

**A Rapid Terrestrial Ecological Assessment of Lake Atalanta Park,
City of Rogers, Benton County, Arkansas**



Prairie grasses including big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and side-oats grama (*Bouteloua curtipendula*) thrive in a southwest-facing limestone glade overlooking Lake Atalanta. This area, on a steep hillside east of the Lake Atalanta dam, contains some of the highest quality natural communities remaining in the park.

By Theo Witsell

Arkansas Natural Heritage Commission

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By Theo Witsell, Arkansas Natural Heritage Commission

Executive Summary

In September and October of 2013, staff of the Arkansas Natural Heritage Commission conducted an inventory of the plant species and terrestrial natural communities at Lake Atalanta Park. This inventory documented eight terrestrial natural communities and 539 plant species present in the park. Five sites were identified as Ecologically Significant Areas and populations of seven plant species of state conservation concern were found. This report maps and describes these Ecologically Significant Areas including management recommendations, provides specific details on the occurrences of rare plant species in the park, and provides general information on the park's natural communities. An annotated list of plant species documented from the park is also provided.

Background and History

Lake Atalanta Park is owned by the City of Rogers and includes properties surrounding Lake Atalanta. The city is planning various improvements and other development projects on these properties. Area educators and other interested citizens have been working to conduct an ecological inventory of park property to identify any significant ecological communities and/or areas of significant flora and fauna in the park. The Arkansas Natural Heritage Commission (ANHC) is a key resource in conducting surveys to identify such areas and provide technical assistance regarding their management needs.

In September of 2013 the City of Rogers contracted with the ANHC to conduct a rapid terrestrial ecological assessment of city-owned lands surrounding Lake Atalanta. This assessment focused on plant species and terrestrial habitats and did not include animal surveys or surveys of aquatic habitats such as springs and spring runs (aside from vegetation along them) or the lake itself. Three trips were made by ANHC staff in September and October 2013 to conduct field inventory for this assessment. Information gathered on these trips was combined with information ANHC staff gathered on a fourth trip made in 2011 as part of a field trip with the Arkansas Native Plant Society. Dates of these field trips were as follows:

20 October 2013 – Theo Witsell (ANHC Botanist)

16, 17, & 18 October 2013 – Theo Witsell (ANHC Botanist)

9, 10, & 11 September 2013 – Theo Witsell (ANHC Botanist)

15 May 2011 – Theo Witsell (ANHC Botanist) on a field trip of the Arkansas Native Plant Society led by Joan Reynolds

Data gathered during these site visits provided the basis for this ecological assessment. However, due to the timeline established for this inventory contract, regular inventory trips were not made throughout the growing season, so it should be understood that the inventory for this assessment cannot be considered comprehensive. Some plant species are visible and/or identifiable only in the spring or early summer and were thus likely undetected in the field work for this assessment. To some extent, information provided by local naturalists who regularly visit the park (especially those affiliated with the Arkansas Native Plant Society, Northwest Arkansas Master Naturalists, Northwest Arkansas Audubon Society, and the Northwest Arkansas Community College) helped to fill in these gaps and is incorporated into the assessment.

Site Description

General Description

Lake Atalanta Park (Figs. 1, 2, & 3) is located just east of downtown Rogers, Arkansas in a rugged section of the Dissected Springfield Plateau Ecoregion near its boundary with the Springfield Plateau Ecoregion, which lies a short distance to the west. The site lies south of Highway 12 and city-owned land lies both north and south of East Walnut Street. The terrain in and around the park is dissected, with moderate to steep slopes of various aspects along several headwater tributaries of Prairie Creek. Small stream valleys are narrow and situated between chert and limestone hills.

Lake Atalanta Park contains approximately 220 feet of topographic relief, with elevations ranging from roughly 1370 feet near East Cherry Street at the southwest corner of the property to roughly 1150 feet where Prairie Creek leaves the park below the Lake Atalanta dam. All slopes and aspects are present.

The geology of the property is comprised almost entirely of the Mississippian-aged Boone Formation, with small areas of Quaternary alluvium deposited along the larger streams. The Boone Formation consists of alternating beds of limestone (both coarse and fine-grained) and chert, creating calcareous and acidic soils respectively, each with their own characteristic plant communities. Numerous springs (both perennial and ephemeral) occur on the property.

Streams on the property are characteristic of small streams in the Springfield Plateau and move a substantial gravel bedload. The larger streams have formed noticeable terraces. Most streams on the property are intermittent though several that emerge from or are fed by large springs flow year-round into Lake Atalanta.

Karst Features

Because so much of the underlying geology is limestone, karst features are prominent in the park. As mentioned above, many of the streams are either dry or losing (flowing underground) by early summer, with some areas maintaining flow year round from the numerous springs on the property.

Ecological Significance

The flora of Lake Atalanta Park is diverse, with elements of both the (former) tallgrass prairies of the flat Springfield Plateau surface to the west and the rich forests of the White River Valley to the east. The property was found to support eight distinct plant communities or terrestrial habitats: 1) limestone glades and woodlands, 2) acidic chert woodlands, 3) mesic hardwood slope forests, 4) riparian forests, 5) spring runs, 6) lakeshores, 7) fields, and 8) disturbed areas. Each of these is described briefly below in the section on plant communities.

Native plant communities over most of the property are in a moderately to severely degraded condition. Several areas support mature forests dominated by large trees but the shrub and herbaceous (ground cover) layers are often dominated by non-native invasive species and contain few native species. Even the best glades and dry woodlands on the property are fire-suppressed and have substantial cedar and other woody plant encroachment, a departure from their natural condition.

Despite these facts however, Lake Atalanta Park is a botanically significant area. The site is remarkably diverse for its size and landscape context, with nearly 540 vascular plant species documented to date. Furthermore, seven of the plant species in the park are of state conservation concern, and two are considered to be of global concern, with conservation status ranks of G3 (globally vulnerable) or higher. The park supports elements of a more northern and eastern flora in its mesic ravines and elements of an endemic and more western flora in its glades and dry woodlands. No federally listed species (species listed as Threatened or Endangered under the U.S. Endangered Species Act) were found during the present study. See Appendix D for a complete list of plant species of conservation concern found in the park.

Plant Communities

The following are general descriptions of the plant communities present in the park. More detailed descriptions of communities found in ecologically significant areas appear in Appendix C.

1) Limestone Glades and Woodlands

Glades are naturally treeless openings in forested landscapes where bedrock is exposed or comes close to the surface of the ground. In their natural state, glades are characterized by treeless or very sparsely wooded openings dominated by a variety of drought-tolerant grasses, shrubs, and wildflowers. Glade soils are thin and while they may be wet in the winter and spring (due to bedrock limiting infiltration of water) they are exceedingly dry in the summer and early fall. Glades support a rich diversity of drought-

adapted plants and animals including a number of rare species that are restricted to open glade habitat. Glades are classified based on the type of geology on which they occur. Limestone glades such as those found in Lake Atalanta Park (Figs. 8e, 8f, 9a, & 9b) have a high pH and support a number of plant species that are not found in glades formed on acidic rocks like sandstone, chert, or granite. Glades are widely recognized as habitats of conservation concern and there are many resources available regarding their ecology, restoration, and management.

In their natural condition, the open structure of glades is maintained in part by periodic fire. In the absence of fire, glades will generally become dense with woody vegetation. In the Ozarks, one of the most common invading trees is the native eastern red-cedar (*Juniperus virginiana*), which can completely fill in glade openings over time resulting in the elimination of characteristic glade flora and fauna. Glades generally transition into surrounding deeper-soiled open woodland communities, which have enough soil to support trees, though they are often spaced widely enough to allow sunlight to reach the ground and support a diverse community of plants on the ground. The canopy in these woodlands is often dominated by post oak (*Quercus stellata*), chinquapin oak (*Quercus muehlenbergii*), Shumard's oak (*Quercus shumardii*), and white ash (*Fraxinus americana*).

A more detailed description of the limestone glades in the park can be found in Appendix C.

2) Acidic Chert Woodlands

Acidic chert woodland (Fig. 4) is common in the park. These dry to dry-mesic woodlands occur on well-drained uplands with chert substrate. They are typically dominated by black oak (*Quercus velutina*), white oak (*Quercus alba*), and mockernut hickory (*Carya alba*) but often contain post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*) on drier sites. Common understory species include flowering dogwood (*Cornus florida*), Carolina buckthorn (*Frangula caroliniana*), sassafras (*Sassafras albidum*), farkleberry (*Vaccinium arboreum*), and winged elm (*Ulmus alata*). Ground cover is characteristic of acidic woodlands and often includes low-bush blueberry (*Vaccinium pallidum*), deerberry (*Vaccinium stamineum*), dittany (*Cunila origanoides*), hawkweed (*Hieracium gronovii*), Muhlenberg's sedge (*Carex muehlenbergii* var. *enervis*), and several species of rosette grasses (*Dichanthelium* spp.), goldenrods (*Solidago* spp.), asters (*Symphotrichum* spp.), bush-clovers (*Lespedeza* spp.) and tick-trefoils (*Desmodium* spp.).

An unusual area of open chert grassland, or barrens, (Fig. 5) is found on a moderately steep northwest-facing slope on the east side of Lake Atalanta, between Lake Atalanta Road and the shore of the lake. This community may represent an extremely open phase of the surrounding chert woodland and supports an exceptionally diverse native flora containing several species that were not found elsewhere in the park.

Scattered plants of Ozark chinquapin (*Castanea pumila* var. *ozarkensis*) (Fig. 4e) occur in chert woodlands in the park. This species was once a common canopy tree in woodlands on acidic soils across the Ozarks but has been decimated by the Chestnut Blight, an introduced fungal pathogen that arrived in the local area about 1957. Infected trees are killed to the ground and though they may continue to resprout from the roots, they are generally reduced to shrub stature and rarely get large enough to

produce fruit. Chinquapin wood is exceptionally rot resistant and trunks of large dead trees, often called “chinquapin skeletons” (Fig. 4f) dating to the late 1950s can still be found in the park.

A more detailed description of the chert woodlands in the park can be found in Appendix C.

3) Mesic Hardwood Slope Forests

This community (Figs. 8a & 8b) is associated primarily with north- and east-facing slopes in the park but may occur on all aspects in narrow valleys, especially on lower slopes. The canopy is typically dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*), and often includes shagbark hickory (*Carya ovata*), bitternut hickory (*Carya cordiformis*), mockernut hickory (*Carya alba*), red maple (*Acer rubrum*), basswood (*Tilia americana*), black walnut (*Juglans nigra*), and other hardwood species.

Common shrubs include spicebush (*Lindera benzoin*), pawpaw (*Asimina triloba*), bladdernut (*Staphylea trifolia*), hop-hornbeam (*Ostrya virginiana*), hazelnut (*Corylus americana*), American holly (*Ilex opaca*), and wild hydrangea (*Hydrangea arborescens*).

A rich herbaceous layer includes a variety of ferns, forbs, grasses, and sedges. Characteristic ferns and forbs include northern maidenhair fern (*Adiantum pedatum*), broad beech fern (*Phegopteris hexagonoptera*), Christmas fern (*Polystichum acrostichoides*), honewort (*Cryptotaenia canadensis*), aniseroot (*Osmorhiza longistylis*), black cohosh (*Actaea racemosa*), goat’s-beard (*Aruncus dioicus*), clustered black snakeroot (*Sanicula odorata*), wakerobin (*Trillium sessile*), green trillium (*Trillium viridescens*), large-flower bellwort (*Uvularia grandiflora*), Jack-in-the-pulpit (*Arisaema triphyllum*), wild ginger (*Asarum canadense*), white snakeroot (*Ageratina altissima*), wreath goldenrod (*Solidago caesia*), blue wood aster (*Symphyotrichum drummondii*), wild geranium (*Geranium maculatum*), bloodroot (*Sanguinaria canadensis*), lopseed (*Phryma leptostachya*), wild blue phlox (*Phlox divaricata* subsp. *laphamii*), Jacob’s-ladder (*Polemonium reptans*), sweet-scent bedstraw (*Galium triflorum*), blue violet (*Viola sororia*), Joe-pye-weed (*Eutrochium purpureum*), and Solomon’s-seal (*Polygonatum biflorum*). Bearded shorthusk (*Brachyelytrum erectum*), hairy woodland brome (*Bromus pubescens*), bottlebrush-grass (*Elymus hystrix*), and Virginia wild rye (*Elymus virginicus*) are common grasses.

4) Riparian Forests

This habitat occurs along wooded streams in the park. Riparian forest along the upper reaches of the smallest streams may differ little from surrounding upland forest in terms of tree canopy, though the herbaceous layer and even the shrub layer may be strikingly different. In examples of this habitat on larger streams in the park, canopy cover varies but typical species include sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*), slippery elm (*Ulmus rubra*), red maple (*Acer rubrum*), white oak (*Quercus alba*), northern red oak (*Quercus rubra*), bitternut hickory (*Carya cordiformis*), basswood (*Tilia americana*), black walnut (*Juglans nigra*), black cherry (*Prunus serotina*), persimmon (*Diospyros virginiana*), and other hardwood species.

Common woody species in the understory include spicebush (*Lindera benzoin*), deciduous holly (*Ilex decidua*), Carolina buckthorn (*Frangula caroliniana*), ninebark (*Physocarpus opulifolius*), pawpaw (*Asimina triloba*), bladdernut (*Staphylea trifolia*), and hop-hornbeam (*Ostrya virginiana*). Shade-tolerant

grasses and sedges are common in riparian forests and include river-oats (*Chasmanthium latifolium*), hairy wild rye (*Elymus villosus*), Virginia wild rye (*Elymus virginicus*), bottlebrush-grass (*Elymus hystrix*), stout wood-reed (*Cinna arundinacea*), bearded shorthusk (*Brachyelytrum erectum*), and many species of sedges (*Carex* spp.).

Common ferns and forbs include Christmas fern (*Polystichum acrostichoides*), broad beech fern (*Phegopteris hexagonoptera*), Virginia waterleaf (*Hydrophyllum virginianum*), yellow ironweed (*Verbesina alternifolia*), frostweed (*Verbesina virginica*), bear's-foot (*Smallanthus uvedalius*), cup-plant (*Silphium perfoliatum*), wild blue phlox (*Phlox divaricata* subsp. *laphamii*), blue violet (*Viola sororia*), downy yellow violet (*Viola pubescens*), beggar's-lice (*Hackelia virginiana*), tall bellflower (*Campanula americana*), carpenter's-square (*Scrophularia marilandica*), enchanter's-nightshade (*Circaea canadensis* subsp. *canadensis*), and giant yellow-hyssop (*Agastache nepetoides*). Vines include moonseed (*Menispermum canadense*), bristly greenbrier (*Smilax hispida*), and carrion-flower (*Smilax pulverulenta*).

5) Spring Runs

Spring runs (Figs. 6c, 6d, 6e, & 6f) are groundwater-fed streams that receive all or most of their water from springs. These streams may be small or large but they generally flow all year. The cool, constant flow of mineral-rich groundwater supports a number of species that rarely, if ever, occur on streams without groundwater influence. Spring runs at Lake Atalanta Park support a number of characteristic plants including spotted jewelweed (*Impatiens capensis*), dotted smartweed (*Persicaria punctata*), golden ragwort (*Packera aurea*), fowl manna grass (*Glyceria striata*), great blue lobelia (*Lobelia siphilitica*), water speedwell (*Veronica anagallis-aquatica*), bulrush (*Scirpus atrovirens*), rice cut grass (*Leersia oryzoides*), wire-stem muhly (*Muhlenbergia frondosa*), toothcup (*Rotala ramosior*), swamp agrimony (*Agrimonia parviflora*), deer-tongue rosette grass (*Dichantheium clandestinum*), smooth wild petunia (*Ruellia strepens*), tall bellflower (*Campanula americana*), pink thoroughwort (*Fleischmannia incarnata*), and a number of sedges (*Carex* spp.). Larger spring runs are generally surrounded by typical riparian forest vegetation unless they have been cleared or otherwise disturbed.

6) Lakeshores

Shorelines (Figs. 6a & 6b) along the margin of Lake Atalanta provide habitat for a variety of wetland and woodland species. Common species include false nettle (*Boehmeria cylindrica*), beggar-ticks (*Bidens frondosa*), Japanese stilt grass (*Microstegium vimineum*), river-oats (*Chasmanthium latifolium*), small carp grass (*Arthraxon hispidus*), American bugleweed (*Lycopus americanus*), rusty flatsedge (*Cyperus odoratus*), yellow flatsedge (*Cyperus flavescens*), monkey-flower (*Mimulus alatus*), great blue lobelia (*Lobelia siphilitica*), red maple (*Acer rubrum*), white woodland aster (*Symphotrichum lateriflorum*), fox sedge (*Carex vulpinoidea*), summer sedge (*Carex lurida*), Frank's sedge (*Carex frankii*), a sedge (*Carex annectens*), wax-leaf meadow-rue (*Thalictrum revolutum*), Catesby's virgin's-blower (*Clematis catesbyana*), Florida paspalum (*Paspalum floridanum*), wild potato vine (*Ipomoea pandurata*), brown-eyed Susan (*Rudbeckia triloba*), common scouring-rush (*Equisetum hyemale*), Missouri ironweed (*Vernonia missurica*), Virginia wild rye (*Elymus virginicus* var. *virginicus*), southeastern wild rye (*Elymus glabriflorus*), and hedge bindweed (*Calystegia sepium*).

7) Fields

Several fields (Fig. 12a) occur on park property, all of which are dominated by various species of mostly non-native grasses. These include long-established fields on stream terraces, such as those on the Fleming and Shelton tracts, and those recently created by the removal of upland forest, such as those off of East Cherry Street and East Oak Street near the southwest edge of the park. Common grass species in these fields include tall fescue (*Schedonorus arundinaceus*), Bermuda (*Cynodon dactylon*), Johnson grass (*Sorghum halepense*), purple-top tridens (*Tridens flavus* var. *flavus*), crabgrass (*Digitaria* spp.), and, where partially shaded, Japanese stilt grass (*Microstegium vimineum*). A number of weedy forbs also occur in these fields.

8) Disturbed Areas

A variety of disturbed habitats occur throughout the park, from informal parking areas around the lake to areas of exposed dirt and gravel where structures were recently demolished. Other examples of disturbed habitats in the park include mowed lawns, powerline rights-of-way periodically sprayed with herbicides, eroding stream banks, and roadsides. These habitats all provide habitat for weedy species, native and introduced, that benefit from various kinds of disturbance. Some types of disturbed areas that aren't intensively maintained, especially roadsides and powerline rights-of-way, often retain vegetation typical of the natural communities that they border.

Ecological Stresses

Five major ecological stresses on the park's terrestrial natural communities were identified during field work for this assessment. These are:

- 1) fire suppression
- 2) non-native invasive plant species
- 3) deer pressure
- 4) altered hydrology/stream erosion
- 5) human-caused disturbances

These stresses are often interrelated and have worked together to produce the current condition of the park's natural communities.

Fire Suppression

Whether ignited by lightning or by Native Americans, landscape scale fire is widely understood to have been a natural ecological process that played a major role in shaping nearly all upland habitats in the Ozark Plateau. Fires regularly burned across the Ozark landscape before European settlement and the structure and species composition of natural communities was shaped in large part by the frequency and intensity of these fires in a given spot. The main effects of fire on habitats in the region were 1) to periodically remove leaves and other dead plant material from the ground and 2) to maintain open conditions by arresting the growth of woody vegetation. The degree of habitat openness in the pre-

settlement landscape varied with geographic location, landform, local climate, and other factors. Conditions ranged from open prairie and savanna on the flat surface of the Springfield Plateau west of Lake Atalanta (where fires were more frequent and intense) to lush closed canopy hardwood forests in the deep hollows draining to the White River from Lake Atalanta east (where fires were less frequent and intense). However, much of the upland landscape around Lake Atalanta was probably somewhere in between savanna and closed forest – a mosaic of semi-open woodlands where periodic fires allowed light to reach the ground and sustained diverse carpets of sun-loving grasses and wildflowers.

As fires were suppressed, these open habitats, along with the species that depended on them, declined across the region. Consequently, many species that were more common historically are rare today. Prescribed fire, or the intentional ignition and management of “controlled burns”, is widely used today (where appropriate) to manage for healthy and diverse woodlands, prairies, glades, and other plant communities.

Non-native Invasive Plant Species

Lake Atalanta Park is home to a wide variety of non-native invasive plants, a consequence of its location on the edge of an urban area and a long history of disturbance to its natural communities. Intense use of the park by humans, both presently and historically, coupled with a large deer population have likely contributed to the colonization and spread of certain invasive plant species. The spread of these species, combined with other factors, has displaced native species and altered the structure and species composition of natural communities in many areas of the park.

Appendix F presents a table of non-native invasive plant species in the park that are negatively impacting native habitats, or that have the potential to negatively impact native habitats in the future. This list includes information about the life form (forb, grass, woody vine, shrub, tree, etc.) of each species, as well as the habitat(s) they occupy in the park. Following this table is an annotated list with park-specific information on each species.

Deer Pressure

As is the case in many urban and suburban wooded areas, a large deer population has exerted substantial pressure on the plant communities at Lake Atalanta Park. Large deer herds can cause populations of many plant species to decline over time or even become extirpated locally as deer consume most or all the plants of a given species. Deer may also encourage certain unpalatable invasive species by avoiding them while eating the native species that formerly occupied the same habitat. Deer were regularly encountered during field work in the park and signs of high deer pressure were observed in many areas including browse lines on shrubs and a general lack of a native ground flora in many park woodlands.

Altered Hydrology/Stream Erosion

Many riparian habitats in Lake Atalanta Park show signs of altered hydrology caused by excessive and ongoing stream erosion. Several of the larger streams show evidence of recent and ongoing

downcutting (Figs. 12e & 12f). Some of the smaller tributaries that feed these streams are actively head cutting in response to this lowering of the channel bottom in the larger streams. This downcutting can lower the water table in riparian habitats, reducing soil moisture and making habitat unsuitable for some species. In addition, all of this bank and channel erosion is moving large amounts of sediment into Lake Atalanta as well as altering the riparian habitats in the park.

Human-Caused Disturbances

Lake Atalanta Park has a long history of human alteration and most of the park's natural communities have been affected by these activities. Examples include fragmentation of park forests and woodlands by roads and utility rights-of-way, alteration of hydrology by development (both within and outside the park), logging and/or clearing forests, spraying of herbicides in utility rights-of-way that cross the park, impoundment of springs, and channelization of spring runs.

Acknowledgments

The following individuals provided valuable assistance by sharing their information, knowledge, and photographs of the flora of Lake Atalanta Park and/or by accompanying me in the field during site visits: Deb Bartholomew, Gordon Bradford, Craig Fraiser, Burnetta Hinterthuer, Tom McClure, Joe Neal, David Oakley, Joan Reynolds, and Ellen Turner. Special thanks to Joan Reynolds for access to her plant inventory records, her assistance in the field, and for lending a kayak to enable surveys of areas along and above the lakeshore.

**APPENDIX A: AERIAL PHOTO AND TOPOGRAPHIC MAPS OF
LAKE ATALANTA PARK**

Location of Lake Atalanta Park

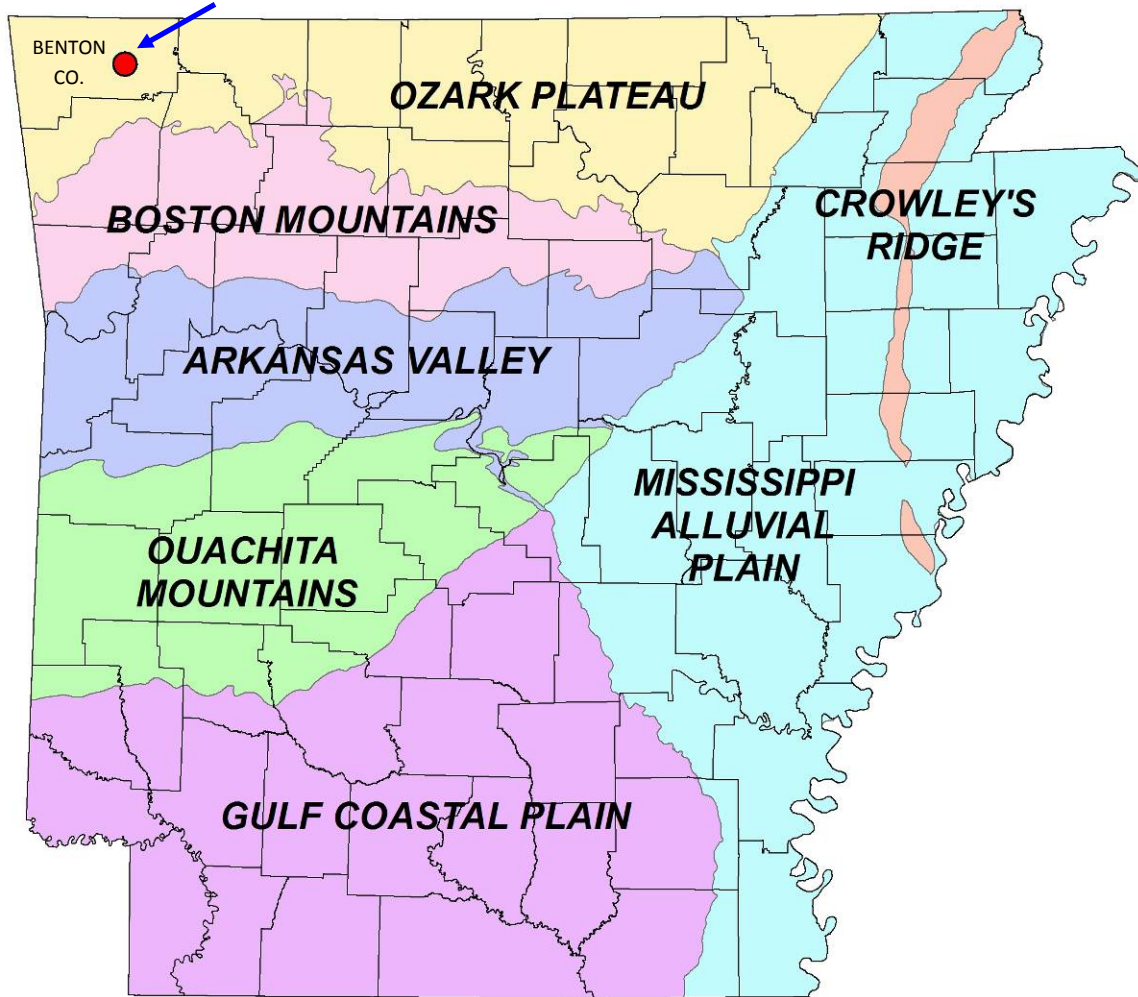


FIGURE 1. Location of Lake Atalanta Park, Benton County, Arkansas.

Lake Atalanta Park – Aerial Photo

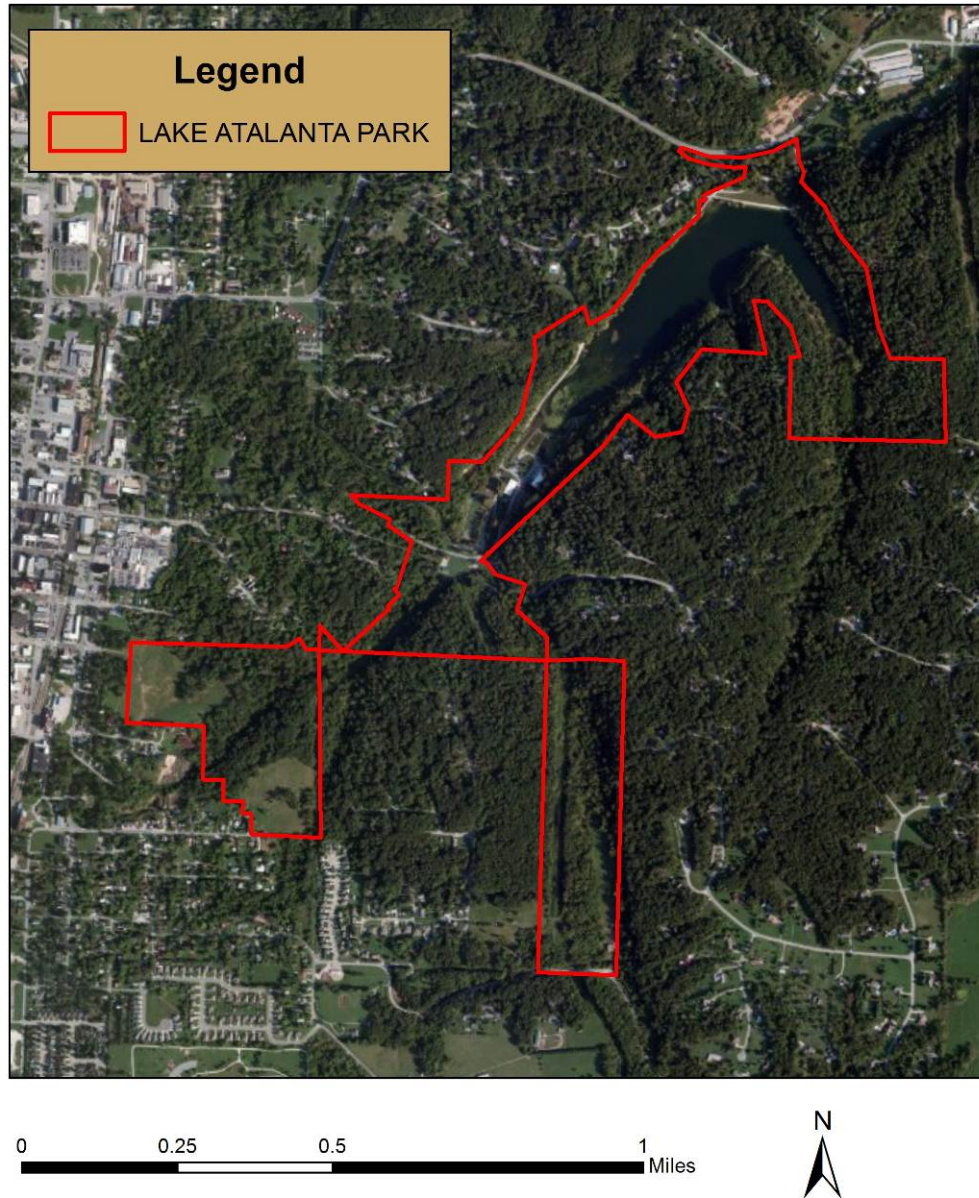


FIGURE 2. Map of Lake Atalanta Park on 2012 aerial photo. Map by Theo Witsell, Arkansas Natural Heritage Commission, 2013.

Lake Atalanta Park - Topo Map

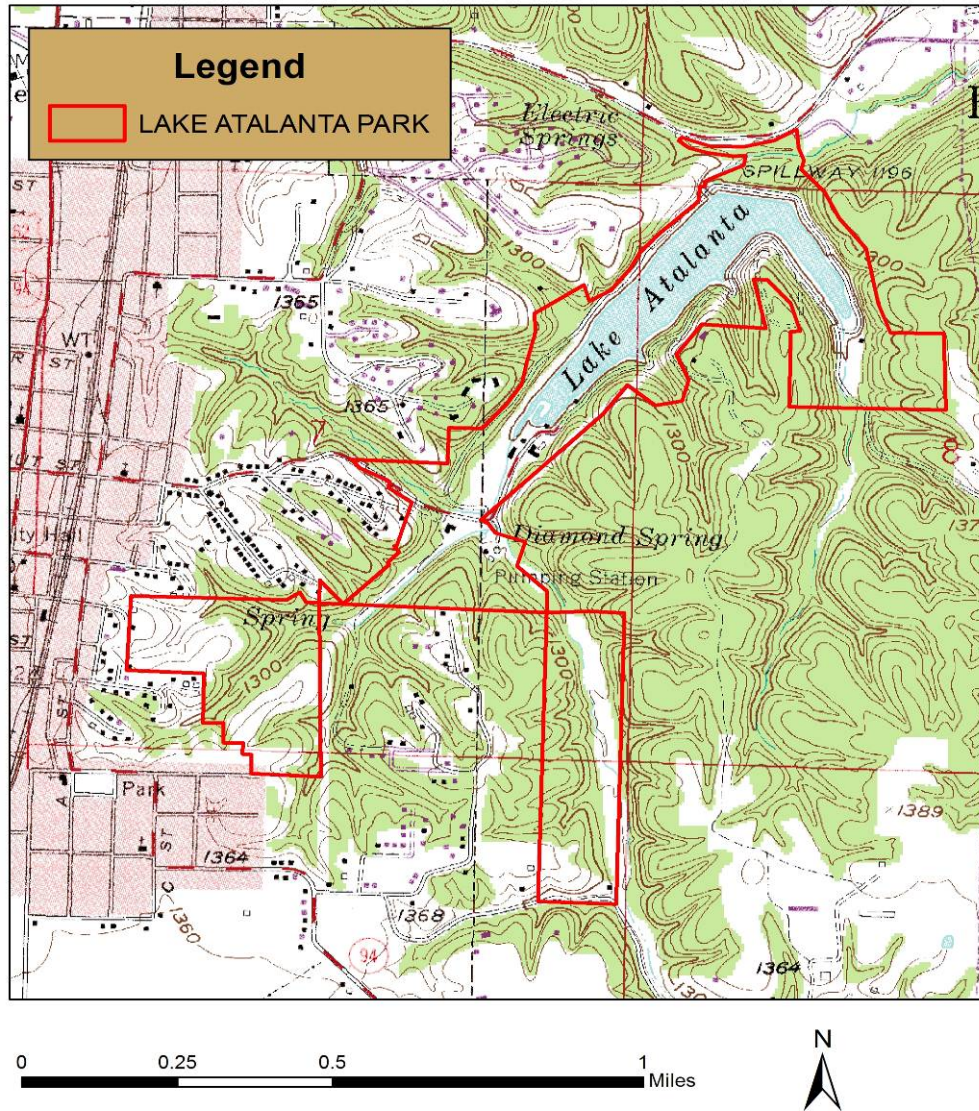


FIGURE 3. Map of Lake Atalanta Park on USGS topo map from Rogers 7.5' quadrangle. Map by Theo Witsell, Arkansas Natural Heritage Commission, 2013.

APPENDIX B: PHOTOGRAPHS OF SPECIES AND COMMUNITIES AT LAKE ATALANTA PARK

All photos taken by Theo Witsell in September and October 2013 unless otherwise noted.

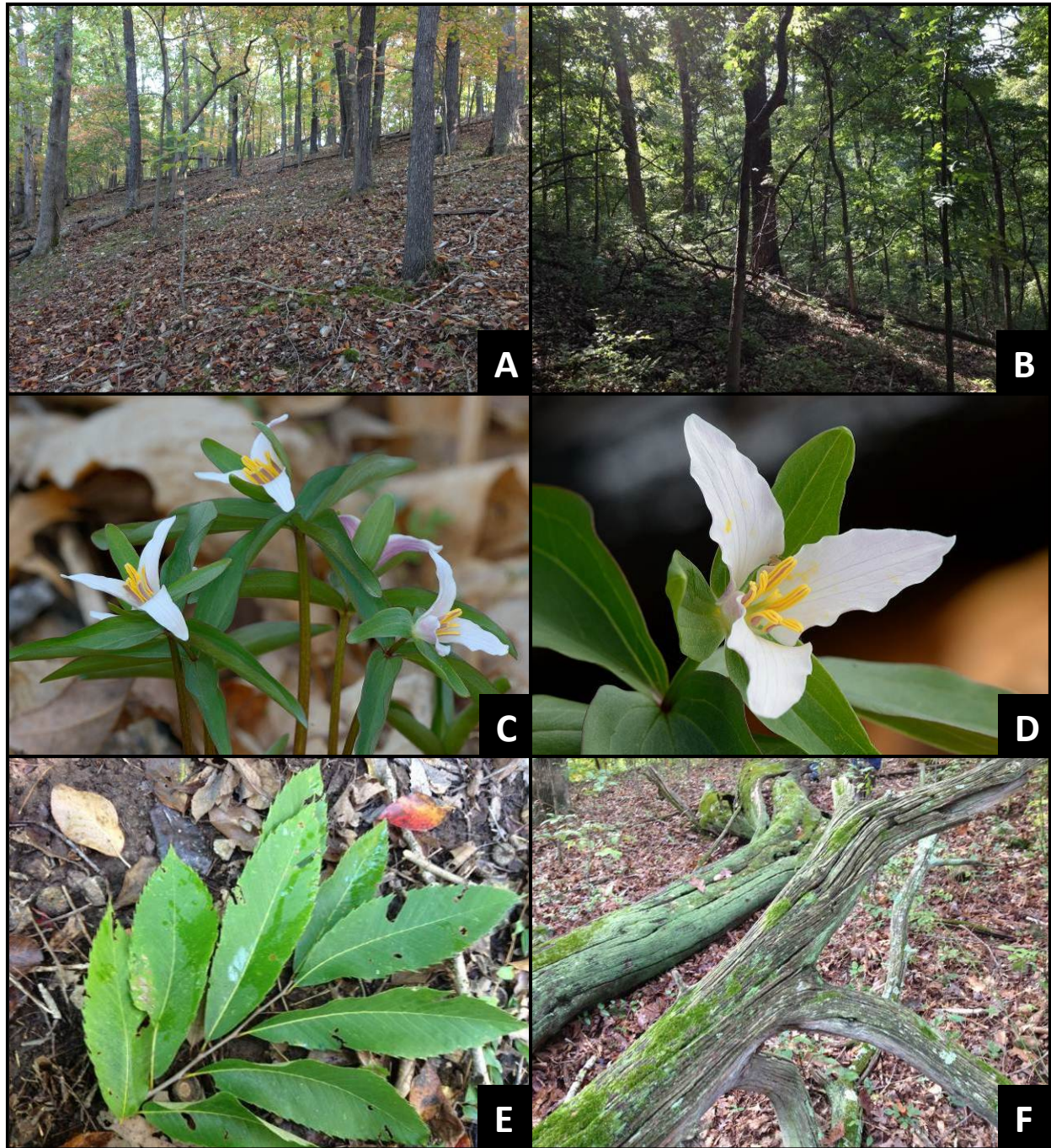


FIGURE 4. **A.** Acidic chert woodland dominated by black oak (*Quercus velutina*) and white oak (*Quercus alba*), upstream from Lake Atalanta. **B.** This acidic chert woodland south of Frisco Spring is home to a population of Ozark trillium (*Trillium ozarkanum*), a plant species of global conservation concern found only in portions of the Ozark Plateau and Ouachita Mountains. **C.** and **D.** Ozark trillium at Lake Atalanta Park. Photos by David Oakley. **E.** Leaves of Ozark chinquapin (*Castanea pumila* var. *ozarkensis*), an uncommon tree that has been decimated throughout its range by Chesnut Blight, an introduced fungal pathogen. Small trees were found at several sites in chert woodlands in the park. **F.** These “skeletons” of big Ozark chinquapin trees killed by the blight in the late 1950s still persist on the Fleming tract in the southern part of the park.



FIGURE 5. A. and B. These chert barrens on the east side of Lake Atalanta support a rich diversity of grassland and woodland plant species and are relatively free from invasive species. This community may represent an extremely open phase of the surrounding chert woodland. C. Prairie grasses including Indian grass (*Sorghastrum nutans*) and little bluestem (*Schizachyrium scoparium*) share this chert barrens with wildflowers such as rough blazing-star (*Liatris aspera*), rattlesnake master (*Eryngium yuccifolium*), beebalm (*Monarda fistulosa*), white-leaf mountain-mint (*Pycnanthemum albescens*), several species of asters (*Symphyotrichum* sp.) and goldenrods (*Solidago* sp.), and many species of native legumes.



FIGURE 6. **A.** and **B.** Lakeshore habitat along the margins of Lake Atalanta supports a number of wetland plant species not found elsewhere in the park. **C.** Frisco Spring is one of several large, perennial springs in the park that feed Lake Atalanta. **D.** Spring-fed creeks or spring runs like this one issuing from Frisco Spring flow year-round and provide habitat for species that need cool ground water. **E.** A more disturbed portion of this same spring run (under a powerline right-of-way upstream from the pavilion) is dominated by non-native invasive plants such as Japanese stilt grass (*Microstegium vimineum*) and air-potato or cinnamon vine (*Dioscorea polystacha*). **F.** A dense stand of reed canary grass (*Phalaris arundinacea*) along a spring run downstream from Frisco Spring. This species is a major invasive capable of displacing all other species in open wetlands.

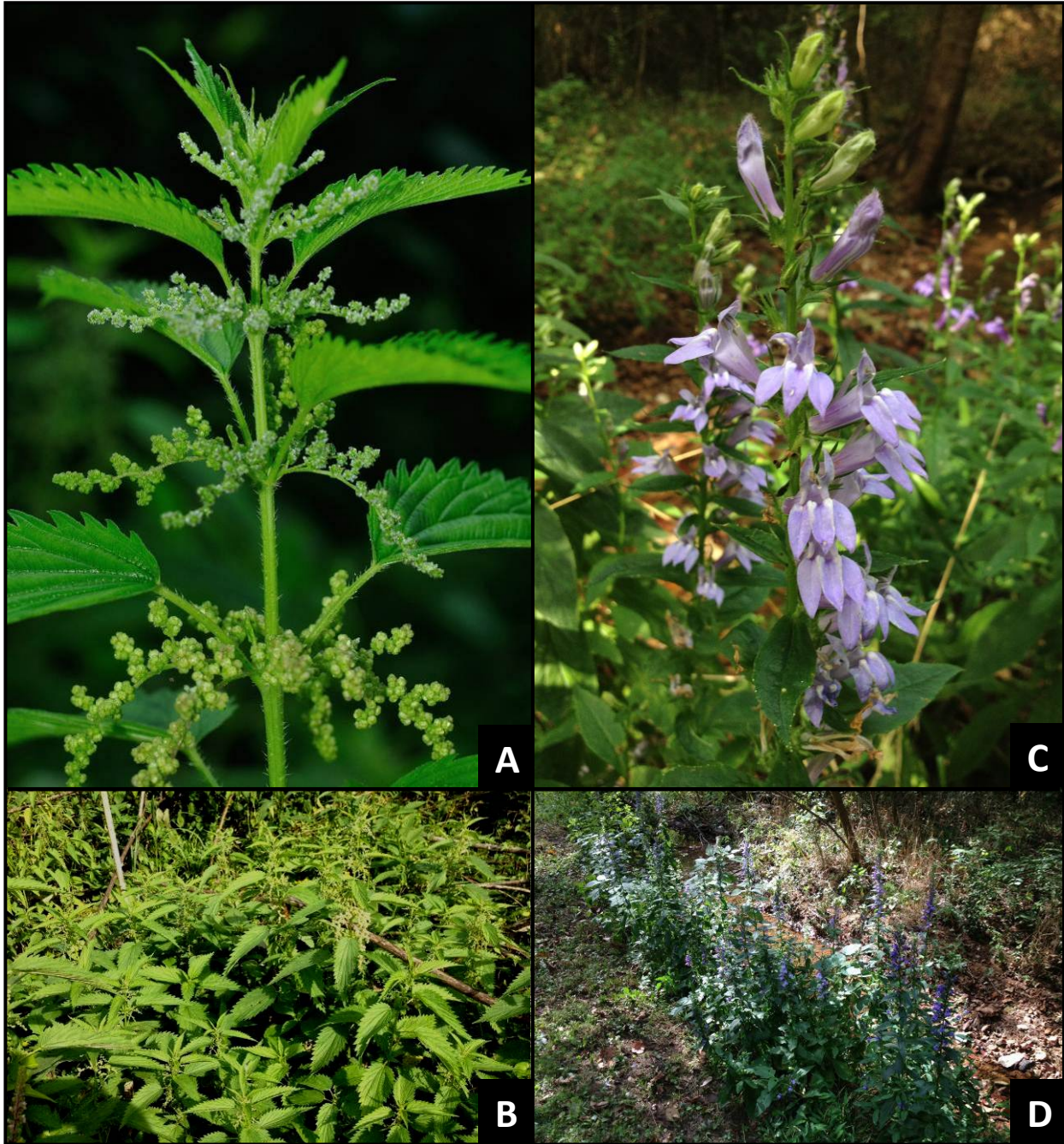


FIGURE 7. A. Slender nettle (*Urtica gracilis*), a species of state conservation concern known from just two sites in Arkansas, one of which is along a spring-fed creek issuing from Frisco Spring. Photo by David Oakley. **B.** A group of slender nettle plants downstream from Frisco Spring. **C.** Great blue lobelia (*Lobelia siphilitica*), a species characteristic of groundwater-fed wetlands and spring runs, downstream from Frisco Spring. **D.** A stand of great blue lobelia downstream from Frisco Spring.

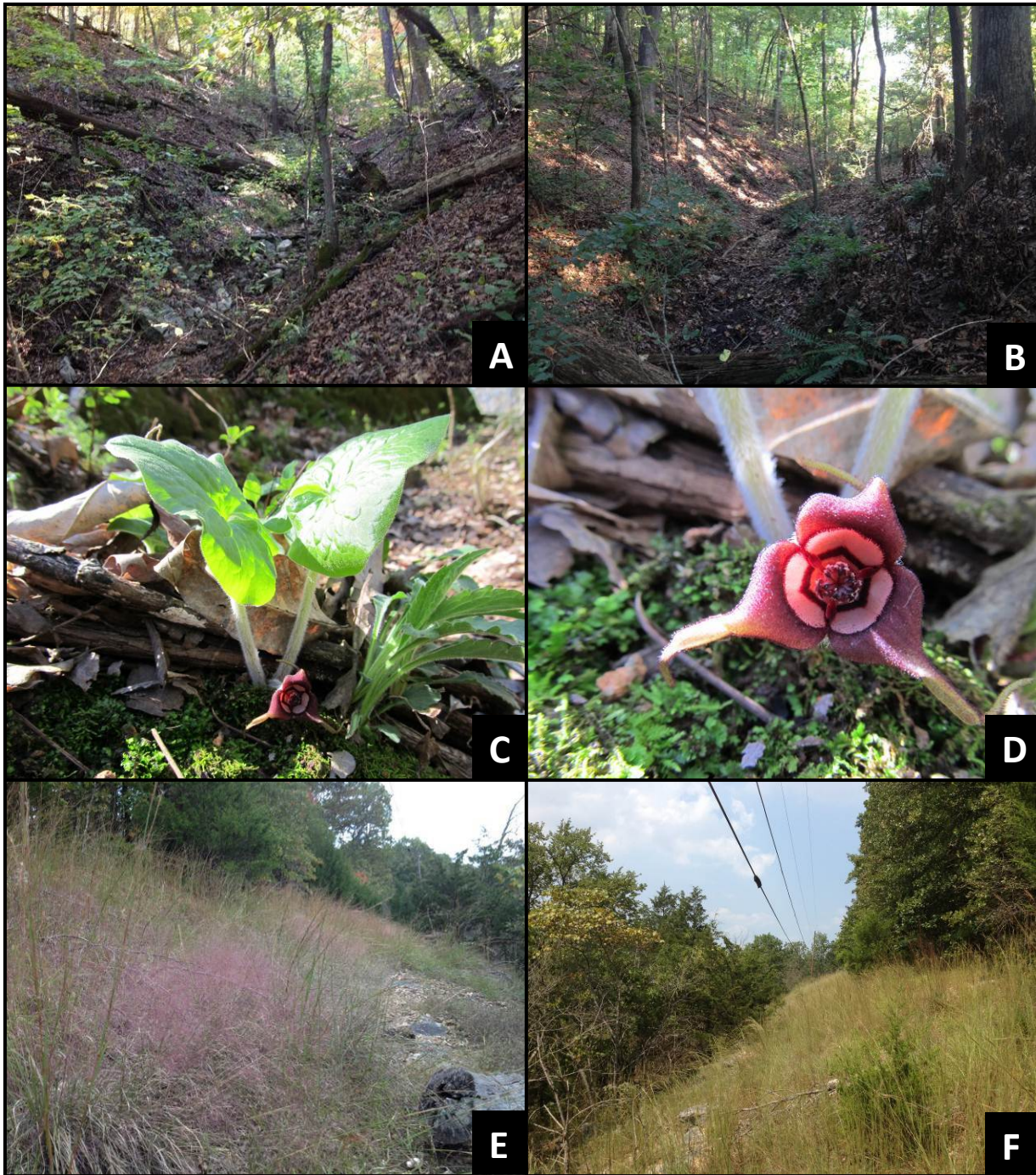


FIGURE 8. A. and B. Rich, mesic hardwood forests occur in protected ravines that feed Lake Atalanta and are home to a number of spring wildflower species. C. One of the most significant rare plants at Lake Atalanta Park is the taper-tip wild ginger (*Asarum canadense* var. *acuminatum*) which is typically found in states to the north and east of Arkansas. In Arkansas, it is only known from a few locations in Benton, Newton, and Stone counties, all in mesic hardwood forests in protected ravines with limestone-derived soils. Photo by Joan Reynolds. D. Taper-tip wild ginger is differentiated from the more common wild ginger by its long petal tips, large plants, and leaves that are tapered to a pointed tip. Photo by Joan Reynolds. E. and F. Limestone glade habitat on a hillside east of the Lake Atalanta dam.

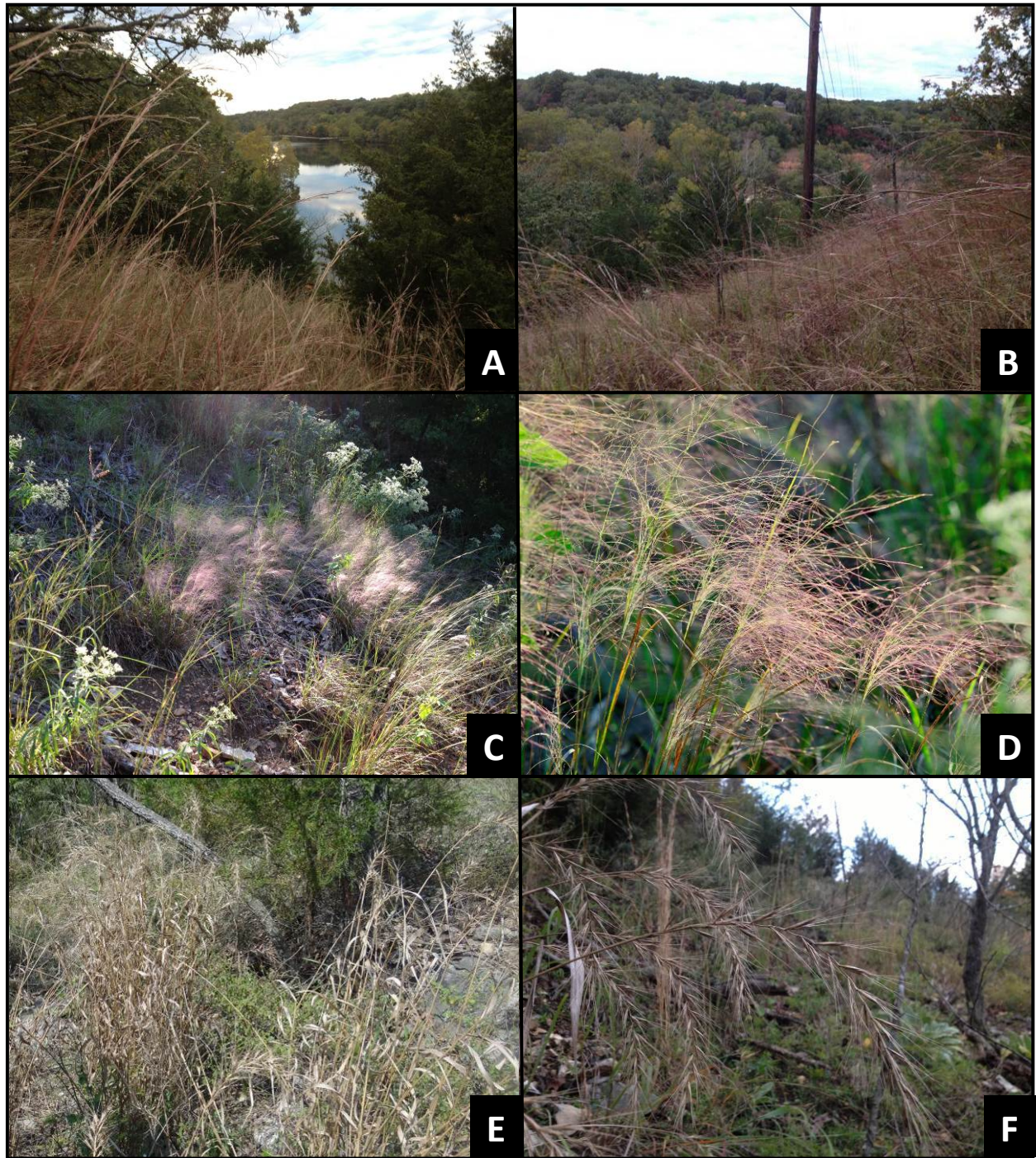


FIGURE 9. A. and B. Limestone glade on a hillside east of the Lake Atalanta dam. C. Hair-awn muhly grass (*Muhlenbergia capillaris*), also known as pink smoke grass, is an indicator of good quality glade and savanna habitat. Growing in limestone glades near the north end of Lake Atalanta. D. Detail of hair-awn muhly grass. Photo by David Oakley. E. Church's wild rye (*Elymus churchii*), a grass species described new-to-science in 2006 and known only from the mountains of Arkansas, Missouri, and Oklahoma. Growing in limestone glades and adjacent woodlands near the north end of Lake Atalanta. Photo by Joan Reynolds. F. Detail of Church's wild rye.

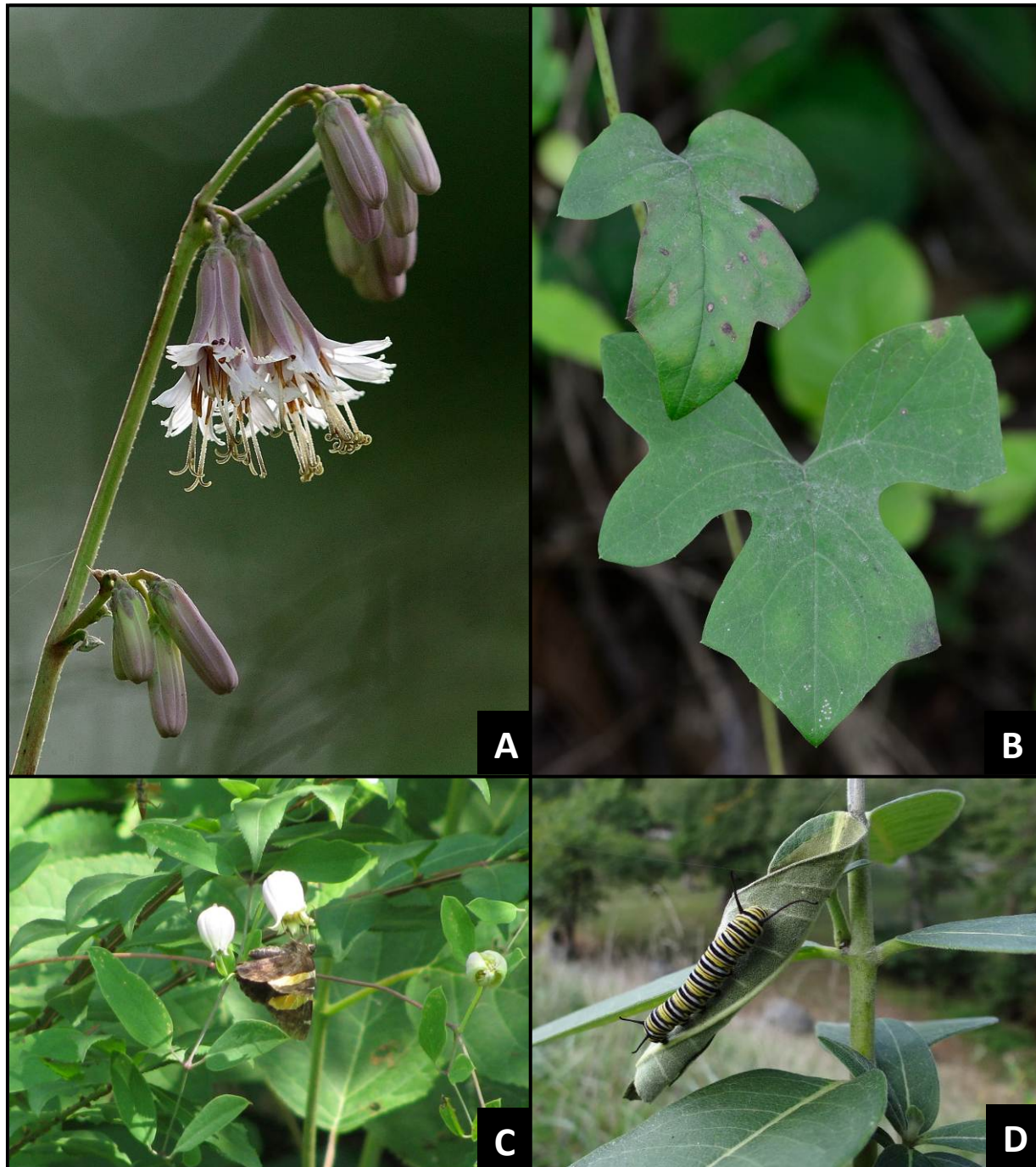


FIGURE 10. A. White rattlesnake-root (*Prenanthes alba*), a species of state conservation concern, growing on rocky limestone slopes above Lake Atalanta Road. Photo by David Oakley. **B.** Detail of white rattlesnake-root (*Prenanthes alba*) leaves, Lake Atalanta Park. Photo by David Oakley. **C.** Golden-banded Skipper (*Autochton cellus*) nectaring on pale leather-flower (*Clematis versicolor*) in glade above Lake Atalanta Road. Photo by Joan Reynolds. **D.** Caterpillar of the Monarch butterfly (*Danaus plexippus*) on its host plant purple milkweed (*Asclepias purpurascens*) east of the dam. Photo by Joan Reynolds.

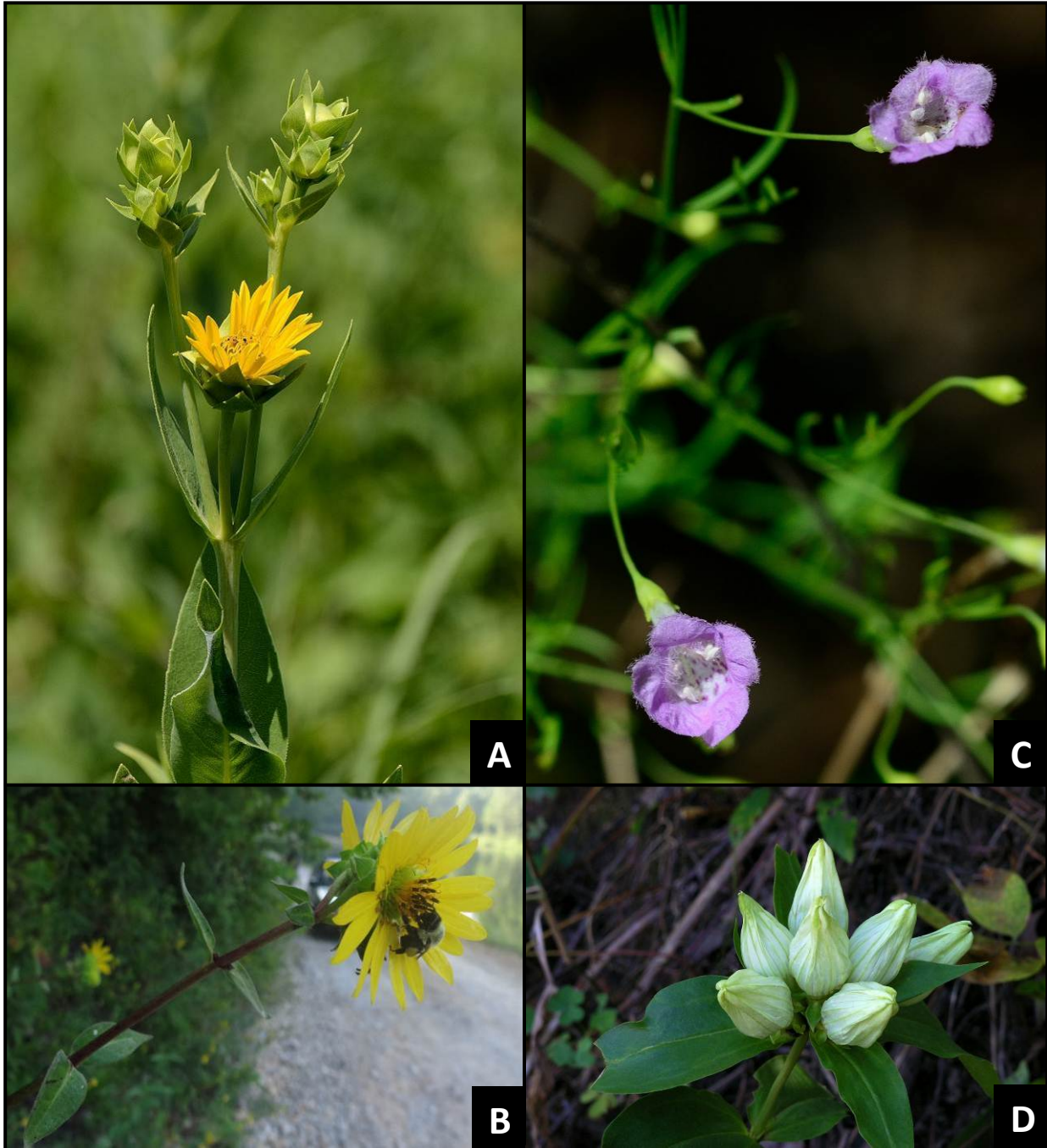


FIGURE 11. A. Smooth rosinweed (*Silphium integrifolium* var. *laeve*), a plant of state conservation concern found in Arkansas only at a few sites in Benton and Carroll counties. Photo by David Oakley. B. A bumblebee (*Bombus* sp.) pollinating smooth rosinweed along Lake Atalanta Road. Photo by Joan Reynolds. C. Gattinger's false foxglove (*Agalinis gattingeri*), a common species of dry open chert woodlands on upper slopes and ridges. Photo by David Oakley. D. Pale gentian (*Gentiana alba*), a species of state conservation concern, growing on a rocky limestone slope along Lake Atalanta Road. Photo by Craig Fraiser.

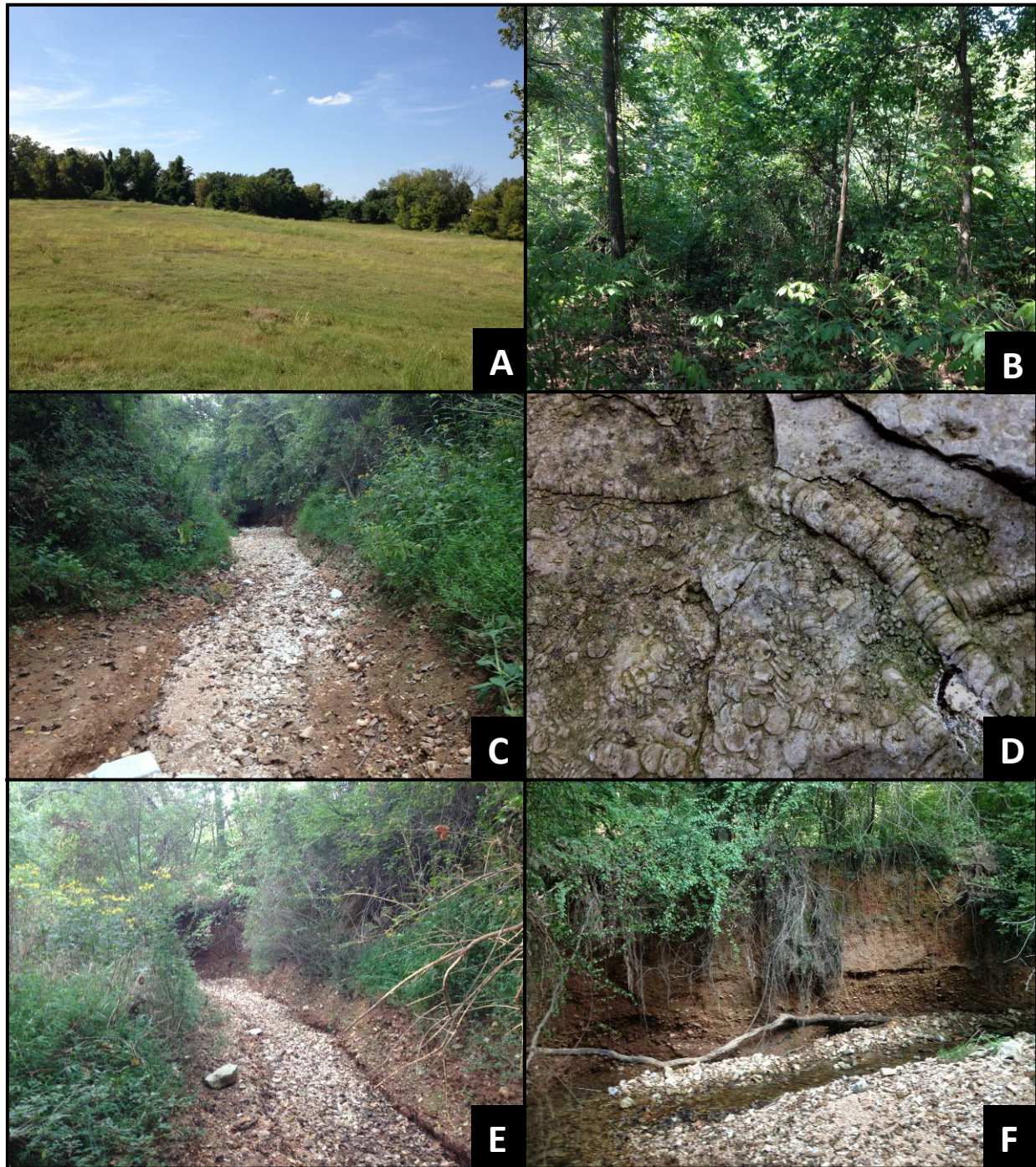


FIGURE 12. **A.** Upland field dominated by non-native grasses in the southwest part of the park. **B.** Degraded chert woodland with heavy encroachment by several non-native invasive shrubs and vines including burning-bush (*Euonymus alatus*), Chinese privet (*Ligustrum sinense*), Oriental bittersweet (*Celastrus orbiculatus*), and Japanese honeysuckle (*Lonicera japonica*). **C.** This losing stream south of Lake Atalanta is indicative of a karst landscape. **D.** Crinoid fossils in the Boone Limestone along a creek upstream from Lake Atalanta. **E.** Stream south of Lake Atalanta showing active downcutting. This small stream was incised more than eight feet deep in some places and smaller tributaries were actively head cutting in response. **F.** Same stream showing severe (and recent) bank erosion. Note exposed roots.



FIGURE 13. A. Powerline right-of-way dominated by two non-native invasive species: Japanese stilt grass (*Microstegium vimineum*) and beefsteak plant (*Perilla frutescens*). These and other invasive annual species have become dominant in rights-of-way where herbicide spraying has destroyed the native perennial herbaceous vegetation. **B.** Solid stand of beefsteak-plant in an herbicide-sprayed powerline right-of-way. **C.** Dense stand of kudzu (*Pueraria montana*) taking over a wooded upper slope south of the pavilion.

**APPENDIX C: ECOLOGICALLY SIGNIFICANT AREAS AT LAKE
ATLANTA PARK**

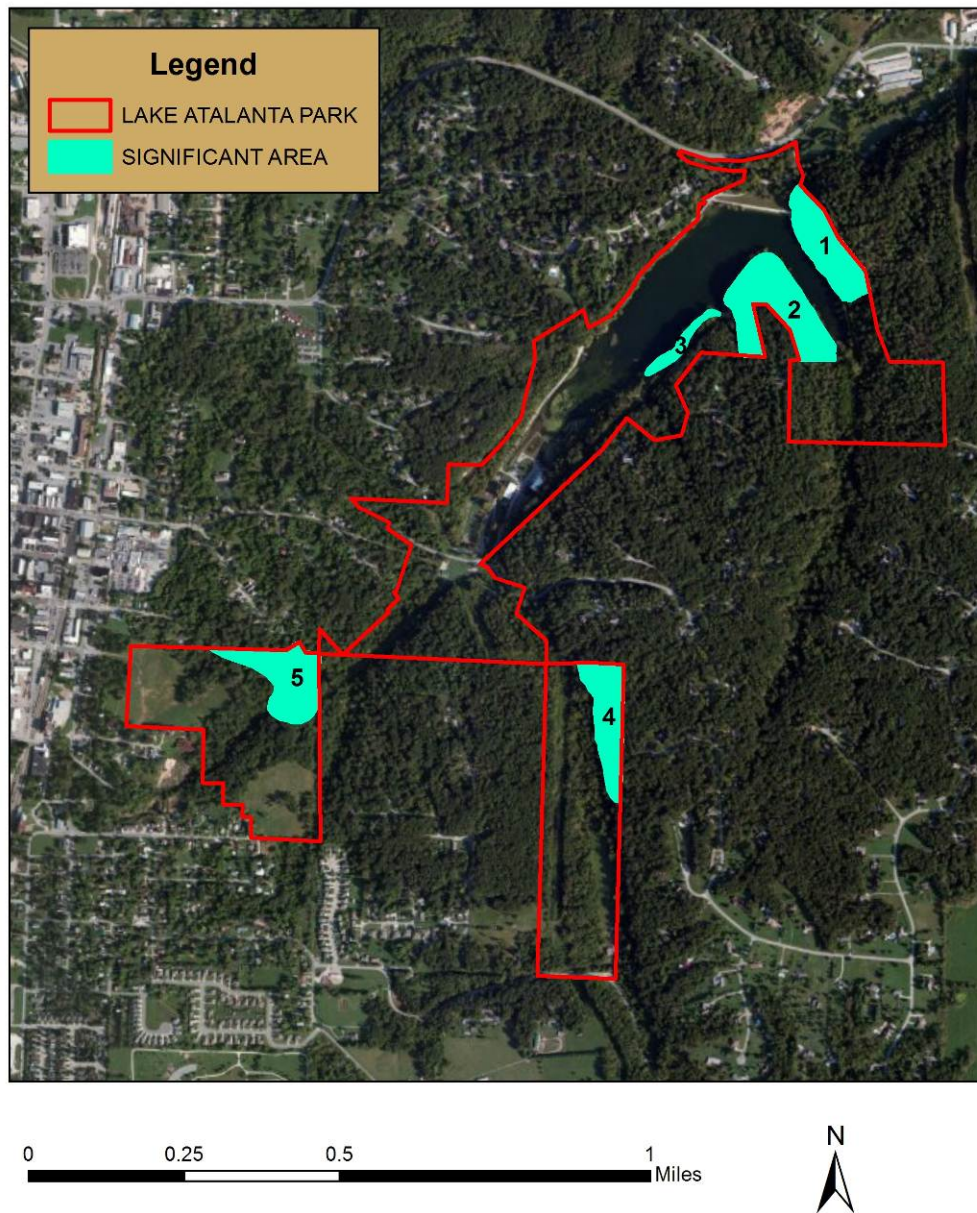


FIGURE 14. Map showing location of five Ecologically Significant Areas at Lake Atalanta Park. Map by Theo Witsell, Arkansas Natural Heritage Commission, 2013.

Ecologically Significant Areas

Five Ecologically Significant Areas were identified at Lake Atalanta Park during the rapid assessment. An Ecologically Significant Area is defined here as an area with relatively intact or high quality natural communities. These areas may include populations of species of conservation concern or may simply support relatively intact plant communities with high native species diversity and low levels of non-native invasive species. These may be thought of as those areas of the park that are the least altered in terms of their natural condition, most biologically diverse, and that would be the easiest to restore and maintain in good condition.

Identification of these five areas as Ecologically Significant Areas is not meant to indicate that other areas of the park are not ecologically significant or worthy of protection or management to enhance their natural values. In particular, there are other areas that support populations of plant species of conservation concern but that are not identified here as Ecologically Significant Areas due to their small size, altered condition, landscape context, or for other reasons.

This appendix contains descriptions and maps of each of these areas. Descriptions provide latitude and longitude coordinates of the centrum of each area followed by a justification of why they were deemed ecologically significant and a description of the plant community or communities present. Brief management recommendations are also provided for each area.

Two areas of Lake Atalanta Park support small areas of good quality limestone glade vegetation. Both occur on limestone and both are associated, at least partially, with powerline rights-of-way where the maintenance of open conditions has preserved open habitat for glade species. However, this is something of a mixed bag as the use of herbicides to maintain these open rights-of-way has been detrimental to some species and in some areas. Coordination with right-of-way managers is needed to ensure that the unique elements of these areas are preserved while still keeping the glade habitat (and the right-of-way) clear of trees. This can often be done by making minor adjustments in the way in which herbicides are applied and/or in the specific chemicals used.

SIGNIFICANT AREA 1: Centrum = 36.33943, -94.09424

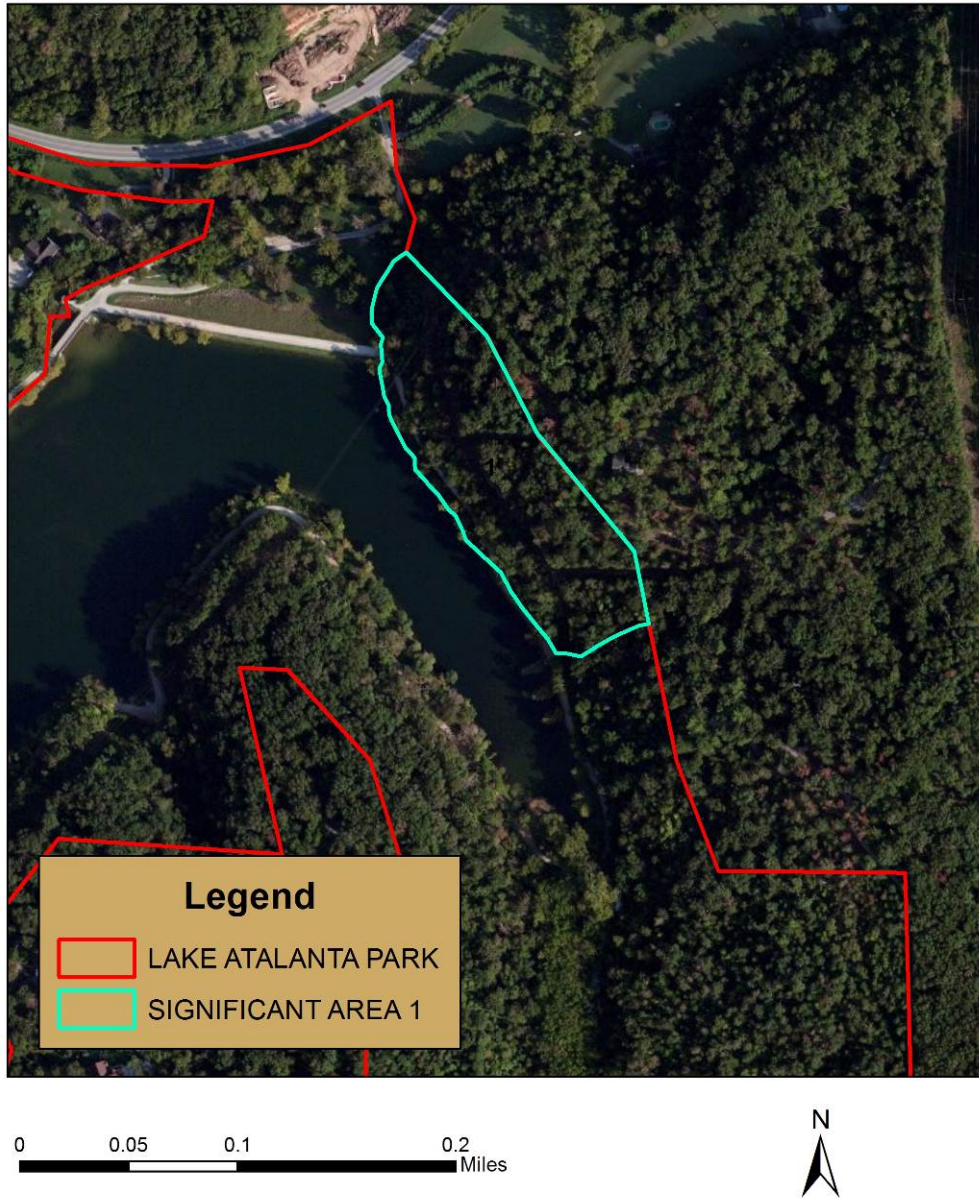


FIGURE 15. Map showing location of Significant Area 1. Map by Theo Witsell, ANHC, 2013.

SIGNIFICANT AREA 1: Centrum = 36.33943, -94.09424

This area includes the largest and most diverse pockets of limestone glade and woodland vegetation in the park (Figs. 8e, 8f, & Fig. 9) as well as good quality chert woodland. It also contains the highest concentration of rare plant species in the park, supporting at least four species listed as state species of conservation concern by the Arkansas Natural Heritage Commission. These are Church's wild rye (*Elymus churchii*), pale gentian (*Gentiana alba*), white rattlesnake-root (*Prenanthes alba*), and smooth rosinweed (*Silphium integrifolium* var. *laeve*). Details of the occurrence(s) of each are provided in Appendix D.

The geologic contact between the limestone and the overlying chert occurs near the upper edge of the main north-south trending powerline right-of-way that traverses the area. The slope below this contact is mostly underlain by limestone while the area above is entirely underlain by chert.

Limestone Glade and Woodland

The canopy layer of the limestone woodland consists mainly of scattered plants of chinquapin oak (*Quercus muehlenbergii*), Shumard's oak (*Quercus shumardii*), and post oak (*Quercus stellata*). Glades support a few stunted examples of these species as well as scattered gum bumelia (*Sideroxylon lanuginosum*), white ash (*Fraxinus americana*), winged elm (*Ulmus alata*), dwarf hackberry (*Celtis tenuifolia*), and eastern redbud (*Cercis canadensis*). Eastern red-cedar (*Juniperus virginiana*) is also common in some areas.

Open areas are dominated by big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and side-oats grama (*Bouteloua curtipendula*). Other grasses include Indian grass (*Sorghastrum nutans*), switch grass (*Panicum virgatum*), three-flower melic grass (*Melica nitens*), purple-top tridens (*Tridens flavus* var. *flavus*), wiry witch grass (*Panicum flexile*), narrow-leaf rosette grass (*Dichanthelium aciculare*), hidden dropseed (*Sporobolus clandestinus*), tall dropseed (*Sporobolus compositus*), Ozark dropseed (*Sporobolus vaginiflorus* var. *ozarkanus*), hair-awn muhly (*Muhlenbergia capillaris*), and Church's wild rye (*Elymus churchii*). Forbs and other herbaceous plants present include blue waxweed (*Cuphea viscosissima*), purple-stem cliff-brake (*Pellaea atropurpurea*), goat's-rue (*Tephrosia virginiana*), snout-bean (*Rhynchosia latifolia*), yellow passion-flower (*Passiflora lutea*), one-seed mercury (*Acalypha moncococca*), noseburn (*Tragia* sp.), slender mountain-mint (*Pycnanthemum tenuifolium*), narrow-leaf paleseed (*Leucospora multifida*), a rush (*Juncus secundus*), drooping bulrush (*Scirpus pendulus*), prairie-tea (*Croton monanthogynus*), flowering spurge (*Euphorbia corollata*), yellow false-foxglove (*Aureolaria grandiflora*), sensitive-brier (*Mimosa quadrivalvis* var. *nuttallii*), green-flower milkweed (*Asclepias viridiflora*), violet wood-sorrel (*Oxalis violacea*), diamond-flower (*Houstonia nigricans*), beaked panic grass (*Panicum anceps*), false spotted St. John's-wort (*Hypericum pseudomaculatum*), violet bush-clover (*Lespedeza frutescens*), wingstem crownbeard (*Verbesina helianthoides*), tall thistle (*Cirsium altissimum*), rough goldenrod (*Solidago radula*), common ragweed (*Ambrosia artemisiifolia*), false boneset (*Brickellia eupatorioides*), meadow-parsnip (*Thaspium chapmannii*), white-wand beardtongue (*Penstemon tubiflorus*), and rabbit-tobacco (*Pseudognaphalium obtusifolium*).

Downslope, toward Lake Atalanta Road, the woodland becomes more mesic and species diversity increases, adding species like winecup (*Callirhoe digitata*), prairie-dock (*Silphium terebinthinaceum*), starry rosinweed (*Silphium asteriscus*), smooth aster (*Symphotrichum laeve*), pale gentian (*Gentiana alba*), white rattlesnake-root (*Prenanthes alba*), smooth rosinweed (*Silphium integrifolium* var. *laeve*), and many more. The slope immediately above the road through this area is one of the richest areas for plant viewing in the park.

Chert Woodland

The part of this area above the powerline supports acidic chert woodland dominated by black oak (*Quercus velutina*), white oak (*Quercus alba*), and post oak (*Quercus stellata*) with some blackjack oak (*Quercus marilandica*). The understory consists primarily of flowering dogwood (*Cornus florida*), white ash (*Fraxinus americana*), Carolina buckthorn (*Frangula caroliniana*), and winged elm (*Ulmus alata*). The ground cover is characteristic of acid woodlands and includes low-bush blueberry (*Vaccinium pallidum*), deerberry (*Vaccinium stamineum*), forked rosette grass (*Dichanthelium dichotomum*), Bosc's rosette grass (*Dichanthelium boscii*), dittany (*Cunila origanoides*), hawkweed (*Hieracium gronovii*), oldfield goldenrod (*Solidago nemoralis*), Muhlenberg's sedge (*Carex muehlenbergii* var. *enervis*), and several species of native bush-clovers (*Lespedeza* spp.) and tick-trefoils (*Desmodium* spp.). Few invasive species are present though several large eastern white pine (*Pinus strobus*) trees are present in the canopy in one area. This species is not native to Arkansas and these trees must have been planted, or naturalized from planted trees, long ago.

Management Recommendations

Though this site would get the most benefit from periodic prescribed burning, this may be difficult due to its location and landscape context.

In the absence of fire, cutting and removal of cedar trees would help to restore open conditions to the glades and woodlands. These cedars occur in close enough proximity to the lake that they could probably be dragged down to the shore, wired to cinder blocks, and sunk into the lake for fish habitat. The ANHC has found this to be an excellent project for volunteers at Devil's Eyebrow Natural Area on the north end of Beaver Lake. Following cedar removal, control of some of the smaller hardwood trees and shrubs should be considered. Unlike cedars, which do not re-sprout after cutting, the stumps of hardwoods will need to be carefully treated with herbicide to prevent re-sprouting.

The portions of the glades under the powerlines have a diverse grass component but few broadleaf forbs. This indicates that the right-of-way may have been sprayed with a broadleaf-specific herbicide to control woody vegetation. Rather than broadcast-spraying the right-of-way through this area, or even spot spraying shrubs with a foliar spray, a more delicate approach would be to cut the woody vegetation and then treat the stump directly with herbicide. This reduces overspray and thus collateral damage to desirable broadleaf glade species.

Infrastructure planning should take into account the locations of rare plant species and route trails away from them to the extent possible. In addition, because there are rare species in the roadside along Lake

Atalanta Road in this area, compatible roadside vegetation management is critical. Broadcast spraying of herbicides should be avoided in this area and vegetation management should be by mechanical treatment only. Furthermore, mowing or weed-eating should be timed to allow rare species to flower and make seed if possible.

Unfortunately, a number of invasive plant species have become established, primarily on the lower slope above Lake Atalanta Road. These include tree-of-heaven (*Ailanthus altissima*), Oriental bittersweet (*Celastrus orbiculatus*), and Japanese honeysuckle (*Lonicera japonica*). These species should be controlled by mechanical treatment, or by a mix of mechanical treatment and very careful use of herbicide so that desirable and rare species are not harmed in the process. Reduction of the park's deer herd would also benefit the native flora in this area.

SIGNIFICANT AREA 2: Centrum = 36.33838, -94.09591.

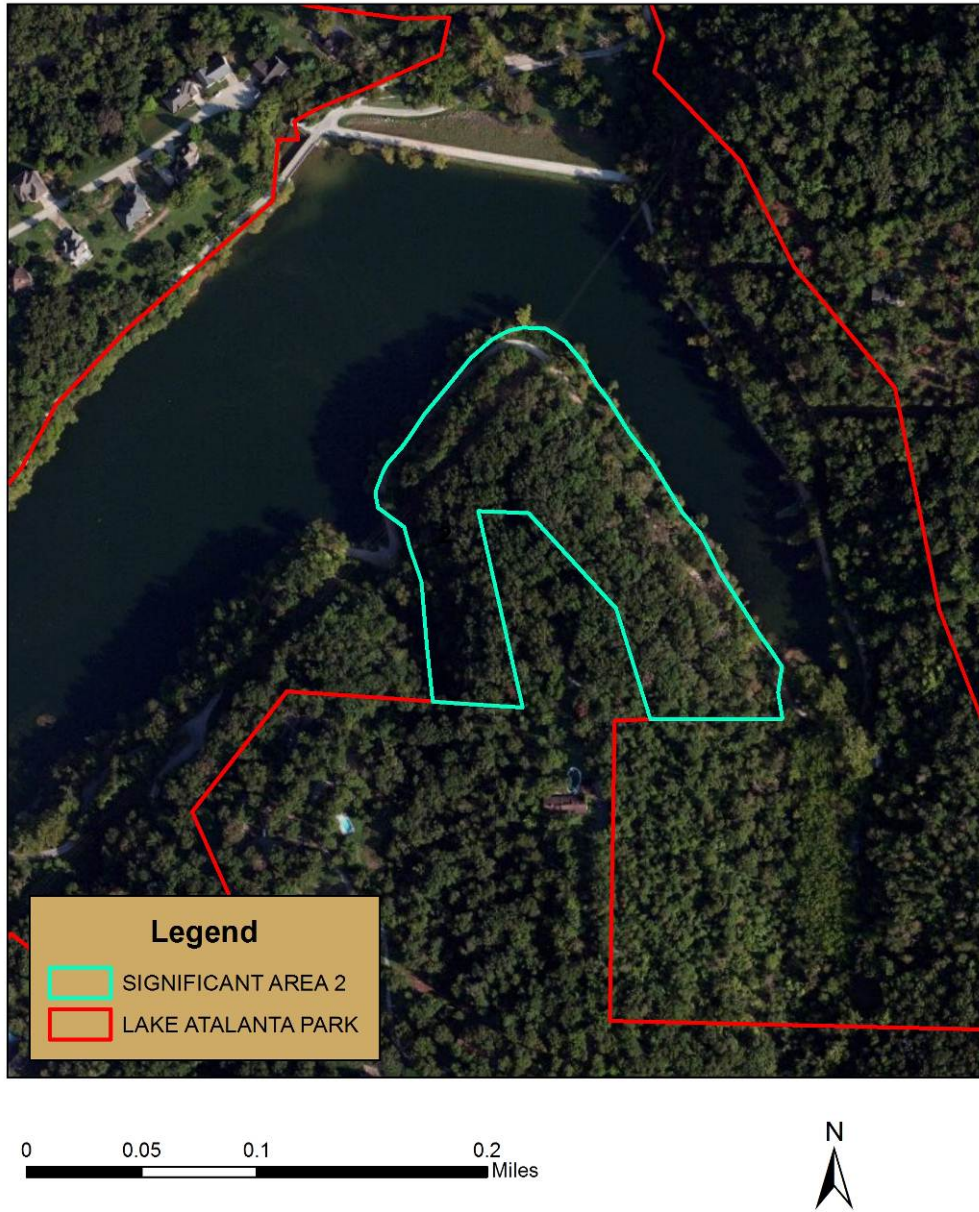


FIGURE 16. Map showing location of Significant Area 2. Map by Theo Witsell, ANHC, 2013.

SIGNIFICANT AREA 2: Centrum = 36.33838, -94.09591.

This area contains good representations of several communities including limestone glade and woodland, chert woodland, and mesic slope forest. It also contains a population of white rattlesnake-root (*Prenanthes alba*), a species of conservation concern.

Limestone Glade and Woodland

An area of glade vegetation is centered on a steep southwest-facing slope above Lake Atalanta Road, just northeast of a small cove in the lake (centrum = 36.33808, -94.09686.). The area under the powerline supports most of the remaining glade flora but the adjacent woodlands also support some species. The most diverse area is on steep slope under the powerline where there are limestone outcrops above the road. Here the herbaceous layer is dominated by little bluestem (*Schizachyrium scoparium*) with an abundance of big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and tall thoroughwort (*Eupatorium altissimum*). Other species include hidden dropseed (*Sporobolus clandestinus*), hair-awn muhly (*Muhlenbergia capillaris*), New Jersey-tea (*Ceanothus americanus*), wingstem crownbeard (*Verbesina helianthoides*), hairy wild petunia (*Ruellia humilis*), oldfield goldenrod (*Solidago nemoralis*), green-flower milkweed (*Asclepias viridiflora*), marbleseed (*Onosmodium bejariense* var. *subsetosum*), Scribner's rosette grass (*Dichanthelium oligosanthes* subsp. *scribnerianum*), late purple aster (*Symphotrichum patens*), white prairie-clover (*Dalea candida*), purple prairie-clover (*Dalea purpurea*), prairie-tea (*Croton monanthogynus*), wiry witch grass (*Panicum flexile*), purple-top tridens (*Tridens flavus* var. *flavus*), side-oats grama (*Bouteloua curtipendula*), and yellow passion-flower (*Passiflora lutea*). The canopy of the adjacent woodland associated with this limestone glade area is primarily Shumard's oak (*Quercus shumardii*) and chinquapin oak (*Quercus muehlenbergii*).

Chert Woodland

The more gentle areas upslope of the limestone outcrops are underlain by chert and acid-loving shrubs such as farkleberry (*Vaccinium arboreum*) and low-bush blueberry (*Vaccinium pallidum*) are common here. Dominance in the herbaceous layer shifts to big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*) with variable rosette grass (*Dichanthelium commutatum*), forked rosette grass (*Dichanthelium dichotomum*), sensitive-brier (*Mimosa quadrivalvis* var. *nuttallii*), goat's-rue (*Tephrosia virginiana*), and hawkweed (*Hieracium gronovii*). The canopy here is dominated by black oak (*Quercus velutina*), mockernut hickory (*Carya alba*), and white oak (*Quercus alba*).

Mesic Forest

The eastern part of this area consists of a northeast-facing slope covered by a mesic hardwood forest with a rich ground flora. It includes a population of white rattlesnake-root (*Prenanthes alba*), a species of conservation concern, located on the slopes above and below Lake Atalanta Road. Other mesic forest species present include Solomon's-seal (*Polygonatum biflorum*), wild geranium (*Geranium maculatum*), large-flower bellwort (*Uvularia grandiflora*), meadow-parsnip (*Thaspium trifoliatum*), goat's-beard (*Aruncus dioicus*), wreath goldenrod (*Solidago caesia*), wild hydrangea (*Hydrangea arborescens*), blue

wood aster (*Symphotrichum drummondii*), hazelnut (*Corylus americana*), and black cohosh (*Actaea racemosa*).

Management Recommendations

Though this site would get the most benefit from periodic prescribed burning, this may be difficult due to its location and landscape context.

In the absence of fire, cutting and removal of cedar trees would help to restore open conditions to the glades and woodlands. These occur in close enough proximity to the lake that they could probably be dragged down to the shore, wired to cinder blocks, and sunk into the lake for fish habitat. The ANHC has found this to be an excellent project for volunteers at Devil's Eyebrow Natural Area on the north end of Beaver Lake. Following cedar removal, control of some of the smaller hardwood trees and shrubs should be considered. Unlike cedars, which do not re-sprout after cutting, the stumps of hardwoods will need to be carefully treated with herbicide to prevent re-sprouting.

The portions of the glades under the powerlines have a diverse grass component but few broadleaf forbs. This indicates that the right-of-way may have been sprayed with a broadleaf-specific herbicide to control woody vegetation. Rather than broadcast-spraying the right-of-way through this area, or even spot spraying shrubs with a foliar spray, a more delicate approach would be to cut the woody vegetation and then treat the stump directly with herbicide. This reduces overspray and thus collateral damage to broadleaf glade species.

Other invasive species should also be controlled in a manner that will not adversely impact desirable native species in this area. Reduction of the park's deer herd would also benefit the native flora in this area.

SIGNIFICANT AREA 3: Centrum = 36.33719, -94.09836

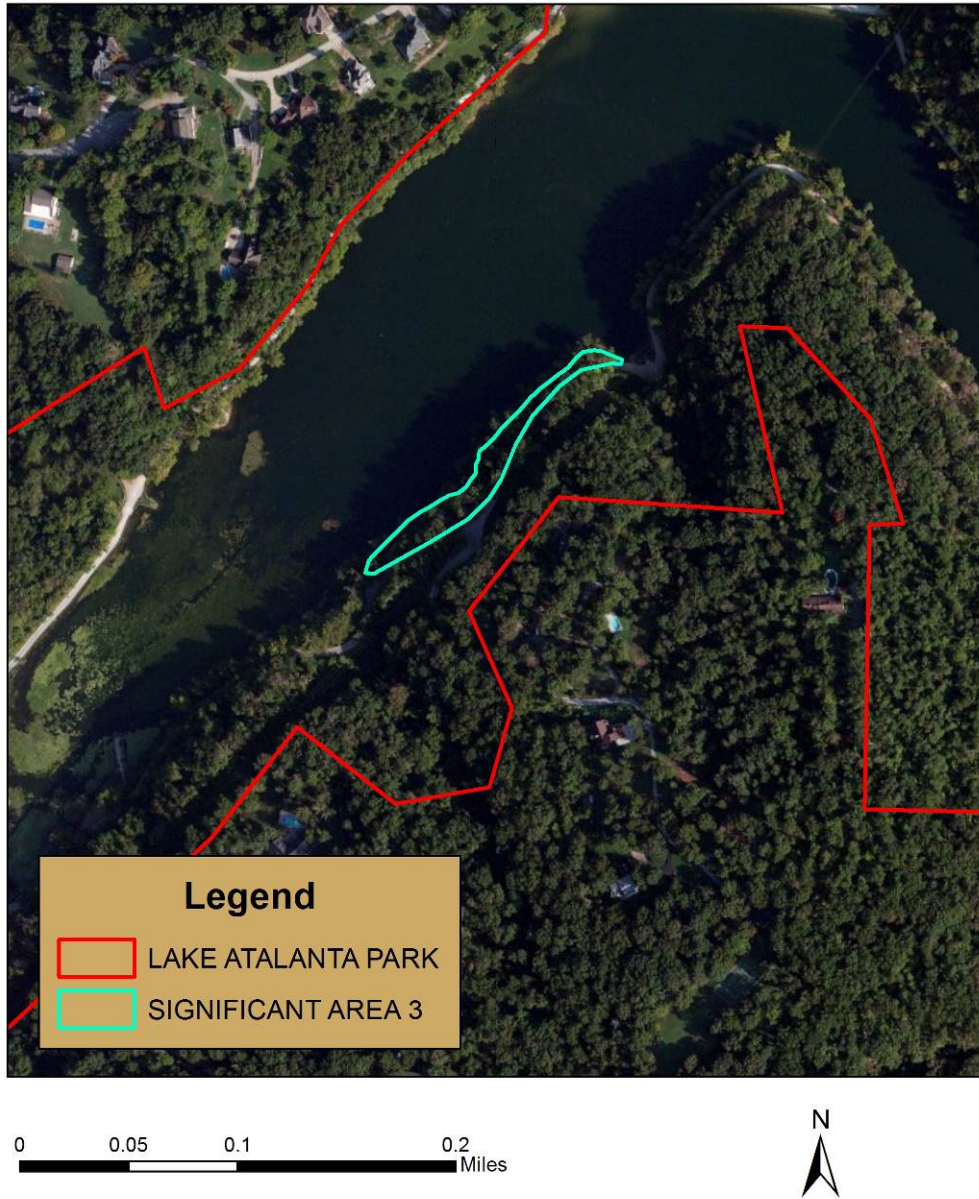


FIGURE 17. Map showing location of Significant Area 3. Map by Theo Witsell, ANHC, 2013.

SIGNIFICANT AREA 3: Centrum = 36.33719, -94.09836

Chert Woodland and Barrens

This unusual natural community (Fig. 5) is found on a moderately steep northwest-facing slope between two small coves on the east side of Lake Atalanta, between Lake Atalanta Road and the shore of the lake (centrum = 36.33668, -94.09905). Soils in this area are very thin and consist mostly of broken chert rubble over acidic clay. It is possible that this community represents an extremely open phase of the surrounding chert woodland or that past human activities related to the construction of Lake Atalanta contributed to its development. Whatever its origin, it is a unique area with a diverse native flora containing several species that were not found elsewhere in the park. For lack of a better term, I am calling it a “chert barrens” here.

This community has a few scattered trees and shrubs; mostly black-gum (*Nyssa sylvatica*), rusty blackhaw (*Viburnum rufidulum*), hazelnut (*Corylus americana*), American holly (*Ilex opaca*), deerberry (*Vaccinium stamineum*), and fragrant sumac (*Rhus aromatica*), but is mostly open grassland dominated by little bluestem (*Schizachyrium scoparium*) and Indian grass (*Sorghastrum nutans*) with high forb diversity. Common herbaceous species include dittany (*Cunila origanoides*), wild quinine (*Parthenium integrifolium*), flowering spurge (*Euphorbia corollata*), hairy goldenrod (*Solidago hispida*), rattlesnake-master (*Eryngium yuccifolium*), white-leaf mountain-mint (*Pycnanthemum albescens*), slender bush-clover (*Lespedeza virginica*), hairy bush-clover (*Lespedeza hirta*), beebalm (*Monarda fistulosa*), late purple aster (*Symphyotrichum patens*), manyray aster (*Symphyotrichum anomalum*), white woodland aster (*Symphyotrichum lateriflorum*), trailing bush-clover (*Lespedeza procumbens*), big bluestem (*Andropogon gerardii*), tall tickseed (*Coreopsis tripteris*), star tickseed (*Coreopsis pubescens*), oldfield goldenrod (*Solidago nemoralis*), paniced tick-trefoil (*Desmodium paniculatum*), hairy woodland sunflower (*Helianthus hirsutus*), false boneset (*Brickellia eupatorioides*), tall thoroughwort (*Eupatorium altissimum*), poverty oat grass (*Danthonia spicata*), southeastern wild rye (*Elymus glabriflorus*), goat's-rue (*Tephrosia virginiana*), downy milk-pea (*Galactia volubilis*), wingstem crownbeard (*Verbesina helianthoides*), Maryland tick-trefoil (*Desmodium marilandicum*), tick-trefoil (*Desmodium perplexum*), rock muhly (*Muhlenbergia sobolifera*), woodland muhly (*Muhlenbergia sylvatica*), Canada wild lettuce (*Lactuca canadensis*), Baldwin's ironweed (*Vernonia baldwinii*), prairie rose (*Rosa setigera*), rough blazing-star (*Liatris aspera*), and violet bush-clover (*Lespedeza frutescens*). It is surrounded by more typical chert woodland.

Non-native invasive species are remarkably sparse in this area as compared to much of the park. The most common ones in this area are Oriental bittersweet (*Celastrus orbiculatus*) and sericea lespedeza (*Lespedeza cuneata*). Both could be controlled here without an excessive amount of effort or expense.

Management Recommendations

Prescribed burning should be considered as a management option for this area. It is well-suited to this management with a road above and lakeshore below to serve as fire breaks.

In the absence of fire, removal of some of the smaller hardwood trees and shrubs should be considered. Unlike cedars, which do not re-sprout after cutting, the stumps of hardwoods will need to be carefully treated with herbicide to prevent re-sprouting.

Oriental bittersweet, sericea lespedeza, and other invasive species should also be controlled in a manner that will not adversely impact desirable native species in this area. Reduction of the park's deer herd would also benefit the native flora in this area.

SIGNIFICANT AREA 4: Centrum = 36.32833, -94.10032

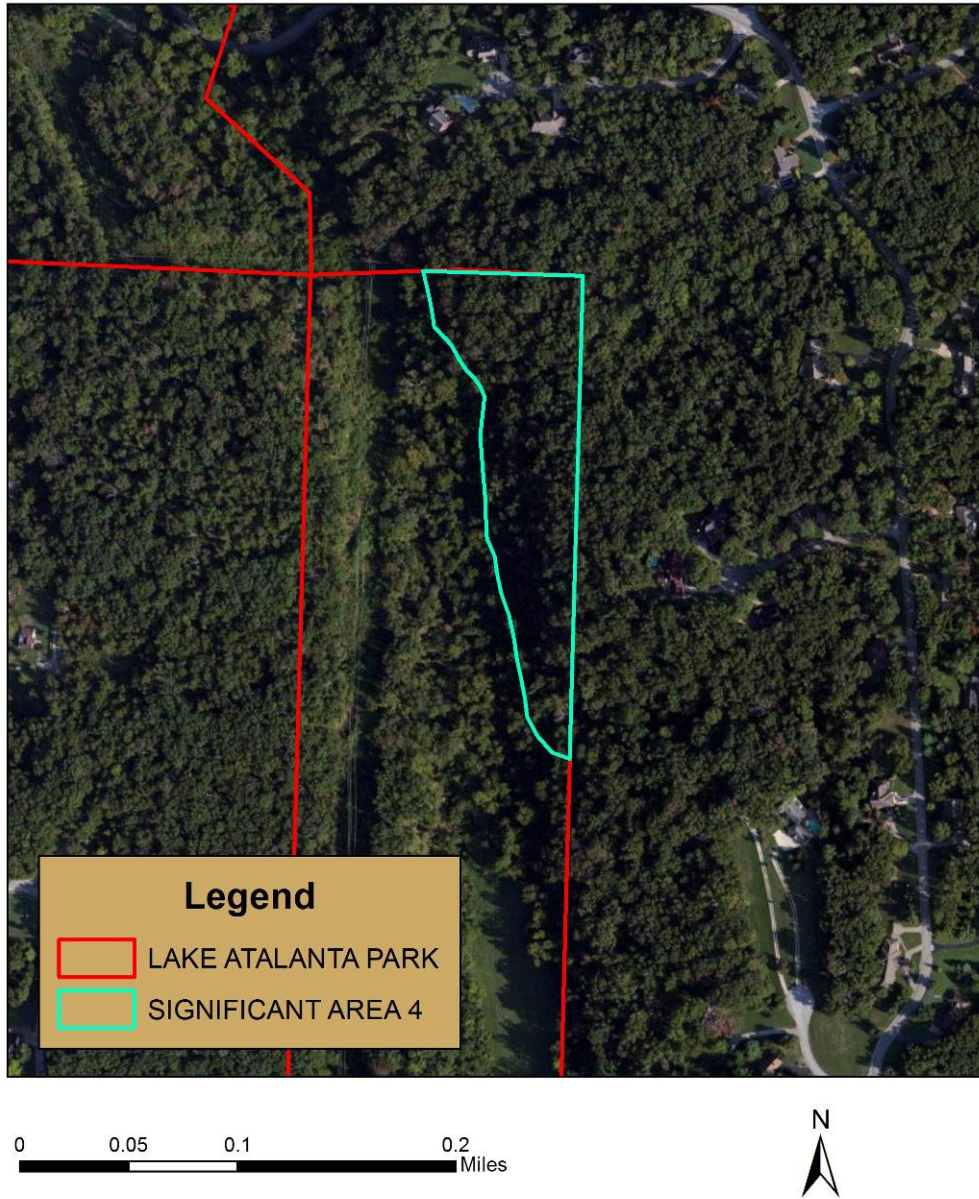


FIGURE 18. Map showing location of Significant Area 4. Map by Theo Witsell, ANHC, 2013.

SIGNIFICANT AREA 4: Centrum = 36.32833, -94.10032

This area extends from the east edge of a weedy forested stream terrace (formerly cleared) up a west-facing slope to the park boundary and includes some of the best chert woodland remaining in the park. Part way up this slope is a low limestone outcrop and above this is chert woodland.

Chert Woodland

Above the limestone outcrop is an area of good quality chert woodland (Fig. 4a). The canopy is dominated by large, well-spaced white oak (*Quercus alba*) and black oak (*Quercus velutina*) trees, with an understory of black-gum (*Nyssa sylvatica*), Carolina buckthorn (*Frangula caroliniana*), and flowering dogwood (*Cornus florida*). The understory is overly dense in some areas but most of the chert woodland here is relatively open with a sparse but native understory containing a few scattered plants of sun-loving species like big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Arkansas bedstraw (*Galium arkansanum*), hawkweed (*Hieracium gronovii*), and bird's-foot violet (*Viola pedata*). There are remarkably few invasive species present though several small patches of Japanese stilt grass (*Microstegium vimineum*) were observed.

Mesic Hardwood Forest

In the northern part of this area there is a small west-flowing drainage containing an ephemeral creek with a limestone bottom (Fig. 8a & 8b). Centrum coordinates = 36.32898, -94.10032. Unlike most of the other creeks in this area, which have a chert bottom and are badly incised, this small hollow appears to be relatively hydrologically intact (perhaps due to the presence of the limestone bedrock preventing head cutting). The slopes on the sides of this hollow are moderately steep and support a mesic hardwood forest with surprisingly few invasive plant species. Understory species present in the fall include northern maidenhair fern (*Adiantum pedatum*), Christmas fern (*Polystichum acrostichoides*), and spicebush (*Lindera benzoin*). This area may have a diverse assemblage of Spring-blooming wildflowers and should be surveyed during that season.

Management Recommendations

Though this site would get the most benefit from periodic prescribed burning, this may be difficult due to its location and landscape context.

In the absence of fire, removal of some of the smaller hardwood trees and shrubs in the chert woodland might be considered. Unlike cedars, which do not re-sprout after cutting, the stumps of hardwoods will need to be carefully treated with herbicide to prevent re-sprouting.

Patches of Japanese stilt grass should be sprayed with herbicide before they make seed in the fall. Other invasive species should also be controlled in a manner that will not adversely impact desirable native species in this area. Reduction of the park's deer herd would also benefit the native flora in this area.

SIGNIFICANT AREA 5: Centrum = 36.32926, -94.10945

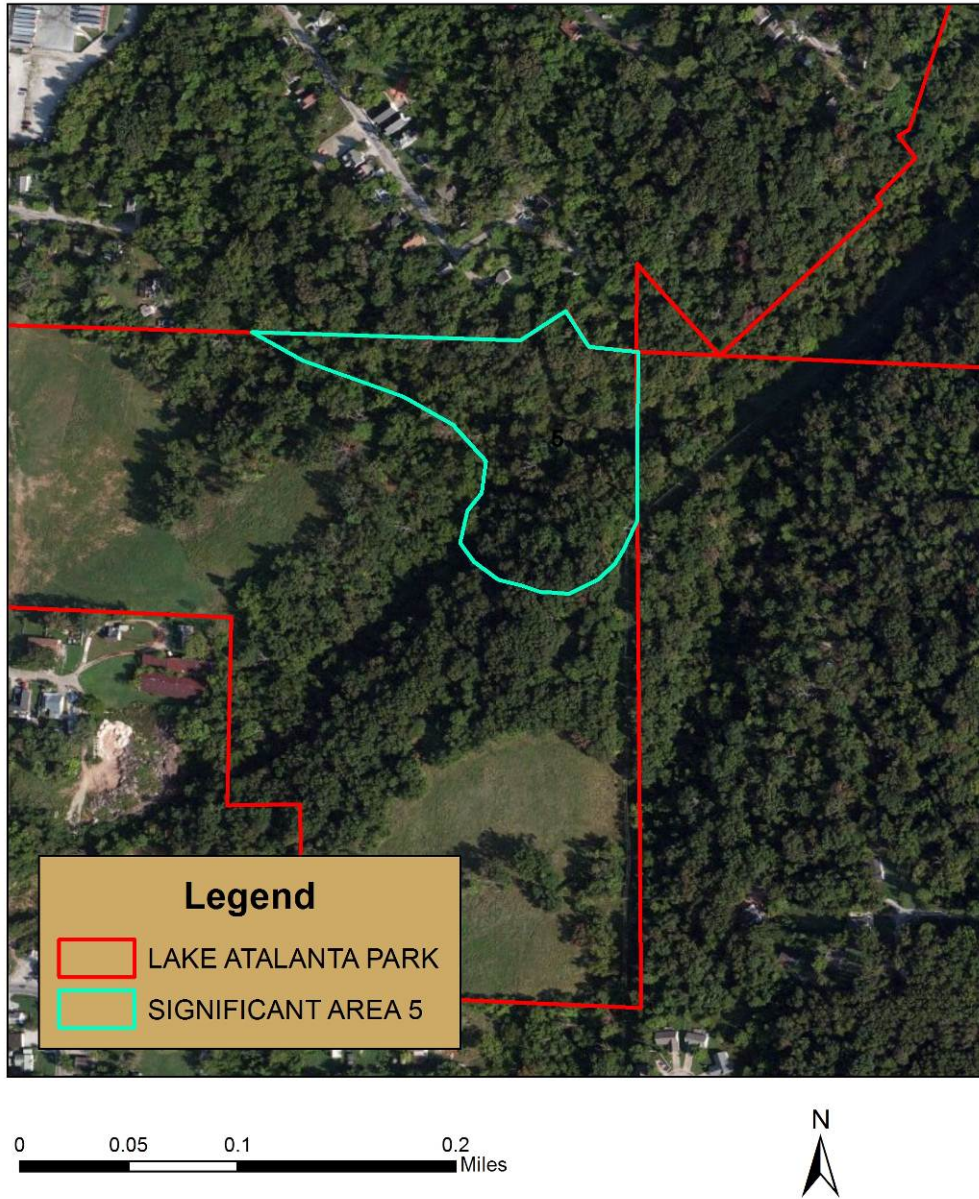


FIGURE 19. Map showing location of Significant Area 5. Map by Theo Witsell, ANHC, 2013.

SIGNIFICANT AREA 5: Centrum = 36.32926, -94.10945

This area contains relatively good quality chert woodlands, mesic slope and riparian forest, and supports populations of two rare plant species: Ozark trillium (*Trillium ozarkanum*) (Figs. 4c & 4d), and taper-tip wild ginger (*Asarum canadense* var. *acuminatum*) (Fig. 8c & 8d). Details of the occurrence(s) of each of these species are provided in Appendix D.

Chert Woodland

Uplands in the southern part of this area support good quality chert woodland habitat (Fig. 4a) and are home to the only population of Ozark trillium (*Trillium ozarkanum*), a globally-rare plant species, known in the park. The canopy is dominated by large, well-spaced white oak (*Quercus alba*) and black oak (*Quercus velutina*) trees, with an understory of sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), flowering dogwood (*Cornus florida*), and spicebush (*Lindera benzoin*). The understory is overly dense in some areas but most of the chert woodland here is relatively open with a mostly native understory containing species characteristic of acidic chert woodlands like mayapple (*Podophyllum peltatum*), tick-trefoils (*Desmodium* spp.) and blueberries (*Vaccinium* spp.). There are not as many invasive species present here as there are in most areas of the park though there is a fair amount of Oriental bittersweet (*Celastrus orbiculatus*).

Mesic Hardwood Forest

North of the chert woodland with the Ozark trillium, two streams converge in a mesic limestone hollow that supports mesic hardwood forest with understory species including Virginia waterleaf (*Hydrophyllum virginianum*), wild blue phlox (*Phlox divaricata* subsp. *laphamii*), northern maidenhair fern (*Adiantum pedatum*), southern bladder fern (*Cystopteris protrusa*), Christmas fern (*Polystichum acrostichoides*), and spicebush (*Lindera benzoin*). This area is one of two sites in the park for taper-tip wild ginger (*Asarum canadense* var. *acuminatum*), a very rare species in Arkansas. This area may also have a diverse assemblage of Spring-blooming wildflowers and should be surveyed during that season. Unfortunately a number of invasive plant species are found in this hollow including Oriental bittersweet (*Celastrus orbiculatus*), Japanese stilt grass (*Microstegium vimineum*), burningbush (*Euonymus alatus*), wintercreeper (*Euonymus fortunei*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), and others.

Management Recommendations

Infrastructure planning should take into account the locations of rare plant species and route trails away from them to the extent possible.

Invasive species in this area should be controlled in a manner that will not adversely impact desirable native species in this area. This would be a good area in which to focus volunteer invasive species control efforts. Reduction of the park's deer herd would also benefit the native flora in this area.

**APPENDIX D: SPECIES OF CONSERVATION CONCERN FOUND AT
LAKE ATALANTA PARK**

The following species occurring at Lake Atalanta Park have been identified by the Arkansas Natural Heritage Commission as being of conservation concern in Arkansas. Each species is presented with general information on its range and habitat followed by specific information on populations found at Lake Atalanta Park. Each species is also given along with its global (G) and state (S) conservation status ranks. A legend explaining these rank codes is provided in appendix E.

- 1) Ozark Trillium (*Trillium ozarkanum*) – G3S3
- 2) White Rattlesnake-root (*Prenanthes alba*) – G5S1S2
- 3) Pale Gentian (*Gentiana alba*) – G4S1
- 4) Church's Wild Rye (*Elymus churchii*) – G2G3S2?
- 5) Taper-tip Wild Ginger (*Asarum canadense* var. *acuminatum*) – G5TNRS1
- 6) Smooth Rosinweed (*Silphium integrifolium* var. *laeve*) – G5T4?S1
- 7) Slender Nettle (*Urtica gracilis*) – G5S1

Ozark Trillium (*Trillium ozarkanum*) – G3S3

Ozark trillium (Figs. 4c & 4d) is found only in the Ozark Plateau and Ouachita Mountains of Arkansas, Missouri, and Oklahoma and is a species of conservation concern in all of these states. It is typically found in acidic woodlands on chert substrates and is one of the first woodland wildflowers to bloom in the Spring, beginning to flower in early March in some years. A single population is known from Lake Atalanta Park, which I observed on 15 May 2011 on a field trip with the Arkansas Native Plant Society. However, much additional suitable habitat for the species occurs in the park and should be surveyed for Ozark trillium between March and June, when plants are observable.

**SITE 1: Centrum = 36.32871, -94.10900; Upslope edge of population = 36.32868, -94.10899;
Downslope edge of population = 36.32874, -94.10902**

Several hundred plants were observed on 15 May 2011 on both sides of a spur trail 0.35 mile S of E. Walnut Street. Habitat is an open, northwest-facing dry-mesic forest on chert substrate, dominated by white oak (*Quercus alba*) and black oak (*Quercus velutina*). Associate species include Oriental bittersweet (*Celastrus orbiculatus*), mayapple (*Podophyllum peltatum*), spicebush (*Lindera benzoin*), Virginia-creeper (*Parthenocissus quinquefolia*), and sassafras (*Sassafras albidum*). The population extends 25 feet upslope from bottom to top and extends away from trail in both directions (exact limits were not mapped on this axis).

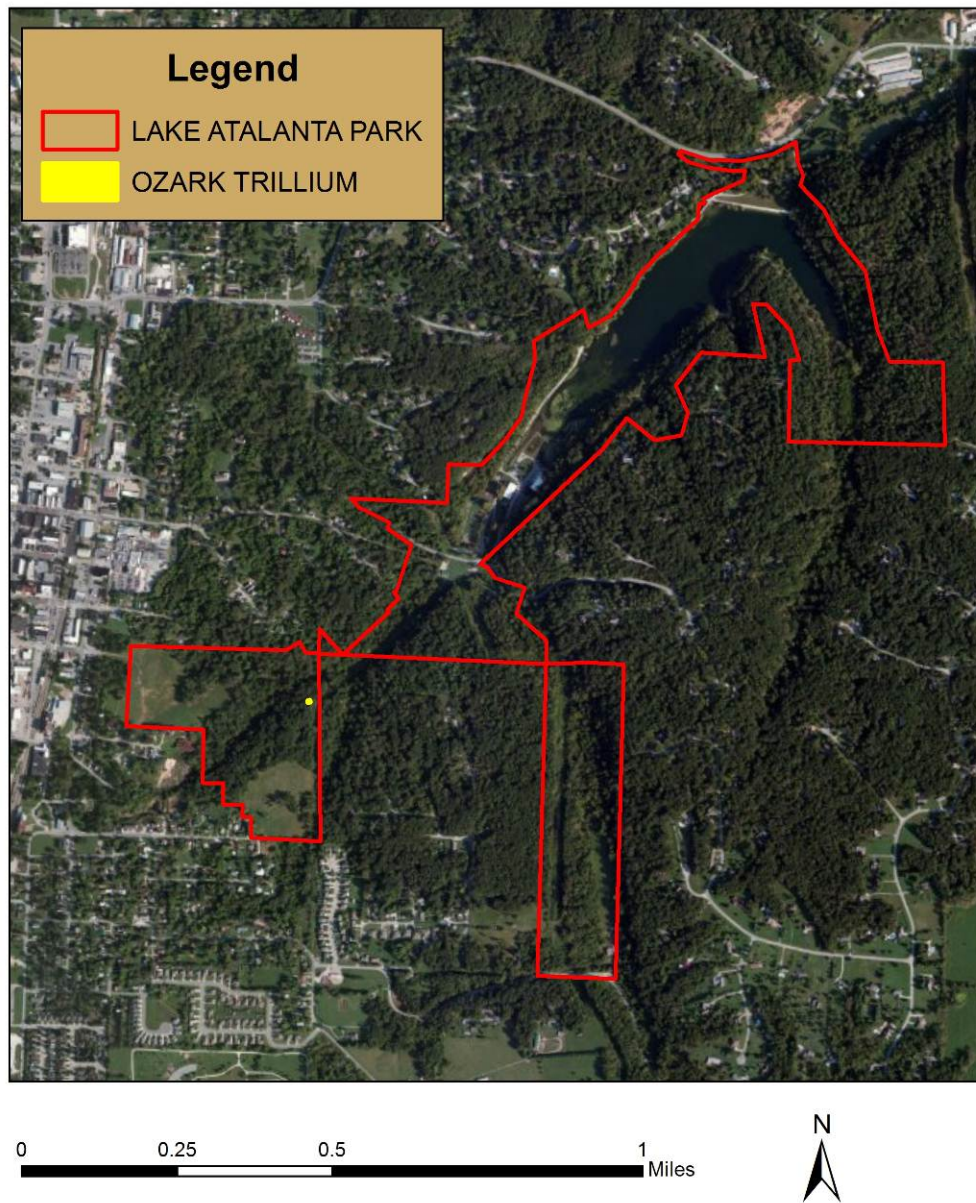


FIGURE 20. Map showing location of Ozark trillium at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

White Rattlesnake-root (*Prenanthes alba*) – G5S1S2

White rattlesnake-root (Figs. 10a & 10b) is a northern species with its main range in the Midwest (where it occurs from central Illinois and southern Iowa north) and in the Appalachians (where it occurs from Virginia and West Virginia north). It is rare in northwestern Arkansas where it is disjunct from its main range and is known from only a few populations. It is identified as a species of state conservation concern by the Arkansas Natural Heritage Commission. As is common with other species in the genus *Prenanthes*, only a small percentage of plants in a population typically flower in a given year and since sterile (non-flowering) plants typically go dormant in the summer, populations discovered in the late summer or fall may be larger than they appear. White rattlesnake-root is known from two areas at Lake Atalanta Park:

SITE 1: Centrum = 36.33778, -94.09476

15 to 20 sterile plants were observed on a rich, northeast-facing slope above Lake Atalanta Road on 15 May 2011. This population extends downslope of the road where a single plant was observed in fruit just above water line on 18 October 2013 in the vicinity of 36.33805, -94.09478. Associate species include Solomon's-seal (*Polygonatum biflorum*), wild geranium (*Geranium maculatum*), large-flower bellwort (*Uvularia grandiflora*), meadow-parsnip (*Thaspium trifoliatum*), goat's-beard (*Aruncus dioicus*), wreath goldenrod (*Solidago caesia*), wild hydrangea (*Hydrangea arborescens*), smooth sumac (*Rhus glabra*), blue wood aster (*Symphyotrichum drummondii*), hazelnut (*Corylus americana*), flowering dogwood (*Cornus florida*), Carolina buckthorn (*Frangula caroliniana*), black cohosh (*Actaea racemosa*), and tall tickseed (*Coreopsis tripteris*). Additional plants are likely present in this area.

SITE 2: Centrum = 36.34003, -94.09495

40 to 50 sterile plants were observed above Lake Atalanta Road just east of the Lake Atalanta dam on 15 May 2011 and a single fruiting plant and several sterile ones were observed here on 10 & 11 September 2013. Also, several fruiting plants were observed between the road and lakeshore nearby (centrum = 36.33999, -94.09513) on 18 October 2013. Associate species include hairy woodland sunflower (*Helianthus hirsutus*), a goldenrod (*Solidago arguta*), prairie-dock (*Silphium terebinthinaceum*), coral-berry (*Symphoricarpos orbiculatus*), blue wood aster (*Symphyotrichum drummondii*), smooth wild petunia (*Ruellia strepens*), thimbleweed (*Anemone virginiana*), eastern redbud (*Cercis canadensis*), persimmon (*Diospyros virginiana*) and elm (*Ulmus* sp.).

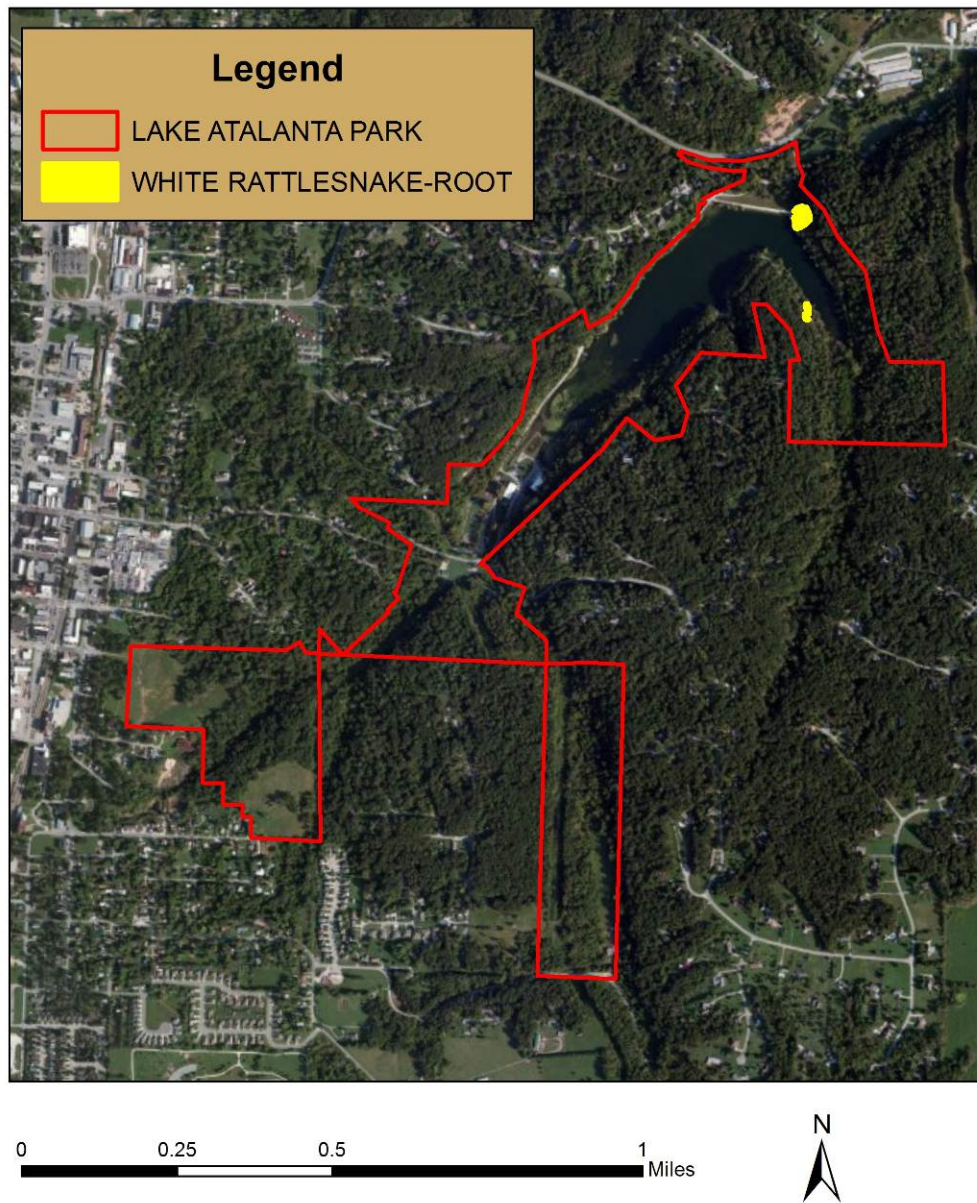


FIGURE 21. Map showing location of white rattlesnake-root at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

Pale Gentian (*Gentiana alba*) – G4S1

Pale gentian (Fig. 11d) is a northern species with its main range in the Upper Midwest, centered in Missouri, Iowa, Illinois, Wisconsin, and Minnesota, and with a few scattered populations east across the Cumberland Plateau to the Appalachians. It is rare in Arkansas where most of the known sites are based on historical records and only a few have been recently observed.

SITE 1: Centrum = 36.33934, -94.09475 (S end) to 36.33999, -94.09515 (N end)

6 large clumps were observed in flower on 18 October 2013 scattered on the slope above the shoreline between these points. Location of plants ranged from 15 inches to 4 feet above water line. Associated species include common scouring-rush (*Equisetum hyemale*), false boneset (*Brickellia eupatorioides*), smooth aster (*Symphyotrichum laeve*), flowering spurge (*Euphorbia corollata*), American germander (*Teucrium canadense*), big bluestem (*Andropogon gerardii*), tall thistle (*Cirsium altissimum*), wax-leaf meadow-rue (*Thalictrum revolutum*), persimmon (*Diospyros virginiana*), star tickseed (*Coreopsis pubescens*), hazelnut (*Corylus americana*), wild potato vine (*Ipomoea pandurata*), summer sedge (*Carex lurida*), tall thoroughwort (*Eupatorium altissimum*), golden alexanders (*Zizia aurea*), and sycamore (*Platanus occidentalis*).

SITE 2: Centrum = 36.33885, -94.09427

4 clumps were observed on 10 September 2013 on a somewhat mesic but gladey limestone slope above Lake Atalanta Road. Associated species include tall tickseed (*Coreopsis tripteris*), beebalm (*Monarda fistulosa*), smooth aster (*Symphyotrichum laeve*), white arrow-leaf aster (*Symphyotrichum urophyllum*), gray-headed coneflower (*Ratibida pinnata*), Oriental bittersweet (*Celastrus orbiculatus*), sassafras (*Sassafras albidum*), and hairy woodland sunflower (*Helianthus hirsutus*).

SITE 3: Centrum = 36.33468, -94.10156

A single clump was observed on 15 May 2011 and again on 10 September 2013 growing on a rich, mesic, rocky northwest-facing limestone slope about 4 feet above Lake Atalanta Road. Associated species include Canadian black-snakeroot (*Sanicula canadensis*), poison-ivy (*Toxicodendron radicans*), Virginia-creeper (*Parthenocissus quinquefolia*), Japanese honeysuckle (*Lonicera japonica*), Japanese stilt grass (*Microstegium vimineum*), and wild strawberry (*Fragaria virginiana*).

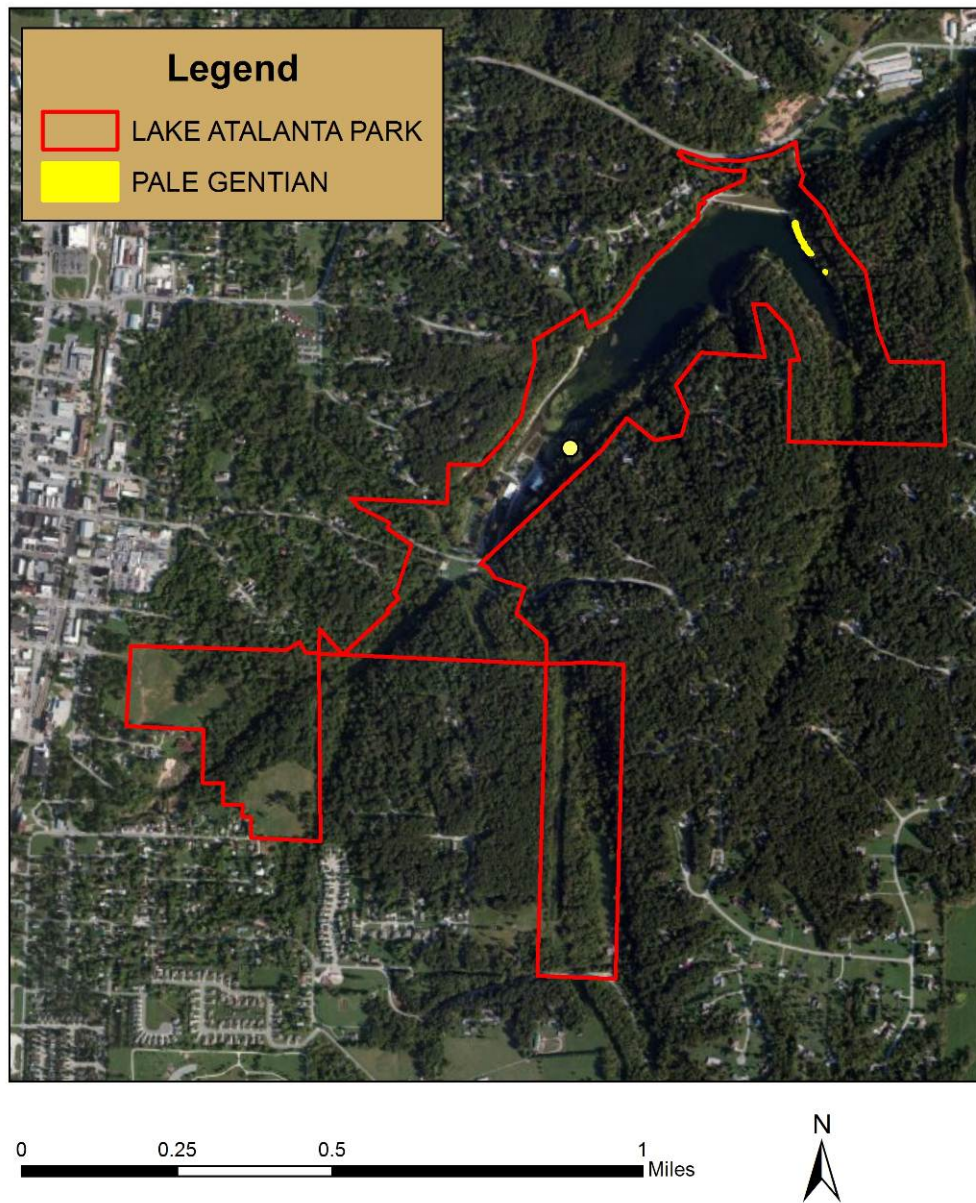


FIGURE 22. Map showing location of pale gentian at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

Church's Wild Rye (*Elymus churchii*) – G2G3S2?

Church's wild-rye (Figs. 9e & 9f) is a rare grass species known only from the Interior Highlands (Ozark Plateau, Arkansas Valley, and Ouachita Mountains) in portions of Arkansas, Missouri, and Oklahoma. It was first described in 2006 and is tracked by the Arkansas Natural Heritage Commission as a species of state conservation concern. Typical habitat includes bluffs, margins of glades, and rocky, open woodlands on a variety of geologic substrates. Two sites for Church's wild-rye were found at Lake Atalanta Park, both on a steep, gladey hillside east of the dam where they are associated with limestone outcrops.

Site #1: Centrum = 36.33899, -94.09400

30+ clumps were observed on 11 September 2013 scattered in a limestone glade and adjacent woodland at the downhill edge of a powerline right-of-way. Associate species include wiry witch grass (*Panicum flexile*), side-oats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), purple-top tridens (*Tridens flavus* var. *flavus*), purple-stem cliff-brake (*Pellaea atropurpurea*), three-flower melic grass (*Melica nitens*), and eastern red-cedar (*Juniperus virginiana*), growing under chinquapin oak (*Quercus muehlenbergii*), white ash (*Fraxinus americana*), winged elm (*Ulmus alata*), dwarf hackberry (*Celtis tenuifolia*), and eastern redbud (*Cercis canadensis*).

Site #2: Centrum = 36.34044, -94.09446

20+ clumps were observed on 16 October 2013 scattered on a steep west-facing slope above dam, above power line right-of-way and extending downslope into the powerline right-of-way that leads to picnic area below the dam.

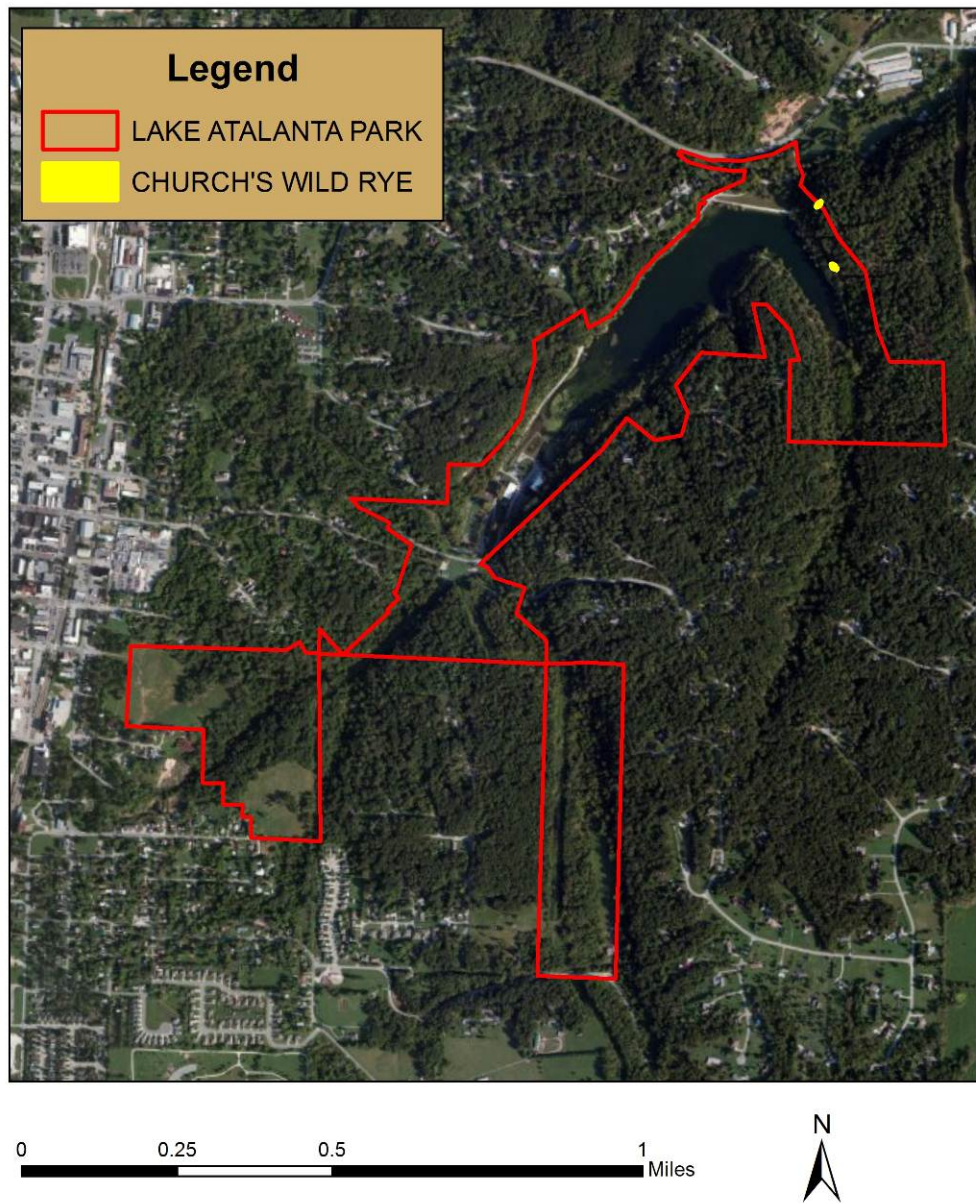


FIGURE 23. Map showing location of Church's wild rye at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

Taper-tip Wild Ginger (*Asarum canadense* var. *acuminatum*) – G5TNR51

This variety of wild ginger (Fig. 8c & 8d) is characterized by its large size, acuminate leaf tips, and flowers with long, tapering tips. Its distribution is primarily northern and Appalachian. It is rare in Arkansas where it is known only from mesic calcareous forests in Benton and Stone counties. It was first documented in Arkansas from Lake Atalanta Park on 15 May 2011 from at least two sites, both associated with mesic hardwood forests along small streams.

SITE 1: Centrum = 36.33608, -94.10279

50+ plants were observed on 15 May 2011 scattered in a mesic ravine on the west side of Lake Atalanta.

SITE 2: Centrum = 36.32919, -94.10961

100+ plants were observed on 15 May 2011 scattered in a mesic ravine upstream of Lake Atalanta near the junction of two streams near trail crossing.

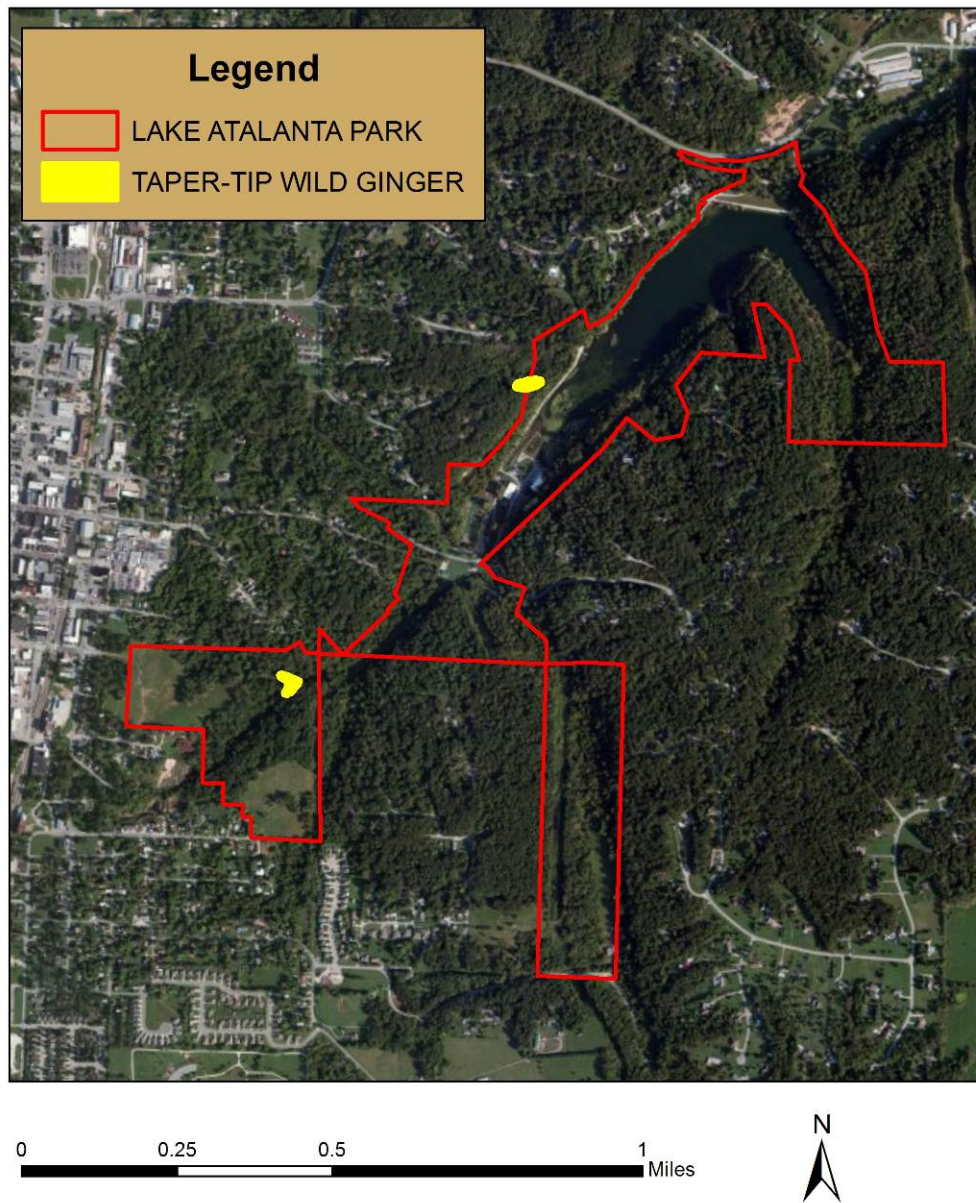


FIGURE 24. Map showing location of taper-tip wild ginger at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

Smooth Rosinweed (*Silphium integrifolium* var. *laeve*) – G5T4?S1

This variety of rosinweed (Fig. 11a & 11b) is sometimes treated as a separate species under the name *Silphium speciosum*. It has a limited range in the southern Great Plains, centered in the eastern parts of Nebraska and Kansas with outlying populations in western Missouri, northern Oklahoma, and extreme northwestern Arkansas. In Arkansas, it is known from just a few sites, several of which have been destroyed.

SITE 1: Centrum = 36.33866, -94.09410

50+ plants were observed on 10 September 2013 growing on a south-facing slope just above Lake Atalanta Road with prairie-dock (*Silphium terebinthenaceum*), pale leather-flower (*Clematis versicolor*), hairy angelica (*Angelica venenosa*), Indian-plantain (*Arnoglossum plantagineum*), winecup (*Callirhoe digitata*), Seneca snakeroot (*Polygala senega*), butterfly milkweed (*Asclepias tuberosa*), whorled milkweed (*Asclepias verticillata*), Missouri coneflower (*Rudbeckia missouriensis*), heart-leaf skullcap (*Scutellaria ovata*), and a tick-trefoil (*Desmodium cuspidatum*).

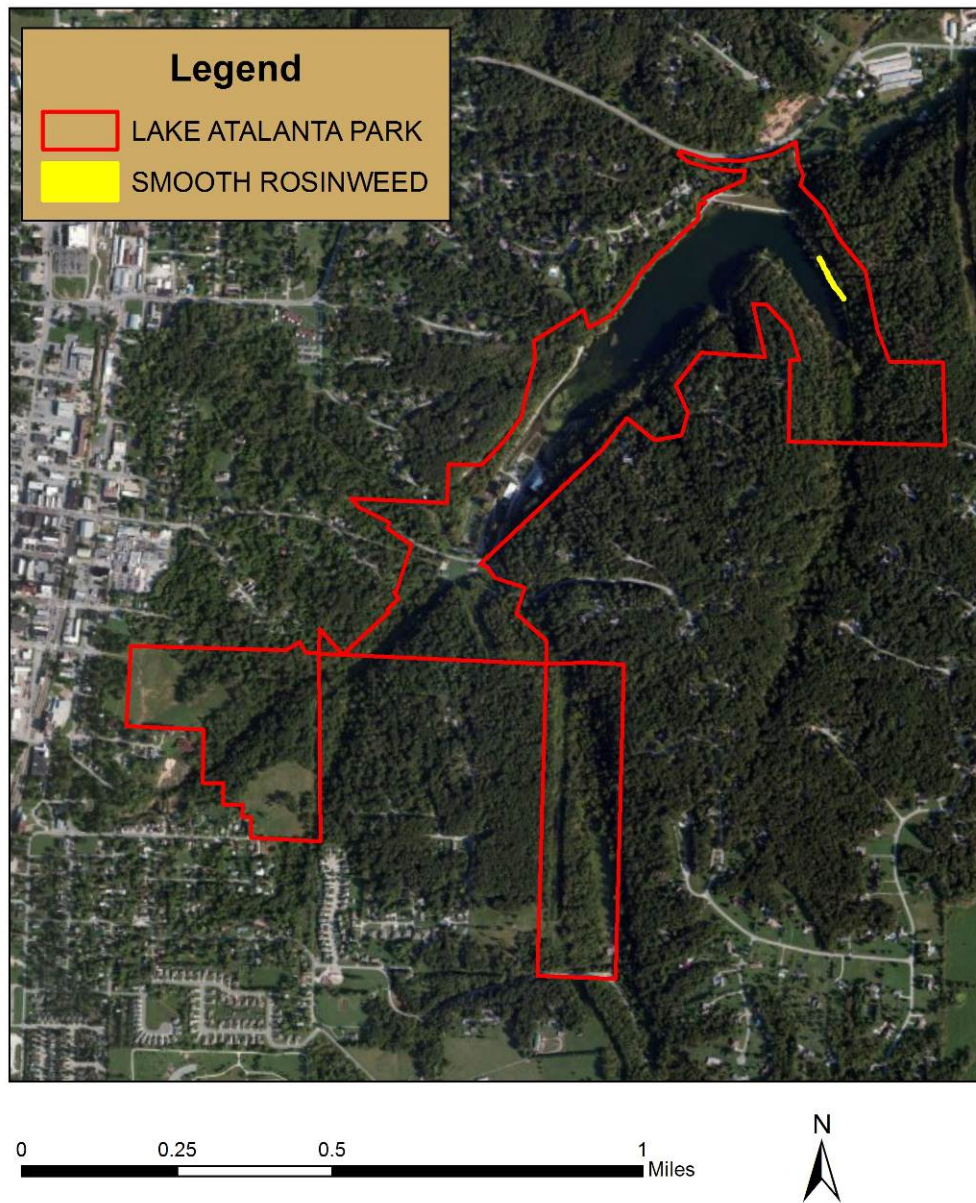


FIGURE 25. Map showing location of smooth rosinweed at Lake Atalanta Park. Map by Theo Witsell, ANHC, 2013.

Slender Nettle (*Urtica gracilis*) – G5S1

Slender nettle (Fig. 7a & 7b) is a northern species with the main part of its range north of central Missouri. It was found at a single site at Lake Atalanta in an area where the creek issuing from Frisco Spring crosses private land adjacent to one of the Park's trails. Slender nettle was first documented from Arkansas in 2012 when it was found on islands of the Mississippi River in Mississippi County in the northeastern part of the state. The population at Lake Atalanta is the first documented from northwestern Arkansas and only the second in the state.

SITE 1: Centrum = 36.32937, -94.10778

Several patches of plants were observed on 10 and 11 September 2013 in a wet meadow along a spring-fed creek issuing from Frisco Spring. Associate species include spotted jewelweed (*Impatiens capensis*), yellow ironweed (*Verbesina alternifolia*), beefsteak-plant (*Perilla frutescens*), cinnamon vine (*Diocorea polystachya*), Johnson grass (*Sorghum halepense*), sedges (*Carex* spp.), poison-hemlock (*Conium maculatum*), great blue lobelia (*Lobelia siphilitica*), and tall fescue (*Schedonorus arundinaceus*).

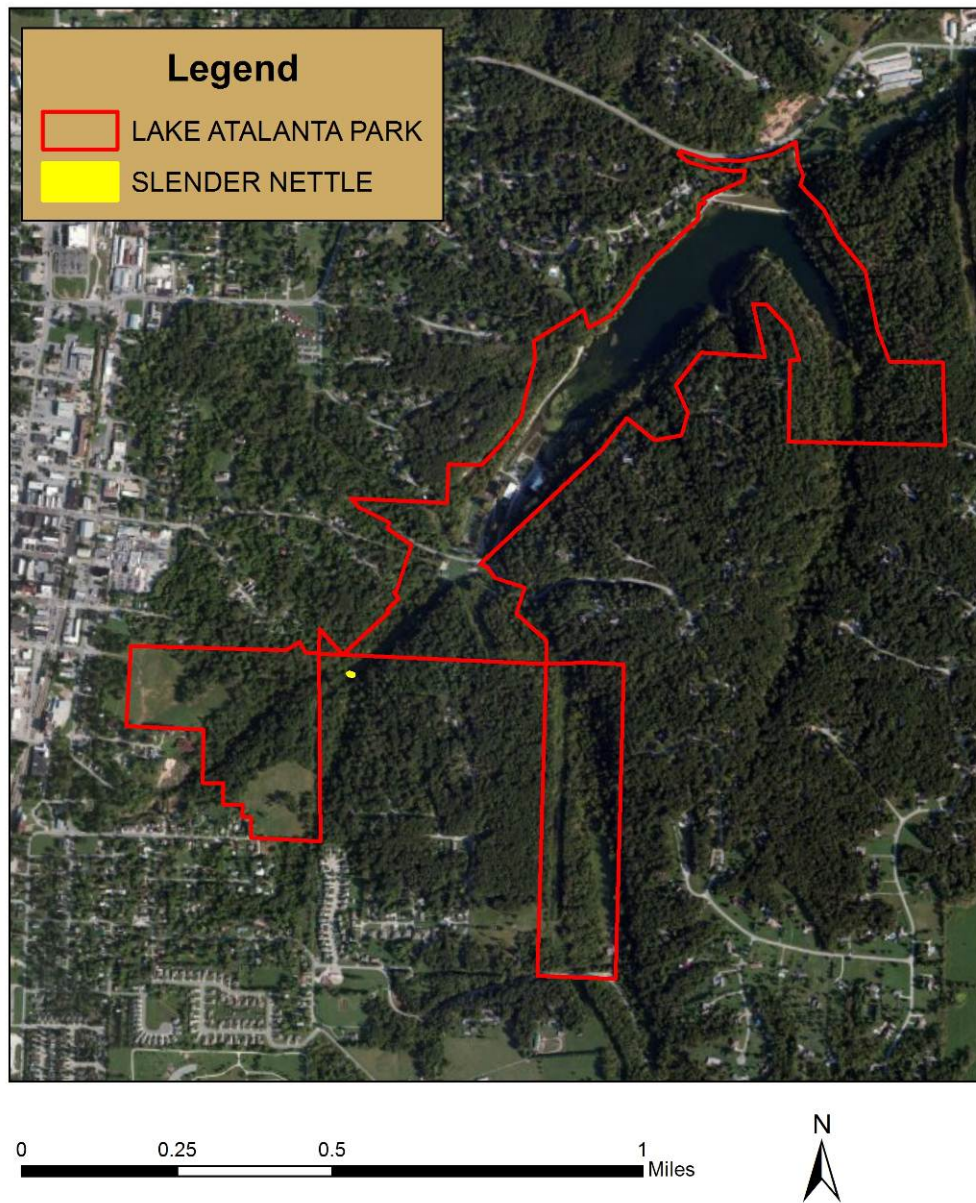


FIGURE 26. Map showing location of slender nettle at Lake Atalanta. Map by Theo Witsell, ANHC, 2013.

APPENDIX E: CONSERVATION STATUS CODE/RANK LEGEND

DEFINITION OF RANKS

GLOBAL RANKS

- G1** = **Critically Imperiled Globally.** At a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2** = **Imperiled Globally.** At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3** = **Vulnerable Globally.** At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4** = **Apparently Secure Globally.** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5** = **Secure Globally.** Common, widespread and abundant.
- GH** = **Of Historical Occurrence, Possibly Extinct Globally.** Missing; known from only historical occurrences, but still some hope of rediscovery.
- GU** = **Unrankable.** Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
- GX** = **Presumed Extinct Globally.** Not located despite intensive searches and virtually no likelihood of rediscovery.
- GNR** = **Unranked.** The global rank not yet assessed.
- GNA** = **Not Applicable.** A conservation status rank is not applicable.
- T-Ranks** = **T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level.** The subrank consists of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.

STATE RANKS

- S1** = **Critically Imperiled in the State.** At a very high risk of extirpation due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- S2** = **Imperiled in the State.** At high risk of extirpation due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- S3** = **Vulnerable in the State.** At moderate risk of extirpation due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- S4** = **Apparently Secure in the State.** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5** = **Secure in the State.** Common, widespread and abundant.
- SH** = **Of Historical Occurrence, with Some Possibility of Rediscovery.** Its presence may not have been verified in the past 20-40 years. A species may be assigned this rank without the 20-40 year delay if the only known occurrences were destroyed or if it had been extensively and unsuccessfully sought.
- SU** = **Unrankable.** Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SX = **Presumed Extirpated from the State.** Not located despite intensive searches and virtually no likelihood of rediscovery.

SNR = **Unranked.** The state rank not yet assessed.

SNA = **Not Applicable.** A conservation status rank is not applicable.

GENERAL RANKING NOTES

Q = A “Q” in the global rank indicates the element’s taxonomic classification as a species is a matter of conjecture among scientists.

Ranges = Ranges are used to indicate a range of uncertainty about the status of the element.

? = A question mark is used to denote an inexact numeric rank.

**APPENDIX F: NON-NATIVE INVASIVE PLANT SPECIES FOUND AT
LAKE ATALANTA PARK**

The following table is a list of non-native invasive plant species at Lake Atalanta Park with information on their life form, local severity (major, moderate, or minor), and habitat(s) occupied. This table is followed by an annotated list, organized by severity with more information on each species.

Scientific Name	Common Name(s)	Plant Type	Severity at Lake Atalanta Park	Habitat(s)
<i>Ailanthus altissima</i>	Tree-of-heaven	Tree	Major	Disturbed woods, fields, powerlines, roadsides
<i>Albizia julibrissin</i>	Mimosa, Silktree	Tree	Moderate	Stream banks, disturbed woods, fields, powerlines, roadsides
<i>Arthraxon hispidus</i>	Small carp grass	Grass	Moderate	Stream banks, ditches, lake margins, wet open areas
<i>Berberis thunbergii</i>	Japanese barberry	Shrub	Minor	Woods, roadsides
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Woody vine	Major	Woods, roadsides, powerlines, etc.
<i>Centaurea stoebea subsp. micranthos</i>	Spotted knapweed	Forb	Moderate	Roadsides, fields, and other open, disturbed areas
<i>Conium maculatum</i>	Poison-hemlock	Forb	Moderate	Stream banks, fields, roadsides, and other open, disturbed areas
<i>Dioscorea polystachya</i>	Air potato, cinnamon vine	Herbaceous Vine	Major	Streambanks, moist woods, roadsides, powerlines, and other moist disturbed areas
<i>Elaeagnus umbellata</i>	Autumn-olive	Shrub	Minor	Woods, roadsides, field margins,

				powerlines
<i>Euonymus alatus</i>	Burningbush	Shrub	Major	Mesic woods
<i>Euonymus fortunei</i>	Wintercreeper	Woody vine	Major	Mesic woods
<i>Glechoma hederacea</i>	Ground-ivy	Forb	Minor	Floodplain forests, low fields, lawns, and other disturbed areas
<i>Houttuynia cordata</i>	Chameleon	Forb	Minor	Spring run
<i>Lespedeza cuneata</i>	Sericea lespedeza	Forb	Moderate	Roadsides, fields, powerlines, and other open areas
<i>Leucanthemum vulgare</i>	Ox-eye daisy	Forb	Minor	Roadsides, fields, powerlines, and other open areas
<i>Ligustrum sinense</i>	Chinese privet	Shrub	Major	All habitats
<i>Lonicera japonica</i>	Japanese honeysuckle	Woody vine	Major	All habitats
<i>Lonicera maackii</i>	Amur honeysuckle, bush honeysuckle	Shrub	Major	Mesic woods, field margins, powerlines
<i>Melilotus albus</i>	White sweet-clover	Forb	Minor	Open areas
<i>Microstegium vimineum</i>	Japanese stiltgrass	Grass	Major	Moist woods, shaded field margins, roadsides, powerlines, wetlands
<i>Miscanthus sinensis</i>	Chinese silver grass	Grass	Minor	Lakeshore, upland woods
<i>Morus alba</i>	White mulberry	Tree	Minor	Edges of woods, roadsides
<i>Nandina domestica</i>	Nandina	Shrub	Minor	Woods, roadsides
<i>Oenanthe javanica</i>	Java water-dropwort	Forb	Minor	Spring run

<i>Perilla frutescens</i>	Beefsteak plant	Forb	Major	Disturbed moist woods, roadsides, fields, lakeshores
<i>Persicaria longiseta</i>	Bristly lady's-thumb	Forb	Major	Disturbed moist woods, roadsides, fields, lakeshores
<i>Phalaris arundinacea</i>	Reed canary grass	Grass	Moderate	Spring runs and other open wetlands
<i>Pueraria montana</i>	Kudzu	Woody vine	Major	Roadsides, disturbed woods, fields
<i>Pyrus calleryana</i>	Callery pear	Tree	Moderate	Roadsides, fields, lakeshores, powerlines, and other open disturbed areas
<i>Rosa multiflora</i>	Multiflora rose	Shrub	Major	Disturbed moist woods, roadsides, fields, lakeshores
<i>Rubus phoenocolasius</i>	Wineberry	Shrub	Moderate	Roadsides, disturbed woods, fields
<i>Schedonorus arundinaceus</i>	Tall fescue	Grass	Moderate	Streambanks, roadsides, fields, spring run, powerlines
<i>Securigera varia</i>	Crown-vetch	Forb	Minor	Disturbed open areas
<i>Sorghum halepense</i>	Johnson grass	Grass	Moderate	Disturbed open areas
<i>Vinca major</i>	Big-leaf periwinkle	Forb	Moderate	Woods and roadsides near old plantings

MAJOR SEVERITY INVASIVE SPECIES

Tree-of-heaven (*Ailanthus altissima*) – Scattered throughout the park, tree-of-heaven is actively spreading into the more remote and intact areas of the park. It is known for colonizing forest edges at roadsides and utility rights-of-way and then taking advantage of disturbances (such as gaps in the forest canopy that form when native trees die) to colonize the forest interior. This process was observed to be most advanced on the Fleming tract at the south end of the park where tree-of-heaven had become dominant in an area of a wooded hillside northwest of the old house and shop building. It also spreads along stream corridors.

Oriental Bittersweet (*Celastrus orbiculatus*) – This woody vine has become a common groundcover in forests and woodlands throughout Lake Atalanta Park. Where there is sufficient sunlight at forest edges along roads, fields, and powerlines, bittersweet has climbed into the tree canopy where it flowers and makes large quantities of seed.

Air-potato, Cinnamon Vine (*Dioscorea polystachya*) – This non-native herbaceous vine has widely naturalized in Arkansas, especially along streams and moist field margins. It is common in Lake Atalanta Park along the main spring run/ditch carrying water from Frisco Spring to Lake Atalanta, but was also found at a number of other sites. This species is easily identified during the summer and fall by the aerial tubers, or “potatoes” that form along its stem as it climbs over other vegetation.

Burningbush (*Euonymus alatus*) – This shrub is common in some areas of the park where it forms dense understory thickets, shading out native ground flora and suppressing young native trees and shrubs. It is especially dense in the hollows upstream from Frisco Spring, but is found at many sites throughout the park.

Wintercreeper (*Euonymus fortunei*) – This creeping woody vine is common at scattered sites throughout the park. It commonly forms a solid evergreen groundcover but can only flower and fruit where it climbs trees, which it can eventually strangle, kill, and crush.

Chinese Privet (*Ligustrum sinense*) – One of the most widespread and aggressive invasive shrubs in Arkansas, Chinese privet is capable of forming a nearly solid semi-evergreen shrub layer that will displace native ground flora over time. It is common in the park, especially along streams and on lower slopes.

Japanese Honeysuckle (*Lonicera japonica*) – This woody vine has become a dominant groundcover in forests and woodlands throughout Lake Atalanta Park. Where there is sufficient sunlight at forest edges along roads, fields, and powerlines, Japanese honeysuckle has climbed into the tree canopy where it flowers and fruits.

Amur Honeysuckle, Bush Honeysuckle (*Lonicera maackii*) – This non-native invasive shrub favors soils derived from limestone and is most abundant in Arkansas in urban woodlands of Benton and Washington counties where it often dominates the shrub layer and excludes native flora. It is scattered across Lake Atalanta Park and is most common along streams and on lower slopes.

Japanese Stilt grass (*Microstegium vimineum*) – Perhaps the most abundant invasive plant in Lake Atalanta Park (and one of the most abundant species in the park), Japanese stilt grass has become the dominant groundcover in most of the riparian forests and lower slopes in the park. It is also common to dominant in many of the powerline rights-of-way through the park where the spraying of herbicide has reduced native perennial species and favored weedy annuals (Fig. 13a).

Beefsteak Plant (*Perilla frutescens*) – An abundant invasive plant in Lake Atalanta Park, beefsteak plant has become a common groundcover in many of the riparian forests and lower slopes on the park. It is also common to dominant in many of the powerline rights-of-way through the park where the spraying of herbicide has reduced native perennial species and favored weedy annuals (Figs. 13a & 13b).

Bristly lady's-thumb (*Persicaria longiseta*) – This aggressive forb has become one of the dominant species in some areas of the park. It favors moist, shaded habitats with rich soils including stream banks, floodplain forests, margins of spring runs and hillside seeps, gravel bars, low fields, and other disturbed areas. At Lake Atalanta Park, it is especially common in open areas below the dam.

Kudzu (*Pueraria montana*) – This conspicuous woody vine was observed at two localities in the park: 1) on the east side of Lake Atalanta Road just north of Walnut Street, in the vicinity of 36.33306, -94.10315 and 2) on a wooded slope southwest of the pavilion in the vicinity of 36.33133, -94.10617 (Fig. 13c). A comprehensive survey for the species was not conducted.

Multiflora Rose (*Rosa multiflora*) – This shrub is a major invasive species across the Ozarks and is capable of making large quantities of seed, which are dispersed by birds and other animals. At Lake Atalanta Park it is common in a variety of habitats including riparian forests, roadsides, powerline rights-of-way, and the shores of the lake.

MODERATE SEVERITY INVASIVE SPECIES

Mimosa (*Albizia julibrissin*) – Mimosa, or silk tree, takes advantage of disturbed areas such as roadsides, rights-of-way, and streamsides. It is thinly scattered throughout the park.

Small Carp Grass (*Arthraxon hispidus*) – This introduced grass can become dominant to the point of excluding all other species in wet fields and on stream banks, gravel bars, and lakeshores. It has become dominant in areas along the margins of spring runs and the shores of Lake Atalanta.

Spotted Knapweed (*Centaurea stoebe* subsp. *micranthos*) – This introduced forb has been the focus of much research on allelopathy, the capability of some species to inhibit germination and growth of other species by the release of chemicals into the soil. It is becoming a major invasive species in dry, open habitat across northern Arkansas and appears to be spreading along highways and into fields by mowing equipment. It was found at two sites at Lake Atalanta Park: 1) under powerlines northwest of the bathrooms and playground and 2) in fields on the Fleming Tract. A comprehensive survey for the species was not performed.

Poison-hemlock (*Conium maculatum*) – One of the most deadly toxic plants in the North American flora, this European species has naturalized across northern Arkansas, especially along streams, roadsides, and in open fields. It was found scattered in the park but was most concentrated along the main spring run/ditch carrying water from Frisco Spring to Lake Atalanta. It was also observed under powerlines where the spraying of herbicide has reduced native perennial species and favored weedy annuals.

Sericea Lespedeza (*Lespedeza cuneata*) – Introduced for erosion control and wildlife planting, this species spreads aggressively in all but the wettest open habitat. Especially harmful in glades and prairies, it is very common across the state. At Lake Atalanta Park, it can be found along roads, powerlines, streams banks, and in fields.

Reed Canary Grass (*Phalaris arundinacea*) – This large, colony-forming wetland grass, introduced from Europe, is a major problem in the Upper Midwest and Northeast U.S. It is rapidly spreading in wetlands across northern Arkansas. At Lake Atalanta Park, it is especially common along the main spring-fed stream/ditch that issues from Frisco Spring upstream from Walnut Street and east of the playground and pavilion. There it forms large, single-species colonies that have excluded all other species.

Callery Pear (*Pyrus calleryana*) – Callery pear is an invasive colony-forming tree that is used as the rootstock for the widely-planted Bradford pear. Callery pear fruit are popular with birds and the seeds are spread far and wide. It is found at scattered locations in the park.

Wineberry (*Rubus phoenocolasius*) – This introduced raspberry rapidly colonizes disturbed areas such as field margins, roadsides, and utility rights-of-way and is capable of displacing native vegetation. It is scattered in these habitats at Lake Atalanta Park.

Tall Fescue (*Schedonorus arundinaceus*) – This cool season European grass has been widely planted in pastures across the state. It can become dominant in a variety of open habitats including stream banks, gravel bars, roadsides, fields, and utility rights-of-way. It is a common species in all of these habitats in the park.

Johnson Grass (*Sorghum halepense*) – This invasive warm-season grass species is widespread throughout the region where it can dominate pastures, roadsides, utility rights-of-way, and other open habitats. It is found in all of these habitats in Lake Atalanta Park.

Big-leaf Periwinkle (*Vinca major*) – This invasive creeping vine was widely planted as an ornamental groundcover and has now spread from old home sites and other areas to cover large areas. At the park, it is especially common in areas that were formerly developed along the west side of Lake Atalanta but is also found at other sites.

MINOR SEVERITY INVASIVE SPECIES

Japanese Barberry (*Berberis thunbergii*) – This Asian shrub is a problematic invasive pest in the Upper Midwest and Northeastern U.S. but has only recently been documented as a naturalized component of the Arkansas flora. It was observed at two sites in Lake Atalanta Park in areas where it does not appear to have been planted.

Autumn-olive (*Elaeagnus umbellata*) – Once widely planted for its ornamental value and as cover for wildlife, this introduced shrub has naturalized extensively across Arkansas. It was found at scattered sites across the park, especially along the edges of powerline rights-of-way through the forest.

Ground-ivy (*Glechoma hederacea*) – This aromatic, creeping groundcover spreads to cover the ground in floodplain forests, low fields, lawns, and other disturbed areas. It was found scattered in moist habitats in the park.

Chameleon (*Houttuynia cordata*) – This species, not previously documented from Arkansas, was found recently at Lake Atalanta Park by Burnetta Hinterthuer of the Northwest Arkansas Community College. It has dominated a portion of a muddy spring run just south of the pavilion where it grows with Java water-dropwort (*Oenanthe javanica*), another invasive species recently documented new-to-Arkansas from Lake Atalanta Park.

Ox-eye Daisy (*Leucanthemum vulgare*) – This European species was commonly planted for its showy flowers and has naturalized across Arkansas. It spreads with mowing along roadsides, in powerline rights-of-way, and in fields. It is scattered in these habitats in the park.

White Sweet-clover (*Melilotus albus*) – This invasive forb can become dominant in open habitats with limestone-derived soils. It is scattered along roadsides, in fields, and in powerline rights-of-way in the park.

Chinese Silvergrass (*Miscanthus sinensis*) – Only recently discovered in the wild in Arkansas, this large grass is known outside of cultivation only from Washington and Benton counties. It is apparently just beginning to naturalize in Arkansas, but is a major invasive in other states. Two clumps were discovered at Lake Atalanta Park, clearly outside of cultivation; one on the shoreline of Lake Atalanta and one in a disturbed upland chert woodland on the Shelton Tract.

White Mulberry (*Morus alba*) – This introduced tree has naturalized across Arkansas, especially in urban areas. It is scattered in disturbed woodlands, field margins, roadsides, and under powerlines at Lake Atalanta Park.

Nandina (*Nandina domestica*) – This evergreen ornamental shrub, widely planted in Arkansas, has naturalized extensively in some urban areas. The berries can be toxic to birds such as Cedar Waxwings when eaten in large quantities. It was observed in several remote wooded areas in the park.

Java Water-dropwort (*Oenanthe javanica*) – This species, not previously documented from Arkansas, was found recently at Lake Atalanta Park by Joan Reynolds of the Northwest Arkansas Master

Naturalists. There, it has dominated a muddy spring run just south of the pavilion where it grows with chameleon (*Houttuynia cordata*), another invasive species recently documented new-to-Arkansas from Lake Atalanta Park.

Crown-vetch (*Securigera varia*) – Widely planted as an erosion control, crown-vetch has naturalized in a variety of open habitats in the state. It can become dominant in a variety of open habitats including stream banks, gravel bars, roadsides, fields, and utility rights-of-way. It is found in all of these habitats in the park.

**APPENDIX G: LIST OF PLANT SPECIES FOUND AT LAKE
ATALANTA PARK**

List of Plant Species Occuring at
Lake Atalanta Park

Nomenclature according to Gentry et al., eds. 2013. *Atlas of the Vascular Plants of Arkansas*.

Scientific Name*	Common Name	Habitat(s)	Source
<i>Acalypha monococca</i>	one-seed mercury	A,B	1
<i>Acalypha ostryifolia</i>	hop-hornbeam copperleaf	G,H	1
<i>Acalypha rhomboidea</i>	rhombic copperleaf	D,H,F	1
<i>Acalypha virginica</i>	Virginia copperleaf	A,B,F,G,H	1
<i>Acer ginnala</i>	Amur maple	H	5
<i>Acer negundo</i>	box elder	D,G,H	1
<i>Acer rubrum</i>	red maple	C,D,F	1
<i>Actaea racemosa</i>	black cohosh	C	2
<i>Adiantum pedatum</i>	northern maidenhair fern	C,D	1
<i>Aesculus pavia</i>	red buckeye	C,D	3
<i>Agalinis gattingeri</i>	Gattinger's false foxglove	B	1
<i>Agastache nepetoides</i>	yellow giant-hyssop	C,D	5
<i>Ageratina altissima</i>	white snakeroot	C,D,H	1
<i>Agrimonia cf. pubescens</i>	agrimony	C,D	1
<i>Agrimonia parviflora</i>	agrimony	G	1
<i>Agrostis gigantea</i>	redtop	G,H	1
<i>Agrostis perennans</i>	autumn bent grass	B,C,D,H	1
<i>Ailanthus altissima</i>	tree-of-heaven	A,B,C,D,G,H	1
<i>Albizia julibrissin</i>	mimosa	G,F,G,H	1
<i>Allium vineale</i>	field garlic	D,F,G,H	1
<i>Ambrosia artemisiifolia</i>	common ragweed	A,D,F,G,H	1
<i>Ambrosia trifida</i>	giant ragweed	D,F,G,H	1
<i>Amelanchier arborea</i>	downy service-berry	B,D	1
<i>Ampelopsis cordata</i>	false grape	D,E,F,G	1
<i>Amphicarpaea bracteata</i>	hog-peanut	B,C,D,H	1
<i>Amsonia tabernaemontana</i>	eastern bluestar	C,D	5
<i>Andropogon gerardii</i>	big bluestem	A,B,F	1
<i>Andropogon virginicus</i>	broomsedge	A,B,F,G,H	1
<i>Anemone virginiana</i>	thimbleweed	A,C,F	1
<i>Angelica venenosa</i>	hairy angelica	B,C	1
<i>Antennaria parlinii</i>	pussytoes	B	1
<i>Apios americana</i>	groundnut	D,E,F	1
<i>Apocynum cannabinum</i>	dogbane	F,G,H	1
<i>Arctium minus</i>	common burdock	D,G,H	1
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	C,D	4
<i>Aristida purpurascens</i>	arrow-feather three-awn	A,B	2

Scientific Name*	Common Name	Habitat(s)	Source
<i>Aristolochia serpentaria</i>	Virginia snakeroot	B,C	1
<i>Arnoglossum plantagineum</i>	Indian-plantain	A	5
<i>Artemisia annua</i>	sweet wormwood	G,H	1
<i>Arthraxon hispidus</i>	small carp grass	E,F,G,H	1
<i>Aruncus dioicus</i>	goat's-beard	C,D	1
<i>Asarum canadense var. acuminatum</i>	taper-tip wild ginger	C,D	5
<i>Asarum canadense var. reflexum</i>	wild ginger	C	5
<i>Asclepias purpurascens</i>	purple milkweed	A,C	1
<i>Asclepias quadrifolia</i>	four-leaf milkweed	B,C	3
<i>Asclepias tuberosa subsp. interior</i>	butterfly milkweed	A,B	1
<i>Asclepias verticillata</i>	whorled milkweed	A	1
<i>Asclepias viridiflora</i>	green-flower milkweed	A	1
<i>Asimina triloba</i>	pawpaw	C,D	1
<i>Asplenium platyneuron</i>	ebony spleenwort	B,C,D	1
<i>Aureolaria grandiflora</i>	yellow false foxglove	A,B	1
<i>Baptisia bracteata</i>	cream wild indigo	B	5
<i>Barbarea vulgaris</i>	yellow-rocket	G,H	4
<i>Berberis bealei</i>	mahonia	A,C,H	1
<i>Berberis thunbergii</i>	Japanese barberry	C,G	5
<i>Bidens bipinnata</i>	Spanish-needles	H	1
<i>Bidens frondosa</i>	beggar-ticks	E,F	1
<i>Boechera canadensis</i>	Canadian rockcress	A	5
<i>Boehmeria cylindrica</i>	false nettle	D,E,F	1
<i>Botrychium dissectum</i>	cut-leaf grape fern	C,D	1
<i>Botrychium virginianum</i>	rattlesnake fern	C,D	1
<i>Bouteloua curtipendula</i>	side-oats grama	A	1
<i>Brachyelytrum erectum</i>	bearded shorthusk	C,D	1
<i>Brickellia eupatorioides</i>	false boneset	A,B	1
<i>Bromus</i>	bromus	G,H	1
<i>Bromus pubescens</i>	hairy woodland brome	C,D	1
<i>Callirhoe digitata</i>	winecup	A	1
<i>Calystegia sepium</i>	hedge bindweed	D,E,F,H	2
<i>Campanula americana</i>	tall bellflower	C,D	1
<i>Campsis radicans</i>	trumpet-creeper	B,D,F,G,H	1
<i>Capsella bursa-pastoris</i>	shepherd's-purse	G,H	4
<i>Carex</i>	sedge	C,D	1
<i>Carex albicans</i>	sedge	A	1
<i>Carex annectens</i>	sedge	G	2
<i>Carex aureolensis</i>	sedge	D,E,F	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Carex flaccosperma</i>	blue sedge	D,E,G	1
<i>Carex frankii</i>	Frank's sedge	F	2
<i>Carex lurida</i>	sedge	E,F	2
<i>Carex muehlenbergii</i> var. <i>enervis</i>	Muhlenberg's sedge	B	1
<i>Carex nigromarginata</i>	sedge	B	1
<i>Carex vulpinoidea</i>	fox sedge	E,F	2
<i>Carya alba</i>	mockernut hickory	A,B,C	1
<i>Carya cordiformis</i>	bitternut hickory	C,D	1
<i>Carya ovata</i>	shagbark hickory	A,C,D	1
<i>Carya texana</i>	black hickory	B	1
<i>Castanea pumila</i> var. <i>ozarkensis</i>	Ozark chinquapin	B	2
<i>Catalpa</i>	catalpa	G,H	1
<i>Ceanothus americanus</i>	New Jersey-tea	A,B	1
<i>Celastrus orbiculatus</i>	Oriental bittersweet	A,B,C,D,E,F,G,	1
<i>Celastrus scandens</i>	American bittersweet	A,B	3
<i>Celtis occidentalis</i>	hackberry	C,D,H	1
<i>Celtis tenuifolia</i>	dwarf hackberry	A	1
<i>Centaurea stoebe</i> subsp. <i>micranthos</i>	spotted knapweed	G,H	1
<i>Cercis canadensis</i> var. <i>canadensis</i>	eastern redbud	A,C,D,F,H	1
<i>Chaerophyllum procumbens</i>	spreading chervil	C,D	4
<i>Chamaecrista fasciculata</i> var. <i>fasciculata</i>	showy partridge-pea	G,H	1
<i>Chamaecrista nictitans</i> var. <i>nictitans</i>	sensitive partridge-pea	F,H	2
<i>Chasmanthium latifolium</i>	river-oats	C,D	1
<i>Chenopodium missouriense</i>	Missouri lamb's-quarters	H	1
<i>Cinna arundinacea</i>	stout wood-reed	D	1
<i>Circaea canadensis</i> subsp. <i>canadensis</i>	enchanter's-nightshade	C,D	1
<i>Cirsium altissimum</i>	tall thistle	A,B,F,H	1
<i>Claytonia virginica</i>	spring-beauty	A,B,C,D,H	3
<i>Clematis catesbyana</i>	Catesby's virgin's-bower	B,D,F	2
<i>Clematis terniflora</i>	sweet autumn virgin's-bower	A,C,D,H	1
<i>Clematis versicolor</i>	pale leather-flower	A	1
<i>Cocculus carolinus</i>	Carolina snailseed	C,D,F,G,H	1
<i>Comandra umbellata</i>	bastard-toadflax	B	1
<i>Commelina communis</i>	Asiatic dayflower	D,E,F,G,H	1
<i>Commelina diffusa</i>	spreading dayflower	F	1
<i>Conium maculatum</i>	poison-hemlock	D,E,F,G,H	1
<i>Conyza canadensis</i>	horseweed	A,F,G,H	1
<i>Conyza ramosissima</i>	dwarf fleabane	H	1
<i>Coreopsis palmata</i>	tickseed	A,B	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Coreopsis pubescens</i>	star tickseed	B	1
<i>Coreopsis tripteris</i>	tall tickseed	A	1
<i>Cornus cf. racemosa</i>	gray dogwood	A	1
<i>Cornus drummondii</i>	rough-leaf dogwood	A,D,G	1
<i>Cornus florida</i>	flowering dogwood	B,C,D	1
<i>Corylus americana</i>	hazelnut	B,C,D	1
<i>Crataegus crus-galli</i>	cockspur hawthorn	B	1
<i>Croton monanthogynus</i>	prairie-tea	A	1
<i>Cryptotaenia canadensis</i>	honestwort	C,D	1
<i>Cunila origanoides</i>	dittany	B	1
<i>Cuphea viscosissima</i>	blue waxweed	A	1
<i>Cuscuta cuspidata</i>	cuspid dodder	E,F	1
<i>Cynanchum laeve</i>	sandvine	F,H	1
<i>Cynodon dactylon</i>	Bermuda grass	G,H	1
<i>Cyperus bipartitus</i>	flatsedge	F	1
<i>Cyperus echinatus</i>	globe flatsedge	B,G,H	1
<i>Cyperus esculentus</i>	yellow nutsedge	F	1
<i>Cyperus flavescens</i>	yellow flatsedge	F	1
<i>Cyperus odoratus</i>	rusty flatsedge	F	2
<i>Cyperus strigosus</i>	false nutsedge	F,G	1
<i>Cystopteris protrusa</i>	southern bladder fern	C	1
<i>Dactylis glomerata</i>	orchard grass	G,H	1
<i>Dalea candida</i>	white prairie-clover	A	1
<i>Dalea purpurea</i>	purple prairie-clover	A	1
<i>Danthonia spicata</i>	poverty oat grass	B	1
<i>Dasistoma macrophylla</i>	mullein-foxglove	A,D	5
<i>Daucus carota</i>	Queen Anne's-lace	G,H	1
<i>Desmodium cuspidatum</i>	tick-trefoil	B,C	1
<i>Desmodium glutinosum</i>	tick-trefoil	B,C,D	1
<i>Desmodium marilandicum</i>	tick-trefoil	B	1
<i>Desmodium nudiflorum</i>	naked-flower tick-trefoil	B	1
<i>Desmodium nuttallii</i>	Nuttall's tick-trefoil	B	1
<i>Desmodium obtusum</i>	tick-trefoil	F,G,H	1
<i>Desmodium paniculatum</i>	panicled tick-trefoil	B,F	1
<i>Desmodium pauciflorum</i>	few-flower tick-trefoil	C,D	1
<i>Desmodium perplexum</i>	tick-trefoil	B	1
<i>Dichantherium aciculare</i>	narrow-leaf rosette grass	A	1
<i>Dichantherium acuminatum</i>	hairy rosette grass	A	1
<i>Dichantherium boscii</i>	Bosc's rosette grass	B	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Dichanthelium clandestinum</i>	deer-tongue rosette grass	D,E,F	1
<i>Dichanthelium commutatum</i>	variable rosette grass	B	1
<i>Dichanthelium dichotomum</i>	forked rosette grass	B	1
<i>Dichanthelium laxiflorum</i>	open-flower rosette grass	B	1
<i>Dichanthelium malacophyllum</i>	soft-leaf rosette grass	A,B	1
<i>Dichanthelium oligosanthes subsp. scribnerianum</i>	Scribner's rosette grass	A	1
<i>Dicliptera brachiata</i>	dicliptera	C,D	1
<i>Digitaria</i>	digitaria	F,G,H	1
<i>Diodia teres</i>	poor-Joe	A,B,F,G,H	1
<i>Diodia virginiana</i>	Virginia buttonweed	E,F,H	1
<i>Dioscorea polystachya</i>	cinnamon vine	C,D,E,F,G,H	1
<i>Dioscorea villosa</i>	wild yam	A,B,C	1
<i>Diospyros virginiana</i>	persimmon	A,B,C,D,E,F,G,	1
<i>Duchesnea indica</i>	Indian-strawberry	F,H	2
<i>Echinacea pallida</i>	pale purple coneflower	A	1
<i>Echinochloa crusgalli</i>	barnyard grass	E,F	1
<i>Eclipta prostrata</i>	false daisy	E,F	1
<i>Elaeagnus umbellata</i>	autumn-olive	B,G,H	1
<i>Eleocharis</i>	spike-rush	F	1
<i>Elephantopus carolinianus</i>	Carolina elephant's-foot	A,C,D,G	1
<i>Eleusine indica</i>	goose grass	F,G,H	1
<i>Elymus churchii</i>	Church's wild rye	A	1
<i>Elymus glabriflorus</i>	southeastern wild rye	B,G,H	1
<i>Elymus hystrix</i>	bottle-brush grass	C,D	1
<i>Elymus villosus</i>	hairy wild rye	D	1
<i>Elymus virginicus var. jejunos</i>	Virginia wild rye	D	2
<i>Elymus virginicus var. virginicus</i>	Virginia wild rye	C,D,G	1
<i>Equisetum hyemale</i>	common scouring-rush	D,E,F	1
<i>Eragrostis hirsuta</i>	big-top love grass	A	1
<i>Eragrostis intermedia</i>	plains love grass	A,H	1
<i>Eragrostis pilosa</i>	Indian love grass	H	1
<i>Erechtites hieraciifolius</i>	fireweed	H	1
<i>Erigeron annuus</i>	daisy fleabane	G,H	1
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	D,G,H	1
<i>Erigeron pulchellus</i>	Robin's-plantain	A,C	1
<i>Eryngium yuccifolium</i>	rattlesnake-master	B	1
<i>Euonymus alatus</i>	burning-bush	B,C,D,H	1
<i>Euonymus atropurpureus</i>	wahoo	A,F	1
<i>Euonymus fortunei</i>	winter-creeper	C,D	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Eupatorium altissimum</i>	tall thoroughwort	A,B	1
<i>Eupatorium serotinum</i>	late boneset	D,E,F,G,H	1
<i>Euphorbia corollata</i>	flowering spurge	A,B	1
<i>Euphorbia dentata</i>	toothed spurge	A,H	1
<i>Euphorbia maculata</i>	spotted spurge	F,G,H	1
<i>Euphorbia nutans</i>	nodding spurge	A,F,H	1
<i>Eutrochium purpureum</i>	Joe-pye-weed	C	3
<i>Fallopia scandens</i>	climbing false buckwheat	D,E,F	1
<i>Fleischmannia incarnata</i>	pink thoroughwort	C,D,E,F,G	2
<i>Forsythia suspensa</i>	weeping forsythia	C,H	2
<i>Fragaria virginiana</i>	wild strawberry	A	1
<i>Frangula caroliniana</i>	Carolina buckthorn	A,B,C	1
<i>Fraxinus americana</i>	white ash	A,B,C	1
<i>Galactia volubilis</i>	downy milk-pea	A,B	1
<i>Galium aparine</i>	cleavers	C,D,E,G	1
<i>Galium arkansanum</i> var. <i>arkansanum</i>	Arkansas bedstraw	B	1
<i>Galium circaeazans</i>	wild licorice	B,D	1
<i>Galium concinnum</i>	shining bedstraw	B,C	1
<i>Galium triflorum</i>	sweet-scent bedstraw	C,D	1
<i>Gaura longiflora</i>	biennial gaura	A,H	1
<i>Gentiana alba</i>	pale gentian	A,C,F	1
<i>Geranium maculatum</i>	wild geranium	C,D	4
<i>Geranium molle</i>	dove's-foot crane's-bill	F,H	4
<i>Geum canadense</i>	white avens	D	1
<i>Geum vernum</i>	spring avens	D,E	1
<i>Glechoma hederacea</i>	ground-ivy	D,G,H	1
<i>Glyceria striata</i>	fowl manna grass	E	1
<i>Hackelia virginiana</i>	beggar's-lice	C,D	1
<i>Helianthus divaricatus</i>	woodland sunflower	B	1
<i>Helianthus hirsutus</i>	hairy woodland sunflower	A,B	1
<i>Helianthus tuberosus</i>	Jerusalem artichoke	D,F,H	1
<i>Heliopsis helianthoides</i>	ox-eye	A	1
<i>Hemerocallis fulva</i>	orange day-lily	B,G,H	1
<i>Hibiscus syriacus</i>	rose-of-Sharon	G,H	2
<i>Hieracium gronovii</i>	hawkweed	B	1
<i>Houstonia nigricans</i>	diamond-flower	A	1
<i>Houstonia purpurea</i> var. <i>purpurea</i>	mountain houstonia	C,D	1
<i>Houttuynia cordata</i>	chameleon	E	1
<i>Hydrangea arborescens</i>	wild hydrangea	C,F	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Hydrophyllum virginianum</i>	Virginia waterleaf	C,D	1
<i>Hypericum hypericoides subsp. multicaule</i>	St. Andrew's-cross	B	1
<i>Hypericum pseudomaculatum</i>	false spotted St. John's-wort	A	1
<i>Hypericum sphaerocarpum</i>	round-fruit St. John's-wort	A	1
<i>Ilex aquifolium</i>	English holly	B,C	1
<i>Ilex decidua</i>	deciduous holly	A,C,D	1
<i>Ilex opaca</i>	American holly	B,C	1
<i>Impatiens capensis</i>	spotted jewelweed	D,E,F	1
<i>Impatiens pallida</i>	yellow jewelweed	D,E	1
<i>Ipomoea coccinea</i>	red morning-glory	H	1
<i>Ipomoea lacunosa</i>	small white morning-glory	F,G,H	1
<i>Ipomoea pandurata</i>	wild potato vine	F	1
<i>Juglans nigra</i>	black walnut	A,B,C,D,G	1
<i>Juncus secundus</i>	rush	A,F	1
<i>Juncus tenuis</i>	path rush	F,G,H	1
<i>Juniperus virginiana</i>	eastern red-cedar	A,C,D,F,G	1
<i>Kickxia elatine</i>	cancerwort	F,G	1
<i>Koelreuteria paniculata</i>	golden-rain-tree	C,D	1
<i>Krigia biflora</i>	two-flower dwarf-dandelion	B,C	1
<i>Kummerowia striata</i>	Japanese bush-clover	G,H	1
<i>Kyllinga pumila</i>	spikesedge	F	1
<i>Lactuca canadensis</i>	wild lettuce	B	1
<i>Lactuca floridana</i>	Florida wild lettuce	D,F	1
<i>Lamium purpureum</i>	purple dead-nettle	C,D,G,H	1
<i>Laportea canadensis</i>	wood-nettle	C,D	1
<i>Lathyrus latifolius</i>	everlasting-pea	G,H	1
<i>Leersia oryzoides</i>	rice cut grass	E,F	1
<i>Leersia virginica</i>	white grass	C,D,E,F	1
<i>Lemna</i>	duckweed	F	1
<i>Lespedeza cuneata</i>	sericea lespedeza	B,F,G,H	1
<i>Lespedeza frutescens</i>	violet bush-clover	A,B	1
<i>Lespedeza hirta</i>	hairy bush-clover	B	1
<i>Lespedeza procumbens</i>	trailing bush-clover	B	1
<i>Lespedeza violacea</i>	bush-clover	B	A
<i>Lespedeza virginica</i>	slender bush-clover	A,B	1
<i>Leucanthemum vulgare</i>	ox-eye daisy	G,H	1
<i>Leucospora multifida</i>	narrow-leaf paleseed	A,F	1
<i>Liatis aspera</i>	rough blazing-star	B	1
<i>Ligustrum sinense</i>	Chinese privet	C,D,E,F,G,H	1

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<i>Lindera benzoin</i>	spicebush	B,C,D,E	1
<i>Lindernia dubia</i>	false pimpernel	F	1
<i>Liriodendron tulipifera</i>	tulip-tree	A,B,C,G,H	1
<i>Liriope spicata</i>	creeping lily-turf	B	1
<i>Lithospermum canescens</i>	hoary puccoon	A	1
<i>Lobelia siphilitica</i>	great blue lobelia	E,F	1
<i>Lolium perenne</i>	rye grass	G,H	1
<i>Lonicera japonica</i>	Japanese honeysuckle	A,B,C,D,E,F,G,	1
<i>Lonicera maackii</i>	Amur honeysuckle	A,C,D,G,H	1
<i>Lonicera sempervirens</i>	trumpet honeysuckle	A	1
<i>Lycopus americanus</i>	American bugleweed	F	1
<i>Lysimachia lanceolata</i>	yellow-loosestrife	A	1
<i>Maclura pomifera</i>	Osage-orange	D,G	1
<i>Matelea</i>	matelea	A,B,F	1
<i>Melica nitens</i>	three-flower melic	A	1
<i>Melilotus albus</i>	white sweet-clover	H	1
<i>Melothria pendula</i>	creeping-cucumber	C,D,F.H	1
<i>Menispermum canadense</i>	moonseed	C,D	1
<i>Mentha x piperita</i>	peppermint	E,F	1
<i>Mentha spicata</i>	spearmint	E,G	1
<i>Microstegium vimineum</i>	Japanese stilt grass	A,B,C,D,E,F,G,	1
<i>Mimosa quadrivalvis var. nuttallii</i>	sensitive-brier	A,B	1
<i>Mimulus alatus</i>	monkey-flower	D,E,F	1
<i>Mirabilis albida</i>	white four-o'clock	A	3
<i>Mirabilis nyctaginea</i>	wild four-o'clock	H	3
<i>Miscanthus sinensis</i>	Chinese silver grass	B,F	2
<i>Monarda bradburiana</i>	Bradbury's beebalm	B	3
<i>Monarda fistulosa</i>	beebalm	A,B	1
<i>Monarda russeliana</i>	Russell's beebalm	A	3
<i>Monotropa uniflora</i>	Indian-pipe	C	3
<i>Morus alba</i>	white mulberry	F,G,H	2
<i>Morus rubra</i>	red mulberry	C,D,F,G	1
<i>Muhlenbergia capillaris</i>	hair-awn muhly	A	1
<i>Muhlenbergia frondosa</i>	wire-stem muhly	E,F	1
<i>Muhlenbergia schreberi</i>	nimblewill	B,D,F,G,H	1
<i>Muhlenbergia sobolifera</i>	rock muhly	A,B,C	1
<i>Muhlenbergia sylvatica</i>	woodland muhly	B,D,F	1
<i>Nandina domestica</i>	nandina	B	2
<i>Nasturtium officinale</i>	watercress	E	1

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<i>Nothoscordum bivalve</i>	crow-poison	A,B	1
<i>Nyssa sylvatica</i>	black-gum	B,C	1
<i>Oenanthe javanica</i>	Java water-dropwort	E	1
<i>Oenothera biennis</i>	evening-primrose	E,F,G,H	1
<i>Onosmodium bejariense</i> var. <i>subsetosum</i>	marbleseed	A	1
<i>Osmorhiza longistylis</i>	aniseroor	C,D	3
<i>Ostrya virginiana</i>	hop-hornbeam	B,C,D,E	1
<i>Oxalis dillenii</i>	yellow wood-sorrel	A,B,D,F,G,H	1
<i>Oxalis stricta</i>	yellow wood-sorrel	C,D	1
<i>Oxalis violacea</i>	violet wood-sorrel	A,B	1
<i>Packera aurea</i>	golden ragwort	E	2
<i>Panicum anceps</i>	beaked panic grass	A,F,G	1
<i>Panicum capillare</i>	witch grass	H	1
<i>Panicum flexile</i>	wiry witch grass	A	1
<i>Panicum philadelphicum</i>	witch grass	A	1
<i>Panicum virgatum</i>	switch grass	A	1
<i>Parthenium integrifolium</i>	wild quinine	B	1
<i>Parthenocissus quinquefolia</i>	Virginia-creeper	B,C,D	1
<i>Paspalum dilatatum</i>	Dallis grass	F,G,H	1
<i>Paspalum floridanum</i>	Florida paspalum	E,F	1
<i>Paspalum laeve</i>	field paspalum	E,F	1
<i>Paspalum pubiflorum</i>	hairy-seed paspalum	F	1
<i>Passiflora incarnata</i>	purple passion-flower	E,F,G,H	2
<i>Passiflora lutea</i>	yellow passion-flower	A	1
<i>Pellaea atropurpurea</i>	purple-stem cliff-brake	A	1
<i>Penstemon digitalis</i>	foxglove beardtongue	A,B	3
<i>Penstemon tubiflorus</i>	beardtongue	A	1
<i>Perilla frutescens</i>	beefsteak-plant	B,C,D,E,F,G,H	1
<i>Persicaria hydropiper</i>	water-pepper	E,F	1
<i>Persicaria hydropiperoides</i>	swamp smartweed	E,F	1
<i>Persicaria longiseta</i>	bristly lady's-thumb	C,D,E,F,G,H	1
<i>Persicaria pensylvanica</i>	pink smartweed	D,E,F,H	1
<i>Persicaria punctata</i>	dotted smartweed	D,E,F,H	1
<i>Persicaria virginiana</i>	jumpseed	C,D	1
<i>Phalaris arundinacea</i>	reed canary grass	E	1
<i>Phaseolus polystachios</i>	wild bean	A,C,F	1
<i>Phegopteris hexagonoptera</i>	broad beech fern	C,D	1
<i>Phlox divaricata</i> subsp. <i>laphamii</i>	wild blue phlox	C,D	1
<i>Phlox paniculata</i>	perennial phlox	D	1

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<i>Phryma leptostachya</i>	lopseed	C,D	1
<i>Physalis cordata</i>	heart-leaf ground-cherry	F	1
<i>Physalis heterophylla</i>	clammy ground-cherry	A,B	1
<i>Physocarpus opulifolius</i>	ninebark	C,D	1
<i>Physostegia angustifolia</i>	narrow-leaf false dragonhead	A,F	3
<i>Phytolacca americana</i>	poke	E,F,G,H	1
<i>Pilea pumila</i>	clearweed	C,D	2
<i>Pinus strobus</i>	eastern white pine	C	1
<i>Pinus taeda</i>	loblolly pine	C	1
<i>Plantago lanceolata</i>	English plantain	F,G,H	1
<i>Plantago major</i>	great plantain	F	1
<i>Plantago rugelii</i>	black-seed plantain	F,G	1
<i>Platanus occidentalis</i>	sycamore	D,F,G,H	1
<i>Poa annua</i>	annual blue grass	F,H	2
<i>Podophyllum peltatum</i>	May-apple	B,C,D	3
<i>Polemonium reptans</i>	Jacob's-ladder	C,D	1
<i>Polygala senega</i>	Seneca snakeroot	A,C	1
<i>Polygonatum biflorum</i>	Solomon's-seal	C	3
<i>Polygonum aviculare</i>	knotweed	H	1
<i>Polygonum erectum</i>	erect knotweed	G,H	1
<i>Polymnia canadensis</i>	leafcup	C	1
<i>Polystichum acrostichoides</i>	Christmas fern	C,D	1
<i>Potamogeton crispus</i>	curly pondweed	F	5
<i>Prenanthes alba</i>	white rattlesnake-root	A,C	1
<i>Prenanthes altissima</i>	tall rattlesnake-root	B,C	1
<i>Primula meadia</i>	shooting-star	A	3
<i>Prunella vulgaris</i>	heal-all	D,F	1
<i>Prunus mahaleb</i>	perfumed cherry	C,H	1
<i>Prunus serotina</i>	black cherry	C,D,F	1
<i>Pseudognaphalium obtusifolium</i>	rabbit-tobacco	A,B	1
<i>Pteridium aquilinum</i>	bracken fern	B	1
<i>Pueraria montana</i>	kudzu	A,B,H	1
<i>Pycnanthemum albescens</i>	white-leaf mountain-mint	B	1
<i>Pycnanthemum cf. virginianum</i>	Virginia mountain-mint	B	1
<i>Pycnanthemum tenuifolium</i>	slender mountain-mint	A,B	1
<i>Pyracantha coccinea</i>	scarlet firethorn	H	1
<i>Pyrus calleryana</i>	Callery pear	B,F,G,H	2
<i>Quercus alba</i>	white oak	B,C,D	1
<i>Quercus marilandica</i>	blackjack oak	B	1

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<i>Quercus muehlenbergii</i>	chinquapin oak	A,D	1
<i>Quercus rubra</i>	northern red oak	C	1
<i>Quercus shumardii</i>	Shumard's oak	A,C	1
<i>Quercus stellata</i>	post oak	A,B	1
<i>Quercus velutina</i>	black oak	B	1
<i>Ranunculus abortivus</i>	small-flower crowfoot	D,G,H	1
<i>Ranunculus recurvatus</i>	hooked buttercup	C,D,E	1
<i>Ranunculus sardous</i>	hairy buttercup	E,F,G,H	4
<i>Ratibida pinnata</i>	gray-head coneflower	A	2
<i>Rhus aromatica</i>	fragrant sumac	A,B	1
<i>Rhus copallinum</i>	winged sumac	A,B,F,G,H	1
<i>Rhus glabra</i>	smooth sumac	B,F,G,H	1
<i>Rhynchosia latifolia</i>	snout-bean	A,B	1
<i>Ribes missouriense</i>	Missouri gooseberry	C	1
<i>Robinia pseudoacacia</i>	black locust	B,F,G,H	1
<i>Rosa carolina</i>	Carolina rose	A,B	1
<i>Rosa multiflora</i>	multiflora rose	B,C,D,E,F,G,H	1
<i>Rosa setigera</i>	climbing rose	A,B,E	1
<i>Rotala ramosior</i>	toothcup	E	1
<i>Rubus</i>	rubus	B,C	1
<i>Rubus occidentalis</i>	black raspberry	C,D	1
<i>Rubus phoenicolasius</i>	wineberry	C,D,E,F,G,H	1
<i>Rudbeckia hirta</i>	black-eyed Susan	A,F,G,H	1
<i>Rudbeckia laciniata</i>	wild goldenglow	D,E,F	2
<i>Rudbeckia missouriensis</i>	Missouri coneflower	A	1
<i>Rudbeckia triloba</i>	brown-eyed Susan	A,C,F	1
<i>Ruellia humilis</i>	hairy wild petunia	A	1
<i>Ruellia strepens</i>	smooth wild petunia	A,C,D	1
<i>Rumex</i>	rumex	E	1
<i>Rumex crispus</i>	curly dock	F,G,H	1
<i>Sabatia angularis</i>	rose-gentian	A,H	1
<i>Sagittaria latifolia</i>	arrowhead	F	1
<i>Salix nigra</i>	black willow	F	1
<i>Sambucus canadensis</i>	elderberry	D,F,G	1
<i>Sanguinaria canadensis</i>	bloodroot	C,D	1
<i>Sanicula canadensis</i>	Canadian black-snakeroot	A,B,C,D	1
<i>Sanicula odorata</i>	clustered black-snakeroot	C,D	1
<i>Saponaria officinalis</i>	bouncing-bet	H	1
<i>Sassafras albidum</i>	sassafras	B,G	1

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Schedonorus arundinaceus	tall fescue	D,E,F,G,H	1
<i>Schizachyrium scoparium</i>	little bluestem	A,B	1
<i>Scirpus atrovirens</i>	bulrush	E	1
<i>Scirpus pendulus</i>	bulrush	A	1
<i>Scrophularia marilandica</i>	carpenter's-square	C,D	1
<i>Scutellaria elliptica</i>	hairy skullcap	C,D,F	1
<i>Scutellaria lateriflora</i>	mad-dog skullcap	F	1
<i>Scutellaria ovata</i>	heart-leaf skullcap	A,B	1
Securigera varia	crown-vetch	D,F,G,H	1
<i>Sedum ternatum</i>	woodland stonecrop	C,E	2
<i>Senna marilandica</i>	wild senna	A,C,H	1
Setaria faberi	Chinese foxtail	G,H	2
<i>Setaria parviflora</i>	knot-root bristle grass	B,F,G,H	1
Setaria pumila	yellow bristle grass	G,H	1
Sherardia arvensis	field-madder	H	4
<i>Sicyos angulatus</i>	bur-cucumber	D,E	1
<i>Sideroxylon lanuginosum</i>	gum bumelia	A,B	1
<i>Silene virginica</i>	fire-pink	B	3
Silene vulgaris	bladder-campion	H	5
<i>Silphium asteriscus</i>	starry rosinweed	A	1
Silphium integrifolium var. laeve	rosinweed	A	1
<i>Silphium perfoliatum</i>	cup-plant	D,F	1
<i>Silphium terebinthinaceum</i>	prairie-dock	A	1
<i>Sisyrinchium</i>	blue-eyed-grass	A,B	1
<i>Sisyrinchium angustifolium</i>	blue-eyed-grass	A,D	1
<i>Smallanthus uvedalius</i>	bear's-foot	D	1
<i>Smilax hispida</i>	bristly greenbrier	C,D	1
<i>Smilax pulverulenta</i>	carrion-flower	C	5
<i>Solanum carolinense</i>	Carolina horse-nettle	G,H	1
<i>Solanum ptychanthum</i>	black nightshade	C,D,H	1
<i>Solidago altissima</i>	tall goldenrod	F,G,H	1
<i>Solidago arguta</i>	goldenrod	A,C,D	1
<i>Solidago caesia</i>	wreath goldenrod	C,D	1
<i>Solidago hispida</i>	hairy goldenrod	B	1
<i>Solidago nemoralis</i>	oldfield goldenrod	A,B	1
<i>Solidago petiolaris</i>	goldenrod	A,B	1
<i>Solidago radula</i>	rough goldenrod	A,B	1
<i>Solidago ulmifolia</i>	elm-leaf goldenrod	A,B	1
<i>Sorghastrum nutans</i>	Indian grass	A,B	1

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<i>Sorghum bicolor</i>	sorghum	H	1
<i>Sorghum halepense</i>	Johnson grass	F,G,H	1
<i>Sporobolus clandestinus</i>	hidden dropseed	A	1
<i>Sporobolus compositus</i>	tall dropseed	A	1
<i>Sporobolus vaginiflorus var. ozarkanus</i>	Ozark dropseed	A	1
<i>Staphylea trifolia</i>	bladdernut	C,D	1
<i>Strophostyles helvola</i>	wild bean	F	1
<i>Stylosanthes biflora</i>	pencil-flower	A,B	1
<i>Symphoricarpos orbiculatus</i>	coral-berry	A,B,C,D	1
<i>Symphyotrichum anomalum</i>	aster	B	1
<i>Symphyotrichum drummondii</i>	blue wood aster	A,C,D	2
<i>Symphyotrichum laeve</i>	smooth aster	A	1
<i>Symphyotrichum lanceolatum</i>	tall white aster	D,E	1
<i>Symphyotrichum lateriflorum</i>	white woodland aster	B,D,F	1
<i>Symphyotrichum oblongifolium</i>	aromatic aster	A	1
<i>Symphyotrichum patens</i>	late purple aster	A,B	1
<i>Symphyotrichum pilosum</i>	white heath aster	F,G,H	1
<i>Symphyotrichum turbinellum</i>	prairie aster	B	1
<i>Symphyotrichum urophyllum</i>	white arrow-leaf aster	A	1
<i>Taraxacum officinale</i>	common dandelion	G,H	2
<i>Tephrosia virginiana</i>	goat's-rue	A,B	1
<i>Teucrium canadense</i>	American germander	D,F,G	1
<i>Thalictrum revolutum</i>	wax-leaf meadow-rue	A,D,F	1
<i>Thaspium chapmanii</i>	meadow-parsnip	A,B,F	5
<i>Thaspium trifoliatum</i>	meadow-parsnip	F	3
<i>Tilia americana</i>	basswood	C,D	1
<i>Torilis arvensis</i>	field hedge-parsley	G,H	1
<i>Toxicodendron radicans</i>	poison-ivy	A,B,C,D,F	1
<i>Tradescantia ohiensis</i>	Ohio spiderwort	A	2
<i>Tragia</i>	noseburn	A	1
<i>Tragia cordata</i>	heart-leaf noseburn	A,B,D	1
<i>Tridens flavus var. flavus</i>	purple-top tridens	A,B,F,G,H	1
<i>Trifolium pratense</i>	red clover	F,G,H	1
<i>Trifolium repens</i>	white clover	G,H	1
<i>Trillium ozarkanum</i>	Ozark trillium	B	5
<i>Trillium sessile</i>	wakerobin	C,D	3
<i>Trillium viridescens</i>	green trillium	C,D	5
<i>Triosteum</i>	horse-gentian	A	1
<i>Ulmus alata</i>	winged elm	A,B	1

Scientific Name*	Common Name	Habitat(s)	Source
<i>Ulmus americana</i>	American elm	D	1
<i>Ulmus rubra</i>	slippery elm	C,D,F	1
<i>Urtica gracilis</i>	slender nettle	E	1
<i>Uvularia grandiflora</i>	large-flower bellwort	C	1
<i>Vaccinium arboreum</i>	farkleberry	B	1
<i>Vaccinium pallidum</i>	low-bush blueberry	B	1
<i>Vaccinium stamineum</i>	deerberry	B	1
<i>Valerianella radiata</i>	cornsalad	H	3
<i>Verbascum blattaria</i>	moth mullein	G,H	1
<i>Verbascum thapsus</i>	woolly mullein	G,H	1
<i>Verbena urticifolia</i>	white vervain	B,F	1
<i>Verbesina alternifolia</i>	yellow ironweed	C,D,E,F,G	1
<i>Verbesina helianthoides</i>	crownbeard	A,B	1
<i>Verbesina virginica</i>	frostweed	C,D,E,F,G	1
<i>Vernonia arkansana</i>	Arkansas ironweed	B,E,F	1
<i>Vernonia baldwinii</i>	Baldwin's ironweed	B	1
<i>Vernonia missurica</i>	Missouri ironweed	B,F	2
<i>Veronica anagallis-aquatica</i>	water speedwell	E,F	2
<i>Veronica persica</i>	Persian speedwell	F,H	1
<i>Viburnum prunifolium</i>	blackhaw	A,D	2
<i>Viburnum rufidulum</i>	rusty blackhaw	B	1
<i>Vicia caroliniana</i>	wood vetch	A,B	1
<i>Vinca major</i>	big-leaf periwinkle	C,H	1
<i>Viola bicolor</i>	Johnny-jump-up	H	3
<i>Viola pedata</i>	bird's-foot violet	A,B	2
<i>Viola pubescens</i>	downy yellow violet	C,D	4
<i>Viola sororia</i>	blue violet	C,D	2
<i>Viola striata</i>	cream violet	C,D	1
<i>Vitis aestivalis</i>	summer grape	B,C,D	1
<i>Vitis cinerea</i>	winter grape	D,E	1
<i>Vitis vulpina</i>	frost grape	D	3
<i>Woodsia obtusa</i>	blunt-lobe cliff fern	A	1
<i>Yucca cf. arkansana</i>	Arkansas yucca	A	1
<i>Zizia aptera</i>	heart-leaf golden Alexanders	A,B	1
<i>Zizia aurea</i>	golden Alexanders	C,F	1

Total Taxa: 539

Habitats:

A = limestone glade and woodland

B = chert woodland

C = mesic hardwood forest

D = riparian forest

E = spring run

F = lakeshore

G = field

H = disturbed area

Sources:

1 = Theo Witsell, 9-11 September 2013 site inventory

2 = Theo Witsell, 16-18 & 20 October 2013 site inventory

3 = Joan Reynolds, plant list

4 = Deb Bartholomew, April 2009 photographs

5 = Theo Witsell, 15 May 2011 site inventory/Arkansas Native Plant Society field trip