The Vascular Flora of the South Fork Native Plant Preserve, Van Buren County, Arkansas

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Abstract.—The South Fork Native Plant Preserve, a property owned and managed by the Gates Rogers Foundation, Inc., is located along the South Fork of the Little Red River (now Greers Ferry Lake) in Van Buren County, Arkansas. We conducted a floristic inventory of a 61.3 ha study area consisting of the preserve, adjacent lakefront property owned by the U.S. Army Corps of Engineers, and a riparian corridor on neighboring land from February through November 2005. A total of 582 vascular plant taxa, representing 118 familes and 336 genera, was documented including six species (*Carex lupuliformis* Sartwell ex L. H. Dewey, *Carex swanii* (Fernald) Mack., *Claytonia caroliniana* Michx., *Nemastylis nuttallii* Pichering ex R. C. Foster, *Phemeranthus rugospermus* (Holz.) Kiger, and *Viola canadensis* L. var. *canadensis*) tracked by the Arkansas Natural Heritage Commission as species of conservation concern in Arkansas. Fifty-five taxa (9.5% of the total) are considered introduced to the state. The largest plant families represented were Asteraceae (69 taxa), Poaceae (62 taxa), Cyperaceae (51 taxa), and Fabaceae (39 taxa). Fourteen distinct communities (habitat types) were delineated in the study area. Among these, sandstone glades, a bedrock-bottom stream, bluffs, and an upland depression wetland were found to contribute significantly to the species richness of the study area. The depression wetland contained three species (*Vaccinium fuscatum* Ait., *Acer rubrum* L. var. *drummondii* (Hook. & Arn. ex Nutt.) Sarg., and *Carex lupuliformis* Sartwell ex L. H. Dewey) more typical of the lowlands of the Gulf Coastal Plain and the Mississippi Alluvial Plain.

Key words.—South Fork Native Plant Preserve, Gates Rogers Foundation, Inc., Little Red River, Greers Ferry Lake, Van Buren County, Arkansas, U.S. Army Corps of Engineers, vascular plant taxa, *Carex lupuliformis, Carex swanii*, *Claytonia caroliniana*, *Nemastylis nuttallii*, *Phemeranthus rugospermus*, *Viola canadensis* L. var. *canadensis,* Arkansas Natural Heritage Commission, Asteraceae, Poaceae, Cyperaceae, Fabaceae, *Vaccinium fuscatum*, *Acer rubrum* L. var. *drummondii*, and *Carex lupuliformis.*

Introduction

The South Fork Native Plant Preserve, owned by the Gates Rogers Foundation, Inc. is located on the South Fork of the Little Red River (Greers Ferry Lake), in Van Buren County, Arkansas (Fig. 1). We conducted an inventory of the preserve, adjacent shoreline property, and an adjacent tract of land (hereafter collectively refered to as "the study area") to document the botanical biodiversity of the site. This included documenting plant species richness as well as the location, type and condition of all significant terrestrial and aquatic plant communities on the site. Field work was conducted from February to November 2005.

Materials and Methods

Aerial infrared digital orthophotos and U.S. Geological Survey 7.5' topographic data (available at www.geostor.arkansas.gov) of the study area were analyzed to classify and map plant communities using ArcView GIS software. Ground truthing of these communities was conducted, new communities were added, and boundaries were redrawn and adjusted based on repeated site visits and GPS points taken throughout 2005 and in March of 2006.

Thorough species inventories were conducted in each community, by visiting each community in the study area a minimum of once every 2 weeks during the growing season. Each plant species encountered was recorded (by community) and a master plant species list was compiled. Habitat codes were assigned for each species in the study area, and a relative abundance value was assigned at the conclusion of the field surveys. Non-native and non-native invasive species were identified and labeled as such according to Arkansas Vascular Flora Committee (2006).

Voucher specimens were collected for each species encountered in identifiable condition (typically flowering or fruiting specimens of herbaceous species, and mature specimens of woody plants), with the exception of those species occurring in especially small populations, which we believed might be harmed by collecting. Specimens were pressed and dried according to standard methods and were mounted onto archival specimen paper for storage in the herbarium of the South Fork Native Plant Preserve, housed at the office of the Gates Rogers Foundation in Clinton, Arkansas.

Populations of plant species of conservation concern (ANHC 2005) were mapped using GPS/GIS technology and detailed data on habitat and associate species were collected. These data

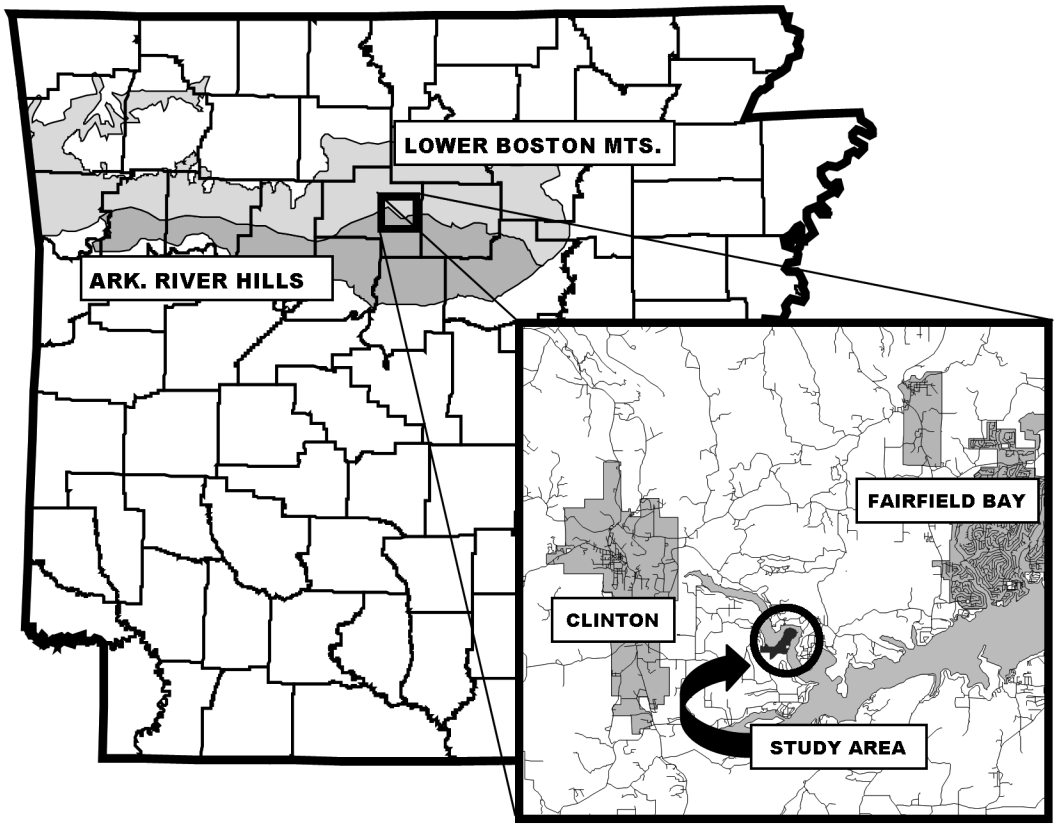

Fig. 1. Map showing the location of the South Fork Native Plant Preserve Study Area, Van Buren County, Arkansas.

will be provided to the Arkansas Natural Heritage Commission for inclusion into their statewide database of elements of special conservation concern.

Description of the Study Area

Location.—The South Fork Native Plant Preserve is located in Van Buren County, Arkansas, approximately 8 km southeast of Clinton, 5.5 km northeast of Choctaw, 13 km south-southwest of Shirley, and 16 km southwest of Fairfield Bay. The study area is larger than the existing preserve. It includes the existing preserve (owned by the Gates Rogers Foundation), land lying between the existing preserve and Greers Ferry Lake (owned by the U.S. Army Corps of Engineers), and a parcel of private land to the south of the Foundation land that includes a high quality example of a bedrock-bottom stream with springs, riparian habitat, and adjacent sandstone glades. The study area encompasses approximately 61.3 ha and falls within the SE ¼ of the SE ¼ of Section 29, the NW ¼ of Section 33, and that part of Section 28 that is south and west of Greers Ferry Lake, all within Township 11 North, Range 13 West (T11N, R13W). The site is prominent and easily located on a map or aerial photograph by the large peninsula projecting into the lake from the south shore (Figs. 1 and 2).

Ecoregional Position.—Woods et al. (2004) show the study area located at the boundary between the Lower Boston Mountains Ecoregion (Level IV Ecoregion 38b) of the Ozark Plateau and the Arkansas Valley Hills Ecoregion (Level IV Ecoregion 37c).

Elevation.—Elevation in the study area ranges from approximately 174 m above sea level at the highest point (near the entrance gate at the corner of Sections 28, 29, 32, and 33), to 140.5 m above sea level at the normal pool elevation of Greers Ferry Lake. The lowest elevation rises and falls with the lake level and the amount of dry land available to terrestrial plants expands and contracts accordingly based on lake level response to seasonal precipitation and withdraws. At the lowest lake level of 2005, the study area extended down to 137.5 m above sea level (USACOE 2006). This exposed approximately 10.3 ha

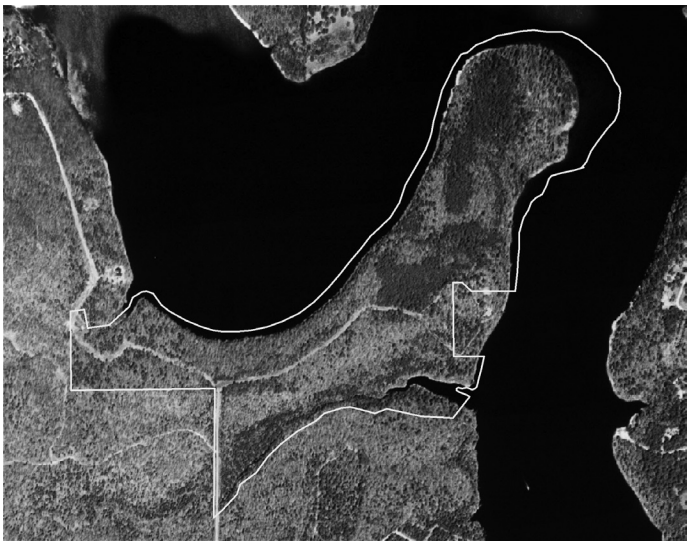

Fig. 2. Aerial photograph showing the boundary of the South Fork Native Plant Preserve Study Area. Note that boundary shown in lake represents low water level in October 2005.

of dry land in the study area that is under water when the lake is at normal pool elevation.

Geology.—Haley and co-authors (1976) mapped the study area as the Bloyd Shale and Prairie Grove Member of the Hale Formation and showed an area of the Atoka Sandstone to the southwest of the study area (Bald Mountain). Based on the lithologic descriptions of McFarland (2004), it seems possible that the coarse scale of the map (1:500,000) introduced some error and that the upper geologic units in the study area are potentially Atoka sandstone underlain by the older Bloyd Shale. The upper elevations, bedrock-bottom stream, and sandstone glades all have tan, brown, or gray sandstone bedrock, which is consistent with the Atoka Formation (McFarland 2004). This is clearly underlain by an older gray shale unit that is visible on the lower part of the north-facing slope and the area below a waterfall (which is located at the boundary between the sandstone and shale units near the southeastern edge of the preserve where a stream enters Greers Ferry Lake).

Anecdotal information about the ecological preferences and distribution of certain plants (e.g. the calciphile *Asplenium rhizophyllum* on a shale outcrop) indicates that the shale unit contains some calcareous material. Similarly, the abundance of a number of acid-loving plants over the sandstone portions of the study area (e.g. *Pinus echinata*, *Vaccinium* spp., and *Quercus falcata*) indicates that this rock does not contain significant amounts of calcareous material. It is possible, however, that this sandstone is part of the Trace Creek Member of the Bloyd Formation which has significant amounts of sandstone and is known to occur as far east as the study area (McFarland 2004). McFarland (2004) also mentions that many modern workers consider the Trace Creek Member to be a part of the Atoka Formation. It is unclear if the Hale Formation outcrops at all in the study area above the normal pool elevation of Greers Ferry Lake.

Soils.—Soils in the highest elevation uplands in the study area are mapped as Enders-Steprock complex, 8 to 20% slopes (Townsend et al. 1986). Gently sloping areas at lower elevation are mapped as Steprock-Linker complex, 3 to 8% slopes. Lowlands and a riparian area along the stream in the southern part of the study area are mapped as Steprock-Mountainburg complex, 3 to 8% slopes.

Hydrology.—The entire study area lies within the watershed of the South Fork of the Little Red River. Prior to the construction of Greers Ferry Lake, the study area was situated above the south side of the South Fork at a bend in the river. Following the filling of the lake, the portion of the valley of the South Fork adjacent to the study area was flooded to a depth of 10.5 to 13.5 m above the normal water level of that river. This also inundated a large area of bottomlands, river terraces, and lower slopes.

Only one stream in the study area is large enough to have a developed riparian plant community associated with it. This unnamed stream is the only stream in the study area that shows up (indicated by a broken blue line) on the 1:24,000 scale USGS topographic map for the area. The stream flows from southwest to northeast and drains a watershed with an area of approximately 168 ha. This watershed ranges from 290 m above sea level at the top of Bald Mountain to 140.5 m at the normal pool elevation of Greers Ferry Lake (137.5 m in December 2005). Land use in the watershed of this stream is predominantly low-intensity forestry (selective cut and natural regeneration) with three pastures covering a total of 16.6 ha on top of Bald Mountain in the uppermost reaches of the west end of the watershed. As of 2000, there was a single residence in the watershed, also on top of Bald Mountain.

Human History of the Study Area.—While we are unaware of any documented evidence of Native American occupation within the study area proper, archaeological evidence of Native American presence in the Ozark Highlands dates back to approximately 12,500 years before present, with evidence indicating widespread occupation by about 10,000 years ago (Nelson 2005). Native American influence on the environment can be attributed to two principle patterns: ecosystem-wide effects from widespread burning of the landscape and local effects resulting from agriculture, hunting, and settlement (Nelson 2005). At least the former of these effects may have played an important role in the shaping of the plant communities in and around the study area prior to the removal of Native Americans and arrival of European settlers.

The earliest European settlement in the 93.2 sq. km (36 sq. mile) township containing the study area (T11N, R13W) occurred in areas along the South Fork of the Little Red River, beginning at least as early as 1844 according to Government Land Office records (Risener 2006). The more rugged and

rocky upland areas in the vicinity were not settled until the late 1800s and early 1900s (Risener 2006). The first land patent deeded from the government in the four sections surrounding the study area was for a 16.2 ha (40 acre) tract along the South Fork deeded from the government in 1844 (Risener 2006). The first deeded parcel of land that included part of the study area was deeded in 1860 (Risener 2006). Other parcels containing the study area were deeded in 1877, 1882, and 1894 (Risener 2006).

Construction on the Greers Ferry Dam began in 1959 and was completed in 1962. The dam impounds the Little Red River and several of its tributaries, inundating an area of approximately 164 sq. km creating Greers Ferry Lake (Greers Ferry Chamber of Commerce 2006). Greers Ferry Lake partially surrounds the study area and influences some of the plant communities, particularly the shoreline and lowland forest communities.

While the study area is almost entirely forested today, an historical aerial photo provided by the Gates Rogers Foundation reveals that a large portion was cleared for fields or pasture as recently as the 1950s. More recently, these fields have converted to young stands of *Pinus echinata* and *Juniperus virginiana* var. *virginiana* in the uplands and to stands of *Liquidambar styraciflua* and *Quercus phellos* in the lowlands at the north end of the peninsula. Several old abandoned roads are still evident in the study area, as well as other signs of past human use including an old home site, an dry-stacked stone wall, and a large, apparently human-dug hole, presumably a well or prospecting pit (Witsell and Baker pers. obs.).

Evidence of past logging can be found in the mixed pine-hardwood forests of the study area. Some of the persisting old stumps are tall enough to be consistent with those left by crosscut saw logging. There is no evidence of mining in the study area (Witsell and Baker pers. obs.).

Climate.—The nearest known site to the study area for which precipitation data are officially recorded is the home of Mary Alice Beer at Fairfield Bay. The yearly precipitation total at this site for 2005 was 89.79 cm, a near record low. This was 38.46 cm below the normal amount of 128.25 cm, averaged over several years at the same site. May, October, and December were particularly dry months with 1.14, 2.34, and 0.74 cm of precipitation respectively. The low May total in particular likely had an adverse impact on some plant species, occurring at the height of the growing season. Total precipitation in 2004 (an above-average year) was 144.04 cm.

While this low rainfall may have had an adverse impact on some plant species, it was responsible for a lowering of Greers Ferry Lake, which exposed a larger-than-normal area of exposed shoreline (Fig. 2), benefiting plant species that utilize this habitat. In 2005 the water level in the lake dropped to 137.48 m above sea level, 3.0 m below the normal pool elevation of 140.5 m (USACOE 2006). The maximum pool elevation of Greers Ferry Lake in January was 142.13 m, giving a total drop of 4.65 m for the year. Monthly mean lake levels show a more or less steady (with the exception of a small rise in April) drop in the lake level throughout 2005.

Summary of Floristic Diversity

A total of 582 taxa of vascular plants representing 118 families and 336 genera was found in the 61.3 ha study area. Of these 582 taxa, 6 taxa are tracked by the Arkansas Natural Heritage Commission as species of conservation concern in Arkansas (ANHC 2005, NatureServe 2005). Fifty-five taxa are considered to be introduced, either intentionally or accidentally, to the United States from elsewhere (AVFC 2006). The largest families are Asteraceae (69 taxa), Poaceae (63 taxa), Cyperaceae (51 taxa), and Fabaceae (39 taxa). The largest genera are *Carex* (Cyperaceae - 28 taxa), *Dichanthelium* (Poaceae - 11 taxa), *Quercus* (Fagaceae - 9 taxa), *Juncus* (Juncaceae - 9 taxa), *Desmodium* (Fabaceae – 8 taxa), *Lespedeza* (Fabaceae – 8 taxa), *Cyperus* (Cyperaceae – 8 taxa), *Solidago* (Asteraceae – 8 taxa), *Symphyotrichum* (Asteraceae – 8 taxa), *Hypericum* (Clusiaceae – 8 taxa), and *Viola* (Violaceae – 7 taxa).

It should be noted that this total of 582 taxa represents 20.04 % of the total number of vascular plant taxa known from Arkansas (AVFC 2006). According to Smith (1988), these are more taxa than have been documented from 36 of the 75 counties in the state. As far as we know, this inventory of the study area has documented the highest number of vascular plant taxa from any area of comparable size in the history of Arkansas's botanical exploration. This is due in part to the significant habitat diversity of the study area and in part to the thoroughness of the inventory.

As of 1988, Van Buren County was ranked 65th (out of 75 counties) in terms of documented plant diversity with 443 taxa documented by voucher specimens (Smith 1988). This was increased to a total of 943 taxa based on collection activities of Mary Alice Beer from 1988-1993 (Beer pers. comm.). Babb (1973) reported 984 taxa from adjacent Cleburne County.

Of the 582 taxa documented, voucher specimens for 537 taxa were collected, leaving 45 species that were observed in the study area, but were not collected. Some of these species were seen only once (perhaps just as leaves in the early spring) and were never relocated. Others were seen only in sterile (non-flowering/non-fruiting) condition, probably due to lack of sufficient light in many cases. Many other plants aborted flowering, died, or went dormant in the drought periods of the spring and summer.

Descriptions of Plant Communities in the Study Area

The following plant communities (Fig. 3) were identified, mapped, and qualitatively described in the study area:

1) Lowland Forest.—This community occurs in flat to nearly flat lowlands at the northeastern end of the peninsula and

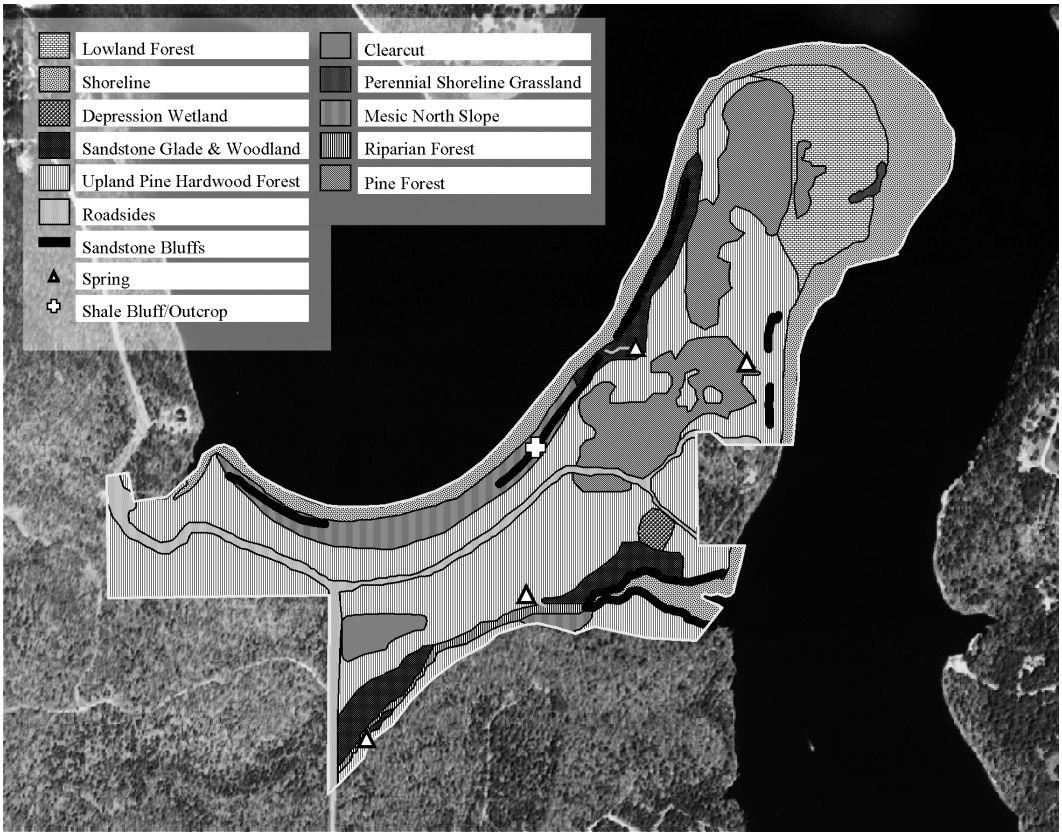

Fig. 3. Map of Plant Communities at South Fork Native Plant Preserve Study Area.

occupies 4.8 ha within the study area. The canopy is dominated by *Quercus nigra*, *Q. phellos,* and *Liquidambar styraciflua*. *Diospyros virginiana*, *Fraxinus pennsylvanica*, *Acer rubrum* var. *rubrum,* and *A. negundo* are common in localized areas. The understory is dominated by *Smilax rotundifolia* and *Smilax bona-nox* with *Smilax glauca* locally common in some areas. Other woody vines include *Campsis radicans*, *Trachelospermum difforme*, and *Brunnichia ovata*. The herbaceous layer is typically sparse and of low species richness. Where present, it consists primarily of sedges, particularly *Carex lupulina*, *C. tribuloides*, and *C. typhina*, and a few species of forbs including *Triadenum tubulosum*, *T. walteri*, *Botrychium biternatum*, *B. dissectum* f. *obliquum*, *Eryngium prostratum*, *Pluchea camphorata*, *Stachys tenuifolia* var. *tenuifolia*, and *Helenium flexuosum*.

According to the historic aerial photo provided by the Gates Rogers Foundation this community occurs primarily in low areas that were fields as recently as the late 1950s. A dense understory of greenbriers makes this community impenetrable to walk through in many areas. Much of this community is in an area that is flooded by Greers Ferry Lake for short periods of time when water levels are high. Water levels were low during 2005, but high-water levels can be determined by the location of an obvious debris line deposited by the water.

2) Shoreline.—The shoreline community extends from the normal pool level of Greers Ferry Lake to the low-water mark in a given year. The amount of area of this habitat exposed depends on the annual rainfall and the amount of water lost from the reservoir through evaporation and discharge through the dam. In 2005 the reservoir level dropped to 137.5 m above sea level, 3 m lower than the normal pool elevation (USACOE 2006). This exposed approximately 10.3 ha of shoreline habitat with 2.82 km of water edge within the study area.

By September of 2005, field surveys found that the shoreline community could be divided into 3 distinct concentric "zones" from the edge of the lowland forest to the water's edge. Vegetation patterns in these zones were clearly related to the length of time each zone had been exposed. In addition to these zones, a sandy grassland dominated by perennial grasses, sedges, and forbs was identified in a small area on the east side of the peninsula. The flora of this grassland was distinct enough and the community persistent enough that we felt that it deserved recognition as a formal community. It should be noted that each of these zones grades into the next, but that they are extensive and uniform enough to be considered distinct by even

a casual observer. However, in a wetter year not all of the zones are likely to be exposed. It can be assumed that diversity of this community is highest during drought years (because more soil is exposed) and was thus well-expressed in 2005.

The following associations were observed on the east side of the peninsula where elevation change was the most gradual.

A) Green Ash/Silver Maple Zone: This community occurs in a thin, linear strip at the edge of the normal pool elevation of Greers Ferry Lake. Only species tolerant of short-term inundation can occur here. Scattered trees of *Acer saccharinum* and *Fraxinus pennsylvanica* occur with a shrub layer of *Cephalanthus occidentalis*. Woody vines are common, particularly *Smilax* spp., *Campsis radicans*, *Trachelopsermum difforme*, and *Brunnichia ovata*. Ground layer vegetation includes *Lespedeza cuneata*, *Smilax bona-nox*, *S. glauca*, *Dichanthelium dichotomum* subsp. *dichotomum*, and seedlings of *Diospyros virginiana* and *Liquidambar styraciflua*.

B) Buttonbush Zone: This zone is evidently too wet for woody plants other than buttonbush and for most perennial herbaceous plants. *Cephalanthus occidentalis* occupies the upper stratum and may occur in thickets or as scattered individual shrubs. An herbaceous layer, when the ground is exposed due to low lake levels, consists mostly of weedy annuals, but includes the emergent perennial *Justicia americana* and scattered clumps of *Panicum rigidulum* subsp. *rigidulum*. Common annuals include *Eragrostis hypnoides*, *Oldenlandia boscii*, *Fimbristylis vahlii*, *F. autumnalis*, *Cyperus squarrosus*, *Eryngium prostratum*, *Lindernia dubia*, *Rotala ramosior*, *Lipocarpha micrantha*, and *Eleocharis acicularis*.

C) Recently Exposed Sandy Shoreline: This zone is occupied by a diversity of annual grasses, sedges, and forbs. The only perennial species in this zone appeared to have germinated during the study year. Dominant species include *Eragrostis hypnoides*, *Cyperus squarrosus*, *Lipocarpha micrantha*, *Fimbristylis vahlii*, *Fimbristylis autumnalis*, and *Eleocharis acicularis*. Other commonly encountered species include *Ammania* X *coccinea*, *Rotala ramosior*, *Oldenlandia boscii*, *Persicaria pensylvanica*, *Persicaria punctata*, *Persicaria lapathifolia*, *Echinochloa muricata* var. *microstachya*, *Ludwigia decurrens*, *Panicum dichotomiflorum* subsp. *dichotomiflorum*, *Ipomoea lacunosa*, *Eryngium prostratum*, *Bidens frondosa* var. *frondosa*, and *B. aristosa*.

3) Perennial Shoreline Grassland.—This community occurs in a small area of sandy soil on the eastern side of the peninsula just above the normal pool elevation of the lake. It is essentially treeless, though scattered *Liquidambar styraciflua* and *Diospyros virginiana* saplings and *Cephalanthus occidentalis* shrubs occur. *Hibiscus moscheutos* subsp. *lasiocarpos* is common in this community. The herbaceous layer differs markedly from the other open shoreline habitat in that it is dominated by perennial species. This community is very wet during periods of high lake levels and very dry in times of low lake levels. As such, it contains a mix of wetland species and species characteristic of xeric, sandy habitats. It can be considered analogous to sandbar communities along infrequently flooded river terraces. Total area occupied by this community within the study area was 0.14 ha.

The herbaceous layer is dominated by *Panicum rigidulum* subsp. *rigidulum*, *Axonopus furcatus*, *Cyperus pseudovegetus*, and *Helenium flexuosum*. Perennial sedges include *Carex lupulina* and *Carex typhina*. Other species commonly encountered include *Diodia teres*, *Paspalum laeve*, *Eryngium prostratum*, *Trachelospermum difforme*, *Boltonia diffusa*, *Pluchea camphorata*, *Polypremum procumbens*, *Hypericum gentianoides*, *H. drummondii*, *H. mutilum*, *Triadenum walteri*, *Chamaecrista nictitans* var. *nictitans*, and *Linum striatum*. *Shoenoplectus pungens*, *Rhexia mariana* var. *mariana*, *R. virginica*, *Axonopus furcatus*, *Crotalaria sagittalis*, and *Ludwigia glandulosa* are apparently restricted to this habitat within the study area. Annual grasses and sedges typical of the shoreline community are also common in this community, especially at the lower, eastern end and in areas where perennial species are sparse.

This community is easily discernible on both the 1950s and 2000 aerial photos. As such, it appears that this community is the result, at least in part, of edaphic factors (perhaps related to the sandy, nutrient-poor soil) and is not entirely the result of periodic flood-related disturbance from the lake.

4) Upland Depression Wetland.—This unique community is represented by a single example within the study area, occupying a total area of approximately 0.32 ha. This wetland is naturally occurring and is situated in a shallow circular depression in an otherwise upland setting. Drainage is impeded by a low ridge at the south end of the wetland. Shallow, standing water is common during the winter and spring months and in periods of higher rainfall, but the wetland became dry during the summer and in periods of low rainfall.

The wetland is forested and is dominated by *Liquidambar styraciflua* and *Quercus nigra*. The shrub layer is sparse but includes species more commonly found in the Gulf Coastal Plain including *Vaccinium fuscatum* and *Acer rubrum* var. *drummondii*. *Ilex decidua* var. *decidua* and *Lyonia ligustrina* also occur in the shrub layer. *Smilax bona-nox* and *S. rotundifolia* are common components of the understory. Plants in the herbaceous layer are typically clump-forming and are concentrated around the edge of the wetland and on raised hummocks within it. *Sphagnum* spp. and other mosses are common, forming dense mats in the wetter areas.

The herbaceous layer is dominated by a diversity of sedges including *Carex albolutescens*, *C. complanata*, *C. glaucodea*, *C. vulpinoidea*, *C. swanii*, *C. tribuloides*, *C. lupuliformis*, *Eleocharis tenuis* var. *verrucosa*, *Rhynchospora recognita*, and *Scirpus georgianus*. Rushes and grasses are also common, including *Juncus effusus*, *Agrostis perennans*, and *Leersia virginica*. Common forbs include *Packera obovata*, *Lycopus rubellus, Pycnanthemum tenuifolium*, *Claytonia virginica*, *Thalictrum thalictroides*, *Hedyotis caerulea*, and *Mitchella repens*. In addition to 2 sedges of conservation concern (*Carex*

swanii, *C. lupuliformis*), several species of orchids are found in and around this wetland including *Liparis liliifolia*, *Malaxis unifolia*, and *Spiranthes cernua*. There is no sign of human alteration of this wetland and it appears to be forested (and wet) in the 1950s aerial photo.

5) Sandstone Glades and Woodlands.—Several small glades, all with a sandstone substrate, are found within the study area. These typically occur on south- and west-facing slopes above bluffs and along both sides of a broad, shallow bedrock-bottom stream. These glades grade into open woodlands, which occur on deeper soil surrounding the glades. The total area of all sandstone glade and associated woodland habitat in the study area is approximately 3.7 ha.

Woodlands surrounding the glades are dominated by *Quercus stellata*, *Q. marilandica*, *Pinus echinata*, *Carya texana*, and *Juniperus virginiana* var. *virginiana*. *Fraxinus americana*, *Chionanthus virginicus*, *Vaccinium arboreum*, *Sideroxylon lanuginosum*, *Ulmus alata,* and *Celtis tenuifolia* are common small trees which occur scattered in and around the edge of the glades. Common shrubs include *Rhus aromatica* var. *aromatica*, *R. copallina*, *Symphoricarpos orbiculatus*, and *Hypericum prolificum*.

Open areas were dominated by a diversity of warm season grasses including *Aristida dichotoma* var. *curtissii*, *Aristida purpurascens*, *Sporobolus clandestinus, Dichanthelium depauperatum*, *D. linearifolium*, *Tridens flavus* var. *flavus*, *Schizachyrium scoparium* var. *scoparium*, *Andropogon ternarius* var. *ternarius*, and *A. virginicus*. Common forbs include *Hypoxis hirsuta*, *Hypericum drummondii*, *H. gentianoides*, *Viola pedata*, *V. sagittata*, *Allium canadense* var. *mobilense*, *Nothoscordum bivalve*, *Croton wildenowii*, *C. monanthogynus*, *Euphorbia corollata*, *Pycnanthemum tenuifolium*, *Scutellaria parvula* var. *australis*, *Oenothera linifolia*, *Delphinium carolinianum* subsp. *carolinianum*, *Saxifraga palmeri*, and *Glandularia canadensis*.

Uncommon species restricted to this habitat include *Acalypha monococca*, *Astragalus distortus* var. *engelmannii*, *Claytonia caroliniana*, *Polygonum tenue*, *Camassia scilloides*, and *Nemastylis nuttallii*.

6) Sandstone Bluffs.—Sandstone bluffs occur in areas where the South Fork of the Little Red River and the unnamed stream at the south end of the study area cut into the hillsides. Within the study area these occur primarily on the north-facing slope, on the west side of the peninsula, and, to a lesser degree, on the east side of the peninsula.

The flora of these bluffs depends on local exposure and hydrology. North- and east-facing bluffs support a more mesophytic flora, while south- and west-facing bluffs are drier and support more xerophytic species. More mesic bluffs in the study area typically support *Quercus muhlenbergii*, *Styrax grandifolius*, *Ulmus americana*, *Acer rubrum* var. *rubrum*, *Carpinus caroliniana*, *Lonicera flava*, *Euonymus americanus*, *Rhododendron prinophyllum*, *Hydrangea arborescens*, *Philadelphus pubescens*, and *Toxicodendron radicans*. Herbaceous plants include *Mitchella repens*, *Heuchera americana* var. *americana*, *H. americana* var. *hirsuticaulis*, *Saxifraga palmeri*, *Parietaria pensylvanica*, *Hybanthus concolor*, *Carex albicans*, *C. oligocarpa*, *C. umbellata*, *Dioscorea villosa*, *Poa sylvestris*, *Sphenopholis intermedia*, *S. obtusata*, *Asplenium platyneuron*, *A. trichomanes* subsp. *trichomanes*, *Pleopeltis polypodioides* var. *michauxiana*, and *Thaspium trifoliatum* var. *flavum*.

Drier bluffs support *Pinus echinata*, *Quercus muhlenbergii*, *Q. stellata*, *Chionanthus virginicus*, *Amelanchier arborea*, *Ulmus alata*, *Juniperus virginiana* var. *virginiana*, *Rhus aromatica* var. *aromatica*, *Toxicodendron radicans*, *Lyonia ligustrina*, and *Vaccinium arboreum*. Herbaceous plants include *Solidago buckleyi*, *S. ulmifolia* var. *palmeri*, *Symphyotrichum anomalum*, *Paronychia fastigiata*, *Tephrosia virginiana*, *Cunila origanoides*, *Penstemon arkansanus*, *Viola pedata*, *Luzula echinata*, *Dichanthelium linearifolium*, and *Woodsia obtusa*.

7) Shale Bluffs and Outcrops.—Shale bluffs are rare within the study area and are small. The flora of these outcrops is similar to that of the north-facing slope. A small outcrop occurs on the north facing slope, on a small bluff mostly of sandstone. It is the only site within the study area for walking fern (*Asplenium rhizophyllum*), a species typically found on moist limestone rocks.

8) Springs and Spring Runs.—Several small intermittent springs and associated groundwater-fed stream segments (spring runs) occur in the study area. These are characterized by lush beds of *Sphagnum* sp., sedges, rushes, and other wetland plants. All of the springs are associated with sandstone bedrock near the surface of the ground which acts as an impermeable barrier to groundwater and channels it to the point of emergence.

Characteristic species include *Lycopus rubellus*, *Scutellaria parvula* var. *australis*, *Spigelia marilandica*, *Eleocharis tenuis* var. *verrucosa*, *Clematis reticulata*, *Saxifraga palmeri*, *Mitchella repens*, *Carex oklahomensis*, *Juncus debilis*, *Spiranthes cernua*, *Agrostis perennans*, *Chasmanthium latifolium*, *Leersia virginica*, *Isoetes melanopoda*, *Selaginella eclipes*, *Amsonia tabernaemontana*, *Cardamine pensylvanica*, *Hypericum mutilum*, and *Vicia minutiflora*. Plants restricted to this community within the study area include *Callitriche heterophylla* subsp. *heterophylla*, *Selaginella eclipes*, and *Isoetes melanopoda*.

9) Roadsides.—There are a total of 2.7 ha of roads and roadside habitat in the study area. These areas support a mix of weedy species (both native and exotic) and conservative native species dependent on open habitat. This latter suite of species cannot survive, or at least cannot flower, in the closed canopy forests that dominate the study area. This habitat, due to suppression of woody plants by mowing, is dominated by herbaceous species with a significant graminoid component. Common graminoid species include *Schedonorus arundinaceus*, *Tridens flavus* var. *flavus*, *Andropogon virginicus*, *Agrostis hyemalis*, *Bromus* spp., *Panicum anceps*, *Dichanthelium* spp., *Carex cephalophora*, *C. leavenworthii*, *C. hrisutella*, and *C. muehlenbergii* var. *enervis*. A wet area on the west side of

Bachelor Road supports a diversity of wetland associated sedges and rushes including *Carex vulpinoidea*, *Scirpus cyperinus*, *Eleocharis lanceolata*, and *Juncus effusus*.

Shrubs are common along the edge of the roadsides and include *Acer rubrum* var. *rubrum*, *Liquidambar styraciflua*, *Aesculus pavia*, *Callicarpa americana*, *Hypericum prolificum*, *Diospyros virginiana*, *Aralia spinosa*, *Rhus aromatica* var. *aromatica*, *Rhus copallina*, and *Rhus glabra*.

Forbs in the roadside habitat can be divided into two groups: 1) weedy native and exotic species and 2) conservative native species dependent on open habitat. Weedy species (exotic species noted by an "*") include *Chaerophyllum tainturieri* var. *tainturieri*, *Daucus carota* *, *D. pusillus*, *Ambrosia artemisiifolia*, *A. bidentata*, *Bidens aristosa*, *Conyza canadensis*, *Erigeron strigosus*, *Eupatorium serotinum*, *Gamochaeta purpurea*, *Helenium amarum*, *Pseudognaphalium obtusifolium* subsp. *obtusifolium*, *Rudbeckia hirta* var. *pulcherrima*, *Solidago nemoralis*, *Draba brachycarpa*, *Lonicera japonica* *, *Cerastium* spp., *Chamaesyce maculata*, *Kummerowia striata* *, *Trifolium* spp.*, *Vicia sativa* *, *Hedeoma hispida*, *Salvia lyrata*, *Plantago* spp., *Rubus* spp., *Sherardia arvensis* *, *Veronica arvensis* *, *Nuttallanthus texanus*, *Valerianella radiata*, and *Viola bicolor*. Conservative, light-dependent native species found in roadsides in the study area include *Asclepias tuberosa* subsp. *interior*, *Liatris squarrulosa*, *Brickellia eupatorioides* var. *texana*, *Vernonia baldwinii*, *V. missurica*, *Trifolium reflexum*, *Lespedeza hirta* var. *hirta*, *L. virginica*, *Scutellaria ovata*, *Senna marilandica*, *Stylosanthes biflora*, *Tephrosia virginiana*, *Sabatia angularis*, *Pcynanthemum albescens*, *P. tenuifolium*, *Linum medium* var. *texanum*, *Delphinium carolinianum* subsp. *carolinianum*, *Ceanothus americana*, *Penstemon digitalis*, *P. tubaeflorus*, *Ruellia humilis* var. *humilis*, *Monarda bradburiana*, *M. fistulosa*, and *Phlox pilosa* subsp. *pilosa*.

Fifteen of the exotic species that occur in the study area were identified as known or potentially invasive species. All of these occur in this habitat. These species are *Carduus nutans*, *Daucus carota*, *Leucanthemum vulgare*, *Lonicera japonica*, *Lespedeza bicolor*, *Lespedeza cuneata*, *Perilla frutescens*, *Melia azedarach*, *Ligustrum sinense*, *Bromus commutatus*, *Bromus hordeaceus* ssp. *hordeaceus*, *Bromus racemosus*, *Dactylis glomerata*, *Schedonorus arundinaceus*, and *Ailanthus altissima*.

10) Upland Pine-Hardwood Forest.—This is the matrix habitat in the upland portions of the study area and occupies a total of approximately 25.8 ha. It is dominated in most areas by mixed species of *Quercus* and *Pinus echinata* with *Carya tomentosa*, *C. texana*, *Prunus serotina*, *Liquidambar styraciflua, Fraxinus americana*, and *Nyssa sylvatica* occurring as locally important species. The density of *P. echinata* varies and is likely as much the result of past timber management activities as it is a function of geomorphology, hydrology, or other abiotic factors. However, *P. echinata* is generally more common on south- and west-facing aspects in areas where past timber management is not a deciding factor in distribution and relative abundance.

Patterns of oak distribution in the community are largely a function of slope, aspect, and associated hydrology. *Quercus alba* is the dominant oak over most of the area with *Q. velutina* dominant to co-dominant in some areas. *Quercus falcata* is common to co-dominant, often in areas of *P. echinata*. Drier ridgetops and south- and west-facing slopes are dominated by *Q. stellata* and *Q. marilandica*. *Quercus muhlenbergii* may be locally common but is generally widely scattered in the study area. *Quercus rubra* may be locally common, particularly on north- and east-facing aspects, but is more common in the mesic north slope hardwood forest.

Common understory species include *Ostrya virginiana*, *Ulmus alata*, *Cornus florida*, *Frangula caroliniana*, *Amelanchier arborea*, *Chionanthus virginicus*, *Aesculus pavia*, *Vaccinium pallidum*, *Rhus aromatica* var. *aromatica*, *Diospyros virginiana*, and *Juniperus virginiana* var. *virginiana*. The herbaceous layer is fairly diverse but is sparse, due to dense shade under the closed canopy and a thick layer of leaf litter on the forest floor.

11) Shortleaf Pine Forest.—This community occupies approximately 8.6 ha and occurs in areas that were fields as recently as the 1950s. It is dominated by *Pinus echinata* with *Juniperus virginiana* var. *virginiana* important to occasionally co-dominant. *Quercus falcata* occurs occasionally in the canopy but more often in the understory. Scattered *Nyssa sylvatica*, *Liquidambar styraciflua*, *Acer rubrum* var. *rubrum*, *Prunus serotina*, *Quercus alba*, and *Q. velutina* occur as understory trees. Stands of this community type do not appear to have been planted, but rather to have arisen from natural regeneration following seedfall from surrounding forest remnants. The canopy in this community is dense and continuous. Woody plants in the understory are typically thick, and the herbaceous layer is sparse.

12) Clearcut.—This community is restricted in the study area to a 0.81 ha area near the southern boundary. It is situated on a gentle south-facing slope. Scattered saplings and shrubs dominate a grassy, early-successional shrubland. A rich diversity of herbaceous species occurs in this community of abundant sunlight. Common species include *Andropogon virginicus*, *Carex hirsutella*, *Dichanthelium* spp., *Lespedeza* spp., *Erechtites hieraciifolius* var. *hieraciifolius*, *Parthenium integrifolium, Liatris squarrulosa, Cirsium altissimum*, *Conyza canadensis*, *Monarda bradburiana*, *Eupatorium serotinum*, *Solidago odora* subsp. *odora*, *Solidago nemoralis*, *Rudbeckia hirta* var. *pulcherimma*, *Asclepias quadrifolia*, and *Verbascum thapsus*.

13) Riparian Forest.—This community is restricted to the narrow floodplain, adjacent terraces, and valley bottom along the stream near the southern boundary of the study area. The western portion of the stream within the study area has a wide, shallow bedrock-bottom with sandstone glades and springs along both sides. This area has a different flora than the middle part of the stream within the study area, which is wooded with boulders, cobbles, and gravel in the bed. The eastern part of the stream, just before it flows into Greers Ferry Lake, becomes

open again with streamside seeps and drops down a 3 m waterfall into the lake.

The forest along the stream is a mix of hardwood species with some *Pinus echinata*. Important hardwood trees include *Acer rubrum* var. *rubrum*, *Liquidambar styraciflua*, *Quercus alba*, *Q. muhlenbergii*, *Q. nigra*, *Fraxinus americana*, and *Platanus occidentalis*. A diverse understory includes *Chionanthus virginicus* (concentrated along the stream banks), *Ilex decidua* var. *decidua*, *Carpinus caroliniana*, *Ostrya virginiana*, *Euonymus americanus*, and *Hypericum hypericoides* subsp. *hypericoides*. The rocky channel of the creek is occupied by *Platanus occidentalis*, *Cornus obliqua*, *Salix caroliniana*, *S. nigra*, and *Amorpha nitens*.

The herbaceous layer is rich and varied alond the stream. Important species along the banks include *Coreopsis tripteris*, *Pedicularis canadensis*, *Chasmanthium latifolium*, *Conoclinium coelestinum*, *Krigia biflora* var. *biflora*, *Verbesina helianthoides*, *V. virginica*, *Lobelia cardinalis*, *L. puberula* var. *mineolana*, *Spiranthes cernua*, and *Lycopus rubellus*. Wooded terraces are occupied by *Polystichum acrostichoides*, *Botrychium virginianum*, *Elephantopus carolinianus*, *Podophyllum peltatum*, *Lysimachia lanceolata*, *Carex blanda*, *C. planispicata*, *Bromus pubescens*, and *Dichanthelium* spp. The channel proper is occupied by *Justicia americana*, *Mecardonia acuminata*, *Gratiola virginiana* var. *virginiana*, *Boehmeria cylindrica*, and *Scirpus pendulus*.

14) Mesic North Slope Hardwood Forest.—This community occurs on north-facing slopes and is dominated by *Quercus alba* and *Q. rubra* with *Carya tomentosa*, *Fraxinus americana*, *Acer saccharum* var. *saccharum*, *Acer rubrum* var. *rubrum*, *Morus rubra*, *Prunus serotina*, and *Tilia americana* var. *americana* important, at least locally. *Carya cordiformis* and *C. laciniosa* are restricted to this community in the study area. The understory is diverse and includes *Cornus florida*, *Asimina triloba*, *Staphylea trifolia*, *Carpinus caroliniana*, *Ostrya virginiana*, *Viburnum rufidulum*, *Euonymus americanus*, *Lyonia ligustrina*, *Rhododendron prinophyllum*, *Vaccinium pallidum*, *V. stamineum*, and *Aesculus pavia*.

The herbaceous layer is especially rich and includes a large number of species that are restricted to this habitat type within the study area. Common species are *Phlox divaricata* subsp. *laphamii*, *Polystichum acrostichoides*, *Adiantum pedatum* var. *pedatum*, *Erythronium albidum*, *Cardamine concatenata*, *Geranium maculatum*, and *Trillium recurvatum*. *Uvularia sessilifolia*, *Polygonatum biflorum*, *Cimicifuga racemosa*, *Carex jamesii*, *C. rosea*, *Erythronium rostratum*, *Cystopteris protrusa*, *Osmorhiza longistylis*, *Ageratina altissima* var. *altissima*, *Solidago caesia*, *Campanulastrum americanum*, *Silene stellata*, *Monotropa hypopithys*, *Sanguinaria canadensis*, *Delphinium tricorne*, *Viola pubescens*, and *V. canadensis* var. *canadensis* are among those herbaceous species restricted to this community in the study area.

This community has been reduced in size by the construction of Greers Ferry Lake. The species composition becomes more rich and mesophytic downslope and presumably was even more rich and mesophytic near the bottom of the slope, which is below the present day lake.

Plant Species of Conservation Concern in the Study Area.—Six state species of conservation concern were found in the study area during the 2005 field season. Each of these rare species is actively monitored by the Arkansas Natural Heritage Commission (2005). They are listed below followed by their conservation status ranks (ANHC 2005).

1. *Phemeranthus rugospermus* (rough-seeded fameflower) G3G4S1 – This species was previously known in the state only from high-quality sand barrens in the Gulf Coastal Plain of southwestern Arkansas. Twelve plants were found growing in a small sandstone glade in the study area. This occurrence represents the first record from the Interior Highlands and is a significant range extension for the species.

2. *Viola canadensis* var. *canadensis* (Canada white violet) G5S2 – Twelve individuals of this species were found growing on the north-facing slope above the lake in a small depression associated with a tip-up mound.

3. *Carex lupuliformis* (false hop sedge) G4S1S2 – This species of is typically found in low, rich, bottomland forests along major rivers in the eastern and southern parts of the state. A single clump of about 20 stems was found growing in the depression wetland. Several smaller clumps were also found in the lowland forest on USACOE land at the northern tip of the peninsula. This occurrence represents the first record from the Interior Highlands and is a significant range extension for the species.

4. *Nemastylis nuttallii* (Nuttall's pleatleaf) G4S2 – This uncommon member of the iris family occurs only in glades and prairies and is limited in distribution to the Interior Highlands (Zollner et al. 2005). There is a population of at least 50 plants in a small, seasonally wet sandstone glade on the north side of the bedrock-bottom stream.

5. *Claytonia caroliniana* (Carolina spring beauty) G5S2S3 – This species is restricted to 2 areas on the property, both shaded seasonally moist areas within sandstone glades and associated woodlands. Fewer than 20 individuals were observed.

6. *Carex swanii* (Swan's sedge) G5S3 – This species is locally common in the depression wetland with more than 100 clumps. It is also found in a small spring-fed drainage in a thin-soiled area and is thinly scattered in the lowland forest.

Other plant species of note -- While the following species are not monitored as elements of special concern by state or federal conservation agencies, their occurrence within the study area is notable because they occur as significantly disjunct populations, edge-of-range occurrences, or are otherwise significant.

1. *Acer rubrum* var. *drummondii* (Drummond's red maple, swamp red maple) – This variety of red maple is typically found in lowland forests and swamp margins in the Mississippi Alluvial Plain and Gulf Coastal Plain ecoregions

(Smith 1988, Witsell pers. obs.). It is found in the study area in the upland depression wetland community where it occurs with *Vaccinium fuscatum*, another unusual shrub for the Interior Highlands.

2. *Axonopus furcatus* (big carpetgrass) – This species is typically found in the Gulf Coastal Plain in southern Arkansas where it grows in wet pine flatwoods and open seasonally wet areas. To our knowledge, this is the first documentation of this native grass from the Interior Highlands (Smith 1988, Witsell pers. obs.). This species was locally common in the perennial shoreline grassland community in the study area.

3. *Carex hirsutella* X *Carex swanii* (a hybrid sedge) – Several clumps of this hybrid sedge were found in the pine forest in the study area and were identified by Tyler Smith of the University of Ontario, an expert on *Carex* Sect. *Porocystis*, to which both parent species belong. Recent correspondence with Smith reveals that the results of molecular genetic analysis support the preliminary determination (based on morphological characters) that these plants are a hybrid between the two species. Because the hybrid involves a parent species that is of conservation concern, *Carex swanii*, it too may be of conservation concern.

4. *Isolepis pseudosetacea* (a bulrush) – This species, listed in Smith (1988) as *Scirpus molestus* M. C. Johnst., is apparently uncommon in Arkansas. It is documented by specimens from wet depressions in sandstone glades in Independence, Izard, Stone, and Logan counties and from wet depressions in igneous glades in Saline County. Smith (1988) lists it as reported (without a voucher specimen) from Drew County.

5. *Vaccinium fuscatum* (highbush blueberry) – This species of native blueberry is known in Arkansas almost exclusively from the Gulf Coastal Plain with a few stations in the southern Ouachita Mountains near the boundary with the Gulf Coastal Plain in Garland and Montgomery Counties where it is associated with wooded seepage wetlands (Smith 1988, Marsico 2005) and in Saline County (Witsell pers. obs.). It was also recently found in similar habitat (an upland depression wetland) in Cleburne County at Big Creek Natural Area (Witsell pers. obs.). Together, these two stations represent the only known sites in the Ozarks/Arkansas Valley and represent small populations that are disjunct from the main range of the species. It is interesting to note that upland depression wetlands in the Ozarks and Ouachitas provide habitat for disjunct populations of a number of other species more typical of the Coastal Plain.

Annotated Checklist

The following is a list of all vascular plant taxa documented within the study area. Taxa are arranged alphabetically by family within the four major groups of Pteridophytes, Gymnosperms, Angiosperms (Dicots), and Angiosperms (Monocots). Nomenclature follows the *Checklist of the Vascular Plants of Arkansas* (AVFC 2006). Introduced taxa are indicated by an asterisk (*). Taxa monitored by the Arkansas Natural Heritage Commission as species of conservation concern are listed in **bold** type. Codes for the communities in which taxa were found are listed and correspond to the communities as follows:

CC = clearcut
DW = upland depression wetland
LF = lowland forest
NS = mesic north slope hardwood forest
PF = shortleaf pine forest
PHF = pine-hardwood forest (upland)
PSG = perennial shoreline grassland
RD = roadsides
RI = riparian forest along creek
SG = sandstone glade and associated open woodland
SHB = shale bluffs (calcareous)
SL = shoreline area of Greers Ferry lake
SP = springs and spring runs
SSB = sandstone bluffs

Those taxa with a slash (/) between two codes occur in the transition zone between the two communities. Following the community codes is a number which corresponds to the relative abundance of the taxon within the entire study area, classified as follows:

5 = abundant
4 = common
3 = occasional
2 = infrequent
1 = rare

In many cases, more than one specimen of a taxon was collected by an author or both authors, with each specimen given a separate collection number. Only one voucher number is listed for each taxon except where both authors collected specimens of the same taxa, in which case, one collection number is listed for each author. For taxa that were observed but not collected, the words "not collected" are listed in parentheses. Voucher specimens are deposited in the Herbarium of the South Fork Native Plant Preserve, owned and managed by the Gates Rogers Foundation, Inc.

Pteridophytes

Aspleniaceae

Asplenium platyneuron (L.) Britton, Stearns, & Poggenb.; DW, NS, PF, RD, SG, SSB; 5 (Baker GRF-175)

Asplenium rhizophyllum L.; SHB/NS; 1 (Witsell 05-27, Baker GRF-007)

Asplenium trichomanes L. subsp. *trichomanes*; SSB; 1 (Witsell 05-248)

Dennstaedtiaceae

Pteridium aquilinum (L.) Kuhn in Decken; PHF, RD; 2 (Baker GRF-232)

Dryopteridaceae

Cystopteris protrusa (Weath.) Blasdell; NS; 1 (Baker GRF-176)

Polystichum acrostichoides (Michx.) Schott; NS, PHF,

RI; 4 (Baker GRF-144)
Woodsia obtusa (Spreng.) Torr.; NS, RD, SG, SSB; 3 (Baker GRF-177)

Isoetaceae
Isoetes melanopoda Gay & Durieu; RI, SP; 1 (Witsell 05-85)

Ophioglossaceae
Botrychium biternatum (Savigny) Underw.; LF; 3 (Witsell 05-1312)
Botrychium dissectum Spreng. f. *obliquum* (Muhl.) Fernald; LF; 3 (Baker GRF-339)
Botrychium virginianum (L.) Sw.; NS, PHF, RI; 3 (Baker GRF-045)
Ophioglossum pycnostichum (Fernald) Á. Löve & D. Löve; SG/SP; 1 (Witsell 05-244)

Polypodiaceae
Pleopeltis polypodioides (L.) E. G. Andrews & Windham in Windham var. *michauxiana* (Weath.) E. G. Andrews & Windham in Windham; NS, SSB; 3 (Witsell 05-28)

Pteridaceae
Adiantum pedatum L. var. *pedatum*; NS; 2 (Baker GRF-167)
Cheilanthes lanosa (Michx.) D. C. Eaton in Emory; SG; 2 (Baker GRF-019)

Selaginellaceae
Selaginella eclipes W. R. Buck; SP; 1 (Witsell 05-270, Baker GRF-148)

Gymnosperms

Cupressaceae
Juniperus virginiana L. var. *virginiana*; NS, PF, PHF, RD, RI, SG, SSB; 5 (Baker GRF-153)

Pinaceae
Pinus echinata Mill.; CC, PF, PHF, RD, RI, SG, SSB; 5 (Witsell 05-791)

Angiosperms (Dicots)

Acanthaceae
Justicia americana (L.) Vahl; RI, SL; 3 (Witsell 05-528)
Ruellia humilis Nutt. var. *humilis*; RD, SG/RI; 2 (Baker GRF-248)
Ruellia pedunculata Torr. ex A. Gray subsp. *pedunculata*; PHF, SG; 3 (Baker GRF-111)

Aceraceae
Acer negundo L.; LF, RD; 2 (Witsell 05-534)
Acer rubrum L. var. *drummondii* (Hook. & Arn. ex Nutt.) Sarg.; DW; 1 (Baker GRF-068)
Acer rubrum L. var. *rubrum*; CC, LF, NS, PF, RD, RI, SSB; 4 (Baker GRF-234)
Acer saccharinum L.; SL; 2 (Baker GRF-160)
Acer saccharum Marshall var. *saccharum*; NS; 3 (Baker GRF-161)

Altingiaceae
Liquidambar styraciflua L.; DW, LF, NS, PF, PHF, PSG, RD, RI, SL; 4 (Witsell 05-747)

Anacardiaceae
Rhus aromatica Aiton var. *aromatica*; PHF, SG, SSB; 4 (Witsell 05-24, Baker GRF-004)
Rhus copallina L.; CC, RD, SG; 3 (Baker GRF-235)
Rhus glabra L.; RD; 3 (Witsell 05-636)
Toxicodendron radicans (L.) Kuntze; CC, LF, NS, PF, PHF, RD, RI, SSB; 5 (Baker GRF-076)

Annonaceae
Asimina triloba (L.) Dunal; NS; 2 (Baker GRF-086)

Apiaceae
Ammoselinum butleri (Engelm. ex S. Watson) J. M. Coult. & Rose; RD; 1 (Witsell 05-223)
Chaerophyllum tainturieri Hook. var. *tainturieri*; RD; 3 (Baker GRF-037)
**Daucus carota* L.; RD; 1 (Baker GRF-224)
Daucus pusillus Michx.; RD; 2 (Baker GRF-115)
Eryngium prostratum Nutt. ex DC.; LF, PSG, SL; 4 (Witsell 05-749, Baker GRF-186)
Osmorhiza longistylis (Torr.) DC.; NS; 1 (not collected)
Ptilimnium nuttallii (DC.) Britton; RD, SG; 4 (Witsell 05-630, Baker GRF-198)
Sanicula canadensis L.; NS, PHF, RI; 3 (Baker GRF-170)
Spermolepis divaricata (Walter) Raf. ex Ser.; RD; 1 (Witsell 05-523, Baker GRF-211)
Thaspium trifoliatum (L.) A. Gray var. *flavum* Blake; RI, SSB/NS; 2 (Witsell 05-386, Baker GRF-083)
Trepocarpus aethusae Nutt.; LF, RD, SG, SSB; 3 (Baker GRF-182)
Zizia aurea (L.) W. D. J. Koch; PHF, SG; 1 (not collected)

Apocynaceae
Amsonia tabernaemontana Walter; NS, SG/SP; 1 (Baker GRF-046)
Apocynum cannabinum L.; RD; 1 (Baker GRF-098)
Trachelospermum difforme (Walter) A. Gray; LF, PSG, RI, SL; 4 (Baker GRF-187)

Aquifoliaceae
Ilex decidua Walter var. *decidua*; DW, LF, RI; 4 (Witsell 05-267, Baker GRF-222)

Araliaceae
Aralia spinosa L.; NS, RD; 2 (Witsell 05-1304)

Aristolochiaceae
Aristolochia serpentaria L.; NS, PHF; 3 (Witsell 05-254, Baker GRF-074)

Asclepiadaceae
Asclepias quadrifolia Jacq.; CC, NS, PHF; 2 (Witsell 05-275)
Ascelpia tuberosa L. subsp. *interior* Woodson; RD; 1 (not collected)
Asclepias variegata L.; PF, PHF, RD; 2 (Witsell 05-539, Baker GRF-137)
Matelea decipiens (Alexander) Woodson; LF, PHF, RI, SG;

3 (Baker GRF-185)

Asteraceae

Achillea millefolium L.; RD; 1 (Baker GRF-097)

Ageratina altissima (L.) R. M. King & H. Rob. var. *altissima*; NS; 2 (Witsell 05-1367, Baker-331)

Ambrosia artemisiifolia L.; RD, SL; 4 (Witsell 05-1190)

Ambrosia bidentata Michx.; RD, SG, SL, SSB; 4 (Witsell 05-1294)

Antennaria parlinii Fernald subsp. *fallax* (Greene) R. J. Bayer & Stebbins; PHF, RI, SG; 4 (Witsell 05-244, Baker-009)

Bidens aristosa (Michx.) Britton; LF, RD, SL; 3 (Baker GRF-328)

Bidens frondosa L. var. *frondosa*; RI, SL; 2 (Witsell 05-1332)

Boltonia diffusa Elliott; LF, PSG, RI, SG, SL, SSB; 3 (Witsell 05-1199)

Bradburia pilosa (Nutt.) Semple; RD; 2 (Baker GRF-290)

Brickellia eupatorioides (L.) Shinners var. *texana* (Shinners) Shinners; RD; 1 (Witsell 05-1167)

**Carduus nutans* L.; CC, RD; 2 (Baker GRF-163)

Cirsium altissimum (L.) Hill; CC, RI; 2 (Baker GRF-321)

Conoclinum coelestinum (L.) DC.; RI; 1 (not collected)

**Conyza canadensis* (L.) Cronquist; CC, RD; 3 (Baker GRF-285)

Coreopsis grandiflora Hogg ex Sweet; RD, SG, SSB; 3 (Witsell 05-519, Baker GRF-095)

Coreopsis tripteris L.; RI; 2 (Baker GRF-253)

Echinacea purpurea (L.) Moench; RD; 1 (Baker GRF-209)

Eclipta prostrata (L.) L.; RI, SL; 4 (Witsell 05-1187)

Elephantopus carolinianus Raeusch.; LF, PF, RI; 3 (Witsell 05-1162)

Elephantopus tomentosus L.; LF, PHF, RD; 2 (Baker GRF-293)

Erechtites hieraciifolius (L.) Raf. ex DC. var. *hieraciifolius*; CC, RD, SL; 3 (Witsell 05-1193)

Erigeron pulchellus Michx. var. *pulchellus*; PHF; 1 (not collected)

Erigeron strigosus Muhl. ex Willd.; RD, SG/RI; 3 (Witsell 05-507, Baker GRF-112)

Eupatorium serotinum Michx.; CC, RD, RI, SL; 3 (Witsell 05-1168, Baker GRF-351)

Eurybia hemispherica (Alexander) G. L. Nesom; SG/RI; 1 (Baker GRF-319)

**Facelis retusa* (Lam.) Sch. Bip.; CC, RD; 2 (Witsell 05-269)

**Gamochaeta purpurea* (L.) Cabrera; RD; 3 (Baker GRF-032)

Helenium amarum (Raf.) H. Rock var. *amarum*; RD; 2 (Baker GRF-099)

Helenium campestre Small; RD, SG; 3 (Witsell 05-524, Baker GRF-139)

Helenium flexuosum Raf.; LF, PSG; 4 (Baker GRF-219)

Helianthus divaricatus L.; PHF, SG, SSB; 3 (Baker GRF-229)

Hieracium gronovii L.; PHF, RD, SG; 3 (Witsell 05-1328, Baker GRF-353)

Krigia biflora (Walter) S. F. Blake var. *biflora*; NS, RI; 2 (Witsell 05-240)

Krigia cespitosa (Raf.) K. L. Chambers var. *cespitosa*; RD; 3 (Baker GRF-042)

Krigia dandelion (L.) Nutt.; DW, PHF, RD; 3 (Witsell 05-280)

Krigia virginica (L.) Willd.; RD; 3 (Baker GRF-043)

Lactuca sp.; RI; 1 (not collected)

**Leucanthemum vulgare* Lam.; RD, SSB; 1 (Baker GRF-093)

Liatris squarrulosa Michx.; CC, PHF, RD; 1 (Witsell 05-1172)

Packera obovata (Muhl. ex Willd.) W. A. Weber & Á. Löve; DW, PHF, RI, SG, SP; 4 (Baker GRF-050, Witsell 05-259)

Packera tomentosa (Michx.) C. Jeffrey; SG/RI, SG/SP; 1 (Witsell 05-96)

Parthenium integrifolium L.; CC, PHF, RD; 2 (Witsell 05-1293)

Pluchea camphorata (L.) DC.; LF, PSG, SL; 3 (Baker GRF-308)

Prenanthes altissima L.; NS, RI; 2 (not collected)

Pseudognaphalium obtusifolium (L.) Hilliard & B. L. Burtt subsp. *obtusifolium*; CC, RD, SG; 3 (Baker GRF-294)

Rudbeckia hirta L. var. *pulcherrima* Farw.; CC, RD, SSB; 3 (Baker GRF-199)

Solidago buckleyi Torr. & A. Gray; SSB/PHF; 1 (Witsell 05-1176)

Solidago caesia L.; NS; 3 (Baker GRF-329)

Solidago flexicaulis L. vel. aff.; NS, SG/PHF; 1 (Witsell 05-1175)

Solidago hispida Muhl. ex Willd.; NS/RI; 1 (not collected)

Solidago nemoralis Aiton; CC, PHF, RD, SG; 4 (Witsell 05-1311, Baker GRF-352)

Solidago odora Aiton subsp. *odora*; CC, PHF; 2 (Witsell 05-1161)

Solidago sp.; SSB/PHF; 1 (Baker GRF-307)

Solidago ulmifolia Muhl. ex Willd. var. *palmeri* Cronquist; PHF, SSB; 3 (Baker GRF-313)

**Sonchus asper* (L.) Hill; CC, RD; 2 (Baker GRF-162)

Symphyotrichum anomalum (Engelm.) G. L. Nesom; PHF, SSB; 3 (Baker GRF-333)

Symphyotrichum drummondii (Lindl. in Hook.) G. L. Nesom; RD; 2 (Baker GRF-354)

Symphyotrichum dumosum (L.) G. L. Nesom; LF, RI; 3 Baker GRF-338)

Symphyotrichum lateriflorum (L.) Á. Löve & D. Löve; NS, RD; 3 (Witsell 05-1308, Baker GRF-355)

Symphyotrichum patens (Aiton) G. L. Nesom var. *patentissimum* (Lindl. ex DC.) G. L. Nesom; PHF, RD,

SG, SSB; 4 (Baker GRF-330)
Symphyotrichum pilosum (Willd.) G. L. Nesom; RD; 2 (Witsell 05-1330)
Symphyotrichum sagittifolium (Wedemeyer) G. L. Nesom vel. aff.; NS; 1 (Witsell 05-1366)
Symphyotrichum turbinellum (Lindl.) G. L. Nesom; PHF/CC; 1 (Witsell 05-1307)
**Taraxacum officinale* Weber ex F. H. Wigg.; RD; 3 (Baker GRF-041)
Verbesina helianthoides Michx.; RI; 2 (Witsell 05-517)
Verbesina virginica L.; DW, RD, RI, SG/RI; 3 (Witsell 05-1166)
Vernonia baldwinii Torr.; RD, SG; 2 (Baker GRF-246)
Vernonia missurica Raf.; RD, RI/SG; 2 (Baker GRF-318)
Xanthium strumarium L.; SL; 4 (Witsell 05-1191)

Balsaminaceae
Impatiens capensis Meerb.; LF; 1 (not collected)

Berberidaceae
Podophyllum peltatum L.; NS, PHF, RI, SP/SG; 3 (Baker GRF-058)

Betulaceae
Betula nigra L.; LF, SL; 2 (Witsell 05-752)
Carpinus caroliniana Walter; NS, PHF, RI, SSB; 4 (Witsell 05-276, Baker GRF-065)
Ostrya virginiana (Mill.) K. Koch; LF, NS, PHF, RI; 4 (Witsell 05-676)

Bignoniaceae
Bignonia capreolata L.; NS, PHF, RI; 2 (Witsell 05-382)
Campsis radicans (L.) Seem.; LF, RD, RI, SL; 3 (not collected)

Boraginaceae
Cynoglossum virginianum L.; NS, PHF, RI; 3 (Baker GRF-053)
**Heliotropium indicum* L.; SL; 3 (Baker GRF-272)
Myosotis macrosperma Engelm.; RD, SG; 3 (Baker GRF-055)

Brassicaceae
Boechera canadensis (L.) Al-Shehbaz; PHR, SG; 2 (Baker GRF-073)
Boechera laevigata (Muhl. ex Willd.) Al-Shehbaz; SG; 1 (Witsell 05-109)
Cardamine concatenata (Michx.) O. Schwarz; NS, PHF, RI, SG, SP; 4 (Baker GRF-003)
**Cardamine hirsuta* L.; RD, RI; 4 (Baker GRF-001)
Cardamine parviflora L. var. *arenicola* (Britton) O. E. Schultz; SG; 1 (Witsell 05-20)
Cardamine pensylvanica Muhl. ex Willd.; SP; 1 (Baker GRF-015)
Draba brachycarpa Nutt. ex Torr. & A. Gray; RD, SG; 3 (Witsell 05-29, Baker GRF-010)
Lepidium virginicum L. var. *virginicum*; RD, SG; 3 (Baker GRF-108)

Buddlejacaceae
Polypremum procumbens L.; PSG, SL; 3 (Baker GRF-218)

Cactaceae
Opuntia humifusa (Raf.) Raf. var. *humifusa*; SG; 1 (Witsell 05-1391)

Callitrichaceae
Callitriche heterophylla Pursh subsp. *heterophylla*; SP; 1 (Witsell 05-258)

Campanulaceae
Campanulastrum americanum (L.) Small; NS; 1 (Baker GRF-281)
Lobelia cardinalis L.; RI; 2 (Baker GRF-317)
Lobelia inflata L.; LF; 1 (Witsell 05-736)
Lobelia puberula Michx. var. *mineolana* E. Wimm.; RI; 2 (Witsell 05-1194)
Lobelia spicata Lam.; NS, PHF, RD, SP; 3 (Witsell 05-626, Baker GRF-233)
Triodanis perfoliata (L.) Nieuwl. var. *biflora* (Ruiz & Pav.) T. R. Bradley; RD; 2 (Baker GRF-100)
Triodanis perfoliata (L.) Nieuwl. var. *perfoliata*; RD; 2 (Baker GRF-081)

Caprifoliaceae
Lonicera flava Sims.; NS, SSB; 2 (Baker GRF-159)
**Lonicera japonica* Thunb.; LF, NS, PHF, RD, SSB; 3 (Baker GRF-135)
Sambucus nigra L. subsp. *canadensis* (L.) Bolli; NS; 1 (not collected)
Symphoricarpos orbiculatus Moench; NS, PHF, SG; 2 (not collected)
Viburnum rufidulum Raf.; NS; 2 (Baker GRF-228)

Caryophyllaceae
**Cerastium brachypetalum* Pers.; RD, SG; 2 (Witsell 05-88)
Cerastium brachypodum (Engelm. ex A. Gray) B. L. Rob.; RD, SG; 3 (Baker GRF-025)
**Cerastium glomeratum* Thuill.; RD; 3 (Baker GRF-029)
**Cerastium pumilum* Curtis; RD; 3 (Baker GRF-013)
**Dianthus armeria* L. subsp. *armeria*; RD; 2 (Baker GRF-110)
Paronychia fastigiata (Raf.) Fernald; SSB; 1 (Witsell 05-1185, Baker GRF-273)
Sagina decumbens (Elliott) Torr. & A. Gray subsp. *decumbens*; RD; 2 (Baker GRF-024)
Silene stellata (L.) W. T. Aiton in W. Aiton & W. T. Aiton; NS; 2 (Baker GRF-280)
Silene virginica L.; PHF, RI, SG, SSB; 2 (Baker GRF-059)
**Stellaria media* (L.) Vill.; NS, PHF, RD, RI, SP, SSB; 3 (Witsell 05-110)

Celastraceae
Euonymus americanus L.; NS, RI, SSB; 2 (Baker GRF-196)

Celtidaceae
Celtis tenuifolia Nutt.; LF, SG; 3 (Witsell 05-230, Baker GRF-060)

Cistaceae
Lechea tenuifolia Michx.; PHF, RD, SG; 2 (Witsell 05-

1204)

Clusiaceae

Hypercium drummondii (Grev. & Hook.) Torr. & A. Gray; PSG, SG; 2 (Witsell 05-808)

Hypericum gentianoides (L.) Britton, Stearns, & Poggenb.; PSG, SG; 2 (Witsell 05-809)

Hypericum hypericoides (L.) Crantz subsp. *hypericoides*; RI; 3 (Witsell 05-811, Baker GRF-279)

Hypericum hypericoides (L.) Crantz subsp. *multicaule* (Michx. ex Willd.) N. Robson; PHR, RD; 2 (Baker GRF-286)

Hypericum mutilum L.; PSG, RI, SL, SP; 3 (Baker GRF-249)

Hypericum prolificum L.; RD, RI, SG, SP, SSB; 4 (Baker GRF-238)

Hypericum pseudomaculatum Bush in Britton; LF, RD, SG, SP, SSB; 3 (Baker GRF-181)

Hypericum punctatum Lam.; RD; 2 (Baker GRF-237)

Triadenum tubulosum (Walter) Gleason; LF, SL; 2 (Witsell 05-1319)

Triadenum walteri (J. F. Gmel.) Gleason; LF, PSG, RI; 3 (Witsell 05-1317, Baker GRF-314)

Convolvulaceae

Ipomoea pandurata (L.) G. F. W. Mey.; RD, RI; 2 (Baker GRF-284)

Ipomoea lacunosa L.; RI, SL; 3 (Witsell 05-1188, Baker GRF-326)

Cornaceae

Cornus florida L.; NS, PHF, RD; 3 (Witsell 05-105)

Cornus obliqua Raf.; RI; 3 (Witsell 05-533, Baker GRF-201)

Cuscutaceae

Cuscuta compacta Juss. ex Choisy; LF, SL; 2 (Baker GRF-336)

Ebenaceae

Diospyros virginiana L.; LF, PHF, PSG, RD, RI, SL, SSB; 4 (Witsell 05-535, Baker GRF-107)

Ericaceae

Lyonia ligustrina (L.) DC.; DW, NS, SSB; 2 (Baker GRF-089)

Rhododendron prinophyllum (Small) Millais; NS, RI/NS, SSB; 3 (Witsell 05-271)

Vaccinium arboreum Marshall; PHF, RI, SG, SSB; 5 (Witsell 05-509, Baker GRF-104)

Vaccinium fuscatum Aiton; DW; 1 (Baker GRF-063)

Vaccinium pallidum Aiton; NS, PHF, RI; 4 (Baker GRF-017)

Vaccinium stamineum L.; NS, PHF; 4 (Baker GRF-062)

Euphorbiaceae

Acalypha monococca (Engelm. ex A. Gray) Lill. W. Mill. & Gandhi; SG; 1 (Witsell 05-1323)

Acalypha virginica L.; PF, PHF, SL, SSB; 3 (Witsell 05-738, Baker GRF-255)

Chamaesyce maculata (L.) Small; RD, SL; 3 (Baker GRF-244)

**Chamaesyce nutans* (Lag.) Small; RI, SL; 2 (Witsell 05-1196, Baker GRF-315)

Croton glandulosus L. var. *septentrionalis* Müll.-Arg.; RD; 1 (Baker GRF-291)

Croton monanthogynus Michx.; SG/RI; 2 (Baker GRF-258)

Croton willdenowii G. L. Webster; RD, SG, SL; 3 (Baker GRF-216)

Euphorbia commutata Engelm.; RI; 1 (not collected)

Euphorbia corollata L.; SG; 2 (Baker GRF-305)

Phyllanthus caroliniensis Walter var. *caroliniensis*; RI, SL; 2 (Baker GRF-271)

Fabaceae

Amorpha nitens F. E. Boynton; NS, RI, SP/SG, SP; 3 (Baker GRF-078)

Amphicarpaea bracteata (L.) Fernald; NS, RI; 1 (not collected)

Apios americana Medik.; LF, RI, SL; 3 (Baker GRF-269)

Astragalus distortus Torr. & A. Gray var. *engelmannii* (E. Sheld.) M. E. Jones; SG; 1 (Witsell 05-237)

Baptisia bracteata Muhl. ex Willd. var. *leucophaea* (Nutt.) Kartesz & Gandhi; PHF, RI; 2 (Witsell 05-279)

Cercis canadensis L. var. *canadensis*; RD; 2 (Witsell 05-22)

Chamaecrista nictitans (L.) Moench var. *nictitans*; PSG, RD, SL; 3 (Witsell 05-1186, Baker GRF-262)

Clitoria mariana L.; PHF; 3 (Baker GRF-302)

Crotalaria sagittalis L.; PSG; 1 (Witsell 05-627)

Desmodium laevigatum (Nutt.) DC.; NS/SL, RD; 3 (Witsell 05-1182)

Desmodium marilandicum (L.) DC.; RD; 3 (Witsell 05-1373, Baker-301)

Desmodium nudiflorum (L.) DC.; NS, PF, PHF; 3 (not collected)

Desmodium paniculatum (L.) DC.; LF, PHF; 2 (not collected)

Desmodium rotundifolium DC.; PHF; 2 (Witsell 05-1300)

Desmodium viridiflorum (L.) DC.; RD; 2 (Baker GRF-322)

Galactia regularis (L.) Britton, Stearns, & Poggenb.; PHF, SG; 1 (not collected)

Gleditsia triacanthos L.; LF; 2 (Witsell 05-1305)

**Kummerowia striata* (Thunb.) Schindl.; RD; 3 (Baker GRF-275)

**Lespedeza bicolor* Turcz.; RD; 1 (not collected)

**Lespedeza cuneata* (Dum. Cours.) G. Don; LF, RD, RI, SG, SL; 4 (Baker GRF-295)

Lespedeza hirta (L.) Hornem. var. *hirta*; PHF, RD, SG; 3 (Baker GRF-334)

Lespedeza intermedia (S. Watson ex A. Gray) Britton; PHF, SG; 1 (Witsell 05-1327)

Lespedeza procumbens Michx.; CC, PHF, SG; 3 (Witsell 05-1195)

Lespedeza repens (L.) W. P. C. Barton; CC, PHF, RD; 3

(Baker GRF-261)
Lespedeza stuevei Nutt.; RD; 2 (Baker GRF-300)
Lespedeza virginica (L.) Britton; RD, SG; 2 (Witsell 05-1180, Baker GRF-320)
Mimosa quadrivalvis L. var. *nuttallii* (DC.) Beard ex Barneby; SG; 1 (Witsell 05-366)
Orbexilum pedunculatum (Mill.) Rydb. var. *pedunculatum*; RI, SG; 1 (Witsell 05-550)
Rhynchosia latifolia Nutt. ex Torr. & A. Gray; PHF; 1 (not collected)
Senna marilandica (L.) Link; RD, RI; 1 (not collected)
Strophostyles umbellata (Muhl. ex Willd.) Britton; RD; 3 (Baker GRF-292)
Stylosanthes biflora (L.) Britton, Stearns, & Poggenb.; RD, SG; 2 (Baker GRF-114)
Tephrosia virginiana (L.) Pers.; PHF, RD, SSB; 3 (Baker GRF-171)
**Trifolium campestre* Schreb.; RD; 2 (Baker GRF-033)
**Trifolium dubium* Sibth.; RD; 2 (Witsell 05-227)
Trifolium reflexum L.; RD; 1 (Baker GRF-082)
**Trifolium repens* L.; RD; 2 (Baker GRF-101)
Vicia minutiflora F. Dietr.; RI, SG, SP; 2 (Witsell 05-111)
**Vicia sativa* L.; RD; 2 (Witsell 05-98, Baker GRF-094)

Fagaceae

Quercus alba L.; NS, PF, PHF, RI; 5 (Witsell 05-1376)
Quercus falcata Michx.; CC, NS, PF, PHF; 4 (Witsell 05-1377)
Quercus marilandica Münchh.; PHF, SG; 4 (Witsell 05-792)
Quercus muhlenbergii Engelm.; PHF, RD, RI, SSB; 3 (Witsell 05-1184)
Quercus nigra L.; DW, LF, RI; 4 (Witsell 05-745)
Quercus phellos L.; LF; 3 (Witsell 05-755)
Quercus rubra L.; NS, PHF; 4 (Witsell 05-793)
Quercus stellata Wangenh.; PHF, SG, SSB; 4 (Witsell 05-794)
Quercus velutina Lam. in Lam. et al.; CC, PF, PHF; 4 (not collected)

Gentianaceae

Sabatia angularis (L.) Pursh; LF, RD, RI, SG; 2 (Witsell 05-740)

Geraniaceae

Geranium carolinianum L. var. *carolinianum*; RD; 2 (Baker GRF-088)
Geranium maculatum L.; NS; 2 (Witsell 05-238)

Hippocastanaceae

Aesculus pavia L.; NS, PHF, RD, SP; 4 (Witsell 05-101, Baker GRF-040)

Hydrangeaceae

Hydrangea arborescens L.; NS/SSB; 1 (not collected)
Philadelphus pubescens Loisel.; NS/SSB; 1 (Witsell 05-634)

Hydrophyllaceae

Phacelia hirsuta Nutt.; RI/SG; 2 (Witsell 05-234)

Juglandaceae

Carya cordiformis (Wangenh.) K. Koch; NS; 2 (Baker GRF-358)
Carya laciniosa (F. Michx.) Loudon; NS/SL; 2 (Baker GRF-288)
Carya texana Buckley; PHF, RD, SG; 4 (Baker GRF-287)
Carya tomentosa (Poir.) Nutt.; NS, PHF; 4 (Baker GRF-344)
Juglans nigra L.; NS, RD, RI; 2 (Witsell 05-651)

Lamiaceae

Cunila origanoides (L.) Britton; CC, NS, PHF, SSB; 3 (Baker GRF-304)
Hedeoma hispida Pursh; RD; 3 (Witsell 05-393, Baker GRF-113)
Lycopus rubellus Moench.; DW, RI, SP; 3 (Witsell 05-1177, Baker GRF-316)
Monarda bradburiana L. C. Beck; CC, PHF, RD; 3 (Witsell 05-273, Baker GRF-087)
Monarda fistulosa L. var. *fistulosa*; NS, PHF, RD; 3 (Baker GRF-230)
**Perilla frutescens* (L.) Britton; LF, RD, RI, SL; 3 (Witsell 05-1170)
Prunella vulgaris L. subsp. *lanceolata* (W. P. C. Barton) Hultén; RD, RI, SP; 3 (Witsell 05-406, Baker GRF-116)
Pycnanthemum albescens Torr. & A. Gray; PHF, RD, RI; 3 (Baker GRF-240)
Pycnanthemum tenuifolium Schrad.; CC, DW, RD, RI, SG; 4 (Witsell 05-682, Baker GRF-231)
Salvia lyrata L.; RD, RI, SP; 3 (Baker GRF-035)
Scutellaria elliptica Muhl. ex Spreng. var. *elliptica*; PHF, RI; 3 (Witsell 05-540, Baker GRF-145)
Scutellaria ovata Hill; NS, PHF, RD, RI; 3 (Baker GRF-180)
Scutellaria parvula Michx. var. *australis* Fassett; SG, SP; 3 (Witsell 05-368, Baker-051)
Stachys tenuifolia Willd. var. *tenuifolia*; LF; 2 (Baker GRF-215)
Teucrium canadense L. var. *canadense*; RD; 1 (Witsell 05-680, Baker GRF-225)
Trichostema dichotomum L.; SG, SL, SSB; 2 (Baker GRF-325)

Lauraceae

Sassafras albidum (Nutt.) Nees; PHF, RD; 3 (Baker GRF-221)

Linaceae

Linum medium (Planch.) Britton var. *texanum* (Planch.) Fernald; RD, SG; 2 (Witsell 05-633)
Linum striatum Walter; LF, PSG; 2 (Witsell 05-628, Baker GRF-217)

Loganiaceae

Spigelia marilandica L.; RI, SP; 2 (Witsell 05-514, Baker GRF-141)

Lythraceae

Ammannia Xcoccinea Rottb.; SL; 3 (Witsell 05-802)
Rotala ramosior (L.) Koehne; SL; 4 (Witsell 05-737, Baker GRF-306)

Malvaceae
Hibiscus moscheutos L. subsp. *lasiocarpos* (Cav.) O. J. Blanch.; PSG, SL; 3 (Witsell 05-805, Baker GRF-278)

Melastomataceae
Rhexia mariana L. var. *mariana*; PSG; 1 (Witsell 05-743)
Rhexia virginica L.; PSG; 1 (Witsell 05-733)

Meliaceae
**Melia azedarach* L.; CC, RD; 1 (Witsell 05-547)

Menispermaceae
Cocculus carolinus (L.) DC.; RD, RI, SG; 3 (not collected)

Molluginaceae
Mollugo verticillata L.; RI/SL; 2 (Baker GRF-270)

Monotropaceae
Monotropa hypopithys L.; NS; 1 (Witsell 05-654)

Moraceae
Morus rubra L.; LF, NS; 2 (Witsell 05-758)

Nyssaceae
Nyssa sylvatica Marshall; PF, PHF; 4 (Witsell 05-757)

Oleaceae
Chionanthus virginicus L.; PHF, RI, SG, SSB; 4 (Baker GRF-066)
Fraxinus americana L.; NS, PHF, RI, SG; 3 (Baker GRF-184)
Fraxinus pennsylvanica Marshall; LF, SL; 3 (Witsell 05-228, Baker GRF-064)
**Ligustrum sinense* Lour.; LF, RD, RI; 2 (Witsell 05-526, Baker GRF-152)

Onagraceae
Gaura longiflora Spach; NS/SL; 1 (Witsell 05-1372)
Ludwigia alternifolia L.; RI, SL; 2 (not collected)
Ludwigia decurrens Walter; SL; 3 (Witsell 05-1324)
Ludwigia glandulosa Walter; PSG; 1 (Witsell 05-734)
Oenothera biennis L.; SL; 1 (not collected)
Oenothera fruticosa L.; SG; 2 (Witsell 05-365)
Oenothera laciniata Hill; RD; 2 (Baker GRF-117)
Oenothera linifolia Nutt.; SG; 2 (Witsell 05-363, Baker GRF-142)

Oxalidaceae
Oxalis dillenii Jacq.; RD; 2 (Baker GRF-048)
Oxalis violacea L.; PHF, SG, SSB; 3 (Witsell 05-94)

Papaveraceae
Sanguinaria canadensis L.; NS; 1 (Witsell 05-103)

Passifloraceae
Passiflora incarnata L.; RD, RI; 1 (Witsell 05-1375)
Passiflora lutea L.; DW, LF, RI; 3 (Witsell 05-1192)

Phytolaccaceae
Phytolacca americana L. var. *americana*; PHF, SL; 2 (Baker GRF-327)

Plantaginaceae
Plantago aristata Michx.; RD; 3 (Baker GRF-207)
Plantago elongata Pursh; RD; 3 (Baker GRF-027)
**Plantago lanceolata* L.; RD; 2 (Baker GRF-118)
Plantago virginica L.; RD, SG; 3 (Baker GRF-028)

Platanaceae
Platanus occidentalis L.; NS, RI, SL; 3 (Witsell 05-384)

Polemoniaceae
Phlox divaricata L. subsp. *laphamii* (A. W. Wood) Wherry; NS; 2 (Witsell 05-104)
Phlox pilosa L. subsp. *pilosa*; PHF, RD; 2 (Witsell 05-274)

Polygalaceae
Polygala sanguinea L.; SG; 1 (Witsell 05-629)

Polygonaceae
Brunnichia ovata (Walter) Shinners; LF, SL, SSB; 3 (Witsell 05-751)
Fallopia scandens (L.) Holub; LF; 1 (not collected)
Persicaria hydropiperoides (Michx.) Small; LF, RD, SL; 2 (Witsell 05-1314, Baker-283)
Persicaria lapathifolia (L.) A. Gray; RD, RI, SL; 2 (Witsell 05-1302)
**Persicaria longiseta* (Bruijn) Kitagawa; SL; 2 (Baker GRF-347)
Persicaria pensylvanica (L.) M. Gómez; SL; 2 (Witsell 05-1315)
Persicaria punctata (Elliott) Small; SL; 2 (Witsell 05-1181)
Polygonum tenue Michx.; SG; 1 (Witsell 05-1325)
Rumex crispus L.; RD; 2 (Baker GRF-103)
Rumex hastatulus Baldwin; SG; 2 (Witsell 05-268, Baker GRF-147)

Portulacaceae
***Claytonia caroliniana* Michx.**; SG; 1 (Witsell 05-113)
Claytonia virginica L. ; DW, PHF, RD, RI, SG; 4 (Witsell 05-91, Baker GRF-014)
***Phemeranthus rugospermus* (Holz.) Kiger**; SG; 1 (Witsell 05-1183)

Primulaceae
Lysimachia lanceolata Walter; RI; 2 (Baker GRF-202)

Ranunculaceae
Anemone virginiana L. var. *virginiana*; PHF, SG; 3 (not collected)
Cimicifuga racemosa (L.) Nutt.; NS; 2 (not collected)
Clematis reticulata Walter; NS, SG/SP; 2 (Witsell 05-635)
Delphinium carolinianum Walter subsp. *carolinianum*; RD, SG; 2 (Baker GRF-140)
Delphinium tricorne Michx.; NS; 2 (Witsell 05-231)
Ranunculus abortivus L.; RI; 1 (Witsell 05-226)
Ranunculus fascicularis Muhl. ex J. M. Bigelow; PHF, SG; 2 (Baker GRF-057)
Ranunculus harveyi (A. Gray) Britton var. *harveyi*; NS; 2 (Witsell 05-84, Baker-021)
Ranunculus micranthus Nutt. in Torr. & A. Gray; NS, PHF; 2 (Witsell 05-239)
**Ranunculus sardous* Crantz; RI; 1 (Witsell 05-265)
Thalictrum thalictroides (L.) A. J. Eames & B. Biovin; DW, NS, PHF, RI, SG; 5 (Baker GRF-006)

Rhamnaceae
Berchemia scandens (Hill) K. Koch; LF, RI, SSB; 2 (Baker GRF-200)
Ceanothus americanus L.; RD, RI, SG; 2 (Witsell 05-537)
Frangula caroliniana (Walter) A. Gray; NS, PHF, RD; 3 (Witsell 05-546, Baker-105)
Rosaceae
Agrimonia rostellata Wallr.; NS, RI; 3 (not collected)
Amelanchier arborea (F. Michx.) Fernald; PHF, SSB; 3 (Witsell 05-21)
Crataegus intricata Lange; PHF; 2 (Baker GRF-061)
Crataegus uniflora Münchh.; PHF, SG; 3 (Witsell 05-253, Baker GRF-214)
Geum canadense Jacq.; NS; 3 (not collected)
Potentilla simplex Michx.; RD, RI, SG; 3 (Baker GRF-047)
Prunus americana Marshall; PHF; 2 (Witsell 05-23, Baker GRF-020)
Prunus mexicana S. Watson; RI; 1 (Witsell 05-518, Baker GRF-154)
Prunus serotina Ehrh.; CC, NS, PF, PHF, SG, SSB; 4 (Witsell 05-1374)
Rosa carolina L.; SG; 1 (Witsell 05-530, Baker GRF-136)
Rubus argutus Link; RD; 3 (Baker GRF-085)
Rubus flagellaris Willd.; RD; 3 (Baker GRF-054)
Rubiaceae
Cephalanthus occidentalis L.; PSG, RI, SL: 4 (Witsell 05-677)
**Cruciata pedemontana* (Bell.) Ehrend.; RD; 2 (Witsell 05-247)
Diodia teres Walter; PSG, RD, SG, SL; 3 (Baker GRF-256)
Diodia virginiana L.; PSG, RI, SL; 3 (Baker GRF-190)
Galium aparine L.; NS, RD, RI; 2 (Baker GRF-052)
Galium circaezans Michx.; NS; 3 (Witsell 05-538, Baker GRF-169)
Galium concinnum Torr. & A. Gray; NS; 3 (Witsell 05-631, Baker GRF-213)
Galium pilosum Aiton; NS, PHF, RD; 3 (Baker GRF-236)
Hedyotis australis Lewis & Moore; RD; 1 (Witsell 05-92)
Hedyotis caerulea (L.) Hook.; DW, RD, RI, SG; 3 (Witsell 05-99)
Hedyotis crassifolia Raf.; RD; 3 (Baker GRF-011)
Hedyotis longifolia (Gaertn.) Hook. var. *longifolia*; PHF, SG; 3 (Witsell 05-242)
Hedyotis purpurea (L.) Torr. & A. Gray; RI; 2 (Witsell 05-512, Baker GRF-143)
Mitchella repens L.; DW, NS, RI, SSB, SP; 3 (Baker GRF-151)
Oldenlandia boscii (DC.) Chapm.; SL; 4 (Witsell 05-735, Baker GRF-340)
**Sherardia arvensis* L.; RD, RI; 2 (Baker GRF-023)
Salicaceae
Salix caroliniana Michx.; RI; 3 (Witsell 05-226, Baker GRF-077)
Salix nigra Marshall; RI/RD, SL; 1 (Baker GRF-226)
Santalaceae
Comandra umbellata (L.) Nutt. subsp. *umbellata*; PHF; 2 (Witsell 05-232)
Sapotaceae
Sideroxylon lanuginosum Michx.; NS, PHF, SG; 3 (Baker GRF-164)
Saxifragaceae
Heuchera americana L. var. *americana*; NS, SG, SSB; 3 (Baker GRF-056)
Heuchera americana L. var. *hirsuticaulis* (Wheelock) Rosend., Butters, & Lakela; NS/SSB; 2 (Baker GRF-172)
Saxifraga palmeri Bush; SG, SP, SSB; 3 (Witsell 05-19, Baker GRF-008)
Scrophulariaceae
Agalinis tenuifolia (Vahl) Raf.; SG, SL/SSB; 2 (Witsell 05-1179, Baker GRF-323)
Aureolaria flava (L.) Farw.; PHF, RI; 2 (not collected)
Gratiola virginiana L. var. *virginiana*; RI; 2 (Witsell 05-364)
Lindernia dubia (L.) Pennell; RI, SL; 2 (Baker GRF-250)
Mecardonia acuminata (Walter) Small; PSG, RI, RI/SG; SSB/SL; 3 (Witsell 05-810)
Nuttallanthus texanus (Scheele) D. A. Sutton; RD; 2 (Witsell 05-235)
Pedicularis canadensis L.; RI; 2 (Witsell 05-95)
Penstemon arkansanus Pennell; SG/RI, SSB; 2 (Baker GRF-080)
Penstemon digitalis Nutt. ex Sims; RD; 2 (Witsell 05-549)
Penstemon tubaeflorus Nutt.; RD, SG/RI; 3 (Baker GRF-138)
**Verbascum thapsus* L.; CC, RD, SL; 2 (Baker GRF-239)
**Veronica arvensis* L.; RD; 3 (Baker GRF-030)
Veronica peregrina L. subsp. *peregrina*; RD; 3 (Baker GRF-026)
Simaroubaceae
**Ailanthus altissima* (Mill.) Swingle; CC, RD; 1 (Witsell 05-536)
Solanaceae
Physalis angulata L.; SL; 2 (Witsell 05-1371)
Physalis heterophylla Nees; RD; 1 (Witsell 05-222)
Physalis pubescens L.; RI, SL; 3 (Witsell 05-1369, Baker GRF-266)
Solanum carolinense L.; RD; 3 (Witsell 05-541, Baker GRF-096)
Staphyleaceae
Staphylea trifolia L.; NS; 2 (Witsell 05-653)
Styracaceae
Styrax grandifolius Aiton; SSB/PHF; 2 (Witsell 05-278, Baker GRF-195)
Thymelaeaceae
Dirca palustris L.; PHF; 1 (Witsell 05-107)

Tiliaceae
Tilia americana L. var. a*mericana*; NS; 3 (Witsell 05-637, Baker GRF-165)
Ulmaceae
Ulmus alata Michx.; CC, RD, PHF, SG, SSB; 4 (Baker GRF-106)
Ulmus americana L.; SSB; 2 (Baker GRF-223)
Urticaceae
Boehmeria cylindrica (L.) Sw.; RI, SL; 3 (Baker GRF-252)
Parietaria pensylvanica Muhl. ex Willd.; NS/SSB; 2 (Baker GRF-173)
Valerianaceae
Valerianella radiata (L.) Dufr.; RD, RI, SG; 3 (Baker GRF-031)
Verbenaceae
Callicarpa americana L.; PHF, RD; 3 (Witsell 05-1378, Baker GRF-357)
Glandularia canadensis (L.) Nutt.; RD, SG; 2 (Witsell 05-26)
Verbena urticifolia L.; RD, RI; 2 (Witsell 05-681, Baker GRF-247)
Violaceae
Hybanthus concolor (T. F. Forst.) Spreng.; NS/SSB; 1 (Witsell 05-245)
Viola bicolor Pursh; RD; 3 (Baker GRF-012)
Viola canadensis* L. var. *canadensis; NS; 1 (Baker GRF-084)
Viola palmata L.; PHF, RD; 3 (Witsell 05-241)
Viola pedata L.; PHF, SG, SSB; 3 (Baker GRF-016)
Viola pubescens Aiton; NS; 1 (Witsell 05-102)
Viola sagittata Aiton; RI, SG; 2 (Witsell 05-100)
Viola sororia Willd.; NS, RD, RI; 3 (Witsell 05-87)
Vitaceae
Parthenocissus quinquefolia (L.) Planch.; NS, PHF, RD, RI; 4 (not collected)
Vitis aestivalis Michx.; NS, RD, RI; 3 (Witsell 05-796)
Vitis rotundifolia Michx.; CC, NS, PHF, RD, RI; 3 (Baker GRF-183Witsell 05-1309,)

Angiosperms (Monocots)

Agavaceae
Camassia scilloides (Raf.) Cory; SG; 1 (Baker GRF-049)
Manfreda virginica (L.) Salisb. ex Rose; SG/RI; 1 (Witsell 05-1198)
Alliaceae
Allium canadense L. var. *canadense*; RI; 1 (Baker GRF-146)
Allium canadense L. var. *mobilense* (Regel) Ownbey; RI/SG; 1 (Witsell 05-529)
**Allium vineale* L.; LF, RD; 2 (Baker GRF-109)
Nothoscordum bivalve (L.) Britton in Britton & A. Br.; SG; 3 (Witsell 05-89, Baker GRF-022)
Amaryllidaceae
**Narcissus Xodorus* L.; RD/NS; 1 (Witsell 05-25)
**Narcissus pseudonarcissus* L.; RD/NS; 1 (Baker GRF-359)
Araceae
Arisaema dracontium (L.) Schott in Schott & Endl.; LF, RI, SP/SG; 1 (Baker GRF-166)
Colchicaceae
Uvularia sessilifolia L.; NS; 1 (not collected)
Commelinaceae
**Commelina communis* L.; RI, SL; 2 (Baker GRF-267)
Tradescantia ohiensis Raf.; SG; 2 (not collected)
Cyperaceae
Carex albicans Willd. ex Spreng.; NS, PHF, SSB; 3 (Witsell 05-218)
Carex albolutescens Schwein.; DW; 1 (Witsell 05-375)
Carex blanda L. H. Dewey; NS, RD, RI; 4 (Witsell 05-216, Baker GRF-069)
Carex bushii Mack.; SG/RI; 2 (Witsell 05-385, Baker GRF-092)
Carex cephalophora Muhl. ex Willd.; NS, PHF, RD; 3 (Witsell 05-370, Baker GRF-044)
Carex complanata Torr. & Hook.; DW; 2 (Witsell 05-377)
Carex digitalis Willd.; LF; 1 (Witsell 05-367)
Carex festucacea Schkuhr ex Willd.; DW; 2 (Witsell 05-396)
Carex glaucodea Tuck. ex Olney; DW, NS, RD, RI; 3 (Witsell 05-380, Baker GRF-036)
Carex hirsutella Mack.; CC, DW, LF, PHF, RD, RI, SG; 5 (Baker GRF-120)
Carex hirsutella Mack. X *swanii* (Fernald) Mack.; PF; 1 (Witsell 05-548) [Det. by T. Smith of U. of Ontario]
Carex intumescens Rudge; LF; 2 (Witsell 05-217)
Carex jamesii Schwein.; NS; 1 (Witsell 05-374)
Carex leavenworthii L. H. Dewey; NS, RD, SG; 3 (Witsell 05-371)
***Carex lupuliformis* Sartwell ex L. H. Dewey**; DW, LF; 2 (Witsell 05-372)
Carex lupulina Willd.; LF, PSG; 3 (Witsell 05-744, Baker GRF-191)
Carex muehlenbergii Schkuhr ex Willd. var. *enervis* Boott; PF, PHF, RD, RI; 3 (Witsell 05-255, Baker GRF-034)
Carex oklahomensis Mack.; RI/SG/SP; 1 (Witsell 05-510, Baker GRF-210)
Carex oligocarpa Willd.; NS, PHF, RD, SSB; 3 (Witsell 05-252)
Carex oxylepis Torr. & Hook.; PF; 1 (Witsell 05-373)
Carex planispicata Naczi; NS, PHF, RD, RI; 3 (Witsell 05-221)
Carex rosea Schkuhr ex Willd.; NS; 2 (Witsell 05-369, Baker GRF-178)
Carex molestiformis Reznicek & P. E. Rothrock; RD; 1 (Baker GRF-121)
***Carex swanii* (Fernald) Mack.**; DW, PF, PHF; 2 (Witsell 05-250)

Carex tribuloides Walenb.; DW, LF; 3 (Witsell 05-543)
Carex typhina Michx.; LF, PSG; 2 (Witsell 05-644, Baker GRF-192)
Carex umbellata Schkuhr ex Willd.; PHF, SSB; 2 (Witsell 05-220)
Carex vulpinoidea Michx.; DW, RD, RI; 2 (Witsell 05-389)
Cyperus echinatus (L.) A. W. Wood; RD; 2 (Witsell 05-1163, Baker GRF-212)
Cyperus erythrorhizos Muhl.; SL; 2 (Witsell 05-1333)
**Cyperus esculentus* L.; SL; 3 (Witsell 05-1316, Baker GRF-337)
Cyperus pseudovegetus Steud.; PSG; 3 (Baker GRF-188)
Cyperus retroflexus Buckley; RD; 1 (Witsell 05-1174)
Cyperus retrorsus Chapm.; NS, SL; 2 (Witsell 05-1368)
Cyperus squarrosus L.; PSG, SL; 3 (Witsell 05-746, Baker GRF-310)
Cyperus strigosus L.; SG/RI; 2 (Baker GRF-265)
Eleocharis acicularis (L.) Roem. & Schult. in Roem. et al.; SL; 4 (Witsell 05-801)
Eleocharis lanceolata Fernald; RD; 3 (Witsell 05-648, Baker GRF-208)
Eleocharis palustris (L.) Roem. & Schult. in Roem. et al.; RI/SG; 1 (Witsell 05-645)
Eleocharis tenuis (Willd.) Schult. var. *verrucosa* (Svenson) Svenson; DW, RI/SG, SP; 3 (Witsell 05-647)
Fimbristylis autumnalis (L.) Roem. & Schult. in Roem. et al.; PSG, SL; 3 (Witsell 05-803, Baker GRF-311)
Fimbristylis vahlii (Lam.) Link; SL; 4 (Witsell 05-741, Baker GRF-309B)
Isolepis pseudosetacea (Daveau) Gand.; RI/SG; 2 (Witsell 05-86, Baker GRF-070)
Lipocarpha micrantha (Vahl) G. C. Tucker; PSG, SL; 4 (Witsell 05-739, Baker GRF-309A)
Rhynchospora capitellata (Michx.) Vahl; SG/RI; 2 (Baker GRF-277)
Rhynchospora recognita (Gale) Kral; DW, RI/SG; 3 (Witsell 05-639, Baker GRF-150)
Schoenoplectus pungens (Vahl) Palla; PSG; 1 (Witsell 05-798)
Scirpus cyperinus (L.) Kunth; RD; 1 (Baker GRF-263)
Scirpus georgianus R. M. Harper; DW, RI; 2 (Witsell 05-642)
Scirpus pendulus Muhl.; RI; 2 (Witsell 05-511)
Scleria oligantha Michx.; DW, NS, PF, PHF, SG; 4 (Baker GRF-158)

Dioscoreaceae

**Dioscorea polystachya* Turcz.; RI; 3 (Witsell 05-797)
Dioscorea villosa L.; DW, NS, PHF, SSB; 3 (Witsell 05-679, Baker GRF-168)

Hemerocallidaceae

**Hemerocallis fulva* (L.) L.; RD; 1 (not collected)

Hyacinthaceae

**Ornithogalum umbellatum* L.; SG/SP; 1 (not collected)

Hypoxidaceae

Hypoxis hirsuta (L.) Coville; RI/SG, SG; 4 (Witsell 05-90)

Iridaceae

**Belamcanda chinensis* (L.) DC. in Redouté; PHF; 1 (not collected)
Iris cristata Sol. ex Aiton; NS, RD; 3 (Witsell 05-236)
***Nemastylis nuttallii* Pichering ex R. C. Foster**; RI/SG; 1 (Witsell 05-632)
Sisyrinchium angustifolium Mill.; PHF, RD, RI; 2 (Witsell 05-233)
Sisyrinchium langloisii Greene; PHF, RD, SG; 2 (Witsell 05-277)

Juncaceae

Juncus acuminatus Michx.; RI; 2 (Baker GRF-206)
Juncus brachycarpus Engelm. in A. Gray; RI; 2 (not collected)
Juncus debilis A. Gray; DW, RI, SP; 2 (Baker GRF-149)
Juncus dudleyi Wiegand; RI; 2 (Baker GRF-203)
Juncus effusus L.; DW, RD, RI; 3 (Witsell 05-649, Baker GRF-251)
Juncus marginatus Rostk.; RI; 1 (Witsell 05-640)
Juncus secundus P. Beauv. ex Poir. in Lam. et al.; RI; 3 (Witsell 05-641)
Juncus tenuis Willd.; RD; 3 (Baker GRF-134)
Juncus validus Coville var. *validus*; SL; 1 (Witsell 05-754)
Luzula echinata (Small) F. J. Herm.; NS, SSB; 4 (Baker GRF-018)

Liliaceae

Erythronium albidum Nutt.; NS, PHF, SG, SP; 4 (Baker GRF-002)
Erythronium rostratum W. Wolf; NS; 1 (Baker GRF-005)

Melanthiaceae

Trillium recurvatum Beck; NS, PHF, SP/SG; 3 (Witsell 05-106)

Orchidaceae

Liparis liliifolia (L.) Rich. ex Lindl.; DW; 1 (Baker GRF-071)
Malaxis unifolia Michx.; DW; 1 (Baker GRF-072)
Spiranthes cernua (L.) Rich.; DW, RI, SP; 3 (Baker GRF-345)
Spiranthes tuberosa Raf.; PHF, RI/SG; 2 (Witsell 05-1178, Baker GRF-303)
Tipularia discolor (Pursh) Nutt.; PHF, SG; 2 (Witsell 05-243)

Poaceae

Agrostis elliottiana Schult.; RI/SG; 1 (Witsell 05-407)
Agrostis hyemalis (Walter) Britton, Stearns, & Poggenb.; RD, RI, SG; 4 (Witsell 05-399, Baker GRF-132)
Agrostis perennans (Walter) Tuck.; DW, RI, SP; 2 (Witsell 05-1189)
**Aira elegans* Willd. ex Kunth; RD; 4 (Witsell 05-398, Baker GRF-102)
Andropogon ternarius Michx. var. *ternarius*; RD, SG; 2 (Witsell 05-1306, Baker GRF-356)

Andropogon virginicus L.; CC, LF, PHF, RD, SG; 4 (Witsell 05-1303)
Aristida dichotoma Michx. var. *curtissii* A. Gray; SG; 2 (Witsell 05-1301)
Aristida purpurascens Poir.; SG; 2 (Witsell 05-1197)
Axonopus furcatus (Flüggé) Hitchc.; PSG; 3 (Baker GRF-342)
**Bromus commutatus* Schrad; RD; 3 (Witsell 05-522)
**Bromus hordeaceus* L. subsp. *hordeaceus*; RD; 4 (Witsell 05-403, Baker GRF-128)
Bromus pubescens Muhl. ex Willd.; NS, RD, RI; 4 (Witsell 05-655, Baker GRF-125)
**Bromus racemosus* L.; RD; 3 (Witsell 05-281)
Chasmanthium latifolium (Michx.) H. O. Yates; RI, SP; 4 (Witsell 05-795, Baker GRF-276)
Cinna arundinacea L.; RD; 1 (not collected)
**Dactylis glomerata* L.; CC, RD; 3 (Witsell 05-264)
Danthonia spicata (L.) P. Beauv. ex Roem. & Schult.; CC, PHF, SG; 3 (Witsell 05-391)
Dichanthelium acuminatum (Sw.) Gould & C. A. Clark subsp. *acuminatum*; SG; 2 (Witsell 05-516)
Dichanthelium boscii (Poir.) Gould & C. A. Clark; LF, NS, PHF, RD, RI; 4 (Witsell 05-394, Baker GRF-127)
Dichanthelium commutatum (Schult.) Gould; NS, PHF, RI; 4 (Witsell 05-395, Baker GRF-075)
Dichanthelium depauperatum (Muhl.) Gould; PHF, RD, SG; 3 (Witsell 05-388, Baker GRF-122)
Dichanthelium dichotomum (L.) Gould subsp. *dichotomum*; LF, PHF, RD, SG, SL; 4 (Witsell 05-646, Baker GRF-133)
Dichanthelium dichotomum (L.) Gould subsp. *microcarpon* (Muhl. ex Elliott) Freckmann & Lelong; RI; 2 (Baker GRF-204)
Dichanthelium dichotomum (L.) Gould subsp. *nitidum* (Lam.) Freckmann & Lelong; RI; 1 (Witsell 05-542)
Dichanthelium laxiflorum (Lam.) Gould; PHF, RD, SG; 4 (Witsell 05-387, Baker GRF-039)
Dichanthelium linearifolium (Scribn.) Gould; PHF, RD, RI, SG, SHB, SSB; 4 (Witsell 05-392, Baker GRF-038)
Dichanthelium polyanthes (Schult.) Mohlenbr.; RD, RI, SG; 4 (Witsell 05-515, Baker GRF-119)
Dichanthelium sphaerocarpon (Elliott) Gould; LF, RI, SG; 4 (Witsell 05-521, Baker GRF-189)
**Digitaria ciliaris* (Retz.) Koeler var. *ciliaris*; RD; 3 (Witsell 05-1202, Baker GRF-243)
**Digitaria ischaemum* (Schreb.) Muhl.; RD; 3 (Witsell 05-1201)
Echinochloa muricata (P. Beauv.) Fernald var. *microstachya* Wiegand; SL; 2 (Witsell 05-1331, Baker GRF-341)
Elymus canadensis L.; RI; 2 (Witsell 05-789, Baker GRF-260)
Elymus virginicus L.; LF, PHF, RI; 2 (Witsell 05-790)
Eragrostis hypnoides (Lam.) Britton, Stearns, & Poggenb.; SL; 4 (Witsell 05-804, Baker GRF-312)
Eragrostis spectabilis (Pursh) Steud.; CC, RD; 3 (Witsell 05-1173, Baker GRF-298)
Festuca paradoxa Desv.; SG; 1 (Witsell 05-652)
Festuca subverticellata (Pers.) E. B. Alexeev; NS, RI; 2 (not collected)
**Hordeum pusillum* Nutt.; RD; 3 (Witsell 05-400, Baker GRF-130)
Leersia virginica Willd.; DW, LF, NS, RI, SP; 3 (Witsell 05-1169)
Melica mutica Walter; NS, RI, SG; 4 (Witsell 05-229)
Muhlenbergia sobolifera (Muhl. ex Willd.) Trin.; PHF, RD, SG; 3 (Witsell 05-1203)
Muhlenbergia sylvatica (Torr.) Torr. ex A. Gray; RI; 3 (Witsell 05-1200, Baker GRF-348)
Panicum anceps Michx. subsp. *anceps*; PF, PHF, RD, SG, SP; 4 (Witsell 05-1165, Baker GRF-299)
Panicum dichotomiflorum Michx. subsp. *dichotomiflorum*; RD, SL; 3 (Witsell 05-1171)
Panicum flexile (Gatt.) Scribn.; RD; 2 (Baker GRF-332)
Panicum rigidulum Bosc ex Nees subsp. *rigidulum*; LF, PSG, SL; 3 (Witsell 05-800, Baker GRF-343)
Paspalum laeve Michx.; PSG, RI; 3 (Witsell 05-1298, Baker GRF-264)
**Poa annua* L.; RD; 3 (Witsell 05-246)
Poa sylvestris A. Gray; RI, SSB; 2 (Witsell 05-249)
Saccharum alopecuroideum (L.) Nutt.; PF, PHF, RD; 2 (Witsell 05-1296)
**Schedonorus arundinaceus* Roem. & Schult. (nom. cons.); RD, RI, SG; 3 (Witsell 05-508, Baker GRF-155)
Schizachyrium scoparium (Michx.) Nash var. *scoparium*; PHF, SG; 1 (not collected)
Setaria parviflora (Poir.) Kerguélen; SL; 2 (Witsell 05-1365)
Setaria pumila (Poir.) Roem. & Schult. subsp. *pumila*; RD; 2 (Baker GRF-242)
Sphenopholis intermedia (Rydb.) Rydb.; NS, PHF, SSB; 2 (Witsell 05-225)
Sphenopholis nitida (Biehler) Scribn.; NS; 2 (Witsell 05-390, Baker GRF-179)
Sphenopholis obtusata (Michx.) Scribn.; SSB; 2 (Baker GRF-124)
Sporobolus clandestinus (Biehler) Hitchc.; SG; 2 (Witsell 05-1295)
Steinchisma hians (Elliott) Nash; RI/SG; 2 (Witsell 05-678)
Tridens flavus (L.) Hitchc. var. *flavus*; RD, SG; 3 (Witsell 05-1164, Baker GRF-296)
**Vulpia myuros* (L.) C. C. Gmel.; RD; 3 (Witsell 05-397, Baker GRF-126)
Vulpia octoflora (Walter) Rydb. var. *octoflora*; RD, SG; 3 (Witsell 05-401, Baker GRF-129)

Ruscaceae

Maianthemum racemosum (L.) Link subsp. *racemosum*; NS; 1 (not collected)

Polygonatum biflorum (Walter) Elliott; NS; 1 (not collected)

Smilacaceae

Smilax bona-nox L.; DW, LF, RD, SL; 4 (Witsell 05-753)
Smilax glauca Walter; LF, SL; 3 (Witsell 05-756)
Smilax rotundifolia L.; DW, LF, RI; 4 (Baker GRF-067)
Smilax tamnoides L.; NS; 1 (not collected)

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