

A BASELINE VASCULAR PLANT SURVEY FOR OCMULGEE NATIONAL MONUMENT, BIBB COUNTY, MACON, GEORGIA

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ABSTRACT

Ocmulgee National Monument is administered by the National Park Service, United States Department of the Interior, and comprises 283.9 ha (701.5 acres) in two disjunct land parcels located in Macon, Bibb County, central Georgia. The park is significant for earthen mounds and other archeological sites associated with the Native American Mississippian cultures that settled along the Ocmulgee River. A floristic survey was conducted to provide Park Service personnel with a baseline vouchered plant species checklist, supplemented with salient information such as relative abundance, locality data, and general community type. Identifications of vouchers from prior surveys were also verified and incorporated into the annotated list that now totals 436 species of vascular plants. The five largest families are Poaceae (53 spp.), Asteraceae (36 spp.), Cyperaceae (33 spp.), Fabaceae (21 spp.), and Rosaceae (18 spp.). According to state rankings, one special concern species, *Cayaponia quinqueloba*, occurs within the study area, and approximately 24 percent of the non-cultivated flora is exotic. A vouchered checklist of vascular plants and descriptions of the general plant communities are included, as well as a list of unvouchered species previously reported from the park.

RESUMEN

El Ocmulgee National Monument está administrado por el Servicio de Parques Nacionales, del Departamento de Interior de los Estados Unidos, y comprende 283.9 ha (701.5 acres) en dos parcelas disjuntas localizadas en Macon, Bibb County, Georgia central. El parque es significativo por los montículos de tierra y otros lugares arqueológicos asociados a las culturas nativas americanas del Mississippi que se asentaron a lo largo del río Ocmulgee. Se realizó un estudio florístico para aportar al personal al servicio del parque un catálogo de especies de plantas con testigos, suplementada con información relativa a su abundancia, datos de la localidad, y tipo general de comunidad. También se verificaron las identificaciones de testigos de estudios anteriores que se incorporaron al catálogo que totaliza ahora 436 especies de plantas vasculares. Las cinco familias más grandes son Poaceae (53 spp.), Asteraceae (36 spp.), Cyperaceae (33 spp.), Fabaceae (21 spp.), y Rosaceae (18 spp.). De acuerdo con la legislación del estado una especie protegida, *Cayaponia quinqueloba*, vive en el área de estudio, y aproximadamente el 24 por ciento de la flora no-cultivada es exótica. Se incluyen un catálogo de las plantas vasculares y descripciones de las comunidades vegetales, así como una lista de las especies citadas previamente del parque.

INTRODUCTION

Study Area

The "fall line" in Georgia is a prominent geological boundary ca. 32 km (20 mi) wide extending from Augusta southwest to Columbus (Fig. 1A) and represents the Mesozoic shoreline of the Atlantic Ocean. The ancient beach demarcates the flat and sandy upper Coastal Plain to the south from the rolling rocky hills of the Piedmont to the north and separates significantly different plant and animal communities. As a consequence, the diverse habitats within this narrow transition zone are characterized by a rich variety of flora and fauna (Wharton 1978). Settlements developed where rivers descend along the relatively steep slope of the fall line, forming rapids or waterfalls that were used to generate power, and provided natural stopping points for travel

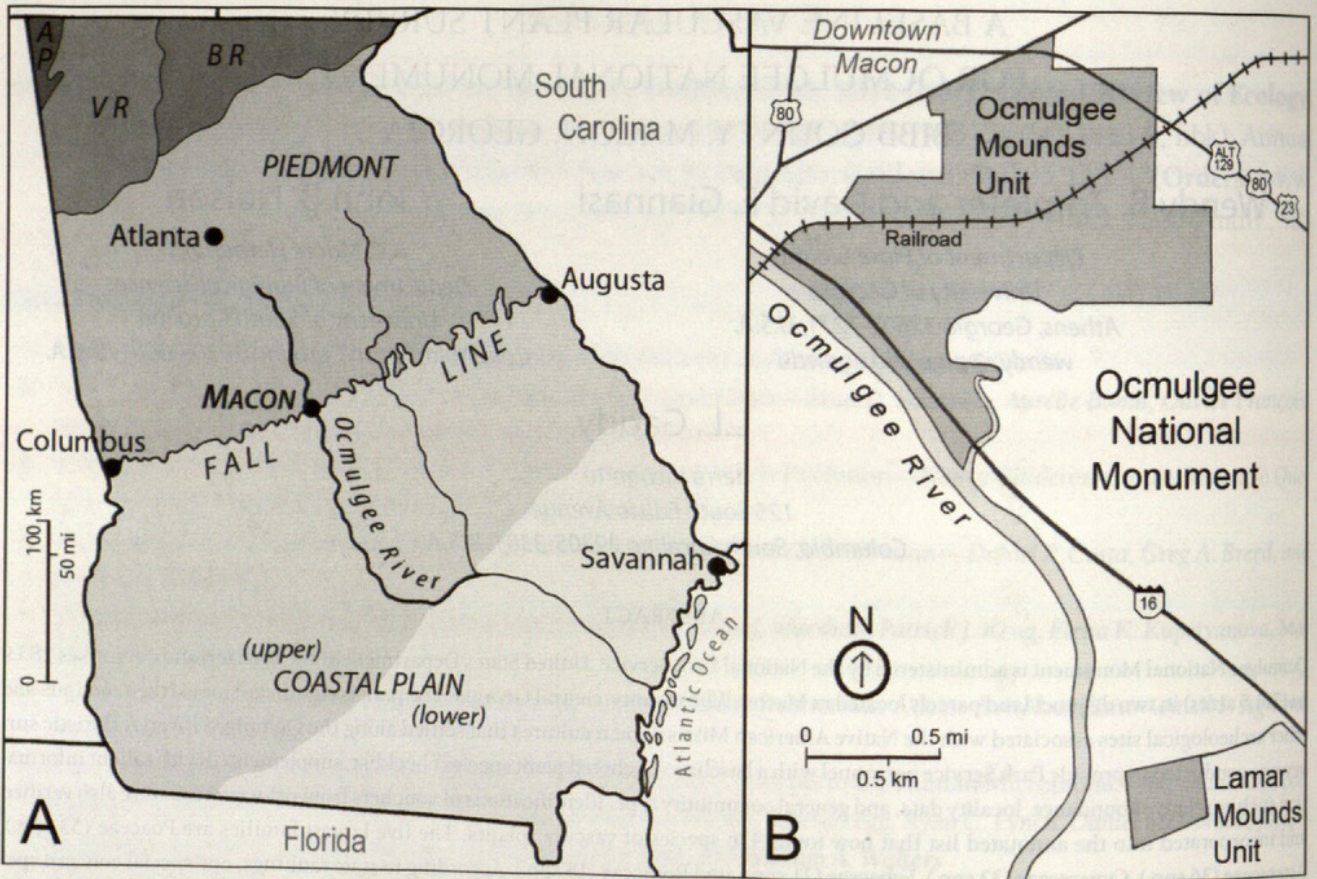


FIG. 1. Location of Ocmulgee National Monument. **A.** Physiographic regions of Georgia, the fall line, and the Ocmulgee River. Abbreviations: AP = Appalachian Plateau, BR = Blue Ridge, VR = Valley and Ridge. **B.** Detail of eastern Macon, Georgia, showing location of the two land parcels comprising Ocmulgee National Monument: the Ocmulgee Mounds and Lamar Mounds units. A modified by WBZ from Wharton (1978); B modified by WBZ from Wheeler (2007) and NPS (2012d).

and commerce. An example is the city of Macon, founded at the fall line of the Ocmulgee River. The river, whose Native American name (Okmulgee) translates as “where the water boils up,” provides the principal watershed for much of the Piedmont and Coastal Plain of central Georgia (Fig. 1A).

Ocmulgee National Monument (OCMU), administered by the National Park Service (NPS, U.S. Department of the Interior), is located along the Ocmulgee River in eastern Macon (Bibb County) at the fall line (NPS 2012a). The park comprises 283.9 ha (701.5 acres) in two separate land tracts (Figs. 1B and 2): the much larger main park unit, Ocmulgee Mounds (265.7 ha, 656.5 acres), and the small detached parcel ca. 3.2 km (2 mi) south, the Lamar Mounds unit (18 ha, 45 acres). OCMU has significant archeological sites including nine earthen mounds associated with two Native American Mississippian cultures that settled along the river prior to European contact (Hally 1994; see “Brief History of OCMU with Emphasis on Land Use” below). Due to the rich cultural resources, OCMU is listed on the National Register of Historic Places and has been designated a Traditional Cultural Property (Wheeler 2007).

The study area is characterized by hot, humid summers and mild winters (National Weather Service 2012). The mean annual temperature is 16° C (60.0° F), with January the coldest month at 1.4° C (34.5° F), and July, the warmest at 33.2° C (91.8° F). Mean annual precipitation is 114.3 cm (45.0 in) per year. January has the highest average precipitation with 12.7 cm (5.0 in), and October, the lowest with 6.0 cm (2.37 in).

Ocmulgee Mounds unit.—The main park unit (Macon Plateau site or “Ocmulgee Old Fields,” coordinates 32.838194°, -83.602124°) is adjacent to the eastern side of downtown Macon and is bordered to the southwest by the Ocmulgee River, and to the south, by Walnut Creek (Figs. 1B and 2A). The park is bisected by the Norfolk Northern Railroad. Emory Highway (U.S. 80E) cuts across the northeastern corner of the property, and Interstate 16 passes through its southwestern border, parallel to the Ocmulgee River. The ca. 9 km (5.5 mi)

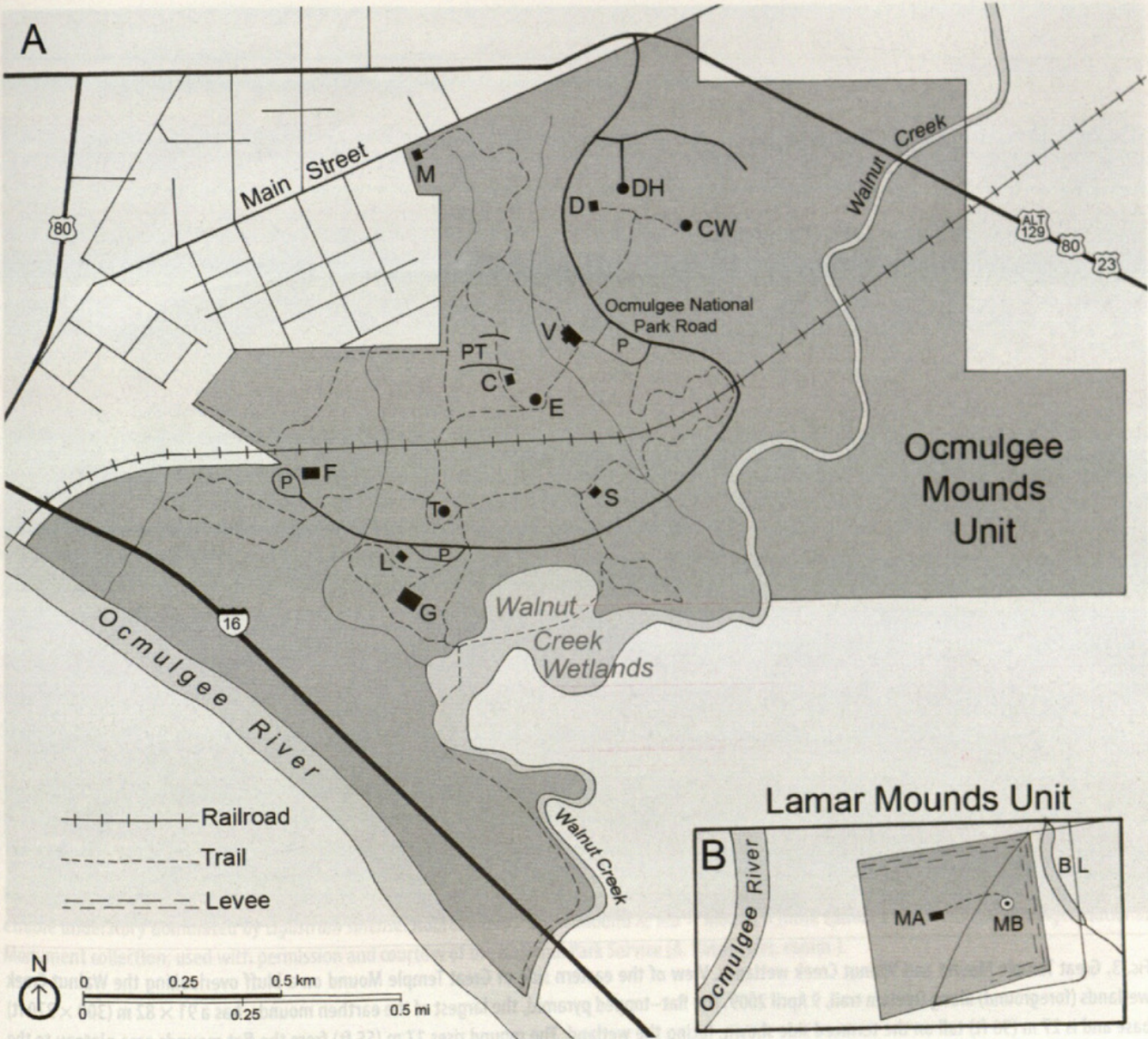


FIG. 2. Map of Ocmulgee National Monument, showing trails and locations of major cultural features. A. Ocmulgee Mounds unit, the main park. B. (inset). Lamar Mounds unit. Abbreviations: BL = Black Lake, C = Cornfield Mound, CW = Civil War earthwork, D = Dunlap Mound, DH = Dunlap House, E = Earthlodge, F = Funeral Mound, G = Great Temple Mound, L = Lesser Temple Mound, M = McDougal Mound, MA = Mound A (pyramidal mound), MB = Mound B (circular mound with spiral ramp), P = parking lot, PT = prehistoric trenches, S = Southeast Mound, T = trading post site, V = Visitor Center. A modified by WBZ from NPS (2005); B modified by WBZ from Wheeler (2007) and unpublished NPS map (G. LaChine, pers. comm.).

of hiking trails traverse upland forests and fields and pass along the swamps and open wetlands associated with the river and its tributary, Walnut Creek.

The most prominent landscape features at the Ocmulgee Mounds site are the seven rectangular earthen mounds that rise up to 17 m (55 ft; Greater Temple Mound, Fig. 3) above the relatively flat topography of 85–119 m (280–390 ft; Marsh 1986). Other historic resources date from early European settlement to more modern times, including a late seventeenth century British fort and trading post site, a Civil War gun emplacement, and a restored antebellum residence (Dunlap House). The Visitor Center includes a museum with exhibits and a major archeological collection with emphasis on the Early Mississippian culture that flourished in the main park parcel from 900 to 1100 AD. The park’s natural and cultural resources attract about 123,000 visitors per year (NPS 2012b).

Lamar Mounds unit.—This isolated part of OCMU (Lamar Mounds and Village site; coordinates 32.812562°, -83.591580°) is located between the Ocmulgee River and Interstate 16, ca. 5 km (3 mi) southeast of



FIG. 3. Great Temple Mound and Walnut Creek wetlands. View of the eastern side of Great Temple Mound on a bluff overlooking the Walnut Creek wetlands (foreground) along Opelofa trail, 9 April 2009. The flat-topped pyramid, the largest of the earthen mounds, has a 91×82 m (300×270 ft) base and is 27 m (90 ft) tall on the terraced side shown, facing the wetland. The mound rises 17 m (55 ft) from the flat mounds area plateau to the north. Photo credit: W.B. Zomlefer.

downtown Macon (Fig. 1B). The property is in swampland slightly elevated from the surrounding floodplain (ca. 85 m, 280 ft) and an oxbow lake (Black Lake) nearby to the east (Fig. 2B; Wheeler 2007). An unfinished levee, constructed in the late 1930s to protect the site from flooding, borders the northern, eastern, and part of the southeastern sides of the property. The unit is the type site of the Lamar culture (Late Mississippian, 1350–1600 AD; Williams 1999) and comprises a palisaded village area (8.7 ha, 21.5 acres) surrounding two large earthen mounds: a rectangular (pyramidal) mound (Mound A in Figs. 2B and 4), 10.7 m (35 ft) tall, and an unusual circular mound with a spiral ramp (Mound B, 6.1 m [20 ft] tall). Each mound is enclosed by a locked chain-link fence. The Lamar Mounds unit has difficult access via a county road and an overgrown foot trail and is open to the public via guided tours on a very limited basis.

Brief History of OCMU with Emphasis on Land Use

Based on archeological evidence, Ocmulgee National Monument was occupied continuously by a series of native North American tribes for ca. 12,000 years before European contact in the mid-seventeenth century (summaries in Pope 1956; Marsh 1986; Hally 1998; NPS 2005; Wheeler 2007; Williams 2008). The most significant cultural period began when the early Mississippians (900–1100 AD) migrated to the area from the central Mississippi River Valley. This sophisticated and stratified society built a town (Ocmulgee Fields) supported by an agricultural economy managed by master farmers along the Ocmulgee River bottomlands. Their ceremo-

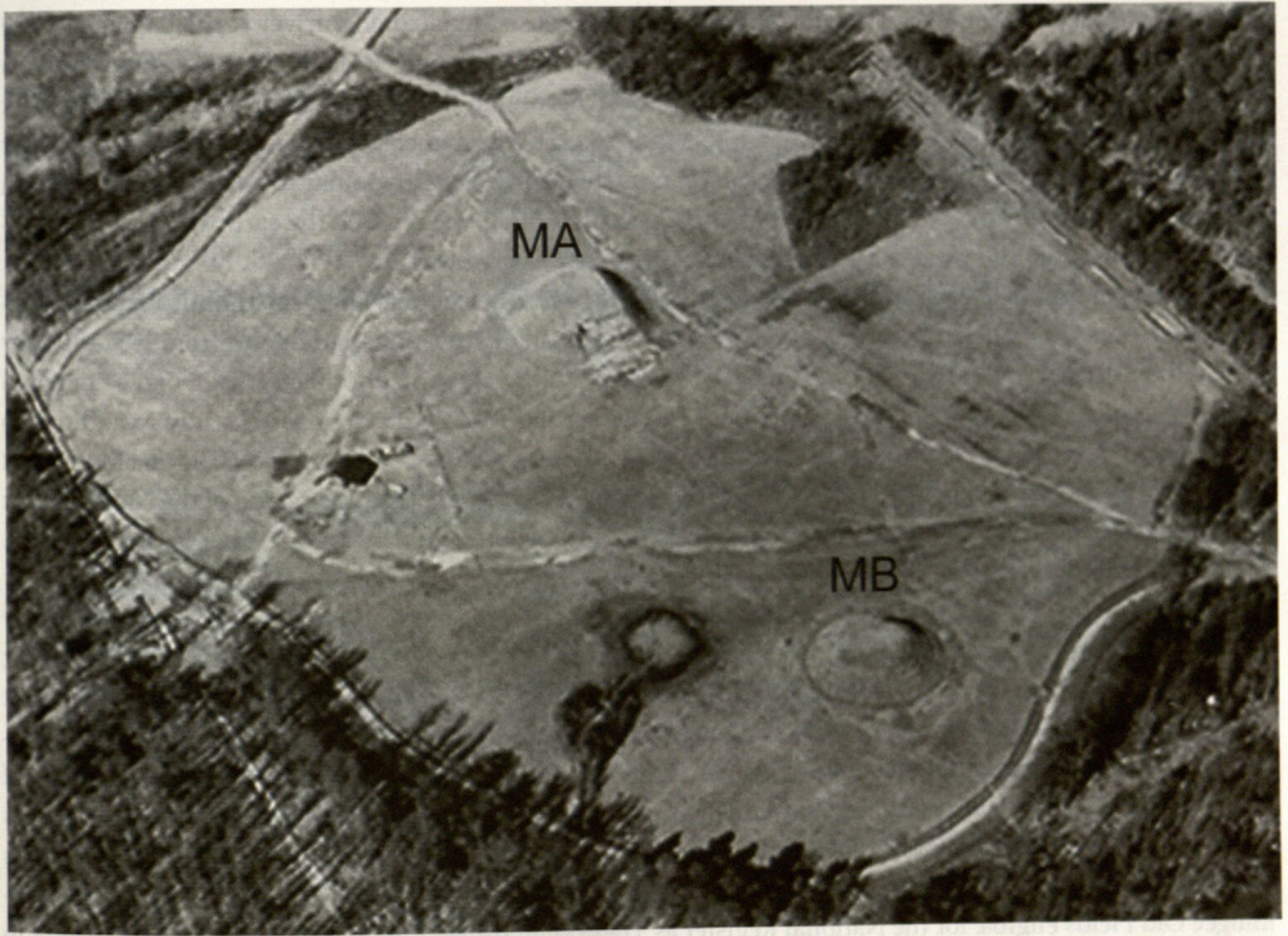


FIG. 4. Aerial view of excavation at the Lamar Mounds and Village Site, 1934. Today the area is covered by dense floodplain forest with an almost impenetrable understory dominated by *Ligustrum sinense*. Abbreviations: MA = Mound A; MB = Mound B (note spiral ramp). From the Ocmulgee National Monument collection; used with permission and courtesy of the National Park Service (A. Bates, pers. comm.).

nial complex included several structures that dominate the landscape today, including a circular earth lodge and seven massive flat-topped pyramidal earthworks that served as temple platforms and burial mounds (Figs. 2A and 3).

By 1350 AD, the Ocmulgee Fields declined as a ceremonial center, and a new culture, the Lamar or Late Mississippians, coalesced among people who lived in the swamps ca. 3.2 km (2 mi) downstream. One of their major centers is now protected as the Lamar Mounds and Village site (Figs. 1B, 2B, and 4). Represented by vestiges of a stockade surrounding two temple mounds, this site includes a unique circular mound with a spiral ramp (Figs. 2B and 4). The spread of introduced European disease led to eventual decline in the population, and by 1650 the remnants of the culture had relocated westward to the Chattahoochee River (Williams & Shapiro 1990).

Descendants of these Lamar (designated "Creek" or "Muscogee" by the European settlers) returned to Ocmulgee Fields in 1690 to re-establish the town ("Okmulgee Town") and to trade with the British who had built a trading post and fort near the sacred mounds (Fig. 2A). The Creeks were later (1717) expelled from the area after losing a war with the British over land rights. After the Revolutionary War, the new state of Georgia obtained concessions to Creek tribal lands in 1826, following a series of contentious treaties (see Pope 1956; Wheeler 2007). The acreage was incorporated into the new city of Macon, established in 1828.

For the next century, agriculture and industry accelerated the progressive degradation of the natural and cultural resources of the site (Froeschauer 1989; Wheeler 2007). The main park area was a large plantation by the mid-1850s. Grazing removed understory vegetation in the forested areas of Walnut Creek, and intense ag-

gricultural production around the mounds eroded topsoil that accumulated downriver at the Lamar site. The Central of Georgia Railroad constructed two railway lines through "Ocmulgee Old Fields," clearing vegetation and removing much of Lesser Temple Mound and Funeral Mound in the process. After the Civil War, a brick factory, fertilizer plant, and dairy farm were in operation at the site, and clay was mined from deep pits near Great Temple Mound. By the 1920's, the Ocmulgee mounds had become a popular recreation area for Macon residents, and activities such as motorcycle racing (on the slopes) further eroded the earthworks. A large portion of McDougal Mound was used as fill for constructing Emery Highway.

A group of concerned local citizens and politicians successfully secured New Deal funding for archeological studies, organized by the Smithsonian Institution. The massive excavations, conducted from 1933–1942 by the Civilian Conservation Corps (CCC), stripped most of the vegetation at both sites (e.g., Fig. 4) to reveal prehistoric landscapes and invaluable artifacts. The success of the federally sponsored study in addition to strong local support for historical preservation resulted in the establishment of Ocmulgee National Monument by Presidential Proclamation in 1936 (Marsh 1986; Wheeler 2007). Under the jurisdiction of the National Park Service, CCC workers constructed roads, trails, utilities, parking lots, and the Visitor Center for the new park. Loblolly pine (*Pinus taeda*) and Bermuda grass (*Cynodon dactylon*) were planted to control erosion.

More recently, natural resources have been heavily impacted by encroaching urbanization, particularly the construction of the Macon Levee (in 1950) on the western side of the river and of Interstate 16 (in the 1960s; Fig. 1B), which extensively changed the hydrology at both park units (Burkholder et al. 2010). One significant consequence was a massive flood in 1994 that inundated hardwood forest and created the Walnut Creek wetlands, now a permanently flooded area (Figs. 2A, 3, and 5). Currently, the rest of the main park consists of forested "natural" zones surrounding mowed lawns protecting the mound areas. The Lamar Mounds unit is covered by dense floodplain forest that is managed on a minimal maintenance schedule with trail and mounds occasionally cleared of vegetation. The NPS continues to negotiate for acquisition of up to 14,000 acres of Ocmulgee Old Fields eligible for the National Register as Traditional Cultural Property due to the significance to the Creek people (David 2012).

Floristic Surveys of OCMU

A few unvouchered lists of plant species for the Ocmulgee National Monument and surrounding areas had been produced for various park reports (e.g., Froeschauer 1989; Puckett 1997). In 1999, the National Park Service inaugurated a long-term ecological inventory and monitoring program to establish baseline data on park ecosystems for resource management decisions (see Fancy et al. 2009). As part of that initiative in the southeastern United States (DeVivo et al. 2008), a comprehensive and vouchered floristic survey of OCMU was conducted by Gaddy and Nelson (2004). They collected 447 specimens from July 2002 to November 2004 and also obtained 31 vouchers from informal 1986–1987 surveys by John D. Shepherd and his students at Mercer University in Macon, Georgia. The most recent specimen verifications and supplemental collections in 2008–2009 by Zomlefer and associates enhance previous surveys with the goal of generating an accurate vouchered species list as a reference for on-going invasive species control and park-wide vegetation community mapping and research projects (e.g., DeVivo et al. 2011).

MATERIALS AND METHODS

The first author led 4 field trips for one year (27 May, 25 July, and 1 October 2008; 9 April 2009; Zomlefer 2091–2136, 2249–2268, 2275–2292, 2359–2403) to collect plant specimen vouchers using standard field and herbarium techniques (under collecting permit # OCMU-2008-SCI-0005). One follow-up trip was conducted on 7 August 2012 to confirm vegetation community types. The GA Herbarium team also verified determinations of vouchers from previous surveys of the park (Nelson, Gaddy, and Shepherd collections), including 70 unidentified specimens as well as a voucher of *Salpichroa origanifolia* sent to GA for identification in November 2010 by Theresa L. Hall, Interpretive Ranger at Ocmulgee National Monument. The complete set of mounted vouchers for the park (610 specimens) is deposited at GA Herbarium. The floras of Radford et al. (1968) and Weakley (2011) were primary sources for plant identification, supplemented by Cronquist (1980), Godfrey

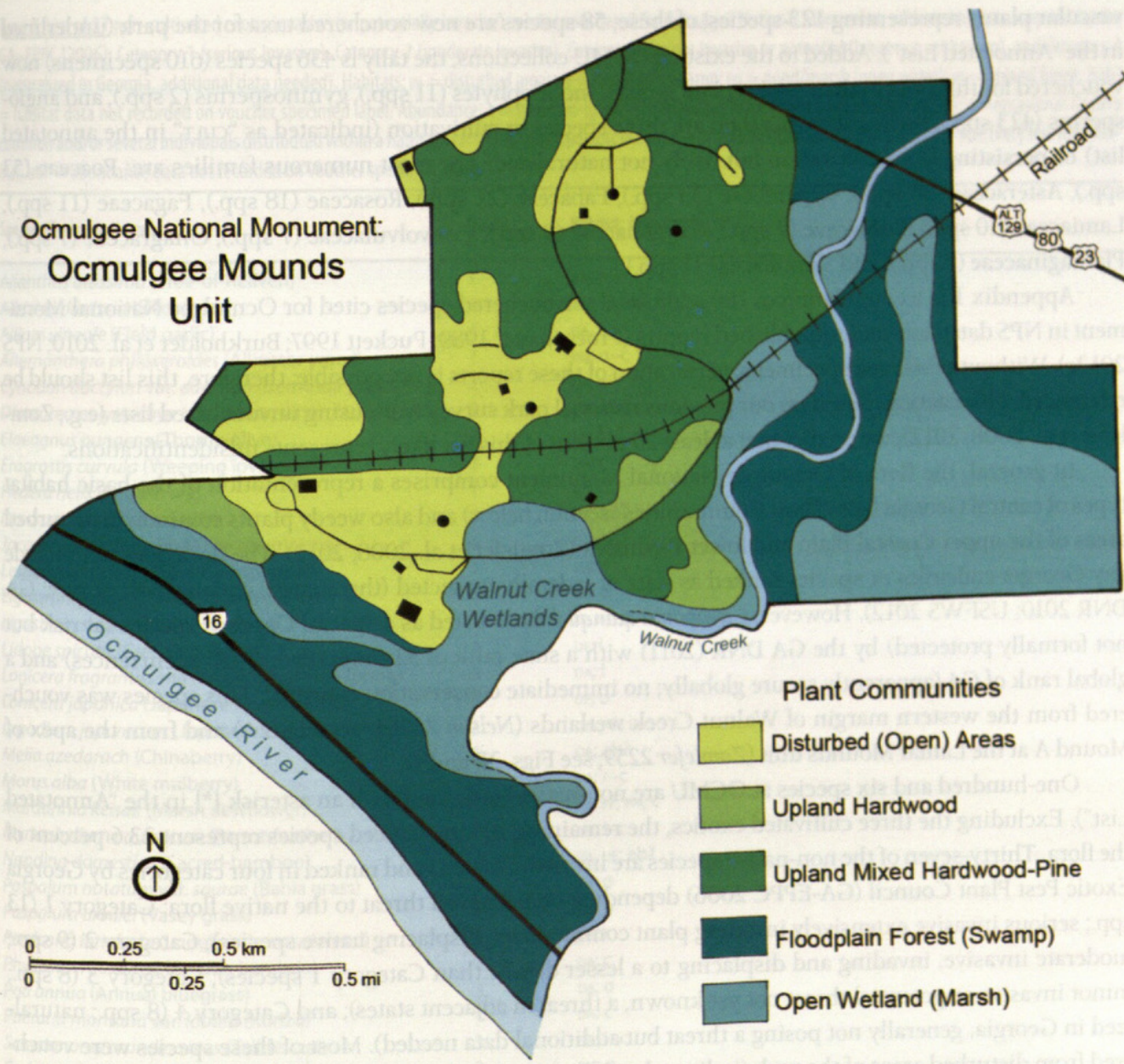


Fig. 5. General vegetation map of the Ocmulgee Mounds unit. Locations of major cultural features and Ocmulgee National Park Road provided for reference (see Fig. 2A). Modified and updated from Froeschauer (1989) by WBZ from field observations (W.B. Zomlefer and B.L. Wichmann, pers. obs.), specimen locality data, Google Earth©, and unpublished aerial imagery maps (CIR 1999 [color infrared] and NAIP 2010 [National Agriculture Imagery Program]) provided by the NPS (G. LaChine, pers. comm.).

(1988), Godfrey and Wooten (1979, 1981), Isely (1990), Wunderlin and Hansen (2000, 2011), and appropriate volumes of the *Flora of North America* (FNA 1993+). Intraspecific status was designated when practical keys (utilizing discrete characters appropriate for our specimens) were available. The list of unvouchered plant sight records (Appendix 1) was compiled from unpublished reports and an NPS species database (NPS 2012c) with the nomenclature and taxonomy updated using the *Integrated Taxonomic Information System* online database (ITIS 2012) and Weakley (2011). The format of this report incorporates standards recommended for floristic studies by Palmer and Richardson (2012).

RESULTS

Floristics

The “Annotated Checklist of Vascular Plant Taxa” is the complete flora for Ocmulgee National Monument represented by vouchers in GA Herbarium. The current survey comprised 131 new numbered collections of

vascular plants representing 123 species; of these, 58 species are new vouchered taxa for the park (underlined in the "Annotated List"). Added to the existing OCMU collections, the tally is 436 species (610 specimens) now vouchered for this flora in three major plant groups: monilophytes (11 spp.), gymnosperms (2 spp.), and angiosperms (423 spp.). Included in this total are three species in cultivation (indicated as "CULT" in the annotated list) or persisting from cultivation but likely not naturalized. The most numerous families are: Poaceae (53 spp.), Asteraceae (36 spp.), Cyperaceae (33 spp.), Fabaceae (21 spp.), Rosaceae (18 spp.), Fagaceae (11 spp.), Lamiaceae (10 spp.), Rubiaceae (9 spp.), Polygonaceae (8 spp.), Convolvulaceae (7 spp.), Onagraceae (7 spp.), Plantaginaceae (7 spp.), and Sapindaceae (7 spp.).

Appendix 1 is a compilation of 189 additional unvouchered species cited for Ocmulgee National Monument in NPS databases and unpublished reports (Froeschauer 1989; Puckett 1997; Burkholder et al. 2010; NPS 2012c). Without preserved specimens, verification of these reports is not possible; therefore, this list should be referenced with caution. Based on our previous national park survey work using unvouchered lists (e.g., Zomlefer et al. 2008, 2012), we predict that at least 20 percent of this list likely represents misidentifications.

In general, the flora of Ocmulgee National Monument comprises a representation of the basic habitat types of central Georgia (see "Plant Communities" section below) and also weedy plants common in disturbed areas of the upper Coastal Plain and lower Piedmont (Zomlefer et al. 2008, 2012). The flora does not include any Georgia endemics or species ranked as state or federally protected (threatened, endangered, or rare; GA DNR 2010; USFWS 2012). However, *Cayaponia quinqueloba* is listed as a Special Concern species (at risk but not formally protected) by the GA DNR (2011) with a state rank of S2 (imperiled; 6–20 occurrences) and a global rank of G4 (apparently secure globally; no immediate conservation concern). This species was vouchered from the western margin of Walnut Creek wetlands (Nelson 23064; see Fig. 2A) and from the apex of Mound A at the Lamar Mounds unit (Zomlefer 2259; see Figs. 2B and 4).

One-hundred and six species at OCMU are non-native (indicated with an asterisk [*] in the "Annotated List"). Excluding the three cultivated exotics, the remaining 103 introduced species represent 23.6 percent of the flora. Thirty-seven of the non-native species are invasive (Table 1) and ranked in four categories by Georgia Exotic Pest Plant Council (GA-EPPC 2006) depending on perceived threat to the native flora: Category 1 (13 spp.; serious invasive extensively invading plant communities, displacing native species); Category 2 (9 spp.; moderate invasive, invading and displacing to a lesser degree than Category 1 species); Category 3 (8 spp.; minor invasive or potential threat not yet known, a threat in adjacent states); and Category 4 (8 spp.; naturalized in Georgia, generally not posing a threat but additional data needed). Most of these species were vouchered from disturbed areas of the park (indicated as "DA" in Table 1).

Currently, about 40 ha (100 acres) of OCMU have been successfully surveyed, treated, and managed for invasive plant species (G. LaChine, pers. comm.). For the past ten years, park personnel have been targeting the most prevalent and critical of these exotics (all ranked as Category 1): *Ailanthus altissima*, *Ligustrum sinense*, *Melia azedarach*, and *Pueraria montana*. A serious invasive of immediate concern and removal efforts, *Triadica sebifera*, has become widespread in the Walnut Creek wetlands area of the main park unit and is also present at the Lamar Mounds unit. Other exotics, such as *Lonicera japonica* and *Hedera helix*, have been eradicated whenever possible, especially from sensitive areas with cultural resources (NPS 2012d). In some areas, aquatic invasives *Alternanthera philoxeroides* (Category 1), *Murdannia keisak* (1), and *Myriophyllum aquaticum* (2) are becoming a management challenge (Burkholder et al. 2010). Control measures have not been instigated for the 20 non-native grass species (Wheeler 2007; G. LaChine, pers. comm.); eight of these are ranked as Category 2 or 3 (Table 1). In the main park unit, these exotics primarily occur intermixed with native grasses and planted *Cynodon dactylon* comprising the mowed lawns covering the mound areas.

Plant Communities

Ocmulgee National Monument has a long history of disturbance that has drastically altered the vegetation, especially over the last two centuries (see "Brief History of OCMU with Emphasis on Land Use"). The Ocmulgee Mounds unit now comprises grassy fields (around the mounds) surrounded by upland woods and forested or open wetland habitats (Fig. 5). The Lamar Mounds unit is swamp with some open disturbed areas bordering

TABLE 1. List of 37 non-cultivated exotic invasive (or potentially invasive) species vouchered for Ocmulgee National Monument, with rankings as assessed by the GA-EPPC (2006): Category 1 (serious invasive), Category 2 (moderate invasive), Category 3 (minor invasive or potential threat not yet known), and Category 4 (naturalized in Georgia, additional data needed). Habitats: DA = disturbed areas; FP = floodplain swamp; PM = pond/marsh (open water); UF = upland forest; hab? = habitat data not recorded on voucher specimen label. Abundance: c = common (generally abundant throughout a particular habitat); o = occasional (locally common and/or several individuals distributed within a habitat); i = infrequent (sporadic occurrence of a small number of individuals); r = rare (very few individuals); ab? = abundance data not recorded on voucher specimen label.

Species (Common Name)	Rank	Habitat; Abundance
<i>Ailanthus altissima</i> (Tree-of-heaven)	1	DA; O
<i>Albizia julibrissin</i> (Silktree)	1	DA, UF; ab?
<i>Allium vineale</i> (Field garlic)	4	DA; i
<i>Alternanthera philoxeroides</i> (Alligator-weed)	1	PM; O–C
<i>Cynodon dactylon</i> var. <i>dactylon</i> (Bermuda grass)	2	DA; C
<i>Dioscorea polystachya</i> (Cinnamon vine)	2	PM; ab?
<i>Elaeagnus pungens</i> (Thorny-olive)	2	UF; ab?
<i>Eragrostis curvula</i> (Weeping lovegrass)	3	DA; C
<i>Hedera helix</i> (English ivy)	1	UF; C
<i>Ilex cornuta</i> (Chinese holly)	4	DA; ab?
<i>Jacquemontia tamnifolia</i> (Jacquemontia)	4	DA; ab?
<i>Lespedeza cuneata</i> (Sericea lespedeza)	1	DA; C
<i>Ligustrum japonicum</i> (Japanese privet)	2	DA; O
<i>Ligustrum sinense</i> (Chinese privet)	1	FP, UF; C
<i>Liriope spicata</i> (Creeping lilyturf)	4	UF; i
<i>Lonicera fragrantissima</i> (Sweet breath-of-spring)	3	DA; i
<i>Lonicera japonica</i> (Japanese honeysuckle)	1	UF; O
<i>Lygodium japonicum</i> (Japanese climbing fern)	1	DA, PM; i–C
<i>Melia azedarach</i> (Chinaberry)	1	DA; ab?
<i>Morus alba</i> (White mulberry)	3	DA; r–C
<i>Murdannia keisak</i> (Marsh dewflower)	1	DA, FP, PM; C
<i>Myriophyllum aquaticum</i> (Parrot-feather)	2	PM; i–C
<i>Nandina domestica</i> (Sacred-bamboo)	2	DA, UF; ab?
<i>Paspalum notatum</i> var. <i>saurae</i> (Bahia grass)	2	DA; O
<i>Paspalum urvillei</i> (Vasey grass)	3	DA; O
<i>Persicaria longiset</i> a (Longbristle smartweed)	4	DA; C
<i>Phyllostachys aurea</i> (Golden bamboo)	2	DA; C
<i>Poa annua</i> (Annual bluegrass)	3	DA; O
<i>Pueraria montana</i> var. <i>lobata</i> (Kudzu)	1	DA; C
<i>Schedonorus arundinaceus</i> (Tall fescue)	3	DA; i–C
<i>Sesbania punicea</i> (Rattlebox)	2	PM; O
<i>Sonchus oleraceus</i> (Common sow-thistle)	4	DA; r
<i>Sorghum halepense</i> (Johnson grass)	3	DA; O
<i>Stachys floridana</i> (Florida betony)	3	DA; C
<i>Triadica sebifera</i> (Chinese tallow-tree)	1	FP, PM; i–C
<i>Verbascum thapsus</i> (Common mullein)	4	DA; r
<i>Verbena bonariensis</i> (Purpletop vervain)	4	DA; ab?
<i>Wisteria sinensis</i> (Chinese wisteria)	1	DA; ab?

the overgrown logging road and cleared mound areas (Fig. 2B). Below is a summary of the flora of these general community types based on Wharton (1978), Froeschauer (1989), specimen data, and field observations (W.B. Zomlefer & B.L. Wichmann, pers. obs.): upland forest (mixed hardwood and mixed hardwood–pine), swamp forest, open wetland, and disturbed areas. These categories, which may intergrade, are provided as a guide for placing plant species within the context of a habitat.

Upland Forests.—The forested uplands at the Ocmulgee Mounds unit (Fig. 5) have been modified by disturbance into secondary growth hardwood and mixed hardwood–pine (Wharton 1978; Burkholder et al. 2010). The dominants are oaks (e.g., *Quercus falcata*, *Q. nigra*, *Q. phellos*), hickories (e.g., *Carya glabra*, *C. ovata*), and loblolly pine (*Pinus taeda*); a few areas along the southeastern section of Ocmulgee National Monument Road are dominated by pine. Other codominant trees include *Acer* spp. (e.g., *A. floridanum*, *A. rubrum*), *Fagus*

grandifolia, *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Magnolia grandiflora*, and *Ulmus americana*. The composition of the understory shrubs and shrubby trees vary according to the overstory and location in the park and commonly include *Aesculus pavia*, *Asimina parviflora*, *Calycanthus floridus*, *Carpinus caroliniana*, *Celtis laevigata*, *Cercis canadensis*, *Cornus florida*, *Crataegus* spp. (e.g., *C. spathulata*), *Diospyros virginiana*, *Ilex* spp. (e.g., *I. decidua*), *Ligustrum sinense*, *Prunus serotina*, and *Vaccinium arboreum*. *Gelsemium sempervirens*, *Hedera helix*, *Lonicera japonica*, *Smilax* spp. (e.g., *S. bona-nox*), *Toxicodendron radicans*, and *Vitis* spp. (e.g., *V. rotundifolia*) comprise some frequent vine species intertwined amongst the shrubs and over the ground cover.

Understory vegetation is much more diverse in the mixed hardwood forests than in those areas where pine predominates. The early spring flora species, inhabiting the forest floor before the hardwood canopy fully closes, include: *Erythronium umbilicatum*, *Hexastylis arifolia*, *Luzula echinata*, *Melica mutica*, *Myosotis macrosperma*, *Podophyllum peltatum*, *Polygonatum biflorum*, and *Viola sororia*. Woodland species such as *Asplenium platyneuron*, *Conoclinium coelestinum*, *Dichanthelium commutatum*, *Elephantopus carolinianus*, *Oplismenus hirtellus*, *Symphytotrichum* spp. (e.g., *S. pilosum*), and *Tipularia discolor* appear later in the season, especially under canopy openings such as trail sides.

Floodplain Forest.—Swamp or bottomland hardwood (floodplain, alluvial, or palustrine forest) consists of seasonally inundated, mesic lowland that generally remains moist throughout the year (Wharton 1978). At the Ocmulgee Mounds unit, this community type is associated with the Ocmulgee River and Walnut Creek in the southwestern and eastern sections of the park, mainly bordering open marshland (Figs. 2A and 5). The low-lying Lamar Mounds unit is almost entirely covered by dense floodplain forest (Williams 1999) since the partial levee (Fig. 2B) provides little protection from periodic flooding by the nearby Ocmulgee River (Fig. 1B).

Within the swamp forest, tall trees create a closed-canopy over an often impenetrable thicket of shrubby understory. Dominant trees usually include *Acer* spp. (e.g., *A. negundo*, *A. rubrum*), *Betula nigra*, *Fraxinus pennsylvanica*, *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Nyssa biflora*, *Platanus occidentalis*, *Quercus* spp. (e.g., *Q. nigra*), and *Ulmus americana*. Swamp communities at OCMU can also be characterized by the following co-dominants and/or understory woody species: *Alnus serrulata*, *Asimina parviflora*, *Bignonia capreolata*, *Carpinus caroliniana*, *Crataegus viridis*, *Itea virginica*, *Ilex* spp. (e.g., *I. vomitoria*), *Ligustrum sinense*, *Lonicera japonica*, *Ostrya virginiana*, *Pinus taeda*, *Salix caroliniana*, *Smilax* spp. (e.g., *S. laurifolia*), *Triadica sebifera*, *Toxicodendron radicans*, and *Vitis* spp. (e.g., *V. rotundifolia*). A relatively sparse understory of ferns, such as *Onoclea sensibilis* and *Woodwardia areolata*, and angiosperm species, such as *Arundinaria gigantea*, *Arisaema triphyllum*, *Commelina virginica*, *Juncus coriaceus*, *Justicia ovata*, *Leersia lenticularis*, *Lobelia cardinalis*, *Lycopus rubellus*, and *Pilea pumila*, may occur under openings in the bottomland canopy.

Open Wetlands.—Open wetland (or marsh) is a broad designation, here applied to aquatic areas at the Ocmulgee Mounds unit where the canopy is lacking or sparse and standing water is often present for at least part of the year. This habitat type is mainly associated with floodplain areas of the Ocmulgee River and its tributary, Walnut Creek (Fig. 5). The large marsh, Walnut Creek wetlands (Figs. 2A, 3, and 5), developed from hydrological changes caused by the construction of I-16 (Wheeler 2007; Burkholder et al. 2010). Prior to 1994, this open wetland was forested and seasonally flooded but the area now contains standing water all year.

In the marshy areas of this park unit, sedges and grasses predominate, including *Carex* spp. (e.g., *C. louisianica*, *C. lupulina*), *Cyperus* spp. (e.g., *C. erythrorhizos*, *C. retrorsus*), *Leersia virginica*, *Panicum anceps*, *P. rigidulum*, *Phanopyrum gymnocarpon*, *Rhynchospora globularis*, and *Scirpus cyperinus*. Floating aquatics include *Alternanthera philoxeroides*, *Myriophyllum aquaticum*, and *Najas minor*. Other common herbaceous species are *Erechtites hieracifolius*, *Galium triflorum*, *Hydrocotyle verticillata*, *Iris hexagona*, *Juncus dichotomus*, *Ludwigia* spp. (e.g., *L. decurrens*), *Mikania scandens*, *Mimulus alatus*, *Murdannia keisak*, *Packera glabella*, *Persicaria* spp. (e.g., *P. hydropiperoides*), *Sagittaria latifolia*, *Saururus cernuus*, and *Typha latifolia*. *Berchemia scandens*, *Brunichia ovata*, *Cephalanthus occidentalis*, *Cornus stricta*, *Forestiera acuminata*, *Hibiscus laevis*, *Rubus pensilvanicus*, *Sabal minor*, *Sambucus canadensis*, *Smilax* spp. (e.g., *S. glauca*), and *Vitis* spp. (e.g., *V. aestivalis*) are examples of common woody vines and scattered shrubs that occur along the margins of these open wetlands. The bordering areas may also comprise some tree species (such as *Acer floridanum*) and seedlings of *Triadica sebifera*.

Disturbed or Ruderal Areas.—This general category refers to cleared sections around public access areas (parking lots, roadsides, trails, railroad right-of-way) and mowed fields surrounding earthworks and other historic sites at the Ocmulgee Mounds unit (see Fig. 5). Disturbed areas in the Lamar Mounds swamp are restricted to the most exposed sites (cleared mounds and trail margins) and are characterized by species preferring damp habitat such as *Eupatorium serotinum*, *Hypericum mutilum*, *Perilla frutescens*, *Persicaria longiseta*, and *Smilax* spp. (e.g., *S. rotundifolia*).

In the main park, ruderal areas are characterized by a much more variable and diverse flora that includes many non-native and invasive species and a predominance of graminoids, including: *Andropogon* spp. (e.g., *A. glomeratus*), *Bromus racemosus*, *Cynodon dactylon*, *Dactylis glomerata*, *Danthonia spicata*, *Dichanthelium* spp. (e.g., *D. dichotomum*), *Echinochloa crusgalli*, *Eragrostis* spp. (e.g., *E. curvula*), *Festuca subverticillata*, *Lolium perenne*, *Panicum* spp. (e.g., *P. virgatum*), *Paspalum* spp. (e.g., *P. dilatatum*), *Setaria parviflora*, *Sorghastrum nutans*, *Sorghum halepense*, and *Vulpia myuros*. Asteraceae also comprise a large component, with common species such as *Ambrosia artemisiifolia*, *Erigeron strigosus*, *Eupatorium hyssopifolium*, *Gamochaeta* spp. (e.g., *G. pensylvanica*), *Helenium amarum*, *Hypochaeris radicata*, *Krigia virginica*, *Pityopsis graminifolia*, *Solidago altissima*, *Sonchus oleraceus*, and *Youngia japonica*. *Allium canadense*, *Chaerophyllum tainturieri*, *Glandularia pulchella*, *Houstonia pusilla*, *Ipomoea* spp. (e.g., *I. cordatotriloba*), *Lamium amplexicaule*, *Lespedeza cuneata*, *Plantago* spp. (e.g., *P. lanceolata*), *Polypremum procumbens*, *Stellaria media*, *Trifolium arvense*, *Vicia* spp. (e.g., *V. sativa*), and *Viola arvensis* are examples of other widespread ruderal herbs. The borders of these areas often include woody species such as *Morus rubra*, *Prunus serotina*, *Rubus trivialis*, *Toxicodendron radicans*, and *Vitis* spp. (e.g., *V. rotundifolia*).

DISCUSSION

OCMU Management Issues and Importance of Vouchers

Ocmulgee National Monument is a historically significant park that also supports diverse wildlife as part of a greenway corridor to other natural areas to the south (DeVivo et al. 2008). The biological and cultural resources of the park have been heavily impacted by surrounding urbanization and associated degradation of the Ocmulgee River watershed. Threats affecting the flora and fauna include air and water pollution, erosion, sedimentation, and invasive exotic species (Burkholder et al. 2010). The herbarium collection for OCMU serves as a baseline for monitoring these habitats, thus providing a valuable reference for natural resource management. Encroaching development threatens the native component of the OCMU flora while contributing to an increase in non-native and weedy species that require documentation. Continued inventory efforts should also concentrate on locating significant species—both native and exotic—previously reported in the park but not yet verified by voucher specimens (see Appendix 1).

ANNOTATED CHECKLIST OF VASCULAR PLANT TAXA

This list of 436 vascular plant species, representing 112 families, represents collections from Ocmulgee National Monument now deposited at the GA herbarium. Genera, species, and infraspecific taxa are alphabetical within each family under three major groups (monilophytes [“ferns and allies”], gymnosperms, and angiosperms). Family circumscriptions follow the following sources: Smith et al. (2006) for monilophytes; FNA (1993) for gymnosperms; and APG III (2009) for angiosperms. Scientific nomenclature follows ITIS (2012) and Weakley (2011). Common names are from Weakley (2011) when available, or from Wunderlin and Hansen (2011). The few synonyms included in brackets are alternate names used in NPS reports and databases.

Specimen notations: G = Gaddy (all s.n.) [GA accession number], H = Julie Howard (one specimen, *Salpichroa organifolia*), N = Nelson, S = John D. Shepherd, Z = Zomlefer; underlined taxa = new vouchered taxa for the park by Zomlefer; * = exotic (ITIS 2012; Weakley 2011); invasive exotics (GA-EPPC 2006): [CAT 1] = Category 1, [CAT 2] = Category 2, [CAT 3] = Category 3, [CAT 4] = Category 4; rare plants: [Con] = species of special concern in Georgia (GA-DNR 2011); CULT = cultivated (i.e., planted on park grounds); (s) = sterile (non-reproductive) specimen. Locality/habitat data: LM = Lamar Mounds, DA = disturbed areas, FP = floodplain swamp, PM

= pond/marsh (open water), UF = upland forest, hab? = habitat data not recorded on specimen voucher label. Relative abundance: c = common (generally abundant throughout a particular habitat; species easily found), o = occasional (locally common and/or several individuals distributed within a habitat; species not too difficult to locate), i = infrequent (sporadic occurrence of a small number of individuals; species relatively scarce and not easily found), r = rare (very few individuals encountered), ab? = abundance data not recorded on specimen label.

MONILOPHYTES ("FERNS AND ALLIES")

Aspleniaceae

Asplenium platyneuron (L.) Britton, Sterns & Poggenb., Ebony spleenwort; DA, UF; i-o; G s.n. [262100]; N 23025; Z 2093

Athyriaceae

Athyrium asplenoides (Michx.) A.A. Eaton [*A. filix-femina* (L.) Roth ssp. *asplenoides* (Michx.) Hultén], Southern lady fern; DA, PM, UF; i; N 24364; S 4095

Blechnaceae

Woodwardia areolata (L.) Moore, Netted chain fern; FP, PM, UF; o; G s.n. [262243] (s); N 23021

Dennstaedtiaceae

Pteridium aquilinum L., Bracken; UF; o; N 23055

Dryopteridaceae

Polystichum acrostichoides (Michx.) Schott, Christmas fern; LM: hab?, ab?; S 4140 (s)

Lygodiaceae

**Lygodium japonicum* (Thunb.) Swartz, Japanese climbing fern; [CAT 1]; DA, PM; i-c; G s.n. [262175]; N 24415; Z 2100

Onocleaceae

Onoclea sensibilis L. var. *sensibilis*, Sensitive fern; PM; i; G s.n. [262188]

Osmundaceae

Osmunda spectabilis Willd. [*O. regalis* (Willd.) A. Gray var. *spectabilis* (Willd.) A. Gray], American royal fern; UF; i; G s.n. [262190] (s)
Osmundastrum cinnamomeum (L.) C. Presl, Cinnamon fern; DA; i; N 23033

Polypodiaceae

Pleopeltis polypodioides (L.) E.G. Andrews & Windham var. *michauxiana* (Weath.) E.G. Andrews & Windham [*Polypodium polypodioides* (L.) Watt], Resurrection fern; UF; c; N 23052

Thelypteridaceae

**Macrothelypteris torresiana* (Gaudich.) Ching, Mariana maiden fern; UF; i; LM: DA, FP; o; N 23026; Z 2257

GYMNOSPERMS

Cupressaceae

Juniperus virginiana L., Southern red cedar; UF; i; G s.n. [262160]

Pinaceae

Pinus taeda L., Loblolly pine; DA, UF; i; G s.n. [262196]; N 23059 (s)

ANGIOSPERMS

Acanthaceae

Dicliptera brachiata (Pursh) Spreng., Branched foldwing; UF; LM: DA, FP; o; G s.n. [262136]; Z 2387

Justicia ovata (Walter) Landau var. *ovata*, Coastal plain water-willow; LM: DA, FP; i; Z 2252

Ruellia caroliniensis (J.F. Gmel.) Steudel, Wild petunia; DA; o; N 23044

Adoxaceae

Sambucus canadensis L., Common elderberry; FP, PM; c; N 22976

Viburnum nudum L. var. *nudum*, Southern wild raisin; FP; ab?; G s.n. [262236] (s)

Alismataceae

Sagittaria latifolia Willd., Broadleaf arrowhead; PM; i; Z 2370

Altingiaceae

Liquidambar styraciflua L., Sweet gum; UF; o; G s.n. [262166]

Amaranthaceae

**Alternanthera philoxeroides* (Mart.) Griseb., Alligator-weed; [CAT 1]; PM; o-c; N 23065; Z 2117

**Amaranthus viridis* L., Slender amaranth; DA; ab?; G s.n. [262097]

Chenopodium album L., Lamb's-quarters; DA; r; Z 2376

**Dysphania ambrosioides* (L.) Mosyakin & Clemants [*Chenopodium ambrosioides* L.], Mexican-tea; DA; i; N 24399

**Gomphrena serrata* L., Arrasa con todo; DA; ab?; N 22990

Amaryllidaceae

Allium canadense L. var. *canadense*, Wild onion; DA; c; Z 2131

**Allium vineale* L., Field garlic; [CAT 4]; DA; i; Z 2095

Nothoscordum bivalve (L.) Britton, False garlic; DA; ab?; N 23621

Zephyranthes atamasca (L.) Herbert, Common atamasco-lily; PM, UF; i; N 23703; Z 2403

Anacardiaceae

Rhus copallinum L., Winged sumac; hab?; ab?; G s.n. [262212] (s)

Toxicodendron radicans (L.) Kuntze ssp. *radicans*, Eastern poison ivy; DA; ab?; N 22932

Annonaceae

Asimina parviflora Dunal, Small-flowered pawpaw; FP, UF; r-o; N 23032 (s), 23054, 23684

Asimina triloba (L.) Dunal, Common pawpaw; UF; i; N 23063 (s)

Apiaceae

**Anthriscus caucalis* Bieb., Bur chervil; DA; i; N 23675

Chaerophyllum tainturieri Hook., Southern chervil; DA; o; N 23660

Sanicula canadensis L., Canadian black snakeroot; DA; i; Z 2127

Apocynaceae

Gonolobus suberosus (L.) R. Br. [*Matelea gonocarpus* (Walter) Shinners], Anglepod; DA, PM, UF; c-o; N 22969; 23070; Z 2129

Trachelospermum difforme (Walter) A. Gray, Climbing dogbane; FP; ab?; N 22960

Aquifoliaceae

Ilex ambigua (Michx.) Torr., Carolina holly; UF; ab? N 23699, 24362

**Ilex cornuta* Lindl. & Paxton, Chinese holly; [CAT 4]; DA; ab?; N 24409

Ilex decidua Walter, Possum-haw; DA, UF; o-c; N 22927 (s), 22934, 23682

Ilex opaca Aiton var. *opaca*, American holly; UF; i; G s.n. [262155]

Ilex vomitoria Aiton, Yaupon; DA, UF; ab?; N 23004, 23655

Araceae

Arisaema dracontium (L.) Schott, Green dragon; PM; ab?; G s.n. [262099] (s)

Arisaema triphyllum (L.) Schott, Jack-in-the-pulpit; LM: FP; ab?; S 4147

Araliaceae

Aralia spinosa L., Devil's-walking-stick; DA; ab?; N 22994

**Hedera helix* L., English ivy; [CAT 1]; UF; c; N 23048 (s)

Hydrocotyle verticillata Thunb., Whorled marsh pennywort; PM; i; G s.n. [262153] (s)

Arecaceae

Sabal minor (Jacq.) Pers., Dwarf palmetto; PM; i; N 22970; Z 2122

Aristolochiaceae

Hexastylis arifolia (Michx.) Small [*Asarum arifolium* Michx.], Little brown jug; UF; i; N 23686

Asparagaceae

**Asparagus officinalis* L., Asparagus; DA; i; N 22987, 24389; Z 2096 (s)

**Liriope spicata* Lour., Creeping lilyturf; [CAT 4]; UF; i; Z 2290

Polygonatum biflorum L. var. *biflorum*, Small Solomon's-seal; UF; i; G s.n. [262203]; N 23701

Yucca filamentosa L., Curlyleaf yucca; DA, UF; i; G s.n. [262245] (s); N 23053 (s), 23694 (s)

Yucca gloriosa L., Mound-lily yucca; DA; ab?; G s.n. [262246] (s), [262247]

Asteraceae

Acmella repens (Walter) Rich. ex Pers., Creeping spotflower; LM; DA, FP; r; Z 2256

Ambrosia artemisiifolia L., Ragweed; DA; c; G s.n. [262098]; N 24388

Bidens bipinnata L., Spanish needles; hab?; ab?; G s.n. [262103]

Bidens discoidea (Torr. & A. Gray) Britton, Few-bracted beggar-ticks; FP; ab?; G s.n. [262104]

Bidens frondosa L., Devil's beggar-ticks; PM; i; N 24412

Brickellia eupatorioides (L.) Shinnars [*Kuhnia eupatorioides* L.], False boneset; UF; ab?; S 4069

Cirsium horridulum Michx. var. *horridulum*, Purple thistle; DA; ab?; N 23716

Conoclinium coelestinum (L.) DC., Mistflower; UF; ab?; G s.n. [262125]

Conyza canadensis (L.) Cronquist var. *canadensis*, Common horseweed; DA; i; Z 2277

Elephantopus carolinianus Raeusch., Leafy elephant's-foot; DA, UF; o; G s.n. [262142]; Z 2286

Erechtites hieraciifolius (L.) Raf., Fireweed; PM; c; Z 2380

Erigeron philadelphicus L. var. *philadelphicus*, Philadelphia-daisy; DA; i; G s.n. [262146]; N 23709

Erigeron strigosus Muhl. ex Willd. var. *strigosus*, Common rough fleabane; DA; o-c; N 24402; Z 2110

Eupatorium hyssopifolium L., Hyssopleaf eupatorium; DA; c; Z 2291, 2365

Eupatorium serotinum Michx., Late eupatorium; LM; DA; c; Z 2385

**Facelis retusa* (Lam.) Schultz-Bip., Trampweed; DA; i; N 23642

**Gamochaeta coarctata* (Willd.) Kerguelen, American everlasting; DA; i; Z 2402

Gamochaeta pensylvanica (Willd.) Cabrera, Pennsylvania everlasting; DA; o; N 23639

Gamochaeta purpurea (L.) Cabrera, Spoonleaf purple everlasting; DA; i; G s.n. [262148]; Z 2393

**Helenium amarum* (Raf.) H. Rock, Bitterweed; DA; o; N 24403

**Heterotheca latifolia* Buckley var. *latifolia*, Common camphorweed; DA; i; N 24385

**Hypochaeris radicata* L., Spotted cat's-ear; DA; ab?; N 22998

Iva annua L., Sumpweed; DA; c; Z 2384

Krigia virginica (L.) Willd., Virginia dwarf-dandelion; DA; o; N 23650; Z 2392

Lactuca floridana (L.) Gaertn., Woodland lettuce; DA, PM; i; Z 2279

Mikania scandens (L.) Willd., Climbing hempweed; FP, PM; c; N 22968

Packera glabella (Poir.) C. Jeffrey, Butterweed; FP, PM; o; N 23707; S 3052

Pityopsis graminifolia (Michx.) Small var. *graminifolia*, Narrowleaf silkgrass; DA; ab?; G s.n. [262199]

Solidago altissima L. var. *altissima*, Tall goldenrod; DA; i-c; N 24380, 24387

**Sonchus oleraceus* L., Common sow-thistle; [CAT 4]; DA; r; Z 2101

Symphotrichum lanceolatum (Willd.) G.L. Nesom, White panicle aster; FP; i; N 24372

Symphotrichum pilosum (Willd.) G.L. Nesom, White oldfield aster; UF; ab?; S 4073

Verbesina occidentalis Vellozo, Southern crownbeard; FP; ab?; G s.n. [262235]

Vernonia gigantea (Walter) Trel., Giant ironweed; FP, PM; i; G s.n. [262234]; N 22979, 24377

Xanthium strumarium L., Cocklebur; DA, FP; c; N 24390

**Youngia japonica* (L.) DC., Asiatic hawk's-beard; DA; ab?; G s.n. [262244]; N 23672

Berberidaceae

**Nandina domestica* Thunb., Sacred-bamboo; [CAT 2]; DA, UF; ab?; G s.n. [262183] (s)

Podophyllum peltatum Michx., May-apple; UF; o; G s.n. [262202]; Z 2395

Betulaceae

Betula nigra L., River birch; FP; o; G s.n. [262102] (s)

Carpinus caroliniana Walter, American hornbeam; UF; o; N 23696

Ostrya virginiana (Mill.) K. Koch, American hop-hornbeam; FP, UF; i-o; G s.n. [262191] (s), [262192] (s)

Bignoniaceae

Bignonia capreolata L., Cross-vine; DA; c; N 23712; Z 2394

Campsis radicans (L.) Seemans, Trumpet-creeper; PM; ab?; N 22975

Boraginaceae

**Heliotropium amplexicaule* Vahl, Wild heliotrope; DA; o; Z 2275

**Heliotropium indicum* L., Turnsole; FP; r; N 24371

Myosotis macrosperma Engelm., Bigseed forget-me-not; DA, UF; o; N 23666, 23702; Z 2401

Nemophila aphylla (Nutt.) R. & M., Smallflower baby blue eyes; DA; o-c; N 23632; Z 2391

Phacelia dubia (L.) Trel., Smallflower phacelia; DA; r-c; G s.n. [262195]; N 23623, 23654, 23669; S 3018

Brassicaceae

**Arabidopsis thaliana* (L.) Heynh., Mouse-ear cress; DA; ab?; N 23673

**Capsella bursa-pastoris* (L.) Medik, Common shepherd's purse; DA; o; N 23679

**Cardamine hirsuta* L., Hairy bittercress; DA; ab?; G s.n. [262107]

Cardamine pensylvanica Muhl. ex Willd., Quaker bittercress; DA; ab?; N 23715

Lepidium virginicum L. ssp. *virginicum*, Poor man's pepper; DA; i; Z 2136

**Lunaria annua* L., Annual honesty; DA; i; N 23680

Bromeliaceae

Tillandsia usneoides (L.) L., Spanish-moss; FP; o; G s.n. [262225]

Cactaceae

Opuntia humifusa Raf., Southern prickly-pear; DA; i-c; N 23038 (s); Z 2130

Calycanthaceae

Calycanthus floridus L. var. *floridus*, Sweet-shrub; UF; i-o; G s.n. [262105] (s); N 23056

Campanulaceae

Lobelia cardinalis L., Cardinal flower; LM; FP; i; Z 2389

Lobelia elongata Small, Longleaf lobelia; PM; i; G s.n. [262167]

Triodanis biflora (Ruiz. & Pav.) Greene, Small Venus' looking-glass; DA; i; N 23636

**Wahlenbergia marginata* (Thunb.) DC., Southern rockbell; DA, UF; o; G s.n. [262241]; N 23649

Cannabaceae

Celtis laevigata Willd., Southern hackberry; DA, UF; r; N 23671; G s.n. [262122] (s)

Caprifoliaceae

**Lonicera fragrantissima* Lindl. & Paxton, Sweet breath-of-spring; [CAT 3]; DA; i; N 23042 (s)

**Lonicera japonica* Thunb., Japanese honeysuckle; [CAT 1]; UF; o; N 22925

Valerianella radiata (L.) Dufr., Beaked cornsalad; DA; c; N 23664; Z 2400

Caryophyllaceae

**Cerastium glomeratum* Thuill., Sticky mouse-ear; DA; i; N 23640

**Stellaria media* (L.) Villars, Common chickweed; DA; i; N 23622, 23629

Celastraceae

Euonymus americanus L., Strawberry-bush; DA, UF; i; G s.n. [262147]; N 23060

Cistaceae

Lechea mucronata Raf., Hairy pinweed; DA; r; N 24349

Lechea racemulosa Michx., Illinois pinweed; DA; i; N 24381

Commelinaceae

Commelina virginica L., Virginia dayflower; FP; ab?; N 22999

**Murdannia keisak* (Hassek.) Hand.-Mazz., Marsh dewflower; [CAT 1]; DA, FP, PM; c; G s.n. [262182]; N 23015 (s)

Tradescantia ohiensis Raf., Smooth spiderwort; UF; i; G s.n. [262226] (s)

Convolvulaceae

Cuscuta gronovii Willd., Common dodder; FP; i; N 24365

Dichondra carolinensis Michx., Carolina ponyfoot; DA; o; N 23633

Ipomoea coccinea L., Scarlet creeper; DA; ab?; S 4103

Ipomoea cordatotriloba Dennstedt var. *cordatotriloba*, Coastal morning-glory; DA; o; G s.n. [262154]; Z 2369

Ipomoea hederacea (L.) Jacq., Ivyleaf morning-glory; DA; o; N 24395; Z 2378

Ipomoea pandurata (L.) G.F.W. Mey., Wild sweet potato; DA; ab?; N 22992

**Jacquemontia tamnifolia* (L.) Griseb., Jacquemontia; [CAT 4]; DA; ab?; S 4109

Cornaceae

Cornus florida L., Flowering dogwood; UF; ab?; G s.n. [262126]

Cornus stricta Lam. [*C. foemina* Mill.], Southern swamp dogwood; PM, UF; o; G s.n. [262127] (s); N 22962

Nyssa biflora Walter, Swamp tupelo; FP; ab?; G s.n. [262185]

Nyssa ogeche Bartram ex Marshall, Ogeechee lime; FP; i; G s.n. [262186]

Cucurbitaceae

Cayaponia quinqueloba (Raf.) Shinnars, Fivelobe melonleaf; Con; PM, LM; DA; r-o; N 23064; Z 2259

Melothria pendula L., Creeping cucumber; DA; ab?; N 23007

Cyperaceae

Carex abscondita Mack., Thicket sedge; UF; i; N 23051

Carex albicans Willd. ex Spreng. var. *australis* (L.H. Bailey) J. Rettig, Stellate sedge; UF; o; G s.n. [262108]

Carex amphibola Steud., Amphibious sedge; DA; i; N 23663

Carex blanda Dewey, Eastern woodland sedge; UF; i; G s.n. [262109]

Carex cephalophora Muhl. ex Willd., Oval-leaf sedge; DA; i; N 23622

Carex crebriflora Wiegand, Coastalplain sedge; UF; i; G s.n. [262110]

Carex crinita Lam., Fringed sedge; DA; o; N 23016

Carex debilis Michx., White-edge sedge; UF; i; N 23697

Carex digitalis Willd. var. *floridana* (L.H. Bailey) Naczi, Slender woodland sedge; DA; ab?; N 23634

Carex flaccosperma Dewey, Thinfruit sedge; LM; hab?; ab?; S 4149

Carex frankii Kunth, Frank's sedge; LM; DA, FP; o; Z 2253

Carex joorii L.H. Bailey, Joor'sedge; FP; i; G s.n. [262111]

Carex laxiflora Lam., Broad looseflower sedge; UF; i; G s.n. [262112]

Carex leavenworthii Dewey, Leavenworth's sedge; DA; ab?; N 23653

Carex louisianica L.H. Bailey, Louisiana sedge; PM; i; LM; DA, FP; o; N 22945; Z 2251

Carex lupulina Muhl. ex Willd., Hopsedge; PM; o; N 22951; G s.n. [262113]; Z 2121

Carex lurida Wahl., Shallow sedge; DA, UF; ab?; N 23008

Carex muehlenbergii Schkuhr ex Willd. var. *muehlenbergii*, Muehlenberg's sedge; DA; ab?; N 23646

Carex oxylepis Torr. & Hook., Sharpsscale sedge; PM; ab?; G s.n. [262114], [262115]

Carex retroflexa Willd., Reflexed sedge; DA; i-o; N 23661, 23668

Carex seorsa Howe, Weak stellate sedge; PM; i; G s.n. [262116]

Carex striatula Michx., Lined sedge; UF; i; G s.n. [262117]; N 23691

Carex texensis (Torr.) L.H. Bailey, Texas sedge; PM; ab?; G s.n. [262118]

Carex typhina Michx., Cattail sedge; PM, UF; i; G s.n. [262119]; N 23041

Carex vulpinoidea Michx., Fox sedge; DA, PM; ab?; N 23711

Cyperus echinatus (L.) Wood, Globe flatsedge; DA; c; N 22953

Cyperus erythrorhizos Muhl., Redroot flatsedge; FP, PM; c; N 24375

**Cyperus iria* L., Ricefield flatsedge; DA; i; G s.n. [262130]

Cyperus retrorsus Chapm., Pinebarren flatsedge; DA, PM; o; G s.n. [262131]; N 22997; Z 2280

Cyperus strigosus L., False nutsedge; DA; ab?; G s.n. [262132]; N 23009

Cyperus virens Michx., Green flatsedge; FP, PM; o; G s.n. [262133]; N 22943

Rhynchospora globularis (Chapm.) Small var. *globularis*, Globe beaksedge; FP, PM; ab?; G s.n. [262213]

Scirpus cyperinus (L.) Kunth, Woolgrass bulrush; FP, PM; o-c; G s.n. [262218]; N 22967; Z 2278

Dioscoreaceae

**Dioscorea polystachya* Tucz., Cinnamon vine; [CAT 2]; PM; ab?; N 22978 (s)

Ebenaceae

Diospyros virginiana L., American persimmon; DA, UF; ab?; N 22930 (s)

Elaeagnaceae

**Elaeagnus pungens* Thunb., Thorny-olive; [CAT 2]; UF; ab?; G s.n. [262141] (s)

Ericaceae

Lyonia lucida (Lam.) K. Koch, Shining fetterbush; FP; o; G s.n. [262176]

Rhododendron canescens (Michx.) Sweet, Piedmont azalea; UF; ab?; N 23692

Vaccinium arboreum Marshall, Sparkleberry; hab?; ab?; G s.n. [262232]

Vaccinium corymbosum L., Smooth highbush blueberry; DA; ab?; G s.n. [262233] (s)

Euphorbiaceae

Acalypha rhomboidea Raf., Rhombic copperleaf; DA; i; N 24413

Cnidoscolus stimulosus (Michx.) Engelm. & A. Gray, Spurge-nettle; DA; i; N 23041

**Croton capitatus* Michx., Woolly croton; DA; ab?; N 24408

Euphorbia cyathophora Murr., Painted leaf; DA; i; Z 2379

Euphorbia hyssopifolia L. [*Chamaesyce hyssopifolia* (L.) Small], Hys-sopleaf sandmat; hab?; i; S 4052

**Triadica sebifera* (L.) Small, Chinese tallow-tree; [CAT 1]; FP, PM; i-c; N 22965 (s), 24376; Z 2103

Fabaceae

**Albizia julibrissin* Durazz., Silktree; [CAT 1]; DA, UF; ab?; N 22952

Centrosema virginianum (L.) Benth., Spurred butterfly-pea; DA; i; Z 2371

Cercis canadensis L. var. *canadensis*, Eastern redbud; DA/UF; o-c; N 22926; Z 2360

Chamaecrista nictitans (L.) Moench var. *nictitans*, Common sensitive-plant; DA; ab?; G s.n. [262124]

Desmodium ciliare (Muhl. ex Willd.) DC., Hairy small-leaf ticktrefoil; DA; i; G s.n. [262134]

Desmodium paniculatum (L.) DC. var. *paniculatum*, Panicked ticktrefoil; DA; ab?; G s.n. [262135]

Galactia volubilis (L.) Britton var. *volubilis*, Eastern milkpea; DA; o; Z 2276

**Lespedeza cuneata* G. Don, Sericea lespedeza; [CAT 1]; DA; c; G s.n. [262161]; Z 2383

Lespedeza stuevei Nutt., Velvety lespedeza; DA; o; Z 2373

**Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maes. & Alm., Kudzu; [CAT 1]; DA; c; N 24392

**Senna obtusifolia* (L.) Irwin & Barneby, Sicklepod; DA; o; Z 2375

**Sesbania punicea* Benth., Rattlebox; [CAT 2]; PM; o; Z 2284

Sesbania vesicaria (Jacqu.) Elliott [*Glottidium vesicarium* (Jacq.) R.M. Harper], Bladderpod; FP; c; N 24369

Tephrosia spicata (L.) Pers., Spiked hoarypea; DA; i; N 23027

**Trifolium arvense* L., Rabbitfoot clover; DA; c; Z 2113

**Trifolium dubium* Sibth., Low hop clover; DA; i; N 23618, 23626; S 3066

**Vicia hirsuta* (L.) S.F. Gray, Tiny vetch; DA; ab?; N 23713

**Vicia lathyroides* L., Spring vetch; DA; ab?; N 23620

**Vicia sativa* (L.) Ehret ssp. *nigra* (L.) Ehrh., Narrowleaf vetch; DA; ab?; N 23631; S 3044

**Vicia tetrasperma* (L.) Scherb., Slender vetch; DA; ab?; N 23665

**Wisteria sinensis* (Sims) DC., Chinese wisteria; [CAT 1]; DA; ab?; G s.n. [262242]

Fagaceae

Castanea pumila (L.) Mill., Common chinquapin; UF; ab?; N 24378 (s)

Fagus grandifolia Ehrh., American beech; UF; i; N 23687

Quercus coccinea Wangenh., Scarlet oak; LM: DA, FP; i; Z 2265

Quercus falcata Michx., Spanish oak; UF; ab?; G s.n. [262207]

Quercus laurifolia Michx., Laurel oak; FP; ab?; G s.n. [262208] (s)

Quercus lyrata L., Overcup oak; FP; ab?; G s.n. [262209] (s)

Quercus michauxii Nutt., Basket oak; DA; ab?; S 3075

Quercus nigra L., Water oak; FP, UF; LM: DA, FP; o; G s.n. [262210]; Z 2266, 2285 (s), 2287 (s)

Quercus phellos L., Willow oak; UF; ab?; S 4127 (s)

Quercus shumardii Buckley, Shumard oak; UF; ab?; G s.n. [262211]

Quercus velutina Lam., Black oak; UF; LM: DA, FP; i; N 23040 (s); Z 2262

Gelsemiaceae

Gelsemium sempervirens (L.) St.-Hil., Carolina jessamine; UF; ab?; G s.n. [262149]

Geraniaceae

Geranium carolinianum L., Carolina crane's-bill; DA; i; N 23624

**Geranium molle* L., Dove's-foot crane's-bill; DA; ab?; N 23678

Haloragaceae

**Myriophyllum aquaticum* (Vell.) Verdc., Parrot-feather; [CAT 2]; PM; i-c; N 22948 (s), 24411 (s); Z 2115 (s)

Hamamelidaceae

Hamamelis virginiana L., Witch-hazel; UF; i; N 23689 (s)

Hydrangeaceae

Hydrangea quercifolia Bartram, Oakleaf hydrangea; UF; ab?; G s.n. [262151]; N 23693 (s)

Hydrocharitaceae

**Najas minor* All., Spinyleaf naiad; PM; c?; N 22949 (s)

Hydroleaceae

Hydrolea quadrivalvis Walter, Waterpod; PM; ab?; N 22981

Hypericaceae

Hypericum gentianoides (L.) Britton, Sterns & Poggenb., Pineweed; DA; o; N 24397

Hypericum hypericoides (L.) Krantz, St. Andrew's cross; UF; ab?; G s.n. [262152]

Hypericum mutilum L., Dwarf St.-John's-wort; DA; i; LM: DA, FP; i; N 23002; Z 2250

Hypericum walteri J.F. Gmel. [*Triadenum walteri* (J.F. Gmel.) Gleason], Walter's marsh St.-John's-wort; PM; o; N 22984 (s)

Iridaceae

Iris hexagona Walter, Anglepod blue flag; PM; i; N 23698; Z 2102

Sisyrinchium atlanticum E.P. Bicknell, Atlantic blue-eyed grass; UF; ab?; S 4164

Iteaceae

Itea virginica L., Virginia-willow; FP; o; G s.n. [262156]

Juglandaceae

Carya cordiformis (Wang.) K. Koch, Bitternut hickory; UF; i; N 23058 (s)

Carya glabra (Mill.) Sweet, Pignut hickory; UF; ab?; G s.n. [262121]

**Carya illinoensis* (Wangenh.) K. Koch, Pecan; DA; ab?; N 22989

Carya ovata (Mill.) K. Koch, Common shagbark hickory; UF; o-c; Z 2292 (s), 2399

Carya pallida (Ashe) Engl. & Graebn., Sand hickory; UF; ab?; S 3092

Carya tomentosa (Lam. ex Poir.) Nutt. ex Elliott [*C. alba* (L.) Nutt.], Mockernut hickory; UF; ab?; G s.n. [262120] (s)

Juncaceae

Juncus coriaceus Mack., Leathery rush; FP; ab?; G s.n. [262157]

Juncus dichotomus Elliott, Forked rush; PM, UF; i-o; G s.n. [262158], [262159]

Luzula bulbosa (Alph. Wood) Smyth & L.C.R. Smyth, Bulbous wood-sedge; DA; i; N 23647

Luzula echinata (Small) F.J. Hermann, Spreading wood-rush; UF; i-o; G s.n. [262174]; N 23688

Lamiaceae

Callicarpa americana L., Beautyberry; UF; i; N 23023

**Lamium amplexicaule* L., Henbit; DA; o; N 23643

**Lamium purpureum* L., Purple dead-nettle; DA; ab?; N 23652

Lycopus rubellus Moench., Stalked bugleweed; DA, FP; r-i; N 23034 (s); 24366

Monarda punctata L., Eastern horse-mint; DA; ab?; N 24406

**Perilla frutescens* (L.) Britton, Beefsteak plant; LM: DA; c; Z 2386

Salvia lyrata L., Lyreleaf sage; DA; ab?; N 23659

Scutellaria lateriflora L., Mad dog skullcap; FP; i; N 24373 (s)

**Stachys floridana* Shuttlw. ex Benth., Florida betony; [CAT 3]; DA; c; N 24394 (s)

Trichostema dichotomum L., Common blue curls; DA, UF; ab?; G s.n. [262227]

Lauraceae

Lindera benzoin (L.) Blume, Northern spicebush; hab?; i; G s.n. [262164]

Persea palustris (Raf.) Sargent, Swamp bay; FP; i; N 23020

Sassafras albidum (Nutt.) Nees, Sassafras; DA, UF; i; N 23031 (s); Z 2361 (s)

Liliaceae

Erythronium umbilicatum Parks & Hardin, Trout lily; UF; i; N 23685

Linderniaceae

Lindernia dubia (L.) Pennell var. *dubia*, Moistbank false pimpernel; FP, PM; c; G s.n. [262165]; N 24374

Magnoliaceae

Liriodendron tulipifera L., Tulip-tree; UF; o; N 23013 (s); S 4156

Magnolia grandiflora L., Southern magnolia; UF; r; N 23049 (s)

Magnolia virginiana L., Sweet bay; DA; i; N 23029 (s)

Malvaceae

Hibiscus laevis All., Smooth rose-mallow; PM; i-o; N 22973, 24414; Z 2116

Modiola caroliniana (L.) G. Don, Bristly-mallow; DA; ab?; N 24410

**Sida rhombifolia* L., Arrowleaf sida; DA; ab?; G s.n. [262220]

Melanthiaceae

Trillium maculatum Raf., Mottled trillium; PM?; ab?; S 3047

Meliaceae

**Melia azedarach* L., Chinaberry; [CAT 1]; DA; ab?; G s.n. [262178]

Menispermaceae

Calyccarpum lyonii (Pursh) A. Gray, Cupseed; PM; ab?; G s.n. [262106]

Cocculus carolinus (L.) DC., Coralbeeds; DA; o; N 22959; Z 2099 (s)

Menispermum canadense L., Moonseed; DA, PM; ab?; G s.n. [262179] (s)

Moraceae

**Morus alba* L., White mulberry; [CAT 3]; DA; r-c; N 23037 (s), 23676; Z 2125

Morus rubra L., Red mulberry; UF; LM: DA, FP; i-o; G s.n. [262181] (s); N 22939 (s); Z 2261 (s)

Myricaceae

Morella cerifera (L.) Small, Common wax-myrtle; DA; ab?; S 4113

Nyctaginaceae

**Mirabilis jalapa* L., Garden four-o'clock; DA; o; Z 2377

Oleaceae

Forestiera acuminata (Michx.) Poir., Swamp privet; PM; o; N 22972 (s)

Fraxinus caroliniana Mill., Water ash; FP; i; N 22985 (s)

Fraxinus pennsylvanica Marshall, Green ash; FP; ab?; N 22940 (s)

**Ligustrum japonicum* Thunb., Japanese privet; [CAT 2]; DA; o; N 23046

**Ligustrum sinense* Lour., Chinese privet; [CAT 1]; FP, UF; C; N 23012; Z 2283

Onagraceae

Ludwigia decurrens Walter, Wingstem water-primrose; PM; o; G s.n. [262169; specimen comprises detached infructescences], [262170]

Ludwigia glandulosa Wahl., Small-flowered seedbox; PM; o; N 22950

Ludwigia leptocarpa (Nutt.) Hara, Water-willow; FP; ab?; G s.n. [262171]

Ludwigia palustris (L.) Elliott, Common water-purslane; DA; ab?; N 23001

Ludwigia peploides Kunth var. *glabrescens* (Kuntze) Shinnars, Floating primrosewillow; PM; r; G s.n. [262172]; Z 2120

Ludwigia repens J.R. Forst., Creeping seedbox; hab?; ab?; G s.n. [262173]

Oenothera laciniata L., Cutleaf evening-primrose; DA; ab?; G s.n. [262187]

Orchidaceae

Tipularia discolor (Pursh) Nutt., Crane fly orchid; UF; r; N 23700 (s)

Orobanchaceae

Agalinis fasciculata Raf., Beach false foxglove; DA; i-c; N 24401, 24407; S 4114; Z 2374

Oxalidaceae

Oxalis dillenii Jacq., Southern yellow wood-sorrel; DA; i; N 23066; 23625; S 3065

**Oxalis articulata* Savigny in Lam. [*O. rubra* A. St.-Hil.], Windowbox wood-sorrel; DA; o; Z 2134

Passifloraceae

Passiflora incarnata L., Maypops; DA; o; N 22957

Passiflora lutea L. var. *lutea*, Eastern yellow passionflower; UF; ab?; N 22938 (s)

Phymaceae

Mimulus alatus Aiton, Winged monkey-flower; PM; LM: DA, FP; o; N 22977; Z 2274

Plantaginaceae

Callitriche heterophylla Pursh var. *heterophylla*, Common water-starwort; LM: PM; ab?; S 4145

Nuttallanthus canadensis (L.) D.A. Sutton, Common toadflax; DA; i; G s.n. [262184]; N 23648

**Plantago aristata* Michx., Buckthorn plantain; DA; o; Z 2132a

**Plantago lanceolata* L., English plantain; DA; o; Z 2133

Plantago rugellii Desc., American plantain; LM: DA; o; Z 2268

Plantago wrightiana Desc., Wright's plantain; DA; o; Z 2132b

**Veronica arvensis* L., Corn speedwell; DA; ab?; N 23619; S 3037

Platanaceae

Platanus occidentalis J.F. Gmel., Sycamore; PM, UF; i-c; G s.n. [262200]; Z 2289

Poaceae

Andropogon glomeratus (Walter) Britton, Bushy bluestem; DA; o; Z 2364

Andropogon ternarius Michx. var. *ternarius*, Splitbeard bluestem; DA; o; Z 2372

Aristida purpurascens Poir. Arrowfeather; DA; i-c; N 24379, 24398

Arundinaria gigantea (Walter) Muhl., Giant cane; DA; o; N 23010 (s); Z 2107 (s)

Axonopus compressus (Sw.) Beav., Southern carpet grass; PM; ab?; N 22964

**Briza minor* L., Lesser quaking grass; DA; o; N 23644

**Bromus catharticus* Vahl var. *catharticus*, Rescue grass; DA; o-c; N 23628

**Bromus commutatus* Schrad., Hairy Chess; DA; c; N 22988

Chasmanthium latifolium (Michx.) Yates, River oats; UF; c; N 22936

Chasmanthium laxum (L.) Yates, Slender spikegrass; DA; i; N 23028

**Cynodon dactylon* (L.) Pers. var. *dactylon*, Bermuda grass; [CAT 2]; DA; c; Z 2112

**Dactylis glomerata* L., Orchard grass; DA; c; Z 2094

Danthonia spicata (L.) Beauv., Poverty oatgrass; DA; o; N 23035

Dichanthelium aciculare (Desv. ex Poir.) Gould & C.A. Clark, Witch grass; DA; o; N 22995

Dichanthelium dichotomum (L.) Gould var. *dichotomum*, Cypress witch grass; DA; c; N 23047

Dichanthelium commutatum (Schult.) Gould var. *commutatum*, Variable witch grass; UF?; ab?; S 4068

Dichanthelium scoparium (Lam.) Gould, Velvet witch grass; DA; ab?; N 23000

Digitaria ciliaris (Retz.) Koeler, Southern crab grass; DA; ab?; G s.n. [262137]

**Digitaria sanguinalis* (L.) Scop., Northern crab grass; DA; c; N 24384

Digitaria serotina (Walter) Michx., Dwarf crab grass; DA; o; G s.n. [262138]

**Echinochloa crusgalli* (L.) Beauv. var. *crusgalli*, Barnyard-grass; DA; FP; i-c; N 24370, 24391

Elymus virginicus L. var. *virginicus*, Common eastern wild-rye; PM; i; N 22980, G s.n. [262143]

**Eragrostis cilianensis* (All.) Vignolo ex Janch., Stinkgrass; DA; ab?; G s.n. [262144]

**Eragrostis curvula* Nees, Weeping lovegrass; [CAT 3]; DA; c; N 24386

Eragrostis spectabilis (Pursh) Steudel, Purple lovegrass; DA; FP; i; G s.n. [262145]; N 24382; S 4060

Festuca subverticillata (Pers.) Alexeev, Nodding fescue; DA; c; Z 2108

Leersia lenticularis Michx., Catchfly cutgrass; LM: FP; i; Z 2388

Leersia oryzoides (L.) Sw., Rice cutgrass; FP, PM; i; G s.n. [262162]; [262163]; N 22974; Z 2382

Leersia virginica Willd., White cutgrass; PM; o; N 22944

- **Lolium perenne* L. var. *aristatum* Willd., Italian ryegrass; hab?; ab?; G s.n. [262168]
Melica mutica Walter, Two-flower melic; DA, UF; i; N 23674
Oplismenus hirtellus (Lam.) Roem. & Schult., Woods-grass; DA, FP, UF; c; G s.n. [262189]; N 22933, 24363
Panicum anceps Michx., Beaked panicum; DA, FP, PM; o; N 22963; Z 2367
Panicum rigidulum Bosc ex Nees, Redtop panicum; PM; o; N 22947
Panicum virgatum L., Switchgrass; DA, UF; ab?; G s.n. [262193]
**Paspalum dilatatum* Poir. ssp. *dilatatum*, Dallis grass; DA; c; G s.n. [262194]; Z 2105
Paspalum floridanum Michx., Florida paspalum; DA; o; Z 2363
**Paspalum notatum* Flügge var. *saurae* Parodi, Bahia grass; [CAT 2]; DA; o; N 22955
**Paspalum urvillei* Steud., Vasey grass; [CAT 3]; DA; o; N 22954
Phanopyrum gymnocarpon (Elliott) Nash, Swamp phanopyrum; FP, PM; o-c; G s.n. [262197], [262198]; Z 2381
**Phyllostachys aurea* Carrière ex Rivière & C. Rivière, Golden bamboo; [CAT 2]; DA; c; N 24400 (s)
Piptochaetium avenaceum (L.) Parodi, Eastern needlegrass; DA; o-c; N 23657; Z 2397
**Poa annua* L., Annual bluegrass; [CAT 3]; DA; o; N 23637
Poa autumnalis Muhl., Autumn bluegrass; PM; i; G s.n. [262201]
**Poa compressa* L., Canada bluegrass; DA; i; N 23630
Saccharum giganteum (Walter) Pers., Sugarcane plume grass; DA; ab?; G s.n. [262217]
**Schedonorus arundinaceus* (Schreb.) Dumort., Tall fescue; [CAT 3]; DA; i-c; N 23651, 24393
Setaria parviflora (Poir.) Kerguelen, Knotroot bristlegrass; DA; i; G s.n. [262219]; Z 2368
Sorghastrum nutans (L.) Nash, Yellow Indiangrass; DA; o; Z 2366
**Sorghum bicolor* (L.) Moench.; DA; i; N 24383
**Sorghum halepense* (L.) Pers., Johnson grass; [CAT 3]; DA; o; N 22986
Tridens flavus (L.) Hitchc., Redtop; DA; ab?; G s.n. [262228]
**Vulpia myuros* (L.) Gmel., Rat-tail fescue; DA; c; N 23677
- Polygonaceae**
Brunnichia ovata (Walter) Shinnars, Buckwheat-vine; PM; o-c; N 22961, 22983; Z 2123 (s), 2282
Persicaria hydropiperoides (Michx.) Small [*Polygonum hydropiperoides* Michx.], Swamp smartweed; PM; c; Z 2118
**Persicaria longisetata* (Bruijn) Kitag. [*Polygonum cespitosum* var. *longisetum* Bruijn], Longbristle smartweed; [CAT 4]; LM: DA, FP; c; Z 2249
Persicaria sagittata (L.) Fross ex Nakai [*Polygonum sagittatum* L.], Arrowleaf tearthumb; FP; ab?; G s.n. [262204]
Persicaria virginiana (L.) Gaertn. [*Polygonum virginianum* L.], Jumpseed; PM, UF; i-o; LM: DA, FP; i; G s.n. [262205]; N 23024; Z 2255
**Rumex acetosella* L., Red dock; DA; ab?; G s.n. [262215]
**Rumex crispus* L., Curly dock; PM; ab?; G s.n. [262216]
Rumex hastatulus Baldwin, Wild dock; DA; c; Z 2135
- Ranunculaceae**
Ranunculus abortivus L., Kidneyleaf buttercup; DA; i; N 23708; S 3051
- Rhamnaceae**
Berberis scandens (Hill.) K. Koch, Supplejack; DA, FP, PM; i-o; G s.n. [262101]; N 22971; Z 2128 (s)
- Rosaceae**
Agrimonia pubescens Wallr., Downy agrimony; LM: DA, FP; o; Z 2267
**Aphanes australis* Rydb. [*A. microcarpa* (Boiss. & Reut.) Rothm.], Parsley-piert; DA; o; N 23635
Crataegus aprica Beadle, Sunny hawthorn; DA; o; N 23681
Crataegus dispar Beadle, Aiken hawthorn; UF; r; N 23658
Crataegus marshallii Eggl., Parsley haw; DA; ab?; G s.n. [262128] (s)
Crataegus spathulata Michx., Littlehip hawthorn; DA, UF; o; N 22928 (s), 22996 (s)
- Crataegus uniflora* Muenchh., Oneflower hawthorn; UF; ab?; G s.n. [262129] (s)
Crataegus viridis L., Green hawthorn; UF; LM: DA, FP; i; N 22946 (s); Z 2264 (s)
Malus angustifolia (Aiton) Michx., Wild crabapple; DA, UF; ab?; G s.n. [262177] (s); N 23003
**Potentilla indica* (Andr.) T. Wolf [*Duchesnea indica* (Andrews) Focke], Indian-strawberry; DA; ab?; G s.n. [262140]; S 3029
Prunus angustifolia Marshall var. *angustifolia*, Chickasaw plum; DA; ab?; S 4171
Prunus caroliniana (Mill.) Aiton, Carolina laurel cherry; DA, UF; c; N 22931; Z 2091
Prunus serotina Ehrh. var. *serotina*, Black cherry; DA, UF; o; G s.n. [262206]; Z 2124
**Pyracantha koidzumii* (Hayata) Rehder, Formosan firethorn; CULT; Z 2359
Rubus pensilvanicus Poir. [*R. argutus* Link], Pennsylvania blackberry; DA, PM; ab?; G s.n. [262214]; N 23710
Rubus trivialis Michx., Southern dewberry; DA; c; N 23670
**Spiraea cantoniensis* Lour., Reeve's meadowsweet; UF?/CULT?; ab?; G s.n. [262223] [Plants persisting from cultivation?]
**Spiraea thunbergii* Siebold ex Blume, Thunberg's meadowsweet; UF?/CULT?; ab?; G s.n. [262224] [Plants persisting from cultivation?]
- Rubiaceae**
Cephalanthus occidentalis L., Buttonbush; PM; o; G s.n. [262123]; N 22982
Diodia teres Walter, Poorjoe; DA; o; G s.n. [262139]; N 29113
Diodia virginiana L., Virginia buttonweed; DA; ab?; N 23006
Galium aparine L., Cleavers; DA; o; N 22667
**Galium sherardia* E.H.L. Krause, [*Sherardia arvensis* L.], Field-madder; DA; o; N 23645
Galium triflorum Michx., Sweet-scented bedstraw; PM; r; Z 2119
Houstonia pusilla Schoepf, Tiny bluet; DA; c; N 23641
Mitchella repens L., Partridge-berry; UF; ab?; G s.n. [262180] (s)
**Richardia brasiliensis* Gomes, Tropical Mexican-clover; DA?; ab?; S 4058
- Rutaceae**
Ptelea trifoliata L., Hop-tree; UF; o; Z 2288 (s)
- Santalaceae**
Phoradendron serotinum (Raf.) M. C. Johnst. ssp. *serotinum*, American mistletoe; DA; o; Z 2398
- Sapindaceae**
Acer floridanum (Chapm.) Pax [*A. barbatum* Michx.], Southern sugar maple; UF; i; N 23062 (s)
Acer negundo L., Box elder; FP, UF; o; N 23068; 23695 (s)
Acer rubrum L., Red maple; UF; o; N 22942 (s)
Acer saccharinum L., Silver maple; UF; ab?; N 22935 (s)
Aesculus pavia L. var. *pavia*, Red buckeye; FP, UF; ab?; N 23005, 23683
Aesculus sylvatica R. Bartram, Painted buckeye; UF; ab?; N 23705
**Koeleria paniculata* Laxm., Golden rain tree; DA; i; N 24405; Z 2092
- Sapotaceae**
Sideroxylon lanuginosum L., Gum bumelia; UF; r-i; N 23050 (s), 23656
Sideroxylon lycioides L., Buckthorn bumelia; DA, PM; r-i; N 22966 (s); Z 2114 (s)
- Saururaceae**
Saururus cernuus L., Lizard's-tail; PM, i; LM: DA, FP; o; N 23018; Z 2254
- Scrophulariaceae**
**Verbascum thapsus* L., Woolly mullein; [CAT 4]; DA; r; Z 2362

Simaroubaceae

**Ailanthus altissima* (Mill.) Swingle, Tree-of-heaven; [CAT 1]; DA; o; N 23036 (s)

Smilacaceae

Smilax bona-nox L., Catbrier; DA, PM; o-c; N 22929; 23069; Z 2097

Smilax glauca Walter, Whiteleaf greenbrier; PM; c; Z 2281 (s)

Smilax hispida Raf. [*S. tamnoides* L.], Bristly greenbrier; DA; ab?; G s.n. [262221]

Smilax laurifolia L., Bamboo vine; LM: DA, FP; o; Z 2258

Smilax rotundifolia L., Common greenbrier; LM: DA, FP; o; Z 2260 (s)

Smilax smallii Morong, Jackson-brier; UF; o; G s.n. [262222]; N 23057 (s)

Solanaceae

**Salpichroa origanifolia* Thell., Lily-of-the-valley vine; DA; o; H s.n.

Styracaceae

Halesia carolina L., Little silverbell; UF; i; N 23022; 23061

Halesia tetraptera J. Ellis, Common silverbell; UF; ab?; N 23706

Symplocaceae

Symplocos tinctoria (L.) L'Hér., Sweetleaf; UF; i; N 23690

Tetrachondraceae

Polypremum procumbens L., Rustweed; DA; c; N 22958

Typhaceae

Typha latifolia L., Common cattail; FP, PM; i; Z 2104

Ulmaceae

Planera aquatica Walter ex J. F. Gmel.; Planer-tree; FP; i; N 23067 (s)

Ulmus alata Michx., Winged elm; FP, UF; i; G s.n. [262229]; N 22937 (s)

Ulmus americana L., American elm; UF; LM: DA, FP; i-c; G s.n. [262230]; Z 2106 (s); 2263 (s), 2396 (s)

Ulmus rubra Muhl., Slippery elm; FP; o; G s.n. [262231] (s); N 22941 (s)

Urticaceae

Boehmeria cylindrica (L.) Sw., False-nettle; DA; i; N 23017

Laportea canadensis (L.) Wedd., Wood-nettle; LM: DA, FP; o; Z 2390

Pilea pumila (L.) A. Gray, Greenfruit clearweed; FP; o; N 24368

Verbenaceae

**Glandularia pulchella* (Sweet) Tronc., Moss vervain; DA; o-c; G s.n. [262150]; N 24404

**Verbena bonariensis* L., Purpletop vervain; [CAT 4]; DA; ab?; N 22991

**Verbena rigida* Spreng., Tuberous vervain; DA; o; N 22956; 24396; Z 2111

Violaceae

**Viola arvensis* Murray, European field-pansy; DA; o; N 23627

Viola bicolor Pursh, Wild pansy; DA; ab?; G s.n. [262237]; N 23714

Viola primulifolia Willd., Primrose-leaf violet; DA; ab?; G s.n. [262238] (s)

Viola sororia Willd. [*V. affinis* Leconte], Common blue violet; DA, UF; i-o; G s.n. [262239]; N 23638; S 3056

Vitaceae

Ampelopsis arborea (L.) Koehne, Peppervine; DA; ab?; N 22993

Vitis aestivalis Michx. var. *bicolor* Deam, Silverleaf grape; FP, PM; ab?; G s.n. [262240]

Vitis cinerea (Engelm.) Millard var. *floridana* Munson, Florida grape; DA; o; N 23043; Z 2126

Vitis rotundifolia Michx., Muscadine; DA, UF; c; N 23039 (s); Z 2109

Vitis vulpina L., Frost grape; DA, UF; o-c; N 23045; Z 2098 (s)

APPENDIX 1**VASCULAR PLANTS REPORTED FROM OCMULGEE NATIONAL MONUMENT**

The following 189 unvouchered vascular plant species have been cited for Ocmulgee National Monument in various NPS reports and databases (Froeschauer 1989; Puckett 1997; Burkholder et al. 2010; NPS 2012c). Where applicable, the name on the original lists (in brackets) follows the current accepted synonym. Although many of these taxa may presently occur (or may have occurred) within park boundaries, a significant percentage of these names likely represent misidentifications of species listed in the "Annotated List" of vouchered specimens.

Amaranthaceae: *Amaranthus hybridus* L.

Apiaceae: *Ptilimnium capillaceum* (Michx.) Raf.; *Sanicula marilandica* L.

Apocynaceae: *Amsonia tabernaemontana* Walter; *Apocynum cannabinum* L.; *Asclepias tuberosa* Elliott; *Matelea obliqua* (Jacq.) Woods. [*M. carolinensis* (Jacq.) Woods.]

Araceae: *Lemna perpusilla* Torr.; *Spirodela polyrhiza* (L.) Schleid.

Aristolochiaceae: *Asarum canadense* L.

Asparagaceae: *Liriope muscari* Bailey; *Ornithogalum umbellatum* L.; *Maianthemum racemosum* (L.) Link [*Smilacina racemosa* (L.) Desf.]; *Yucca flaccida* Haw.

Asteraceae: *Ampelaster carolinianus* (Walter) Nesom [*Aster carolinianus* Walter]; *Baccharis halimifolia* L.; *Balduina angustifolia* (Pursh) B.L. Rob.; *Bidens aristosa* (Michx.) Britton; *Chrysogonum virginianum* L.; *Chrysopsis mariana* (L.) Elliott [*Heterotheca mariana* (L.) Shinnery]; *Elephantopus tomentosus* L.; *Erigeron annuus* (L.) Pers.; *E. quercifolius* Lam.; *E. strigosus* Muhl. ex Willd. var. *calicicola* J.R. Allison; *Eupatorium capillifolium* L.; *Helianthus angustifolius* L.; *H. annuus* L.; *H. strumosus* L.; *Heterotheca subaxillaris* (Lam.) Britton & Rusby; *Krigia cespitosa* (Raf.) K.L. Chambers; *K. dandelion* (L.) Nutt.; *Packera anonyma* L. [*Senecio smallii* Britton]; *Pluchea camphorata* (L.) DC.; *Pseudognaphalium obtusifolium* L. var. *obtusifolium* [Gnaphalium obtusifolium L.]; *Pyrrhopappus carolinianus* (Willd.) Ohwi; *Rudbeckia hirta* L.; *Solidago canadensis* L. var. *scabra* (Muhl. ex Willd.) Torr. & A.

Gray; *S. chapmanii* A. Gray [*S. odora* Aiton]; *S. erecta* Pursh; *S. gigantea* Aiton; *Symphyotrichum puniceum* (L.) Á. Löve & D. Löve var. *puniceum*; *Taraxacum officinale* L.; *Verbesina alternifolia* (L.) Britton ex Kearney [*Actinomeris alternifolia* DC.]; *Vernonia acaulis* (Walter) Gleason; *V. angustifolia* Michx.; *V. flaccidifolius* Small; *V. noveboracensis* L.

Balsaminaceae: *Impatiens capensis* Meerb.

Betulaceae: *Alnus serrulata* (Aiton) Willd.

Blechnaceae: *Woodwardia virginica* (L.) Sm.

Boraginaceae: *Myosotis verna* Nutt.; *Phacelia maculata* Wood

Cactaceae: *Opuntia ficus-indica* (L.) Mill.

Campanulaceae: *Triodanis perfoliata* (L.) Nieuwl.

Cannabaceae: *Celtis occidentalis* L.

Commelinaceae: *Commelina communis* L.; *Tradescantia virginiana* L.

Convolvulaceae: *Calystegia spithamea* (L.) Pursh; *C. sepium* (L.) R. Br. [*Convolvulus sepium* L.]; *Ipomoea lacunosa* L.; *I. nil* (L.) Roth

Cornaceae: *Nyssa sylvatica* Marshall

Cyperaceae: *Carex atlantica* L.H. Bailey; *C. gigantea* Rudge; *C. intumescens* Rudge; *C. nigromarginata* Schwein.; *C. scoparia* Schkuhr ex Willd.; *C. styloflexa* Buckley; *C. venusta* Dewey

Dioscoreaceae: *Dioscorea floridana* Bartlett

Elaeagnaceae: *Elaeagnus commutata* Bernh.

Equisetaceae: *Equisetum hyemale* L.

Ericaceae: *Chimaphila maculata* (L.) Pursh; *Monotropa uniflora* L.; *Vaccinium stamineum* L.

- Euphorbiaceae: *Acalypha gracilens* A. Gray; *Euphorbia maculata* L. [*Chamaesyce maculata* (L.) Small]
- Fabaceae: *Amorpha fruticosa* L.; *Chamaecrista fasciculata* (Michx.) Greene; *Clitoria mariana* L.; *Desmodium perplexum* B.G. Schub.; *Erythrina herbacea* L.; *Hylodesmum nudiflorum* (L.) H. Ohashi & R.R. Mill [*Desmodium nudiflorum* (L.) DC.]; *Lespedeza capitata* Michx.; *L. repens* (L.) W.P.C. Barton; *Mimosa microphylla* Dryand. ex Sm. [*Schrankia microphylla* (Dryand.) J.F. Macbr.]; *Senna occidentalis* (L.) Link [*Cassia occidentalis* L.]; *Strophostyles helvola* (L.) Elliott; *Tephrosia virginiana* (L.) Pers.; *Trifolium incarnatum* L.; *Wisteria frutescens* (L.) Poir.
- Fagaceae: *Quercus alba* L.; *Q. pagoda* Raf.; *Q. stellata* Wangenh.
- Geraniaceae: *Geranium maculatum* L.
- Hydrocharitaceae: *Najas filifolia* Haynes
- Hypoxidaceae: *Hypoxis hirsuta* (L.) Coville
- Iridaceae: *Iris cristata* Aiton; *Iris virginica* L.
- Juglandaceae: *Carya aquatica* (Michx. f.) Nutt.; *C. ovalis* (Wangenh.) Sarg.; *Juglans nigra* L.
- Juncaceae: *Juncus effusus* L.
- Lamiaceae: *Prunella vulgaris* L.
- Lentibulariaceae: *Utricularia inflata* Walter
- Liliaceae: *Erythronium americanum* Ker Gawl.
- Loganiaceae: *Spigelia mariliandica* (L.) L.
- Malvaceae: *Sida spinosa* L.
- Melanthiaceae: *Trillium cuneatum* Raf.; *T. decipiens* J.D. Freeman
- Melastomataceae: *Rhexia virginica* L.
- Moraceae: *Maclura pomifera* (Raf.) C.K. Schneid.
- Onagraceae: *Ludwigia peruviana* (L.) H. Hara; *Oenothera biennis* L.; *O. fruticosa* L.; *O. speciosa* Nutt.
- Ophioglossaceae: *Botrychium lunarioides* (Michx.) Sweet
- Orchidaceae: *Goodyera pubescens* (Willd.) R. Br.
- Orobanchaceae: *Agalinis obtusifolia* Raf.; *A. purpurea* (L.) Pennell; *Aureolaria virginica* (L.) Pennell
- Osmundaceae: *Osmunda claytoniana* L.
- Oxalidaceae: *Oxalis stricta* L.; *O. violacea* L.
- Papaveraceae: *Sanguinaria canadensis* L.
- Phytolaccaceae: *Phytolacca americana* L.; *P. rigida* Small
- Phrymaceae: *Mazus pumilus* (Burm. f.) Steenis
- Pinaceae: *Cedrus deodara* Roxb. ex D. Don; *Pinus echinata* Mill.; *P. glabra* Walter; *P. palustris* P. Mill
- Plantaginaceae: *Penstemon australis* Small
- Poaceae: *Andropogon virginicus* L.; *Aristida spiciformis* Elliott; *Arundinaria tecta* (Walter) Muhl.; *Axonopus fissifolius* (Raddi) Kuhlmann. [A. *affinis* Chase]; *Cenchrus echinatus* L.; *C. longispinus* (Hack.) Fernald [*C. pauciflorus* Benth.]; *C. tribuloides* L.; *Dichanthelium boscii* (Poir.) Gould & C.A. Clark; *D. oligosanthos* (Schult.) Gould var. *oligosanthos* [*Panicum scribnerianum* Nash]; *Digitaria filiformis* (L.) Köler; *Eleusine indica* (L.) Gaertn.; *Erianthus giganteus* (Walter) Muhl.; *Leptoloma cognatum* (Schultes) Chase; *Microstegium vimineum* (Trin.) A. Camus; *Pennisetum glaucum* (L.) R. Br.; *Phalaris arundinacea* L.; *Phragmites australis* (Cav.) Trin. ex Steud. [*P. communis* Trin.]; *Poa chapmaniana* Scribn.; *Schedonorus pratensis* (Huds.) P. Beauv. [*Lolium pratense* (Huds.) Darbysh.]; *Schizachyrium scoparium* (Michx.) Nash; *Setaria corrugata* (Elliott) Schult.; *S. glauca* (L.) Beauv.; *Sporobolus indicus* [L.] R. Br. [*S. poiretii* (Roem. & Schult.) Hitchc.]
- Polygonaceae: *Persicaria hirsuta* (Walter) Small [*Polygonum hirsutum* Walter]; *P. lapathifolia* (L.) Gray [*Polygonum lapathifolium* L.]; *P. maculosa* Gray [*Polygonum persicaria* L.]; *P. punctata* (Elliott) Small [*Polygonum punctatum* Elliott]
- Ranunculaceae: *Anemone berlandieri* Pritz.; *Aquilegia canadensis* L.; *Clematis virginiana* L.; *Ranunculus bulbosus* L.
- Rhamnaceae: *Frangula caroliniana* (Walter) A. Gray [*Rhamnus caroliniana* Walter]
- Rosaceae: *Crataegus punctata* Jacq.; *Fragaria virginiana* L.; *Potentilla canadensis* L.; *Rosa carolina* L.; *Rubus canadensis* L.; *R. hispidus* L.; *Spiraea xarguta* Zabel
- Rubiaceae: *Houstonia caerulea* L.; *H. tenuifolia* Nutt.; *Richardia scabra* L.
- Salicaceae: *Populus deltoides* W. Bartram ex Marshall; *Salix nigra* Marshall
- Sapindaceae: *Acer saccharum* Marshall
- Sapotaceae: *Sideroxylon tenax* L.
- Smilacaceae: *Smilax ecirrata* (Englem. ex Kunth) S. Watson; *S. herbacea* L.; *S. walteri* Pursh
- Solanaceae: *Datura stramonium* L.; *Physalis heterophylla* Nees; *Solanum americanum* Mill.; *S. carolinense* L.
- Verbenaceae: *Verbena brasiliensis* Vell.
- Violaceae: *Viola tricolor* L.
- Vitaceae: *Parthenocissus quinquefolia* (L.) Planch.

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We dedicate this paper to Steven W. Leonard, who in 1962 brought attention to the site and its significance.



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