**FINAL REPORT**

**FLORISTIC INVENTORY OF KETTLE CREEK BATTLEFIELD**

**WILKES COUNTY, GEORGIA**

**INTRODUCTION**

Kettle Creek Battlefield was the site of a significant Revolutionary War battle on 14 February 1779, which brought victory to the Patriots and forced the British to change their Georgia strategy (Davis 2004a, 2004b). Portions of the site have been protected from farming, clearcutting, and other development since that time and it is currently preserved and managed by the Kettle Creek Battlefield Association and Wilkes County government. Because of this history, the site is one of the few minimally disturbed Piedmont upland forests left in Georgia.

A brief survey conducted by the Georgia Botanical Society on May 10, 2014 revealed the presence of many calciphilic (calcium-loving) plant species, indicating that the underlying bedrock is likely to be a mafic rock type that produces circumneutral or basic soils. The approximately three-hour survey yielded a list of 100 species, more than half of which had not previously been documented from Wilkes County (Giannasi and Zomlefer 2010). As a result of this finding, the Kettle Creek Battlefield Association (KCBA) decided to pursue a plant inventory of 14 acres surrounding War Hill, the most prominent feature of the Battlefield. KCBA subcontracted for the inventory with the State Botanical Garden of Georgia through a contract with the University of Georgia’s Carl Vinson Institute of Government.

This study revealed that the Kettle Creek Battlefield (KCB) is not only a significant historical site but an important reservoir of plant diversity for this region of Georgia. Management recommendations provided below will help to ensure the preservation of this biodiversity and also provide future visitors with a glimpse of the natural conditions at the time of the Revolutionary War.

**METHODS**

Approximately 14 acres of the Battlefield site were delineated as the study area (Figure 1) through consultation with Dr. Joseph Harris of KCBA during June and July of 2014. Field surveys began shortly afterward and were conducted on these dates:

07/16/2014

08/14/2014

09/11/2014

10/02/2014

10/30/2014

03/18/2015

03/27/2015

04/23/2015

05/14/2015

05/30/2015

06/15/2015

07/01/2015

07/16/2015

11/17/2015

The study area was delineated into 14 survey zones, listed below, based on topographic position and type of dominant vegetation. The zone boundaries and numbers are shown in Figure 1. Species lists for each zone are provided in Appendix 1.

Zone 1–Clarke's Summit, west of War Hill Road: dry woods on south-facing slope

Zone 2–Clarke's Summit, west of War Hill Road: dry woods on west-facing slope west of Summit Trail

Zone 3–Clarke's Summit, west of War Hill Road: scrubby thickets on west-facing slope on edge of pine plantation

Zone 4–Settlement Road: road banks and roadside ditches

Zone 5–Settlement Road Piedmont Prairie

Zone 6­–War Hill Road: roadsides between Settlement Road intersection and stone entrance gate, and grassy clearings near stone entrance gate

Zone 7–War Hill: cleared area at top of hill near monument, parking area, and roadsides from stone entrance gate to top of hill

Zone 8–War Hill: south- and southeast-facing slopes

Zone 9–War Hill: southwest-facing slopes

Zone 10–War Hill: west-facing slope

Zone 11–War Hill: north-facing Slope

Zone 12–Kelly Branch floodplain: WEST side of branch, from Settlement Road south to confluence with Kettle Creek

Zone 13–Kelly Branch floodplain: EAST side of branch at base of north- and northwest-facing slopes of War Hill

Zone 14–Kettle Creek floodplain: north side of creek, below south-facing slope of War Hill

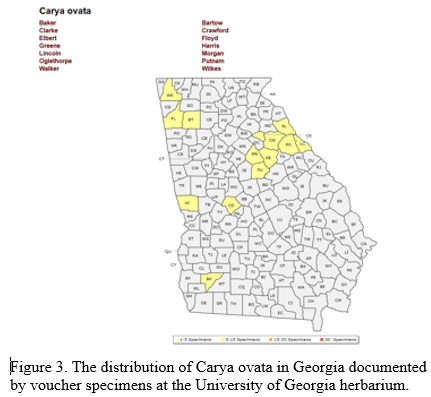
Figure 1. Kettle Creek Battlefield Floristic Inventory Survey Zones 1 - 14.

Field surveys consisted of a slow walk-over of the site and the collection of samples of most observed plants. Traditional floristic inventory methods prescribe the collection of flowering and fruiting specimens; however, this was not always possible and in many cases only vegetative specimens (leaves and stems) were collected. Some plants that were observed only once or twice were not collected at all following Plant Conservation Guidelines for collecting plants that are locally or globally rare (Plant Conservation Roundtable 1986). Field notes were made throughout, describing the dominant species in each vegetation layer: tree canopy, subcanopy (small trees), shrubs and woody vines, and herbs (wildflowers, grasses, and ferns). Field surveys were conducted by Linda Chafin, Conservation Botanist at the State Botanical Garden of Georgia (University of Georgia), with frequent assistance by Joe Harris, of KCBA, and Jan Coyne, of UGA’s Carl Vinson Institute of Government.

Plant specimens were pressed in standard plant presses (Figure 2), allowed to dry, and stored in insect-proof containers at the State Botanical Garden of Georgia. Specimens were identified to species using standard references for botanical work in the southeastern U.S.: Weakley (2012, 2014), Radford et al. (1968), and Godfrey and Wooten (1979, 1981).

One set of specimens will be given to the KCBA for incorporation into future historical and scientific interpretation materials; a second set will be deposited at the University of Georgia Herbarium.

Calciphile plants were annotated based on habitat information provided by Weakley (2012, 2014). The nativity of the species – whether the plant is native to the Piedmont of Georgia – was also determined using Weakley (2012, 2014). Exotic plants were determined to be invasive based on their listing by the Georgia Exotic Pest Plant Council (2015).

The “Vascular Plant Atlas of Georgia,” an online digital resource displaying the counties for each of Georgia’s vascular plant species (Giannasi and Zomlefer 2010) was consulted to determine if the Kettle Creek plants had been previously documented in Wilkes County. An example county map for Shagbark Hickory (*Carya ovata*) is shown in Figure 3.

**RESULTS**

**Description of the Study Area**

Kettle Creek Battlefield is located about 12 miles southwest of Washington, Georgia, and is currently 234 acres in size. The study area is largely owned by Wilkes County and consists of 14 acres centered on War Hill, the site of a monument commemorating the Battle, and Clarke’s Summit which lies immediately north of War Hill. Coordinates for the summit of War Hill are 33.691067North, -82.886007West. The study area is bordered on the north by Settlement Road, on the south by Kettle Creek, on the east by the KCB property boundary, and on the west by the westernmost extent of the Kelly Branch floodplain.

**Floristics**

Total number of plant species observed at KCB: 332

Number of genera: 219

Number of plant families: 91

Number of plant species not previously documented in Wilkes County: 240 (72%)

Number of native plant species: 303 (91%)

Number of exotic *but not invasive* plant species: 26 (8%)

Number of exotic, *invasive pest* plant species: 3 (<1%)

Number of plant species associated with high-nutrient soil and/or mafic bedrock: 42 (13%). By comparison, a floristic inventory of nearby Elbert County (Coile 1979, 1981) identified 823 species of which 10% per calciphiles.

Number of plant specimens collected and pressed: approximately 500 specimens of 272 species were collected, pressed, and labeled for deposit in the University of Georgia Herbarium and with the KCBA. Some species were not collected due to local rarity, e.g. Bloodroot, Blue Star, and White Milkweed (which were seen only once), or inaccessibility, e.g. tall trees and high-climbing vines. Some species were noted during field work but simply overlooked during the collection process. Time and weather permitting, additional collecting will take place in 2016 to fill these gaps. (Not included in these data are six specimens that have been sent to an expert for determination.)

Plant species, with both their common and scientific names, that were observed in each Zone are shown in Appendix 1 (common names are used in the body of this report for readability). Field work results including species lists, collection dates and locations, nativity, and calciphile status are provided in an Excel worksheet in Appendix 2.

**DISCUSSION**

**Species Diversity**

The 14-acre study area supports at least 332 vascular plant species, a surprisingly high number for such a small area. A typical floristic inventory is conducted over two years because of weather variation and its impact on plants, so it is likely that additional field work would lead to the discovery of more species in this area.

As a comparison, the results of intensive floristic inventories in three other Georgia Piedmont counties are listed here:

Elbert County, Georgia 228,800 acres 823 species (Coile 1979)

Harris County/Pine Mtn. 300,000 acres 829 species (Jones 1974)

Clarke County, Georgia 74,240 acres 924 species (Jones & Coile n.d.)

Although the plant diversity at Kettle Creek cannot be extrapolated to all of Wilkes County, these figures suggest that this area is especially rich botanically. As with any area, the “species discovery curve” will flatten out at some point, i.e. the rate of increase of new species discoveries will slow down as the area surveyed increases in size (Efron and Thisted 1976).

Before this inventory, 262 vascular plant species had been documented from Wilkes County, with many specimens collected by Dr. Wilbur Duncan and Dr. Sam Jones, both former directors of the UGA Herbarium (Giannasi and Zomlefer 2010). Like most central Georgia counties, Wilkes County is considered by botanists to be “under-collected,” i.e. not well surveyed botanically. This study brings the county total to 594 species, still considerably less than Elbert and Clarke Counties, suggesting that there are likely more species to be found in Wilkes County.

The species diversity and high number of calciphilic plant species at KCB is most likely due to (1) geology and topography and (2) land use history. These factors are discussed below.

**Geology and Topography**

The variety of topographic features at KCB includes the slopes and summits of War Hill and Clarke’s Summit and the floodplains of Kettle Creek and Kelly Branch, creating a mosaic of plant habitats. War Hill is a monadnock – an isolated hill that rises abruptly above the surrounding landscape. It was formed by the erosion of softer surrounding rocks exposing the prominent knoll that played a role in the historical battle for which the knoll is named. The gentle, north-facing slope of War Hill supports plants that are associated with cooler, moister environments while the steep, south-facing slope receives more sun throughout the year and supports a different suite of species. The tops of the knolls are drier and better drained than the slopes. The two streams in the study area are deeply incised into their floodplains and no longer receive regular overbank flooding; however, they do receive runoff from the adjacent slopes and their soils are more fertile and remain moister year-round than elsewhere at KCB. These different moisture, nutrient, and light conditions foster different plant communities.

The number of calciphilic (calcium-loving) plants – 13% of the species – indicates the presence of mafic bedrock that breaks down to form soils with a higher pH than most other Georgia Piedmont soils. Mafic rocks are high in iron, magnesium, and calcium, which promote a lush and rich flora (Williams 2012, Edwards et al. 2013). Mafic sites are uncommon in Georgia and always of interest to botanists since they support plant species that require circumneutral or basic soils. Typical Georgia Piedmont soils are derived from granitic rocks (granite, schist, and gneiss) that yield acidic, low-nutrient soils (Edwards et al. 2013).

In the Georgia Piedmont, mafic rocks are typically amphibolite and that is the case at KCB. Dan Williams, a recently retired forester with UGA’s Warnell School of Forestry and a local geology expert, surveyed the area and reported his findings in an email to Joe Harris in October 2014; the following is an extract: “In walking the creek, we found a bedrock outcrop of … amphibolite (high-calcium rock) in Kettle Creek. It is due southeast of the [monument] on the hilltop… The outcrop has a strike (linear axis) that makes it appear to run through the site… Our conclusion is the large amphibolite outcrop shown on the Georgia geology map is releasing calcium into Kettle Creek and its tributaries. The calcium-rich material from the creek has fostered the calciphilic vegetation. The geology map does not show the amphibolite outcrop as occurring as far south as the battle site, but it does, in fact, extend at least in part there.”

**Plant Communities**

The designation of natural communities used in this report is based on the classification system in “*The Natural Communities of Georgia*” (Edwards et al. 2013).

**Mesic (Moist) Forests** occur on sites with consistent moisture, such as those on north- to east-facing slopes and on toe slopes of other aspects. These forests are famous for their spring displays of wildflowers that bloom and set fruit in the narrow window between the end of winter and full canopy leaf-out in late April.

At KCB, Mesic Forest occurs on the north-facing, mid- and lower slopes of War Hill as well as the toe slopes on the south and west aspects of the hill. The forest canopy includes 15 species of moisture-loving trees including Bitternut Hickory, Shagbark Hickory, White Ash, Black Walnut, Beech, Sweet Gum, and Tulip Tree. Other canopy species include Loblolly Pine, Mockernut Hickory, Pignut Hickory, Red Maple, Sycamore, White Oak, and Water Oak. The subcanopy contains young individuals of the canopy as well as many stems of Hop Hornbeam and Florida Maple, two understory trees that indicate mafic bedrock when they are abundant.

More than 40 species of herbs (soft-tissue, non-woody plants) occur in the ground layer on the lower, north-facing slopes at KCB. These include the early spring-blooming wildflowers, Bloodroot, Hepatica, Rain Lily, Trout Lily, and Windflower. Other showy herbs that bloom later in the spring just before the canopy closes include Hairy Spiderwort, Indian Pink, Large-Seeded Forget-me-not, Solomon’s Seal, Wild Geranium, and Wild Ginger. Summer-flowering herbs are sparse due to the dense, sun-blocking canopy of the mesic forest but a number of interesting herbs flower from July through September, such as Crane-fly Orchid, Leafy Elephant's Foot, Purple Wood Sorrel, and Rattlesnake Plantain Orchid.

**Oak-Pine-Hickory Forests** occur on drier sites, usually on south- and west-facing slopes where they receive much more sunlight than northern and eastern aspects. These are the most common forests in Georgia’s Piedmont but most have sustained heavy impacts from urban expansion and conversion to pine plantations and agriculture.

AT KCB, Oak-Pine-Hickory Forests dominate the upper, well drained slopes on War Hill, regardless of aspect, and the top of the knoll. True to their name, they contain several hickory species (Mockernut, Pignut, Sand, Shagbark) and oak species (Black, Northern Red, Post, Southern Red, and White), as well as Loblolly Pine and Shortleaf Pine. Two calcium-loving species dominate the subcanopy, Florida Maple and Hop Hornbeam. The herb layer is relatively depauperate, lacking the spring-flowering species found on the north slope, but with a number of summer-flowering bean and grass family plants that flourish in light gaps in the canopy and along the edges of the forest.

**Piedmont Prairies** are recently recognized natural communities that have largely disappeared from the Piedmont in the southeastern United States. Historical records indicate that small-scale prairies, savannas, and woodlands, which differ mainly in the extent of tree cover, were once common throughout the southeastern Piedmont (Barden 1997). Formed and maintained by the interplay among lightning-set fires, Native American-set fires, soil and bedrock types, these habitats were among the first to be converted to croplands when Europeans arrived Edwards et al. 2013). Remnant prairie habitats and orphaned populations of prairie species have persisted in utility rights-of-way and along roadsides, especially where there is mafic bedrock.

A small, approximately one-acre, remnant patch of Piedmont Prairie occurs on the north-facing slope of Clarke’s Summit, the small knoll just north of War Hill. The patch is bordered by Settlement Road on the north, Kelly Branch on the west, and pine plantation on the south and east. Why pines were not planted in this area or were planted and did not thrive is not known. Other vegetation on the south slopes of Clarke’s Summit suggests that a mosaic of prairie, savannah, and woodland once covered this knoll. After the pine plantation on Clarke’s Summit is harvested, prescribed fire and strategic mowing could be used to restore most of the area to a similar mosaic of vegetation types, thus contributing to the overall biodiversity of the county and the state and restoring the area to its pre-Revolutionary War condition. The Georgia Forestry Commission provides free consultation on the use of prescribed fire in ecological restoration, and the author would be pleased to consult with KCBA on the restoration of prairie at KCB.

Piedmont Prairies are characterized by a grassy ground cover with many showy wildflowers among scattered shrubs and stunted or sapling trees. The prairie at KCB has a typical composition of grass species (Broomsedge, Little Bluestem, Beaked Panic Grass, Needle Grass) growing with sun-loving wildflowers such as Blue-star, Fire-pink, Narrow-leaf Purple Foxglove, Sensitive Briar, Spotted Phacelia, Trailing Phlox, and White Milkweed. Shrubs include Georgia Hackberry, a calciphile found in barrens and woodlands, and Carolina Buckthorn, another calciphile. Calcium-loving tree species such as Florida Sugar Maple, Hop Hornbeam, Red Cedar, and White Ash are scattered throughout the area. Sixty-seven species, or 20% of the total for the entire study area, occur in this one-acre area.

**Piedmont Floodplain Forests** occur in low-lying areas along streams. Both Kettle Creek and Kelly Branch are bordered by floodplains that support a mixture of typical floodplain species and Mesic Forest species. The floodplains within the study area do not appear to flood regularly which explains the presence of flood-intolerant trees such as Beech and Mockernut Hickory. More typical of floodplains are the common trees that tolerate occasional, short-term floods, such as Bitternut Hickory, Cottonwood, Green Ash, Hackberry, Sweet Gum, Sycamore, Tulip Tree, Willow Oak, and Winged Elm. Some notable calcium-loving species are found in the shrub layer in both Kettle Creek and Kelly Branch floodplains, including Carolina Buckthorn, Spicebush, and Tall Pawpaw. Three areas in the floodplains, described below, are of special interest.

(1) The patch of **Tall Pawpaw** in the Kettle Creek floodplain is large and vigorous, flowering and setting fruit both years of the study. Tall Pawpaw is common throughout its range, but this population is one of the healthiest this author has seen. Tall Pawpaw forms large colonies by underground stems; the numerous plants in the Kettle Creek floodplain may actually represent only a few genetic individuals. Tall Pawpaw produces the largest edible fruit native to the United States (Jones and Layne 2009). Some researchers postulate that pawpaw fruit may have evolved for consumption and distribution by extinct megafauna such as Giant Ground Sloths and American Mastodons that disappeared from the North American continent 10,000 years ago (McCormick 2010).

(2) A canebrake formed by River Cane occurs on both sides of Kelly Branch in the floodplain on the north side of War Hill. Once common throughout the South, canebrakes are now identified as a High Priority Habitat for conservation and restoration by the Georgia Department of Natural Resources because of their rarity and value to wildlife (Georgia DNR 2015). Their dense growth of aboveground stems provide habitat for migrating birds, and the thick mat of belowground, horizontal stems (rhizomes) forms a barrier against erosion. Because they occupied fertile bottomlands, canebrakes were some of the earliest habitats in the South to be converted to cropland; they have also suffered from Chinese Privet invasion.

The canebrake on Kelly Branch is small but in good condition with a dense stand of stems. It may be a remnant of the large canebrake that played a role in the Battle of Kettle Creek, which has been called The Battle of the Cane Brakes (Davis and Thomas 1974). This extensive canebrake was destroyed by the channelization of Kettle Creek in 1920-21 (Davis 2004b). There is a sparse canopy of Black Walnut, Sweet Gum, and Tulip Tree above the cane, and wetland herbs and vines are intermingled with the canes at the ground level. Every effort should be made to protect the canebrake from mechanical disturbance and encroachment by invasive plants. Visitors should be directed away from the canebrake because seeds of invasive plants are inevitably spread in the tread of hikers’ shoes. Trails routed through the canebrake will result in mechanical damage to the stems and the underground, reproductive parts of the cane. (River Cane reproduces largely by vegetative spread of rhizomes and flowers only every 50 - 100 years). The greatest threat to the persistence of the canebrake on Kelly Branch is the spread of Chinese Privet (see below). This small patch of River Cane should be preserved to enhance the historical authenticity of the battle site and to preserve an example of a nearly extinguished southern plant community.

(3) A large patch of **Chinese Privet** is established in the Kettle Creek floodplain, and is spreading to adjacent slopes and into the Kelly Branch floodplain. Chinese Privet is one of the most ecologically destructive of all the invasive pest plants in the southeast (Greene and Blossey 2011, Wilcox and Beck 2007). Unlike Kudzu, which is more visible, Chinese Privet is not confined to sunny, disturbed areas. It grows vigorously in moist, low light situations and has invaded the understory of floodplains throughout the South. Its dense shade, vegetative reproduction, and heavy seed crop ensure the rapid creation of a monoculture that excludes all other plant species. Native plants cannot compete against Chinese Privet; even large trees are eventually excluded because their seedlings and saplings cannot survive the competition for light and moisture.

The infestation at Kettle Creek is small enough that it can be controlled, even eradicated, if action is taken soon. Control at this point would be relatively simple. The stems can be cut near ground level with a hand- of chainsaw and the cut surface immediately painted with glyphosate. (Glyphosate is sold as “Roundup” but there are cheaper, generic glyphosate products for sale at home and garden stores.) It is critical that the herbicide be applied within seconds of the cut before the plant’s cells begin to die and are unable to transport the chemical to the roots (SE-EPPC 2003, Tu et al. 2001). The best time to apply herbicide using the “cut and paint” method is in the fall or winter when the plant is withdrawing resources into its roots. Two people working together, one with the saw, the other with a spray bottle or backpack sprayer of glyphosate, can make good progress in a only few work days. The longer the infestation is allowed to expand, the harder and more expensive it will be to control. (Herbicide can be sprayed on leaves but that method uses much more of the chemical, is more expensive, and runs the risk of overspray killing desirable native plants.)

**Disturbed Areas** are parts of the landscape that have been affected by “ a force that periodically destroys, damages, or removes vegetation…subsequently altering vegetation structure and/or composition” (Edwards et al. 2013). At KCB, disturbed areas include roadsides, roadside ditches, parking areas, and a pine plantation on Clarke’s Summit. The vegetation in these areas is a mix of native and non-invasive, exotic species. The roadsides support many native grasses, including Arrow-feather Three-awn Grass, Bigtop Love-grass, Broomsedge, Purple Love-grass, Splitbeard Bluestem, and Yellow Indian-grass. Other sun-loving plants such as the showy wildflowers Blue Curls, Curtiss’ Goldenrod, Maryland Meadow-beauty, Small’s Ragwort, and Southern Sundrops flourish on the roadsides. If Clarke’s Summit is restored to a prairie condition, then these roadside plants will act as a continuing seed source.

The native roadside grasses and wildflowers should be allowed to flourish and not be replaced with non-native species such as Fescue and Sericea Lespedeza, both popular with the Georgia Department of Transportation. Roadside maintenance limited to periodic mowing (after flowering and seed set) will encourage the spread of the grasses and wildflowers that will prevent erosion and beautify the entrance. Indiscriminate herbicide spraying as conducted by most county road maintenance crews would destroy these natives.

**Pine Plantation** on Clarke’s Summit is relatively young. Toward its center, native plants are nearly excluded by the density of the pines, but the diversity of native plants is good around the edges and in gaps. Careful logging that avoids the proposed trail system will also protect the native plants in this area. Some of the notable plants in gaps and on the edges of the pine plantation are the calciphiles False Aloe, Georgia Hackberry, and Woodland Spurge, as well as our native Prickly Pear cactus. As mentioned above, the pine plantation borders the small patch of Piedmont Prairie at KCB. Logging the pine plantation creates an opportunity to manage the entire summit as a Piedmont Prairie.

**Invasive Plants**

Compared to many areas in the Georgia Piedmont, KCB is relatively free of invasive pest plants. Only three non-native, invasive plant species are currently of concern on KCB: Chinese Privet (discussed above), Japanese Stilt-grass, and Musk Thistle. Invasive plants often follow human activity, brought in on tire and boot treads. While increased visitation at KCB is highly desirable, it is strongly recommended that KCBA and Wilkes County parks personnel periodically monitor the site for invasive species and act quickly to eradicate them.

(1) Japanese Stilt-grass is widespread in the Kettle Creek and Kelly Branch floodplains. The seeds of Japanese Stilt-grass follow human activity throughout the South and persist in the seed bank for five or more years (PCA 2015a). The plants are rather delicate annuals that nevertheless spread aggressively and form dense mats that compete with native plants for light, nutrients, and moisture. They can be sprayed with glyphosate where native species will not be endangered. They can also be hand-pulled before seed set in mid-September. Because they have thin, shallow roots, they are easily pulled out of moist soil (PCA 2015a).

(2) Musk Thistle was observed in only one location at KCB, on the northern roadside of Settlement Road near Kelly Branch. The author attempted to eradicate and remove the approximately 50 plants but undoubtedly some seeds escaped from the mature flower heads. These thistles seed prolifically and rapidly colonize open, disturbed land such as roadsides and pastures. If left unchecked in the KCB area, they will colonize the nearby Piedmont Prairie and quickly outcompete native plants. Musk Thistle is a biennial; if the flowering stems are removed in late spring, the plants will die without flowering. It is strongly recommended that this area be monitored annually and the plants pulled up or chopped down wherever they occur (PCA 2015b).

It has been the author’s experience that volunteers can be readily recruited to attack exotic pest plants. Master Gardeners, Boy Scout troops, and other groups looking for volunteer opportunities are easily trained to identify and eradicate these plants and, working under supervision of KCBA members or county personnel, will be able to make a big dent in the invasive plant problems at KCB. Once invested in an invasive plant eradication project, volunteers often become advocates for the site.

**Additional Management Recommendations**

Clearing of underbrush as carried out on the upper slopes of War Hill in the past few years will be detrimental to the forest if repeated frequently. Such clearing will kill or stunt saplings and prevent forest regeneration. It will also reduce the species diversity that characterizes this area and create openings for exotic species invasion. If open sight lines are required for historical interpretation, it is recommended that KCBA consult with a botanist or ecologist about how to judiciously remove weedy plants and protect sensitive areas and plants.

**ACKNOWLEDGEMENTS**

The author would like to thank the following for their assistance during field work: Jan Coyne, Joe Harris, Bruce Sorrie, Lee Shearer, Anne Brightwell, and Dan and Jenny Williams, with special thanks to Bruce Sorrie for identifying many of the grass and sedge specimens collected at KCB. Thanks are also given to Wendy Zomlefer for providing plant presses from the University of Georgia Herbarium and for reviewing this report. Broad thanks are offered to the members of the Kettle Creek Battlefield Association which provided financial support to this inventory.

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**APPENDIX 1**

**SPECIES LISTS BY ZONE**

**Zone 1 – Clarke's Summit, west of War Hill Road: dry woods on south-facing slope**

Natural Community: Oak-Pine-Hickory Forest

High point on summit: 33.69161229N / -82.88464464W

**Canopy:**

|  |  |
| --- | --- |
| Shagbark Hickory | *Carya ovata* |
| White Ash | *Fraxinus americana* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Loblolly Pine | *Pinus taeda* |
| Southern Red Oak | *Quercus stellata* |

**Subcanopy:**

|  |  |
| --- | --- |
| Georgia Hackberry | *Celtis tenuifolia* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Hop Hornbeam | *Ostrya virginiana* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |
| Post Oak | *Quercus stellata* |
| Winged Elm | *Ulmus alata* |

**Shrubs and woody vines:**

|  |  |
| --- | --- |
| Dwarf Pawpaw | *Asimina parviflora* |
| Cross-vine | *Bignonia capreolata* |
| Hearts A-bustin’ | *Euonymus americanus* |
| St. Andrews Cross | *Hypericum hypericoides* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Winged Sumac | *Rhus copallinum* |
| Blackberry | *Rubus pensylvanica* |
| Buckthorn Bumelia | *Sideroxylon lycioides* |
| Sparkleberry | *Vaccinium arboreum* |
| Curly-leaf Yucca | *Yucca filamentosa* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Arrow-feather Three-awn Grass | *Aristida purpurascens* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Woods Oats | *Chasmanthium sessiliflorum* |
| Globe Flatsedge | *Cyperus echinatus* |
| Plukenet's Flatsedge | *Cyperus plukenetii* |
| Virginia Snakeroot | *Endodeca serpentaria* |
| Bigtop Love-grass | *Eragrostis hirsuta* |
| Purple Love-grass | *Eragrostis spectabilis* |
| Daisy Fleabane | *Erigeron strigosus* |
| Dog Fennel | *Eupatorium capillifolium* |
| Late Boneset | *Eupatorium serotinum* |
| Flowering Spurge | *Euphorbia pubentissima* |
| Wild Ginger | *Hexastylis arifolia* |
| Longleaf Bluet | *Houstonia longifolia* |
| Downy Trailing Lespedeza | *Lespedeza procumbens* |
| False Aloe | *Manfreda virginica* |
| Prickly Pear | *Opuntia humifusa* |
| Purple Sorrel | *Oxalis violacea* |
| Small’s Ragwort | *Packera anonyma* |
| Southern Beardtongue | *Penstemon australis* |
| Black Needle Grass | *Piptochaetium avenacea* |
| Few-flowered Nutrush | *Scleria oligantha* |
| Venus's Looking-glass | *Triodanis biflora* |

**Zone 2 – Clarke's Summit, west of War Hill Road: dry woods on west-facing slope west of Summit Trail**

Natural Community: Oak-Hickory-Pine Forest

33.691685N / -82.885733

**Canopy:**

|  |  |
| --- | --- |
| Sand Hickory | *Carya pallida* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |

**Subcanopy:**

|  |  |
| --- | --- |
| Hop Hornbeam | *Ostrya virginiana* |
| Loblolly Pine | *Pinus taeda* |

**Shrubs and woody vines:**

|  |  |
| --- | --- |
| Dwarf Pawpaw | *Asimina parviflora* |
| Sparkleberry | *Vaccinium arboreum* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Butterfly Weed | *Asclepias tuberosa* |
| Wood Oats | *Chasmanthium sessiliflorum* |
| Plukenet's Flatsedge | *Cyperus plukenetii* |
| Fireweed | *Erechtites hieraciifolia* |
| Dog-fennel | *Eupatorium capillifolium* |
| Little Bluestem | *Schizachyrium scoparium* |

**Zone 3 – Clarke's Summit, west of War Hill Road: scrubby thickets on west-facing slope on edge of pine plantation**

Disturbed Area - edge of pine plantation - westernmost extent of Summit Trail

33.69173270N / -82.88463534W

**Canopy:**

|  |  |
| --- | --- |
| none |  |

**Subcanopy:**

|  |  |
| --- | --- |
| Eastern Red Cedar | *Juniperus virginiana* |
| Loblolly Pine | *Pinus taeda* |
| Black Cherry | *Prunus serotina* |
| Southern Red Oak | *Quercus falcata* |
| Winged Elm | *Ulmus alata* |
| Black Willow | *Salix nigra* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| St. Andrew's Cross | *Hypericum hypericoides* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Blackberry | *Rubus pensilvanicus* |
| Winged Sumac | *Rhus copallina* |
| Blackberry | *Rubus pensilvanicus* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Splitbeard Bluestem | *Andropogon ternarius* |
| Broomsedge Bluestem | *Andropogon virginicus* |
| White Milkweed | *Asclepias variegata* |
| Yellow-fruited Sedge | *Carex annectens* |
| Wood Oats | *Chasmanthium sessiliflorum* |
| Common Yellow Thistle | *Cirsium horridulum* |
| Fireweed | *Erechtites hieraciifolia* |
| Dog-fennel | *Eupatorium capillifolium* |
| Climbing Milkvine | *Gonolobus suberosus* |
| Quaker Ladies | *Houstonia caerulea* |
| Prickly Pear | *Opuntia humifusa* |
| Passion-flower | *Passiflora incarnata* |
| Cat-briar | *Smilax bona-nox* |
| Round-leaf Greenbriar | *Smilax rotundifolia* |
| Woolly Mullein | *Verbascum thapsus* |

**Zone 4 – Settlement Road: road banks and roadside ditches**

Habitat: Disturbed Area

Intersection with War Hill Road: 33.692617 / -82 .882778W

At Piedmont Prairie: 33.692697N / -82.884589W

At Kelly Branch: 33.692538 N / -82.885847W

**Canopy (near Kelly Branch only):**

|  |  |
| --- | --- |
| Tulip Tree | *Liriodendron tulipifera* |
| Sycamore | *Platanus occidentalis* |
| Slippery Elm | *Ulmus rubra* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Tag Alder | *Alnus serrulata* |
| American Beauty Bush | *Callicarpa americana* |
| Trumpet Creeper | *Campsis radicans* |
| Elderberry | *Sambucus canadensis* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Lesser Quaking Grass | *Briza minor* |
| Nodding thistle | *Carduus nutans* |
| Beaked Panic Grass | *Coleataenia anceps* |
| Globe Flatsedge | *Cyperus echinatus* |
| Sedge | *Cyperus sp.* |
| Silky Oat Grass | *Danthonia sericea* |
| Panicled Beggar-lice | *Desmodium paniculatum* |
| Slimleaf Beggar-Lice | *Desmodium tenuifolium* |
| Velvet Witch-grass | *Dichanthelium scoparium* |
| Poor-joe | *Diodia teres* |
| Silver Plume Grass | *Erianthus alopecuroides* |
| Elephantopus tomentosus | *Elephant’s Foot* |
| Wild Rye | *Elymus glabriflorus* |
| Bigtop Love Grass | *Eragrostis hirsuta* |
| Daisy Fleabane | *Erigeron strigosus* |
| Spoonleaf Purple Everlasting | *Gamochaeta purpurea* |
| Climbing Milkvine | *Gonolobus suberosus* |
| Little Barley | *Hordeum pusillum* |
| Summer Bluet | *Houstonia longifolia* |
| Nits-and-lice | *Hypericum drummondii* |
| Leathery Rush | *Juncus coriaceus* |
| Soft Rush | *Juncus effusus* |
| Dwarf Dandelion | *Krigia cespitosa* |
| Velvety Lespedeza | *Lespedeza stuevei* |
| Virginia Lespedeza | *Lespedeza virginica* |
| Downy Lobelia | *Lobelia puberula* |
| Toad Flax | *Nuttallanthus canadensis* |
| Trailing Phlox | *Phlox nivalis* |
| Long-bract Plantain | *Plantago aristata* |
| Heal-all | *Prunella vulgaris* |
| Angle-stem Beaksedge | *Rhynchospora caduca* |
| Carolina Wild Petunia | *Ruellia caroliniensis* |
| Heart-wing Sorrel | *Rumex hastatulus* |
| Georgia Bulrush | *Scirpus georgianus* |
| Fire Pink | *Silene virginica* |
| Horse-nettle | *Solanum americanum* |
| Gray Goldenrod | *Solidago nemoralis* |
| Pencil-flower | *Stylosanthes biflora* |
| Long-stalked Aster | *Symphyotrichum dumosum* |
| Small White Aster | *Symphyotrichum racemosum* |
| Venus’s Looking Glass | *Triodanis perfoliata* |
| Common Vetch | *Vicia sativa* ssp. *sativa* |

**Zone 5 - Settlement Road Piedmont Prairie**

33.6925N, -82.884722W

**Canopy:**

|  |  |
| --- | --- |
| none |  |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Mimosa | *Albizzia julibrissin* |
| Pignut Hickory | *Carya glabra* |
| White Ash | *Fraxinus americana* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Hop Hornbeam | *Ostrya virginiana* |
| Loblolly Pine | *Pinus taeda* |
| Basswood | *Tilia americana* var. *heterophylla* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Painted Buckeye | *Aesculus sylvatica* |
| American Beauty-bush | *Callicarpa americana* |
| Georgia Hackberry | *Celtis tenuifolia* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Winged Sumac | *Rhus copallinum* |
| Blackberry | *Rubus pensilvanicus* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Narrow-leaf Purple Foxglove | *Agalinis tenuifolia* |
| Blue Star | *Amsonia tabernaemontana* |
| Broomsedge | *Andropogon virginicus* |
| White Milkweed | *Asclepias variegata* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Carolina Sedge | *Carex caroliniana* |
| Hirsute Sedge | *Carex complanata* |
| Black-edge Sedge | *Carex nigromarginata* |
| Common thistle | *Cirsium horridulum* |
| Butterfly Pea | *Clitoria mariana* |
| Beaked Panic Grass | *Coleataenia anceps* |
| Common Dayflower | *Commelina erecta* |
| Globe Flatsedge | *Cyperus echinatus* |
| Bosc’s Witch Grass | *Dichanthelium boscii* |
| Witch Grass | *Dichanthelium* sp. |
| Wild Rye | *Elymus glabriflorus* |
| Virginia Snakeroot | *Endodeca serpentaria* |
| Trout Lily | *Erythronium umbilicatum* |
| Dog Fennel | *Eupatorium capillifolium* |
| Late Boneset | *Eupatorium serotinum* |
| Cleavers | *Galium aparine* |
| Hairy Bedstraw | *Galium pilosum* |
| Dove's-foot Crane's-bill | *Geranium molle* |
| Honey Locust | *Gleditsia triacanthos* |
| Climbing Milkweed | *Gonolobus suberosus* |
| Wild Ginger | *Hexastylis arifolia* |
| Quaker Ladies | *Houstonia caerulea* |
| Soft Rush | *Juncus effusus* |
| Coral Honeysuckle | *Lonicera sempervirens* |
| False Aloe | *Manfreda virginica* |
| Carolina Spinypod | *Matelea caroliniana* |
| Creeping Cucumber | *Melothria pendula* |
| Sensitive-briar | *Mimosa microphylla* |
| Large-Seeded Forget-Me-Not | *Myosotis macrosperma* |
| Yellow Wood Sorrel | *Oxalis dillenii* |
| Purple Wood Sorrel | *Oxalis violacea* |
| Small’s Ragwort | *Packera anonyma* |
| Passionflower | *Passiflora incarnata* |
| Spotted Phacelia | *Phacelia maculata* |
| Trailing Phlox | *Phlox nivalis* |
| Needle Grass | *Piptochaetium avenaceum* |
| Solomon’s Seal | *Polygonatum biflorum* |
| Cinquefoil | *Potentilla canadensis* |
| Little Bluestem | *Schizachyrium scoparium* |
| Fire-pink | *Silene virginica* |
| Blue-eyed Grass | *Sisyrinchium angustifolium* |
| Round-leaf Greenbriar | *Smilax rotundifolia* |
| Horse Nettle | *Solanum americanum* |
| Shining Wedge-scale Grass | *Sphenopholis nitida* |
| Hairy Spiderwort | *Tradescantia hirsuticaulis* |
| Hairy Vetch | *Vicia hirsuta* |

**Zone 6 - War Hill Road: roadsides between Settlement Road intersection and stone entrance gate, and grassy clearings near stone entrance gate**

Habitat: Disturbed Area

**Canopy:**

|  |  |
| --- | --- |
| none |  |

**Subcanopy:**

|  |  |
| --- | --- |
| Eastern Red Cedar | *Juniperus virginiana* |
| Loblolly Pine | *Pinus taeda* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| American Beauty-bush | *Callicarpa americana* |
| Southern Sensitive Plant | *Chamaecrista nictitans* |
| St. Andrew's Cross | *Hypericum hypericoides* |

**Herbs:**

|  |  |
| --- | --- |
| Ragweed | *Ambrosia artemisifolia* |
| Splitbeard Bluestem | *Andropogon ternarius* |
| Broomsedge | *Andropogon virginicus* |
| Plantain Pussy-toes | *Antennaria plantaginifolia* |
| Arrow-feather Three-awn Grass | *Aristida purpurascens* |
| Butterfly Pea | *Clitoria mariana* |
| Ear-leaf Tickseed | *Coreopsis auriculata* |
| Large-flowered Tickseed | *Coreopsis grandiflora* |
| One-flowered Hawthorn | *Crataegus uniflora* |
| Globe Flat-sedge | *Cyperus echinatus* |
| Bigtop Love-grass | *Eragrostis hirsuta* |
| Purple Love-grass | *Eragrostis spectabilis* |
| Fireweed | *Erechtites hieraciifolia* |
| Daisy Fleabane | *Erigeron strigosus* |
| Dog-fennel | *Eupatorium capillifolium* |
| Hyssop-leaved Boneset | *Eupatorium hyssopifolium* |
| Late Boneset | *Eupatorium serotinum* |
| Bitterweed | *Helenium amarum* |
| Common Camphorweed | *Heterotheca latifolia* |
| Pineweed | *Hypericum gentianoides* |
| Path rush | *Juncus tenuis* |
| Poor Man’s Pepper | *Lepidium virginicum* |
| Sericea Lespedeza | *Lespedeza cuneata* |
| Southern Sundrops | *Oenothera fruticosa* |
| Small’s Ragwort | *Packera anonyma* |
| Angled Ground Cherry | *Physalis angulata* |
| Heal-all | *Prunella vulgaris* |
| Fragrant Rabbit Tobacco | *Pseudognaphalium obtusifolium* |
| Maryland Meadow-beauty | *Rhexia mariana* |
| Perennial Foxtail-grass | *Setaria parviflora* |
| Horse Nettle | *Solanum americanum* |
| Curtiss’ Goldenrod | *Solidago curtisii* |
| Gray Goldenrod | *Solidago nemoralis* |
| Yellow Indian-grass | *Sorghastrum nutans* |
| Calico Aster | *Symphyotrichum lateriflorum* |
| Spiked Hoary-pea | *Tephrosia spicata* |
| Nettle-leaf Nose-burn | *Tragia urticifolia* |
| Blue-curls | *Trichostema dichotomum* |
| Purple-top | *Tridens flavus* |
| Brazilian Vervain | *Verbena brasiliensis* |
| Hairy Vetch | *Vicia hirsuta* |
| Slender Vetch | *Vicia tetrasperma* |

**Zone 7 - War Hill: cleared area at top of hill near monument, parking area, and roadsides from stone entrance gate to top of hill**

Habitat: Disturbed Area

Top of War Hill: 33.691030 / -82.886002

**Canopy:**

|  |  |
| --- | --- |
| Shagbark Hickory | *Carya ovata* |
| Sand Hickory | *Carya pallida* |
| Mockernut Hickory | *Carya tomentosa* |
| Shortleaf Pine | *Pinus echinata* |
| Loblolly Pine | *Pinus taeda* |
| Southern Red Oak | *Quercus falcata* |
| Post Oak | *Quercus stellata* |

**Subcanopy:**

|  |  |
| --- | --- |
| Southern Red Oak | *Quercus falcata* |
| Water Oak | *Quercus nigra* |

**Shrubs:**

|  |  |
| --- | --- |
| Southern Sensitive-Plant | *Chamaecrista nictitans* |
| Hearts-a-Bustin’ | *Euonymus americana* |
| Sericea Lespedeza | *Lespedeza cuneata* |

**Herbs and Ferns**:

|  |  |
| --- | --- |
| Shortstalk Copperleaf | *Acalypha gracilens* |
| Splitbeard Bluestem | *Andropogon ternarius* |
| Broomsedge | *Andropogon virginicus* |
| Quaking Grass | *Briza minor* |
| Spurred Butterfly Pea | *Centrosema virginiana* |
| Butterfly Pea | *Clitoria mariana* |
| Woodland Tickseed | *Coreopsis major* |
| Plains Tickseed | *Coreopsis tinctoria* |
| Globe Flatsedge | *Cyperus echinatus* |
| Rough Flatsedge | *Cyperus retrofractus* |
| Pineland Flatsedge | *Cyperus retrorsus* |
| Elephant's Foot | *Elephantopus tomentosus* |
| Bigtop Love-grass | *Eragrostis hirsuta* |
| Dove's-foot Crane's-bill | *Geranium molle* |
| Daisy Fleabane | *Erigeron strigosus* |
| Veiny Hawkweed | *Hieracium venosum* |
| Summer Bluet | *Houstonia longifolia* |
| Little Bluet | *Houstonia pusilla* |
| Dwarf Dandelion | *Krigia virginica* |
| Smooth Trailing Lespedeza | *Lespedeza repens* |
| Bulbous Woodrush | *Luzula bulbosa* |
| Toad-flax | *Nuttalanthus canadensis* |
| Cinquefoil | *Potentilla canadensis* |
| Prickly Pear | *Opuntia humifusa* |
| Heal-all | *Prunella vulgaris* |
| Fragrant Rabbit Tobacco | *Pseudognaphalium obtusifolium* |
| Horse-nettle | *Solanum americanum* |
| Dixie Goldenrod | *Solidago brachyphylla* |
| Gray Goldenrod | *Solidago nemoralis* |
| Pencil-flower | *Stylosanthes biflora* |
| Nettle-leaf Noseburn | *Tragia urticifolia* |
| Rabbit-foot Clover | *Trifolium arvense* |
| Red Clover | *Trifolium pratense* |
| Bird's-eye Speedwell | *Veronica persica* |
| Carolina Vetch | *Vicia caroliniana* |
| Narrowleaf Vetch | *Vicia sativa* |
| Wahlenbergia | *Wahlenbergia marginata* |

**Zone 8 – War Hill: south- and southeast-facing slopes**

Rock outcrop on south-facing slope: 33.689991115N / -82.88579598W

Upper and mid- slope, east end: 33.690573N / -82.885277W

Lower slope: 33.690006N, -82.885114W

**Upper and Mid- Slope (Natural Community:** **Oak-Pine-Hickory Forest)**

**Canopy:**

|  |  |
| --- | --- |
| Pignut Hickory | *Carya glabra* |
| Shagbark Hickory | *Carya ovata* |
| Mockernut Hickory | *Carya tomentosa* |
| White Ash | *Fraxinus americana* |
| Black Walnut | *Juglans nigra* |
| Shortleaf Pine | *Pinus echinata* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |
| Southern Red Oak | *Quercus falcata* |
| Post Oak | *Quercus stellata* |
| Black Oak | *Quercus velutina* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Mockernut Hickory | *Carya tomentosa* |
| Dogwood | *Cornus florida* |
| Persimmon | *Diospyros virginiana* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Sweet Gum | *Liquidambar styraciflua* |
| Hop Hornbeam | *Ostrya virginiana* |
| Winged Elm | *Ulmus alata* |

**Shrubs and Vines:**

|  |  |
| --- | --- |
| Hearts-a-bustin’ | *Euonymus americanus* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Yellow Jessamine | *Gelsemium sempervirens* |
| Chinese Privet | *Ligustrum sinense* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Buckthorn Bumelia | *Sideroxylon lycioides* |
| Poison Ivy | *Toxicodendron radicans* |
| Sparkleberry | *Vaccinium arboreum* |
| Rusty Haw | *Viburnum rufidulum* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Quaker Bittercress | *Cardamine pennsylvanica* |
| Weak Stellate Sedge | *Carex seorsa* |
| Thin-fruit Sedge | *Carex striatula* |
| Butterfly Pea | *Centrosema virginiana* |
| Large-flowered tickseed | *Coreopsis grandiflora* |
| Poverty Oat Grass | *Danthonia spicata* |
| Witch Grass | *Dichanthelium* sp. |
| Milk-pea | *Galactia volubilis* |
| Cleavers | *Galium aparine* |
| Forest Bedstraw | *Galium circaezans* |
| Wild Ginger | *Hexastylis arifolia* |
| Naked Tick-trefoil | *Hylodesmum nudiflorum* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Woods-grass | *Oplismenus setarius* |
| Yellow Wood Sorrel | *Oxalis dillenii* |
| Yellow Passionflower | *Passiflora lutea* |
| Canada Sanicle, Black Snakeroot | *Sanicula canadensis* |
| Fragrant Snakeroot | *Sanicula odorata* |
| Few-flowered Nut-rush | *Scleria oligantha* |
| Huger's Carrion-flower | *Smilax hugeri* |

**Lower Slope (Natural Community: Mix of Mesic and Oak-Pine-Hickory Forests)**

**Canopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Pignut Hickory | *Carya glabra* |
| Shagbark Hickory | *Carya ovata* |
| Sweet Gum | *Liquidambar styraciflua* |
| Tulip Tree | *Liriodendron tulipifera* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |
| Water Oak | *Quercus nigra* |
| Shumard’s Oak | *Quercus shumardii* |
| Post Oak | *Quercus stellata* |

**Subcanopy:**

|  |  |
| --- | --- |
| Hop Hornbeam | *Ostrya virginiana* |
| Dogwood | *Cornus florida* |
| Sourwood | *Oxydendron arboreum* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Painted buckeye | *Aesculus sylvatica* |
| Devil’s Walking-stick | *Aralia spinosa* |
| Giant Cane | *Arundinaria gigantea* |
| Hearts-a-bustin’ | *Euonymus americanus* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Green Ash | *Fraxinus pensylvanica* |
| Yellow Jessamine | *Gelsemium sempervirens* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Trifoliate Orange | *Poncirus trifoliata* |

**Herbs:**

|  |  |
| --- | --- |
| White Milkweed | *Asclepias variegata* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Canada Rockcress | *Boechera canadensis* |
| Wood Oats | *Chasmanthium sessiliflorum* |
| Leatherflower | *Clematis* sp. |
| Honewort | *Cryptotaenia canadensis* |
| Wild Yam | *Dioscorea villosa* |
| Trout Lily | *Erythronium umbilicatum* |
| Flowering Spurge | *Euphorbia pubentissima* |
| Climbing Milkvine | *Gonolobus suberosa* |
| Wild Ginger | *Hexastylis arifolia* |
| Hairy Bush Clover | *Lespedeza hirta* |
| Melic Grass | *Melica mutica* |
| Yellow Wood Sorrel | *Oxalis dillenii* |
| Passionflower | *Passiflora incarnata* |
| Solomon’s Seal | *Polygonatum biflorum* |
| Canada Sanicle | *Sanicula canadensis* |
| Few-flowered Nutrush | *Scleria oligantha* |
| Narrow-leaved Blue-eyed-grass | *Sisyrinchium angustifolium* |
| Round-leaf Greenbriar | *Smilax rotundifolia* |
| Indian Pink | *Spigelia marilandica* |
| Chickweed | *Stellaria meadia* |
| Rue-Anemone, Wind Flower | *Thalictrum thalictroides* |
| Sweet Betsy | *Trillium cuneatum* |
| Atamasco Lily, Rain Lily | *Zephyranthes atamasca* |

**Zone 9 - War Hill: southwest-facing slopes**

Natural Community: Oak-Pine-Hickory Forest, more recently disturbed than south-facing slopes, with more canopy gaps and pines, and a thick needle layer in many areas.

33.69040106N / -82.88701831

**Canopy:**

|  |  |
| --- | --- |
| Pignut Hickory | *Carya glabra* |
| Sand Hickory | *Carya pallida* |
| White Ash | *Fraxinus americana* |
| Sweet Gum | *Liquidambar styraciflua* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |
| Water Oak | *Quercus nigra* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Pignut Hickory | *Carya glabra* |
| Mockernut Hickory | *Carya tomentosa* |
| Redbud | *Cercis canadensis* |
| Dogwood | *Cornus florida* |
| Hawthorn | *Crataegus uniflora* |
| Black Walnut | *Juglans nigra* |
| Sweet Gum | *Liquidambar styraciflua* |
| Red Mulberry | *Morus rubra* |
| Hop Hornbeam | *Ostrya virginiana* |
| Winged Elm | *Ulmus alata* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Painted Buckeye | *Aesculus sylvatica* |
| Hearts-a-Bustin’ | *Euonymus americanus* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Poison Ivy | *Toxicodendron radicans* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Bosc’s Witch Grass | *Dichanthelium boscii* |
| Fireweed | *Erechtites hieraciifolia* |
| Climbing Milkvine | *Gonolobus suberosus* |
| Wild Ginger | *Hexastylis arifolia* |
| Naked Tick-trefoil | *Hylodesmum nudiflorum* |
| Melic Grass | *Melica mutica* |
| Needle Grass | *Piptochaetium avenaceum* |
| Huger's Carrion-flower | *Smilax hugeri* |
| Jackson-briar | *Smilax smallii* |
| Chickweed | *Stellaria meadia* |
| Windflower, Rue-anemone | *Thalictrum thalictroides* |
| Woolly Mullein | *Verbascum thapsus* |

**Zone 10 - War Hill: west-facing slope**

Natural Community: Oak-Pine-Hickory Forest

Upper slope: 33.69116621N / -82.88658497

Lower slope: 33.69158505N / -82.88706492W

**Lower slope**

**Canopy:**

|  |  |
| --- | --- |
| Hackberry | *Celtis laevigata* |
| Florida Maple | *Acer floridanum* |
| Black Walnut | *Juglans nigra* |
| Loblolly Pine | *Pinus taeda* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Ironwood, Musclewood | *Carpinus caroliniana* |
| Dogwood | *Cornus florida* |
| Hop Hornbeam | *Ostrya virginiana* |
| Sourwood | *Oxydendron arboreum* |
| White Oak | *Quercus alba* |

**Shrubs and Vines:**

|  |  |
| --- | --- |
| River Cane | *Arundinaria gigantea* |
| Ironwood, Musclewood | *Carpinus caroliniana* |
| Dogwood | *Cornus florida* |
| Hop Hornbeam | *Ostrya virginiana* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Hackberry | *Celtis laevigata* |
| Spring Coralroot | *Corallorhiza wisteriana* |
| Forest Bedstraw | *Galium circaezans* |
| Wild ginger | *Hexastylis arifolia* |
| Partridgeberry | *Mitchella repens* |
| Christmas Fern | *Polystichum acrostichoides* |

**Upper slope**

**Canopy:**

|  |  |
| --- | --- |
| Pignut Hickory | *Carya glabra* |
| Sand Hickory | *Carya pallida* |
| Shortleaf Pine | *Pinus echinata* |
| Loblolly Pine | *Pinus taeda* |
| White Oak | *Quercus alba* |
| Scarlet Oak | *Quercus coccinea* |
| Southern Red Oak | *Quercus falcata* |
| Post Oak | *Quercus stellata* |
| Black Oak | *Quercus velutina* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Redbud | *Cercis canadensis* |
| Ironwood, Musclewood | *Carpinus caroliniana* |
| Dogwood | *Cornus florida* |
| Hop Hornbeam | *Ostrya caroliniana* |

**Shrubs and Vines:**

|  |  |
| --- | --- |
| Sparkleberry | *Vaccinium arboreum* |
| Deerberry | *Vaccinium stamineum* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Virginia Oak-Leech | *Aureolaria virginica* |
| Carolina Sedge | *Carex caroliniana* |
| Cumberland Sedge | *Carex cumberlandensis* |
| Black-edged Sedge | *Carex nigromarginata* |
| Poverty Oat Grass | *Danthonia sericea* |
| Variable Witch-grass | *Dichanthelium commutatum* |
| Flowering Spurge | *Euphorbia pubentissima* |
| Forest Bedstraw | *Galium circaezans* |
| One-flowered Bedstraw | *Galium uniflorum* |
| Dove's-foot Crane's-bill | *Geranium molle* |
| Wild Ginger | *Hexastylis arifolia* |
| Veiny Hawkweed | *Hieracium venosum* |
| Naked Tick-trefoil | *Hylodesmum nudiflorum* |
| Smooth Cat's-ear | *Hypochaeris glabra* |
| Partridgeberry | *Mitchella repens* |
| Toad Flax | *Nuttalanthus canadensis* |
| Virginia Ground-cherry | *Physalis virginiana* |
| Needle Grass | *Piptochaetium avenaceum* |
| Solomon’s Seal | *Polygonatum biflorum* |
| Cinquefoil | *Potentilla canadensis* |
| Maryland Sanicle | *Sanicula marilandica* |
| Narrow-leaved Blue-Eyed Grass | *Sisyrinchium angustifolium* |
| Whiteleaf Greenbriar | *Smilax glauca* |
| Shining Wedge-scale | *Sphenopholis nitida* |
| Crane-fly Orchid | *Tipularia discolor* |
| Wahlenbergia | *Wahlenbergia marginata* |

**Zone 11 - War Hill: north-facing Slope**

Northwest-facing slope above Kelly Branch: 33.69188919N / -82.88649947

North-facing, lower slope: 33.69188663N / -82.88560990W

Lower slope, head of drain: 33.69143539N / -82.88504538W

**Lower Slope (Natural Community: Mesic Forest)**

**Canopy:**

|  |  |
| --- | --- |
| Red Maple | *Acer rubrum* |
| Bitternut Hickory | *Carya cordiformis* |
| Pignut Hickory | *Carya glabra* |
| Shagbark Hickory | *Carya ovata* |
| Mockernut Hickory | *Carya tomentosa* |
| Beech | *Fagus grandifolia* |
| White Ash | *Fraxinus americana* |
| Black Walnut | *Juglans nigra* |
| Sweet Gum | *Liquidambar styraciflua* |
| Tulip Tree | *Liriodendron tulipifera* |
| Black Gum | *Nyssa sylvatica* |
| Loblolly Pine | *Pinus taeda* |
| Sycamore | *Platanus occidentalis* |
| White Oak | *Quercus alba* |
| Water Oak | *Quercus nigra* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Red Maple | *Acer rubrum* |
| Ironwood, Musclewood | *Carpinus caroliniana* |
| Redbud | *Cercis canadensis* |
| Dogwood | *Cornus florida* |
| Sweet Gum | *Liquidambar styraciflua* |
| Black Gum | *Nyssa sylvatica* |
| Hop Hornbeam | *Ostrya virginiana* |
| Sourwood | *Oxydendron arboreum* |
| White Oak | *Quercus alba* |
| American Elm | *Ulmus americana* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Painted Buckeye | *Aesculus sylvatica* |
| River Cane | *Arundinaria gigantea* |
| Dwarf Pawpaw | *Asimina parviflora* |
| American Beauty Bush | *Callicarpa americana* |
| Sweet Shrub | *Calycanthus floridus* |
| Fringe Tree | *Chionanthus virginica* |
| Yellow Jessamine | *Gelsemium sempervirens* |
| Witch Hazel | *Hamamelis virginiana* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Wafer Ash | *Ptelea trifoliata* |
| Piedmont Azalea | *Rhododendron canescens* |
| Mayberry | *Vaccinium elliottii* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Hepatica | *Anemone americana* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Rattlesnake Fern | *Botrypus virginianum* |
| Hairy Bittercress | *Cardamine hirsuta* |
| Black-edged Sedge | *Carex nigromarginata* |
| Lined Sedge | *Carex striatula* |
| Spreading Chervil | *Chaerophyllum procumbens* |
| Pipsissewa | *Chimaphila maculata* |
| Coralbeads, Carolina Moonseed | *Cocculus carolinus* |
| Bosc’s Witch-grass | *Dichanthelium boscii* |
| Open-flower Witchgrass | *Dichanthelium laxiflorum* |
| Leafy Elephant's Foot | *Elephantopus carolinianus* |
| Virginia Snakeroot | *Endodeca serpentaria* |
| Trout Lily | *Erythronium umbilicatum* |
| Cleavers | *Galium aparine* |
| One-flowered Bedstraw | *Galium uniflorum* |
| Wild Geranium | *Geranium maculatum* |
| Rattlesnake Plantain Orchid | *Goodyera pubescens* |
| Wild Ginger | *Hexastylis arifolia* |
| Solomon’s Plume | *Maianthemum racemosum* |
| Partridgeberry | *Mitchella repens* |
| Large-Seeded Forget-Me-Not | *Myosotis macrosperma* |
| False Garlic | *Nothoscordum bivalve* |
| Purple Wood Sorrel | *Oxalis violacea* |
| Yellow Passionflower | *Passiflora lutea* |
| Resurrection Fern | *Pleopeltis polypodioides* |
| American Blue Grass | *Poa cuspidata* |
| Solomon’s Seal | *Polygonatum biflorum* |
| Christmas Fern | *Polystichum acrostichoides* |
| Tall Lion’s Paw | *Prenanthes altissimum* |
| Bloodroot | *Sanguinaria canadensis* |
| Maryland Sanicle | *Sanicula marilandica* |
| Huger's Carrionflower | *Smilax hugeri* |
| Gray Goldenrod | *Solidago nemoralis* |
| Shining Wedge-scale | *Sphenopholis nitida* |
| Indian Pink | *Spigelia marilandica* |
| Windflower, Rue Anemone | *Thalictrum thalictroides* |
| Crane-fly orchid | *Tipularia discolor* |
| Hairy Spiderwort | *Tradescantia hirsuticaulis* |
| Carolina Vetch | *Vicia carolina* |
| Zephyr Lily, Rain Lily | *Zephyranthes atamasca* |

**Upper Slope (Natural Community: Oak-Pine-Hickory Forest)**

**Canopy:**

|  |  |
| --- | --- |
| Pignut Hickory | *Carya glabra* |
| Shagbark Hickory | *Carya ovata* |
| White Oak | *Quercus alba* |
| Southern Red Oak | *Quercus falcata* |
| Northern Red Oak | *Quercus rubra* |
| Post Oak | *Quercus stellata* |
| Loblolly Pine | *Pinus taeda* |

**Subcanopy:**

|  |  |
| --- | --- |
| Red Maple | *Acer rubrum* |
| Black Gum | *Nyssa sylvatica* |
| Hop Hornbeam | *Ostrya virginiana* |
| Northern Red Oak | *Quercus rubra* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Tall Pawpaw | *Asimina triloba* |
| One-flowered Hawthorn | *Crataegus uniflora* |
| Hearts-a-Bustin’ | *Euonymus americanus* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Coral Honeysuckle | *Lonicera sempervirens* |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Bigleaf Snowbell | *Styrax grandifolius* |
| Southern Black Haw | *Viburnum rufidulum* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Ebony Spleenwort | *Asplenium platyneuron* |
| Lazy Sedge | *Carex pigra* |
| Reflexed Sedge | *Carex retroflexa* |
| Poverty Oat Grass | *Danthonia spicata* |
| Round-leaf Beggar-lice | *Desmodium rotundifolium* |
| Bosc’s Witch-grass | *Dichanthelium boscii* |
| White-haired Witch-grass | *Dichanthelium villosissimum* |
| Wild Yam | *Dioscorea villosa* |
| Wild Ginger | *Hexastylis arifolia* |
| Cat’s Ear | *Hypochaeris radicata* |
| Yellow Star-grass | *Hypoxis hirsuta* |
| Colonial Dwarf-dandelion | *Krigia dandelion* |
| Tuberous Wood Rush | *Luzula bulbosa* |
| Carolina Milkvine | *Matelea carolinensis* |
| Melic Grass | *Melica mutica* |
| Prickly Pear | *Opuntia humifusa* |
| Yellow Wood Sorrel | *Oxalis dillenii* |
| Pokeweed | *Phytolacca americana* |
| Solomon’s Seal | *Polygonatum biflorum* |
| Woolly Mullein | *Verbascum thapsus* |

**Zone 12 - Kelly Branch floodplain: WEST side of branch, from Settlement Road south to confluence with Kettle Creek**

Natural Community: Floodplain Forest

33.692291 / -82.886069

**Canopy:**

|  |  |
| --- | --- |
| Pignut Hickory | *Carya glabra* |
| Mockernut Hickory | *Carya tomentosa* |
| Hackberry | *Celtis laevigata* |
| Green Ash | *Fraxinus pensylvanica* |
| Black Walnut | *Juglans nigra* |
| Sweet Gum | *Liquidambar styraciflua* |
| Tulip Tree | *Liriodendron tulipifera* |
| Loblolly Pine | *Pinus taeda* |
| Sycamore | *Platanus occidentalis* |
| Shumard Oak | *Quercus shumardii* |
| Willow Oak | *Quercus phellos* |
| Winged Elm | *Ulmus alata* |

**Subcanopy:**

|  |  |
| --- | --- |
| Redbud | *Cercis canadensis* |
| Honey Locust | *Gleditsia triacanthos* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Hop Hornbeam | *Ostrya virginiana* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Painted Buckeye | *Aesculus sylvatica* |
| Tag Alder | *Alnus serrulata* |
| Giant Cane | *Arundinaria gigantea* |
| Dwarf Pawpaw | *Asimina parviflora* |
| Tall Pawpaw | *Asimina triloba* |
| Rattan Vine | *Berchemia scandens* |
| Cross Vine | *Bignonia capreolata* |
| American Beauty-bush | *Callicarpa americana* |
| Virgin's Bower | *Clematis virginiana* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Hearts-a-Bustin’ | *Euonymus americanus* |
| Chinese Privet | *Ligustrum sinensis* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Trifoliate Orange | *Poncirus trifoliata* |
| Blackberry | *Rubus pensilvanica* |
| Elderberry | *Sambucus canadensis* |
| Poison Ivy | *Toxicodendron radicans* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Rhombic Copperleaf | *Acalypha rhomboidea* |
| Wild Onion | *Allium canadensis* |
| Hog Peanut | *Amphicarpaea bracteata* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| False Nettle | *Boehmeria cylindrica* |
| River Oats | *Chasmanthium latifolium* |
| Woods Oats | *Chasmanthium sessiliflorum* |
| Coralbeads, Moonseed | *Cocculus caroliniana* |
| Beaked Panic Grass | *Coleataenia anceps* |
| Leafy Elephant's Foot | *Elephantopus carolinianus* |
| Wild Rye | *Elymus glabriflorus* |
| Fireweed | *Erechtites hieraciifolia* |
| Trout Lily | *Erythronium umbilicatum* |
| Cleavers | *Galium aparine* |
| White Avens | *Geum canadense* |
| Climbing Milkvine | *Gonolobus suberosus* |
| Wild Ginger | *Hexastylis arifolia* |
| Dwarf St. John's-wort | *Hypericum mutilum* |
| Spreading Wood Rush | *Luzula echinata* |
| Climbing Milkvine | *Gonolobus suberosa* |
| Creeping Cucumber | *Melothria pendula* |
| Japanese Stilt-grass | *Microstegium vimineum* |
| Purple Sorrel | *Oxalis violacea* |
| Swamp Smartweed | *Persicaria setacea* |
| Christmas Fern | *Polystichum acrostichoides* |
| Hoary Mountain-mint | *Pycnanthemum incanum* |
| Round-leaf Greenbriar | *Smilax rotundifolia* |
| Goldenrod | *Solidago caesia* |
| Small White Aster | *Symphyotrichum racemosum* |
| Common Purple Violet | *Viola sororia* |

**Zone 13 – Kelly Branch floodplain: EAST side of branch at base of north- and northwest-facing slopes of War Hill**

Natural Community: Floodplain Forest

Floodplain northwest of top of War Hill: 33.691669200N / -82.88750983W

Floodplain due North of top of War Hill: 33.69209902N / -82.88593344W

**Canopy:**

|  |  |
| --- | --- |
| Bitternut Hickory | *Carya cordiformis* |
| Hackberry | *Celtis laevigata* |
| Black Walnut | *Juglans nigra* |
| Sweet Gum | *Liquidambar styraciflua* |
| Tulip Tree | *Liriodendron tulipifera* |
| Loblolly Pine | *Pinus taeda* |
| Sycamore | *Platanus occidentalis* |
| Cottonwood | *Populus deltoides* |
| Shumard’s Oak | *Quercus shumardii* |
| Winged Elm | *Ulmus alata* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Ironwood, Musclewood | *Carpinus caroliniana* |
| Hop Hornbeam | *Ostrya virginiana* |
| Shumard’s Oak | *Quercus shumardii* |
| Winged Elm | *Ulmus alata* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Tag Alder | *Alnus serrulata* |
| Giant Cane | *Arundinaria gigantea* |
| Cross Vine | *Bignonia capreolata* |
| Sweet Shrub | *Calycanthus floridus* |
| Carolina Buckthorn | *Frangula caroliniana* |
| Chinese Privet | *Ligustrum sinensis* |
| Spicebush | *Lindera benzoin* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Piedmont Azalea, Southern Pinxter Azalea | *Rhododendron canescens* |
| Poison Ivy | *Toxicodendron radicans* |
| Summer Grape | *Vitis aestivalis* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Wild Onion | *Allium canadense* |
| Hepatica | *Anemone americana* |
| Ebony Spleenwort | *Asplenium platyneuron* |
| False Nettle | *Boehmeria cylindrica* |
| Winter Grape Fern | *Botrychium biternatum* |
| Quaker Bittercress | *Cardamine pennsylvanica* |
| Cherokee Sedge | *Carex cherokeensis* |
| Graceful Sedge | *Carex gracillima* |
| Smooth-sheathed Sedge | *Carex laevivaginata* |
| Rosy Sedge | *Carex rosea* |
| Wild Chervil | *Chaerophyllum tainturieri* |
| White Avens | *Geum canadensis* |
| Rattlesnake Plantain Orchid | *Goodyera pubescens* |
| Wild Ginger | *Hexastylis arifolia* |
| Forked Rush | *Juncus dichotomus* |
| Partridgeberry | *Mitchella repens* |
| Large-Seeded Forget-Me-Not | *Myosotis macrosperma* |
| Yellow Passionflower | *Passiflora lutea* |
| Water-pepper | *Persicaria hydropiperoides* |
| Virginia Jump-seed | *Persicaria virginiana* |
| Lopseed | *Phryma leptostachya* |
| Virginia Ground Cherry | *Physalis virginiana* |
| Christmas Fern | *Polystichum acrostichoides* |
| Kidneyleaf Buttercup | *Ranunculus abortivus* |
| Round-leaf Greenbriar | *Smilax rotundifolia* |
| Jackson Briar | *Smilax smallii* |
| Curtiss’ Goldenrod | *Solidago curtissii* |
| Shining Wedge-scale | *Sphenopholis nitida* |
| Wind-flower, Rue-anemone | *Thalictrum thalictroides* |
| Sweet Betsy, Purple Toadshade | *Trillium cuneatum* |

**Zone 14 – Kettle Creek floodplain: north side of creek, below south-facing slope of War Hill**

Natural Community: Floodplain Forest

East end of floodplain, near wooden stairs: 33.68975034N / -82.88537378W

West end of floodplain, near confluence with Kelly Branch: 33.68948291N / -82.88625590W

**Canopy:**

|  |  |
| --- | --- |
| Box Elder | *Acer negundo* |
| Red Maple | *Acer rubrum* |
| River Birch | *Betula nigra* |
| Hackberry | *Celtis laevigata* |
| Beech | *Fagus grandifolia* |
| Green Ash | *Fraxinus pennsylvanica* |
| Black Walnut | *Juglans nigra* |
| Loblolly Pine | *Pinus taeda* |
| Sycamore | *Platanus occidentalis* |
| Cottonwood | *Populus deltoides* |
| Water Oak | *Quercus nigra* |
| Swamp Chestnut Oak | *Quercus michauxii* |
| American Elm | *Ulmus americana* |
| Slippery Elm | *Ulmus rubra* |

**Subcanopy:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Ironwood, Musclewood | *Carpinus carolinianus* |
| Bitternut Hickory | *Carya cordiformis* |
| Hackberry | *Celtis laevigata* |
| Sweet Gum | *Liquidambar styraciflua* |
| Red Mulberry | *Morus rubra* |
| Hop Hornbeam | *Ostrya virginiana* |

**Shrubs and Woody Vines:**

|  |  |
| --- | --- |
| Florida Maple | *Acer floridanum* |
| Giant Cane | *Arundinaria gigantea* |
| Tall Pawpaw | *Asimina triloba* |
| Cross Vine | *Bignonia capreolata* |
| Ironwood, Musclewood | *Carpinus carolinianus* |
| Chinese Privet | *Ligustrum sinense* |
| Spicebush | *Lindera benzoin* |
| Sweet Gum | *Liquidambar styraciflua* |
| Japanese Honeysuckle | *Lonicera japonica* |
| Muscadine Grape | *Muscadinia rotundifolia* |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Swamp Chestnut Oak | *Quercus michauxii* |
| Poison Ivy | *Toxicodendron radicans* |
| Black Haw, Nannyberry | *Viburnum prunifolium* |
| Summer Grape | *Vitis aestivalis* |

**Herbs and Ferns:**

|  |  |
| --- | --- |
| Rhombic Copperleaf | *Acalypha rhomboidea* |
| Wild Onion | *Allium canadense* |
| Indian Plantain | *Arnoglossum atriplicifolia* |
| False Nettle | *Boehmeria cylindrica* |
| Quaker Bittercress | *Cardamine pennsylvanica* |
| Narrow-leaved Sedge | *Carex amphibola* |
| Cherokee Sedge | *Carex cherokeensis* |
| Bearded Sedge | *Carex crinita* |
| Weak Stellate Sedge | *Carex seorsa* |
| Bitternut Hickory | *Carya cordiformis* |
| Mockernut Hickory | *Carya tomentosa* |
| Wild Chervil | *Chaerophyllum tainturieri* |
| River Oats | *Chasmanthium latifolium* |
| Wood Oats | *Chasmanthium sessiliflorum* |
| Common Dayflower | *Commelina communis* |
| Virginia Dayflower | *Commelina virginica* |
| Honewort | *Cryptotaenia canadensis* |
| Cinnamon Vine | *Dioscorea polystachya* |
| Leafy Elephant’s Foot | *Elephantopus carolinianus* |
| Wild Rye | *Elymus glabriflorus* |
| Trout Lily | *Erythronium umbilicatum* |
| Cleavers | *Galium aparine* |
| White Avens | *Geum canadensis* |
| Climbing Milkvine | *Gonolobus suberosa* |
| Forked Rush | *Juncus dichotomus* |
| Eastern Red Cedar | *Juniperus virginiana* |
| Japanese Stilt Grass | *Microstegium vimineum* |
| Large-seeded Forget-me-not | *Myosotis macrosperma* |
| Woods-grass | *Oplismenus setarius* |
| Purple Wood Sorrel | *Oxalis violacea* |
| Beefsteak Plant | *Perilla frutescens* |
| Water-pepper | *Persicaria hydropiperoides* |
| Virginia Jump-seed | *Persicaria virginiana* |
| Lopseed | *Phryma leptostachya* |
| Virginia Ground Cherry | *Physalis virginiana* |
| Christmas Fern | *Polystichum acrostichoides* |
| Swamp Chestnut Oak | *Quercus michauxii* |
| Kidney-leaf Buttercup | *Ranunculus abortivus* |
| Lyre-leaved Sage | *Salvia lyrata* |
| Elderberry | *Sambucus canadensis* |
| Black Snakeroot | *Sanicula canadensis* |
| Snakeroot | *Sanicula sp.* |
| Narrow-leaved Blue Eyed Grass | *Sisyrinchium angustifolium* |
| Catbriar | *Smilax bona-nox* |
| Chickweed | *Stellaria media* |
| Windflower, Rue Anemone | *Thalictrum thalictroides* |
| Nettle-leaf Noseburn | *Tragia urticifolia* |
| Sweet Betsy, Purple toadshade | *Trillium cuneatum* |
| Venus’ Looking Glass | *Triodanis perfoliata* |
| Youngia | *Youngia japonica* |