

**VASCULAR FLORA OF LITTLE RIVER CANYON NATIONAL PRESERVE
CHEROKEE AND DEKALB COUNTIES, ALABAMA**

TECHNICAL REPORT NPS

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I. INTRODUCTION

A. Scope of Study

A flora is an enumeration of plants that occur within a given geographic area. Standard taxonomic practice is to document occurrences by means of plant collections. Should a question arise as to identity of elements, experts then may review the preserved specimens to resolve the issue. The Little River Canyon National Preserve (hereinafter referred to as the “Preserve”) is defined by political boundaries that plant life does not recognize (Figure 1). Thus, the Preserve is ecologically an artificial unit. The Preserve does include large portions of Little River as well as canyon shoulders with outcroppings, bluffs, talus slopes, and foot slopes. Most of the interesting and unusual species of the drainage are found within the Preserve. Ancillary information, such as cursory description of vegetation, is included to assist with interpretation.

The primary objectives of this study are to catalogue the vascular flora of the Preserve, to document the occurrence of taxa primarily by means of herbarium specimens, and to analyze the flora for unique components. The objectives are accomplished by numerous collections (over four thousand specimens dating back to the mid-1960’s). These specimens are housed within the Jacksonville State University (JSU) Herbarium. The JSU Herbarium is recognized internationally by the acronym “JSU” (Whetstone 1983).

The canyon has long been a focus of interest by botanists. Most have not attempted to prepare a thorough floristic inventory of this part of Alabama. Charles Mohr (1901) alludes to the biogeographic significance of the area by his statement:

“there occurs a strong mingling of types that are at home in the Alleghenian area of the adjoining States and of North Carolina with plants of the lower ranges within the Carolinian area, giving rise to a varied flora,

the like of which has not been observed in any other part of the mountain region of Alabama.”

Many collectors have visited the area though these were more casual investigations. Among those are A. Ruth who collected the type specimen of *Cuscuta harperi* (Harper’s love-vine). Charles Mohr (1897) first described the mountain or green pitcher plant from Lookout Mountain (as *Sarracenia catesbaei* Mohr, now called *Sarracenia oreophila* (Kearny) Wherry C. R. Bell 1949).

Important collections include those of Ken Landers, Ross Clark, Robert Kral, David Whetstone, Gary Wayner, Catherine Newsome, Mark and Terri Ballard, and more recently, Steve Threlkeld and Tim Hofmann. Floristic treatments that directly deal with distribution of the area’s plant life are *Woody plants of Alabama* (R. C. Clark 1971), *Vascular flora and vegetation of the Cumberland Plateau of Alabama . . .* (R. D. Whetstone 1981), *Aquatic and marsh plants of Alabama* (L. J. Davenport and R. R. Haynes 1983, R. R. Haynes 1980, and J. H. Wiersema and R. R. Haynes 1983) and *A vascular and non-vascular flora of Little River on Lookout Mountain in Northeast Alabama* (C. C. Dickson 1992). Many of Roland Harper’s publications deal with floristic and vegetation studies of this region; however, it is difficult to ascertain the relative number of his plant collections within the area.

Figure 1. Location of Little River Canyon National Preserve (NPS)

B. Physical Setting

1. Cultural Development¹

The earliest inhabitants of this vicinity were nomadic Paleo-Indians who arrived over 12,000 years ago. These early Americans followed the large game of the last ice age into present day Alabama.

As the ice age ended, large game became less abundant. Survival became dependent on hunting and gathering of smaller game animals and the collection of forage. This led to a nomadic lifestyle of small families. These groups lived in rock shelters, using them as a base camp for their hunting forays. During this time hunting techniques were advanced by the invention of the Atlatl. These changes came about during the Archaic period which lasted from 8000 B. C. to 2500 B. C.

With advances in tools and farming the Woodland and Mississippian cultures occurred from 2500 B. C. to 1540 A. D. Cultural advances led to pottery, the bow, and eventually the establishment of small villages. These cultures flourished along creeks and streams which are abundant throughout the Little River region.

In the early 1800's, tribes were removed west to the Oklahoma Territory and the land was occupied by European settlers. They removed timber from the canyon rim and other areas of the table lands, and hauled logs from the more accessible portions of the canyon.

Two large dams were built along the upper stretches of Little River, these being at Lake Lahusage on the East Fork and one just above DeSoto Falls on the West Fork. The latter was utilized for hydro-electric energy production. Several coal mines were established along tributaries of Little River. These are no longer in use. Most of the table land is

¹ Personal communication from Dr. Harry Holstein, Chris Hill, and Angie Morgan. Department of Archeology JSU.

utilized for beef, dairy cattle, and hay production. While the accessible areas along the river are utilized for lumber and pulp wood products. Large tracts of the canyon lands are managed by the Alabama Department of Conservation as a state park (Desoto State Park).

A great deal of recreational use occurs in the Preserve, such as hiking, camping, rock climbing, rappelling, and kayaking. Some of the more fragile environments have been subjected to much alteration due to permanent, unauthorized installation of climbing equipment. Hiking and water sports have thus far proven to be less intrusive. Housing development is proceeding along the southern and eastern rims of the canyon.

2. Climate

Climatic data are derived mostly from soil surveys, therefore are more historic than current (SCS 1958, 1978). Specific data for the surface of Lookout Mountain and the Preserve specifically are not being kept. Data collection sites are located in valleys at significantly lower elevations. In general, Lookout mountain and the Preserve experience different climatic conditions than surrounding valleys. A noticeable, cool air drainage is evident within the canyon, particularly during late evening. Thus, climatic variation within the canyon support many micro-habitats; including Mountain Pitcher plant (*Sarracenia oreophila*) bogs, and Mountain Laurel (*Kalmia latifolia*)/Rhododendron slicks.

Fall temperatures average 15 °C (59 °F). Temperatures steadily decline from September to November, with the first hard frost occurring in late October (Figure 2.). Precipitation during this period averages approximately 5 cm per month. The majority of the rain fall occurs during November, with September being the driest month of the season. Winter is the wettest season of the year with an average of 38.4 cm of rain fall. Temperatures during the winter months are mild, with temperatures falling at or below freezing

approximately 70 times during the season (Dobson 1994). Snow accumulation is rare, with flurries occurring frequently throughout the season.

Spring temperatures average 13 °C (55 °F). Temperatures gradually rise during the season, with the warmest month being May with an average temperature being 17 °C (63 °F). The last frost usually occurs in mid to late April. Precipitation during the Spring months averages 40 cm a year. Summer temperatures are cooler than other areas of the state, with an average of 25.3 °C (78°F). July is the warmest month of the season with temperatures being 27 °C (81 °F).

Figure 2. Monthly Temperature (°C) and Precipitation (cm) of the Little River Canyon National Preserve from September 1992 to November 1993. (Dobson 1994)

3. Soils

Soils mostly belong to three associations (SCS 1958), *i.e.*, Hartsells-Muskingum, Apison-Pottsville-Muskingum, and Muskingum-Rockland-Hartsells. Table 1 provides a comparison of these soils.

Table 1. Soils of the Little River Canyon National Preserve.

Series	Description	Position/location
Apison ²	Texture variable, with platy fragments	Ridgetops, slopes, benches, fans
Hartsells	Fine, sandy loams, occasionally pebbly.	Flat, plateau surfaces
Muskingum	Excessively-drained, deep to shallow, fine sandy loams lacking pebbles	Hilly sites on the plateau surfaces
Pottsville	Fine sands, shallow soils; Channery. Acidic and low in nutrients.	Uplands, plateau surface
Rockland ³	Large boulders and blocks of sandstone.	Talus slopes, particularly in areas with steep relief. Topography is undulating to cliff-like

Soils across Lookout Mountain are mostly sandy and acidic with low fertility. Soil depth is minimal along canyon shoulders becoming deeper away from the edges of the plateau. Most soils are well-drained; however, water is frequently perched by the sandstones creating seeps and low, wet swales with hydric soils. Rocklands and wetter soils provide unique habitats that harbor some of the more unusual species of the Preserve.

4. Geology

Lookout Mountain is part of the Pottsville Formation (Butts 1926). As noted above, this formation has economic importance due to the presence of carboniferous shale (coal) and

² These soils are classified as “Enders” in other county surveys.

³ Technically, Rockland does not constitute a soil series.

iron ore. This portion of the formation is referred to as the Plateau fields. The surface of Lookout Mountain is primarily Pottsville Sandstone. The valleys are etched from the tableland by watercourses. Below the sandstone are varying thicknesses of interbedded materials including dark gray shales, siltstones, and coal (Butts 1926 and Osbourne *et al.* 1989). An overwhelming portion of exposures is of sandstone. These sandstones are acidic and, as revealed by the name, siliceous.

5. Hydrology

Waters from Little River flow into the Coosa, thence to the Alabama River, south to the Mobile and Tensaw rivers which empty into Mobile Bay. Just to the north of Little River's headwaters, streams drain into the Tennessee River that ultimately flow into the Mississippi River (with the exception of those that flow into the Tennessee-Tombigbee Waterway). The Tenn-Tom project makes a direct connection from the Tennessee River to the Tombigbee River in Mississippi, allowing river traffic a more direct access to the Gulf Coast of Alabama.

The hydrologic systems range from terrestrial to riverine (Cowartdin *et al.* 1976). The basin is restricted to Lookout Mountain and a short channel below Mouth Park that flows into Lake Weiss. As noted above, the system is greatly altered by impoundments along the upper east and west forks of the river. A hydro-electric dam forming Lake Weiss has inundated the confluence of Little River with the Chattooga River as well as the mouth where it once flowed into the Coosa River.

Little River is a perennial stream draining about 518km². Little River is a relatively undisturbed watershed of high quality, particularly so below Indian Falls or Little River Falls (located just below the AL-35 bridge). This section is designated a Wild and Scenic River. Upper forks and tributaries vary from intermittent (characterized by stretches that at times have low flow alternating with dry reaches) to ephemeral. While not pertinent to this study, water chemistry and seasonal temperature data have been

collected by Dobson (1994). Further studies are being conducted by Drs. Don McGarey and Kelly Gregg⁴ to better ascertain the nature and source of primary influences on water quality of Little River.

Associated terrestrial systems vary from dry-mesic (canyon shoulders and outcrops) to mesic. Some areas along the canyon rim and within the canyon retain soil moisture for long periods. These areas may have poor drainage so soils are saturated to inundated for long periods. Other sites may be wetted by fresh rains and seeps. Water is fresh, clear, and acidic.

6. Topography

The primary landform is a plateau or table land. Little River occupies a synclinal arch that directs drainage southward. The drainage basin rises to *ca.* 550m (1800 ft) along the edges of Lookout Mountain. Little River downcuts through the sandstones and shales of the Pottsville formation to *ca.* 175m (570 ft). Landscape results mostly from water erosion and deposition. The surface is gently undulating to rolling. Valleys display strata, thus commonly have shoulders, near vertical bluffs, bouldery talus, boulder fields on slopes, foot and toe slopes with some accumulation of unconsolidated sediments and organics mixed with rocks varying in size from pebbles to boulders approaching “box car” size. Valley floors have little variation in riparian zone. Stream channels are mostly entrenched and flow over a bed of sandstone. Channel bottoms range from flat sandstones, to boulders, to cobbles, to sand. Due to the nature of erosion and nearly uniform rocks, landforms are rather homogeneous.

7. Physiography

⁴ Personal communication with Dr. D. McGarey, Department of Biology, JSU, and Dr. K. Gregg, Department of Geography, JSU.

The study site is located within the Cumberland Plateau Section (Appalachian Plateaus Province) of the Appalachian Highlands Physiographic Region (Fenneman 1938). In Alabama, the Cumberland Plateau Section is loosely divided into the Warrior Basin (Coal Measures), Sand Mountain, and Lookout Mountain. Lookout is separated from Sand Mountain by a breached, anticlinal arch known as the Wills Creek anticline. To the east, the steep Cumberland Front (escarpment) clearly delineates Lookout Mountain from the Valley and Ridge Province.

C. Biotic Setting

1. Communities

Community descriptions are based upon studies performed by Whetstone (1981) for typical communities of the Cumberland Plateau. The studies comprised 10 quarter-points with nested quadrats to discern characteristics of the understory. Sites were arbitrarily selected to represent commonly repetitive communities types in the vicinity. While frequencies and cover values vary, taxa are thought to be prevalent in similar, undisturbed sites. These data were combined with observations over the past 17 years on composition of the vegetation at the Preserve to produce the descriptive analysis below.

a. Oak-Hickory dominated Communities

Oak-Hickory, communities commonly occur in the Pottsville series. Soils in this series contain clay and silt. Such sites are in deeper soils along the rim of the canyon, particularly above the canyon shoulders. See Appendix, Site 1 study, for specific data. Canopy associates usually includes northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), shagbark hickory (*C. ovata*), pignut hickory (*C. glabra*), mockernut hickory (*Carya tomentosa*), winged elm (*Ulmus alata*), and white ash (*Fraxinus americana*). Shrubs seldom form a distinct stratum within this community. Maple-leaf viburnum

(*Viburnum acerifolium*), rusty black-haw (*Viburnum rufidulum*), buckthorn (*Rhamnus caroliniana*), beauty-berry (*Callicarpa americana*), hawthorns (*Crataegus* species), and Carolina rose (*Rosa carolina*) are frequently encountered. Herbs are common, though of relatively low cover values. Table 2 lists those taxa that inhabit these sites. Lianas found in these communities are cross vine (*Bignonia capreolata*), cow-itch (*Campsis radicans*), poison-ivy (*Toxicodendron radicans*), and grapes (*Vitis* species).

Table 2. Components commonly encountered in herb stratum of oak-dominated forests.

Species	Vernacular Name	Family
<i>Agrimonia pubescens</i>	Agrimony	Rosaceae
<i>Anemone virginiana</i>	Thimble-weed	Ranunculaceae
<i>Apocynum cannibinum</i>	Indian-hemp	Apocynaceae
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	Araceae
<i>Aristolochia serpentaria</i>	Dutchman's-pipe	Aristolochiaceae
<i>Botrychium virginianum</i>	Grape fern	Ophioglossaceae
<i>Campanula divaricata</i>	Southern Harebell	Campanulaceae
<i>Chimaphila maculata</i>	Spotted wintergreen	Pyrolaceae
<i>Cimicifuga racemosa</i>	Black cohosh	Ranunculaceae
<i>Desmodium glutinosum</i>	Beggar-lice	Fabaceae
<i>Desmodium nudiflorum</i>	Beggar-lice	Fabaceae
<i>Dichanthelium boscii</i>	Panic grass	Poaceae
<i>Elephantopus tomentosus</i>	Elephant's-foot	Asteraceae
<i>Hedyotis purpurea</i>	Purple bluets	Rubiaceae
<i>Passiflora lutea</i>	Yellow passion flower	Passifloraceae
<i>Salvia urticifolia</i>	Nettle-leafed sage	Lamiaceae
<i>Sanicula canadensis</i>	Sanicle	Apiaceae
<i>Silene stellata</i>	Starry campion	Caryophyllaceae
<i>Smilacina racemosa</i>	False Solomon's-seal	Liliaceae
<i>Smilax ecirrhata</i>	Carrion flower	Smilacaceae
<i>Solidago arguta</i>	Goldenrod	Asteraceae
<i>Solidago sphacelata</i>	Goldenrod	Asteraceae
<i>Thalictrum thalictroides</i>	Wind flower	Ranunculaceae
<i>Trillium cuneatum</i>	Sweet Betsy	Liliaceae

b. Canyon Shoulder Communities

Scrub pine (*Pinus virginiana*) frequently forms open, glade-like areas along canyon shoulders (see Site 2 report in Appendix). These taxa occur in shallow, sandy soils and rock crevices. These trees characteristically are stunted in growth and resemble bonsai plants. Other pine species, particularly short-leaf and loblolly (*Pinus echinata* and *Pinus taeda*) may be present at these sites. Occurrence of these species is infrequent except in deeper soils usually located upslope from the canyon shoulder. Red maple (*Acer rubrum*), mockernut hickory (*Carya tomentosa*), and pignut hickory (*Carya glabra*) are of minor importance along the periphery and in transitional areas to oak and hickory dominated forests. Shrubs found are hawthorn (e.g., *Crataegus uniflora*), diervilla (*Diervilla rivularis*), oak-leaf hydrangea (*Hydrangea quercifolia*), mountain-laurel (*Kalmia latifolia*), rosebay (*Rhododendron catawbiense*), maple-leaf viburnum (*Viburnum acerifolium*), and other members of the heath family, e.g., sparkleberry (*Vaccinium arboreum*), high-bush blueberry (*Vaccinium corymbosum*), low-bush blueberry (*Vaccinium pallidum*), and deer-berry (*Vaccinium stamineum*). Trailing arbutus (*Epigaea repens*), partridge-berry (*Mitchella repens*), prickly-pear (*Opuntia humifusa*) are low-growing evergreens that inhabit these sites. Herb coverage is usually depauperate when a distinct shrub stratum is evident. Grasses are frequently abundant. Common taxa are needle grass (*Stipa avenacea*), hair grass (*Deschampsia flexuosa*), oat grass (*Danthonia spicata*), reed grass (*Calamagrostis cinnoides*), and spike grass (*Chasmanthium sessiliflorum*). Forbs include sharp goldenrod (*Solidago arguta*) and erect goldenrod (*S. erecta*), lousewort (*Pedicularis canadensis*). Lianas include cat-briar (*Smilax glauca* and *S. rotundifolia*), poison-ivy (*Toxicodendron radicans*), cow-itch (*Campsis radicans*), cross-vine (*Bignonia capreolata*), and yellow jessamine (*Gelsemium sempervirens*). While scrub pine communities are common along the canyon rim, they may be more frequent further upslope due to burning and clearing for pasturage. Further, scrub pine is a dominant taxon along noses leading down to the river.

c. Sandstone rock outcrops Communities

Sandstone outcrops communities occur in many places throughout the National Preserve. These outcrops tend to be located along canyon shoulders. The outcrops are maintained

by sheet and gully erosion (Whetstone 1981). Topography of the sandstone outcrops trends toward the canyon shoulder; giving a slight sloping effect. This does not allow for an excessive build up of soil in these areas.

Trees that grow on the outcrops are stunted or dwarf “bonsai”, due to shallow soils and exposure to wind and rain. Scrub Pine (*Pinus virginiana*) is the primary tree found on outcrops. Shrubs present are sparkleberry (*Vaccinium arboreum*), fringe tree (*Chionanthus virginicus*), Georgia holly (*Ilex longipes*) and black gum (*Nyssa sylvatica*).

Large mats of lichens grow in the shallow depressions of the outcrops. The lichens collect soil as it washes down from up slope creating suitable niches for plants to grow. A variety of herbaceous plants can be found growing in small refuges located throughout outcrops. Some of these are rayless goldenrod (*Bigelowia nuttallii*), blazing star (*Liatris* sp.), flameflower (*Talinum mengesii*), eastern prickly pear cactus (*Opuntia humifusa*), elf-orphine (*Dimorpha smallii*), Texas sunnysbells (*Schoenolirion wrightii*) and Little River Canyon onion (*Allium speculae*).

d. Riparian Communities

Due to the mostly entrenched channel, the riparian zone is usually narrow. In broader channels, oxbows harbor wetlands or extended riparian areas. Trees found are red maple (*Acer rubrum*), beech (*Fagus grandifolia*), umbrella magnolia (*Magnolia tripetala*), sycamore (*Platanus occidentalis*), and river birch (*Betula nigra*). Shrubs found along streams include alternate leaved dogwood (*Cornus alternifolia*), oak leaf hydrangea (*Hydrangea quercifolia*), mountain laurel (*Kalmia latifolia*), rhododendron (*Rhododendron catabawensis*), Piedmont azalea (*Rhododendron canescens*), include sweet azalea (*Rhododendron arborescens*), yellow-root (*Xanthorrhiza simplicissima*) and tag-alder (*Alnus serrulata*) which is the most common. Frequently found herbs in the riparian zone are arrow-leaf ginger (*Hexastylis airifolia*), Catesby’s Trillium (*Trillium catesbi*), soapwort gentian (*Gentiana saponaria*). Rare taxa include pimpernel

(*Lindernia saxicola*), mountain or green pitcher-plant (*Sarracenia oreophila*), mock bishop's-weed (*Ptilimnium fluviatile*), royal fern (*Osmunda regalis*), and cinnamon fern (*Osmunda cinnamomea*).

2. Species of Conservation Concern

Little River Canyon National Preserve is home for a number of species of special concern (see Table 3.). Broad categories included herein are disjuncts (species whose populations are widely separated from their known range), taxa that are found mostly in coastal or montane areas, and endemics (native and rather restricted in range).

Table 3. Species of conservation concern in Little River Canyon National Preserve.

SPECIES NAME	Disjunct	Coastal	Montane	Endemic
<i>Acer spicatum</i>			X	
<i>Allium speculae</i>				X
<i>Coreopsis pulchra</i>				X
<i>Cuscuta harperi</i>				X
<i>Deschampsia flexuosa</i>			X	
<i>Diervilla rivularis</i>				X
<i>Eriocaulon decangulare</i>		X		
<i>Lindernia saxicola</i>				X
<i>Ptilimnium fluviatile</i>				X
<i>Quercus incana</i>		X		
<i>Quercus margaretta</i>		X		
<i>Rhododendron catawbiense</i>			X	
<i>Sagittaria secundifolia</i>				X
<i>Sarracenia oreophila</i>			X	
<i>Schoenolirion wrightii</i>	X			
<i>Sporobolus junceus</i>		X		
<i>Trichomanes boschianum</i>			X	

a. Disjunct

A major disjunct of the Preserve is Texas sunny-bells (*Schoenolirion wrightii*). The species is known from Sand and Lookout mountains of Alabama thence are disjunct to the highlands of Texas. Substrates are acidic and sandy. These are plants that are located mostly in full sun, usually on sandstone outcrops.

b. Coastal Plain Species

The sandy soils of the Preserve are similar to soils of the outer coastal plain. Thus, several taxa from the coastal plain have notable disjunctions. Piney woods drop-seed (*Sporobolus junceus*) is located in deep sands of the outer coastal plain and is not commonly distributed in other sections of the Appalachians. At Mouth Park, blue-jack oak (*Quercus incana*) and dwarf post oak (*Quercus margaretta*) form a unique community on the deep sands of this portion of the Preserve. Blue-jack oak is rare in the highlands while dwarf post oak is found in higher elevations of the Valley and Ridge Section. Hat pins (*Eriocaulon decangulare*), common in the Coastal Plain of the southeast, occurs in sandy, alluvium of Little River.

c. Montane Species

Mountain maple (*Acer spicatum*) is common in the Blue Ridge Section; however, a single population below Eberhart's Point is the only record for Alabama. Hair grass (*Deschampsia flexuosa*) and rosebay (*Rhododendron catawbiense*) are abundant in high elevations of the Blue Ridge. These taxa reach their southernmost extent of their range in the canyon area. Filmy fern (*Trichomanes boschianum*) is a rare fern of sandstone grottoes or rock-houses. It is common in the Sipsey Wilderness Area of the Bankhead National Forest; and from the Bear Creek drainage. The type locality of mountain or green pitcher-plant (*Sarracenia oreophila*) is Lookout Mountain. Long thought to be located only on Lookout Mountain and adjacent Coosa Valley, it is now recorded from several other localities.

d. Endemics

Endemics are many; however, attention is drawn only to those taxa that are narrowly endemic. The rarest taxon is Kral's water-plantain (*Sagittaria secundifolia*). The species is known from Sand Mountain and Lookout Mountain. A populations is now known from the Locust Fork of the Black Warrior drainage⁵. It is aquatic and found only in sandstone shallows and pools. Pimpernel (*Lindernia saxicola*) is known only to Lookout Mountain. The type locality (Tallula Falls) is destroyed. Some confusion exists as to the relationship of this taxon with other species within the genus. Genetic studies are now underway (by Jeri Higginbotham, Elizabeth McCartney and David Whetstone) to elucidate the taxonomy. Tickseed (*Coreopsis pulchra*), and Harper's love-vine (*Cuscuta harperi*) were thought to be narrowly restricted to Lookout Mountain; however, recent investigations have located these taxa on sandstones of Sand Mountain. Tickseed is abundant on rock outcroppings and is rare off the Cumberland Plateau. Bush-honeysuckle (*Diervilla rivularis*) is common along the canyon rim and rock ledges. It is rare elsewhere within its range.

II. FLORA

A. Floristics

1. Floristic Summary

The flora of Little River River Canyon National Preserve is made up of 687 specific and infra-specific taxa; including 373 genera, 129 families, 5 classes and 4 divisions. Magnoliophyta is the largest division with a total of 660 specific and infra-specific taxa (95 percent). Of this class Magnoliopsida makes up the majority with 80 percent whereas Liliopsida comprises only of 15 percent. Fern and Fern allies (Lycopodiophyta and Polypodiophyta) make up 3 percent of the flora; with the Gymnosperms (Pinophyta) contributing only 1 percent to the flora. The ten largest families are Asteraceae with 106

⁵ Personal communications with Suzanne Oberhoulster of the U. S. Forest Service.

species, Fabaceae with 44 species, Poaceae with 27 species, Cyperaceae with 27 species, Rosaceae with 23 species, Lamiaceae with 17 species, Scrophulariaceae with 16 species, Brassicaceae with 15 species, Ranunculaceae with 14 species and Liliaceae with 11 species (Figure 3.).

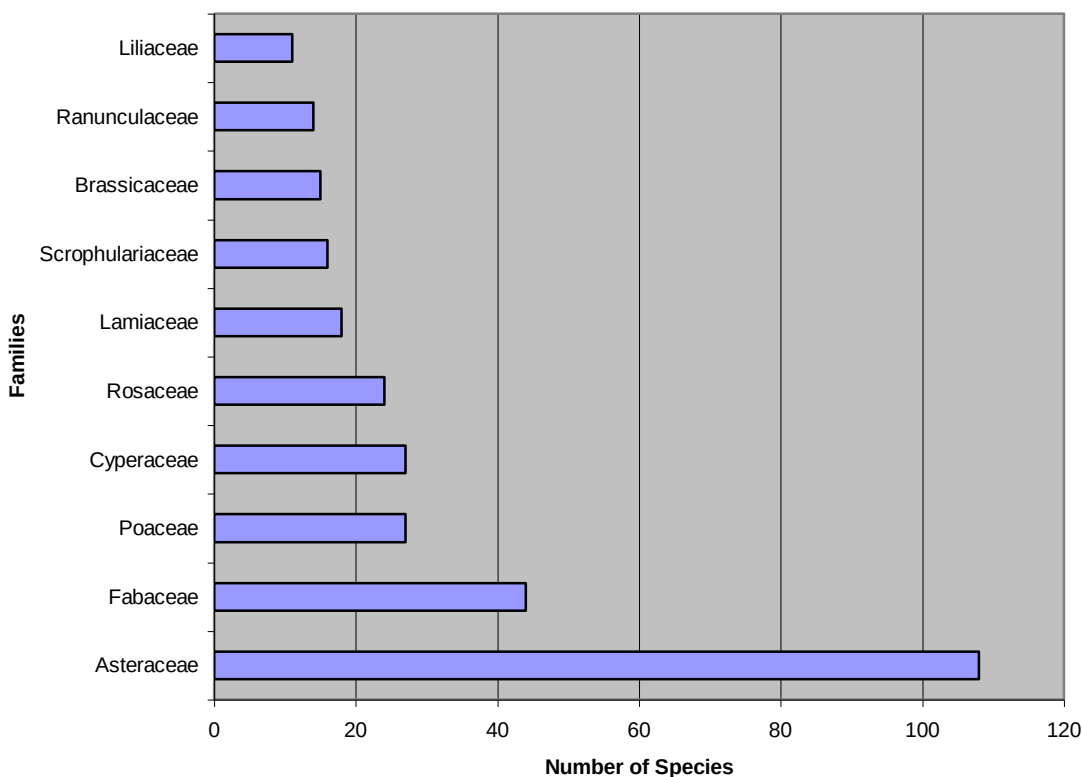


Figure 3. Comparison of Major Plant Families

1. Life-forms

Life-forms are adaptive features of plants that are readily discernible. Life-form categories are based upon life cycle and morphologic features (see Table 4.). Of particular interest is life cycle duration (annual versus perennial), whether woody or herbaceous, position of perennating structures or buds, and relative exposure of buds to elements (plant height). Raunkiaer (1934) first presented the system and established a

“world spectrum” to serve as a baseline for interpretation. Table 4 and Figure 4 summarize a life-form analysis of Preserve.

Table 4. Life-forms of Plants, modified from Raunkiaer (1934).

Life-form	Description
Therophyte	Annual; plants begin their life cycles from seeds and die at end of growing season leaving a seed bank to begin the next growing season, seed is over-wintering structure.
Cryptophyte	Perennial herbs
Geophyte	Perennial herbs; herbs with a deeply buried perennating structure such as a corm, tuber, or rhizome.
Hydrophyte	Perennial herbs; submergent or emergent plants that mostly occur in the aquatic or wetland environments, perennating buds in part protected by water.
Hemicryptophyte	Perennial herbs; herbs whose above-ground portions die back to soil surface leaving buds to over-winter near the surface of the ground.
Parasite	Perennial herbs or otherwise; plants deriving all or a portion of their nutritional needs from another species or host.
Succulent	Perennial (rarely annuals); stems, leaves, or both structures that are fleshy.
Chamaephyte	Woody plants; perennials whose above-ground portions do not die back to surface of the ground during winter, buds are raised 0–0.5 m above the surface of the substrate
Phanerophyte	Woody plants; perennials whose above-ground portions do not die back to surface of the ground during winter,

Life-form	Description
	buds are raised from = 0.5 m above the surface of the soil; divided into trees, shrubs, and lianas.
Phanerophyte-tree	Erect Phanerophyte arising from ground level with usually a single bole, aerial stems = 3m at maturity.
Phanerophyte-shrub	Phanerophyte arising from ground level with multiple boles, aerial stems = 3 m at maturity.
Phanerophyte-liana	Clambering, running, or climbing phanerophytes.

Table 5. Life-forms in the flora of Little River Canyon.

Life-form	Absolute Frequency	Relative Frequency
Therophyte	86	10.12%
Cryptophyte	78	9.18%
Geophyte	75	8.82%
Hydrophyte	3	0.35%
Hemicryptophyte	264	31.06%
Parasite	15	1.76%
Succulent	3	0.35%
Chamaephyte	14	1.65%
Phanerophyte	156	18.35%
Phanerophyte-tree	66	7.76%
Phanerophyte-shrub	69	8.12%
Phanerophyte-vine	21	2.47%

Totals	850	100.00%
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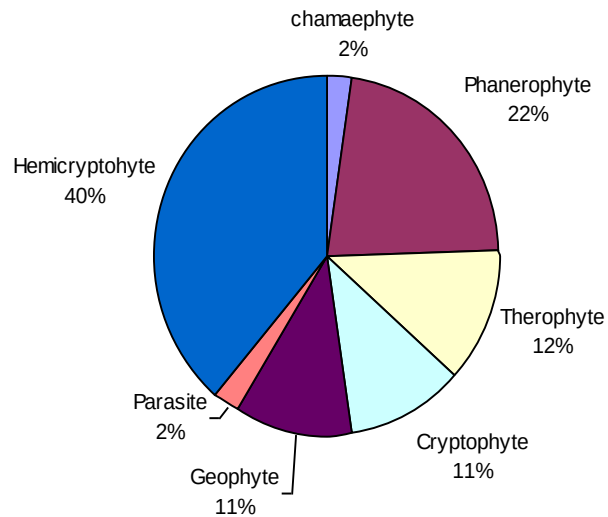


Figure 4. Life-form categories of flora of Little River Canyon National Preserve.

As evinced by the data, hemicryptophytes predominate so that one may conclude the climate is “hemicryptophytic”. Combine these forms with those other perennial herbs and the flora comprises mostly herbaceous taxa with shallowly buried perennating organs. These results are similar to a much broader study performed on the Cumberland Plateau of Alabama (Whetstone 1981).

Woody flora (chamaephytes and phanerophytes) account for about 20% of the total. Vegetationally, these types are dominant flora in nearly all communities. Trees (phanerophytes trees) make up about 8 %, about 8 % are shrubs (phanerophyte shrubs), and about 2.5% are lianas (phanerophyte liana or “woody vines”). Sub-shrubs (chamaephytes) account for less than 2% of the flora.

A little over 10% of the species are therophytes. These annual herbs are mostly found outside the forested environment, so are more prevalent in disturbances and in early successional habitats.

2. Flowering and Fruiting Phenology

Flowering and fruiting data were tabulated to determine discernible patterns in yearly cycles (See Table 6 and Figure 3). Data were collected from herbarium specimens and by field observations to ascertain the extent of flowering by taxon. Thus, the tabulations represent the number of species flowering during each month. If a taxon flowers for several months, each monthly tally includes this taxon.

Table 6. Absolute number of species flowering and fruiting by month.

Month	Absolute number of species flowering	Absolute number of species fruiting
January	0	0
February	3	1
March	25	6
April	101	18
May	158	62
June	95	64
July	87	74
August	88	85
September	92	102
October	49	101
November	6	11
December	0	0

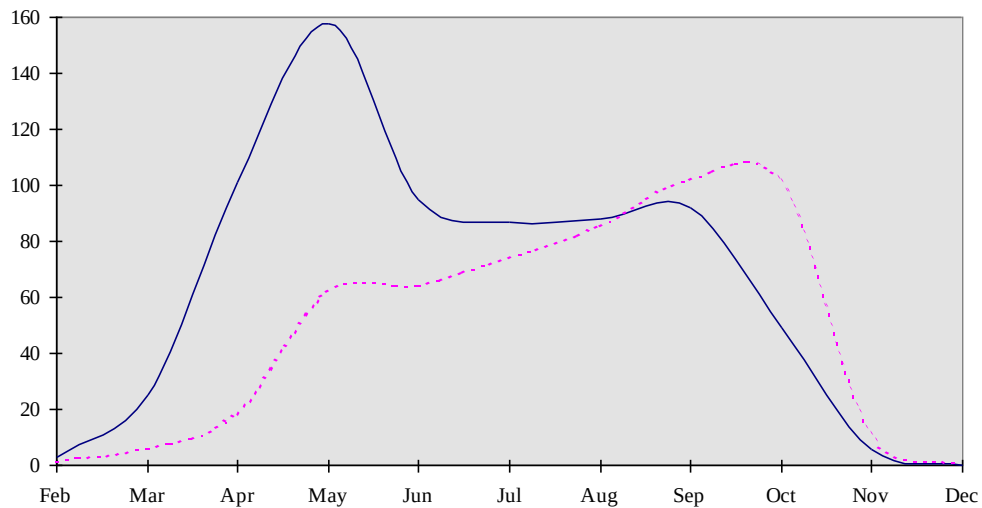


Figure 3. Flowering and fruiting phenology of Little River flora. Solid line = absolute number of taxa flowering. Broken line = absolute number of taxa fruiting each month.

January and February have few species flowering or fruiting. Some taxa, such as wind flower (*Thalictrum thalictroides*) and liver-leaf (*Hepatica nobilis* var. *obtusa*) may infrequently come into flowering. The “vernal” flora begins in earnest in March with

about 25 species flowering. Spring is evident with the combined April and May total of over 250 species. Our best floral display occurs about the first weekend in April (personal observation, senior author); however, more taxa flower during May. An abrupt decline occurs in June and July. September flowering increases gradually to a second display, though not as diverse as the spring flora.

Tabulations of taxa that are in fruit show a pattern that does not follow the flowering phenology pattern. Here, numbers increase gradually (except for May, a culmination of spring reproduction). The yearly numbers plummet in November with the advent of cold weather, shorter days, and leaf fall.

3. Distributional Patterns of the Flora

An analysis of distributional patterns of the flora indicates that about 70% of the flora is widely distributed across the eastern United States. Approximately 13% of the flora is mostly centered in the Appalachians with 7% being southern Appalachian endemics. Over 8% of the flora is distributed mostly within the Coastal Plain with extensions into the edge of the Appalachian. A number of important peripheral taxa are found in sandy acidic soils, habitats not unlike coastal environments. A little under 12% of the flora comprises alien taxa that are naturalized (herein meaning that taxa originated outside the area yet are reproducing and behaving much like native taxa) (Table 7.) or waifs (herein referring to alien taxa that are not thought to reproduce in the wild but are frequently encountered in the flora area) (Figure 4.). Alien taxa tabulated as occurring within the confines of the Cumberland Plateau (Whetstone 1981) account for nearly 20% of the total flora. The relatively low number of alien taxa bears tribute to the near pristine nature of the Preserve.

Table 7. Invasive alien species found in Little River National Preserve.

Species	Family	Country of Origin
<i>Taraxacum officinale</i>	Asteraceae	Europe
<i>Lonicera japonica</i>	Caprifoliaceae	Asia
<i>Ligustrum sinense</i>	Oleaceae	Asia
<i>Lamium amplexicaule</i>	Lamiaceae	Europe
<i>Lamium purpureum</i>	Lamiaceae	Europe
<i>Perilla frutescens</i>	Lamiaceae	Asia
<i>Prunella vulgaris</i>	Lamiaceae	Eurasia
<i>Plantago lanceolata</i>	Plantaginaceae	Eurasia
<i>Sherardia arvensis</i>	Rubiaceae	Europe
<i>Ailanthus altissima</i>	Simaroubaceae	Asia
<i>Verberna brasiliensis</i>	Verbenaceae	South America
<i>Viola rafinesquii</i>	Violaceae	Europe
<i>Commelinaceae communis</i>	Commelinaceae	Asia
	Poaceae	Asia
<i>Arthraxon hispidus</i>		
<i>Cynodon dactylon</i>	Poaceae	Europe
<i>Dactylis glomerata</i>	Poaceae	Europe
<i>Digitaria ciliaris</i>	Poaceae	Europe

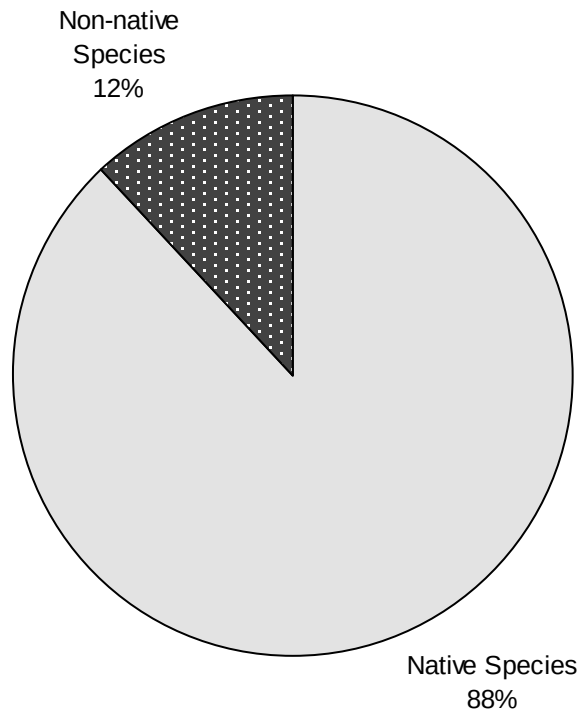


Figure 4. Percentage of Native to Non-Native Species of Little River National Preserve.

B. Catalogue of the Flora

DIVISION LYCOPODIOPHYTA

CLASS LYCOPSIDA

ISOETACEAE (Quillwort Family)

Reference: W. C. Taylor et al. 1993.

1. ISOETES Linnaeus

Reference: B. M. Boom 1982.

1. *I. engelmannii* A. Braun, APPALACHIAN or ENGELMANN'S QUILLWORT. Perennial (hydrophyte). Sporulates April—October. Margins of small streams and pools; very rare. State rank, S3;

LYCOPODIACEAE (Clubmoss Family)

Reference: W. H. Wagner and J. M. Beitel 1993.

1. DIPHASIASTRUM Holub

Reference: R. J. Hickey and J. M. Beitel 1979.

1. *D. digitatum* (Dillenius ex A. Braun) Holub, RUNNING GROUND-PINE; GROUND-CEDAR. Evergreen perennial (chamaephyte). Sporulates July—September. Acidic woods and slopes; rare. State listed as Species of Special Concern by Freeman et al. (1979). [*Lycopodium flabelliforme* (Fernald) Blanchard]

DIVISION POLYPODIOPHYTA

CLASS FILICOPSIDA

ASPLENIACEAE (Spleenwort Family)

Reference: W.H. Wagner, R. C. Moran and C. R. Werth 1993.

1. ASPLENIUM Linnaeus

1. *A. bradleyi* D.C. Eaton, BRADLEY'S SPLEENWORT. Perennial (hemicryptophyte). Sporulates February—September. In crevices of shaded sandstone bluffs; rare.
2. *A. montanum* Willdenow, MOUNTAIN SPLEENWORT. Perennial (hemicryptophyte). Sporulates February—May. Sandstone rockhouses; rare.
3. *A. pinnatifidum* Nuttall, LOBED SPLEENWORT. Perennial (hemicryptophyte). Sporulates September. In crevices of shaded sandstone bluffs; rare.
4. *A. platyneuron* (Linnaeus) Oakes, EBONY SPLEENWORT. Perennial (hemicryptophyte). Sporulates April—October. Woods, fields, thickets and road banks; common.
5. *A. resiliens* Kunze, BLACKSTEM SPLEENWORT. Perennial (hemicryptophyte). Sporulates April—October. Bluffs, rock houses and boulders in woods; infrequent.
6. *A. rhizophyllum* Linnaeus, WALKING FERN. Perennial (hemicryptophyte). Sporulates May—October. Rich woods on rocks; rare.
7. *A. trichomanes* Linnaeus, MAIDENHAIR SPLEENWORT. Perennial (hemicryptophyte). Sporulates March—October. Wooded slopes on rocks; rare.

BLECHNACEAE (Chain Fern Family)

1. WOODWARDIA J.E. Smith

Reference: R. B. Cranfill 1993b.

1. *W. areolata* (Linnaeus) Moore, NETTED CHAIN FERN. Perennial (hemicryptophyte). Sporulates June—September. Wet seeps of the canyon; rare.

DENNSTAEDTIACEAE (Cuplet Fern Family)

Reference: R. B. Cranfill 1993a.

1. PTERIDIUM Gleditsch ex Scopoli

Reference: C. A. Jacobs, and J. H. Peck 1993.

- 1. *P. aquilinum*** (Linnaeus) Kuhn var. *pseudocaudatum* (Clute) Heller, TAILED BRACKEN FERN. Perennial (geophyte). Sporulates July—September. Dry upland woods; infrequent.

DRYOPTERIDACEAE (Wood Fern Family)

[Aspidiaceae]

Reference: A. R. Smith 1993b.

1. ATHYRIUM Roth

Reference: M. Kato 1993.

- 1. *A. filix-femina*** (Linnaeus) Roth var. *asplenioides* (Michaux) Farwell, SOUTHERN LADY FERN. Perennial (geophyte). Sporulates May—September. Low woods and wooded stream banks; infrequent. [*A. asplenioides* (Michaux) A. A. Eaton]

2. DRYOPTERIS Adanson

Reference: J. D. Montgomery and W. H. Wagner 1993.

- 1. *D. marginalis*** (Linnaeus) Gray, MARGINAL SHIELD FERN. Semi-evergreen perennial (hemicryptophyte). Sporulates June—September. Rocky woods and sandstone bluffs; rare.

3. ONOCLEA Linnaeus

Reference: D. M. Johnson 1993.

- 1. *O. sensibilis*** Linnaeus, SENSITIVE FERN; BEAD FERN. Perennial (hemicryptophyte). Sporulates May—June. Wet seeps, and creek banks; infrequent.

4. POLYSTICHUM Roth

Reference: D. H. Wagner 1993.

1. *P. acrostichoides* (Michaux) Schott, CHRISTMAS FERN. Evergreen perennial (chamaephyte). Sporulates May—October. Moist woods and shaded slopes; common.

5. **WOODSIA** R. Brown

Reference: M. D. Windham 1993c.

1. *W. obtusa* (Sprengel) Torrey, BLUNT-LOBED CLIFF FERN or WOODSIA. Perennial (hemicryptophyte). Sporulates May—August. Moist, rocky woods, shaded sandstone cliffs and limestone bluffs; infrequent.

OPHIOGLOSSACEAE (Adder's-tongue Family)

Reference: W. H. Wagner and F. S. Wagner 1993.

1. **BOTRYCHUM** Swartz

Reference: W. H. Wagner and F. S. Wagner 1983.

1. *B. virginianum* (Linnaeus) Swartz, RATTLESNAKE FERN. Perennial (hemicryptophyte). Sporulates April—June. Wooded slopes; infrequent.

2. **OPHIOGLOSSUM** Linnaeus

Reference: W. H. Wagner et al. 1984.

1. *O. vulgatum* Linnaeus, COMMON ADDER'S-TONGUE. Perennial (hemicryptophyte). Sporulates April—July. Glade areas; rare. [*O. vulgatum* Linnaeus var. *pycnostichum* Fernald]

OSMUNDACEAE (Royal Fern Family)

Reference: R. D. Whetstone and T. A. Atkinson 1993.

1. **OSMUNDA** Linnaeus

1. *O. cinnamomea* Linnaeus, CINNAMON FERN. Perennial (hemicryptophyte). Sporulates March—May. Low woods and stream banks; rare.
2. *O. regalis* Linnaeus var. *spectabilis* (Willdenow) Gray, ROYAL FERN. Perennial (hemicrypto-phyte). Sporulates March—June. Stream banks and low woods; rare.

POLYPODIACEAE (Polypody Family)

Reference: A. R. Smith 1993c.

1. PLEOPELTIS Humbolt & Bonpland ex Willdenow

Reference: E. G. Andrews and M. D. Windham 1993.

1. *P. polypodioides* (Linnaeus) Andrews & Windham var. *michauxiana* (Weatherby) Andrews & Windham, RESURRECTION FERN. Evergreen perennial (chamaephyte/epiphyte). Sporulates June—October. Growing on trees and rocks; common. [*Polypodium polypodioides* (Linnaeus) Watt]
2. *P. virginia* Linnaeus, ROCK CAP FERN. Evergreen perennial (chamaephyte/epiphyte). Sporulates April—June. Canyon rim, wooded slopes; infrequent.

PTERIDACEAE (Maidenhair Fern Family)

Reference: M. D. Windham 1993a.

1. ADIANTUM Linnaeus

References: C. A. Paris 1993; C. A. Paris and M. D. Windham 1988.

1. *A. pedatum* Linnaeus, MAIDENHAIR FERN. Perennial (geophyte). Sporulates June—August. Rich wooded slopes; common.

2. CHEILANTHES Swartz

1. *C. lanosa* (Michx.) D.C. Eaton, HAIRY LIP FERN. Perennial (geophyte). Sporulates June—August. Rich wooded slopes; rare.
2. *C. tomentosa* Link., WOOLY-LIP FERN. Perennial (geophyte). Sporulates April—August. Rich wooded slopes; rare.

3. **PELLAEA** Link

Reference: M. D. Windham 1993b.

1. ***P. atropurpurea*** (Linnaeus) Link, PURPLE CLIFF-BRAKE. Perennial (chamaephyte). Sporulates May—September. Limestone outcropping in the canyon ; rare.

DIVISION PINOPHYTA

CLASS PINOPSIDA

PINACEAE (Pine Family)

Reference: R. Kral 1993.

1. **PINUS** Linnaeus

1. ***P. echinata*** Miller, SHORTLEAF PINE. Evergreen tree (phanerophyte). Pollen shed March–April; seeds shed September—October. Upland woods canyon shoulders; infrequent.
2. ***P. taeda*** Linnaeus, LOBLOLLY PINE. Evergreen tree (phanerophyte). Pollen shed March–April; seeds shed October—November. Canyon rim, upland woods and canyon floor; common.
3. ***P. virginiana*** Miller, SCRUB PINE; VIRGINIA PINE. Evergreen tree (phanerophyte). Pollen shed March—May; seeds shed September–November. Canyon shoulder, rock outcrop dry woods; common.

CUPRESSACEAE (Cypress Family)

References: J. A. Hart and R. A. Price 1990; F. D. Watson and J. E. Eckenwalder 1993.

1. **JUNIPERUS** Linnaeus

References: R. P. Adams 1986, 1993.

1. ***J. virginiana*** Linnaeus, EASTERN RED CEDAR. Evergreen tree (phanerophyte). Pollen shed February—March; seeds shed October–November. Canyon shoulder and rock outcrops; common.

DIVISION MAGNOLIOPHYTA

CLASS MAGNOLIOPSIDA

ACANTHACEAE (Acanthus Family)

1. RUELLIA Linnaeus

Reference: R. W. Long 1974, M. L. Fernald 1945.

1. ***R. carolinensis*** (Walter) Steudel, HAIRY WILD-PETUNIA. Perennial herb (geophyte). Flowers and fruits May—September. Upland woods, canyon floor and roadsides; common.

ACERACEAE (Maple Family)

1. ACER Linnaeus

References: Y. Desmarais 1952; M. L. Fernald 1942; F. R. Fosberg 1954; E. Murray 1975.

1. ***A. leucoderme*** Small, CHALK MAPLE. Tree (phanerophyte). Flowers March—April; fruits May—September. Wooded slopes of the canyon; infrequent. . [*Acer saccharum* Marshall ssp. *leucoderme* (Small) Desmarais]
2. ***A. negundo*** Linnaeus, BOX-ELDER; ASH-LEAF MAPLE. Tree (phanerophyte). Flowers March—April; fruits August—October. Low woods and river margins of the canyon; common.
3. ***A. rubrum*** Linnaeus, RED MAPLE. Tree (phanerophyte). Flowers February—March; fruits April—July. Wooded slopes of the canyon, canyon shoulder and rock outcrops; common.
4. ***A. saccharum*** Marshall, SUGAR MAPLE. Tree (phanerophyte). Flowers April—June; fruits June—September. River margins and wooded slopes of the canyon; infrequent.
5. ***A. saccharinum*** Linnaeus, SILVER MAPLE. Tree (phanerophyte). Flowers February—April; fruits April—July. River margin; rare.
6. ***S. spicatum*** Lamark, MOUNTAIN MAPLE. Tree (phanerophyte). Flowers March—April; fruits May—July. Wooded slopes of the canyon; rare.

AMARANTHACEAE (Amaranth Family)

Reference: K. R. Robertson 1981.

1. **ALTERNANTHERA** Forskal

1. ***A. philoxeroides*** (Martius) Grisebach, ALLIGATOR-WEED. Perennial herb (hemicryptophyte); native to South America. Flowers and fruits April—October. Mouth park, lake; rare.

2. **AMARANTHUS** Linnaeus

1. ***A. spinosus*** Linnaeus, SPINY AMARANTH. Monoecious, annual herb (therophyte); native to tropical America. Flowers and fruits May—November. Roadsides and disturbed sites; rare.

ANACARDIACEAE (Sumac/Cashew Family)

Reference: G. K. Brizicky 1962a.

1. **RHUS** Linnaeus

1. ***R. copallina*** Linnaeus, WINGED or DWARF SUMAC. Shrub or small tree (phanerophyte). Flowers July—September; fruits August—October. Uplands and outcrop borders; infrequent.

2. ***R. glabra*** Linnaeus, SMOOTH SUMAC. Shrub or small tree (phanerophyte). Flowers May—July; fruits June—October. Uplands wooded borders; infrequent.

2. **TOXICODENDRON** Miller

Reference: W. T. Gillis 1971.

1. ***T. radicans*** (Linnaeus) Kuntze, POISON-IVY. Woody vine (phanerophyte). Flowers April—May; fruits August—October. Woods, woodland border; common. [*Rhus radicans* Linnaeus]

ANNONACEAE (Custard-Apple Family)

Reference: R. Kral 1960.

1. ASIMINA Adanson

Reference: R. L. Wilbur 1970a.

1. *A. parviflora* (Michaux) Dunal, DWARF PAW-PAW. Shrub (phanerophyte). Flowers April—May; fruits July—September. Canyon slopes and low woods; rare.

APIACEAE (Carrot/Parsley Family)

1. ANGELICA Linnaeus

1. *A. triquinata* Michaux, FILMY ANGELICA. Perennial herb (hemicryptophyte). Flowers August—September; fruits September—October. River margins; infrequent.

2. CHAEROPHYLLUM Linnaeus

1. *C. tainturieri* Hook, HAIRY-FRUIT CHERVIL. Annual herb (therophyte). Flowers March—May; fruits April—May. Roadsides, disturbed habitats; common.

3. DAUCUS Linnaeus

1. *D. carota* Linnaeus, QUEEN-ANNE'S-LACE; WILD CARROT. Short-lived perennial (biennial/hemicryptophyte) herb; native to Europe. Flowers and fruits May—October. Roadsides and other disturbed sites; common.

4. OSMORHIZA Rafinesque

Reference: P. P. Lowry and A.G. Jones 1979.

1. *O. claytonii* (Michaux) Clarke, SWEET CICELY. Perennial herb (hemicryptophyte). Flowers April—May; fruits May—June. Rich woods; infrequent.
2. *O. longistylis* (Torrey) De Candolle. SWEET CHERVIL; ANISE-ROOT. Perennial herb (hemicryptophyte). Flowers April—May; fruits May—June. Rich woods; infrequent.

5. **PTILIMNIUM** Rafinesque

1. ***P. fluviatile*** (Rose) Mathias, RIVER MOCK BISHOP'S-WEED. Annual herb (therophyte). Flowers May—July; fruits July—August. Rocky shallows; infrequent.

6. **SANICULA** Linnaeus

1. ***S. canadensis*** Linnaeus, SHORT-STYLED or BLACK SNAKEROOT. Perennial herb (hemicryptophyte). Flowers April—May; fruits June—July. Wooded of canyon; common.
2. ***S. marilandica*** Linnaeus, SANICLE; BLACK SNAKEROOT. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—August. Wooded slopes and upland woods; infrequent.
3. ***S. smallii*** Bicknell, SMALL'S SNAKEROOT. Perennial herb (hemicryptophyte). Flowers April—ay; fruits May—June. Upland woods; rare.

7. **THASPIUM** Nuttall

1. ***T. trifoliatum*** (Linnaeus) Gray var. *flavum* Blake, YELLOW MEADOW-PARSNIP. Perennial herb (hemicryptophyte). Flowers April—May; fruits July—August. Slopes of |canyon; infrequent.

8. **Zizia** Koch

1. ***Z. aptera*** (Gray) Fernald, HEART-LEAVED ALEXANDERS. Perennial herb (hemicryptophyte). Flowers April—May; fruits July—August. Canyon slopes; rare.
2. ***Z. aurea*** (Linnaeus) W. D. J. Koch, GOLDEN ALEXANDERS. Perennial herb (hemicryp-tophyte). Flowers April—May; fruits July—August. Canyon slopes; rare

APOCYNACEAE (Dogbane Family)

Reference: T. J. Rosatti 1989.

1. **AMSONIA** Walter

1. ***A. tabernaemontana*** Walter, BLUE STAR. Perennial herb (hemicryptophyte). Flowers April—May; fruits August\—September. Rich woods of canyon floor; infrequent.

2. **APOCYNUM** Linnaeus

1. **A. *cannabinum*** Linnaeus, INDIAN-HEMP; CLASPING-LEAF DOGBANE. Perennial herb (hemicryptophyte). Flowers May—July; fruits September—October. Clay roadsides; rare.

3. **VINCA** Linnaeus

1. **V. *major*** Linnaeus, GREATER PERIWINKLE. Perennial, evergreen vine (chamaephyte); native to Europe. Flowers March—May; fruits June—July. Old homesites; rare.

AQUIFOLIACEAE (Holly Family)

1. **ILEX** Linnaeus

Reference: R. P. Wunderlin and J. E. Poppleton 1977.

1. **I. *ambigua*** (Michaux) Torrey var. ***ambigua*** ., SAND HOLLY. Small tree or large shrub (phanerophyte). Flowers April—June; fruits August—September. Upland woods wooded borders; common.
2. **I. *longipes*** Chapman, GEORGIA HOLLY. Tree (phanerophyte). Flowers April—May; fruits September—October. Upland woods and outcrops margins; infrequent. [*I. decidua* Walter var. *longipes* (Chapman) Ahles]
3. **I. *opaca*** Aiton, AMERICAN HOLLY. Evergreen tree (phanerophyte). Flowers April—June; fruits September—October. Woodland slopes of canyon; common.
4. **I. *verticillata*** (Linnaeus) Gray, WINTERBERRY; BLACK-ALDER. Large shrub (phanerophyte). Flowers April—May; fruits September–November. Stream banks and river margins of canyon; infrequent.

ARALIACEAE (Ginseng Family)

Reference: S. A. Graham 1966.

1. **ARALIA** Linnaeus

1. **A. *spinosa*** Linnaeus, DEVILS'WALKING-STICK; HERCULES'-CLUB. Shrub or small tree (phanerophyte). Flowers June—September; fruits August—October. Upland woods and wooded borders; common.

2. **HEDERA** Linnaeus

1. ***H. helix*** Linnaeus, ENGLISH IVY. Woody, evergreen vine (phanerophyte); native to Eurasia and north Africa. Flowers June—August; fruits January—March. Old homesites; rare.

3. **PANAX** Linnaeus

Reference: S. Y. Hu et al. 1980.

1. ***P. quinquefolius*** Linnaeus, AMERICAN GINSENG. Perennial herb (geophyte). Flowers May—June; fruits August—October. Wooded slopes of canyon; rare. Federal status, 3C; State rank, S4; Endangered Species in Alabama (Freeman et al. 1979).

ARISTOLOCHIACEAE (Birthwort Family)

1. **ARISTOLOCHIA** Linnaeus

1. ***A. serpentaria*** Linnaeus, VIRGINIA SNAKEROOT. Perennial herb (geophyte). Flowers May—June; fruits June—July. Upland woods; infrequent.

2. **HEXASTYLIS** Rafinesque

Reference: H.L. Blomquist 1957, L. L. Gaddy 1987.

1. ***H. arifolia*** (Michaux) Small var. ***ruthii*** (Ashe) H. L. Blomquist, ARROW-LEAF GINGER; HEART-LEAF. Perennial herb (hemicryptophyte). Flowers March—May; fruits April—June. Upland woods and canyon slopes; common.

2. ***H. shuttleworthii*** (Britton & Baker) Small, SHUTTLEWORTH'S GINGER. Perennial herb (hemi-cryptophyte). Flowers and fruits May—July. Upland woods and canyon slopes; infrequent.

ASCLEPIADACEAE (Milkweed Family)

References: T. J. Rosatti 1989; E. Sundell 1980; R. E. Woodson 1941.

1. ASCLEPIAS Linnaeus

Reference: K. Carr 1942; R. E. Woodson 1945, 1954.

1. *A. lanceolata* Walter, LANCEOLATE MILKWEED. Perennial herb (hemicryptophyte). Flowers May—July; fruits June—August. Open areas and rock outcrops; rare.
2. *A. longifolia* Michaux, LONG-LEAF MILKWEED. Perennial herb (hemicryptophyte). Flowers May—July; fruits June—August. Open areas, and rock outcrops; rare.
3. *A. quadrifolia* Jacquin, FOUR-LEAVED MILKWEED. Perennial herb (hemicryptophyte). Flowers May—June; fruits August—September. Canyon slopes ; rare.
4. *A. tuberosa* Linnaeus, BUTTERFLY-WEED; PLEURISY-ROOT. Perennial herb (hemicryptophyte). Flowers May—August; fruits August—October. Roadsides and woodland borders; common.
5. *A. variegata* Linnaeus, WHITE MILKWEED. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—September. Open areas and woodland borders; rare.
6. *A. verticillata* Linnaeus, WHORLED MILKWEED. Perennial herb (hemicryptophyte). Flowers June—September; fruits September—October. Canyon shoulders; rare.

ASTERACEAE (Aster/Composite Family)

References: A. Cronquist 1980; S. B. Jones 1982; R. W. Scott 1990; B. S. Vuilleumier 1969, 1973.

1. ACHILLEA Linnaeus

1. *A. millefolium* Linnaeus, YARROW; MILFOIL. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits May—October. Woodland borders; infrequent.

2. AMBROSIA Linnaeus

1. *A. artemisiifolia* Linnaeus, COMMON RAGWEED. Annual herb (therophyte). Flowers and fruits August—November. Roadsides and other disturbed areas; common.
2. *A. trifida* Linnaeus, GIANT RAGWEED. Annual herb (therophyte). Flowers and fruits July—November. Roadsides and other disturbed areas; common.

3. ANTENNARIA Gaertner

Reference: R. J. Bayer and G. L. Stebbins 1982, 1987.

1. *A. plantaginifolia* (Linnaeus) Richardson, PLANTAIN-LEAVED PUSSY-TOES. Semi-evergreen perennial herb (chamaephyte). Flowers and fruits March—May. Upland woods and canyon shoulders; common.
2. *A. solitaria* Rydberg, SOLITARY PUSSY-TOES. Semi-evergreen perennial herb (chamaephyte). Flowers and fruits March—May. Uplands and canyon shoulders; infrequent.

4. ASTER Linnaeus

References: R. L. Jones 1983, 1992; J. C. Semple 1982.

1. *A. concolor* Linnaeus, EASTERN SILVERY ASTER. Perennial herb (hemicryptophyte). Flowers and fruits September—November. Open areas and woodland borders; infrequent.
2. *A. divaricatus* Linnaeus, WHITE WOOD ASTER; HEART-LEAVED ASTER. Perennial herb (hemi-cryptophyte). Flowers and fruits August—October. Upland woods and rocky slopes of canyon; infrequent.
3. *A. dumosus* Linnaeus, BUSHY ASTER. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Open woodlands; infrequent.
4. *A. hemisphericus* Alexander, SOUTHERN ASTER. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Open woodland; infrequent.
5. *A. lateriflorus* (Linnaeus) Britton, CALICO or STARVED ASTER. Perennial herb (hemicrypto-phyte). Flowers and fruits September—November. Slopes of canyon; infrequent..
6. *A. patens* Aiton, LATE PURPLE ASTER; SPREADING ASTER. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Rock outcrops and woodland borders; rare.
7. *A. paternus* Cronquist, TOOTHED WHITE-TOPPED ASTER. Perennial herb (hemicryptophyte). Flowers and fruits June—July. Open areas and woodland borders; rare.
8. *A. pilosus* Willdenow, FROST ASTER. Perennial herb (hemicryptophyte). Flowers and fruits September—November. Open areas and other disturbed areas; common.
9. *A. solidagineus* Michaux, NARROW-LEAVED WHITE-TOPPED ASTER. Perennial herb (hemi-cryptophyte). Flowers and fruits June—July. Sandstone outcrops and opens areas; rare.
10. *A. surculosus* Michaux, PURPLE ASTER. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Sandstone outcrops and canyon shoulder; rare. State rank, S1.

11. *A. undulatus* Linnaeus, WAVY-LEAVED ASTER. Perennial herb (hemicryptophyte). Flowers and fruits August—November. Open wooded borders; Infrequent.

5. **BIDENS** Linnaeus

1. *B. bipinnata* Linnaeus, SPANISH NEEDLES. Annual herb (therophyte). Flowers and fruits July—October. Roadsides; rare.

2. *B. frondosa* Linnaeus, DEVIL'S BEGGAR-TICKS; STICK-TIGHT. Annual herb (therophyte). Flowers and fruits September—October. Stream margins moist ravine; infrequent.

3. *B. polylepis* Blake, AWNLESS BEGGAR-TICKS; TICKSEED-SUNFLOWER. Annual herb (therophyte). Flowers and fruits August—October. Canyon shoulders; rare.

4. *B. tripartita* Linnaeus, THREE-LOBED BEGGAR-TICKS. Annual herb (therophyte). Flowers and fruits June—October. Rock outcrops woodland borders; infrequent.

6. **BIGELOWIA** De Candolle

References: L. C. Anderson 1970, 1977.

1. *B. nuttallii* L.C. Anderson, NUTTALL'S RAYLESS GOLDENROD. Perennial herb (hemicrypto-phyte). Flowers and fruits August—October. Sandstone outcrops; rare. State rank, S2.

7. **CACALIA** Linnaeus

Reference: R. W. Pipen 1978.

1. *C. atriplicifolia* Linnaeus, PALE INDIAN-PLANTAIN. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Upland; infrequent.

8. **CHRYSANTHEMUM** Linnaeus

1. *C. leucanthemum* Linnaeus, OX-EYE DAISY. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits April—July. Roadsides; infrequent.

9. **CHRYSOPSIS** Elliott

References: V. L. Harms 1969, 1974; J. C. Semple 1981; J.C. Semple and F. D. Bowers 1985.

1. *C. camporum* Greene, PRAIRIE GOLDEN-ASTER. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Roadsides; rare.

2. *C. graminifolia* (Michaux) Elliott, GRASS-LEAVED GOLDEN-ASTER; SILKGRASS. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Woodlands and roadsides; infrequent.

3. *C. mariana* (Linnaeus) Elliott, MARYLAND GOLDEN-ASTER. Perennial herb (hemicrypto-phyte). Flowers and fruits June—October. Woods, woodland borders and roadsides; common.

10. *CIRSIUM* Miller

Reference: R. J. Moore and C. Frankton 1969.

1. *C. horridulum* Michaux, YELLOW THISTLE. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers and fruits March—June. Roadsides; rare. [*Carduus spinosissimus* Walter]

2. *C. vulgare* (Savi) Tenore, BULL THISTLE. Short-lived perennial (biennial/hemicryptophyte) herb; native to Europe. Flowers and fruits June—November. Roadsides and low ditches; infrequent. [*Carduus lanceolatus* Linnaeus]

11. *CONYZA* Linnaeus

1. *C. canadensis* (Linnaeus) Cronquist, HORSEWEED; HOGWEED. Annual herb (therophyte). Flowers and fruits July—November. Roadsides; infrequent. [*Erigeron canadensis* Linnaeus]

12. *COREOPSIS* Linnaeus

Reference: E. B. Smith 1976.

1. *C. auriculata* Linnaeus, EARED TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Uplands and slopes of canyon; infrequent.

2. *C. lanceolata* Linnaeus, LANCE-LEAVED TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Canyon shoulder and margins of outcrops; infrequent.

3. *C. major* Walter, GREATER TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits May—July. Uplands and slopes of canyon; common.

4. *C. pubescens* Elliott, STAR TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Slopes of canyon; infrequent.

5. *C. pulchra* F. Boynton, WOODLAND TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Sandstone outcrops along canyon shoulder; infrequent. Federal Status, 3C; State rank, S1.

6. *C. tripteris* Linnaeus, TALL TICKSEED. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Along canyon floor and outcrops along canyon shoulders; infrequent.

13. **ELEPHANTOPUS** Linnaeus

1. *E. carolinianus* Willdenow, CAROLINA ELEPHANT'S-FOOT. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Canyon floor and upland woods along streams; common.

2. *E. tomentosus* Linnaeus, WOOLLY ELEPHANT'S-FOOT. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Upland woods and canyon floor; common.

14. **ERECHTITES** Rafinesque

Reference: J. A. Clonts and S. McDaniel 1978.

1. *E. hieracifolia* (Linnaeus) Rafinesque, FIREWEED; PILEWORT. Annual herb (therophyte). Flowers and fruits July—November. Rock outcrops, roadsides; infrequent.

15. **ERIGERON** Linnaeus

Reference: A. Cronquist 1947.

1. *E. annuus* (Linnaeus) Persoon, DAISY FLEABANE. Annual herb (therophyte). Flowers and fruits May—October. Roadsides and sandstone outcrops; common.

2. *E. philadelphicus* Linnaeus, PHILADELPHIA FLEABANE. Annual herb (therophyte). Flowers and fruits April—June. Roadsides and open areas; common.

3. *E. pulchellus* Michaux, ROBIN'S-PLANTAIN. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers and fruits April—June. Canyon floor and rich woods; infrequent.

4. *E. strigosus* Muhlenberg, LESSER DAISY FLEABANE. Annual herb (therophyte). Flowers and fruits April—October. Canyon shoulders and slopes; common.

16. **EUPATORIUM** Linnaeus

References: A. F. Clewell and J. W. Wooten 1971; M. J. Warnock 1987.

1. *E. album* Linnaeus, WHITE THOROUGHWORT. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Open woods, fields and roadsides; infrequent.

2. *E. capillifolium* (Lamarck) Small, DOG-FENNEL. Short-lived perennial herb (hemicryptophyte). Flowers and fruits September—November. Fields, roadsides and other disturbed sites; infrequent.

3. *E. coelestinum* Linnaeus, MIST FLOWER; WILD AGERATUM. Perennial herb (hemicrypt-ophyte). Flowers and fruits July—October. Low woods, ditches and stream margins; infrequent.
4. *E. fistulosum* Barratt, HOLLOW JOE-PYE-WEED. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Alluvial woods and stream margins; common.
5. *E. hyssopifolium* Linnaeus, HYSSOP-LEAVED THOROUGHWORT. Perennial herb (hemicrypt-ophyte). Flowers and fruits July—October. Roadsides and woodland borders; infrequent.
6. *E. perfoliatum* Linnaeus, BONESET. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Alluvial woods of canyon floor and roadside ditches; rare.
7. *E. rotundifolium* Linnaeus, ROUNDEAF THOROUGHWORT. Perennial herb (hemicrypt-ophyte). Flowers and fruits June—October. Woods and woodland borders; infrequent.
8. *E. rugosum* Houttuyn, WHITE SNAKEROOT. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Alluvial woods of canyon floor; infrequent.
9. *E. serotinum* Michaux, LATE-FLOWERING THOROUGHWORT. Perennial herb (hemicrypt-ophyte). Flowers and fruits August—October. Alluvial woods of canyon floor; infrequent.

17. GNAPHALIUM Linnaeus

1. *G. obtusifolium* Linnaeus, RABBIT-TOBACCO; SWEET EVERLASTING. Annual herb (therophyte). Flowers and fruits August—October. Rock outcrops and boulder fields of canyon; infrequent.
2. *G. purpureum* Linnaeus, PURPLE CUDWEED. Annual herb (therophyte). Flowers and fruits March—June. Canyon shoulders and rock outcrops; infrequent.

18. HELENIUM Linnaeus

References: M. W. Bierner 1972, 1989.

1. *H. amarum* (Rafinesque) H. Rock, BITTERWEED; BITTER SNEEZEWEED. Annual herb (therophyte). Flowers and fruits May—November. Roadsides; rare.
2. *H. autumnale* Linnaeus, COMMON SNEEZEWEED. Perennial herb (geophyte). Flowers and fruits September—October. Stream margins; rare.

3. *H. flexuosum* Rafinesque, PURPLE-HEADED SNEEZEWEED. Perennial herb (hemicryptophyte). Flowers and fruits May—August. Roadsides; rare.

19. **HELIANTHUS** Linnaeus

Reference: C. B. Heiser et al. 1969.

1. *H. angustifolius* Linnaeus, NARROW-LEAVED SUNFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Roadsides; rare.
2. *H. atrorubens* Linnaeus, DARK-EYED SUNFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Roadsides; rare.
3. *H. divaricatus* Linnaeus, WOODLAND SUNFLOWER. Perennial herb (geophyte). Flowers and fruits June—August. Roadsides and woodland borders; rare.
4. *H. hirsutus* Rafinesque, STIFF-HAIRED SUNFLOWER. Perennial herb (geophyte). Flowers and fruits July—October. Upland woods and woodland borders; infrequent.
5. *H. longifolius* Pursh, LONGLEAF SUNFLOWER. Perennial herb (geophyte). Flowers and fruits August—October. Sandstone outcrops and canyon shoulders ; infrequent. State rank, S2?.
6. *H. microcephalus* Torrey & Gray, SMALL-HEAD or SMALL WOOD SUNFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Uplands and woodland borders; infrequent.

20. **HETEROTHECA** Cassini

1. *H. subaxillaris* (Lamarck) Britton & Rusby, CAMPHORWEED. Annual (therophyte) or short-lived perennial herb (hemicryptophyte). Flowers and fruits July—October. Roadsides; rare.

21. **HIERACIUM** Linnaeus

1. *H. gronovii* Linnaeus, HAIRY HAWKWEED. Perennial herb (hemicryptophyte). Flowers and fruits July—November. Woodland borders and roadside banks; infrequent.
2. *H. venosum* Linnaeus, RATTLESNAKE-WEED. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Uplands and canyon shoulders; infrequent.

22. **KRIGIA** Schreber

References: K. J. Kim and B. L. Turner 1992; L. H. Shinnars 1947.

1. *K. biflora* (Walter) Blake, TWO-FLOWERED CYNTHIA. Perennial herb (hemicryptophyte). Flowers and fruits May—July. Roadsides; infrequent.
2. *K. dandelion* (Linnaeus) Nuttall, POTATO DWARF-DANDELION. Perennial herb (geophyte). Flowers and fruits April—May. Roadsides; infrequent.
3. *K. oppositifolia* Rafinesque, OPPOSITE-LEAVED DWARF-DANDELION. Annual herb (therophyte). Flowers and fruits March—June. Roadsides; common.
4. *K. virginica* (Linnaeus) Willdenow, VIRGINIA DWARF-DANDELION. Annual herb (therophyte). Flowers and fruits March—June. Rock outcrops; infrequent.

23. LACTUCA Linnaeus

1. *L. canadensis* Linnaeus, TALL YELLOW LETTUCE; WILD LETTUCE. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers and fruits June—November. Roadsides; infrequent.
2. *L. floridana* (Linnaeus) Gaertner, WOODLAND or BLUE LETTUCE. Short-lived perennial (biennial/ hemicryptophyte) herb. Flowers and fruits August—November. Roadsides; infrequent.
3. *L. serriola* Linnaeus, PRICKLY LETTUCE. Annual herb (therophyte); native to Europe.. Flowers and fruits August—November. Roadsides and woodland borders; rare.

24. LIATRIS Schreber

1. *L. aspera* Michx., ROUGH BLAZING-STAR. Perennial herb (geophyte). Flowers and fruits August—October. Sandstone Rock outcrops; rare.
2. *L. graminifolia* Willdenow, GRASS-LEAVED BLAZING-STAR. Perennial herb (geophyte). Flowers and fruits September—October. Sandstone Rock outcrops; rare.
3. *L. microcephala* (Small) K. Schumann, BLAZING-STAR. Perennial herb (geophyte). Flowers and fruits July—September. Sandstone outcrops; infrequent.
4. *L. squarrosa* (Linnaeus)Willd., var. *squarrosa*., SCALY BLAZING-STAR. Perennial herb (geophyte). Flowers and fruits September—October. Sandstone outcrops; infrequent.

25. MARSHALLIA Schreber

References: C. D. Beadle and F. E. Boynton 1901; R. B. Channell 1957; L. E. Watson and J. R. Estes 1990.

1. *M. trinervia* (Walter) Trelease, BROAD-LEAF BARBARA'S-BUTTONS. Perennial herb (hemicryptophyte). Flowers and fruits May—July. Canyon slopes and stream banks; rare.

26. **MIKANIA** Willdenow

Reference: W.C. Holmes 1981.

1. *M. scandens* (Linnaeus) Willdenow, CLIMBING HEMPWEED. Perennial, herbaceous vine (hemi-cryptophyte). Flowers and fruits July—October. Stream margins; rare.

27. **POLYMNIA** Linnaeus

Reference: J. R. Wells 1965, 1969.

1. *P. uvedalia* Linnaeus, BEAR'S-FOOT. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Wooded slopes and woodland borders; rare.

28. **PRENANTHES** Linnaeus

1. *P. altissima* Linnaeus, TALL WHITE-LETTUCE. Short-lived perennial (biennial/geophyte) herb. Flowers and fruits August—November. Rich woodlands; rare.
2. *P. serpentaria* Pursh, LION'S-FOOT; RATTLESNAKE-ROOT. Short-lived perennial (biennial/geophyte) herb. Flowers and fruits August—October. Woods and woodland borders; rare

29. **PYRRHOPAPPUS** De Candolle

1. *P. carolinianus* (Walter) De Candolle, FALSE-DANDELION. Short-lived perennial (biennial/hemi-cryptophyte) herb. Flowers and fruits April—June. Roadsides; rare.

30. **RUDBECKIA** Linnaeus

Reference: R. E. Perdue 1957.

1. *R. fulgida* Aiton var. *fulgida*, ORANGE CONEFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Roadsides; rare.
2. *R. heliopsisidis* Torrey & Gray, OXEYE or SUN-FACING CONEFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Outcrops along river; rare. Federal status, 3C; State rank, S2; Species of Special Concern (Freeman et al. 1979).
3. *R. hirta* Linnaeus var. *hirta*, BLACK-EYED-SUSAN. Short-lived perennial (hemicryptophyte) or annual herb (therophyte). Flowers and fruits May—July. Woodland margins; infrequent.

4. ***R. hirta*** Linnaeus var. ***pulcherrima*** Farwell, BLACK-EYED-SUSAN. Short-lived perennial (hemicryptophyte) or annual herb (therophyte). Flowers and fruits May—July. Woodland and Roadsides; infrequent.
5. ***R. triloba*** Linnaeus, THIN-LEAVED CONEFLOWER; BROWN-EYED-SUSAN. Short-lived perennial herb (hemicryptophyte). Flowers and fruits July—October. Roadsides; infrequent.

31. **SENECIO** Linnaeus

References: T. M. Barkley 1962, 1978; R. R. Kowal and T. M. Barkley 1973.

1. *S. **anonymus*** A. Wood, SOUTHERN RAGWORT; SMALL'S SQUAW-WEED. Perennial herb (hemi-cryptophyte). Flowers and fruits April—June. Roadsides and woodland borders; infrequent.
2. *S. **glabellus*** Poiret, BUTTERWEED; GROUNDSEL. Annual herb (therophyte). Flowers and fruits March—June. Ditches, alluvial woods; common.

32. **SILPHIUM** Linnaeus

1. *S. **asteriscus*** Linnaeus var. ***scabrum*** Nuttall, COMMON or STARRY ROSIN-WEED. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Sandstone outcrops; infrequent.
2. *S. **compositum*** Michaux, SOUTHERN ROSIN-WEED. Perennial herb (hemicryptophyte). Flowers and fruits May—September. Wooded margins of outcrops; rare.

33. **SOLIDAGO** Linnaeus

1. *S. **caesia*** Linnaeus, WREATH GOLDENROD; BLUE-STEM GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Woods and woodland borders; infrequent.
2. *S. **canadensis*** Linnaeus var. ***scabra*** Torrey & Gray, TALL GOLDENROD. Perennial herb (hemi-cryptophyte). Flowers and fruits September—November. Roadsides; common. [*S. **altissima*** Linnaeus]
3. *S. **curtisii*** Torrey & Gray, CURTIS' GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Woods and woodland borders; infrequent.
4. *S. **erecta*** Pursh, ERECT or SLENDER GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Woods and woodland borders; common.
5. *S. **gigantea*** Aiton, LATE or GIANT GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Stream margins and river margin; rare.
6. *S. **nemoralis*** Aiton var. ***haleana*** Fernald, GRAY GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits September—November. Open woods and roadsides; infrequent.
7. *S. **odora*** Aiton, SWEET GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Woods, woodland borders and roadsides; infrequent.

8. *S. rugosa* Miller, ROUGH-STEMMED or WRINKLED GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Alluvial woods; rare.

9. *S. ulmifolia* Muhlenberg ex Willdenow, ELM-LEAVED GOLDENROD. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Woodlands; rare.

34. *SONCHUS* Linnaeus

Reference: L. Boulos 1973.

1. *S. asper* (Linnaeus) Hill, SPINY-LEAVED SOW-THISTLE. Annual herb (therophyte); native to Europe. Flowers and fruits March—July. Roadsides; rare.

35. *TARAXACUM* Wiggers

1. *T. officinale* Wiggers, COMMON DANDELION. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits February—June (and sporadically later). Roadsides; common.

36. *VERBESINA* Linnaeus

1. *V. virginica* Linnaeus, FROSTWEED; WHITE CROWN-BEARD. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Wooded slopes of canyon floor; infrequent.

37. *VERNONIA* Schreber

Reference: S. B. Jones Jr. and W. Z. Faust 1978, L. E. Urbatsch 1972.

1. *V. flaccidifolia* Small, IRONWEED. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Upland woods and woodland borders; infrequent.

2. *V. gigantea* (Walter) Trelease ex Branner & Coville, TALL IRONWEED; QUEEN-OF-THE-MEADOW. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Low roadsides and woodland borders; infrequent. [*V. altissima* Nuttall]

38. *XANTHIUM* Linnaeus

1. *X. strumarium* Linnaeus var. *glabratum* (De Candolle) Cronquist, COMMON COCKLEBUR. Annual herb (therophyte); native to Europe. Flowers and fruits July—November. Roadsides; rare.

BALSAMINACEAE (Touch-me-not Family)

1. IMPATIENS Linnaeus

1. *I. capensis* Meerburgh, JEWEL-WEED; SPOTTED TOUCH-ME-NOT. Annual herb (therophyte). Flowers and fruits May—October. Low woods, swamps, marshes, ditches, stream; infrequent.

BERBERIDACEAE (Barberry Family)

1. CAULOPHYLLUM Michaux

Reference: H. Laconte and W. H. Blackwell 1985.

1. *C. thalictroides* (Linnaeus) Michaux, BLUE COHOSH. Perennial herb (geophyte). Flowers April—May; fruits July—August. Rich, moist woods; rare.

2. PODOPHYLLUM Linnaeus

1. *P. peltatum* Linnaeus, MAY-APPLE. Perennial herb (geophyte). Flowers March—April; fruits May—June. Rich, moist woods; infrequent.

BETULACEAE (Birch Family)

References: J. J. Furlow 1990; J. W. Hardin 1971b.

1. ALNUS Ehrhart

Reference: J. J. Furlow 1979.

1. *A. serrulata* (Aiton) Willdenow, TAG ALDER; SMOOTH ALDER. Shrub (phanerophyte). Flowers February—March; fruits August—October. Rivers margin and marshes stream; common.

2. BETULA Linnaeus

1. *B. lenta* Linnaeus, SWEET or CHERRY BIRCH. Tree (phanerophyte). Flowers March—April; fruits June—July. Rich, rocky sloped woods and sandstone bluffs; rare.
2. *B. nigra* Linnaeus, RIVER BIRCH. Tree (phanerophyte). Flowers March—April; fruits May—June. Low woods, stream banks; infrequent.

3. **CARPINUS** Linnaeus

References: J. J. Furlow 1987a, 1987b.

1. ***C. caroliniana*** Walter, AMERICAN HORNBEAM; SMOOTH-BARKED IRONWOOD. Small tree (phanerophyte). Flowers March—April; fruits September—October. Low woods, stream bank margins; common.

4. **OSTRYA** Scopoli

1. ***O. virginiana*** (Miller) K. Koch, HOP HORNBEAM; ROUGH-BARKED IRONWOOD. Small tree (phanerophyte). Flowers April—May; fruits August—October. Low woods and stream banks; common.

BIGNONIACEAE (Trumpet-creeper/Bignonia Family)

Reference: L. H. Shinnars 1961.

1. **BIGNONIA** Linnaeus

Reference: R. L. Wilbur 1980.

1. ***B. capreolata*** Linnaeus, CROSS-VINE. Woody vine (phanerophyte). Flowers April—May; fruits July—August. Woods and woodland borders; infrequent. [*Anisostichus capreolata* (Linnaeus) Bureau]

2. **CAMPSIS** Loureiro

1. ***C. radicans*** (Linnaeus) Seeman, TRUMPET CREEPER; COW-ITCH. Woody vine (phanerophyte). Flowers June—July; fruits September—October.

3. **CATALPA** Linnaeus

1. ***C. bignonioides*** Walter, SOUTHERN CATALPA; CATAWBA. Tree (phanerophyte). Flowers June—July; fruits September—October. Stream banks and low roadsides; very rare.

BORAGINACEAE (Borage Family)

1. CYNOGLOSSUM Linnaeus

1. *C. virginianum* Linnaeus, WILD COMFREY. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Woodlands; infrequent.

2. HELIOTROPIUM Linnaeus

1. *H. indicum* Linnaeus, TURN-SOLE. Annual herb (therophyte); native to Asia. Flowers and fruits July—November. Low woodlands borders, stream margins; rare.

3. LITHOSPERMUM Linnaeus

1. *L. canescens* (Michaux) Lehmann, HOARY PUCCOON. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Rock outcrops woodlands; rare
2. *L. tuberosum* Rugel ex De Candolle, TUBEROUS-ROOTED GROMWELL. Perennial herb (hemicryptophyte). Flowers and fruits March—June. Rock outcrops woodlands; infrequent.

4. ONOSMODIUM Linnaeus

1. *O. virginianum* (Linnaeus) Alphonse de Candolle, VIRGINIA FALSE GROMWELL. Perennial herb (hemicryptophyte). Flowers and fruits April—September. Woodland borders; rare.

BRASSICACEAE (Mustard Family)

References: I. A. Al-Shehbaz 1984, 1986, 1988a, 1988b.

1. ARABIDOPSIS Heynhold

1. *A. thaliana* (Linnaeus) Heynhold, MOUSE-EAR CRESS. Annual herb (therophyte); native to Europe. Flowers and fruits March—May. Disturbed habitats and roadsides; rare.

2. **ARABIS** Linnaeus

Reference: M. Hopkins 1937.

1. ***A. laevigata*** (Muhlenberg ex Willdenow) Poirét, SMOOTH ROCK CRESS. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers April—May; fruits May—June. Limestone outcropping in canyon woods; rare.

3. **BARBAREA** R. Brown ex Aiton

1. ***B. verna*** (Miller) Ascherson, EARLY WINTER CRESS. Annual herb (therophyte); native to Europe. Flowers and fruits March—June. Roadsides and other disturbed areas; rare.

4. **CAPSELLA** Medicus

1. ***C. bursa-pastoris*** (Linnaeus) Medicus, SHEPHERD'S-PURSE. Annual herb (therophyte); native to Europe. Flowers and fruits March—June. Roadsides and other disturbed areas; infrequent.

5. **CARDAMINE** Linnaeus

1. ***C. hirsuta*** Linnaeus, HAIRY BITTERCRESS. Annual herb (therophyte); native to Europe. Flowers and fruits February—May. Roadsides and other disturbed habitats; common.
2. ***C. pensylvanica*** Muhlenberg, PENNSYLVANIA BITTERCRESS. Short-lived perennial herb (hemi-cryptophyte). Flowers and fruits March—May. Wet woods and wooded stream margins; infrequent.

6. **DENTARIA** Linnaeus

References: F. H. Montgomery 1955; N. L. Turrill et al. 1994.

1. ***D. diphylla*** Michaux, TWO-LEAVED TOOTHWORT. Perennial herb (geophyte). Flowers April—May; fruits May—June. Canyon slopes; rare. [*Cardamine diphylla* (Michaux) Wood]
2. ***D. heterophylla*** Nuttall, SLENDER TOOTHWORT. Perennial herb (geophyte). Flowers February—April; fruits April—May. Alluvial woods of canyon; infrequent. [*Cardamine angustata* O. E. Schultz]

7. **DRABA** Linnaeus

1. ***D. brachycarpa*** Nuttall ex Torrey & Gray, SMALL-FRUITED WHITLOW-GRASS. Annual herb (therophyte). Flowers February—April; fruits March—May. Roadsides and disturbed sites; common.
2. ***D. verna*** Linnaeus, WHITLOW-GRASS. Annual herb (therophyte); native to Europe. Flowers February—March; fruits March—May. Roadsides and other disturbed sites; infrequent.

8. **LEPIDIUM** Linnaeus

1. ***L. virginicum*** Linnaeus, PEPPERGRASS; POOR-MAN'S-PEPPER. Annual herb (therophyte). Flowers and fruits April—June. Roadsides and other disturbed areas; infrequent.

9. **RORIPPA** Scopoli

Reference: R. L. Stuckey 1972.

1. ***R. palustris*** (Linnaeus) Besser, YELLOW CRESS. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers and fruits May—October. Ditches and other wet, open areas; infrequent. [*R. islandica* (Oeder) Barbas]

10. **SIBARA** Green

Reference: R. C. Rollins 1947.

1. ***S. virginica*** (Linnaeus) Rollins, VIRGINIA ROCKCRESS; SOUTHERN SANDCRESS. Annual herb (therophyte). Flowers and fruits February—June. Low disturbed sites; infrequent.

BUXACEAE (Boxwood Family)

Reference: R. B. Channell and C. E. Wood 1987.

1. **PACHYSANDRA** Michaux

1. ***P. procumbens*** Michaux, ALLEGHENY-SPURGE. Monoecious, perennial herb (geophyte). Flowers and fruits March—April. Alluvial woods of canyon slopes; rare. State rank, S3; Species of Special Concern (Freeman et al. 1979).

CACTACEAE (Cactus Family)

Reference: L. Benson 1982.

1. *OPUNTIA* Miller

Reference: P. A. Romeo et al. 1987.

1. *O. humifusa* Rafinesque, EASTERN PRICKLY-PEAR. Woody, succulent plant (phanerophyte). Flowers May—June; fruits August—October. Sandstone outcrops and open, thin-soiled woods; infrequent. [*O. compressa*(Salisbury) Macbride]

CALLITRICHACEAE (Water-starwort Family)

1. *CALLITRICHE* Linnaeus

Reference: N. C. Fassett 1951.

1. *C. heterophylla* Pursh, LARGER WATER-STARWORT. Aquatic, herbaceous perennial (hydrophyte). Flowers and fruits March—October. Rivers margin and stream margins; infrequent.

CALYCANTHACEAE (Strawberry-shrub Family)

1. *CALYCANTHUS* Linnaeus

1. *C. floridus* Linnaeus, SWEET-SHRUB; CAROLINA ALLSPICE. Shrub (phanerophyte). Flowers April—May; fruits August—September. Uplands and slopes of canyon; common.

CAMPANULACEAE (Bellflower Family)

1. *CAMPANULA* Linnaeus

Reference: S. G. Shetler 1963.

1. *C. americana* Linnaeus, TALL BELLFLOWER. Short-lived perennial (biennial/hemicryptophyte) herb. Flowers June—September; fruits August—October. Roadsides; rare.

2. *C. divaricata* Michx., SOUTHERN HAREBELL. Short-lived perennial (hemicryptophyte) herb. Flowers July—September; fruits August—October. Slopes of canyon and rich woods; common.

2. LOBELIA Linnaeus

Reference: R. McVaugh 1936.

1. *L. cardinalis* Linnaeus, CARDINAL FLOWER. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Stream margins and wet woodland borders; common.
2. *L. inflata* Linnaeus, INDIAN-TOBACCO. Annual herb (therophyte). Flowers and fruits July—November. Roadsides; infrequent.
3. *L. puberula* Michaux, DOWNY LOBELIA. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Roadsides and woodlands; common.
4. *L. nuttallii* R & S., NUTTALL'S LOBELIA. Perennial herb (hemicryptophyte). Flowers May—September; fruits July—October. Sandstone outcrops; rare.
5. *L. spicata* Lamarck, PALE-SPIKED LOBELIA. Perennial herb (hemicryptophyte). Flowers May—September; fruits July—October. Wooded slopes of canyon and woodland borders; rare.

3. TRIODANIS Rafinesque

References: T. R. Bradley 1975; M. L. Fernald 1946; R. McVaugh 1945, 1948.

1. *T. perfoliata* (Linnaeus) Nieuwland var. *biflora* (Ruiz & Pavon) Bradley, VENUS'-LOOKING-GLASS. Annual herb (therophyte). Flowers and fruits April—June. Roadsides and other disturbed sites; infrequent. [*Specularia biflora* (Ruiz & Pavon) Fischer & Meyer]
2. *T. perfoliata* (Linnaeus) Nieuwland var. *perfoliata*, CLASPING-LEAF VENUS'-LOOKING-GLASS. Annual herb (therophyte). Flowers and fruits April—June. roadsides and other disturbed sites; common. [*Specularia perfoliata* (Linnaeus) A. De Candolle]

CAPRIFOLIACEAE (Honeysuckle Family)

Reference: I. K. Ferguson 1966a.

1. DIERVILLA Miller

Reference: J. W. Hardin 1968.

1. *D. rivularis* Gattinger, RIVERBANK BUSH-HONEYSUCKLE. Shrub (phanerophyte). Flowers June—August; fruits August—October. Sandstone bluffs and sloped banks along rocky streams; rare. State rank, S?. [*D. sessilifolia* Buckley var. *rivularis* (Gattinger) Ahles]

2. **LONICERA** Linnaeus

1. *L. flava* Sims, YELLOW HONEYSUCKLE. Semi-evergreen woody vine (phanerophyte). Flowers March—July; fruits July—September. Woods and woodland borders; rare.

2. *L. japonica* Thunberg, JAPANESE HONEYSUCKLE. Evergreen woody vine (phanerophyte); native to Asia. Flowers April—June; fruits August—November. Woods, woodland borders, roadsides and other disturbed sites; common.

3. *L. sempervirens* Linnaeus, CORAL HONEYSUCKLE; TRUMPET HONEYSUCKLE. Semi-evergreen Woody vine (phanerophyte). Flowers March—July; fruits July—September. Woods and woodland borders; infrequent.

3. **SAMBUCUS** Linnaeus

1. *S. canadensis* Linnaeus, AMERICAN ELDERBERRY. Shrub (phanerophyte). Flowers April—July; fruits July—August. Ditches and stream banks; infrequent.

4. **VIBURNUM** Linnaeus

1. *V. acerifolium* Linnaeus, MAPLE-LEAF VIBURNUM. Shrub (phanerophyte). Flowers April—June; fruits August—October. Uplands and canyon slopes; common.

2. *V. cassinoides* Linnaeus, WITHE-ROD; WILD RAISIN. Shrub (phanerophyte). Flowers May—June; fruits August—October. Stream margins; rare.

3. *V. nudum* Linnaeus, POSSUM HAW VIBURNUM. Shrub (phanerophyte). Flowers March—April; fruits September—October. Stream margins; infrequent.

4. *V. rufidulum* Rafinesque, RUSTY BLACK HAW; BLUE HAW. Shrub (phanerophyte). Flowers March—April; fruits September—October. Rocky woodlands; infrequent.

CARYOPHYLLACEAE (Pink Family)

Reference: R. K. Rabeler and J. W. Thieret 1988.

1. **CERASTIUM** Linnaeus

1. *C. glomeratum* Thuillier, MOUSE-EAR CHICKWEED. Annual herb (therophyte); native to Eurasia. Flowers and fruits March—May. Roadsides and other disturbed sites; common.

2. *SAGINA* Linnaeus

1. *S. decumbens* (Elliott) Torrey & Gray, PEARLWORT. Annual herb (therophyte). Flowers and fruits March—June. Roadsides and other disturbed areas; infrequent.

3. *SILENE* Linnaeus

References: C. L. Hitchcock and B. Maguire 1947; R. L. Wilbur 1970b.

1. *S. antirrhina* Linnaeus, SLEEPY CATCHFLY. Annual herb (therophyte). Flowers and fruits April—July. Roadsides; rare.
2. *S. caroliniana* Walter ssp. *wherryi* (Small) Clausen, WHERRY'S CATCHFLY; WILD PINK. Perennial herb (geophyte). Flowers and fruits April—July. Sandy woods and outcrops; infrequent. State rank, S2; Species of Special Concern (Freeman et al. 1979).
3. *S. rotundifolia* Nuttall, ROUND-LEAF CATCHFLY. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Canyon slopes; infrequent.
4. *S. stellata* (Linnaeus) Aiton f., STARRY CAMPION. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Rich woods; infrequent.
5. *S. virginica* Linnaeus, FIRE PINK. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Mixed woodlands and canyon shoulder; infrequent.

4. *STELLARIA* Linnaeus

1. *S. media* (Linnaeus) Cyrillo, COMMON CHICKWEED. Annual herb (therophyte); native to Eurasia. Flowers and fruits February—May. roadsides, and other disturbed sites; common.
2. *S. pubera* Michaux, GIANT or STAR CHICKWEED. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Rich woods; infrequent.

CELASTRACEAE (Bittersweet Family)

1. *EUONYMUS* Linnaeus

1. *E. americanus* Linnaeus, HEART'S-BURSTING-WITH-LOVE; STRAWBERRY-BUSH. Shrub (phanerophyte). Flowers May—June; fruits September—October. Upland and canyon slopes; common.

CHENOPODIACEAE (Goosefoot Family)

1. CHENOPODIUM Linnaeus

1. *C. album* Linnaeus, LAMB'S-QUARTERS; WHITE GOOSEFOOT. Annual herb (therophyte); native to Europe. Flowers and fruits June—November. Alluvial woods; rare.

CISTACEAE (Rock-rose Family)

Reference: G. K. Brizicky 1964a.

1. LECHEA Linnaeus

1. *L. racemulosa* Michaux, RACEMOSE PINWEED. Perennial herb (hemicryptophyte). Flowers June—July; fruits July—October. Sandy, dry woodland borders; rare.

CLUSIACEAE (St. John's-wort/Mangosteen Family)

[Hypericaceae]

References: P. Adams 1973; C. E. Wood and P. Adams 1974.

1. HYPERICUM Linnaeus

1. *H. frondosum* Michaux, GOLDEN ST. JOHN'S-WORT. Shrub (phanerophyte). Flowers June—August; fruits July—October. Upland woods ; rare.
2. *H. gentianoides* (Linnaeus) Britton, Sterns & Poggenburg, PINEWEED; ORANGE-GRASS. Annual herb (therophyte). Flowers and fruits July—October. Sandstone outcrops and open, sandy disturbed sites; infrequent.
3. *H. hypericoides* (Linnaeus) Crantz, ST. ANDREW'S-CROSS. Low shrub (phanerophyte). Flowers and fruits May—August. Mixed woods; common..
4. *H. mutilum* Linnaeus, SLENDER or DWARF ST. JOHN'S-WORT. Perennial herb (hemicrypt-ophyte). Flowers and fruits June—October. Stream amrgins; common.

5. *H. punctatum* Lamarck, SPOTTED ST. JOHN'S-WORT. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Ditches, low woods and roadsides; common.

CONVOLVULACEAE (Morning-glory Family)

1. CALYSTEGIA R. Brown

Reference: R. K. Brummitt 1980.

1. *C. sepium* (Linnaeus) R. Brown, HEDGE BINDWEED. Herbaceous, perennial vine (hemicrypto-phyte). Flowers and fruits May—August. Roadsides; infrequent.

2. DICHONDRA Forster & Forster

1. *D. carolinensis* Michaux, PONY-FOOT. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Roadsides; infrequent.

3. IPOMOEA Linnaeus

1. *I. coccinea* Linnaeus, SCARLET MORNING-GLORY. Annual, herbaceous vine (therophyte); native to tropical America. Flowers and fruits August—November. Roadsides; rare.
2. *I. hederacea* (Linnaeus) Jacquin, IVY-LEAVED MORNING-GLORY. Annual, herbaceous vine (therophyte); native to tropical America. Flowers and fruits July—November. Roadsides; common. [Includes *I. hederacea* var. *integriuscula* Gray]
3. *I. lacunosa* Linnaeus, SMALL WHITE MORNING-GLORY. Annual, herbaceous vine (thero-phyte). Flowers and fruits August—November. Roadsides; infrequent.
4. *I. pandurata* (Linnaeus) Meyer, WILD POTATO-VINE; MANROOT. Perennial, herbaceous vine (hemicryptophyte). Flowers May—July; fruits July—September. Roadsides and other disturbed sites; common.
5. *I. purpurea* (Linnaeus) Roth, COMMON MORNING-GLORY. Annual, herbaceous vine (thero-phyte); native to tropical America. Flowers and fruits July—October. Roadsides and other disturbed sites; infrequent.

CORNACEAE (Dogwood Family)

Reference: I. K. Ferguson 1966b.

2. CORNUS Linnaeus

References: R. H. Eyde 1987; J. S. Wilson 1965.

1. *C. alternifolia* Linnaeusf, ALTERNATE LAEF DOGWOOD. Small tree (phanerophyte). Flowers March—April; fruits September—October. Canyon floor; rare.
2. *C. amomum* Miller, SILKY DOGWOOD. Shrub (phanerophyte). Flowers May—June; fruits August—September. Alluvial woods and stream margins; common.
3. *C. florida* Linnaeus, FLOWERING DOGWOOD. Small tree (phanerophyte). Flowers March—April; fruits September—October. Woodlands; common.
4. *C. foemina* Miller, SWAMP DOGWOOD. Shrub (phanerophyte). Flowers April—May; fruits July—August. Stream margins and alluvial woods; infrequent.

CRASSULACEAE (Stonecrop Family)

Reference: S. A. Spongberg 1978.

1. DIAMORPHA Nuttall

Reference: R. L. Wilbur 1988.

1. *D. smallii* Britton, ELF-ORPINE; SMALL'S STONECROP. Annual herb (therophyte). Flowers April—May; fruits May—June. Depressions on sandstone outcrops; infrequent. State rank, S3. [*Sedum smallii* (Britton) Ahles]

2. SEDUM Linnaeus

Reference: R. T. Clausen 1975.

1. *S. sarmentosum* Bunge, STONECROP. Perennial, succulent herb (hemicryptophyte). Flowers April—June; fruits May—July. Sandstone outcrops; infrequent.
2. *S. ternatum* Michaux, WILD STONECROP. Perennial, succulent herb (hemicryptophyte). Flowers April—June; fruits May—July. Alluvial woods; infrequent.

CUCURBITACEAE (Cucumber Family)

1. MELOTHRIA Linnaeus

1. *M. pendula* Linnaeus, CREEPING CUCUMBER. Monoecious, annual vine (therophyte). Flowers and fruits June—November. Roadsides and low woodland borders; infrequent.

2. SICYOS Linnaeus

1. *S. angulatus* Linnaeus, BUR CUCUMBER. Monoecious, annual vine (therophyte). Flowers and fruits June—November. Alluvial habitats; rare.

CUSCUTACEAE (Dodder Family)

[Convolvulaceae]

Reference: E. Hadsc and J. Chrtk 1970.

1. CUSCUTA Linnaeus

Reference: T. G. Yuncker 1932.

1. *C. compacta* Jussieu, COMPACT DODDER. Parasitic, annual vine (therophyte). Flowers and fruits August—November. Low woodland borders and floodplains; infrequent.
2. *C. harperi* Small, HARPER'S DODDER. Parasitic, annual vine (therophyte). Flowers and fruits August—October. Sandstone outcrops; rare. Federal status, C2; State rank, S2; Species of Special Concern (Freeman et al. 1979).
3. *C. pentagona* Engelm., FIVE-ANGLED DODDER. Parasitic, annual vine (therophyte). Flowers and fruits August—October. Sandstone outcrops; rare.

DIAPENSIACEAE (Diapensia Family)

Reference: C. E. Wood and R. B. Channell 1959.

1. GALAX Linnaeus

References: R. K. Brummitt 1972; G. L. Nesom 1983.

1. *G. urceolata* (Poiret) Brummitt, BEETLE-WEED; WAND-FLOWER. Perennial, evergreen herb or subshrub (chamaephyte). Flowers May—July; fruits August—October. Rocky, sloped woods and stream banks; common. [*G. aphylla* Linnaeus]

EBENACEAE (Ebony Family)

1. DIOSPYROS Linnaeus

1. *D. virginiana* Linnaeus, PERSIMMON. Tree (phanerophyte). Flowers May—June; fruits September—November. Dry woods; common.

ERICACEAE (Heath Family)

Reference: C. E. Wood 1961.

1. EPIGAEA Linnaeus

1. *E. repens* Linnaeus, TRAILING ARBUTUS. Low, creeping shrub (chamaephyte). Flowers February—May; fruits April—June. Sandy, sloped woods and shoulders of sandstone bluffs; infrequent.

2. KALMIA Linnaeus

References: J. E. Ebinger 1974; R. M. Southall and J. W. Hardin 1974.

1. *K. latifolia* Linnaeus, MOUNTAIN-LAUREL. Large shrub (phanerophyte). Flowers April—June; fruits September—October. Sandstone bluffs and rocky, acidic woods, often near streams; common.

3. **OXYDENDRUM** De Candolle

1. ***O. arboreum*** (Linnaeus) De Candolle, SOURWOOD. Medium-sized tree (phanerophyte). Flowers June—July; fruits September—October. Upland woods and stream banks; common.

4. **RHODODENDRON** Linnaeus

References: F. Galle 1968; R. H. Mohlenbrock and J. W. Richardson 1963; R. L. Wilbur 1976.

1. ***R. arborescens*** (Pursh) Torrey, SMOOTH OR SWEET AZALEA. Shrub (phanerophyte). Flowers May—July; fruits July—October. Stream banks; infrequent.
2. ***R. catawbiense*** Michaux, CATAWBA RHODODENDRON; MOUNTAIN ROSEBAY. Large, evergreen shrub (phanerophyte). Flowers April—June; fruits July—October. Rocky slopes and stream banks; common.
3. ***R. canescens*** (Michaux) Sweet, PIEDMONT AZALEA. Shrub (phanerophyte). Flowers March—May; fruits September—October. Moist, wooded slopes and stream banks; infrequent.

5. **VACCINIUM** Linnaeus

References: L. J. Uttal 1986; S. P. Vander Kloet 1978, 1980.

1. ***V. arboreum*** Marshall, SPARKLEBERRY. Large shrub or small tree (phanerophyte). Flowers April—June; fruits September—October. Dry, acidic woods, sandstone bluffs and outcrops; common.
2. ***V. atrococcum*** (Gray) Porter, BLACK Highbush BLUEBERRY. Shrub (phanerophyte). Flowers February—May; fruits June—August. Acidic woods; rare.
3. ***V. corymbosum*** Linnaeus, Highbush BLUEBERRY. Shrub (phanerophyte). Flowers February—May; fruits June—August. Acidic woods and sandstone outcrops; rare.
4. ***V. elliotii*** Chapman, ELLIOTT'S BLUEBERRY. Shrub (phanerophyte). Flowers February—April; fruits May—June. Acidic woods and stream banks; infrequent.
5. ***V. pallidum*** Aiton, LOWBUSH BLUEBERRY. Low shrub (phanerophyte). Flowers March—April; fruits June—July. Dry, acidic woods; common. [*Vaccinium vacillans* Torrey]
6. ***V. stamineum*** Linnaeus, DEERBERRY; SQUAW-HUCKLEBERRY. Shrub (phanerophyte). Flowers April—June; fruits August—October. Dry or rocky woods; infrequent.

EUPHORBIACEAE (Spurge Family)

Reference: G. L. Webster 1967.

1. ACALYPHA Linnaeus

1. *A. gracilens* Gray, SLENDER THREE-SEEDED-MERCURY. Monoecious, annual herb (thero-phyte). Flowers and fruits June—November. Roadsides and other disturbed sites; infrequent.

2. CHAMAESYCE S. F. Gray

References: D. Burch 1965, 1966; L. C. Wheeler 1941.

1. *C. maculata* (Rafinesque) Small, MILK-PURSLANE. Monoecious, annual herb (therophyte). Flowers and fruits May—November. Roadsides and other disturbed sites; common. [*Euphorbia supina* Rafinesque]
2. *C. nutans* Lagasca, EYEBANE; SPOTTED SPURGE. Monoecious, annual herb (therophyte). Flowers and fruits May—October. Roadsides and other disturbed sites; common. [*Euphorbia maculata* auct. non Linnaeus]

3. CROTON Linnaeus

1. *C. glandulosus* Linnaeus var. *septrionalis* Mueller, GLANDULAR CROTON. Monoecious, annual herb (therophyte). Flowers and fruits May—October. Roadsides; infrequent.

4. EUPHORBIA Linnaeus

1. *E. corollata* Linnaeus var. *corollata*, FLOWERING SPURGE. Monoecious, perennial herb (geophyte). Flowers and fruits May—September. Woods, woodland borders; common.
2. *E. corollata* Linnaeus var. *zinniiflora* (Small) Ahles, FLOWERING SPURGE. Monoecious, perennial herb (geophyte). Flowers and fruits March—July. Sandy woods and woodland borders; infrequent.
3. *E. dentata* Michaux, TOOTHED SPURGE. Monoecious, annual herb (therophyte). Flowers and fruits July—October. Roadsides and other disturbed sites; rare.
4. *E. mercurialina* Michaux, DOG'S MERCURY SPURGE. Monoecious, perennial herb (geophyte). Flowers and fruits April—June. Rich woods; infrequent.

5. **TRAGIA** Linnaeus

Reference: K. I. Miller and G. L. Webster 1967.

1. *T. urticifolia* Michaux, NOSE-BURN. Monoecious, perennial herb (geophyte). Flowers and fruits May—October. Upland woods and woodland borders; rare.

FABACEAE (Pea/Bean Family)

References: T. S. Elias 1974; D. Isley 1990; K. R. Robertson and Y. T. Lee 1976.

1. **ALBIZIA** Durazzini

1. *A. julibrissin* Durazzini, MIMOSA; SILK TREE. Small tree (phanerophyte); native to Asia. Flowers May—August; fruits July—November. Roadsides, stream banks and woodland borders; infrequent.

2. **AMORPHA** Linnaeus

Reference: R. L. Wilbur 1975.

1. *A. fruticosa* Linnaeus, FALSE-INDIGO; LEAD-PLANT. Shrub (phanerophyte). Flowers April—June; fruits June—October. Stream banks canyon slopes; infrequent.

3. **AMPHICARPAEA** Elliott ex Nuttall

1. *A. bracteata* (Linnaeus) Fernald, HOG-PEANUT. Annual, herbaceous vine (therophyte). Flowers July—September; fruits August—October. Woodlands; infrequent.

4. **APIOS** Fabricius

1. *A. americana* Medicus, GROUNDNUT; AMERICAN POTATO-BEAN. Perennial, herbaceous vine (geophyte). Flowers June—August; fruits July—September. Low and alluvial woods and thickets; rare.

5. **CERCIS** Linnaeus

Reference: K. R. Robertson 1977.

1. *C. canadensis* Linnaeus, RED BUD. Small tree (phanerophyte). Flowers March—May; fruits June—November. Woodlands; common.

6. **CLITORIA** Linnaeus

1. *C. mariana* Linnaeus, BUTTERFLY-PEA. Perennial, herbaceous vine (hemicryptophyte). Flowers June—August; fruits July—October. Woods and woodland borders; infrequent.

7. **CROTALARIA** Linnaeus

Reference: D. R. Windler 1974.

1. *C. sagittalis* Linnaeus, ARROWHEAD RATTLE-BOX. Annual herb (therophyte). Flowers June—August; fruits July—September. Woodland borders; infrequent.
2. *C. spectabilis* Roth, SHOWY RATTLE-BOX. Annual herb (therophyte); native to tropical America. Flowers July—October; fruits August—November. Roadsides and fields; rare.

8. **DESMODIUM** Desvaux

Reference: D. Isley 1983.

1. *D. glabellum* (Michaux) De Candolle, DILLEN'S TICK-TREFOIL. Perennial herb (hemicryptophyte). Flowers June—September; fruits August—October. Roadsides and woodland borders; infrequent.
2. *D. glutinosum* (Muhlenberg ex Willdenow) Wood, POINTED-LEAVED TICK-TREFOIL. Perennial herb (hemicryptophyte). Flowers June—August; fruits August—October. Rich woods; infrequent.
3. *D. marilandicum* (Linnaeus) De Candolle, MARYLAND TICK-TREFOIL. Perennial herb (hemicryptophyte). Flowers June—September; fruits August—October. Upland and woodland borders; infrequent.
4. *D. nudiflorum* (Linnaeus) De Candolle, NAKED-FLOWERED TICK-TREFOIL. Perennial herb (hemicryptophyte). Flowers July—August; fruits August—October. Woods and woodland borders; common.
5. *D. perplexum* Schubert, TICK-TREFOIL. Perennial herb (hemicryptophyte). Flowers June—September; fruits August—October. Woodland borders; infrequent.
6. *D. rotundifolium* De Candolle, DOLLAR-LEAF; PROSTRATE TICK-TREFOIL. Trailing, perennial herb (hemicryptophyte). Flowers June—August; fruits August—October. Woods; infrequent.

9. **GALACTIA** P. Browne

Reference: W. H. Duncan 1979.

1. *G. volubilis* (Linnaeus) Britton, DOWNY MILK PEA. Perennial, herbaceous vine (hemicrypt-ophyte). Flowers June—August; fruits July—October. Woodlands and woodland borders; common. [Includes *G. macreei* M. A. Curtis]

10. GLEDITSIA Linnaeus

1. *G. triacanthos* Linnaeus, HONEY-LOCUST. Tree (phanerophyte). Flowers April—May; fruits July—November. Woodland borders; rare.

11. KUMMEROWIA Schindler

Reference: D. Isley 1948.

1. *K. striata* (Thunberg) Schindler, JAPANESE-CLOVER. Annual herb (therophyte); native to southeast Asia. Flowers July—September; fruits August—November. Roadsides and other disturbed sites; infrequent. [*Lespedeza striata* (Thunberg) Hooker & Arnott]

12. LATHYRUS Linnaeus

Reference: C. L. Hitchcock 1952.

1. *L. hirsutus* Linnaeus, SINGLETARY PEA; VETCHLING. Annual, climbing herb (therophyte); native to Europe. Flowers and fruits April—July. Roadsides; rare.

13. LESPEDEZA Michaux

Reference: A. F. Clewell 1966.

1. *L. capitata* Michx., ROUND-HEADED BUSH-CLOVER. Perennial herb (hemicryptophyte); native to east Asia. Flowers July-September; fruits October—November. Roadsides and other disturbed sites; infrequent.
2. *L. cuneata* (Dumont) G. Don, SERICEA; CHINESE BUSH-CLOVER. Perennial herb (hemicrypto-phyte); native to east Asia. Flowers July—September; fruits October—November. Roadsides and other disturbed sites; infrequent.
3. *L. hirta* (Linnaeus) Hornemann, HAIRY BUSH-CLOVER. Perennial herb (hemicryptophyte). Flowers August—October; fruits September—November. Woodland borders; rare.
4. *L. repens* (Linnaeus) Barton, CREEPING BUSH-CLOVER. Trailing, perennial herb (hemicrypto-phyte). Flowers July—September; fruits August—November. Open woods and woodland borders; infrequent.

5. *L. stuevei* Nuttall, STUEVE'S BUSH-CLOVER. Perennial herb (hemicryptophyte). Flowers July—September; fruits August—November. Roadsides and woodland borders; infrequent.

6. *L. virginica* (Linnaeus) Britton, SLENDER BUSH-CLOVER. Perennial herb (hemicryptophyte). Flowers July—September; fruits August—November. Open woods and open areas; infrequent.

14. **MEDICAGO** Linnaeus

1. *M. sativa* Linnaeus, ALFALFA. Annual herb (therophyte); native to Europe. Flowers and fruits May—July. Roadsides and other disturbed sites; infrequent.

15. **ORBEXILUM** Rafinesque

Reference: J. Grimes 1988.

1. *O. pedunculatum* (Miller) Rydberg var. *pedunculatum*, SAMPSON'S SNAKEROOT. Perennial herb (hemicryptophyte). Flowers May—July; fruits July—August. Woodland borders and sandstone outcrops; infrequent. [*Psoralea psoralioides* (Walter) Cory var. *eglandulosa* (Elliott) F.L. Freeman]

16. **PUERARIA** De Candolle

1. *P. lobata* (Willdenow) Ohwi, KUDZU. Woody vine (phanerophyte); native to east Asia. Flowers July—September; fruits August—October. Roadsides and other disturbed sites; infrequent.

17. **ROBINIA** Linnaeus

Reference: D. Isley and F. J. Peabody 1984.

1. *R. hispida* Linnaeus var. *rosea* Pursh, BOYNTON'S LOCUST. Shrub (phanerophyte). Flowers April—July; no data on fruiting. Sandstone bluffs, rare. [*R. boytonii* Ashe]

2. *R. pseudoacacia* Linnaeus, BLACK LOCUST. Tree (phanerophyte). Flowers April—June; fruits July—November. Woods and woodland borders; infrequent.

18. **SCHRANKIA** Willdenow

Reference: D. Isley 1971.

1. *S. microphylla* (Solander ex Smith) Macbride, SENSITIVE BRIER. Creeping, perennial herb (hemicryptophyte). Flowers June—September; fruits August—November. Roadsides and woodland borders; infrequent.

19. SENNA (A. Bauhin) Miller

Reference: H. S. Irwin and R. C. Barneby 1982.

1. *S. obtusifolia* (Linnaeus) Irwin & Barneby, SICKLEPOD; COFFEEWEED. Annual herb (therophyte); native to tropical America. Flowers July—September; fruits August—November. Roadsides and other disturbed areas; infrequent. [*Cassia obtusifolia* Linnaeus]

20. STYLOSANTHES Swartz

1. *S. biflora* (Linnaeus) Britton, Sterns & Poggenburg, PENCIL FLOWER. Perennial herb (hemicryptophyte). Flowers June—August; fruits July—October. Woodland borders and roadsides; infrequent.

21. TEPHROSIA Persoon

1. *T. spicata* (Walter) Torrey & Gray, LOOSE-FLOWERED GOAT'S-RUE; HAIRY DEVIL'S-SHOESTRINGS. Perennial herb (hemicryptophyte). Flowers June—August; fruits July—October. Woodland borders and roadsides; infrequent.

2. *T. virginiana* (Linnaeus) Persoon, GOAT'S-RUE; RABBIT'S-PEA. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—October. Dry, open, acidic woods; rare.

22. TRIFOLIUM Linnaeus

1. *T. campestre* Schreber, LOW HOP CLOVER. Annual herb (therophyte); native to Europe. Flowers and fruits April—October. Roadsides; infrequent.

2. *T. dubium* Sibthorp, LEAST HOP CLOVER. Annual herb (therophyte); native to Europe. Flowers and fruits April—September. Roadsides and disturbed areas; infrequent.

3. *T. incarnatum* Linnaeus, CRIMSON CLOVER. Annual herb (therophyte); native to Europe. Flowers April—June; fruits July—August. Roadsides and fields; infrequent.

4. *T. pratense* Linnaeus, RED CLOVER. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits April—September. Roadsides; rare.

5. *T. repens* Linnaeus, WHITE CLOVER. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits April—September. Roadsides; infrequent.

23. VICIA Linnaeus

1. *V. caroliniana* Walter, WOOD VETCH. Perennial herb (hemicryptophyte). Flowers April—June; fruits May—July. Woods and woodland borders; infrequent.
2. *V. grandiflora* Scopoli, BIGFLOWER VETCH. Annual herb (therophyte); native to Europe. Flowers April—June; fruits May—July. Roadsides; rare.
3. *V. sativa* Linnaeus ssp. *nigra* (Linnaeus) Ehrhart, NARROW-LEAVED VETCH. Annual herb (therophyte); native to Europe. Flowers March—June; fruits May—July. Roadsides and other disturbed sites; infrequent. [*V. angustifolia* Reichard]
5. *V. villosa* Roth spp. *varia* (Host) Corbiere, SMOOTH VETCH. Annual herb (therophyte); native to Europe. Flowers and fruits May—September. Roadsides; infrequent. [*V. dasycarpa* Tenore]

24. WISTERIA Nuttall

1. *W. frutescens* (Linnaeus) Poiret, AMERICAN WISTERIA. Woody vine (phanerophyte). Flowers April—June; fruits June—September. Woods bordering streams; rare.

FAGACEAE (Beech Family)

Reference: T. S. Elias 1971.

1. CASTANEA Miller

1. *C. dentata* (Marshall) Borkhausen, AMERICAN CHESTNUT. Large tree (phanerophyte), when able to mature. Flowers June—July; fruits September—October. Rich woods; rare.

2. FAGUS Linnaeus

1. *F. grandifolia* Ehrhart, AMERICAN BEECH. Large tree (phanerophyte). Flowers March—April; fruits September—October. Canyon slopes and rich woods; infrequent.

3. QUERCUS Linnaeus

Reference: J. W. Hardin 1979.

1. *Q. alba* Linnaeus, WHITE OAK. Large tree (phanerophyte). Flowers April; fruits September—November. Woods; common.
2. *Q. coccinea* Muenchhausen, SCARLET OAK. Large tree (phanerophyte). Flowers April; fruits September—November. Mixed woods; infrequent.
3. *Q. falcata* Michaux, SOUTHERN RED OAK; SPANISH OAK. Large tree (phanerophyte). Flowers April; fruits September—November. Dry woods; common.
4. *Q. georgiana* M. A. Curtis, GEORGIA OAK. Small tree (phanerophyte). Flowers April; fruits September—November. Dry sandy woods; rare.
5. *Q. incana* Bartrum, BLUE-JACK OAK. Small tree (phanerophyte). Flowers April; fruits September—November. Dry sandy woods; rare.
6. *Q. margaretta* Ashe, SCRUBBY POST OAK. Small tree (phanerophyte). Flowers April; fruits September—November. Dry woods; rare.
7. *Q. marilandica* Muenchhausen, BLACK JACK OAK. Small tree (phanerophyte). Flowers April; fruits September—November. Dry woods; infrequent.
8. *Q. montana* Willdenow, ROCK CHESTNUT OAK. Medium to large tree (phanerophyte). Flowers April; fruits September—November. Dry, rocky woods; common. [*Q. prinus* Linnaeus]
9. *Q. muehlenbergii* Engelm., CHINQUAPIN OAK; YELLOW CHESTNUT OAK. Medium to large tree (phanerophyte). Flowers April; fruits September—October. Rocky woods; infrequent.
10. *Q. nigra* Linnaeus, WATER OAK. Medium sized tree (phanerophyte). Flowers April; fruits September—November. Low woods and creek banks; infrequent.
11. *Q. phellos* Linnaeus, WILLOW OAK. Medium to large tree (phanerophyte). Flowers March—April; fruits September—November. Low woods and stream banks; rare.
12. *Q. rubra* Linnaeus, NORTHERN RED OAK. Tree (phanerophyte). Flowers April—May; fruits September—October. Rich, mesophytic woods; rare.
13. *Q. shumardii* Buckley, SHUMARD OAK; SWAMP RED OAK. Tree (phanerophyte). Flowers April; fruits September—October. Low woods and stream banks; common.
14. *Q. stellata* Wangenheim, POST OAK. Medium to small tree (phanerophyte). Flowers April; fruits September—November. Dry woods; common.
15. *Q. velutina* Lamarck, BLACK OAK. Large tree (phanerophyte). Flowers April; fruits September—October. Dry woods; common.

GENTIANACEAE (Gentian Family)

Reference: C. E. Wood and R. E. Weaver 1982.

1. OBOLARIA Linnaeus

1. *O. virginica* Linnaeus, PENNYWORT. Perennial herb (geophyte). Flowers March—April; fruits May—June. Rich woods; rare.

2. SABATIA Adanson

References: J. D. Perry 1971; R. L. Wilbur 1955.

1. *S. angularis* (Linnaeus) Pursh, SQUARE-STEM ROSE-GENTIAN or ROSE-PINK. Perennial herb. June—August. Canyon slopes and open woods; rare. State Rank, S2.
2. *S. capitata* (Rafinesque) Blake, UPLAND ROSE-GENTIAN or ROSE-PINK. Short-lived perennial herb. June—August. Canyon Slopes and open woods; rare. State Rank, S2. [*Lapithea capitata* (Rafinesque) Small]

GERANIACEAE (Geranium Family)

Reference: K. R. Robertson 1972.

1. ERODIUM L'Heritier

1. *E. cicutarium* (Linnaeus) L'Heritier, STORK'S-BILL; ALFILARIA. Annual herb (therophyte); native to Asia. Flowers March—June; fruits April—July. Roadsides and disturbed areas; rare.

2. GERANIUM Linnaeus

1. *G. carolinianum* Linnaeus, CAROLINA CRANES-BILL. Annual herb (therophyte). Flowers and fruits March—June. Roadsides and other disturbed sites; common.
2. *G. maculatum* Linnaeus, WILD GERANIUM. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Rich woods; infrequent.

GROSSULARIACEAE (Currant/Gooseberry Family)

[Saxifragaceae]

1. ITEA Linnaeus

1. *I. virginica* Linnaeus, VIRGINIA-WILLOW; SWEET SPIRE. Shrub (phanerophyte). Flowers April—June; fruits June—October. Low woods, marshes and stream margins; infrequent.

2. RIBES Linnaeus

Reference: Q. P. Sinnott 1985.

1. *R. curvatum* Small, DROOPING or GRANITE GOOSEBERRY. Shrub (phanerophyte). Flowers April—May; fruits June—July. Rocky woods; common. State rank, S2; Threatened in Alabama (Freeman et al. 1979).

HALORAGACEAE (Water Milfoil Family)

1. MYRIOPHYLLUM Linnaeus

References: S. G. Aiken 1981; C. F. Reed 1977.

1. *M. pinnatum* (Walter) BSP, WATER-MILFOIL. Perennial aquatic herb (hydrophyte). Flowers and fruits April—June. Streams margins, partially submerged and floating on the water; infrequent.

HAMAMELIDACEAE (Witch-hazel Family)

Reference: W. R. Ernst 1963.

1. HAMAMELIS Linnaeus

1. *H. virginiana* Linnaeus, WITCH-HAZEL. Small tree (phanerophyte). Flowers October–December; fruits October—November (the following year). Mixed woods of canyon floor ; common.

2. FOTHERGILLA Murray

Reference: R. E. Weaver 1969.

1. ***F. major*** (Sims) Loddiges, WITCH-ALDER. Shrub to small tree (phanerophyte). Flowers April—May; fruits July—October. Mixed woods along streams; rare. State rank, S2; Species of Special Concern (Freeman et al. 1979).

3. LIQUIDAMBAR Linnaeus

1. ***L. styraciflua*** Linnaeus, SWEET-GUM. Large tree (phanerophyte). Flowers April—May; fruits July—October. Woods; common.

HIPPOCASTANACEAE (Horse-chestnut Family)

Reference: J. W. Hardin 1957.

1. AESCULUS Linnaeus

Reference: J. W. Hardin 1995.

1. ***A. pavia*** Linnaeus, RED BUCKEYE. Shrub or small tree (phanerophyte). Flowers April—May; fruits July—August. Woods; infrequent.

HYDRANGEACEAE (Hydrangea Family)

[Saxifragaceae]

1. HYDRANGEA Linnaeus

Reference: R. E. Pilatowski 1982.

1. ***H. arborescens*** Linnaeus, WILD or NINE-BARK HYDRANGEA. Shrub (phanerophyte). Flowers May—July; June—August. Mixed woods; common.
2. ***H. quercifolia*** Bartram, OAKLEAF HYDRANGEA; SEVEN-BARK. Shrub (phanerophyte). Flowers April—July; fruits July—August. Upland woods; common.

2. PHILADELPHUS Linnaeus

Reference: S.Y. Hu 1955, 1956.

1. *P. hirsutus* Nuttall, HAIRY MOCK-ORANGE. Shrub (phanerophyte). Flowers April—May; fruits June—August. Canyon slopes; rare.
2. *P. inodorus* Linnaeus, COMMON MOCK-ORANGE. Shrub (phanerophyte). Flowers April—May; fruits June—August. Rich woods; rare.

HYDROPHYLLACEAE (Waterleaf Family)

Reference: R. L. Beckerman 1979, 1980.

1. HYDROPHYLLUM Linnaeus

1. *H. canadense* Linnaeus, BROAD-LEAVED WATERLEAF. Perennial herb (geophyte). Flowers May—June; fruits August—September. Rich woods; rare.

2. PHACELIA Jussieu

1. *P. bipinnatifida* Michaux, FERN-LEAVED PHACELIA or SCORPIONWEED. Short-lived perennial (biennial/ hemicryptophyte) herb. Flowers and fruits April—June. Rich, rocky woods and stream banks; rare.
2. *P. purshii* Buckl., Short-lived perennial herb (hemicryptophyte). April—June. Rich, rocky woods; rare.

JUGLANDACEAE (Walnut Family)

Reference: T. S. Elias 1972.

1. CARYA Nuttall

1. *C. cordiformis* (Wangenheim) K. Koch, BITTERNUT HICKORY. Monoecious tree (phanerophyte). Flowers March—April; fruits September—October. Low woods; infrequent.
2. *C. illinoensis* (Wangenheim) K. Koch, PECAN. Cultivated, monoecious tree (phanerophyte); native to the southeastern United States. Flowers April—May; fruits September—October. Old home sites; rare.
3. *C. ovata* (Miller) K. Koch, SHAGBARK HICKORY. Monoecious tree (phanerophyte). Flowers April—May; fruits September—October. Mixed woods; common.

4. *C. pallida* (Ashe) Engler & Graebner, SAND HICKORY; PALE HICKORY. Monoecious tree (phanerophyte). Flowers April—May; fruits September—October. Dry woods; common.
5. *C. tomentosa* (Poiret) Nuttall, MOCKERNUT HICKORY; WHITE HICKORY. Monoecious tree (phanerophyte). Flowers April—May; fruits September—October. Dry woods; common.

2. JUGLANS Linnaeus

1. *J. nigra* Linnaeus, BLACK WALNUT. Monoecious tree (phanerophyte). Flowers April—May; fruits September—October. Rich woods; rare.

LAMIACEAE (Mint Family)

1. COLLINSONIA Linnaeus

Reference: L. H. Shinnars 1962a.

1. *C. canadensis* Linnaeus, CITRONELLA HORSE-BALM; RICHWEED. Perennial herb (geophyte). Flowers July—September; fruits September—October. Rich woods; rare.

2. LAMIUM Linnaeus

1. *L. amplexicaule* Linnaeus, HENBIT. Annual herb (therophyte); native to Europe. Flowers and fruits March—June. Roadsides; common.
2. *L. purpureum* Linnaeus, PURPLE DEAD-NETTLE. Annual herb (therophyte); native to Europe. Flowers and fruits March—May. Roadsides; infrequent.

3. LYCOPUS Linnaeus

Reference: N. C. Henderson 1962.

1. *L. rubellus* Moench, TAPER-LEAF BUGLEWEED. Perennial herb (hemicryptophyte). Flowers and fruits June—November. Alluvial woods; infrequent.

4. MONARDA Linnaeus

Reference: R. W. Scora 1967.

1. *M. clinopodia* Linnaeus, BASIL-BALM; BEE-BALM. Perennial herb (hemicryptophyte). Flowers May—September; fruits July—October. Rich woods; rare. State rank, S3; Species of Special Concern (Freeman et al. 1979).
2. *M. fistulosa* Linnaeus, WILD BERGAMOT. Perennial herb (hemicryptophyte). Flowers June—September; fruits August—October. Wooded slopes, woodland borders and roadsides; infrequent.

5. PERILLA Linnaeus

1. *P. frutescens* (Linnaeus) Britton, BEAFSTEAK PLANT. Annual herb (therophyte); native to east Asia. Flowers and fruits August—November. Roadsides and woodland borders; infrequent.

6. PRUNELLA Linnaeus

1. *P. vulgaris* Linnaeus, HEAL-ALL. Perennial herb (hemicryptophyte); native to Eurasia. Flowers and fruits April—November. Roadsides and woodland borders; common.

7. PYCNANTHEMUM Michaux

Reference: E. Grant and C. Epling 1943.

1. *P. tenuifolium* Schrader, NARROW-LEAVED MOUNTAIN-MINT. Perennial herb (hemicryptophyte). Flowers June—August; fruits September—October. Open, stream banks; rare.

8. SALVIA Linnaeus

1. *S. lyrata* Linnaeus, LYRE-LEAVED SAGE; CANCER-WEED. Perennial herb (hemicryptophyte). Flowers April—May; fruits May—July. Roadsides and open woods; common.
2. *S. urticifolia* Linnaeus, NETTLE-LEAVED SAGE. Perennial herb (hemicryptophyte). Flowers April—June; fruits May—July. Rocky woods and woodland edges; rare.

9. SCUTELLARIA Linnaeus

Reference: J. L. Collins 1976; C. Epling 1942.

1. *S. elliptica* Muhlenberg, HAIRY SKULLCAP. Perennial herb (hemicryptophyte). Flowers May—June; fruits June—July. Woods and woodland borders; infrequent.
2. *S. incana* Biehler, DOWNY SKULLCAP. Perennial herb (hemicryptophyte). Flowers June—August; fruits August—September. Wooded stream banks; rare.
3. *S. integrifolia* Linnaeus, HYSSOP SKULLCAP. Perennial herb (hemicryptophyte). Flowers May—July; fruits July—August. Roadsides and ditches; infrequent.
4. *S. lateriflora* Linnaeus, MAD DOG or BLUE SKULLCAP. Perennial herb (hemicryptophyte). Flowers and fruits July—November. Roadsides and ditches; infrequent.
5. *S. ovata* Hill, HEART-LEAVED SKULLCAP. Perennial herb (geophyte). Flowers May—July; fruits June—September. Rich woods; rare.

10. TRICHOSTEMA Linnaeus

Reference: W. H. Lewis 1945.

1. *T. dichotomum* Linnaeus, BLUE-CURLS; BASTARD PENNYROYAL. Annual herb (therophyte). Flowers and fruits August—November. Sandy woodland borders, sandstone outcrops and roadsides; rare.
2. *T. setaceum* Houttuyn, NARROW-LEAVED BLUE-CURLS. Annual herb (therophyte). Flowers and fruits August—November. Sandstone outcrops; rare.

LAURACEAE (Laurel Family)

1. LINDERA Thunberg

1. *L. benzoin* (Linnaeus) Blume, SPICEBUSH. Shrub (phanerophyte). Flowers March—April; fruits August—September. Rich woods; infrequent.

2. SASSAFRAS Trew ex Blackwell

1. *S. albidum* (Nuttall) Nees, SASSAFRAS. Tree (phanerophyte). Flowers March—April; fruits June—July. Woodlands; common.

LINACEAE (Flax Family)

Reference: K. R. Robertson 1971.

1. LINUM Linnaeus

Reference: C. M. Rogers 1963.

1. *L. medium* (Planchon) Britton var. *texanum* (Planchon) Fernald, STIFF YELLOW FLAX. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Woods and woodlands; infrequent. [*Linum virginianum* Linnaeus var. *medium* Planchon]
2. *L. striatum* Walter, RIDGED YELLOW FLAX. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Low woods and stream banks; infrequent.

LOGANIACEAE (Logania Family)

Reference: G.K. Rogers 1986.

1. GELSEMIUM Jussieu

Reference: W. H. Duncan and D. W. De Jong 1964.

1. *G. sempervirens* (Linnaeus) Aiton f., YELLOW JESSAMINE. Woody, evergreen vine (phanerophyte). Flowers March—May; fruits September—November. Sandstone outcrops and woodland borders; common.

2. SPIGELIA Linnaeus

1. *S. marilandica* Linnaeus, INDIAN-PINK. Perennial herb (hemicryptophyte). Flowers May—June; fruits June—July. Rich woods; infrequent.

LORANTHACEAE (Showy Mistletoe Family)

1. PHORADENDRON Nuttall

1. *P. serotinum* (Rafinesque) M.C. Johnston, AMERICAN MISTLETOE. Parasitic, dioecious shrub (phanerophyte). Flowers October—November; fruits November—January. Woods and woodland borders; common.

LYTHRACEAE (Loosestrife Family)

1. AMMANNIA Linnaeus

1. *A. coccinea* Rottboell, PURPLE or SCARLET AMMANNIA. Annual herb (therophyte). Flowers and fruits July—October. Roadside ditches; rare.

MAGNOLIACEAE (Magnolia Family)

1. LIRIODENDRON Linnaeus

1. *L. tulipifera* Linnaeus, TULIP-POPLAR; YELLOW-POPLAR. Large tree (phanerophyte). Flowers April—June; fruits September—October. Low woods; common.

2. MAGNOLIA Linnaeus

Reference: R. F. Miller 1975.

1. *M. acuminata* Linnaeus, CUCUMBER MAGNOLIA; CUCUMBERTREE. Tree (phanerophyte). Flowers April—May; fruits July—September. Rich woods, infrequent.
2. *M. macrophylla* Michx., BIGLEAF MAGNOLIA. Tree (phanerophyte). Flowers April—May; fruits July—September. Rich woods, infrequent.
3. *M. tripetala* Linnaeus, UMBRELLA MAGNOLIA. Tree (phanerophyte). Flowers May—June; fruits September—October. Rich woods, infrequent.

MALVACEAE (Mallow Family)

1. HIBISCUS Linnaeus

1. *H. moscheutos* Linnaeus, SWAMP ROSE-MALLOW. Perennial herb (hemicryptophyte). Flowers June—September; fruits July—October. Stream margins; rare.

2. SIDA Linnaeus

1. *S. acuta* Burm. F., BROOMWEED. Annual herb (therophyte); native to tropical America. Flowers and fruits June—October. Open areas and roadsides; rare.

2. *S. spinosa* Linnaeus, PRICKLY MALLOW; PRICKLY SIDA. Annual herb (therophyte); native to tropical America. Flowers and fruits June—November. Roadsides and other disturbed sites; infrequent.

MELASTOMATACEAE (Melastome Family)

Reference: J. J. Wurdack and R. Kral 1982.

1. RHEXIA Linnaeus

Reference: R. Kral and P. E. Bostick 1969.

1. *R. mariana* Linnaeus, MARYLAND MEADOW-BEAUTY. Perennial herb (geophyte). Flowers and fruits May—October. Wet meadows; infrequent.

MELIACEAE (Mahogany Family)

1. MELIA Linnaeus

1. *M. azedarach* Linnaeus, CHINA-BERRY; PRIDE-OF-INDIA. Tree (phanerophyte); native to Asia. Flowers April—May; fruits September—October. Roadsides and other disturbed sites; rare.

MENISPERMACEAE (Moonseed Family)

Reference: W. R. Ernst 1964.

1. COCCULUS De Candolle

1. *C. carolinus* (Linnaeus) De Candolle, CORALBEADS; RED-BERRIED MOONSEED. Woody vine (phanero-phyte). Flowers June—August; fruits July—November. Roadsides and other disturbed areas; infrequent.

MORACEAE (Mulberry Family)

1. MACLURA Nuttall

1. *M. pomifera* (Rafinesque) Schneider, OSAGE-ORANGE. Dioecious tree (phanerophyte); native to the southwestern United States. Flowers April—May; fruits October—November. Disturbed areas; rare.

2. MORUS Linnaeus

1. *M. rubra* Linnaeus, RED MULBERRY. Small to medium tree (phanerophyte). Flowers April—May; fruits May—June. Alluvial woods; rare.

NYSSACEAE (Sour Gum Family)

1. NYSSA Linnaeus

Reference: R. E. Burckhalter 1992, R. H. Eyde 1966.

1. *N. sylvatica* Marshall, BLACK GUM; SOUR GUM. Tree (phanerophyte). Flowers April—June; fruits August—October. Upland and low woods; common.

OLEACEAE (Olive Family)

References: J. W. Hardin 1974; K. A. Wilson and C. E. Wood 1959.

1. CHIONANTHUS Linnaeus

1. *C. virginicus* Linnaeus, FRINGE TREE; GRANCY GRAY BEARD. Shrub or small tree (phanerophyte). Flowers April—May; fruits July—September. Dry woods, sandstone outcrops and bluffs; common.

2. FRAXINUS Linnaeus

Reference: G. N. Miller 1955.

1. *F. americana* Linnaeus, WHITE ASH; AMERICAN ASH. Tree (phanerophyte). Flowers April—May; fruits August—October. Woodlands; infrequent.

2. *F. pennsylvanica* Marshall, GREEN ASH; RED ASH. Tree (phanerophyte). Flowers April—May; fruits August—October. Swamps, low woods and stream; infrequent.

3. LIGUSTRUM Linnaeus

1. *L. sinense* Loureiro, CHINESE PRIVET. Semi-evergreen shrub or small tree (phanerophyte); native to east Asia. Flowers May—June; fruits September—November. Low woods and woodland borders; infrequent.

ONAGRACEAE (Evening-primrose Family)

Reference: P. A. Munz 1965.

1. CIRCAEA Linnaeus

Reference: D. E. Boufford 1983.

1. *C. lutetiana* (Linnaeus) Ascherson & Magnus ssp. *canadensis* (Linnaeus) Ascherson & Magnus, ENCHANTER'S NIGHTSHADE. Perennial herb (hemicryptophyte). Flowers and fruits June—August. Rich woods; rare.

2. GAURA Linnaeus

Reference: P. H. Raven and D. P. Gregory 1972.

1. *G. filipes* Spach, SLENDER GAURA. Perennial herb (hemicryptophyte). Flowers July—September; fruits August—October. Open disturbed areas; rare.

3. LUDWIGIA Linnaeus

Reference: P. A. Munz 1944.

1. *L. alternifolia* Linnaeus, BUSHY SEED-BOX. Perennial herb (hemicryptophyte). Flowers and fruits May—October. Low woods, Ditches and stream margins; rare.
2. *L. decurrens* Walter, PRIMROSE-WILLOW; FALSE-LOOSESTRIFE. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Stream margins and ditches; infrequent.
3. *L. leptocarpa* (Nuttall) Hara, RIVER SEED-BOX. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Stream margins and ditches; infrequent.
5. *L. peploides* (Humbolt, Bonpland & Kunth) Raven, FLOATING SEED-BOX. Perennial herb (hydrophyte). Flowers and fruits May—September. Stream and river margins; infrequent.

4. **OENOTHERA** Linnaeus

1. ***O. biennis*** Linnaeus, COMMON EVENING-PRIMROSE. Short-lived perennial (biennial/hemi-cryptophyte) herb. Flowers and fruits June—October. Roadsides and other disturbed sites; common.
2. ***O. fruticosa*** Linnaeus, COMMON SUNDROPS. Short-lived perennial (hemicryptophyte) herb. Flowers and fruits June—October. Roadsides and other disturbed sites; infrequent.
3. ***O. speciosa*** Nuttall, SHOWY EVENING-PRIMROSE. Perennial herb (hemicryptophyte); native to the mid-western United States. Flowers and fruits May—August. Roadsides; infrequent.

OROBANCHACEAE (Broomrape Family)

1. **CONOPHOLIS** Wallroth

Reference: R.R. Haynes 1971.

1. ***C. americana*** (Linnaeus) Wallroth, SQUAW-ROOT; CANCER-ROOT. Perennial herb (geophyte). Flowers and fruits March—June. Upland woods; infrequent.

2. **EPIFAGUS** Nuttall

1. ***E. virginiana*** (Linnaeus) Barton, BEECH-DROPS. Perennial herb (geophyte). Flowers and fruits September—November. Rich woods with beech; infrequent.

OXALIDACEAE (Wood-sorrel Family)

Reference: K. R. Robertson 1975.

1. **OXALIS** Linnaeus

Reference: G. Eiten 1963.

1. ***O. dillenii*** Jacquin var. ***dillenii***, GRAY-GREEN WOOD-SORREL; SOUR-GRASS. Perennial herb (hemicryptophyte). Flowers and fruits March—October. Roadsides and other disturbed sites; common.
2. ***O. priceae*** Small spp. ***colorea*** (Small) Eiten, LARGE-FLOWERED WOOD-SORREL. Perennial herb (hemicryptophyte). Flowers and fruits April—September. Rocky, sloped woods; rare. [*O. florida* Salisbury var. *recurva* (Elliott) Ahles]

3. *O. violacea* Linnaeus, VIOLET WOOD-SORREL. Perennial herb (geophyte). Flowers and fruits April—May. Rich woods; infrequent.

PAPAVERACEAE (Poppy Family)

Reference: W. R. Ernst 1962.

1. SANGUINARIA Linnaeus

1. *S. canadensis* Linnaeus, BLOOD-ROOT; RED PUCCOON. Perennial herb (geophyte). Flowers March—April; fruits April—May. Rich woods; rare.

PASSIFLORACEAE (Passion-flower Family)

Reference: G. K. Brizicky 1961b.

1. PASSIFLORA Linnaeus

1. *P. incarnata* Linnaeus, PASSION-FLOWER; MAY-POPS. Herbaceous, perennial vine (hemicryptophyte). Flowers May—July; fruits July—October. Roadsides and other disturbed sites; infrequent.
2. *P. lutea* Linnaeus, YELLOW PASSION-FLOWER. Herbaceous, perennial vine (hemicryptophyte). Flowers June—September; fruits August—October. Woodland borders; infrequent.

PHRYMACEAE (Lopseed Family)

1. PHRYMA Linnaeus

1. *P. leptostachya* Linnaeus, LOP-SEED. Perennial herb (hemicryptophyte). Flowers June—August; fruits August—October. Rich woods; infrequent.

PHYTOLACCACEAE (Pokeweed Family)

1. PHYTOLACCA Linnaeus

1. *P. americana* Linnaeus, POKEWEED. Perennial herb (hemicryptophyte). Flowers and fruits May—November. Roadsides and other disturbed sites; infrequent.

PLANTAGINACEAE (Plantain Family)

1. *PLANTAGO* Linnaeus

References: I. J. Bassett 1973.

1. *P. aristata* Michaux, BRACTED PLANTAIN; BOTTLE-BRUSH PLANTAIN. Annual herb (therophyte). Flowers and fruits April—July. Roadsides and other disturbed sites; infrequent.
2. *P. heterophylla* Nuttall, MANY-SEED PLANTAIN. Annual herb (therophyte). Flowers and fruits March—May. Low disturbed sites; rare.
3. *P. lanceolata* Linnaeus, ENGLISH PLANTAIN; RIB-GRASS. Herbaceous perennial (hemicryptophyte). Flowers and fruits April—November. Roadsides and other disturbed sites; common.
4. *P. rugelii* Decaisne, RUGEL'S or PALE PLANTAIN. Herbaceous perennial (hemicryptophyte). Flowers and fruits June—November. Roadsides and other disturbed areas; common.
5. *P. virginica* Linnaeus, SOUTHERN or HOARY PLANTAIN. Annual herb (therophyte). Flowers and fruits March—June. Roadsides and other disturbed sites; common.

PLATANACEAE (Plane-tree Family)

Reference: W. R. Ernst 1963.

1. *PLATANUS* Linnaeus

1. *P. occidentalis* Linnaeus, SYCAMORE; PLANE-TREE. Large tree (phanerophyte). Flowers April—May; fruits September—October. Canyon alluvium and stream banks; common.

POLEMONIACEAE (Phlox Family)

1. *PHLOX* Linnaeus

Reference: E. T. Wherry 1955.

1. *P. amoena* Sims, HAIRY PHLOX. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Sandy upland woods; infrequent.
2. *P. divaricata* Linnaeus, BLUE PHLOX. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Woodlands; common.

3. *P. glaberrima* Linnaeus, SMOOTH PHLOX. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Stream banks, low woods and meadows; infrequent. [Includes *P. carolina* Linnaeus]

POLYGALACEAE (Milkwort Family)

Reference: N. G. Miller 1971b.

1. POLYGALA Linnaeus

1. *P. curtisii* Gray, CURTIS' MILKWORT. Annual herb (therophyte). Flowers and fruits June—October. Sandstone outcrops; infrequent.
2. *P. nana* (Michx.) D.C., DWARF MILKWORT. Perennial (geophyte). Flowers April—June; fruits May. Sandy woodland borders; rare.
3. *P. polygama* Walter, RACEMED MILKWORT. Short-lived perennial (biennial/geophyte). Flowers May—July; fruits June—July. Sandy woodland borders; rare.
4. *P. verticillata* Linnaeus, WHORLED MILKWORT. Annual herb (therophyte). Flowers and fruits June—October. Sandstone outcrops; rare.

POLYGONACEAE (Buckwheat Family)

References: Graham, S. A. and C. E. Wood 1965; J. H. Horton 1972.

1. POLYGONUM Linnaeus

Reference: A. Love and D. Love 1956.

1. *P. aviculare* Linnaeus, PROSTRATE KNOTWEED. Annual herb (therophyte); native to Europe. Flowers and fruits May—November. Roadsides and disturbed habitats; rare.
2. *P. caespitosum* Blume var. *longisetum* (DeBruyn) Stewart, LONG-BRISTLED SMARTWEED. Annual herb (therophyte); native to southeast Asia. Flowers and fruits May—November. Low woods and moist disturbed areas; infrequent.
3. *P. pensylvanicum* Linnaeus, PENNSYLVANIA SMARTWEED; PINKWEED. Annual herb (thero-phyte). Flowers and fruits July—November. Ditches and other moist disturbed sites; infrequent.
4. *P. punctatum* Elliott, DOTTED SMARTWEED. Annual herb (therophyte). Flowers and fruits July—November. Low woods, stream and rivers margin; rare.

5. *P. scandens* Linnaeus var. *scandens*, CLIMBING FALSE-BUCKWHEAT. Perennial, herbaceous vine (geophyte). Flowers and fruits July—October. Alluvial woods and stream margins; infrequent.

2. RUMEX Linnaeus

1. *R. acetosella* Linnaeus, SHEEP-SORREL. Dioecious, perennial herb (hemicryptophyte); native to Europe. Flowers and fruits April—July. Disturbed and roadsides; rare.

2. *R. crispus* Linnaeus, CURLY DOCK; SOUR DOCK. Monoecious, short-lived perennial herb (hemicryptophyte); native to Europe. Flowers March—May; fruits May—July. Ditches, roadsides and other disturbed sites; infrequent. .

PORTULACACEAE (Purslane Family)

1. CLAYTONIA Linnaeus

1. *C. virginica* Linnaeus, VIRGINIA SPRING-BEAUTY. Perennial herb (geophyte). Flowers and fruits March—April. Rich woods and wooded banks of small streams; infrequent.

2. TALINUM Adanson

References: M. E. B. Carter and W. H. Murdy 1985; W. H. Murdy et al. 1970.

1. *T. mengesii* W. Wolf, MENGE'S FAMEFLOWER. Perennial, succulent herb (hemicryptophyte). Flowers and fruits June—September. Sandstone outcrops; infrequent. Federal status, 3C; State rank, S3; Threatened Species in Alabama (Freeman et al. 1979).

PRIMULACEAE (Primrose Family)

1. LYSIMACHIA Linnaeus

References: V. J. Coffey and S. B. Jones 1980; J. D. Ray 1956.

1. *L. lanceolata* Walter, LANCE-LEAF LOOSESTRIFE. Perennial herb (hemicryptophyte). Flowers June—August; fruits August—October. Alluvial woods and stream banks; rare.

2. *L. quadrifolia* Linnaeus, WHORLED LOOSESTRIFE. Perennial herb (hemicryptophyte). Flowers May—July; fruits August—October. Sandy woods and woodland borders; rare.

PYROLACEAE (Shinleaf/Wintergreen Family)

[Ericaceae]

1. CHIMAPHILA Pursh

1. *C. maculata* (Linnaeus) Pursh, SPOTTED WINTERGREEN; PIPSISSEWA. Very low shrub (chamaephyte). Flowers May—June; fruits July—October. Upland woods; common.

RANUNCULACEAE (Buttercup Family)

Reference: C. S. Keener 1977.

1. ACTAEA Linnaeus

1. *A. pachypoda* Elliott, DOLL'S-EYES; WHITE BANEBERRY. Perennial herb (geophyte). Flowers April—May; fruits August—October. Rich woods; rare. State listed as a Species of Special Concern (Freeman et al. 1979).

2. ANEMONE Linnaeus

Reference: C. S. Keener 1975a.

1. *A. quinquefolia* Linnaeus, WOOD ANEMONE; WIND FLOWER. Perennial herb (hemicrypto-phyte). Flowers and fruits March—May. Rich woods, infrequent.
2. *A. virginiana* Linnaeus, THIMBLEWEED. Perennial herb (hemicryptophyte). Flowers and fruits May—July. Canyon slopes; rare.

3. CIMICIFUGA Linnaeus

Reference: G. W. Ramsey 1988.

1. *C. racemosa* Nuttall, BLACK COHOSH; BUGBANE. Perennial herb (geophyte). Flowers May—July; fruits June—July. Rich woods; rare.

4. CLEMATIS Linnaeus

References: F. B. Essig 1990; C. S. Keener 1975b, 1978.

1. *C. viorna* De Candolle, LEATHERFLOWER. Perennial, herbaceous vine (hemicryptophyte). Flowers and fruits July—September. Stream banks, low woods; infrequent.

2. *C. virginiana* Linnaeus, VIRGINIA VIRGIN'S-BOWER. Perennial, herbaceous vine (hemicrypto-phyte). Flowers and fruits July—September. Low woods, roadsides and stream banks; infrequent.

5. **CONSOLIDA** (De Candolle) S. F. Gray

References: C. S. Keener 1976a.

1. *C. ambigua* (Linnaeus) P.W. Ball & Heywood, ROCKET LARKSPUR. Annual herb (thero-phyte); native to Europe. Flowers and fruits May—September. Disturbed sites; rare.

6. **DELPHINIUM** Linnaeus

Reference: C. S. Keener 1976a; R. Kral 1976.

1. *D. tricornis* Michaux, DWARF LARKSPUR. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Rich woods; rare.

7. **HEPATICA** Miller

Reference: C. S. Keener 1977.

1. *H. nobilis* Miller var. *acuta* (Pursh) Steyermark, SHARP-LOBED LIVERLEAF. Perennial evergreen herb (chamaephyte). Flowers and fruits March—April. Rich woods; infrequent. [*H. acutiloba* De Candolle]

8. **RANUNCULUS** Linnaeus

References: T. Duncan 1980; C. S. Keener 1976b, 1987.

1. *R. recurvatus* Poir., HOOKED BUTTERCUP. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Rich, moist woods; common.

2. *R. sardous* Crantz, HAIRY BUTTERCUP. Annual herb (therophyte); native to Europe. Flowers and fruits April—July. Roadsides; infrequent.

9. **THALICTRUM** Linnaeus

Reference: C. S. Keener 1976c.

1. *T. dioicum* Linnaeus, EARLY MEADOW-RUE. Perennial herb (hemicryptophyte). Flowers and fruits March—April. Rich woods and wooded stream banks; rare.

2. *T. thalictroides* (Linnaeus) Boivin, RUE-ANEMONE; WINDFLOWER. Perennial herb (geophyte). Flowers and fruits March—May. Rich woods; infrequent.

10. **XANTHORHIZA** Marshall

1. *X. simplicissima* Marshall, YELLOW-ROOT. Small shrub (phanerophyte). Flowers April—May; fruits May—June. Stream banks and rivers margin; common.

RHAMNACEAE (Buckthorn Family)

Reference: G. K. Brizicky 1964c.

1. **BERCHEMIA** Necker ex De Candolle

1. *B. scandens* (Hill) K. Koch, RATTAN-VINE; SUPPLE-JACK. Dioecious, woody vine (phanerophyte). Flowers April—May; fruits August—October. Low, sandy woods and stream banks; infrequent.

2. **CEANOTHUS** Linnaeus

1. *C. americanus* Linnaeus, NEW JERSEY-TEA. Low, dioecious shrub (chamaephyte). Flowers May—June; fruits June—July. Woods and woodland borders; infrequent.

3. **RHAMNUS** Linnaeus

1. *R. caroliniana* Walter, CAROLINA BUCKTHORN; INDIAN CHERRY. Small, dioecious tree or large shrub (phanerophyte). Flowers May—June; fruits September—October. Rocky woods and woodland borders; infrequent.

ROSACEAE (Rose Family)

Reference: K. R. Robertson 1974.

1. **AGRIMONIA** Linnaeus

1. *A. rostellata* Wallroth, BEAKED AGRIMONY. Perennial herb (hemicryptophyte). Flowers July—August; fruits August–September. Low woods; infrequent.

2. **AMELANCHIER** Medicus

Reference: W. A. Robinson 1982.

1. ***A. arborea*** (Michaux f.) Fernald, DOWNY SERVICEBERRY; COMMON SHADBUSH. Small tree (phanerophyte). Flowers March—April; fruits May—June. Upland woods and sandstone bluffs; common.

3. **ARONIA** Persoon

Reference: J. W. Hardin 1973.

1. ***A. arbutifolia*** (Linnaeus) Elliott, RED CHOKEBERRY. Shrub (phanerophyte). Flowers March—May; fruits September—October. Low woods, sandstone outcrops and bluffs; infrequent. [*Sorbus arbutifolia* (Linnaeus) Heynhold]

4. **ARUNCUS** Adanson

1. ***A. dioicus*** (Walter) Fernald, GOAT'S-BEARD. Dioecious, perennial herb (hemicryptophyte). Flowers May—June; fruits July—September. Rich, moist woods; rare.

5. **CRATAEGUS** Linnaeus

Reference: J. B. Phipps 1988, E. J. Kruschke 1965.

1. ***C. marshallii*** Eggleston, PARSLEY-LEAF HAWTHORN. Small tree (phanerophyte). Flowers April—May; fruits July—October. Alluvial and low woods; infrequent.
2. ***C. spathulata*** Michaux, LITTLE-HIP HAWTHORN. Small tree (phanerophyte). Flowers April—May; fruits September—October. Stream banks and low woods; infrequent.

6. **DUCHESNEA** Smith

1. ***D. indica*** (Andrzejowski) Focke, MOCK-STRAWBERRY; INDIAN-STRAWBERRY. Perennial herb (hemicryptophyte); native to Asia. Flowers and fruits February—November. Roadsides, lawns and other disturbed areas; infrequent.

7. **GEUM** Linnaeus

1. ***G. canadense*** Jacquin, WHITE AVENS. Perennial herb (hemicryptophyte). Flowers May—August; fruits May—November. Alluvial and low woods; rare.

8. PHYSOCARPUS Maximowicz

1. *P. opulifolius* (Linnaeus) Maximowicz, NINEBARK; OPULASTER. Shrub (phanerophyte). Flowers May—July; fruits July—September. Stream banks; rare.

9. PORTERANTHUS Britton

1. *P. stipulatus* (Muhlenberg) Britton, AMERICAN IPECAC. Perennial herb (hemicryptophyte). Flowers April—June; fruits August—October. Rich woods; rare. [*Gillenia stipulata* (Muhlenberg) Baillon]
2. *P. trifoliatum* (Linnaeus) Britton, BOWMAN'S-ROOT; INDIAN PHYSIC. Perennial herb (hemicryptophyte). Flowers April—June; fruits August—October. Rich woods; rare. [*Gillenia trifoliata* (Linnaeus) Moench].

10. POTENTILLA Linnaeus

1. *P. canadensis* Linnaeus, DWARF CINQUEFOIL; FIVE-FINGERS. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Woodland borders and sandstone outcrops; infrequent.
2. *P. simplex* Michaux, OLD FIELD CINQUEFOIL. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Woodland borders and roadsides; common.

11. PRUNUS Linnaeus

Reference: L. H. Shinnars 1956.

1. *P. angustifolia* Marshall, CHICKASAW PLUM. Shrub (phanerophyte). Flowers March—April; fruits May—July. Woodland borders; infrequent.
2. *P. mexicana* Watson, MEXICAN PLUM. Shrub or small tree (phanerophyte). Flowers March—April; fruits July—August. Rich woodlands; rare. [*P. americana* Marshall var. *lanata* Sudworth]
3. *P. persica* (Linnaeus) Batsch, PEACH. Small tree (phanerophyte); native to Asia. Flowers March—April; fruits June—July. Disturbed areas and old home sites; very rare.
4. *P. serotina* Ehrhart, BLACK CHERRY. Tree (phanerophyte). Flowers April—May; fruits July—August. Woodlands and woodland borders; infrequent.

12. PYRUS Linnaeus

1. *P. communis* Linnaeus, PEAR. Tree (phanerophyte); native to Eurasia. Flowers April; fruits August—October. Old home sites; rare.

13. *ROSA* Linnaeus

1. *R. carolina* Linnaeus, CAROLINA or WILD ROSE. Shrub (phanerophyte). Flowers May—June; fruits August—October. Woods and woodland borders; infrequent.

2. *R. multiflora* Thunberg, MULTI-FLOWERED ROSE. Shrub (phanerophyte); native to east Asia. Flowers April—June; fruits August—October. Roadsides; rare.

3. *R. setigera* Michaux, PRAIRIE ROSE. Shrub (phanerophyte). Flowers May—June; fruits September—October. Stream margins and disturbed areas; rare.

14. *RUBUS* Linnaeus

References: H. A. Davis 1990; H. A. Davis et al. 1967, 1968a, 1968b, 1969a, 1969b, 1970.

1. *R. argutus* Link, HIGH BUSH BLACKBERRY. Shrub (phanerophyte). Flowers April—May; fruits June—July. Low woods, woodland borders; common. [*R. betulifolius* Small]

2. *R. bifrons* Vest, HIMALAYA-BERRY. Shrub (phanerophyte); native to Europe. Flowers May—June; fruits June—July. Roadsides and woodland borders; rare.

3. *R. flagellaris* Willdenow, NORTHERN DEWBERRY; PRICKLY DEWBERRY. Trailing shrub (phanerophyte). Flowers April—May; fruits May—July. Woodland borders and roadsides; infrequent.

RUBIACEAE (Madder/Coffee Family)

1. *CEPHALANTHUS* Linnaeus

1. *C. occidentalis* Linnaeus, BUTTONBUSH; GLOBE FLOWER. Large shrub (phanerophyte). Flowers June—August; fruits August—September. Stream margins; common.

2. *DIODIA* Linnaeus

1. *D. teres* Walter, POOR-JOE; ROUGH BUTTONWEED. Annual herb (therophyte). Flowers and fruits June—November. Sandy roadsides and sandstone outcrops; infrequent.

2. *D. virginiana* Linnaeus, VIRGINIAN BUTTONWEED. Perennial herb (geophyte). Flowers and fruits June—November. Low roadsides, ditches and stream margins; infrequent.

3. **GALIUM** Linnaeus

References: C. Puff 1976, 1977.

1. ***G. circaezans*** Michaux, WOODS BEDSTRAW; WILD-LICORICE. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Woodlands; common.
3. ***G. obtusum*** Bigelow, BLUNT-LEAF BEDSTRAW. Perennial herb (hemicryptophyte). Flowers and fruits April—May. Alluvial woods and stream margins; infrequent.
4. ***G. pedemontanum*** Allioni, PIEDMONT BEDSTRAW. Annual herb (therophyte); native to Europe. Flowers and fruits April—June. Roadsides; rare.
5. ***G. pilosum*** Aiton, HAIRY BEDSTRAW. Perennial herb (hemicryptophyte). Flowers and fruits May—August. Woods, woodland borders and roadsides; infrequent.
6. ***G. tinctorium*** Linnaeus, STIFF MARSH BEDSTRAW. Annual herb (therophyte). Flowers and fruits April—October. Ditches and roadsides; infrequent.

4. **HOUSTONIA** Linnaeus

References: E. E. Terrell 1959, 1991.

1. ***H. caerulea*** Linnaeus, BLUEETS; QUAKER-LADIES. Perennial herb (hemicryptophyte). Flowers April—May; fruits May—June. Woods and woodland borders; common.
2. ***H. purpurea*** Linnaeus, SUMMER BLUEETS. Perennial herb (hemicryptophyte). Flowers May—July; fruits July—August. Woods, woodland border and roadsides; common.

5. **MITCHELLA** Linnaeus

1. ***M. repens*** Linnaeus, PARTRIDGE-BERRY. Evergreen, perennial herb (chamaephyte). Flowers May—June; fruits June—October. Woodlands; common.

7. **SHERARDIA** Linnaeus

1. ***S. arvensis*** Linnaeus, FIELD MADDER. Annual herb (therophyte); native to Europe. Flowers and fruits April—August. Roadsides and other disturbed sites; infrequent.

SALICACEAE (Willow Family)

1. **POPULUS** Linnaeus

Reference: J. E. Eckenwalder 1977.

1. ***P. deltoides*** Marshall, COTTONWOOD. Tree (phanerophyte). Flowers and fruits March—April. Alluvial woods; infrequent.

2. **SALIX** Linnaeus

References: G. W. Argus 1986; C. R. Ball 1938; R. D. Dorn 1976.

1. ***S. nigra*** Marshall, BLACK WILLOW. Tree (phanerophyte). Flowers and fruits March—April. Stream banks; infrequent.

SAPOTACEAE (Sapodilla Family)

1. **BUMELIA** Swartz

Reference: R. B. Clark 1942.

1. ***B. lycioides*** (Linnaeus) Persoon, SOUTHERN BUCKTHORN; BUCKTHORN BUMELIA. Shrub (phanerophyte). Flowers June—July; fruits September—October. Rich woods; rare.

SARRACENIACEAE (Pitcher-plant Family)

1. **SARRACENIA** Linnaeus

1. ***S. oreophila*** (Kearney) Wherry, MOUNTAIN PITCHER-PLANT. Perennial herb (hemicryptophyte). Flowers May—August; fruits June—August. Rocky shoals, low wet seeps; rare. Federally listed species endangered.

SAURURACEAE (Lizard's-tail Family)

Reference: C. E. Wood Jr. 1971.

1. SAURURUS Linnaeus

1. *S. cernuus* Linnaeus, LIZARD'S-TAIL. Perennial herb (hydrophyte). Flowers May—July; fruits August—September. Stream margins and rivers edge; infrequent.

SAXIFRAGACEAE (Saxifrage Family)

Reference: S. A. Spongberg 1972.

1. HEUCHERA Linnaeus

Reference: E. F. Wells 1984.

1. *H. americana* Linnaeus, COMMON ALUMROOT. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Rich woods; infrequent.
2. *H. villosa* Michaux, HAIRY ALUMROOT. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Rock ledges of Canyon shoulder; rare.

2. SAXIFRAGA Linnaeus

1. *S. virginensis* Michaux, EARLY SAXIFRAGE. Perennial herb (hemicryptophyte). Flowers and fruits March—May. Rock ledges of Canyon shoulder; infrequent.

3. TIARELLA Linnaeus

Reference: O. Lakela 1937.

1. *T. cordifolia* Linnaeus, var. *collina* Wherry, FOAM FLOWER. Perennial herb (hemi-cryptophyte). Flowers and fruits April—June. Rich woods; infrequent.

SCROPHULARIACEAE (Figwort/Snapdragon Family)

Reference: F. W. Pennell 1935.

1. AGALINIS Rafinesque

References: F. W. Pennell 1928, 1929; L. H. Shinnars 1962c.

1. *A. purpurea* (Linnaeus) Pennell, PURPLE FALSE-FOXGLOVE; PURPLE GERARDIA. Annual herb (therophyte). Flowers and fruits August—November. Roadsides and open areas; infrequent.

2. AUREOLARIA Rafinesque

1. *A. virginica* (Linnaeus) Pennell, DOWNY FALSE-FOXGLOVE. Perennial herb (hemicrypto-phyte). Flowers May—July; fruits August—September. Woodlands; infrequent.

3. CASTILLEJA Mutis ex Linnaeus f.

1. *C. coccinea* (Linnaeus) Sprengel, INDIAN PAINTBRUSH; PAINTED CUP. Short-lived perennial herb (hemicryptophyte). Flowers April—May; fruits May—June. Sandstone outcrops in thin soil; rare. State rank, S2; Species of Special Concern (Freeman et al. 1979).

4. CHELONE Linnaeus

1. *C. glabra* Linnaeus, WHITE TURTLE-HEAD. Perennial herb (hemicryptophyte). Flowers August—October; fruits September—November. Alluvial woods; rare.

5. GRATIOLA Linnaeus

1. *G. neglecta* Torrey, CLAMMY HEDGE-HYSSOP. Annual herb (therophyte). Flowers April—May; fruits May—July. Ditches and stream margins; rare.

6. LINARIA Miller

1. *L. canadensis* (Linnaeus) Dumont, OLD-FIELD TOAD-FLAX. Short-lived perennial (biennial/hemicryptophyte) herb. March—May. Roadsides and disturbed sites; rare.

7. **LINDERNIA** Allioni

1. ***L. monticola*** Muhlenberg ex Nuttall, PIEDMONT FALSE-PIMPERNEL. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Sandstone outcrops; rare. State rank, S3; Species of Special Concern (Freeman et al. 1979).
2. ***L. saxicola*** M. A. Curtis, PIMPERNEL. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Sandstone outcrops; rare. State rank, S1.

8. **MECARDONIA** Ruiz & Pavon

1. ***M. acuminata*** (Walter) Small, PURPLE or BLACKENING HEDGE-HYSSOP. Perennial herb (hemicryptophyte). Flowers July—September; fruits August—October. Stream margins; rare.

9. **PEDICULARIS** Linnaeus

1. ***P. canadensis*** Linnaeus, LOUSEWORT; WOOD BETONY. Perennial herb (hemicryptophyte). Flowers April—May; fruits May—July. Open woods and thin soil along rock outcrops; rare.

10. **PENSTEMON** Mitchell

1. ***P. australis*** Small, SOUTHERN BEARD-TONGUE. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—August. Woods, sandstone outcrops and meadows; infrequent.
2. ***P. calycosus*** Small, LONG-SEPALED BEARD-TONGUE. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—August. Woods and meadows; rare.
3. ***P. laevigatus*** Solander ex Aiton, SMOOTH BEARD-TONGUE. Perennial herb (hemicryptophyte). Flowers May—June; fruits July—August. Woodland borders; rare.

11. **SEYMERIA** Pursh

1. ***S. cassioides*** (J. F. Gmelin) Blake, BLACK-SENNA. Annual herb (therophyte). Flowers and fruits August—October. Sandstone outcrops; rare.

12. **VERBASCUM** Linnaeus

1. ***V. thapsus*** Linnaeus, WOOLLY MULLEIN. Perennial herb (hemicryptophyte); native to Eurasia. Flowers and fruits June—September. Roadsides and other disturbed areas; infrequent.

13. VERONICA Linnaeus

1. *V. arvensis* Linnaeus, CORN SPEEDWELL. Annual herb (therophyte); native to Eurasia. Flowers and fruits March—June. Roadsides and other disturbed areas; infrequent.
2. *V. peregrina* Linnaeus, PURSLANE SPEEDWELL. Annual herb (therophyte). Flowers and fruits March—May. Roadsides and other disturbed areas; infrequent.

SIMAROUBACEAE (Quassia Family)

1. AILANTHUS Desfontaines

1. *A. altissima* (Miller) Swingle, TREE-OF-HEAVEN; COPAL-TREE. Polygamous tree (phanero-phyte); native to Asia. Flowers May—June; fruits July—October. Woodland borders, old home sites and roadsides; infrequent.

SOLANACEAE (Nightshade/Potato Family)

1. PHYSALIS Linnaeus

Reference: U. T. Waterfall 1958.

1. *P. heterophylla* Nees, CLAMMY GROUND-CHERRY. Perennial herb (geophyte). Flowers May—July; fruits July—September. Woods and woodland borders; rare.
2. *P. virginiana* Miller, VIRGINIAN GROUND-CHERRY. Perennial herb (geophyte). Flowers April—May; fruits June—July. Woodland borders, roadsides and other disturbed ground; infrequent.

2. SOLANUM Linnaeus

References: W. G. D'Arcy 1974; E. E. Schilling 1981.

1. *S. carolinense* Linnaeus, HORSE-NETTLE. Perennial herb (geophyte). Flowers May—July; fruits August—September. Roadsides and other disturbed sites; infrequent.

STAPHYLEACEAE (Bladdernut Family)

1. STAPHYLEA Linnaeus

1. *S. trifolia* Linnaeus, BLADDERNUT. Shrub or small tree (phanerophyte). Flowers April; fruits September—October. Alluvial woods; rare.

STYRACACEAE (Storax Family)

1. HALESIA Ellis ex Linnaeus

Reference: J. L. Reveal and M. J. Seldin 1976.

1. *H. tetraptera* Ellis, SILVERBELL TREE. Tree (phanerophyte). Flowers March—May; fruits August—September. Rich woods and stream banks; infrequent. [*H. carolina* Linnaeus]

2. STYRAX Linnaeus

Reference: G. J. Gonsoulin 1974.

1. *S. americana* Lamarck, AMERICAN SNOWBELL; AMERICAN STORAX. Shrub (phanerophyte). Flowers April—June; fruits July—September. Stream margins; rare.
2. *S. grandifolia* Aiton, BIG-LEAF SNOWBELL; LARGE-LEAVED STORAX. Shrub (phanerophyte). Flowers April—June; fruits July—September. Alluvial woods; rare.

SYMPLOCACEAE (Sweetleaf Family)

1. SYMPLOCOS Jacquin

1. *S. tinctoria* (Linnaeus) L'Heritier, SWEET-LEAF; HORSE-SUGAR. Large shrub or small tree (phanerophyte). Flowers March—May; fruits August—September. Rich, sandy woods, stream banks and alluvial woods; infrequent.

THEACEAE (Tea/Camellia Family)

Reference: C. E. Wood 1959b.

1. STEWARTIA Linnaeus

Reference: S. A. Spongberg 1974.

1. *S. ovata* (Cavanilles) Weatherby, MOUNTAIN-CAMELLIA. Shrub or small tree (phanerophyte). Flowers June—July; fruits August—September. Rich woods along streams; rare. State rank, S3; Species of Special Concern (Freeman et al. 1979).

THYMELAEACEAE (Mezereum Family)

1. DIRCA Linnaeus

1. *D. palustris* Linnaeus, LEATHERWOOD. Shrub (phanerophyte). Flowers March—April; fruits June—July. Rich woods; rare.

TILIACEAE (Linden Family)

Reference: G. K. Brizicky 1965a.

1. TILIA Linnaeus

Reference: L. G. Hickok and J. C. Anway 1972.

1. *T. americana* Linnaeus, BASSWOOD; AMERICAN LINDEN. Tree (phanerophyte). Flowers June; fruits August—September. Rich and rocky woods; rare. [*T. heterophylla* Vent]

ULMACEAE (Elm Family)

Reference: T. S. Elias 1970.

1. CELTIS Linnaeus

1. *C. laevigata* Willdenow, SUGARBERRY. Medium to large tree (phanerophyte). Flowers April—May; fruits August—October. Low woods; infrequent.
2. *C. occidentalis* Linnaeus, HACKBERRY. Medium to large tree (phanerophyte). Flowers April—May; fruits August—October. Upland woods; rare.

2. **ULMUS** Linnaeus

1. *U. alata* Michaux, WINGED ELM; WAHOO. Small to large tree (phanerophyte). Flowers February—March; fruits March—April. Mixed woods; infrequent.
2. *U. americana* Linnaeus, AMERICAN ELM; WHITE ELM. Medium to large tree (phanerophyte). Flowers February—March; fruits March—April. Low woods; rare.
3. *U. rubra* Muhlenberg, SLIPPERY ELM. Small to large tree (phanerophyte). Flowers February—March; fruits March—April. Low woods; infrequent.

URTICACEAE (Nettle Family)

Reference: N. G. Miller 1971a.

1. **BOEHMERIA** Jacquin

1. *B. cylindrica* (Linnaeus) Swartz, FALSE NETTLE. Monoecious, perennial herb (geophyte). Flowers July—August; fruits September—October. Ditches and stream margins; infrequent.

2. **LAPORTEA** Gaudin

1. *L. canadensis* (Linnaeus) Weddell, WOOD NETTLE. Monoecious, perennial herb (geophyte). Flowers June—July; fruits July—August. Rich and alluvial woods; rare.

3. **PILEA** Lindley

1. *P. pumila* (Linnaeus) Gray, CLEARWEED. Monoecious, annual herb (therophyte). Flowers August—September; fruits September—November. Stream margins; infrequent.

VALERIANACEAE (Valerian Family)

1. **VALERIANELLA** Miller

Reference: D. M. E. Ward 1983.

1. *V. radiata* (Linnaeus) Dufresne, BEAKED CORN SALAD. Annual herb (therophyte). Flowers April—June; fruits May—June. Roadsides and other disturbed sides; infrequent.

VERBENACEAE (Verbena Family)

1. **CALLICARPA** Linnaeus

1. ***C. americana*** Linnaeus, BEAUTY-BERRY; FRENCH-MULBERRY. Shrub (phanerophyte). Flowers June—July; fruits August—October. Woodlands; infrequent.

2. **VERBENA** Linnaeus

Reference: S. C. Barber 1982.

1. ***V. brasiliensis*** Vellozo, BRAZILIAN VERVAIN. Perennial herb (hemicryptophyte); native to South America. Flowers and fruits May—October. Roadsides and other disturbed sites; infrequent.
2. ***V. canadensis*** (Linnaeus) Britton, ROSE VERVAIN. Perennial herb (hemicryptophyte). Flowers and fruits May—October. Roadsides and other disturbed sites; infrequent.
3. ***V. simplex*** Lehmann, NARROW-LEAVED VERVAIN. Perennial herb (hemicryptophyte). Flowers and fruits May—September. Roadsides; rare.
4. ***V. urticifolia*** Linnaeus, WHITE VERVAIN. Perennial herb (hemicryptophyte). Flowers and fruits May—November. Low woods and roadsides; infrequent.

VIOLACEAE (Violet Family)

Reference: G. K. Brizicky 1961a.

1. **HYBANTHUS** Jacquin

1. ***H. concolor*** (Forster) Sprengel, GREEN VIOLET. Perennial herb (hemicryptophyte). Flowers and fruits May—June. Rich woods; rare.

2. **VIOLA** Linnaeus

References: L. E. McKinney 1992; N. H. Russell 1965.

1. ***V. hastata*** Michaux, HALBERD-LEAVED VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Moist, deciduous woods; rare.
2. ***V. palmata*** Linnaeus, EARLY BLUE VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Mixed woods; common. [*V. palmata* Linnaeus var. *triloba* (Schweinitz) Gingins ex De Candolle]

3. *V. pedata* Linnaeus, BIRD-FOOT VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Dry woods and woodland borders; infrequent.
4. *V. primulifolia* Linnaeus, PRIMROSE-LEAVED VIOLET. Perennial herb (geophyte). Flowers and fruits April—May. Dry woods and woodlands; infrequent.
5. *V. pubescens* Aiton var. *eriocarpa* (Schweinitz) Russell, SMOOTH YELLOW VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Rich woods; rare.
6. *V. rafinesquii* Greene, FIELD PANSY. Annual herb (therophyte); native to Europe. Flowers and fruits March—May. Roadsides and disturbed areas; common.
7. *V. rostrata* Pursh, LONG-SPURRED VIOLET. Perennial herb (geophyte). Flowers and fruits April—May. Rich woods; infrequent.
8. *V. sagittata* Aiton var. *ovata* (Nuttall) Torrey & Gray, OVATE-LEAF VIOLET. Perennial herb (geophyte). Flowers and fruits April—May. Dry woods and woodland borders; infrequent. [*V. fimbriatula* Smith]
9. *V. sororia* Willdenow var. *sororia*, BLUE VIOLET; CONFEDERATE VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Alluvial woods, roadsides and other disturbed habitats; common. [*V. papilionacea* Pursh; *V. affinis* Le Conte (in part)]
10. *V. tripartita* Elliott var. *glaberrima* (De Candolle) Harper, YELLOW VIOLET. Perennial herb (geophyte). Flowers and fruits March—May. Rich, sloped woods; rare.

VITACEAE (Grape Family)

Reference: G. K. Brizicky 1965b.

1. AMPELOPSIS Michaux

1. *A. arborea* (Linnaeus) Koehne, PEPPER-VINE. Woody vine (phanerophyte). Flowers June—August; fruits August—October. Low woods and woodland borders; infrequent.
2. *A. cordata* Michaux, RACCOON-GRAPE; HEART-LEAVED PEPPER-VINE. Woody vine (phanerophyte). Flowers May—June; fruits June—September. Low woods, stream banks and woodland borders; common.

2. PARTHENOCISSUS Planchon

1. *P. quinquefolia* (Linnaeus) Planchon, VIRGINIA CREEPER; WOODBINE. Woody vine (phanerophyte). Flowers May—July; fruits July—August. Woodlands; common.

3. **VITIS** Linnaeus

References: B. L. Comeaux et al. 1987; M. O Moore 1991.

1. ***V. aestivalis*** Michaux, SUMMER GRAPE. Woody vine (phanerophyte). Flowers May—June; fruits September—October. Low woods; infrequent. [Includes *V. aestivalis* Michaux var. *argentifolia* (Munson) Fernald]
2. ***V. rotundifolia*** Michaux, MUSCADINE GRAPE. Woody vine (phanerophyte). Flowers May—June; fruits August—October. Woods and woodland borders; common.
3. ***V. vulpina*** Linnaeus, FROST GRAPE; WINTER GRAPE. Woody vine (phanerophyte). Flowers May—June; fruits September—October. Low woods; infrequent.

CLASS LILIOPSIDA

AGAVACEAE (Century-Plant Family)

Reference: H. S. Gentry 1972.

1. **MANFREDIA** Salisbury

1. ***M. virginica*** (Linnaeus) Salisbury, FALSE-ALOE. Perennial herb (chamaephyte). Flowers May—July; fruits August—October. Rock outcrops, rocky woods and woodland borders; infrequent.

2. **YUCCA** Linnaeus

1. ***Y. filamentosa*** Linnaeus, BEAR-GRASS; ADAM'S-NEEDLE. Low, evergreen shrub (chamae-phyte). Flowers April—June; fruits September—October. Woodland borders and sandy stream banks; infrequent. [*Y. filamentosa* Linnaeus var. *smalliana* (Fernald) Ahles]

ALISMATACEAE (Water-plantain Family)

Reference: G. K. Rogers 1983.

1. ALISMA Linnaeus

1. *A. subcordatum* Rafinesque, WATER-PLANTAIN. Perennial herb (hemicryptophyte). Flowers and fruits April—November. Ditches; infrequent.

2. SAGITARIA Linnaeus

Reference: Kral 1982, R. G. Bowker 1991, J. W. Wooten 1973.

1. *S. secondifolia* Kral, KRAL'S WATER PLANTAIN. Aquatic monoecious perennial (hydrophyte). Flowers and fruits June—September. Streams and rivers margins; rare. Federal rank LE; state rank S1.

AMARYLLIDACEAE (Amaryllis Family)

1. HYPOXIS Linnaeus

Reference: A. Herndon 1992.

1. *H. hirsuta* (Linnaeus) Coville, YELLOW STAR-GRASS. Perennial herb (geophyte). Flowers March—June; fruits April—November. Woods and woodland borders; common.

ARACEAE (Arum Family)

1. ARISAEMA Martius

1. *A. dracontium* (Linnaeus) Schott, GREEN DRAGON. Monoecious, perennial herb (geophyte). Flowers April—May; fruits June—July. Rich and low woods; infrequent.

2. *A. triphyllum* (Linnaeus) Schott, JACK-IN-THE-PULPIT. Monoecious, perennial herb (geophyte). Flowers March—April; fruits June—July. Rich and low woods; infrequent.

COMMELINACEAE (Spiderwort Family)

Reference: R. B. Faden and D. R. Hunt 1991.

1. COMMELINA Linnaeus

1. *C. communis* Linnaeus, ASIATIC DAYFLOWER. Annual herb (therophyte); native to Asia. Flowers and fruits May—October. Banks of ditches and other moist disturbed sites; infrequent.
2. *C. virginica* Linnaeus, VIRGINIAN DAYFLOWER. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Alluvial woods and swamps; infrequent.

2. MURDANNIA Royale

References: C. P. Dunn and R. R. Sharitz 1990; L. H. Shinnars 1962b.

1. *M. keisak* (Hasskarl) Handel-Mazzetti, MARSH DEWFLOWER. Annual herb (therophyte); native to Asia. Flowers and fruits September—October. Marshes, swamps and marshy shores of stream margins; common. [*Aneilema keisak* Hasskarl]

3. TRADESCANTIA Linnaeus

1. *T. subaspera* Ker, ZIGZAG SPIDERWORT. Perennial herb (hemicryptophyte). Flowers and fruits June—July. Woodlands; infrequent.
2. *T. virginiana* Linnaeus, VIRGINIA SPIDERWORT. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Woods and woodland borders; infrequent.

CYPERACEAE (Sedge Family)

Reference: G. C. Tucker 1987.

1. BULBOSTYLIS Kunth

Reference: R. Kral 1971.

1. *B. capillaris* (Linnaeus) Clarke, HAIRSEGE. Annual herb (therophyte). Flowers and fruits July—October. Depressions in sandstone outcrops; rare.

2. CAREX Linnaeus

References: W. J. Crins and P. W. Ball 1983; A. A. Reznicek and P. W. Ball 1980; A. Robertson 1979.

1. *C. abscondita* Mackenzie, THICKET SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits April—June. Low woods; infrequent.
2. *C. artitecta* Mackenzie, SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits April—May. Dry woods; common.
3. *C. blanda* Dewey, WOODLAND SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits April—June. Rich and low woods; rare.
4. *C. cephalophora* Muhlenberg ex Schkuhr, OVAL-HEADED SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits May—July. Woods and roadsides; infrequent.
5. *C. cherokeensis* Schweinitz, CHEROKEE SEDGE. Monoecious, perennial herb (hemicrypto-phyte). Flowers and fruits May—June. Low woods and woodland borders; infrequent.
6. *C. complanata* Torrey & Hooker, HIRSUTE SEDGE. Monoecious, perennial herb (hemicrypto-phyte). Flowers and fruits May—June. Low woods and woodland borders; infrequent.
7. *C. digitalis* Willdenow, SLENDER WOOD SEDGE. Monoecious, perennial herb (hemicrypto-phyte). Flowers and fruits April—June. Rich woods; infrequent.
8. *C. festucacea* Schkuhr, FESCUE SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits May—June. Ditches and low woods; common.
9. *C. glaucescens* Elliott, PALE SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits July—September. Wet woods; rare.
10. *C. grayi* Carey, GRAY'S SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits May—June. Low woods; rare.
11. *C. intumescens* Rudge, BLADDER SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits May—July. Low woods; infrequent.
12. *C. lupulina* Muhlenberg ex Schkuhr, HOP SEDGE. Monoecious, perennial herb (hemicrypto-phyte). Flowers and fruits June—September. Alluvial woods; infrequent.
13. *C. lurida* Wahlenberg, SALLOW SEDGE. Monoecious, perennial herb (hemicryptophyte). Flowers and fruits June—September. Ditches; infrequent.

3. CYPERUS Linnaeus

References: A. J. Delahoussaye and J. W. Thieret 1967; R. W. Tyndall 1983.

1. *C. globulosus* Aublet, BALDWIN FLATSEGE. Perennial herb (geophyte). Flowers and fruits July—October. Roadsides; infrequent.
2. *C. iria* Linnaeus, RICE or IRIA FLATSEGE. Annual herb (therophyte). Flowers and fruits July—October. Ditches and other wet disturbed areas; rare.
3. *C. ovularis* (Michaux) Torrey, GLOBOSE FLATSEGE. Perennial herb (geophyte). Flowers and fruits June—October. Woodland borders and roadsides; infrequent.
4. *C. strigosus* Linnaeus, STRAW-COLORED FLATSEGE. Perennial herb (geophyte). Flowers and fruits July—October. Ditches and other wet disturbed areas; infrequent.

4. ELEOCHARIS R. Brown

Reference: H. K. Svenson 1934, 1932, 1929.

1. *E. obtusa* (Willdenow) Schultes, BLUNT SPIKERUSH. Annual herb (therophyte). Flowers and fruits April—October. Ditches; infrequent.

5. FIMBRISTYLIS Vahl

Reference: R. Kral 1971.

1. *F. autumnalis* (Linnaeus) Roemer & Schultes, SLENDER FIMBRY. Annual herb (therophyte). Flowers and fruits August—October. Ditches; infrequent.

6. RHYNCHOSPORA Vahl

1. *R. globularis* (Chapman) Small, GLOBE BEAKRUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Sandstone outcrops; infrequent.
2. *R. glomerata* (Linnaeus) Vahl, CLUSTERED BEAKRUSH. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Rivers margins; rare.
3. *R. gracilentia* Gray, SLENDER BEAKRUSH. Perennial herb (hemicryptophyte). Flowers and fruits July—October. Roadsides; rare.

7. **SCIRPUS** Linnaeus

Reference: A. E. Schuyler 1967.

1. ***S. atrovirens*** Willdenow, DUSKY BULRUSH. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Stream margins; infrequent.
2. ***S. cyperinus*** (Linnaeus) Kunth, WOOL-GRASS. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Ditches; common.

8. **SCLERIA** Bergius

References: J. B. Faurey 1967; J. W. Kessler 1987.

1. ***S. oligantha*** Michaux, LITTLE-HEAD NUTRUSH. Monoecious, perennial herb (hemicrypto-phyte). Flowers and fruits May—September. Upland woods; infrequent.

DIOSCOREACEAE (Yam Family)

1. **DIOSCOREA** Linnaeus

1. ***D. batatas*** Decaisne, CINNAMON VINE; CHINESE YAM. Dioecious, perennial, herbaceous vine; native to Asia (geophyte). Flowers and fruits June—August. Alluvial woods; rare.
2. ***D. villosa*** Linnaeus, WILD YAM. Dioecious, perennial, herbaceous vine (geophyte). Flowers April—June; fruits September—November. Woodlands; common.

IRIDACEAE (Iris Family)

1. **IRIS** Linnaeus

1. ***I. cristata*** Aiton, CRESTED DWARF IRIS. Perennial herb (geophyte). Flowers April—May; fruits June—July. Rich woods; rare.
2. ***I. verna*** Linnaeus var. ***smalliana*** Fernald ex M. E. Edwards, DWARF IRIS. Perennial herb (geophyte). Flowers April—May; fruits June—August. Rocky woods; infrequent.

2. **SISYRINCHIUM** Linnaeus

References: L. M. Hill 1984; D. B. Ward 1968.

1. ***S. angustifolium*** Miller, STOUT BLUE-EYED-GRASS. Perennial herb (hemicryptophyte). Flowers March–June; fruits May–July. Low woods and moist meadows; infrequent.

JUNCACEAE (Rush Family)

1. **JUNCUS** Linnaeus

1. ***J. acuminatus*** Michaux, SHARP-FRUITED RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—August. Stream and river margins; infrequent.
2. ***J. coriaceus*** Mackenzie, LEATHERY RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Stream margins; infrequent.
3. ***J. diffusissimus*** Buckley, SLIM-POD RUSH. Perennial herb (hemicryptophyte). Flowers and fruits May—September. Stream margins and ditches; infrequent.
4. ***J. effusus*** Linnaeus, SOFT RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Ditches and stream margins; infrequent.
5. ***J. marginatus*** Rostkovius, GRASS-LEAVED RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Ditches; infrequent.
6. ***J. secundus*** Beauvois ex Poiret, SECUND RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Sandstone outcrops; rare.
7. ***J. tenuis*** Willdenow, PATH RUSH. Perennial herb (hemicryptophyte). Flowers and fruits June—September. Roadsides and other disturbed areas; infrequent.
8. ***J. validus*** Coville, ROUND-HEAD RUSH. Perennial herb (hemicryptophyte). Flowers and fruits July—September. Stream margins; infrequent.

2. **LUZULA** De Candolle

Reference: J. C. Coffey 1970.

1. ***L. acuminata*** Rafinesque var. ***carolinae*** (Watson) Fernald, HAIRY WOODRUSH. Perennial herb (hemicryptophyte). Flowers and fruits April—August. Moist woods; infrequent.
2. ***L. bulbosa*** (Wood) Rydberg. Perennial herb (hemicryptophyte). Flowers and fruits March—August. Canyon floodplain; infrequent.

3. *L. echinata* (Small) Hermann, HEDGEHOG WOODRUSH. Perennial herb (hemicryptophyte). Flowers and fruits March—August. Woodlands; infrequent.

LILIACEAE (Lily Family)

1. ALLIUM Linnaeus

Reference: M. Ownbey and H. C. Aase 1959.

1. *A. speculae* Ownbey & Aase, LITTLE RIVER CANYON or OWNBEY'S ONION. Perennial herb (geophyte). Flowers May—June; fruits June—July. Sandstone outcrops; rare. Federal status, C2; State Rank, S1.

2. AMIANTHIUM Gray

1. *A. muscaetoxicum* (Walter) Gray, FLY-POISON. Perennial herb (geophyte). Flowers and fruits August—September. Roadside, low wet seeps; rare

3. CHAMAELIRIUM Willdenow

1. *C. luteum* (Linnaeus) Gray, FAIRY'S-WAND; DEVIL'S-BIT. Dioecious, perennial herb (geophyte). Flowers March—May; fruits September—November. Rich woods; rare.

4. MEDEOLA Linnaeus

1. *M. virginiana* Linnaeus, INDIAN CUCUMBER-ROOT. Perennial herb (geophyte). Flowers April—June; fruits September—October. Rich woods; rare.

5. MUSCARI Miller

1. *M. racemosum* (Linnaeus) Miller, BLUE-BOTTLES; GRAPE-HYACINTH. Perennial herb (geophyte); native to Europe. Flowers March—April; fruits May—June. Roadsides; rare.

6. NOTHOSCORDUM Kunth

Reference: J. M. Baskin and C. C. Baskin 1979.

1. *N. bivalve* (Linnaeus) Britton, FALSE GARLIC. Perennial herb (geophyte). Flowers March—May; fruits May—June, (and sporadically later). Roadsides, rock outcrops and open woods; common. [*Allium bivalve* (Linnaeus) Kuntze]

7. SCHOENOLIRION Torrey ex Durand

References: E. S. Nixon and J. R. Ward 1981; H. L. Sherman 1979.

1. *S. wrightii* Sherman, TEXAS SUNNYBELLS. Perennial herb (geophyte). Flowers April—May; fruits May—June. Sandstone outcrops; rare. Federal Status, 3C; State rank, S2; Species of Special Concern (Freeman et al. 1979).

8. SMILACINA Desfontaines

1. *S. racemosa* (Linnaeus) Desfontaines, FALSE SOLOMON'S-SEAL. Perennial herb (geophyte). Flowers April—June; fruits August—October. Woodlands; infrequent.

9. TRILLIUM Linnaeus

References: J. D. Freeman 1975; T. S. Patrick 1984, 1986.

1. *T. cuneatum* Rafinesque, LITTLE SWEET BETSY. Perennial herb (geophyte). Flowers February—April; fruits May—June. Woodlands; infrequent.
2. *T. catesbaei* Elliott, CATESBY'S TRILLIUM. Perennial herb (geophyte). Flowers April—May; fruits June—July. Rich woods; common.

10. UVULARIA Linnaeus

Reference: R. L. Wilbur 1963.

1. *U. perfoliata* Linnaeus, PERFOLIATE BELLWORT. Perennial herb (geophyte). Flowers April—May; fruits June—August. Rich woods; infrequent.

ORCHIDACEAE (Orchid Family)

Reference: C. A. Luer 1975.

1. CORALLORHIZA Chatelain

1. *C. wisteriana* Conrad, SPRING CORAL-ROOT; WISTER'S CORAL-ROOT. Perennial herb (hemi-cryptophyte). Flowers and fruits April—June. Woodlands; rare State Rank, S2.

2. CYPRIPIEDUM Linnaeus

1. *C. acaule* Aiton, PINK LADY'S-SLIPPER. Perennial herb (geophyte). Flowers May; fruits June—August. Rich woods; common, locally abundant. State rank, S2;

3. GOODYERA R. Brown

1. *G. pubescens* (Willdenow) R. Brown, DOWNY RATTLESNAKE-PLANTAIN. Perennial herb (hemicryptophyte). Flowers June—August; fruits August—October. Woodlands; infrequent.

4. HABENARIA Willdenow

1. *H. ciliaris* (Linnaeus) R. Brown, YELLOW-FRINGED ORCHID. Perennial herb (geophyte). Flowers August—October; fruits October—November. Roadside ditches, boggy seeps; infrequent.

5. SPIRANTHES Richard

1. *S. cernua* (Linnaeus) Richard, NODDING LADIES'-TRESSES. Perennial herb (geophyte). Flowers August—October; fruits October—November. Sandstone outcrops in thin moist soil; rare.

6. TIPULARIA Nuttall

1. *T. discolor* (Pursh) Nuttall, CRANEFLY ORCHID. Perennial herb (geophyte). Flowers July—September; fruits August—November. Woodlands; common.

POACEAE (Grass Family)

References: C. S. Campbell 1985; A. S. Hitchcock 1950; G. C. Tucker, 1988, 1990.

1. AGROSTIS Linnaeus

1. *A. hyemalis* (Walter) Britton, Sterns & Poggenburg, TICKLEGRASS; WINTER BENTGRASS. Annual herb (therophyte). Flowers and fruits April—November. Roadsides; infrequent.
2. *A. perennans* (Walter) Tuckerman, AUTUMN BENTGRASS. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Low woods and woodland borders; infrequent.

2. **ALOPECURUS** Linnaeus

1. *A. carolinianus* Walter, TUFTED FOXTAIL. Annual herb (therophyte). Flowers and fruits April—May. Ditches; rare.

3. **ANDROPOGON** Linnaeus

References: H. R. DeSelm 1975; F. W. Gould 1967.

1. *A. glomeratus* (Walter) Britton, Sterns & Poggenburg, BUSHY BLUESTEM. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Roadside ditches; infrequent.
2. *A. ternarius* Michaux, SPLIT-BEARD BLUESTEM. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Roadsides and open woods; rare.
3. *A. virginicus* Linnaeus, BROOM-SEDGE. Perennial herb (hemicryptophyte). Flowers and fruits September—October. Roadsides; common.

4. **ARISTIDA** Linnaeus

Reference: K. W. Allred 1986.

1. *A. dichotoma* Michaux var. *dichotoma*, CHURCH-MOUSE THREE-AWN. Annual herb (therophyte). Flowers and fruits August—October. Sandstone outcrops; rare.
2. *A. longespica* Poirer var. *longespica*, SLIMSPIKE THREE-AWN. Annual herb (therophyte). Flowers and fruits August—October. Roadsides and sandstone outcrops; rare.
3. *A. purpurescens* Poirer, ARROW-FEATHER THREE-AWN. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Roadsides; rare.

5. **ARTHRAOXON** Beauvois

1. *A. hispidus* (Thunberg) Makino, JOINT-HEAD ARTHRAOXON. Annual herb (therophyte); native to east Asia. Flowers and fruits September—October. Ditches, marshes, and low woods; infrequent.

6. **ARUNDINARIA** Michaux

1. *A. gigantea* (Walter) Muhlenberg, SWITCH CANE. Woody reed (phanerophyte). Flowers and fruits April—July. Low woods and stream banks; infrequent.

7. **BROMUS** Linnaeus

Reference: J. McNeill 1976.

1. **B. tectorum** Linnaeus, DOWNY CHESS. Annual herb (therophyte); native to Europe. Flowers and fruits April—June. Roadsides and fields; infrequent.

8. **CHASMANTHIUM** Link

Reference: H. O. Yates 1966.

1. **C. latifolium** (Michaux) Yates, WILD-OATS; RIVER-OATS. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Low woods and stream banks; common. [*Uniola latifolia* Michaux]
2. **C. laxum** (Linnaeus) Yates, SLENDER SPIKEGRASS. Perennial herb (hemicryptophyte). Flowers and fruits June—October. Low and alluvial woods; infrequent. [*Uniola laxa* (Linnaeus) Britton, Sterns & Poggenburg]
3. **C. sessiliflorum** (Poirot) Yates, LONG-LEAF SPIKEGRASS. Perennial herb (hemicryptophyte). Flowers and fruits August—October. Upland woods; common. [*Uniola sessiliflora* Poirot]

9. **CYNODON** Richard

1. **C. dactylon** (Linnaeus) Persoon, BERMUDA GRASS. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits May—October. Roadsides; infrequent.

10. **DACTYLIS** Linnaeus

1. **D. glomerata** Linnaeus, ORCHARD GRASS. Perennial herb (hemicryptophyte); native to Europe. Flowers and fruits May—October. Roadsides and other disturbed sites; infrequent.

11. **DANTHONIA** De Candolle

1. **D. sericea** Nuttall, DOWNY OATGRASS. Perennial herb (hemicryptophyte). Flowers and fruits April—June. Upland woods and sandstone outcrops; infrequent.
2. **D. spicata** (Linnaeus) Beauvois ex Roemer & Schultes, POVERTY OATGRASS. Perennial herb (hemicryptophyte). Flowers and fruits May—July. Upland woods and woodland borders; common.

12. DESCHAMPSIA Beauvois

1. *D. flexuosa* (Linnaeus) Trinius, CRINKLED HAIR GRASS. Perennial herb (hemicryptophyte). Flowers and fruits April—August. Sandstone outcrops; rare.

13. DICHANTHELIUM (Hitchcock & Chase) Gould

References: W. V. Brown and B. N. Smith 1975; F. W. Gould and C. A. Clark 1978.

1. *D. boscii* (Poiret) Gould, BOSC'S PANIC GRASS. Perennial herb (hemicryptophyte). Flowers and fruits April—July. Upland woods; common. [*Panicum boscii* Poiret]
2. *D. clandestinum* (Linnaeus) Gould, DEER-TONGUE WITCHGRASS. Perennial herb (hemicrypto-phyte). Flowers and fruits May—August. Stream banks, ditches and low woods; infrequent. [*Panicum clandestinum* Linnaeus]
3. *D. commutatum* (Schultes) Gould, VARIABLE PANIC GRASS. Perennial herb (hemicrypto-phyte). Flowers and fruits March—October. Woodlands; common. [*Panicum commutatum* Schultes]
4. *D. dichotomum* (Linnaeus) Gould, CYPRESS WITCHGRASS; FORKED PANIC GRASS. Perennial herb (hemicryptophyte). Flowers and fruits April—October. Stream banks, ditches and low woods; common. [*Panicum dichotomum* Linnaeus]
5. *D. laxiflorum* (Lamarck) Gould, LAX-FLOWER WITCHGRASS. Perennial herb (hemicrypto-phyte). Flowers and fruits April—June. Woods and roadsides; common. [*Panicum laxiflorum* Lamarck]
6. *D. scoparium* (Lamarck) Gould, BROOM PANIC GRASS. Perennial herb (hemicryptophyte). Flowers and fruits May—August. Ditches and marshes; infrequent. [*Panicum scoparium* Lamarck]

14. DIGITARIA Heister

Reference: R. D. Webster 1987.

1. *D. ciliaris* (Retzius) Koeler, HAIRY or COMMON CRABGRASS. Annual herb (therophyte); native to Europe. Flowers and fruits July—October. Roadsides and other disturbed areas; common.

SMILACACEAE (Greenbrier/Catbrier Family)

[Liliaceae]

1. SMILAX Linnaeus

References: W. C. Coker 1944; J. K. Mangaly 1968; I. E. Yates and W. H. Duncan 1970.

1. *S. bona-nox* Linnaeus, SAW GREENBRIER; BULLBRIER. Dioecious, woody vine (phanero-phyte). Flowers April—May; fruits September—November. Woods and woodland borders; infrequent.
2. *S. glauca* Walter, WHITE-LEAF CATBRIER; SAW-BRIER. Dioecious, woody vine (phanero-phyte). Flowers April—June; fruits September—November. Woods and woodland borders; common.
3. *S. herbacea* Linnaeus, SMOOTH CARRION-FLOWER. Dioecious, perennial, herbaceous vine (geophyte). Flowers May—June; fruits August—October. Rich and alluvial woods; rare.
4. *S. rotundifolia* Linnaeus, COMMON GREENBRIER; HORSE-BRIER. Dioecious, woody vine (phanerophyte). Flowers April—May; fruits September—November. Woods and woodland borders; common.

TYPHACEAE (Cat-tail Family)

1. TYPHA Linnaeus

1. *T. latifolia* Linnaeus, COMMON CAT-TAIL. Perennial herb (hydrophyte). Flowers May—July; fruits August—November. Marshes, low areas; common.

XYRIDACEAE (Yellow-Eyed-Grass Family)

1. XYRIS Linnaeus

1. *X. defformis* Chapman, COMMON YELLOW-EYED-GRASS. Perennial herb (hemicrpto-phyte). Flowers July—August; fruits October. Rivers margins streams; rare.
2. *X. jupicai* Richard, RICHARD'S YELLOW-EYED-GRASS. Perennial herb (hemicrpto-phyte). Flowers July—August; fruits October. Rivers margins streams; rare.

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IV. APPENDIX

Name. Site 1, Oak-hickory Slope

LOCATION

General. DeKalb County, Alabama. *Ca.* 1.6km north of DeSoto State Park.

Specific. 34°31'18"N; 85°38'30"W; T6S, R9E, S13

CANOPY HEIGHT. 23m

SOILS

A. Inceptisols

AA. Ochrepts

B. Dystrochrepts

BB. Lithic dystrochrepts

C. Fine-sandy loam, sliceous, acid, thermic, stoney, over clay

GEOLOGY

A. Sedimentary

AA. Clastic

B. Siliceous

BB. Siliceous

C. Strongly acid

CC. Sandstone

TOPOGRAPHY

A. Tableland

AA. Moderate relief

B. Water erosional and gravity depositional

BB. Partially sheltered, talus slope (boulders present)

C. Moderately steep--steep slope at 25°, variable

CC. Northeast at 25°

HYDROLOGY

A. Terrestrial

AA. Dry mesic

B. Fresh

BB. Permanently exposed

C. Well-drained

CC. Wetted by fresh rains and downslope drainage

PHYSIOGRAPHY

A. A. Appalachian Plateaus Province

AA. Appalachian Highlands Physiographic Region

B. Cumberland Plateau Section

BB. Coosa Basin

C. Wills Creek Valley

CC. Lookout Mountain escarpment, underlain by Pottsville sandstone

VEGETATION

A. Terrestrial Broadleaf Forest System

AA. Large, deliquescent, deciduous trees

B. Oak-hickory Slope

BB. Fagales, Juglandales

C. *Quercus alba* - mixed hickories, oaks

CC. *Quercus alba* -mixed upland oaks, hickories

Name. Site 2, Pine Shoulder

General. *Ca.* 12.8 km southwest of Ft. Payne.

Specific. 34°23'3" N, 85°37'33"; T8S, R10E, S30 & S31.

Canopy Height. 20m.

SOILS

- A. Inceptisols
- AA. Ochrepts
- B. Dystrochrepts
- BB. Lithic dystrochrepts
- C. Stoney, fine-sandy loam, siliceous, acid, thermic

GEOLOGY

- A. Sedimentary
- AA. Clastic
- B. Siliceous
- BB. Siliceous
- C. Strongly acid
- CC. Sandstone

TOPOGRAPHY

- A. Tableland
- AA. Moderate relief
- B. Water erosional
- BB. Canyon shoulder
- C. Open, southeast at 135°
- CC. Sloping at 12°, variable

HYDROLOGY

- A. Terrestrial
- AA. Dry mesic
- B. Fresh
- BB. Permanently exposed
- C. Somewhat excessively drained
- CC. Wetted by fresh rains, and seeps

PHYSIOGRAPHY

- A. Appalachian Plateaus Province
- AA. Appalachian Highlands Physiographic Region
- B. Cumberland Plateau Section
- BB. Coosa Basin
- C. Little River Canyon
- CC. Canyon shoulder, underlain by Pottsville Sandstone

VEGETATION

- A. Large, excurrent, evergreen trees/tall rhizomatous, evergreen shrubs
- AA. Terrestrial Needleleaf Forest System
- B. Pine shoulder
- BB. Coniferales/Ericales
- C. *Pinus virginiana*
- CC. *Pinus virginiana/Kalmia latifolia-Rhododendron catawbiense*