvensis* L. (corn speedwell): exotic; invasive, significant threat; uncommon; Streets 1769

Veronica chamaedrys L. (germander speedwell): exotic; invasive, significant threat; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Veronica officinalis L. var. *officinalis* (common gypsyweed): exotic; invasive, significant threat; uncommon; Streets 1910; Nicholas County Record

Veronica serpyllifolia L. ssp. *serpyllifolia* (thymeleaf speedwell): exotic; invasive, significant threat; unknown abundance; Norris s.n.

Simaroubaceae

Ailanthus altissima (P. Mill.) Swingle (tree of heaven): exotic; invasive, severe threat; uncommon; Streets 2642, 3032; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Smilacaceae

Smilax ecirrata (Engelm. ex Kunth) S. Wats. (upright carrionflower): native; uncommon; Streets 1836B; Nicholas County Record; identified in a vegetation plot during 2006–2009

Smilax glauca Walt. (cat greenbrier): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Smilax herbacea L. (smooth carrionflower): native; uncommon; Streets 1684, 1874, 1999; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Smilax rotundifolia L. (roundleaf greenbrier): native; abundant; Streets 2556; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Smilax tammoides L. (bristly greenbrier): native; common; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Solanaceae

Physalis heterophylla Nees var. *heterophylla* (clammy groundcherry): native; uncommon; Streets 3454; Nicholas County Record

Solanum carolinense L. var. *carolinense* (Carolina horsenettle): native; uncommon; Streets 2583, 3377; identified in a vegetation plot during 2006–2009

Solanum ptychanthum Dunal (West Indian nightshade): native; uncommon; Streets 3481

Sparganiaceae

Sparganium chlorocarpum Rydb. (European bur-reed): native; rare; Streets 2087; identified in a vegetation plot during 2006–2009

Staphyleaceae

Staphylea trifolia L. (American bladdernut): native; uncommon; Streets 2917; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Tiliaceae

Tilia americana L. var. *americana* (American basswood): native; common; Streets 3400; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Tilia americana*)

Tilia americana L. var. *heterophylla* (Vent.) Loud. (American basswood): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Tilia heterophylla*)

Typhaceae

Typha latifolia L. (broadleaf cattail): native; uncommon; Streets 3446, 3470

Ulmaceae

Ulmus americana L. (American elm): native; uncommon; Streets 2863; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Ulmus rubra Muhl. (slippery elm): native; uncommon; Streets 2452, 2457; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Urticaceae

Boehmeria cylindrica (L.) Sw. (smallspike false nettle): native; common; Streets 2095, 3035; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)

Laportea canadensis (L.) Weddell (Canadian woodnettle): native; common; Streets 2859, 3373; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Pilea pumila (L.) Gray var. *pumila* (Canadian clearweed): native; common; Streets 2858, Good 18; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Pilea pumila*)

Verbenaceae

Phryma leptostachya L. (American lopseed): native; uncommon; Streets 2116, 2720; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Verbena urticifolia L. (white vervain): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Verbena urticifolia L. var. *urticifolia* (white vervain): native; uncommon; Streets 1971; Fayette County Record

Violaceae

Hybanthus concolor (T.F. Forst.) Spreng. (eastern greenviolet): native; uncommon; Streets 2476, 2521; Nicholas County Record; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Viola ×*palmata* L. (early blue violet): native; uncommon; Potential Nicholas County Record; identified in a vegetation plot during 2006–2009

Viola ×*primulifolia* L. (pro sp.) (primrose leaf violet): native; uncommon; Streets 1818, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Viola primulifolia*)

Viola appalachiensis Henry (Appalachian violet): native; uncommon; WVNHP tracked, S3, G3; Streets 3493, Norris s.n., Grafton s.n.; (Grafton 1993, Norris 1992, WVDNR 2010)

Viola blanda Willd. var. *blanda* (sweet white violet): native; common; Streets 1844, 2515, Grafton s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993 as *Viola blanda*)

Viola canadensis L. (Canadian white violet): native; uncommon; Streets 1706, 2505, 2528; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Viola cucullata Ait. (marsh blue violet): native; common; Streets 1682, 1817, 2544, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992)

Viola hastata Michx. (halberdleaf yellow violet): native; uncommon; Streets 2860, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993)

Viola hirsutula Brainerd (southern woodland violet): native; rare; Norris s.n.; identified in a vegetation plot during 2006–2009

- Viola lanceolata* L. ssp. *lanceolata* (bog white violet): native; unknown abundance; Norris s.n.
- Viola pedata* L. (birdfoot violet): native; uncommon; Streets 1822, 2497, Norris s.n.; identified in a vegetation plot during 2006–2009; (Grafton 1993, Norris 1992, Walton and Anderson 1997)
- Viola pubescens* Ait. (downy yellow violet): native; uncommon; identified in a vegetation plot during 2006–2009
- Viola pubescens* Ait. var. *scabriuscula* Schwein. ex Torr. & Gray (downy yellow violet): native; uncommon; Streets 2454, 2456, 2466
- Viola rostrata* Pursh (longspur violet): native; uncommon; Streets 2448; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Viola rotundifolia* Michx. (roundleaf yellow violet): native; uncommon; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Viola sagittata* Ait. (arrowleaf violet): native; uncommon; identified in a vegetation plot during 2006–2009
- Viola sagittata* Ait. var. *sagittata* (arrowleaf violet): native; uncommon; Streets 2483, 2888
- Viola sororia* Willd. (common blue violet): native; uncommon; Streets 2450, 2467, 2513; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Viola striata* Ait. (striped cream violet): native; uncommon; Streets 1709, 2477; identified in a vegetation plot during 2006–2009
- Viola triloba* Schwein var. *triloba* (three-lobe violet): native; uncommon; Norris s.n.; identified in a vegetation plot during 2006–2009

Vitaceae

- Parthenocissus quinquefolia* (L.) Planch. (Virginia creeper): native; abundant; Streets 3396; identified in a vegetation plot during 2006–2009; (Grafton 1993, Walton and Anderson 1997)
- Vitis aestivalis* Michx. (summer grape): native; common; identified in a vegetation plot during 2006–2009; (Grafton 1993)
- Vitis aestivalis* Michx. var. *bicolor* Deam (summer grape): native; common; Streets 2202, 2683, 2712
- Vitis riparia* Michx. (riverbank grape): native; unknown abundance; (Grafton 1993, Walton and Anderson 1997)

Appendix C. Definitions of plant nativity status.

Nativity	Definition
Native	Plants that occurred in West Virginia prior to European settlement.
Adventive	Plants that are native to North America prior to European settlement, but are not native to West Virginia nor were they introduced, and are now found growing in the state.
Introduced	Plants that are native to North America, have been intentionally introduced in West Virginia, and now have escaped cultivation.
Exotic	Plants that are not native to North America but occur without cultivation.

Appendix D. Definitions of invasive ranks.

Invasive status	Definition
Severe threat	Invasive plant species or ecotypes which possess invasive characteristics, and spread easily into native plant communities and displace native vegetation in West Virginia. This includes species which are or likely could become widespread in West Virginia.
Significant threat	Invasive plant species or ecotypes which possess invasive characteristics, but have less threatening impact on native plant communities in West Virginia. This list includes species which may have the capacity to invade natural communities along disturbance corridors, or to spread from stands in disturbed sites into undisturbed areas, but have fewer characteristics of invasive plant species than those within the Severe threat category.
Lesser threat	Invasive plant species or ecotypes which seem principally spread vegetatively in disturbed areas. These species remain in disturbed corridors, not readily invading natural areas, but occasionally are found to be competitive with disturbance-dependant rare species. This also includes some agricultural weeds.
Watch list	Invasive plant species or ecotypes reported to be problematic elsewhere, but for which we have little credible evidence of their threat to natural areas in West Virginia. Species on this list should be investigated for potential threat to natural vegetation.

Appendix E. Definitions of estimated abundance ranks.

Abundance	Definition
Abundant	Large number of individuals; wide ecological amplitude, or occurring in habitats covering a large portion of the park.
Common	Large numbers of individuals predictably occurring in commonly encountered habitats, but not those covering a large portion of the park.
Uncommon	Few to moderate numbers of individuals; occurring either sporadically in commonly encountered habitats or in uncommon habitats.
Rare	Few individuals usually restricted to small areas of rare habitat.
Unknown	Abundance unknown.

As the nation's primary conservation agency, the Department of the Interior has responsibility for most of our nationally owned public land and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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