

VASCULAR PLANT FLORA OF CHATTAHOOCHEE RIVER
NATIONAL RECREATION AREA, A CONSERVATION
CORRIDOR FROM THE BUFORD DAM TO
ATLANTA, GEORGIA

WENDY B. ZOMLEFER¹ AND DAVID E. GIANNASI

Department of Plant Biology, 2502 Miller Plant Sciences,
University of Georgia, Athens, GA 30602-7271

¹e-mail: wendyz@plantbio.uga.edu

ALEX REYNOLDS

National Park Service, Chattahoochee River National Recreation Area,
1978 Island Ford Parkway, Atlanta, GA 30350-3432

Current Address: The Lovett School, 4075 Paces Ferry Road NW,
Atlanta, GA 30327-3009

KARIN HEIMAN

367 Onteora Boulevard, Asheville, NC 28803-9687

ABSTRACT. Chattahoochee River National Recreation Area is administered by the National Park Service, US Department of the Interior, and comprises 2618 ha (6470 acres) in 15 land units along 77.3 km (48 mi) of the river corridor in Georgia, from the Buford Dam on Lake Lanier (near Sugar Hill) south to Peachtree Creek in Atlanta. A floristic survey was conducted to provide Park Service personnel with a vouchered plant species checklist, supplemented with salient information such as relative abundance, locality data, and general community type. Twelve collecting trips conducted in 2006–2007 yielded 570 species and three varieties of vascular plants, including 169 species not previously vouchered for the park. Identifications of specimens in the park herbarium from prior surveys were also verified and incorporated into the annotated list, resulting in a total of 827 plant species vouchered for the park flora. The five largest families were Asteraceae (108 spp.), Poaceae (66 spp.), Fabaceae (51 spp.), Cyperaceae (44 spp.), and Rosaceae (30 spp.). According to state rankings, 13 rare plant species occurred within the study area and 19% of the noncultivated flora was exotic. *Clinopodium gracile*, native to Asia, was verified from Georgia for the first time. 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.

Key Words: floristics, Chattahoochee River, exotic plants, Georgia flora, invasive plants, National Park Service, rare plants

The Chattahoochee River, 702 km (436 mi), is the longest river in Georgia. It originates in the Blue Ridge Mountains in the northeastern part of the state (Chattahoochee Gap) and flows southward, joining the Flint River in Florida to form the Apalachicola River, which empties into the Gulf of Mexico (Figure 1A). The river supplies approximately 80% of the water for the metro-Atlanta area (Brown et al. 1997). Hydraulic flow is regulated by controlled releases from the large reservoir, Lake Sidney Lanier, via the Buford Dam located about 56 km (35 mi) northeast of the city center (Figure 1B).

The Chattahoochee River National Recreation Area (CRNRA), administered by the National Park Service (NPS, US Department of the Interior), is a series of 15 separate land parcels located along a 77.3 km (48 mi) linear corridor of the river that runs through four counties, from the Buford Dam (near Sugar Hill) south to Peachtree Creek, Atlanta (Table 1; Figure 1B). The park currently comprises 2618 ha (6470 acres) and is one of the largest urban national parks in the USA (Getty et al. 2001; NPS 2010a). The elevation of CRNRA ranges from approximately 215 to 300 m (700–1000 ft) above sea level. The park river corridor runs along the Brevard Fault Zone, a dividing line between the Appalachian Mountain physiographic province and the Piedmont Plateau. Impressive cliffs and ridges at CRNRA (e.g., Palisades unit, Figure 2), which can rise up to 15 m (50 ft) above the river, were created by geological processes associated with the fault (Parsons Engineering Science 2001).

Besides unusual geological formations, CRNRA parkland also contains a rich assemblage of natural and cultural resources that attract over 2.5 million visitors a year, predominantly from the metro-Atlanta area (Brown 2009). Park facilities, access, ecological integrity, and recreational activity vary widely among the 15 units (Table 1), which are named after local features, such as streams, bridges, or mills. Natural areas include forests, various wetlands, bluffs, and ravines traversed by approximately 160 km (100 mi) of trails. These habitats provide a significant wildlife refuge within a heavily urbanized area. Also interspersed among the park's land units, are over 200 archeological and historic sites, such as Native American rock shelters (e.g., Palisades unit), Civil War earthworks (e.g., Gold Branch unit), and old mills along the river tributaries (Gerdes et al. 2007; O'Grady and Poe 1980). Notable is the

Marietta Paper Mill Ruins site (ca. 1859; Cochran Shoals unit), listed on the National Register of Historic Places.

Brief history of the park area. Based on archeological sites along the river corridor, the park area was most extensively occupied by Native Americans during the Woodland Period, 1000 BC–AD 1000 (summaries in Brown 1980; Gerdes et al. 2007; O’Grady and Poe 1980). The Chattahoochee River had a prominent role in commerce and agriculture for early European settlers (1700s to early 1800s), and as a battleground in the Battle of Atlanta (1864) after the defeat of Confederate forces at Kennesaw Mountain and Cheatham Hill (see Zomlefer et al. 2010). After Reconstruction, extensive industry developed around the river, as evidenced by the historic ruins of grain, paper, and woolen mills at several park units, such as Cochran Shoals and Palisades.

In 1957, the US Army Corps of Engineers erected Buford Dam on the river, creating the reservoir, Lake Sidney Lanier, for flood control and hydroelectric power (Figure 1). The Georgia Metropolitan River Protection Act (Law OCGA 12-5-440) was subsequently enacted by the state legislature in 1973 to ensure protection of the river watershed for the 77.3 km (48 mi) between the Buford Dam and Peachtree Creek (the future CRNRA), and provided criteria to minimize impacts of development along the river (Brown 2009; Brown et al. 2009). Further protection was forthcoming in 1978 when the Chattahoochee River National Recreation Area was established by an act of Congress (16 United States Code 460ii) to preserve the natural, historic, and recreational value of land parcels (ca. 2618 ha; 6300 acres) along that section of the river corridor. The primary goal at that time was to protect the unique geological features (unusual cliffs and bluffs) associated with the Palisades unit (Figure 2) at the southern end of the park (No. 15 in Figure 1B). Amendments to this law in 1984 (Public Law 98-568) and 1999 (Public Law 106-154) ultimately expanded the authorized boundary of the park to a maximum of 4047 ha (10,000 acres) defined by a map depicting target acquisition zones along the corridor (R. Slade,

←

currently owned by the National Park Service (shaded areas; see Table 1 for coordinates); major highways shown; connecting roads and tributaries of the river not shown. Modified by W. B. Zomlefer from Brown (2009) and NPS (2007, 2010b).

Table 1. Location and characteristics of the 15 primary land units of the Chattahoochee River National Recreation Area, listed in alphabetical order. Site name includes the location number in Figure 1B (north to south). Location: County [centroid coordinates along river (°N, °W)]; Rankings: Ecol. = ecological integrity, a relative value (or range of values) reflecting habitat diversity, species richness, and amount of disturbance (based on Heiman 2000 and personal observations of the authors); Rec. = recreation value; a relative ranking based on unit usage types and ease of public access (Brown et al. 2009). No. of site visits = total for the primary vascular plant surveys conducted by Heiman in 1997–1998 and Zomlefer in 2007.

Site Name and Location No.	Approx. Area ha (acres)	Location	Rankings (Ecol.; Rec.)	No. of Vouchered Plant Species (No. of Site Visits)
Abbotts Bridge [6]	88 (218)	Gwinnett [34.0256, -84.1707]	Low to Medium; Medium	46 (5) Former loblolly pine plantation and fields; site of invasive species removal and native species restoration (especially trees)
Bowmans Island [1]	336 (831)	Forsyth, Gwinnett [34.1398, -84.0861]	Low to Medium; Medium	110 (7) Extensive floodplain; cliff habitat in eastern portion; old homesteads
Cochran Shoals [14]	394 (974)	Cobb [33.9177, -84.4429]	High; High	221 (13) High species diversity; extensive wetlands and upland habitat; site of invasive species removal and native species restoration; historic Marietta Paper Mill ruins
Gold Branch [12]	147 (363)	Cobb [33.9801, -84.3768]	High; Medium	163 (15) High species diversity; cove habitat; includes part of lake impoundment
Holcomb Bridge [9]	15 (38)	Fulton [33.9714, -84.2661]	Low; Low	9 (3) Disturbed area with a lot of privet; adjoins water treatment plant
Island Ford [10]	133 (329)	Fulton [33.9939, -84.3768]	Medium to High; High	176 (19) Park Headquarters and Visitors Center
Johnson Ferry [13]	126 (310)	Cobb [33.9540, -84.3959]	Low to High; Medium	148 (12) Little upland, extensive wetlands; intensive invasive species removal in southern portion; historic Hyde Farm
Jones Bridge [8]	79 (194)	Fulton [33.9842, -84.2639]	Low to Medium; Medium	51 (5) Chattahoochee River Environmental Education Center; historic Jones Bridge

Table 1. Continued.

Site Name and Location No.	Approx. Area ha (acres)	Location	Rankings (Ecol.; Rec.)	No. of Vouchered Plant Species (No. of Site Visits) Comments
McGinnis Ferry [4]	68 (168)	Fulton [34.0440, -84.1090]	Low; Low	12 (3) Former white pine plantation
Medlock Bridge [7]	17 (43)	Gwinnett [33.9914, -84.2053]	Low; Medium	16 (5) Well-developed secondary forest along river
Orrs Ferry [2]	60 (146)	Gwinnett [34.1172, -84.2053]	Low to Medium; Low	18 (1) Highly fragmented with extensive meadow habitat along river
Palisades [15]	306 (757)	Cobb, Fulton [33.8848, -84.4426]	High; High	257 (18) High species diversity; unique cliffs; intensive invasive species removal in eastern portion; historic Akers Mill ruins
Settles Bridge [3]	107 (265)	Gwinnett [34.0981, -84.1095]	Medium; Low to Medium	13 (1) Mostly fragmented habitat due to surrounding development; historic Settles Bridge
Suwanee Creek [5]	59 (147)	Gwinnett [34.0315, -84.1304]	High; Low	57 (4) Extensive wetlands
Vickery Creek [11]	109 (269)	Fulton [34.0130, -84.3511]	Medium to High; Medium	43 (8) Sheer cliffs; site of intensive invasive species removal; historic Laurel/Ivy Mill ruins



Figure 2. View of the cliffs (“palisades”) along the river margin, Palisades unit, Chattahoochee River National Recreation Area, March 20, 2004. White flowering trees on the cliffs are *Amelanchier arborea*. Photograph © Carol and Hugh Nourse, used with permission from Nourse and Nourse (2007).

Chief of Science and Resource Management, NPS, pers. comm.). As of this writing, NPS owns over 2023 ha (5000 acres) of land, has authority over an additional 567 ha (1400 acres) of the river (Table 1), and continues to negotiate for the acquisition of more undeveloped tracts within the mandated perimeter.

Floristic surveys of the park. Several unvouchered lists of plant species for the CRNRA have been produced for various park reports (e.g., Ettman 1977; Lee 1974, 1976; Troxel and Haynes 1985; summary in Brown 2009). The first comprehensive and vouchered floristic survey, however, was conducted by Heiman (2000, 2002) from August 1997 to April 1998. The approximately 755 specimens (ca. 636 spp.) from 13 park units established the herbarium collection at CRNRA, now maintained at the park headquarters at Island Ford (Sandy Springs, GA). From 2002–2003, Hay and Parker (2004) vouchered 33 aquatic plant species along the lower 10 units of the river, and an additional 16 specimens of targeted species were collected throughout the park in 2005–2006 by A.R. The most recent inventory, by W.B.Z. and associates, serves as a supplement to these previous surveys, with the goal of generating an accurate vouchered species list as a reference for an imminent park-wide vegetation community mapping project sponsored by NatureServe (Brown 2009).

MATERIALS AND METHODS

The first author led 12 field trips between December 2006 and November 2007 to collect plant specimen vouchers (*Zomlefer 1408–2090*). Due to the time constraints of the survey (one growing season), the park units with greatest potential diversity (e.g., open wetland and/or disturbed sites) were targeted. The Orrs Ferry and Settles Bridge units were surveyed for the first time. The complete set of vouchers is deposited at GA (see Appendix 1). A duplicate set is at the CRNRA headquarters (Island Ford unit) in Sandy Springs, Georgia; that collection is hereafter designated “CHAT,” a Park Service acronym not registered in *Index Herbariorum* (Thiers 2010). The floras of Radford et al. (1968) and Weakley (2009) were primary sources for plant identification, supplemented by Cronquist (1980), FNA (2006), Godfrey (1988), Godfrey and Wooten (1979, 1981), Isely (1990), Jones (2005), Wofford (1989), and Wunderlin and Hansen (2000, 2003). Varieties were designated

when practical keys (utilizing discrete characters appropriate for our specimens) were available. Specimens were identified by W.B.Z. and D.E.G., who also verified identifications of previous holdings at CHAT (collections by *Heiman*, *Parker*, or *Reynolds*) and annotated them with correct and/or current names. The nomenclature and taxonomy for the list of unvouchered plant sight records provided by the Park Service, compiled by A.R. and W.B.Z. (Appendix 2), were updated using the Integrated Taxonomic Information System online database (ITIS 2010) and Weakley (2009).

RESULTS

Floristics. The “Annotated List of Vouchered Vascular Plants of Chattahoochee River National Recreation Area” (Appendix 1) is the complete flora for CRNRA that is represented by vouchers in GA and CHAT herbaria. The current survey comprised 685 new, numbered collections of vascular plants representing 570 species and three varieties; of these, 169 species and three varieties were new vouchered taxa for the park (indicated with “†” in the list). When these are added to the existing CRNRA collections deposited at CHAT herbarium, the tally is 827 species (and 3 varieties) now vouchered for this flora in four major plant groups: lycopods (2 spp.), monilophytes (21 spp.), gymnosperms (12 spp.), and angiosperms (792 spp. and 3 varieties). Included in this total were 50 species in cultivation (indicated as “cult”), or persisting from cultivation but likely not naturalized. The largest families were: Asteraceae (108 spp. and 1 variety), Poaceae (66 spp. and 1 variety), Fabaceae (51 spp.), Cyperaceae (44 spp.), Rosaceae (30 spp.), Ericaceae (22 spp.), Lamiaceae (21 spp.), Ranunculaceae (20 spp.), Fagaceae (17 spp.), Plantaginaceae (15 spp.), Rubiaceae (15 spp.), Polygonaceae (14 spp.), Apiaceae (12 spp.), Convolvulaceae (11 spp.), Juncaceae (11 spp.), Apocynaceae (9 spp.), and Brassicaceae (9 spp.).

With deposition of duplicates from the current survey, CHAT herbarium holdings now comprise 1456 sheets of vascular plants. Appendix 2 is a compilation of 156 additional unvouchered species cited for CRNRA in various unpublished reports. Since 15% of existing collections at CHAT had been identified incorrectly, these unvouchered reports likely represent some misidentifications as well.

In general, the flora of CRNRA represents the basic habitat types, weedy plants common in disturbed areas of the Piedmont,

and a few cultivated plants (some persisting). No Georgia endemics have been found. Thirteen noncultivated species (Table 2) are ranked by the Georgia Department of Natural Resources (GA DNR 2010a, b) as Protected (state protected) or species of Special Concern (at risk but not yet formally protected), indicated as “Pro” (7 spp.) or “Con” (6 spp.) in Table 2. The 13 rare species have been vouchered from nine park units (Table 2), with the greatest number of species from Palisades (7), Island Ford (3), and Jones Bridge (2). One threatened species, *Symphyotrichum georgianum*, is also a candidate for federal listing (USFWS 2010), and NPS is carefully monitoring several populations throughout the park (A.R., pers. obs.). The three other threatened species—*Fothergilla major*, *Hymenocallis coronaria*, and *Schisandra glabra*—occurred only in restricted areas within the Palisades park unit (Table 2).

Reports of several other state-listed plants at CRNRA (see Appendix 2), such as *Hydrastis canadensis* (Troxel and Haynes 1985) and *Plantago pusilla* (Heiman 2000, 2002), lack validating voucher material. Verification should be pursued for these unvouchered species—and for others with poor, sterile, or otherwise questionable specimens listed in Table 2, such as *Hymenocallis coronaria* (Heiman 1524) and *Thermopsis fraxinifolia* (Heiman 1049, 1050).

One hundred and seventy-two species now listed at CRNRA are non-native (indicated with an asterisk in the “Annotated List”). Excluding the 29 cultivated exotics, the remaining 143 introduced species represent 19% of the flora. These include a new vouchered report for Georgia, *Clinopodium gracile* (Slender wild basil), native to Asia (Li and Hedge 1994; Zomlefer et al. 2011). Fifty of the non-native species are invasive (Table 3), and are ranked in four categories (and one subcategory) by the Georgia Exotic Pest Plant Council (GA-EPPC 2006), depending on perceived threat to the native flora: Category 1 (15 spp.; serious invasive extensively invading plant communities; displacing native species), Category 1 Alert (2 spp.; not yet a serious invasive but with significant potential), Category 2 (11 spp.; moderate invasive; invading and displacing to a lesser degree than Category 1 species), Category 3 (10 spp.; minor invasive or potential threat not yet known; a threat in adjacent states), and Category 4 (12 spp.; naturalized in Georgia; generally not posing a threat but additional data are needed).

The Category 1 species, *Ligustrum sinense*, now covers 15% of CRNRA, and its removal is a management priority (Brown 2009). Other serious invasives (mostly Category 1) of immediate concern

Table 2. Rare species vouchered at Chattahoochee River National Recreation Area. Georgia rare plant listings (GA DNR 2010a, b; Patrick et al. 1995); Pro = Protected Plant of Georgia; Con = Georgia Special Concern. State status (GA DNR 2010a): R = rare (may not be endangered or threatened, should be protected because of scarcity); T = threatened (likely to become an endangered species in foreseeable future); U = unusual (deserving special consideration, e.g., commercially exploited). Federal status (USFWS 2010): C = candidate species under status review for federal listing. State rank (GA DNR 2010b): S1 = critically imperiled (five or fewer occurrences); S2 = imperiled (6–20 occurrences); S3 = rare or uncommon (21–100 occurrences); S4 = apparently secure (no immediate conservation concern; ? = questionable rank. Global rank (GA DNR 2010b): G2 = imperiled (6–20 occurrences); G3 = rare or local throughout range, in special habitat, narrowly endemic (21–100 occurrences); G4 = apparently secure globally (no immediate conservation concern); G5 = demonstrably secure; Q = taxon not generally recognized or problematic validity/identity; Ts = taxonomic subdivision used in global rank; ? = questionable rank. Park units (see Table 1 and Figure 1B): BI = Bowmans Island, CS = Cochran Shoals, GB = Gold Branch, IF = Island Ford, JB = Jones Bridge, JF = Johnson Ferry, OF = Orrs Ferry, PA = Palisades, VC = Vickery Creek.

Species (Common Name)	State Rare Plant Listing	State/Federal		Vouchered Park Unit Source;	
		Global Rank	Status; State/ Global Rank	Miscellaneous Notes	
<i>Cypripedium acaule</i> (Pink lady's slipper)	Pro		U/—; S4/G5	IF, VC; occurs throughout park on dry slopes, largest populations at CS and VC (A. R., pers. obs.)	
<i>Fothergilla major</i> (Large witch-alder)	Pro		T/—; S1/G3	PA; forested slope along river	
<i>Hymenocallis coronaria</i> (Shoals spiderlily)	Pro		T/—; S2/G2Q	PA; voucher specimen comprises two detached leaves	
<i>Myriophyllum laxum</i> (Loose watermilfoil)	Pro		R/—; S2S3/G3	PA; voucher specimen comprises nonreproductive material	
<i>Panax quinquefolius</i> (American ginseng)	Con		—/—; S3/G3G4	CS, PA	
<i>Potamogeton pusillus</i> (Small pondweed)	Con		—/—; S1?/G5	JB	
<i>Schizandra glabra</i> (Bay starvine)	Pro		T/—; S2/G3	PA; voucher specimens comprise nonreproductive material	

Table 2. Continued.

Species (Common Name)	State Rare Plant Listing	State/Federal Status; State/ Global Rank	Vouchered Park Unit Source; Miscellaneous Notes
<i>Scirpus expansus</i> (Woodland bulrush)	Con	—/—; S1S2/G4	GB; growing in standing water at base of cove area
<i>Spiranthes ovalis</i> var. <i>erostellata</i> (Oval ladies'-tresses)	Con	—/—; S2S3/G5Ts?	JF; mowed border of wetland ditch
<i>Stachys eplingii</i> (Epling's hedge-nettle)	Con	—/—; S1?/G5	JF; in field
<i>Symphytotrichum georgianum</i> (Georgia aster)	Pro	T/C; S2/G2/G3	IF [cultivated], JB, PA; healthiest population (reintroduced) at GB
<i>Thermopsis fraxinifolia</i> (Ashleaf golden-banner)	Con	—/—; S2?/G3?	PA; voucher specimen comprises top-snatched, nonreproductive material
<i>Veratrum woodii</i> (False hellebore)	Pro	R/—; S2/G5	BI, OF; small populations in dry woodland

Table 3. List of 50 noncultivated, exotic invasive (or potentially invasive) species vouchered for Chattahoochee River National Recreation Area, with rankings as assessed by the GA-EPPC (2006): Category 1 (serious invasive), Category 1A (significant potential to be 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). Park Unit = vouchered park units (see Table 1 and Figure 1B): AB = Abbotts Bridge, BI = Bowmans Island, CS = Cochran Shoals, GB = Gold Branch, IF = Island Ford, JB = Jones Bridge, JF = Johnson Ferry, PA = Palisades, SB = Settles Bridge, SC = Suwanee Creek, VC = Vickery Creek. Habitats: bluff = bluff forest, disturbed = disturbed area, swamp = swamp, upland = upland forest, wetland = open wetland. Abundance: common, occasional, infrequent, rare; abundance? = abundance data not recorded on voucher specimen label.

Species (Common Name)	Rank	Park Unit	Habitat; Abundance
<i>Ailanthus altissima</i> (Tree-of-heaven)	1	BI	disturbed; rare
<i>Albizia julibrissin</i> (Silk tree)	1	CS, IF	disturbed; rare
<i>Allium vineale</i> (Wild garlic)	4	JF, PA	disturbed/upland; infrequent
<i>Alternanthera philoxeroides</i> (Alligator-weed)	1	PA	wetland; abundance?
<i>Arthraxon hispidus</i> (Small carpgrass)	1A	GB, IF	disturbed; common
<i>Bromus secalinus</i> (Rye brome)	4	CS	disturbed; common
<i>Celastrus orbiculatus</i> (Asian bittersweet)	1A	CS, PA	upland; rare-common
<i>Cirsium vulgare</i> (Bull thistle)	4	AB, JF	disturbed; infrequent
<i>Clematis terniflora</i> (Sweet autumn virginibower)	3	CS, PA	disturbed; common
<i>Cynodon dactylon</i> (Bermudagrass)	2	IF	disturbed; common
<i>Cytisus scoparius</i> (Scotch broom)	4	IF	disturbed; rare
<i>Daucus carota</i> (Queen Anne's lace)	3	BI, CS	disturbed; common
<i>Egeria densa</i> (Brazilian waterweed)	2	GB, PA	wetland; common
<i>Elaeagnus pungens</i> (Silverthorn)	2	GB, IF, PA, VC	bluff/upland, disturbed; occasional-common
<i>Elaeagnus umbellata</i> (Autumn olive)	1	CS, IF	disturbed; infrequent
<i>Euonymus fortunei</i> (Creeping euonymus)	3	IF	disturbed; abundance?
<i>Fatoua villosa</i> (Hairy crabweed)	4	IF	disturbed; occasional
<i>Hedera helix</i> (English ivy)	1	IF, PA	disturbed, upland; common
<i>Ipomoea purpurea</i> (Tall morning-glory)	4	VC	disturbed; common
<i>Jacquemontia taminifolia</i> (Hairy clustervine)	4	VC	disturbed; rare
<i>Kummerowia striata</i> (Japanese clover)	4	IF, GB, SC	disturbed; infrequent-common

Table 3. Continued.

Species (Common Name)	Rank	Park Unit	Habitat; Abundance
<i>Lespedeza bicolor</i> (Bicolor lespedeza)	1	CS	upland; infrequent
<i>Lespedeza cuneata</i> (Sericea lespedeza)	1	BI, CS, IF	disturbed; common
<i>Leucanthemum vulgare</i> (Oxeye daisy)	2	CS, IF	disturbed; occasional
<i>Ligustrum japonicum</i> (Japanese privet)	2	CS	upland?; infrequent
<i>Ligustrum sinense</i> (Chinese privet)	1	CS, PA	disturbed; upland; common
<i>Liriope muscari</i> (Big blue lilyturf)	3	PA, VC	upland; occasional
<i>Lonicera japonica</i> (Japanese honeysuckle)	1	BI, GB, IF, JB	disturbed, wetland; common
<i>Lonicera maackii</i> (Amur honeysuckle)	2	IF, JF	bluff/upland; rare
<i>Lygodium japonicum</i> (Japanese climbing fern)	1	IF, VC	disturbed; rare
<i>Mahonia bealei</i> (Oregon grape)	3	GB, PA	disturbed; rare
<i>Melilotus albus</i> (White sweetclover)	3	CS, PA, SC	disturbed; infrequent
<i>Microstegium vimineum</i> (Nepalese browntop)	1	AB, IF, PA	disturbed, upland; common
<i>Murdannia keisak</i> (Asian spiderwort)	1	GB, JF	disturbed/wetland; abundance?
<i>Myriophyllum aquaticum</i> (Parrot feather watermilfoil)	2	CS, JB	wetland; common
<i>Nandina domestica</i> (Sacred bamboo)	2	IF, PA	disturbed, upland; occasional
<i>Paspalum notatum</i> (Bahagrass)	2	JF	disturbed; common
<i>Paspalum urvillei</i> (Vaseygrass)	3	CS, PA	disturbed/wetland; common
<i>Pavlovnia tomentosa</i> (Princess tree)	1	PA	upland; infrequent
<i>Persicaria longiseta</i> (Oriental lady's-thumb)	4	BI, GB, IF	disturbed, upland; occasional
<i>Poa annua</i> (Annual bluegrass)	3	IF, PA	disturbed, upland; common
<i>Pueraria montana</i> var. <i>lobata</i> (Kudzu)	1	CS, GB	disturbed; common
<i>Pyrus calleryana</i> (Callery pear)	3	IF, JF	disturbed; rare
<i>Sonchus asper</i> (Spiny sowthistle)	4	IF, PA	disturbed, swamp; occasional
<i>Sorghum halepense</i> (Johnsongrass)	3	CS	disturbed; common
<i>Verbascum thapsus</i> (Common mullein)	4	BI	disturbed; common
<i>Verbena bonariensis</i> (Purpletop vervain)	4	CS	disturbed; rare
<i>Vinca major</i> (Bignleaf periwinkle)	2	SB	disturbed; common
<i>Vinca minor</i> (Common periwinkle)	2	JB, PA	disturbed, upland; occasional
<i>Wisteria sinensis</i> (Chinese wisteria)	1	IF, PA	disturbed, upland; occasional

at CRNRA include: *Elaeagnus pungens* (2), *E. umbellata* (1), *Hedera helix* (1), *Microstegium vimineum* (1), *Pueraria montana* (1), and *Wisteria sinensis* (1). *Ailanthus altissima* (1), *Mahonia bealei* (3), *Nandina domestica* (2), and *Paulownia tomentosa* (1) are of somewhat lesser concern and will be removed by park personnel whenever possible. Control measures have not yet been instigated for the Category 2 aquatic exotics, *Egeria densa* and *Myriophyllum aquaticum*, dominant invaders of certain river, tributary, and wetland habitats within the park (Brown 2009).

Vegetation communities. Over two-thirds of the CRNRA comprises seasonally or temporally flooded bottomlands and associated aquatic habitats (e.g., open wetlands) essential for flood control (Brown 2009). Upland forest communities support a diverse assemblage of mesic, mixed hardwood and pine, with scattered bluffs, ravines, and a few rock outcrops. Ruderal areas in the park include abandoned fields and former pine plantations. A summary of the flora of these general community types, based on Heiman (2000, 2002), Wharton (1978), and Zomlefer et al. (2010), is provided below, to place the plant species within the context of the various habitats. A more comprehensive community classification was not possible due to the limits of this one-year inventory of 15 noncontiguous land parcels that are flooded artificially on a regular basis (see Introduction). Although habitats are similar along the river corridor, communities may intergrade, and the presence and/or coverage of a particular vegetation type can vary widely depending on the particular park unit.

Swamp or bottomland (floodplain, alluvial, or palustrine forest) is the most common community type along the CRNRA corridor and occurs adjacent to the Chattahoochee River and major tributaries (Brown 2009; Heiman 2000, 2002). The Bowmans Island, Island Ford, and Palisades units of CRNRA contain the best examples of piedmont swamp vegetation in the park (Brown 2009; Troxel and Haynes 1985). These areas are periodically flooded and generally remain moist throughout the year. The understory varies from open to dense thickets of shrubby plants. Dominant trees usually include *Acer* spp. (e.g., *A. negundo*, *A. rubrum*), *Betula nigra*, *Carpinus caroliniana*, *Fraxinus pennsylvanica*, *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Platanus occidentalis*, and *Quercus nigra* (Heiman 2000; Wharton 1978). Swamp communities at CRNRA may also be characterized by the

following codominants and/or understory woody species: *Alnus serrulata*, *Asimina triloba*, *Cercis canadensis*, *Cornus florida*, *Itea virginica*, *Ligustrum sinense*, *Lonicera japonica*, *Pinus taeda*, *Populus deltoides*, *Rhododendron canescens*, *Salix caroliniana*, *Toxicodendron radicans*, and *Viburnum nudum*. *Arisaema triphyllum*, *Chasmanthium latifolium*, *Juncus effusus*, *Onoclea sensibilis*, *Osmundastrum cinnamomeum*, *Packera glabella*, *Podophyllum peltatum*, and *Trillium cernuum* are examples of typical understory herbs present in more open areas, especially in early spring before the trees leaf out.

Upland forests (upland hardwood or oak-hickory forest) of CRNRA occur on well-drained soils covering steep slopes, sometimes immediately adjacent to the floodplain terrace (Georgia Power 2005c). The composition of much of this forest is often nearly original, as the slopes were mostly inaccessible to logging efforts during in the 1900s (Wharton 1978). The uplands overall are mixed deciduous hardwoods or hardwood–pine, and are dominated by various oaks, although the species components vary considerably along the river corridor (Brown 2009; Troxel and Haynes 1985). Drier sites are characterized by more xeric oaks—such as *Quercus coccinea*, *Q. falcata*, *Q. stellata*, and *Q. velutina*—with hickories (e.g., *Carya alba*, *C. glabra*, and *C. pallida*) as codominants; moister substrates typically support less hickory and a predominance of mesic oak species, such as *Q. alba*, *Q. michauxii*, and *Q. rubra*. Some park units, such as Bowmans Island and Island Ford, have a prevalence of pines (e.g., *Pinus echinata* and *P. taeda*) intermixed with the deciduous trees (Heiman 2002). Depending on the site, associated trees may include *Acer floridanum*, *Aesculus pavia*, *Carpinus caroliniana*, *Celtis laevigata*, *Fagus grandifolia*, *Fraxinus* spp. (e.g., *F. americana*), *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Magnolia grandiflora*, *Nyssa sylvatica*, and *Oxydendrum arboreum*. In some areas, species such as *Leucothoe fontanesiana*, *Smilax* spp. (e.g., *S. rotundifolia*), *Toxicodendron radicans*, *Vaccinium* spp. (e.g., *V. arboreum* and *V. corymbosum*), and *Vitis rotundifolia* compose a dense understory of shrubs and woody vines. At locations with more open understory, the ground is typically covered by deep leaf litter with some herbaceous species (especially along the trails), as for example: *Desmodium* spp. (e.g., *D. paniculatum*), *Dichanthelium* spp. (e.g., *D. commutatum*, *D. dichotomum*), *Elephantopus carolinianus*, *Erythronium umbilicatum*, *Galium* spp. (e.g., *G. circaezans*), *Hexastylis arifolia*, *Phryma leptostachya*, *Pteridium aquilinum*, *Sanicula canadensis*, *Silphium*

spp. (e.g., *S. asteriscus*), *Solidago* spp. (e.g., *S. arguta*), *Symphotrichum* spp. (e.g., *S. dumosum*), and *Viola* spp. (e.g., *V. palmata*).

Bluff forest (ravine, palisades, or slope forest) often occurs on the uppermost slopes and hilltops and on the sheer (and occasionally rocky) ravines above the floodplain at CRNRA (Brown 2009). Palisades and Vickery Creek units best exemplify the typical habitat, consisting of relatively shallow soil interspersed with rock, which can limit the development of a dense tree canopy (Ettman 1977; Lee 1974). The relatively sparse canopy usually includes oaks (e.g., *Quercus alba*), hickories (e.g., *Carya glabra*), and *Pinus taeda*, with a characteristic subcanopy of ericaceous species: *Kalmia latifolia* (which can form dense thickets), *Rhododendron maximum*, and *R. minus*, along with various species of *Vaccinium* (e.g., *V. corymbosum*). Elsewhere along the river corridor (e.g., at Gold Branch) some ravines (“cove forest”) are cooler and more mesic than the surrounding uplands, especially along the north-facing slopes (Ettman 1977; Troxel and Haynes 1985), and the vegetation is more diverse. Depending on the level of soil moisture at a particular site, other associated trees and shrubs may include a variety of species such as *Acer floridanum*, *Amelanchier arborea*, *Asimina parviflora*, *Calycanthus florida*, *Cornus florida*, *Fagus grandifolia*, *Halesia carolina*, *Hydrangea arborescens*, *Leucothoe fontanesiana*, *Liriodendron tulipifera*, *Magnolia macrophylla*, *M. tripetala*, *Oxydendrum arboreum*, *Viburnum acerifolium*, and *Xanthorhiza simplicissima*. The ravine floors, especially of the mesic coves, are often species rich with ferns (e.g., *Adiantum pedatum*, *Athyrium asplenoides*, *Dryopteris marginalis*, *Onoclea sensibilis*, *Osmundastrum cinnamomeum*, *Phegopteris hexagonoptera*, *Polystichum acrostichoides*, *Thelypteris noveboracensis*) as well as flowering herbs such as *Amianthium muscitoxicum*, *Epigea repens*, *Heuchera parviflora*, *Ligusticum canadense*, *Thalictrum thalictroides*, and *Tiarella cordifolia*.

Heiman (2000, 2002) described small, rock outcrop-type areas (“piedmont cliff”) at the bases of these cliffs. She noted the best examples at the Island Ford, Palisades, and Vickery Creek units; however, the flora is quite depauperate compared to outcrops elsewhere in Georgia (see Zomlefer et al. 2010). At CRNRA, these small, exposed rocks provide a xeric habitat for lichens, mosses, and indicator vascular plant species such as *Asplenium pinnatifidum*, *Carex pensylvanica*, *Cheilanthes lanosa*, *Danthonia spicata*, *Dichantherium* spp., *Gaylussacia tomentosa*, *Solidago sphacelata*, and *Tradescantia hirsuticaulis*.

Open wetland is a broad designation, here applied to aquatic areas at CRNRA, where the canopy is lacking or sparse, and standing water is often present (Georgia Power 2005b; Heiman 2000, 2002; Zomlefer et al. 2010). These habitats are best developed along the floodplain and tributaries and include marshes, ponds, and the river channel. Floating aquatics in ponds and the river at CRNRA commonly include *Azolla caroliniana*, *Cabomba caroliniana*, *Egeria densa*, *Myriophyllum aquaticum*, and *Potamogeton* spp. (Hay and Parker 2004). In marshy areas (e.g., Johnson Ferry unit), sedges, grasses, and rushes predominate, including *Agrostis stolonifera*, *Carex* spp. (e.g., *C. lupulina*, *C. stipata*), *Chasmanthium sessiliflorum*, *Cyperus* spp. (e.g., *C. strigosus*, *C. echinatus*), *Juncus* spp. (e.g., *J. acuminatus*, *J. effusus*), *Leersia oryzoides*, *Panicum anceps*, *Paspalum urvillei*, and *Scirpus* spp. (e.g., *S. atrovirens*, *S. cyperinus*). Other common herbaceous species are *Boehmeria cylindrica*, *Eupatorium serotinum*, *Hypericum mutilum*, *Impatiens capensis*, *Ludwigia* spp. (e.g., *L. alternifolia*, *L. palustris*), *Mikania scandens*, *Murdannia keisak*, *Oxypolis rigidior*, *Packera anonyma*, *Persicaria* spp. (e.g., *P. hydropiperoides*, *P. punctata*), *Pilea pumila*, *Ranunculus bulbosus*, *Sagittaria latifolia*, *Saururus cernuus*, and *Typha latifolia*. Scattered shrubs of *Cephalanthus occidentalis* and *Sambucus canadensis* often occur in marshes or along pond margins. Open wetland sites may also be bordered with tree species such as *Acer negundo*, *A. rubrum*, *Alnus serrulata*, *Cornus amomum*, *Fraxinus pennsylvanica*, *Lonicera japonica*, *Morus rubra*, *Rubus argutus*, *Salix caroliniana*, and *Viburnum nudum*.

“Disturbed (ruderal)” areas are cleared zones around public access areas (parking lots, roadsides, trails, docks), easements, powerline right-of-ways, fields, plantings around park buildings, and former pine plantations (Heiman 2002; Zomlefer et al. 2010). Ruderal habitats are characterized by a variable flora that includes many non-native and invasive species (Table 3). Fields and easements, in particular, have often been mowed or otherwise actively maintained by park personnel for recreational value as well as for species diversity (Brown 2009). Examples of the numerous grasses established in disturbed areas at CRNRA are *Andropogon ternarius*, *A. virginicus*, *Arthraxon hispidus*, *Bromus secalinus*, *Cynodon dactylon*, *Dactylis glomerata*, *Digitaria filiformis*, *Eleusine indica*, *Lolium perenne*, *Paspalum* spp. (e.g., *P. dilatatum*, *P. notatum*), *Sorghastrum nutans*, and *Sorghum halepense*. Asteraceae also comprise a large component of this flora, with common species

such as *Ambrosia artemisiifolia*, *Conyza canadensis*, *Erigeron* spp. (e.g., *E. annuus*), *Eupatorium capillifolium*, *Hypochaeris radicata*, *Krigia virginica*, *Lactuca canadensis*, *Solidago* spp. (e.g., *S. nemoralis*), and *Symphytotrichum* spp. (e.g., *S. dumosum*). *Cardamine hirsuta*, *Daucus carota*, *Diodia teres*, *Galactia volubilis*, *Geranium carolinianum*, *Hedera helix*, *Lamium amplexicaule*, *Lespedeza cuneata*, *Plantago* spp. (e.g., *P. lanceolata*), *Ptilimnium capillaceum*, *Rumex hastatulus*, *Solanum carolinense*, *Stellaria media*, and *Vinca major* are examples of other widespread weedy herbs. The tree and shrub borders of these areas often include species such as *Apocynum cannabinum*, *Ligustrum sinense*, *Lonicera japonica*, *Rhus copallinum*, and *R. glabra*—with woody vines such as *Campsis radicans*, *Parthenocissus quinquefolia*, and *Toxicodendron radicans*.

DISCUSSION

Park management issues and importance of vouchers. The CRNRA is an ecologically significant park surrounded by one of the most rapidly growing urban areas in the USA. Threats to the watershed and associated habitats include air and water pollution, erosion, sedimentation, visitor impacts, development pressures, and invasive exotic species (Watson 2005). The multifaceted NPS stewardship plan mandates accommodating the increasing numbers of visitors and traffic, while minimizing disturbance to cultural and natural resources (Brown et al. 2009).

The Park Service now recognizes the value of park floras based on voucher specimens deposited in recognized herbaria (see Funk et al. 2005; Ruedas et al. 2000), especially in reference to natural resource management issues. The herbarium collection of CRNRA provides the baseline for monitoring habitats and selected species. Encroachment by development threatens the native component of the flora and contributes to an increase in invasives and weedy species that require documentation. Continued inventory efforts at CRNRA should also concentrate on locating rare species previously reported in the park (see Appendix 2), but not yet verified by voucher specimens.

ACKNOWLEDGMENTS. We thank Kelly A. Bettinger, Galen Burke, Dean Hardy, Chris Hughes, Tim Hutchins, Lisa M. Krueger, Minh Le, and Joel McNeal for their enthusiastic assistance in the field; Joel McNeal also provided several on-site plant identifications.

Kristian D. Jones and Kristi Rebel helped process voucher specimens at both CHAT (an in-house Park Service acronym) and GA herbaria, and Laura E. Lukas corrected several erroneous determinations. We also greatly appreciate the invaluable support and cooperation of National Park Service personnel: Joe DeVivo, Network Coordinator; Rick Slade, Chief of Science and Resource Management; and Chris Hughes, (former) Resource Management Specialist. Walter S. Judd checked the family circumscriptions for conformance to APG III; Peter W. Ball (TRTE), Christian Braeuchler (MSB), Philip D. Cantino (BHO), and Michael Denslow and Derick B. Poindexter (BOON) identified our specimen of *Clinopodium gracile*. Hugh and Carol Nourse graciously gave us permission to use their photograph of the CRNRA palisades (Figure 2), and two anonymous reviewers provided constructive criticisms of the manuscript. This survey was funded by National Park Service contract agreement J2114-05-0024 (W. B. Zomlefer, PI, and D. E. Giannasi, coPI) under collecting permit # CHAT-2006-SCI-0004.

LITERATURE CITED

- ANGIOSPERM PHYLOGENY GROUP (APG III). 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Bot. J. Linn. Soc.* 161: 105–121.
- BROWN, D. R., ed. 2009. Chattahoochee River National Recreation Area Resource Stewardship Strategy. Draft prepared by A. Reynolds, September 2009. National Park Service, Atlanta, GA.
- BROWN, D. R., K. CHERI, R. SLADE, C. HUGHES, R. LUTZ, N. WALTHER, S. PFENINGER, R. PODANY, A. REYNOLDS, AND A. READ. 2009. Chattahoochee River National Recreation Area. Final General Management Plan/Environmental Impact Statement, September 2009. National Park Service, Atlanta, GA.
- BROWN, F., S. M. L. SMITH, AND R. STENGER. 1997. *The Riverkeeper's Guide to the Chattahoochee River from its Origination at Chattahoochee Gap to Apalachicola Bay*. CI Publishing, Atlanta, GA.
- BROWN, L. E. 1980. Historic Resource Study: Chattahoochee River National Recreation Area and the Chattahoochee River Corridor. National Park Service, Southeast Regional Office, Tallahassee, FL.
- CRONQUIST, A. 1980. *Vascular Flora of the Southeastern United States*, Vol. 1. Asteraceae. Univ. North Carolina Press, Chapel Hill, NC.
- EK, D. A. 2004. *Plants of the Chattahoochee River National Recreation Area*. Unpublished report. National Park Service, Atlanta, GA.
- ETTMAN, D. R. 1977. *A Botanical Survey of the Flora of the Chattahoochee River Palisades, Fulton County, Georgia*. Unpublished report. National Park Service, Atlanta, GA.

- FLORA OF NORTH AMERICA EDITORIAL COMMITTEE (FNA), eds. 1993. *Flora of North America North of Mexico*, Vol. 2. Pteridophytes and Gymnosperms. Oxford Univ. Press, New York, NY and Oxford, UK.
- . 2006. *Flora of North America North of Mexico*, Vols. 19–21. Magnoliophyta: Asteridae, Parts 6–8. Asteraceae, Parts 1–3. Oxford Univ. Press, New York, NY and Oxford, UK.
- FUNK, V. A., P. C. HOCH, L. A. PRATHER, AND W. L. WAGNER. 2005. The importance of vouchers. *Taxon* 54: 127–129.
- GEORGIA DEPARTMENT OF NATURAL RESOURCES (GA DNR). 2010a. Protected plant species of Georgia. Georgia Wildlife Resources Division, Social Circle, GA. Website (<http://georgiawildlife.dnr.state.ga.us/content/protectedplants.asp>). Accessed 31 Mar 2010.
- . 2010b. Special concern plant species in Georgia. Georgia Wildlife Resources Division, Social Circle, GA. Website (<http://georgiawildlife.dnr.state.ga.us/content/specialconcernplants.asp>). Accessed 31 Mar 2010.
- GEORGIA EXOTIC PEST PLANT COUNCIL (GA-EPPC). 2006. List of non-native invasive plants in Georgia. Georgia Exotic Pest Plant Council, Univ. Georgia, Tifton, GA. Website (<http://www.gaeppc.org/list.cfm>). Accessed 31 Mar 2010.
- GEORGIA POWER. 2005a. Resource study report: Rare, threatened, and endangered species. Morgan Falls Project (FERC No. 2237), unpublished report. Southern Company, Atlanta, GA.
- . 2005b. Resource study report: Wetlands, littoral, and riparian habitat. Morgan Falls Project (FERC No. 2237), unpublished report. Southern Company, Atlanta, GA.
- . 2005c. Resource study report: Wildlife and botanical resources. Morgan Falls Project (FERC No. 2237), unpublished report. Southern Company, Atlanta, GA.
- GERDES, M., S. MESSER, AND T. JONES. 2007. Chattahoochee River National Recreation Area: Historic resource study. National Park Service, Southeast Regional Office, Cultural Resources Division, Atlanta, GA.
- GETTY, A., K. CHERI, W. CARROLL, B. KONIG, D. LIBMAN, D. EK, S. BACH, AND K. JOHNS. 2001. Planning approach for the Chattahoochee River National Recreation Area general management/EIS, pp. 145–148. *In*: K. J. Hatcher, ed., *Proceedings of the 2001 Georgia Water Resources Conference*, 26–27 March 2001. Univ. Georgia, Athens, GA.
- GODFREY, R. K. 1988. *Trees, Shrubs, and Woody Vines of Northern Florida and Adjacent Georgia and Alabama*. Univ. Georgia Press, Athens, GA.
- AND J. W. WOOTEN. 1979. *Aquatic and Wetland Plants of the Southeastern United States. Monocotyledons*. Univ. Georgia Press, Athens, GA.
- AND ———. 1981. *Aquatic and Wetland Plants of the Southeastern United States. Dicotyledons*. Univ. Georgia Press, Athens, GA.
- HAY, M. E. AND J. D. PARKER. 2004. An inventory of aquatic plants in the Chattahoochee River National Recreation Area, Atlanta, Georgia, USA. Unpublished report. National Park Service, Atlanta, GA.
- HEIMAN, K. 2000. *Vascular flora of the Chattahoochee River National Recreation Area, Atlanta, Georgia: A report for plant collections for an on-site herbarium*. National Park Service, Atlanta, GA.

- . 2002. The vascular flora of Chattahoochee River National Recreation Area, Georgia. *Tipularia* 17: 16–28.
- ISELY, D. 1990. Vascular Flora of the Southeastern United States, Vol. 3, Part 2. Leguminosae (Fabaceae). Univ. North Carolina Press, Chapel Hill, NC.
- ITIS STEERING COMMITTEE (ITIS). 2010. Integrated taxonomic information system on-line database. ITIS Partnership, T. Orrell, Acting Director, c/o Smithsonian Institution, Washington, DC, Website (<http://www.itis.gov/index.html>). Accessed 31 Mar 2010.
- JONES, R. L. 2005. Plant Life of Kentucky, an Illustrated Guide to the Vascular Flora. Univ. Press of Kentucky, Lexington, KY.
- LEE, R. P. 1974. A botanical survey of the flora of selected sites on the flood plain of the Chattahoochee River. Unpublished report. National Park Service, Atlanta, GA.
- . 1976. A botanical survey of the flora of selected sites on the flood plain of the Chattahoochee River Corridor, Cobb County, Georgia. Unpublished report. National Park Service, Atlanta, GA.
- LI, X.-W. AND I. C. HEDGE. 1994. *Clinopodium*, pp. 228–231. In: Z.-Y. Wu and P. H. Raven, eds., Flora of China, Vol. 17. Verbenaceae through Solanaceae. Science Press, Beijing, China.
- MICHAEL, P. W. 2009. *Echinochloa colona* versus “*Echinochloa colonum*” (Poaceae). *Taxon* 58: 1366–1368.
- NATIONAL PARK SERVICE (NPS). 2007. Chattahoochee River. National Park Service, Government Printing Office, Washington, DC.
- . 2010a. Chattahoochee River National Recreation Area, Georgia. National Park Service, Washington, DC. Website (<http://www.nps.gov/chat/index.htm>). Accessed 31 Mar 2010.
- . 2010b. Chattahoochee River: River Guide. National Park Service, Government Printing Office, Washington, DC.
- NOURSE, H. AND C. NOURSE. 2007. Favorite Wildflower Walks in Georgia. Univ. Georgia Press, Athens, GA.
- O’GRADY, P. AND C. B. POE. 1980. Chattahoochee River National Recreation Area, Georgia: Cultural resource inventory. Archeological sites, final report. National Park Service, Southeast Archeological Center, Tallahassee, FL.
- PARSONS ENGINEERING SCIENCE. 2001. Cultural resources overview and predictive model for the Chattahoochee River National Recreation Area, Cobb, Forsyth, Fulton, and Gwinnett Counties, Georgia, March 2001. National Park Service, Atlanta, GA. [updated November 2001]
- PATRICK, T. S., J. R. ALLISON, AND G. A. KRAKOW. 1995. Protected plants of Georgia, an information manual on plants designated by the State of Georgia as endangered, threatened, rare, or unusual. Georgia Dept. Natural Resources, Wildlife Resources Division, Georgia Natural Heritage Program, Atlanta, GA. Website (<http://www.georgiawildlife.com/node/1371>). Accessed 8 Feb 2012.
- RADFORD, A. E., H. E. AHLES, AND C. R. BELL. 1968. Manual of the Vascular Flora of the Carolinas. Univ. North Carolina Press, Chapel Hill, NC.
- RUEDAS, L. A., J. SALAZAR-BRAVO, J. W. DRAGOO, AND T. L. YATES. 2000. Commentary. The importance of being earnest: What, if anything, constitutes a “specimen examined?” *Molec. Phylogeny. Evol.* 17: 129–132.

- SMITH, A. R., K. M. PRYER, E. SCHUETTPELZ, P. KORALL, H. SCHNEIDER, AND P. G. WOLF. 2006. A classification of extant ferns. *Taxon* 55: 705–731.
- THIERS, B. 2010. Index Herbariorum: A Global Directory of Public Herbaria and Associated Staff. New York Botanical Gardens, Bronx, NY. Website (<http://sciweb.nybg.org/science2/IndexHerbariorum.asp>). Accessed 31 Mar 2010.
- TROXEL, W. J. AND R. J. HAYNES. 1985. Floral and faunal survey, Chattahoochee River Re-regulation Dam Project. Unpublished report. US Fish and Wildlife Service, Atlanta, GA.
- UNITED STATES FISH AND WILDLIFE SERVICE (USFWS). 2010. Species reports: Listed plants. US Fish and Wildlife Service, Washington, DC. Website (http://ecos.fws.gov/tess_public/pub/listedPlants.jsp). Accessed 31 March 2010.
- UPPER CHATTAHOOCHEE RIVERKEEPER. 2010. Chattahoochee watershed pocket guide. Upper Chattahoochee Riverkeeper, Atlanta, GA. Website (http://www.chattahoochee.org/downloads/UCR_Pocket_Guide.pdf). Accessed 31 Mar 2010.
- WATSON, J. K. 2005. Avian conservation implementation plan, Chattahoochee River National Recreation Area, National Park Service Southeast Region. US Fish and Wildlife Service, Asheville, NC.
- WEAKLEY, A. S. 2009. Flora of the Carolinas, Virginia, Georgia, Northern Florida, and Surrounding Areas. Working draft August 5, 2009. Published by the author, Univ. North Carolina, Chapel Hill, NC.
- WHARTON, C. H. 1978. The Natural Environments of Georgia. Bull. 144. Georgia Dept. Natural Resources, Atlanta, GA.
- WOFFORD, E. B. 1989. Guide to the Vascular Plants of the Blue Ridge. Univ. Georgia Press, Athens, GA.
- WUNDERLIN, R. P. AND B. F. HANSEN. 2000. Flora of Florida, Vol. 1. Pteridophytes and Gymnosperms. Univ. Press of Florida, Gainesville, FL.
- AND ———. 2003. Guide to the Vascular Plants of Florida, 2nd ed. Univ. Press of Florida, Gainesville, FL.
- ZOMLEFER, W. B., D. E. GIANNASI, M. W. DENSLOW, D. B. POINDEXTER, AND P. BALL. 2011. Noteworthy collections: Georgia. *Castanea* 76: 187–189.
- , ———, AND S. L. ECHOLS. 2010. Vascular plant flora of Kennesaw Mountain Battlefield Park, Cobb County, Georgia. *S. E. Naturalist* (Steuben) 9: 129–164.

APPENDIX 1

ANNOTATED LIST OF VOUCHERED VASCULAR PLANTS
OF CHATTAHOOCHEE RIVER NATIONAL RECREATION AREA

This list of 827 vascular plant species (plus three varieties), representing 138 families was compiled from *Zomlefer (1408–2090)* collections at GA and CHAT herbaria plus vouchers previously deposited at CHAT from other surveys (ca. 1997–2007). Genera, species, and infraspecific taxa are alphabetical within each family under four major groups: lycophytes, monilophytes (“ferns and allies”), gymnosperms, and angiosperms. Family circumscriptions follow the following

sources: Smith et al. (2006) for lycophytes and monilophytes; FNA (1993) for gymnosperms; and APG III (2009) for angiosperms. Scientific nomenclature follows ITIS (2010) and Weakley (2009); synonyms are those that are commonly used in herbaria and floras. Specimen notations: *Z* = Zomlefer (current study, listed first); *H* = Karin Heiman; *P* = John D. Parker; *R* = Alex Reynolds; † = new vouchered taxon for the park; [uni] = unicate *Zomlefer* specimen (i.e., at GA, no duplicate at CHAT); * = exotic (ITIS 2010; Weakley 2009); invasive exotics (GA–EPPC 2006): [Cat1] = Category 1; [Cat1A] = Category 1 Alert; [Cat2] = Category 2; [Cat3] = Category 3; [Cat4] = Category 4; [cult] = cultivated (i.e., planted on park grounds); rare plants: [Con] = species of special concern in Georgia (GA DNR 2010b); [Pro] = protected species in Georgia (GA DNR 2010a). Park units (see Table 1 and Figure 1B): AB = Abbotts Bridge, BI = Bowmans Island, CS = Cochran Shoals, GB = Gold Branch, HB = Holcomb Bridge, IF = Island Ford, JB = Jones Bridge, JF = Johnson Ferry, MB = Medlock Bridge, MF = McGinnis Ferry, OF = Orrs Ferry, PA = Palisades, SB = Settles Bridge, SC = Suwanee Creek, and VC = Vickery Creek. Habitat/locality data: (Heiman 2000, 2002; Zomlefer et al. 2010): bluff = bluff forest (ravine and slope forest), disturbed = disturbed area, outcrop = rock outcrop, swamp = swamp, upland = upland forest, wetland = open wetland, habitat? = habitat unknown (information lacking on CHAT specimen label). Relative abundance: common = generally abundant throughout a particular habitat, species easily found; occasional = locally common and/or several individuals distributed within a habitat, species not too difficult to locate; infrequent = sporadic occurrence of a small number of individuals, species relatively scarce and not easily found; rare = very few individuals encountered; abundance? = abundance unknown (information lacking on CHAT specimen label).

LYCOPHYTES

LYCOPODIACEAE

Diphasiastrum digitatum (Dill. ex A. Braun) Holub [= *Lycopodium digitatum* Dill. ex A. Braun] – BI, HB, SB; disturbed, upland; common–infrequent; *Z* 1508, 2084; *H* 789, 790.

†*Huperzia lucidula* (Michx.) Trevis. [= *Lycopodium lucidulum* Michx.] – BI; upland; rare; *Z* 1822 [uni].

MONILOPHYTES

ASPLENIACEAE

Asplenium pinnatifidum Nutt. – PA?, VC; outcrop; rare; *H* 1225.

Asplenium platyneuron (L.) Britton, Sterns & Poggenb. – BI; upland; infrequent; *Z* 1497; *H* 1224.

BLECHNACEAE

†*Woodwardia areolata* (L.) T. Moore – JF; bluff/upland; occasional; *Z* 1562.

DENNSTAEDTIACEAE

Pteridium aquilinum (L.) Kuhn – CS, PA; disturbed/upland; rare; *Z* 1652; *H* 904.

DRYOPTERIDACEAE

Dryopteris marginalis (L.) A. Gray – PA; upland; infrequent; *H* 1408.

Polystichum acrostichoides (Michx.) Schott – BI, GB, JF; bluff/upland; occasional; *Z* 1561; *H* 888, 889.

LYGODIACEAE

**Lygodium japonicum* (Thunb.) Sw. – [Cat1]; IF, VC; disturbed; rare; *Z* 1878; *R* 74.

ONOCLEACEAE

Onoclea sensibilis L. var. *sensibilis* – BI, PA; swamp; occasional; *Z* 1480; *H* 832.

OPHIOGLOSSACEAE

†*Botrypus virginianus* (L.) Holub [= *Botrychium virginianum* (L.) Sw.] – JF; upland; infrequent; *Z* 1784.

†*Ophioglossum pycnostichum* (Fernald) A. & D. Löve [= *O. vulgatum* L.] – BI; upland; occasional; *Z* 1468.

Sceptridium bibernatum (Savigny) Lyon [= *Botrychium bibernatum* (Savigny) Underw.] – BI, GB, IF, PA; disturbed, upland; common; *Z* 1415; *H* 1272, 1273, 1274.

OSMUNDACEAE

Osmunda regalis L. var. *spectabilis* (Willd.) A. Gray – PA; wetland; common; *H* 836.

Osmundastrum cinnamomeum (L.) C. Presl [= *Osmunda cinnamomea* L.] – PA; upland; rare; *Z* 2057; *H* 835.

POLYPODIACEAE

†*Pleopeltis polypodioides* (L.) E.G. Andrews & Windham subsp. *michauxiana* (Weath.) E.G. Andrews & Windham – GB; upland; rare; *Z* 1735.

PTERIDACEAE

Adiantum pedatum L. – GB, IF; bluff/upland; occasional; *Z* 1730; *H* 1237.

Cheilanthes lanosa (Michx.) Easton – VC; outcrop; rare; *H* 1336.

SALVINIACEAE

Azolla caroliniana Willd. – CS; wetland; infrequent; *H* 1230.

THELYPTERIDACEAE

Phegopteris hexagonoptera (Michx.) Fée – CS, GB; upland; infrequent; *Z* 1659; *H* 852.

Thelypteris noveboracensis (L.) Nieuwl. – VC; upland; infrequent; *H* 1048.

WOODSIACEAE

Athyrium asplenoides (Michx.) Eaton [= *A. filix-femina* (L.) Roth var. *asplenoides* (Michx.) Hultén] – BI, GB; disturbed, swamp; infrequent; *Z* 1826; *H* 1227.

†*Deparia acrostichoides* (Schwartz) M. Kato [= *Athyrium thelypterioides* (Michx.) Desv.] – CS; disturbed; infrequent; *Z* 1660.

GYMNOSPERMS

CUPRESSACEAE

**Callitropsis ×leylandii* (A.B. Jacks. & Dallim.) D.P. Little [= ×*Cupressocyparis leylandii* (A.B. Jacks. & Dallim.) Dallim.] – GB; disturbed; infrequent; *Z* 1408; *H* 2680. [persisting from cultivation; not naturalized]

Juniperus communis L. – PA; [cult]; *H* 1559.

Juniperus virginiana L. – BI, IF; [cult]; *Z* 1462; *H* 1560.

†*Taxodium distichum* (L.) Rich. – VC; [cult]; *Z* 2072.

PINACEAE

- **Abies concolor* (Gordon & Glend.) Lindl. ex Hildebr. – MF; [cult]; *H* 1231.
Pinus echinata Mill. – PA; upland; infrequent; *H* 859, 860.
Pinus elliottii Engelm. var. *elliottii* – MF; disturbed; infrequent; *H* 861.
Pinus strobus L. – IF, MF; disturbed; common; *Z* 1995; *H* 862. [McGinnis
 Ferry: persistent pine plantation]
Pinus taeda L. – BI, IF, PA; disturbed, upland; common; *Z* 1463; *H* 863, 864.
Pinus virginiana Mill. – BI, VC; disturbed, upland; common; *Z* 1828; *H* 865.
 **Pseudotsuga menziesii* (Mirbel) Franco – MF; [cult]; *H* 900.
Tsuga canadensis (L.) Carrière – IF, JB; [cult]; *Z* 1411; *H* 1072.

ANGIOSPERMS

ACANTHACEAE

- Ruellia caroliniensis* (J.F. Gmel.) Steud. – CS, GB; disturbed; infrequent;
Z 1694; *H* 962, 963.

ADOXACEAE

- Sambucus canadensis* L. – GB, IF; disturbed; occasional; *Z* 1607; *H* 972.
Viburnum acerifolium L. – JF, PA; bluff; infrequent; *Z* 1564; *H* 1096.
Viburnum nudum L. – PA; swamp/wetland; common; *H* 1097, 1098.
 **Viburnum opulus* L. var. *americanum* Aiton – PA; [cult]; *H* 2659.
Viburnum prunifolium L. – BI; upland; common; *H* 1099.
Viburnum rufidulum Raf. – PA; swamp?; common; *H* 1100.

ALISMACEAE

- Alisma subcordatum* Raf. – JF; disturbed/wetland; infrequent; *H* 1245; *P* 2614.
Sagittaria latifolia Willd. – CS, JF, SC; wetland; common; *Z* 1799; *H* 967, 968; *P*
 2652.

ALTINGIACEAE

- Liquidambar styraciflua* L. – IF; upland; occasional; *Z* 1465; *H* 1587.

AMARANTHACEAE

- **Alternanthera philoxeroides* (Mart.) Griseb. – [Cat1]; PA; wetland; rare; *P* 2615.
Chenopodium album L. – AB, JF; disturbed/wetland; occasional; *Z* 1955;
H 1338.
 *†*Dysphania ambrosioides* (L.) Mosyakin & Clemants [= *Chenopodium
 ambrosioides* L.] – AB; disturbed/wetland; occasional; *Z* 1956.

AMARYLLIDACEAE

- Allium canadense* L. – CS; disturbed; infrequent; *H* 1247. [seedlings]
 **Allium vineale* L. – [Cat4]; JF, PA; disturbed/upland; infrequent; *Z* 1553; *H* 1246.
Hymenocallis coronaria (Leconte) Kunth [= *H. caroliniana* (L.) Herbert] –
 [Pro]; PA; swamp; rare; *H* 1524. [specimen comprises two detached leaves]
 **Narcissus pseudonarcissus* L. – CS, PA; bluff, upland; rare; *Z* 1450; *H* 827.
 †*Zephyranthes atamasca* (L.) Herb. var. *atamasca* – BI; disturbed/upland;
 occasional; *Z* 1493.

ANACARDIACEAE

- Rhus copallinum* L. – IF; disturbed; occasional; *Z* 1977; *R* 67.
Rhus glabra L. – CS, IF; disturbed; infrequent–occasional; *Z* 1669, 1756; *R* 68.
Toxicodendron pubescens Mill. – PA; disturbed/upland; rare; *H* 1057.
Toxicodendron radicans (L.) Kuntze var. *radicans* – GB, IF; disturbed, upland;
 common; *Z* 1606; *H* 1058.

ANNONACEAE

Asimina parviflora (Michx.) Dunal – CS; bluff; infrequent; *H* 1223.

Asimina triloba (L.) Dunal – BI, IF; upland, swamp; occasional; *Z* 1489; *H* 1222.

APIACEAE

Chaerophyllum tainturieri Hook. – AB, JF; wetland; occasional; *Z* 1546; *H* 1329.

Cicuta maculata L. var. *maculata* – CS; upland, wetland; infrequent; *Z* 1891; *H* 1260.

Cryptotaenia canadensis (L.) DC. – CS, IF; upland, wetland; common; *Z* 1637; *H* 1374.

**Daucus carota* L. – [Cat3]; BI, CS; disturbed; common; *Z* 1658; *H* 1385.

Daucus pusillus Michx. – JF; disturbed; rare; *H* 1386.

Eryngium prostratum Nutt. ex DC. – CS, JF; wetland; occasional; *Z* 1770; *H* 1435.

Ligusticum canadense (L.) Britton – GB, IF, PA; bluff, upland; infrequent; *Z* 1717, 1733; *H* 878, 1578.

Oxyopolis rigidior (L.) Raf. – PA; wetland; common; *H* 839.

Ptilimnium capillaceum (Michx.) Raf. – CS, JF; disturbed, wetland; common; *Z* 1767; *H* 905.

Sanicula canadensis L. – BI, GB, JF, PA; disturbed, upland; common; *Z* 1774; *H* 974, 975, 976.

†*Sanicula smallii* E.P. Bicknell – GB; upland; occasional; *Z* 1602.

Thaspium trifoliatum (L.) A. Gray – GB; upland; occasional; *Z* 1715; *H* 1047.

APOCYNACEAE

Amsonia tabernaemontana Walter – PA; upland; common; *H* 1255.

Apocynum cannabinum L. – CS, GB; disturbed/wetland; occasional; *Z* 1633; *H* 1263.

Asclepias amplexicaulis J.E. Smith – PA; disturbed; infrequent; *H* 1219.

Asclepias tuberosa L. – GB, PA; disturbed; common; *Z* 1701; *H* 1220.

Asclepias variegata L. – GB, VC; upland; rare; *Z* 1681 [uni]; *H* 1221.

†*Gonolobus* cf. *suberosus* (L.) R. Br. [= *Matelea suberosa* (L.) Shinnars] – MF; disturbed; common; *Z* 1992. [nonreproductive specimen]

Matelea carolinensis (Jacq.) Woodson – PA; upland; infrequent; *H* 806.

*†*Vinca major* L. – [Cat2]; SB; disturbed; common; *Z* 1512.

**Vinca minor* L. – [Cat2]; JB, PA; disturbed, upland; occasional; *Z* 1427; *H* 2665.

AQUFOLIACEAE

Ilex ambigua (Michx.) Torr. – IF, PA; bluff/upland; infrequent; *Z* 1413, 2056; *H* 1533, 1538.

Ilex decidua Walter var. *decidua* – SC; disturbed; infrequent; *H* 1532.

Ilex glabra (L.) A. Gray – CS; [cult?]; *H* 1535.

Ilex opaca Aiton – JB, PA; upland; infrequent; *Z* 1432 [cult], 1443; *H* 1536 [cult].

Ilex verticillata (L.) A. Gray – PA; habitat?; infrequent; *H* 1531, 1534.

Ilex vomitoria Aiton – CS, IF; disturbed; infrequent; *Z* 1750; *H* 1537.

ARACEAE

Arisaema dracontium (L.) Schott – SC; disturbed/wetland; rare; *H* 1213.

Arisaema triphyllum (L.) Schott – BI, PA; swamp; infrequent-occasional; *Z* 1479; *H* 1212; *R* 69.

Peltandra virginica (L.) Schott – GB, PA; upland/wetland; rare; *Z* 1729; *H* 847; *P* 2651.

ARALIACEAE

Aralia spinosa L. – IF; upland; rare; *H* 1210.

**Hedera helix* L. var. *helix* – [Cat1]; IF, PA; disturbed, upland; common; *Z* 1417; *H* 1490.

Panax quinquefolius L. – [Con]; CS, PA; upland; infrequent; Z 1661; H 840.

ARISTOLOCHIACEAE

Asarum canadense L. – PA; upland; rare; H 1218.

Endodeca serpentaria (L.) Raf. [= *Aristolochia serpentaria* L.] – GB; upland; infrequent; H 1214.

Hexastylis arifolia (Michx.) Small – IF, PA; upland; occasional; Z 1444; H 1509, 1510.

ASPARAGACEAE

*†*Dracaena godseffiana* Hort – IF; [cult]; Z 2032 [uni].

**Liriope muscari* (Decne.) L.H. Bailey – [Cat3]; PA, VC; upland; occasional; Z 1412; H 1589.

Maianthemum racemosum (L.) Link subsp. *racemosum* – JF, PA; upland; rare; Z 1581; H 802.

**Ophiopogon japonicus* (L. f.) Ker Gawl. – JB; [cult?]; H 833.

Polygonatum biflorum (Walter) Elliott var. *biflorum* – CS, JF; upland; occasional; Z 1580; H 881.

†*Polygonatum biflorum* var. *commutatum* (J.A. & J.H. Schultes) Morong – JF; upland; rare; Z 1583 [uni].

Yucca filamentosa L. – IF, PA; upland; infrequent; Z 1611 [cult]; H 2684.

ASTERACEAE

†*Ageratina altissima* (L.) R.M. King & H. Rob. var. *altissima* – SC; upland; occasional; Z 1984.

Ageratina aromatica (L.) Spach – PA; disturbed; occasional; Z 2038; H 1446.

Ambrosia artemisiifolia L. – CS, SC; disturbed; common; Z 1911; H 1250, 1251.

†*Ambrosia trifida* L. var. *trifida* – CS; disturbed; common; Z 1919.

Antennaria plantaginifolia (L.) Hook. – PA; disturbed; common; H 1261.

**Arctium minus* Bernh. – AB; disturbed; infrequent; H 1211.

Arnoglossum atriplicifolium (L.) H. Rob. – CS, VC; disturbed/upland; occasional; Z 1913; H 1278.

Baccharis halimifolia L. – BI, OF; disturbed; rare; Z 1839; H 1264.

Bidens frondosa L. – AB, JB, PA; disturbed, wetland; infrequent–occasional; Z 1952, 1970, 2002; H 1268, 1269.

*†*Bidens polylepis* S.F. Blake – HB; disturbed; infrequent; Z 2085.

†*Chrysogonum virginianum* L. – PA; upland; infrequent; Z 1452.

Chrysopsis mariana (L.) Elliott – GB, IF, PA; disturbed; infrequent–common; Z 1935, 2013; H 1341, 1342.

†*Cirsium altissimum* (L.) Spreng. – CS; disturbed; occasional; Z 1917, 1918 [uni].

Cirsium discolor (Muhl. ex Willd.) Spreng. – GB; disturbed; infrequent; H 1346.

**Cirsium vulgare* (Savi) Tenore – [Cat4]; AB, JF; disturbed; infrequent; Z 1765; H 1345.

Conoclinium coelestinum (L.) DC. – IF; disturbed; occasional; Z 2020; H 1445 [cult].

†*Conyza canadensis* (L.) Cronquist var. *canadensis* – IF; disturbed; common; Z 1871.

Conyza canadensis var. *pusilla* (Nutt.) Cronquist – BI, CS; disturbed; occasional; Z 1809; H 1434.

- Coreopsis auriculata* L. – JF, PA; wetland; occasional; Z 1560; H 1363.
- †*Coreopsis grandiflora* Hogg ex Sweet – JF; wetland; rare; Z 1781 [uni].
- Coreopsis major* Walter – CS, GB; disturbed; occasional; Z 1656, H 1361, 1362.
- †*Coreopsis pubescens* Elliott var. *robusta* A. Gray ex Eames – PA; upland; rare; Z 2047.
- *†*Coreopsis tinctoria* Nutt. var. *tinctoria* – JB; disturbed; infrequent; Z 1855.
- Coreopsis tripteris* L. – BI; disturbed/wetland; rare; H 1360.
- Doellingeria infirma* (Michx.) Greene – GB; upland; infrequent; H 1203.
- Eclipta prostrata* (L.) L. – CS, PA; disturbed, wetland; occasional; Z 1909; H 1411.
- Elephantopus carolinianus* Räusch. – GB, MB, PA; disturbed, upland; occasional; Z 1996; H 839, 1417.
- Elephantopus tomentosus* L. – IF, PA; disturbed, upland; occasional; Z 1872; H 1418, 1419.
- †*Erechtites hieraciifolius* (L.) Raf. ex DC. – IF; disturbed; occasional; Z 1884.
- Erigeron annuus* (L.) Pers. – SC; disturbed; common; H 1431.
- Erigeron philadelphicus* L. var. *philadelphicus* – JB, JF; disturbed; occasional; Z 1527; H 1430.
- Erigeron pulchellus* Michx. var. *pulchellus* – GB, IF; disturbed, upland; occasional; Z 1601; H 1432.
- Erigeron strigosus* Muhl. ex Willd. – BI, GB; disturbed; common; Z 1700; H 1433.
- Eupatorium album* L. var. *album* – GB, VC; disturbed; common; H 1443, 1444, 1448.
- Eupatorium capillifolium* (Lam.) Small ex Porter & Britton – CS, MF; disturbed; occasional; Z 1988, 2058; H 1440.
- Eupatorium compositifolium* Walter – CS; disturbed; infrequent; H 1451.
[specimen comprises nonreproductive seedling]
- Eupatorium hyssopifolium* L. – BI, IF, PA, SC; disturbed; rare-common; Z 1876, 1979; H 1447, 1453.
- †*Eupatorium rotundifolium* L. – GB; disturbed; occasional; Z 1945.
- Eupatorium serotinum* Michx. – CS, SC; disturbed/wetland; occasional; Z 1925; H 1441.
- †*Eupatorium sessilifolium* L. var. *sessilifolium* – GB; disturbed; occasional; Z 1944.
- Eupatorium torreyanum* Short & R. Peter [= *E. hyssopifolium* L. var. *laciniatum* A. Gray] – JF, OF, PA; disturbed; common; Z 1840; H 1449, 1452.
- †*Eurybia divaricata* (L.) G.L. Nesom – MB; upland; common; Z 2005, 2006.
- Eutrochium fistulosum* (Barratt) E.E. Lamont [= *Eupatorium fistulosum* Barratt] – JB, VC; disturbed, upland; occasional; Z 1859; H 1442.
- Eutrochium purpureum* (L.) E.E. Lamont [= *Eupatorium purpureum* L.] – CS; habitat?; infrequent; H 1450.
- *†*Facelis retusa* (Lam.) Sch.Bip. – CS; disturbed; rare; Z 1624 [uni].
- Gamochaeta purpurea* (L.) Cabrera – SB; disturbed; common; Z 1505, 1506; H 1484.
- **Helenium amarum* (Raf.) H. Rock – BI, SC; disturbed; common; Z 1827; H 1492, 1493.
- Helenium flexuosum* Raf. – GB, JF, OF; disturbed/wetland; infrequent-occasional; Z 1844, 1929; H 1491.
- Helianthus angustifolius* L. – PA; disturbed; infrequent; H 1498.
- †*Helianthus atrorubens* L. – BI; disturbed; infrequent; Z 1815.
- Helianthus decapetalus* L. – CS; upland; infrequent; H 1502.
- Helianthus hirsutus* Raf. – GB, SC; disturbed; infrequent; H 1496, 1497.

- Helianthus microcephalus* Torr. ex A. Gray – PA, SC; disturbed, upland; common; *H* 1495, 1500.
- Helianthus strumosus* L. – CS, IF; disturbed/wetland; common; *Z* 1927; *H* 1499.
- Heliopsis helianthoides* (L.) Sweet – SC; upland; infrequent; *H* 1503.
- Hieracium gronovii* L. – GB, PA; disturbed; infrequent; *H* 1513, 1514.
- Hieracium venosum* L. – CS, JF; upland; infrequent; *Z* 1565; *H* 1512.
- **Hypochaeris radicata* L. – CS, IF; disturbed; rare; *Z* 1621; *H* 1529.
- Krigia cespitosa* (Raf.) K.L. Chambers – JF; disturbed; occasional; *Z* 1534; *H* 1563, 1564.
- †*Krigia virginica* (L.) Willd. – SB; disturbed; common; *Z* 1502.
- †*Lactuca biennis* (Moerich) Fernald – MB; disturbed/wetland; rare; *Z* 2004.
- Lactuca canadensis* L. – BI, CS, GB, JF; disturbed; common; *Z* 1779, 1810; *H* 1042, 1566, 1567.
- *†*Lactuca serriola* L. – AB; disturbed; infrequent; *Z* 1950.
- **Leucanthemum vulgare* Lam. – [Cat2]; CS, IF; disturbed; occasional; *Z* 1616; *H* 1575 [cult].
- Liatris elegantula* (Greene) K. Schum. – IF, PA; disturbed; infrequent; *Z* 2014; *H* 1577.
- †*Liatris spicata* (L.) Willd. var. *spicata* – GB; disturbed; occasional; *Z* 1936.
- †*Mikania scandens* (L.) Willd. – CS; wetland; common; *Z* 1907.
- Packera anonyma* (Wood) W.A. Weber & A. Löve – IF, JF; disturbed/wetland; common; *Z* 1543; *H* 994.
- †*Packera glabella* (Poir.) C. Jeffrey – BI; swamp; occasional; *Z* 1484.
- †*Pityopsis graminifolia* (Michx.) Nutt. var. *graminifolia* – PA; disturbed; common; *Z* 2037.
- Pluchea camphorata* (L.) DC. – CS, JF, PA; wetland; occasional; *Z* 1902; *H* 874; *P* 2640.
- Prenanthes altissima* L. – IF, PA; disturbed; rare; *Z* 2029 [uni]; *H* 895.
- †*Pseudognaphalium obtusifolium* (L.) Hillard & B.L. Burt – MF; disturbed; rare; *Z* 1987 [uni].
- Pyrrhopappus carolinianus* (Walter) DC. – BI, CS, JF, PA; disturbed/wetland; rare; *Z* 1544; *H* 909, 910, 1565.
- **Ratibida columnifera* (Nutt.) Wooton & Standl. – CS; disturbed [cult?]; *H* 936.
- Rudbeckia fulgida* Aiton var. *fulgida* – GB, SC; disturbed; occasional; *Z* 1930; *H* 958, 959.
- Rudbeckia hirta* L. – GB; disturbed; occasional; *Z* 1703; *H* 960.
- Rudbeckia laciniata* L. – AB, CS, GB; disturbed, upland; occasional–common; *Z* 1920, 1963; *H* 961.
- Sericocarpus linifolius* (L.) Britton, Sterns & Poggenb. – PA; disturbed/upland?; abundance?; *H* 1208.
- Silphium asteriscus* L. var. *dentatum* (Elliott) Chapm. – BI, GB; disturbed, upland; occasional–common; *Z* 1728, 1816, 1932; *H* 1000, 1501.
- Silphium compositum* Michx. var. *compositum* – PA; upland; common; *H* 998, 999.
- Smallanthus uvedalius* (L.) Mack. ex Small – IF, JB; disturbed; occasional; *Z* 1858; *H* 1005.
- †*Solidago altissima* L. var. *altissima* – AB; disturbed; common; *Z* 1962.
- Solidago arguta* Aiton – CS, JB, JF, MB; disturbed, upland; rare–common; *Z* 1869, 1915, 2009; *H* 1015.

Solidago caesia L. var. *caesia* – JB, PA; disturbed, upland; rare; Z 1870; H 1016.

Solidago curtisii Torr. & A. Gray – PA; disturbed; common; H 1024.

†*Solidago erecta* Pursh – IF; disturbed; occasional; Z 2012.

Solidago gigantea Aiton – CS, JF; disturbed/wetland; common; Z 1922; H 1018.

Solidago nemoralis Aiton var. *nemoralis* – IF; disturbed; common; Z 2011; H 1019.

Solidago odora Aiton – IF, PA, SC; disturbed; infrequent–common; Z 1971, 2010; H 1020.

Solidago petiolaris Aiton var. *petiolaris* – PA; upland; rare; Z 2042 [uni]; H 1021.

Solidago speciosa Nutt. var. *speciosa* – IF, PA; disturbed/upland; infrequent; H 1017, 1022.

Solidago sphacelata Raf. – VC; outcrop; rare; H 1023.

**Sonchus asper* (L.) Hill – [Cat4]; IF, PA; disturbed, swamp; occasional; Z 1613; H 1025.

Symphyotrichum cordifolium (L.) G.L. Nesom – IF, MB, PA, SC; disturbed, upland; common; Z 2007; H 1196, 1202, 1204, 1207.

Symphyotrichum dumosum (L.) G.L. Nesom – BI, IF, PA; disturbed, upland; occasional–common; Z 2016, 2045; H 1197, 1199.

Symphyotrichum georgianum (Alexander) G.L. Nesom – [Pro]; IF, JB, PA; disturbed; rare; Z 2034 [cult]; H 1193, 1194.

Symphyotrichum lateriflorum (L.) A. Löve & D. Löve – BI, IF; disturbed/upland; infrequent; Z 2078; H 1201.

Symphyotrichum patens (Aiton) G.L. Nesom var. *patens* – CS, PA; disturbed, upland; infrequent; Z 2041; H 1195, 1205.

Symphyotrichum pilosum (Willd.) G.L. Nesom – AB, BI, IF, PA; disturbed; infrequent–occasional; Z 1951, 2024, 2027; H 1198, 1200.

Symphyotrichum undulatum (L.) G.L. Nesom – PA; habitat?; infrequent; H 1206.

*†*Taraxacum officinale* G.H. Weber ex F.H. Wigg. – PA; disturbed; occasional; Z 1430.

Verbesina alternifolia (L.) Britton ex Kearney – AB, JF, SC; disturbed, upland; occasional–common; Z 1796, 1954; H 1088.

Verbesina occidentalis (L.) Walter – MF, PA; disturbed, upland; occasional; Z 1994; H 1089.

Verbesina virginica L. var. *virginica* – PA; disturbed, upland; common; Z 2036; H 1090.

Vernonia gigantea (Walter) Trel. ex Branner & Coville – CS; disturbed/wetland, upland; common; Z 1889; H 1091.

Vernonia noveboracensis (L.) Michx. – CS; disturbed; infrequent; H 1092.

†*Xanthium strumarium* L. – VC; disturbed; occasional; Z 2062.

**Youngia japonica* (L.) DC. – BI, IF, PA; disturbed, swamp; occasional; Z 1459, 1481; H 2682, 2683.

BALSAMINACEAE

Impatiens capensis Meerb. – JF; wetland; common; Z 1769; H 1540.

BERBERIDACEAE

**Berberis julianiae* Schneid. – CS, PA; [cult]; Z 1431; H 2686.

**Mahonia bealei* (Fortune) Carrière – [Cat3]; GB, PA; disturbed; rare; Z 1410; H 801.

**Nandina domestica* Thunb. – [Cat2]; IF, PA; disturbed, upland; occasional; Z 1414; H 826.

Podophyllum peltatum L. – BI, JB; swamp/upland; common; Z 1473; H 879.

BETULACEAE

Alnus serrulata (Aiton) Willd. – IF; disturbed/wetland; infrequent; Z 1464; H 1248.

Betula nigra L. – CS, IF; disturbed/swamp; occasional; Z 1628; H 1267.

Carpinus caroliniana Walter – JB, PA; upland; infrequent–occasional; Z 1446, 1864; H 1308.

Corylus americana Walter – CS; upland; infrequent; H 1367.

Ostrya virginiana (Mill.) K. Koch – PA, SB; disturbed; rare; Z 1511; H 837.

BIGNONIACEAE

Bignonia capreolata L. – JF; disturbed, upland; infrequent; Z 1797; H 1270.

Campsis radicans (L.) Seem. – CS, IF; disturbed, wetland; rare; Z 1644; H 1283.

Catalpa bignonioides Walter – CS, JB; disturbed; rare; Z 1914; H 1318.

BORAGINACEAE

Cynoglossum virginianum L. var. *virginianum* – BI; upland; infrequent; Z 1486; H 1376.

Myosotis macrosperma Engelm. – JB, JF; swamp, wetland; occasional; Z 1526; H 1487.

*†*Myosotis scorpioides* L. – GB; wetland; common; Z 1720.

BRASSICACEAE

**Barbarea verna* (Mill.) Asch. – CS; disturbed; infrequent; H 1266.

Boechera laevigata (Muhl. ex Willd.) Al-Shehbaz [= *Arabis laevigata* (Muhl. ex Willd.) Poir.] – CS; disturbed; infrequent; H 1209.

**Capsella bursa-pastoris* (L.) Medik. – JF; disturbed; infrequent; Z 1516; H 1284.

Cardamine diphylla (Michx.) Wood – CS, JF, PA; disturbed, upland; occasional; Z 1420, 1478; H 1285, 1287.

**Cardamine hirsuta* L. – BI, IF, PA; disturbed, upland; common; Z 1426, 1469; H 1286.

Lepidium virginicum L. var. *virginicum* – CS, PA; disturbed; occasional; Z 1626; H 1571.

**Lunaria annua* L. – CS; disturbed; infrequent; Z 1671; H 784, 785.

*†*Raphanus raphanistrum* L. – JF; disturbed/upland; rare; Z 1559.

Rorippa palustris (L.) Besser var. *fernaldiana* (Butters & Abbe) Stuckey – CS; disturbed; infrequent; H 952.

CABOMBACEAE

Brasenia schreberi J.F. Gmel. – CS; wetland; infrequent; H 1276.

Cabomba caroliniana A. Gray – CS; wetland; common; Z 1738; P 2616, 2617

CALYCANTHACEAE

Calycanthus floridus L. – GB, IF; upland; occasional; Z 1604; H 1279.

CAMPANULACEAE

Campanula divaricata Michx. – PA, SC; upland; rare; Z 2055; H 1282.

Lobelia cardinalis L. – CS, JF, SC; wetland; occasional; Z 1901; H 1594; P 2631.

†*Lobelia inflata* L. – OF; disturbed/wetland; rare; Z 1842 [uni].

Lobelia puberula Michx. – CS, GB; disturbed; rare; Z 1933; H 1593.

Lobelia siphilitica L. var. *siphilitica* – PA; upland; common; H 1590.

Lobelia spicata Lam. – BI, GB, MP, PA; disturbed, wetland; rare–occasional; Z 1811, 2001, 2043 [uni]; H 1591, 1592.

†*Triodanis perfoliata* (L.) Nieuwl. – JF; disturbed; infrequent; Z 1517.

CANNABACEAE

- Celtis laevigata* Willd. – PA; upland; common; *H* 1322.
Celtis occidentalis L. – AB, CS, IF; swamp, upland; occasional; *Z* 1663; *H* 1323, 1324.
Celtis tenuifolia Nutt. – IF; disturbed/upland; common; *H* 1321.

CAPRIFOLIACEAE

- **Abelia* × *grandiflora* (André) Rehder – AB, IF; [cult]; *Z* 1610; *H* 2678.
 **Lonicera fragrantissima* Lindl. & Paxton – JB; [cult?]; *H* 775.
 **Lonicera japonica* Thunb. – [Cat1]; BI, GB, IF, JB; disturbed, wetland; common; *Z* 1609; *H* 774, 776, 777.
 **Lonicera maackii* (Rupr.) Herder – [Cat2]; IF, JF; bluff/upland; rare; *Z* 1575; *H* 773.
Valerianella radiata (L.) Dufr. – BI, IF; disturbed, upland; occasional; *Z* 1499; *H* 1085.

CARYOPHYLLACEAE

- **Cerastium glomeratum* Thuill. – CS, PA; disturbed/upland; common; *Z* 1434; *H* 1327.
Silene stellata (L.) Aiton f. – IF; disturbed; common; *H* 997.
 *†*Stellaria media* (L.) Vill. – PA; upland; common; *Z* 1425.
Stellaria pubera Michx. – CS, PA; upland; infrequent; *Z* 1455; *H* 1033.

CELASTRACEAE

- **Celastrus orbiculatus* Thunb. – [Cat1A]; CS, PA; upland; rare-common; *Z* 2040; *H* 1320; *R* 61.
Euonymus americanus L. – GB; upland; common; *Z* 1594; *H* 1437.
 **Euonymus fortunei* (Turcz.) Hand.-Mazz. – [Cat3]; IF; disturbed; abundance?; *R* 62.
 **Euonymus japonicus* Thunb. – IF, PA; [cult]; *H* 1438, 1439.

COLCHICACEAE

- Uvularia perfoliata* L. – GB, JF; upland; rare; *Z* 1567; *H* 1078.
Uvularia sessilifolia L. – IF; upland; infrequent; *H* 1079.

COMMELINACEAE

- **Commelina communis* L. – AB, BI, CS, IF; disturbed, upland; occasional–infrequent; *Z* 1761, 1820, 1960; *H* 1356.
 **Commelina diffusa* Burm. f. – CS, VC; disturbed/upland; occasional; *Z* 2064; *H* 1357.
 **Murdannia keisak* (Hassk.) Hand.-Mazz. – [Cat1]; GB, JF; disturbed/wetland; common; *P* 2634, 2635.
Tradescantia hirsuticaulis Small – PA; outcrop; rare; *H* 1059, 1060.
 †*Tradescantia subaspera* Ker Gawl. – JF; upland; infrequent; *Z* 1578.

CONVOLVULACEAE

- Calystegia sepium* (L.) R. Br. – HB; disturbed; infrequent; *H* 1280.
 **Convolvulus arvensis* L. – AB; disturbed; infrequent; *H* 1359.
 †*Cuscuta gronovii* Willd. ex Roem. & Schult. – GB, MF; disturbed, wetland; infrequent–common; *Z* 1719 [uni], 1991 [uni].
 †*Dichondra carolinensis* Michx. – IF; disturbed; common; *Z* 1882.
 †*Ipomoea coccinea* L. – AB; disturbed; occasional; *Z* 1968.
Ipomoea hederacea Jacq. – HB, SC; disturbed; occasional; *Z* 2083; *H* 1544.
Ipomoea lacunosa L. – AB, CS; disturbed, wetland; occasional; *Z* 1969; *H* 1543.
Ipomoea pandurata (L.) G. Mey. – CS, GB, IF; disturbed; rare; *Z* 1699; *H* 1541, 1542.
 *†*Ipomoea purpurea* (L.) Roth – [Cat4]; VC; disturbed; common; *Z* 2059.

- *†*Jacquemontia tamnifolia* (L.) Griseb. – [Cat4]; VC; disturbed; rare; *Z* 2069.
Stylisma humistrata (Walter) Chapm. – PA; upland; abundance?; *H* 1036.

CORNACEAE

- Cornus amomum* Mill. – CS, JF, PA; disturbed/wetland; rare-common; *Z* 1641, 1800; *H* 1366.
Cornus florida L. – BI, PA; disturbed, swamp; occasional; *Z* 1488; *H* 1365.
Cornus stricta Lam. [= *C. foemina* Mill. var. *foemina*] – PA; swamp/wetland; infrequent; *H* 1364.
Nyssa sylvatica Marshall – CS; upland; common; *H* 829.

CUCURBITACEAE

- *†*Citrullus lanatus* (Thunb.) Matsum. & Nakai var. *lanatus* – PA; disturbed; rare; *Z* 2044.
*†*Cucurbita maxima* Duchesne – VC; disturbed; rare; *Z* 2067.
*†*Cucurbita moschata* Duchesne – VC; disturbed; infrequent; *Z* 2061.
†*Melothria pendula* L. – JF; disturbed; infrequent; *Z* 1763.
Sicyos angulatus L. – AB, PA; disturbed; occasional; *Z* 1967; *H* 813.

CYPERACEAE

- Carex annectens* (E.R. Bicknell) E.R. Bicknell – JF; disturbed/wetland; infrequent; *H* 1295.
Carex caroliniana Schwein. – CS, JF; disturbed, wetland; occasional; *Z* 1520, 1528; *H* 1288, 1289.
Carex complanata Torr. & Hook. – BI, PA; disturbed, wetland; infrequent; *H* 1304, 1307.
Carex crebriflora Wiegand – PA; upland; common; *H* 1292.
Carex crinita Lam. var. *crinita* – CS, PA; wetland; occasional; *Z* 1648; *H* 1300.
Carex digitalis Willd. – IF; wetland; infrequent; *H* 1302.
†*Carex festucea* Schkuhr ex Willd. – JF; disturbed/wetland; infrequent; *Z* 1545a.
†*Carex flaccosperma* Dewey – JF; disturbed/wetland; occasional; *Z* 1536.
Carex frankii Kunth – CS; wetland; occasional; *Z* 1905; *H* 1296, 1297.
Carex gracilescens Steud. – CS; disturbed; infrequent; *H* 1306.
Carex laxiculmis Schwein. – BI; upland?; rare; *H* 1305.
†*Carex laxiflora* Lam. – GB; upland; rare; *Z* 1591.
Carex lupulina Muhl. ex Willd. – IF, JF; wetland; occasional; *Z* 1532; *H* 1290.
Carex lurida Wahlenb. – IF, JF; disturbed/wetland; occasional; *Z* 1533, 1540; *H* 1293, 1294; *P* 2621.
Carex muehlenbergii Schkuhr ex Willd. var. *enervis* Boott – GB, IF; upland, wetland; infrequent; *H* 1298, 1303.
†*Carex oxylepis* Torr. & Hook. – JF; disturbed/upland; infrequent; *Z* 1574.
†*Carex pensylvanica* Lam. – PA; upland; infrequent; *Z* 1441.
†*Carex picta* Steud. – PA; upland; rare; *Z* 1456.
†*Carex prasina* Wahlenb. – BI; swamp; infrequent; *Z* 1490.
Carex retroflexa Muhl. ex Willd. – BI, CS, IF; upland, wetland; rare–infrequent; *Z* 1496, 1650; *H* 1301.
†*Carex scoparia* Schkuhr ex Willd. var. *scoparia* – CS; wetland; occasional; *Z* 1636.
†*Carex squarrosa* L. – GB; upland/wetland; common; *Z* 1723.
Carex stipata Muhl. ex Willd. – CS, SC; wetland; common; *Z* 1646; *H* 1291.
†*Carex tribuloides* Wahlenb. – JF; upland; occasional; *Z* 1787.
Carex vulpinoidea Michx. – CS, PA; disturbed/wetland; infrequent; *Z* 1638; *H* 1299.
†*Cyperus croceus* Vahl – CS, IF; disturbed, wetland; occasional; *Z* 1760, 1912.

†*Cyperus echinatus* (L.) A.W. Wood – OF; disturbed/wetland; common; *Z* 1848, 1850.

**Cyperus iria* L. – HB, JF; disturbed; infrequent; *Z* 2080; *H* 1379.

Cyperus odoratus L. – CS; disturbed; infrequent; *H* 1377.

Cyperus retrorsus Chapm. – JF; disturbed/wetland; infrequent; *H* 1380.

Cyperus strigosus L. – CS, JF?, OF; disturbed/wetland; occasional-common; *Z* 1849, 1899; *P* 2622.

Dulichium arundinaceum (L.) Britton var. *arundinaceum* – GB; wetland; infrequent; *H* 1410.

†*Eleocharis melanocarpa* Torr. – CS; wetland; occasional; *Z* 1752.

Eleocharis obtusa (Willd.) Schult. – HB, JF; wetland; common; *H* 1416; *P* 2624, 2625.

†*Fimbristylis autumnalis* (L.) Roem. & Schult. – IF; disturbed/wetland; infrequent; *Z* 2079 [unij].

Kyllinga brevifolia Rottb. – IF, JF; disturbed/wetland; occasional; *Z* 2077; *H* 1378.

Rhynchospora corniculata (Lam.) A. Gray – JF; disturbed/wetland; occasional; *Z* 1776; *H* 949.

Rhynchospora glomerata (L.) Vahl var. *glomerata* – IF; wetland; infrequent; *H* 950.

Schoenoplectus tabernaemontani (C.C. Gmel.) Palla – JF; disturbed/wetland; rare; *H* 986.

Scirpus atrovirens Willd. – CS, SC; wetland; common; *Z* 1667; *H* 984.

Scirpus cyperinus (L.) Kunth – JF, SC; disturbed/wetland; common; *Z* 1983; *H* 985; *P* 2655.

†*Scirpus expansus* Fernald – [Con]; GB; swamp/upland; occasional; *Z* 1722.

†*Scirpus polyphyllus* Vahl – OF; disturbed/wetland; common; *Z* 1843.

Scleria oligantha Michx. – PA; wetland; infrequent; *H* 988.

DIAPENSIACEAE

Galax urceolata (Poir.) Brummit – IF; upland; infrequent; *H* 1468.

DIOSCOREACEAE

Dioscorea villosa L. – GB, PA; disturbed, upland; infrequent; *Z* 1599; *H* 1406, 1407.

EBENACEAE

Diospyros virginiana L. – CS, IF, JB; disturbed, upland; infrequent-occasional; *Z* 1665, 2021; *H* 1404.

ELAEAGNACEAE

**Elaeagnus pungens* Thunb. – [Cat2]; GB, IF, PA, VC; disturbed, bluff/upland; occasional-common; *Z* 1726, 2075; *H* 1413, 1414.

**Elaeagnus umbellata* Thunb. var. *parviflora* (Royle) Schneid. – [Cat1]; CS, IF; disturbed; infrequent; *Z* 1806; *H* 1415.

ERICACEAE

Chimaphila maculata (L.) Pursh – PA, VC; upland; infrequent; *Z* 1680; *H* 1339.

Epigaea repens L. – PA; upland; common; *H* 1425.

Gaylussacia tomentosa (A. Gray) Pursh ex Small – PA; upland; infrequent; *H* 1474.

Kalmia latifolia L. – CS; disturbed/bluff; occasional; *Z* 1674; *H* 1561.

Leucothoe fontanesiana (Steud.) Sleumer – PA; upland; common; *Z* 1416; *H* 1576.

Lyonia ligustrina (L.) DC. – PA; upland; common; *H* 792, 793.

Monotropa uniflora L. – BI; upland; rare; *R* s.n.

Oxydendrum arboreum (L.) DC. – GB, IF; upland; infrequent; *Z* 1762; *H* 838; *R* 71.

Rhododendron arborescens (Pursh) Torr. – PA; habitat?; infrequent; *H* 939.

Rhododendron calendulaceum (Michx.) Torr. – IF, JF; bluff/upland; infrequent; *Z* 1568; *H* 940.

Rhododendron canescens (Michx.) Sweet – BI, GB; swamp; infrequent; *Z* 1491; *H* 941.

Rhododendron maximum L. – JB, PA; upland; infrequent; *H* 942 [cult], 943.

Rhododendron minus Michx. – BI, CS, PA, VC; disturbed, bluff; occasional; *Z* 1673, 1683; *H* 944, 945.

**Rhododendron simsii* Planch. – IF; [cult]; *H* 948.

Rhododendron viscosum (L.) Torr. – IF; bluff; infrequent; *H* 946.

Rhododendron (natural) hybrid – IF; bluff; rare; *H* 947. [likely *R. viscosum* (L.) Torr. × *R. calendulaceum* (Michx.) Torr.]

Vaccinium arboreum Marshall – CS, GB; disturbed, upland; infrequent; *Z* 1672; *H* 1080.

Vaccinium corymbosum L. – PA; bluff; common; *H* 1081.

Vaccinium elliottii Chapm. – BI, PA, VC; bluff, upland; occasional; *Z* 1684; *H* 1082, 1083.

†*Vaccinium fuscatum* Aiton – PA; upland; occasional; *Z* 1445.

Vaccinium stamineum L. – GB, IF; upland; occasional; *Z* 1600; *H* 1084.

EUPHORBIACEAE

Acalypha gracilens A. Gray – CS, IF; disturbed; common; *Z* 1880; *H* 1232.

†*Acalypha rhomboidea* Raf. – CS; disturbed/wetland; common; *Z* 1898.

Chamaesyce hyssopifolia (L.) Small – CS, IF, SC; disturbed; occasional–common; *Z* 1873, 1903; *H* 1455.

†*Chamaesyce maculata* (L.) Small – JF; disturbed; rare; *Z* 1801.

*†*Croton glandulosus* L. – CS; disturbed/wetland; occasional; *Z* 1924.

Euphorbia corollata L. – GB, PA; disturbed; infrequent; *Z* 1695; *H* 1454.

**Euphorbia cyparissias* L. – IF; disturbed [cult?]; *H* 1456.

Tragia urticifolia Michx. – GB; disturbed; rare; *Z* 1696; *H* 1061.

FABACEAE

**Albizia julibrissin* Durazz. – [Cat1]; CS, IF; disturbed; rare; *Z* 1746; *H* 1244.

†*Amorpha fruticosa* L. – GB; bluff/upland; rare; *Z* 1734.

Amphicarpaea bracteata (L.) Fernald – GB, SC; disturbed/upland; rare; *Z* 1978; *H* 1254.

Apios americana Medik. – CS, JB; disturbed, upland; rare–common; *Z* 1865, 1926; *H* 1262.

Centrosema virginianum (L.) Benth. – CS, IF; disturbed; occasional; *Z* 1757; *H* 1325.

Cercis canadensis L. var. *canadensis* – PA; upland; infrequent; *Z* 1449; *H* 1328.

Chamaecrista fasciculata (Michx.) Greene – GB, JB; disturbed; common; *Z* 1854; *H* 1331.

Chamaecrista nictitans (L.) Moench var. *nictitans* – IF, PA; disturbed, upland; common; *Z* 1877; *H* 1330.

Clitoria mariana L. var. *mariana* – GB, IF; disturbed; infrequent; *Z* 1758; *H* 1351.

Crotalaria sagittalis L. – IF; [cult?]; *H* 1372.

**Cytisus scoparius* (L.) Link – [Cat4]; IF; disturbed; rare; *R* 63.

Desmodium ciliare (Muhl. ex Willd.) DC. – SC; disturbed/upland; occasional; *Z* 1973; *H* 1391.

Desmodium laevigatum (Nutt.) DC. – PA; upland; infrequent; *H* 1390.

Desmodium paniculatum (L.) DC. – IF, PA; disturbed, upland; occasional–common; *Z* 2022, 2054; *H* 1389.

Desmodium rotundifolium DC. – BI; disturbed; infrequent; *H* 1392.

Desmodium viridiflorum (L.) DC. – IF, JF, PA, SC; disturbed, upland; infrequent–occasional; Z 1883, 1972, 2090; H 1388.

Galactia volubilis (L.) Britton var. *volubilis* – BI, PA; disturbed; common; Z 1829; H 851.

Gleditsia triacanthos L. – AB, JB; disturbed; rare; Z 1964; H 1482.

Hylodesmum nudiflorum (L.) H. Ohashi & R.R. Mill [= *Desmodium nudiflorum* (L.) DC.] – IF; disturbed; infrequent; H 1393.

*†*Kummerowia striata* (Thunb.) Schindler – [Cat4]; IF, GB, SC; disturbed; infrequent–common; Z 1886, 1887, 1937, 1975.

Lathyrus venosus Muhl. ex Willd. – GB; upland; infrequent; H 1569.

**Lespedeza bicolor* Turcz. – [Cat1]; CS; upland; infrequent; H 1574.

**Lespedeza cuneata* (Dum. Cours.) G. Don – [Cat1]; BI, CS, IF; disturbed; common; Z 1744, 1885; H 1572.

Lespedeza ×nuttallii Darl. – PA; habitat?; infrequent; H 1573.

†*Lespedeza procumbens* Michx. – GB, SC; disturbed; rare–occasional; Z 1938 [uni], 1974.

**Lotus corniculatus* L. – CS; disturbed/wetland; common; Z 1634; H 778.

**Medicago lupulina* L. – IF; disturbed; infrequent; H 809.

**Melilotus albus* Medik. – [Cat3]; CS, PA, SC; disturbed; infrequent; Z 1740; H 811, 812.

Mimosa microphylla Dryand. [= *Mimosa quadrivalvis* L. var. *angustata* (Torr. & A. Gray) Barneby] – CS, IF; disturbed; occasional; Z 1685; H 983.

Orbexilum pedunculatum (Mill.) Rydb. var. *psoraloides* (Walter) Isely [= *Psoralea psoraloides* (Walter) Cory] – BI; disturbed; rare; H 901.

**Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen & S.M. Almeida – [Cat1]; CS, GB; disturbed; common; Z 1928; H 906.

Robinia pseudoacacia L. – BI, HB, JF; disturbed, upland; rare–infrequent; Z 2086; H 951; R 72.

†*Senna marilandica* (L.) Link – MF; disturbed; rare; Z 1993.

*†*Senna obtusifolia* (L.) H.S. Irwin & Barneby – VC; disturbed; rare; Z 2070 [uni].

†*Strophostyles helvola* (L.) Elliott – CS; disturbed; common; Z 1916.

Stylosanthes biflora (L.) Britton, Sterns & Poggenb. – GB; disturbed; occasional; Z 1709; H 1037.

Tephrosia spicata (Walter) Torr. & A. Gray – CS, GB, IF; disturbed; infrequent–common; Z 1697, 1759; H 1043.

Tephrosia virginiana (L.) Pers. – PA; disturbed; rare; H 1044.

Thermopsis cf. *fraxinifolia* (Nutt. ex Torr. & A. Gray) Curtis – [Con]; PA; disturbed, upland; rare; H 1049, 1050. [specimens comprise top-snatched, nonreproductive material]

*†*Trifolium campestre* Schreb. – CS; disturbed; occasional; Z 1632.

*†*Trifolium dubium* Sibth. – CS; disturbed; common; Z 1622.

**Trifolium incarnatum* L. – CS; [cult]; H 1064.

**Trifolium pratense* L. – AB, IF; disturbed; common; Z 1615; H 1066.

Trifolium reflexum L. – IF; disturbed/upland; infrequent; H 1065.

**Trifolium repens* L. – BI, IF, JF; disturbed, wetland; occasional; Z 1548; H 1067, 1068.

Vicia caroliniana Walter – CS, BI, IF; disturbed, upland; rare; Z 1494; H 1226, 2662.

*†*Vicia lathyroides* L. – PA; upland; common; Z 1437.

**Vicia sativa* L. subsp. *nigra* (L.) Ehrh. – BI, IF; disturbed; common; *Z* 1458; *H* 2660, 2661.

**Vicia tetrasperma* (L.) Schreb. – AB; disturbed; rare; *H* 2664.

**Vicia villosa* Roth. subsp. *varia* (Host) Corb. – SC; disturbed; infrequent; *H* 2663.

**Wisteria sinensis* (Sims) Sweet – [Cat1]; IF, PA; disturbed, upland; occasional; *Z* 2023; *H* 2679.

FAGACEAE

Castanea dentata Borkh. – CS; disturbed?; rare; *H* 1316.

Castanea pumila (L.) Mill. – PA; disturbed/upland; infrequent; *H* 1317.

Fagus grandifolia Ehrh. – GB, IF; upland, common; *Z* 1595, 1670; *H* 1457.

†*Quercus alba* L. – CS; upland; common; *Z* 1739.

Quercus coccinea Münchh. – BI; upland; common; *H* 914.

Quercus falcata Michx. – SC; upland; common; *H* 915.

Quercus laurifolia Michx. – AB; disturbed; infrequent; *H* 921.

Quercus lyrata Walter – AB; disturbed, upland; rare; *Z* 1965; *H* 922, 924.

Quercus marilandica Münchh. – BI, PA; upland; occasional; *Z* 2050; *H* 923.

†*Quercus michauxii* Nutt. – SC; upland; occasional; *Z* 1986.

Quercus muehlenbergii Engelm. – JF; upland; infrequent; *H* 920.

Quercus nigra L. – CS, JB, PA; disturbed, upland; occasional; *Z* 1629; *H* 916, 925.

Quercus phellos L. – IF, PA; disturbed/upland; infrequent; *Z* 2019; *H* 917.

Quercus rubra L. – GB, PA; upland; occasional; *Z* 1597; *H* 927.

Quercus shumardii Buckley – PA; upland; infrequent; *H* 926.

Quercus stellata Wangenh. – IF, PA; disturbed, upland; occasional; *Z* 2039; *H* 918.

Quercus velutina Lam. – BI, CS, IF; disturbed, upland; occasional; *Z* 1737, 2018; *H* 919.

GELSEMIACEAE

Gelsemium sempervirens (L.) J. St.-Hil. – PA; disturbed, upland; infrequent; *Z* 1451; *H* 1475.

GENTIANACEAE

†*Frasera caroliniensis* Walter [= *Swertia caroliniensis* (Walter) Kuntze] – OF; upland; infrequent; *Z* 1851.

Obolaria virginica L. – GB; upland; infrequent; *H* 830.

Sabatia angularis (L.) Pursh – GB, OF; disturbed; occasional; *Z* 1845; *H* 966.

GERANIACEAE

Geranium carolinianum L. – JF, PA; disturbed, wetland; common; *Z* 1524; *H* 1478.

**Geranium dissectum* L. – AB; upland; infrequent; *H* 1477.

Geranium maculatum L. – BI, CS; upland; infrequent; *Z* 1492; *H* 1479.

HALORAGACEAE

**Myriophyllum aquaticum* (Vell.) Verdc. [= *M. brasiliense* Cambess.] – [Cat2]; CS, JB; wetland; common; *Z* 1642, 1866; *P* 2638.

Myriophyllum laxum Shuttlw. ex Chapm. – [Pro]; PA; wetland; rare; *P* 2637. [nonreproductive specimen]

Myriophyllum pimatum (Walter) Britton, Sterns & Poggenb. – GB; wetland; rare; *H* 824.

HAMAMELIDACEAE

Fothergilla major (Sims) Lodd. – [Pro]; PA; upland; rare; *H* 1462.

Hamamelis virginiana L. – IF; upland; common; *H* 1489.

HYDRANGEACEAE

Decumaria barbara L. – PA; bluff/upland; common; *H* 1387.

Hydrangea arborescens L. – IF, PA, SB; disturbed, upland; infrequent; *Z* 1515, 1576; *H* 1521, 1523.

Hydrangea quercifolia Bartram – IF; [cult]; *Z* 1612; *H* 1522.

Philadelphus inodorus L. – IF; [cult]; *Z* 1608; *H* 853.

HYDROCHARITACEAE

**Egeria densa* Planch. – [Cat2]; GB, PA; wetland; common; *Z* 2053; *H* 1421; *P* 2623.

Najas gracillima A. Braun ex Magnus – SC; wetland; rare; *H* 825.

HYDROLEACEAE

Hydrolea quadrivalvis Walter – JF; wetland; abundance?; *P* 2629.

HYPERICACEAE

Hypericum hypericoides (L.) Crantz – GB, MB, SB; disturbed, upland; rare–infrequent; *Z* 1509, 2008; *H* 1525.

†*Hypericum mutilum* L. – JF, OF; upland, wetland; rare–common; *Z* 1783 [uni], 1837.

Hypericum punctatum Lam. – GB, JB, VC; disturbed, upland, wetland; rare–infrequent; *Z* 1677, 1705, 1867; *H* 1527.

Triadenum walteri (J.F. Gmel.) Gleason – CS, PA, SC; wetland; rare; *Z* 1895; *H* 1526, 1528.

HYPOXIDACEAE

Hypoxis hirsuta (L.) Coville – IF; disturbed?; common; *H* 1530.

IRIDACEAE

**Iris germanica* L. – VC; habitat?; rare; *H* 1545. [plants persisting from cultivation]

Sisyrinchium atlanticum E.P. Bicknell – BI, PA; disturbed; infrequent; *H* 1002, 1003.

Sisyrinchium fuscatum E.P. Bicknell – GB, PA; disturbed, upland; infrequent; *Z* 1592; *H* 1001.

†*Sisyrinchium mucronatum* Michx. – JF; disturbed/wetland; occasional; *Z* 1529.

**Sisyrinchium rosulatum* E.P. Bicknell – CS, JF, PA; disturbed/wetland; occasional; *Z* 1547, 1666; *H* 1004.

ITEACEAE

†*Itea virginica* L. – CS; disturbed/wetland; occasional; *Z* 1640.

JUGLANDACEAE

Carya alba (L.) Nutt. – IF, PA; disturbed/upland; common; *Z* 1874; *H* 1315.

Carya cordiformis (Wangenh.) K. Koch – SC; disturbed, upland; common; *H* 1311.

Carya glabra (Mill.) Sweet var. *glabra* – BI, IF; upland; common; *H* 1312, 1314.

**Carya illinoensis* (Wangenh.) K. Koch – JB; [cult]; *H* 1309. [specimen comprises one leaf with partial leaflets]

Carya ovata (Mill.) K. Koch – IF; upland; infrequent; *H* 1310.

Carya pallida (Ashe) Engl. & Graebn. – PA; upland; common; *H* 1313.

Juglans nigra L. – MF, OF, PA; disturbed, upland; rare–occasional; *Z* 1838, 1990 [uni]; *H* 1547.

JUNCACEAE

Juncus acuminatus Michx. – CS, JF; wetland; common; *Z* 1521, 1522, 1523, 1668; *H* 1554.

Juncus biflorus Elliott – CS; wetland; infrequent; *H* 1555.

Juncus canadensis J. Gay ex Laharpe – JF; disturbed/wetland; infrequent; *H* 1551.

Juncus coriaceous Mack. – CS, PA; wetland; infrequent; *H* 1550, 1557.

Juncus dichotomus Elliott – AB, CS, JF, PA; disturbed, upland, wetland; rare–occasional; *Z* 1552, 1778, 1795; *H* 1549, 1552, 1553.

Juncus diffusissimus Buckley – CS; wetland; infrequent; *H* 1548.

Juncus effusus L. subsp. *solutus* (Fernald & Weigand) Hämet-Ahti – BI, JF; swamp; occasional; Z 1475; P 2630.

Juncus scirpoides Lam. – JF; disturbed/wetland; infrequent; H 1558.

Juncus tenuis Willd. – JF, OF; disturbed, wetland; common; Z 1775, 1836; H 1556.

Luzula acuminata Raf. var. *carolinae* (S. Watson) Fernald – BI, PA; swamp; rare; Z 1477; H 788.

Luzula echinata (Small) F.J. Herm. – BI, CS, IF, JF; swamp, upland; infrequent–occasional; Z 1476, 1563; H 786, 787.

LAMIACEAE

†*Callicarpa americana* L. – IF; [cult]; Z 2033.

*†*Clinopodium gracile* (Benth.) Kuntze – CS; disturbed; occasional; Z 1627.

Collinsonia canadensis L. – PA; upland; infrequent; Z 2048; H 1353.

Collinsonia tuberosa Michx. – PA; upland; common; H 1354.

**Glechoma hederacea* L. – CS, IF; disturbed; occasional; Z 2030; H 1481.

**Lamium amplexicaule* L. var. *amplexicaule* – IF, PA; disturbed/upland; common; Z 1428; H 1568.

*†*Lamium purpureum* L. – PA; disturbed/upland; common; Z 1429.

Lycopus virginicus L. – IF; disturbed/wetland; infrequent; Z 2025; H 791.

Monarda didyma L. – IF; [cult]; H 820.

Monarda fistulosa L. – GB, PA; disturbed, upland; occasional; Z 1688; H 819, 821.

Monarda punctata L. – CS; disturbed/wetland; occasional; Z 1908; H 818.

*†*Perilla frutescens* (L.) Britton – AB; disturbed/upland; infrequent; Z 1953.

**Prunella vulgaris* L. – CS, GB; disturbed; occasional; Z 1689; H 896.

Pycnanthemum incanum (L.) Michx. – BI, CS; disturbed, upland; occasional; Z 1814, 1934; H 907.

Salvia lyrata L. – JF, PA; disturbed/wetland; infrequent; Z 1525; H 971.

Scutellaria elliptica Muhl. – CS, GB; upland; infrequent; Z 1651; H 990.

Scutellaria incana Biehler – PA; upland; rare; H 991.

Scutellaria ovata Hill – PA; upland; rare; Z 2049; H 992.

Stachys eplingii J.B. Nelson – [Con]; IF; disturbed; rare; H 1031.

†*Teucrium canadense* L. – JF; disturbed/wetland; occasional; Z 1790.

Trichostema dichotomum L. – SC; disturbed; rare; H 1062.

LAURACEAE

Lindera benzoin (L.) Blume – CS, PA; upland; occasional; Z 1453; H 1585.

Sassafras albidum (Nutt.) Nees – IF, PA; disturbed, upland; rare; Z 1467; H 977.

LENTIBULARIACEAE

Utricularia cf. *floridana* Nash – IF, SC; wetland; infrequent; H 1076, 1077.
[specimens comprise nonreproductive material (bladder-leaves)]

LILIACEAE

Erythronium umbilicatum C.R. Parks & Hardin – PA; upland; common; Z 1454; H 1436.

Lilium michauxii Poir. – IF; upland; infrequent; H 1581.

Lilium cf. *superbum* L. – GB, PA; disturbed, wetland; rare; H 1582, 1583.
[specimens comprise a seedling and two nonreproductive plants]

Medeola virginiana L. – IF; upland; common; H 808.

LINDERNIACEAE

†*Lindernia dubia* (L.) Pennell var. *anagallidea* (Michx.) Cooperr. – JF; wetland; rare; Z 1780 [uni].

†*Micranthemum umbrosum* (J.F. Gmel.) S.F. Blake – JB; wetland; common; Z 1863.

LYTHRACEAE

**Lagerstroemia indica* L. – GB; disturbed; abundance?; R 73. [persisting from cultivation; not naturalized]

MAGNOLIACEAE

Liriodendron tulipifera L. – GB, PA; upland; common; Z 1586; H 1588.

Magnolia grandiflora L. – CS, JF; disturbed, upland; common; Z 1748; H 800.

Magnolia macrophylla Michx. – VC; bluff/upland; common; Z 1675; H 797.

Magnolia tripetala (L.) L. – GB, PA; disturbed; infrequent; Z 1605; H 799.

Magnolia virginiana L. – GB; upland; infrequent; H 798.

MALVACEAE

Hibiscus moscheutos L. – JF; disturbed/wetland; rare; Z 1888; H 1511.

†*Modiola caroliniana* (L.) G. Don – CS; disturbed; infrequent; Z 1619.

*†*Sida rhombifolia* L. var. *rhombifolia* – JF; disturbed; occasional; Z 1788.

*†*Sida spinosa* L. – VC; disturbed; occasional; Z 2065.

Tilia americana L. var. *heterophylla* (Vent.) Loudon – CS, JB; disturbed, upland; infrequent; Z 1664, 1808; H 1053.

MELANTHIACEAE

Amianthium muscivictim (Walter) A. Gray – GB, PA; bluff/upland/wetland; occasional; Z 1732; H 37, 1249.

Chamaelirium luteum (L.) A. Gray – GB; upland; occasional; Z 1585; H 1332.

Trillium catesbaei Elliott – JB, JF; upland; rare; Z 1570; H 1069.

Trillium cuneatum Raf. – CS, PA; upland; common; Z 1440; H 1070.

Trillium rugelii Rendle – CS, JF; upland; occasional; Z 1571; H 1071.

Veratrum woodii J.W. Robbins ex A.W. Wood – [Pro]; BI, OF; upland; infrequent; Z 1832, 1853; R 64.

MELASTOMATACEAE

Rhexia mariana L. – CS; disturbed, upland; infrequent; Z 1742; H 937.

Rhexia virginica L. – CS; upland; infrequent; H 938.

MENISPERMACEAE

Cocculus carolinus (L.) DC. – JF, VC; upland; occasional; Z 1794; H 1352.

Menispermum canadense L. – MB; upland; infrequent; H 814.

MOLLUGINACEAE

*†*Mollugo verticillata* L. – AB; disturbed; occasional; Z 1946.

MONTIACEAE

Claytonia virginica L. – CS; upland; rare; H 1347.

MORACEAE

*†*Fatoua villosa* (Thunb.) Nakai – [Cat4]; IF; disturbed; occasional; Z 2035.

**Ficus carica* L. – JB; [cult]; H 1460.

Morus rubra L. – GB, JF; disturbed, wetland; rare; Z 1582; H 822.

MYRICACEAE

Morella cerifera (L.) Small – CS; [cult?]; H 823.

NYMPHAEACEAE

Nymphaea odorata Aiton subsp. *odorata* – SC; wetland; infrequent; H 828.

OLEACEAE

Chionanthus virginicus L. – JB; habitat?; infrequent; H 1340.

**Forsythia ×intermedia* Zabel – CS, IF; disturbed; infrequent; Z 1461 [cult]; H 1461.

Fraxinus americana L. – IF, MB; disturbed, upland/swamp?; occasional–common; Z 2017; H 1466.

Fraxinus pennsylvanica Marshall – CS, IF, PA; disturbed, upland; infrequent; Z 1807; H 1464, 1467.

Fraxinus profunda (Bush) Bush – GB; upland; infrequent; H 1465.

**Jasminum nudiflorum* Lindl. – JB; [cult]; H 1546.

**Ligustrum japonicum* Thunb. – [Cat2]; CS; upland?; infrequent; H 1579.

**Ligustrum sinense* Lour. – [Cat1]; CS, PA; disturbed, upland; common; Z 1625; H 1580.

ONAGRACEAE

Circaea canadensis (L.) Hill subsp. *canadensis* [= *C. lutetiana* L. var. *canadensis* L.] – SC; habitat?; infrequent; H 1344.

Epilobium coloratum Biehl. – CS; disturbed; rare; H 1426.

Ludwigia alternifolia L. – CS; wetland; common; Z 1897; H 779.

Ludwigia decurrens Walter – CS, IF, JF; disturbed, wetland; rare–occasional; Z 1904, 2076 [uni]; H 781.

Ludwigia leptocarpa (Nutt.) Hara – JB; disturbed/wetland; infrequent; H 783.

Ludwigia palustris (L.) Elliott – CS, JF; disturbed, wetland; common; Z 1798; H 780, 782; P 2632.

†*Oenothera biennis* L. – GB; disturbed; occasional; Z 1942.

Oenothera laciniata Hill – CS; disturbed; infrequent; Z 1618; H 831.

ORCHIDACEAE

Cypripedium acaule Aiton – [Pro]; IF, VC; upland; occasional; Z 1682; H 1373.
Goodyera pubescens (Willd.) R. Br. ex Aiton f. – GB, SB; disturbed, upland; occasional; Z 1514; H 1485.

Malaxis unifolia Michx. – IF; upland; rare; H 803.

Platanthera clavellata (Michx.) Luer – IF; upland?; rare; H 871.

Platanthera flava (L.) Lindl. – PA; habitat?; rare; H 872.

†*Spiranthes lacera* (Raf.) Raf. var. *gracilis* (Bigelow) Luer – GB, MB; disturbed, upland; rare–infrequent; Z 1939, 1997 [uni].

Spiranthes ovalis Lindl. var. *erostellata* Catling – [Con]; JF; disturbed/wetland; rare; H 1030.

Tipularia discolor (Pursh) Nutt. – BI, CS; upland; infrequent; Z 1823; H 1054.

OROBANCHACEAE

Agalinis fasciculata (Elliott) Raf. – GB, PA; disturbed; rare; Z 2088 [uni]; H 1240.

Agalinis tenuifolia (Vahl) Raf. – PA; disturbed; infrequent; H 1241.

Aureolaria virginica (L.) Pennell – BI, GB; disturbed, upland; occasional; Z 1731, 1813; H 1228, 1229.

†*Conopholis americana* (L.) Wallr. – JF; upland; infrequent; Z 1584.

Epifagus virginiana (L.) W.P.C. Barton – CS, JF; upland; common; Z 1572; H 1424.

Orobanche uniflora L. – CS; wetland; infrequent; H 834.

OXALIDACEAE

*†*Oxalis corniculata* L. – BI; upland; occasional; Z 1498.

†*Oxalis violacea* L. – BI; upland; infrequent–common; Z 1483, 1596.

PAPAVERACEAE

Sanguinaria canadensis L. – CS, PA; upland; occasional; Z 1439; H 973.

PASSIFLORACEAE

Passiflora incarnata L. – CS, GB; disturbed; rare–occasional; Z 1745; H 844; R 66.

Passiflora lutea L. – GB, MB; disturbed, upland; occasional; Z 1998; H 845.

PAULOWNIACEAE

- **Paulownia tomentosa* (Thunb.) Siebold & Zucc. ex Steud. – [Cat1]; PA; upland; infrequent; *H* 846.

PENTHORACEAE

- Penthorum sedoides* L. – GB; wetland; infrequent; *H* 850.

PHRYMACEAE

- **Mazus pumilus* (Burm. f.) Steenis [= *M. japonicus* (Thunb.) Kuntze] – CS, GB; disturbed; infrequent; *Z* 1623; *H* 807.
Mimulus alatus Aiton – GB; wetland; infrequent; *H* 816.
Mimulus ringens L. var. *ringens* – JF, OF; disturbed/wetland; rare; *Z* 1847 [uni]; *P* 2636.
Phryma leptostachya L. var. *leptostachya* – GB, JF; upland; common; *Z* 1785; *H* 857.

PHYLLANTHACEAE

- *†*Phyllanthus urinaria* L. subsp. *urinaria* – VC; disturbed; common; *Z* 2068.

PHYTOLACCACEAE

- †*Phytolacca americana* L. – GB, IF; disturbed; infrequent; *Z* 1687.

PLANTAGINACEAE (VERONICACEAE)

- Callitriche heterophylla* Pursh var. *heterophylla* – JB; wetland; abundance?; *P* 2618, 2619, 2620.
Chelone glabra L. – CS, IF, PA; wetland; rare; *Z* 1892, 2028; *H* 1337.
Gratiola virginiana L. – CS, PA; wetland; infrequent; *H* 1486; *P* 2628.
Nuttallanthus canadensis (L.) D.A. Sutton – BI, CS, SB; disturbed, upland; infrequent; *Z* 1503; *H* 1584, 1586.
 †*Penstemon australis* Small – CS, GB, VC; disturbed, upland forest; rare–common; *Z* 1654, 1676, 1704.
Penstemon laevigatus Aiton – GB; upland; infrequent; *H* 848, 849.
 *†*Plantago aristata* Michx. – GB; disturbed; infrequent; *Z* 1692.
 **Plantago lanceolata* L. – AB, JF; disturbed; common; *Z* 1531; *H* 867.
 **Plantago major* L. – PA; upland; common; *H* 868.
Plantago rugelii Decne. – CS, SC; disturbed; occasional; *Z* 1747; *H* 869.
Plantago virginica L. – CS, SB; disturbed; occasional; *Z* 1504; *H* 870.
 **Veronica arvensis* L. – AB, JF; disturbed; infrequent; *Z* 1554; *H* 1093.
 *†*Veronica hederifolia* L. – PA; disturbed; common; *Z* 1419.
 **Veronica officinalis* L. – PA; disturbed; common; *H* 1094.
 **Veronica serpyllifolia* L. var. *serpyllifolia* – IF; disturbed; common; *H* 1095.

PLATANACEAE

- Platanus occidentalis* L. var. *occidentalis* – CS, VC; disturbed, upland; infrequent; *Z* 1630; *H* 873.

POACEAE

- †*Agrostis perennans* (Walter) Tuck. – MB; wetland; occasional; *Z* 1999.
 *†*Agrostis stolonifera* L. var. *stolonifera* – SC; wetland; common; *Z* 1982.
 *†*Alopecurus pratensis* L. – JF; disturbed; infrequent; *Z* 1556.
Andropogon gerardii Vitman – SC; disturbed; infrequent; *H* 1258.
Andropogon ternarius Michx. var. *ternarius* – BI, GB, IF; disturbed; occasional–common; *Z* 1409, 2074; *H* 1257.
Andropogon virginicus L. var. *virginicus* – CS, IF, JF; disturbed; common; *Z* 2073, 2089; *H* 1256.
Aristida purpurascens Poir. – BI, GB; disturbed; infrequent; *Z* 2087; *H* 2685.
 **Arthraxon hispidus* (Thunb.) Makino var. *hispidus* – [Cat1A]; GB, IF; disturbed; common; *Z* 2015; *H* 1215.

- Arundinaria gigantea* (Walter) Muhl. – GB, PA; disturbed, upland/wetland; common; Z 1438; H 1217.
- Brachyelytrum erectum* (Schreb. ex Spreng.) P. Beauv. – BI, CS, GB; upland, swamp; occasional–common; Z 1714, 1833; H 1275.
- *†*Briza minor* L. – CS; disturbed/wetland; common; Z 1635.
- **Bromus arvensis* L. – JF; disturbed; infrequent; H 1277.
- **Bromus catharticus* Vahl var. *catharticus* [= *B. unioides* Kunth] – AB, BI; disturbed; infrequent; Z 1949; H 1458.
- †*Bromus pubescens* Muhl. ex Willd. [= *B. purgans* L.] – BI, JF; disturbed, upland; infrequent–common; Z 1545c [uni], 1830.
- *†*Bromus secalinus* L. – [Cat4]; CS; disturbed; common; Z 1657.
- Chasmanthium latifolium* (Michx.) Yates – BI, GB; swamp, upland; occasional–common; Z 1724, 1824; H 1333.
- Chasmanthium laxum* (L.) Yates – IF, CS, PA; wetland; infrequent; Z 1751; H 1334, 1335.
- †*Chasmanthium sessiliflorum* (Poir.) Yates [= *C. laxum* (L.) Yates var. *sessiliflorum* (Poir.) Clarke] – JB; wetland; common; Z 1868.
- †*Cinna arundinacea* L. – AB, CS, SC; disturbed, wetland; rare–occasional; Z 1893, 1957, 1976.
- Coelorachis cylindrica* (Michx.) Nash – MF, PA; disturbed, wetland; rare; Z 1989; H 805.
- *†*Cynodon dactylon* (L.) Pers. var. *dactylon* – [Cat2]; IF; disturbed; common; Z 1753.
- **Dactylis glomerata* L. – AB, JF; disturbed; common; Z 1557; H 1381.
- Danthonia spicata* (L.) P. Beauv. ex Roem. & Schult. – CS, JF, PA, VC; disturbed, upland; occasional; Z 1551, 1617; H 1382, 1383.
- †*Dichanthelium boscii* (Poir.) Gould & C.A. Clark – GB, JF; disturbed, upland; occasional–common; Z 1573, 1587, 1708.
- Dichanthelium commutatum* (Schult.) Gould – GB, PA; swamp, upland; infrequent; Z 1588; H 1396, 1401.
- Dichanthelium dichotomum* (L.) Gould – BI, GB; JB, VC; disturbed, upland; infrequent–common; Z 1679, 1718; H 1397, 1400.
- Dichanthelium laxiflorum* (Lam.) Gould – JF, PA; disturbed, upland; infrequent–occasional; Z 1538, 1550; H 1402.
- Dichanthelium polyanthes* (Schult.) Mohlenbr. [= *D. sphaerocarpon* (Elliott) Gould var. *isophyllum* (Scribn.) Gould & C.A. Clark] – GB, IF; disturbed; infrequent; Z 1693; H 1398.
- Dichanthelium scoparium* (Lam.) Gould – CS, GB, JF; disturbed/wetland; occasional; Z 1777; H 1394, 1399.
- Dichanthelium sphaerocarpon* (Elliott) Gould var. *sphaerocarpon* – CS; wetland; infrequent; H 1395.
- †*Digitaria filiformis* (L.) Koeler var. *filiformis* – JB; disturbed; common; Z 1861.
- **Digitaria sanguinalis* (L.) Scop. – CS, IF; disturbed; occasional; Z 1686; H 1403.
- *†*Echinochloa colona* (L.) Link – JB; disturbed; common; Z 1862. [see Michael (2009) for update on *E. colona* vs. “*E. colonum*”]
- **Eleusine indica* (L.) Gaertn. – CS, JF; disturbed; occasional; Z 1923; H 1420.
- Elymus virginicus* L. – CS, GB; disturbed; infrequent; H 1422, 1423.
- Eragrostis capillaris* (L.) Nees – SC; disturbed; infrequent; H 1427.
- †*Eragrostis hirsuta* (Michx.) Nees – GB; disturbed; common; Z 1943.

Glyceria striata (Lam.) Hitchc. var. *striata* – CS, JF, PA; disturbed, wetland; occasional-common; Z 1518, 1558, 1647; H 1483.

Hordeum pusillum Nutt. – SC; disturbed; infrequent; H 1515.

Leersia oryzoides (L.) Sw. – JF; disturbed/wetland; infrequent; H 1570.

*†*Lolium perenne* L. var. *perenne* – JB; disturbed; common; Z 1856.

*†*Lolium perenne* var. *aristatum* Willd. – JF; disturbed; infrequent-common; Z 1539, 1545b [uni].

Melica mutica Walter – CS; upland; occasional; Z 1649, H 810.

**Microstegium vimineum* (Trin.) A. Camus – [Cat1]; AB, IF, PA; disturbed, upland; common; Z 1961, 2031; H 815.

†*Muhlenbergia schreberi* J.F. Gmel. – MB; wetland; infrequent; Z 2000.

†*Panicum anceps* Michx. – JF, SC; disturbed, wetland; occasional-common; Z 1772, 1981.

†*Panicum virgatum* L. – AB, PA; disturbed; common; Z 1966, 2046.

*†*Paspalum dilatatum* Poir. – AB, IF; disturbed; common; Z 1754, 1948.

*†*Paspalum notatum* Flügge var. *notatum* – [Cat2]; JF; disturbed; common; Z 1789.

Paspalum setaceum Michx. – SC; disturbed/wetland; infrequent; H 842.

**Paspalum urvillei* Steud. – [Cat3]; CS, PA; disturbed/wetland; common; Z 1804; H 843.

Piptochaetium avenaceum (L.) Parodi – GB; upland; infrequent; Z 1598; H 1035.

**Poa annua* L. – [Cat3]; IF, PA; disturbed, upland; common; Z 1435; H 877.

†*Poa autumnalis* Muhl. ex Elliott – JF; upland; occasional; Z 1555.

**Poa pratensis* L. subsp. *pratensis* – AB; disturbed; infrequent; H 876.

Saccharum alopecuroides (L.) Nutt. [= *Erianthus alopecuroides* (L.) Elliott] – BI; disturbed; infrequent; H 1428.

Saccharum giganteum (Walter) Pers. – PA, SC; disturbed; infrequent; Z 1980; H 1429.

**Schedonorus arundinaceus* (Schreb.) Dumort. [= *Lolium arundinaceum* (Schreb.) Darbysh.] – AB, IF; disturbed; common; Z 1614; H 875, 1459.

Schizachyrium scoparium (Michx.) Nash – PA, VC; disturbed, upland; infrequent; H 344, 982.

**Secale cereale* L. – CS; disturbed; infrequent; H 993.

Setaria parviflora (Poir.) Kerguelen – AB, SC; disturbed; common; Z 1947; H 995.

Sorghastrum nutans (L.) Nash – JB; disturbed; common; H 1026.

**Sorghum halepense* (L.) Pers. – [Cat3]; CS; disturbed; common; Z 1803; H 1027.

†*Sphenopholis nitida* (Biehler) Scribn. – GB; upland; rare; Z 1590 [uni].

†*Sphenopholis obtusata* (Michx.) Scribn. – JF; disturbed; occasional; Z 1537.

Tridens flavus (L.) Hitchc. – CS, IF, JF; disturbed, wetland; infrequent-common; Z 1879, 1906; H 1063.

*†*Triticum aestivum* L. – JF; disturbed/wetland; occasional; Z 1541.

PODOSTEMACEAE

Podostemum ceratophyllum Michx. – JB; wetland; abundance?; P 2641.

POLEMONIACEAE

Phlox amoena Sims – GB; upland [cult?]; infrequent; H 854.

Phlox carolina L. – CS, GB, IF; disturbed, upland; occasional-common; Z 1653, 1707; H 855.

POLYGALACEAE

Polygala polygama Walter – PA, VC; upland; infrequent; Z 1678; H 880.

POLYGONACEAE

- Persicaria glabra* (Willd.) M. Gómez [= *Polygonum densiflorum* Meisn.] – JF; wetland; abundance?; *P* 2646.
- Persicaria hydropiperoides* (Michx.) Small [= *Polygonum hydropiperoides* Michx.] – CS, JF; disturbed/wetland; common; *Z* 1792; *P* 2644, 2647.
- Persicaria lapathifolia* (L.) S.F. Gray [= *Polygonum lapathifolium* L.] – PA, VC; disturbed; occasional; *Z* 2066; *H* 883.
- **Persicaria longiseta* (Bruijn) Kitag. [= *Polygonum caespitosum* Blume var. *longisetum* (Bruijn) Seward] – [Cat4]; BI, GB, IF; disturbed, upland; occasional; *Z* 1825, 1881; *H* 882.
- Persicaria pensylvanica* (L.) M. Gómez [= *Polygonum pensylvanicum* L.] – JF, SC; disturbed/wetland; common; *Z* 1793; *H* 884.
- Persicaria punctata* (Elliott) Small [= *Polygonum punctatum* Elliott] – AB, CS, JF; wetland; common; *Z* 1958; *H* 885, *P* 2645, 2648.
- Persicaria sagittata* (L.) H. Gross ex Nakai [= *Polygonum sagittatum* L.] – CS, JF; disturbed/wetland; common; *Z* 1910; *H* 886; *P* 2649.
- Persicaria setacea* (Baldwin) Small [= *Polygonum setaceum* Baldwin] – AB, CS, IF, JF; disturbed, wetland; common; *Z* 1894, 1959, 2026; *P* 2650.
- Persicaria virginiana* (L.) Gaertn. [= *Polygonum virginianum* L.] – JB, SC, VC; upland; occasional; *Z* 1857; *H* 1055, 1056.
- *†*Polygonum aviculare* L. – CS, HB; disturbed; occasional; *Z* 1890, 2081.
- **Rumex acetosella* L. – CS; disturbed; infrequent; *H* 964.
- *†*Rumex conglomeratus* Murray – JF; disturbed; common; *Z* 1791.
- **Rumex crispus* L. subsp. *crispus* – AB, JF; disturbed, upland; occasional; *Z* 1530; *H* 965.
- †*Rumex hastatulus* Baldwin – SB; disturbed; common; *Z* 1507.

PONTEDERIACEAE

- **Eichhornia crassipes* (Mart.) Solms – CS; wetland; infrequent; *H* 1412.

POTAMOGETONACEAE

- Potamogeton diversifolius* Raf. – IF, JB; wetland; rare; *H* 893; *P* 2643.
- Potamogeton pusillus* L. – [Con]; JB; wetland; abundance?; *P* 2642.

PRIMULACEAE

- Lysimachia ciliata* L. – CS, GB, PA; upland, wetland; infrequent; *Z* 1643; *H* 794, 795.
- †*Lysimachia lanceolata* Walter – GB; disturbed; infrequent; *Z* 1706.
- *†*Lysimachia nummularia* L. – SB; wetland; infrequent; *Z* 1513.
- Lysimachia quadrifolia* L. – BI; upland; common; *H* 796.
- †*Samolus floribundus* Kunth [= *S. valerandi* L. subsp. *parviflorus* (Raf.) Hultén] – OF; wetland; common; *Z* 1834.

RANUNCULACEAE

- Aconitum uncinatum* L. – GB; disturbed; rare; *H* 1236.
- Actaea racemosa* L. [= *Cimicifuga racemosa* (L.) Nutt.] – GB; upland; infrequent; *Z* 1716; *H* 1343.
- Anemone americana* (DC.) H. Hara [= *Hepatica nobilis* Schreb. var. *obtusata* (Pursh) Steyerl.] – JF; upland; infrequent; *Z* 1569; *H* 1505.
- Anemone virginiana* L. – GB; disturbed, upland; rare; *Z* 1702; *H* 1259.
- Clematis crispa* L. – MB; upland; infrequent; *H* 1350.
- **Clematis terniflora* DC. – [Cat3]; CS, PA; disturbed; common; *Z* 1921; *H* 1348.

Clematis viorna L. – GB, PA; upland; rare; *H* 1349, *R* 70.

†*Clematis virginiana* L. – CS; wetland; common; *Z* 1900.

Ranunculus abortivus L. – CS, PA; disturbed, upland; common; *Z* 1421; *H* 928.

**Ranunculus acris* L. – AB; disturbed; infrequent; *H* 929.

**Ranunculus bulbosus* L. – JF, PA; disturbed/wetland; occasional-common; *Z* 1424, 1519; *H* 930.

Ranunculus hispidus Michx. – CS; disturbed; infrequent; *H* 931, 932.

Ranunculus pusillus Poir. – AB; disturbed; infrequent; *H* 933.

Ranunculus recurvatus Poir. var. *recurvatus* – BI, IF; upland; rare; *Z* 1482 [uni]; *H* 934.

**Ranunculus sardous* Crantz – OF, SC; disturbed, wetland; occasional; *Z* 1835; *H* 935.

†*Thalictrum dioicum* L. – JF; upland; infrequent; *Z* 1579.

†*Thalictrum macrostylum* Small & A. Heller – GB; upland/wetland; rare; *Z* 1721.

Thalictrum pubescens Pursh – IF; upland; common; *H* 1045.

Thalictrum thalictroides (L.) Eames & B. Boivin – CS, BI; upland, wetland; common; *Z* 1470; *H* 1046.

Xanthorhiza simplicissima Marshall – CS, JF; upland; common; *Z* 1566; *H* 2681.

RHAMNACEAE

Ceanothus americanus L. – CS, IF; disturbed; occasional; *Z* 1655; *H* 1319.

ROSACEAE

Agrimonia pubescens Wallr. – GB, JF; disturbed, upland; occasional; *Z* 1786, 1940; *H* 1242, 1243.

Amelanchier arborea (Michx. f.) Fernald – BI, PA; upland; occasional; *Z* 1442; *H* 1252.

Amelanchier canadensis (L.) Medik. – BI; upland; infrequent; *H* 1253.

Aruncus dioicus (Walter) Fernald – GB; upland; infrequent; *H* 1216.

†*Crataegus anisophylla* Beadle [= *C. flava* Aiton] – BI; upland; rare; *Z* 1831.

Crataegus calpodendron (Ehrh.) Medik. – GB; upland; infrequent; *H* 1368.

Crataegus intricata Lange var. *boyntonii* (Beadle) Kruschke [= *C. flabellata* (Spach) Kirchn.] – GB, VC; disturbed/upland; infrequent; *Z* 2071 [cult]; *H* 1371.

Crataegus uniflora Münchh. – GB; bluff/upland; infrequent; *Z* 1727; *H* 1369.

Crataegus viridis L. – GB; disturbed/upland; infrequent; *H* 1370.

Fragaria virginiana Mill. – AB; upland; common; *H* 1463.

Geum canadense Jacq. – GB, JF, SC; disturbed, upland, wetland; infrequent-occasional; *Z* 1710, 1773; *H* 1480.

Geum donianum (Tratt.) Weakley & Gandhi [= *Waldsteinia fragarioides* (Michx.) Tratt. subsp. *doniana* (Tratt.) Teppner] – BI; wetland; rare; *H* 2677.

Gillenia stipulata (Muhl. ex Willd.) Nutt. [= *Porteranthus stipulatus* (L.) Britton] – PA; upland; rare; *H* 891.

Gillenia trifoliata (L.) Moench [= *Porteranthus trifoliatus* (L.) Britton] – PA; upland; infrequent; *H* 892.

†*Malus angustifolia* (Aiton) Michx. – SB; disturbed; rare; *Z* 1510.

Malus coronaria (L.) Mill. – VC; upland; infrequent; *H* 804.

*†*Photinia* × *fraseri* Dress – PA; [cult]; *Z* 1433.

Potentilla canadensis L. – IF, PA; disturbed; common; *Z* 1457; *H* 894.

**Potentilla indica* (Andrews) T. Wolf [= *Duchesnea indica* (Andrews) Focke] – CS, PA; disturbed, upland; common; *Z* 1448; *H* 1409.

Prunus serotina Ehrh. var. *serotina* – PA; upland; infrequent; *Z* 1447; *H* 898.

Prunus umbellata Elliott – MB; upland; infrequent; *H* 899.

**Pyracantha koidzumii* (Hayata) Rehder – JB; [cult]; *H* 908.

**Pyrus calleryana* Decne. – [Cat3]; IF, JF; disturbed; rare; *Z* 1466; *H* 912.

**Pyrus communis* L. – PA; disturbed; infrequent; *H* 913.

†*Rosa carolina* L. – CS; upland; rare; *Z* 1749.

*†*Rosa luciae* Franch. & Rochebr. [= *Rosa wichuraiana* Crép.] – JF; disturbed; rare; *Z* 1535.

**Rosa multiflora* Thunb. – JB; [cult]; *H* 953, 954.

Rubus argutus Link – GB, JF, PA; disturbed/wetland; occasional; *Z* 1542; *H* 955, 956.

Rubus flagellaris Willd. – BI, CS; upland; infrequent; *Z* 1501; *H* 957.

**Spiraea ×arguta* Zabel – VC; [cult]; *H* 1029.

RUBIACEAE

Cephalanthus occidentalis L. – GB, JF; wetland; infrequent; *Z* 1766; *H* 1326.

†*Diodia teres* Walter – GB; disturbed; infrequent; *Z* 1931.

Diodia virginiana L. – CS; disturbed; occasional; *Z* 1743; *H* 1405.

Galium aparine L. – AB, PA; upland; occasional; *Z* 1418; *H* 1472.

Galium circaezans Michx. – BI, CS, GB; upland; occasional; *Z* 1589, 1662; *H* 1470, 1473.

Galium obtusum Bigelow subsp. *obtusum* – GB, IF; upland; common; *Z* 1713; *H* 1469.

†*Galium pilosum* Aiton var. *punctulosum* (Michx.) Torr. & A. Gray – BI; disturbed; infrequent; *Z* 1817.

Galium tinctorium L. – CS, JF; wetland; common; *Z* 1771; *H* 1471; *P* 2627.

†*Galium triflorum* Michx. – OF; upland; rare; *Z* 1841 [uni].

Houstonia longifolia Gaertn. – BI, GB, PA; disturbed, upland, wetland; infrequent; *Z* 1593, 1812 [uni]; *H* 1516, 1519.

Houstonia purpurea L. – BI, GB, PA; upland, wetland; infrequent; *Z* 1712; *H* 1518, 1520.

Houstonia pusilla Schöpf – CS, PA; disturbed, upland; occasional; *Z* 1423; *H* 1517.

Mitchella repens L. – BI, GB; upland; occasional; *Z* 1736; *H* 817.

*†*Richardia scabra* L. – JF; disturbed; infrequent; *Z* 1764.

**Sherardia arvensis* L. – AB; disturbed; infrequent; *H* 996.

RUTACEAE

**Citrus trifoliata* L. [= *Poncirus trifoliata* (L.) Raf.] – IF; disturbed [cult?]; *H* 890.

Ptelea trifoliata L. – PA; disturbed, upland; rare; *Z* 2052; *H* 902, 903.

SALICACEAE

Populus deltoides Bartram ex Marshall var. *deltoides* – JF; wetland; infrequent; *R* 65.

†*Populus heterophylla* L. – GB; disturbed; rare; *Z* 1941.

**Salix babylonica* L. – PA; [cult]; *H* 969.

†*Salix caroliniana* Michx. – BI; swamp; infrequent; *Z* 1485.

Salix nigra Marshall – CS; upland; infrequent; *H* 970.

SANTALACEAE

Comandra umbellata (L.) Nutt. var. *umbellata* – IF; upland; rare; *H* 1355.

Phoradendron serotinum (Raf.) M.C. Johnst. subsp. *serotinum* [= *P. leucarpum* (Raf.) Reveal & M.C. Johnst.] – JB; disturbed; common; *H* 856.

Pyrularia pubera Michx. – IF; upland; common; *H* 911.

SAPINDACEAE

Acer floridanum (Chapm.) Pax [= *A. barbatum* Michx.] – IF; habitat?; common; *H* 1233.

Acer leucoderme Small [= *A. saccharum* Marshall subsp. *leucoderme* (Small) Nieuwl.] – BI; disturbed; occasional; *Z* 1819; *H* 1234.

Acer negundo L. – CS, JF; disturbed, wetland; rare–common; *Z* 1549, 1631; *H* 1235.

†*Acer rubrum* L. – JF; disturbed; common; *Z* 1768.

Aesculus pavia L. var. *pavia* – BI, PA; upland; common; *Z* 1471; *H* 1239.

Aesculus sylvatica W. Bartram – IF; disturbed/upland; rare; *H* 1238.

**Koelreuteria paniculata* Laxm. – JB; [cult]; *H* 1562.

SAURURACEAE

Saururus cernuus L. – CS, PA; disturbed/wetland; occasional; *Z* 1639; *H* 978, 979; *P* 2653, 2654.

SAXIFRAGACEAE

Heuchera americana L. – JF, PA, PA; upland; occasional; *Z* 1577; *H* 1506, 1508.

Heuchera parviflora Bartling – CS; upland; common; *H* 1507.

Micranthus virginianensis (Michx.) Small [= *Saxifraga virginianensis* Michx.] – CS; upland; infrequent; *H* 980.

Tiarella cordifolia L. – BI, GB; upland/swamp; occasional; *Z* 1487; *H* 1051, 1052.

SCHISANDRACEAE

Illicium floridanum Ellis – PA; [cult]; *H* 1539.

Schisandra glabra (Brickell) Rehder – [Pro]; PA; upland; occasional; *Z* 2051; *H* 981.

SCROPHULARIACEAE

Scrophularia marilandica L. – CS, SC; upland; occasional; *Z* 1985; *H* 989.

**Verbascum blattaria* L. – PA; disturbed; infrequent; *H* 1086.

*†*Verbascum thapsus* L. – [Cat4]; BI; disturbed; common; *Z* 1818.

SIMAROUBACEAE

**Ailanthus altissima* (Mill.) Swingle – [Cat1]; BI; disturbed; rare; *R* s.n.

SMILACACEAE

Smilax bona-nox L. – BI, CS; disturbed; occasional; *Z* 1805; *H* 1007.

Smilax glauca Walter – GB, PA; disturbed, upland; common; *Z* 1691; *H* 1008.

†*Smilax herbacea* L. – GB; disturbed; rare; *Z* 1690 [uni].

†*Smilax hispida* Muhl. ex Torr. – HB; disturbed; rare; *Z* 2082.

Smilax hugeri (Small) J.B.S. Norton ex Pennell – CS, GB; upland, wetland; infrequent; *H* 1006, 1009.

Smilax pulverulenta Michx. – GB; wetland; infrequent; *H* 1010.

Smilax rotundifolia L. – BI, CS, IF; disturbed, upland, wetland; occasional; *Z* 1495, 1645; *H* 1011.

Smilax smallii Morong – PA; upland; infrequent; *H* 1012.

SOLANACEAE

†*Physalis angulata* L. var. *angulata* – VC; disturbed; occasional; *Z* 2060.

Solanum americanum Mill. – SC; disturbed; infrequent; *H* 1013.

Solanum carolinense L. – GB, SC; disturbed; common; *Z* 1698; *H* 1014.

*†*Solanum lycopersicum* L. [= *Lycopersicon esculentum* Mill.] – VC; disturbed; infrequent; *Z* 2063.

STAPHYLEACEAE

Staphylea trifolia L. – MB, PA; upland; common; *Z* 2003; *H* 1032.

STYRACACEAE

Halesia tetraptera Ellis var. *tetraptera* – BI, PA; upland; infrequent; *Z* 1472; *H* 1488.

Styrax americanus Lam. – GB, PA; upland; infrequent; *H* 1038, 1039.

Styrax grandifolius Aiton – IF; upland; infrequent; *H* 1040.

SYMPLOCACEAE

Symplocos tinctoria (L.) L'Hér. – MB; habitat?; common; *H* 1041.

TETRACHONDRAEAE

Polypremum procumbens L. – CS, JF; disturbed; occasional; *Z* 1782; *H* 887, 987.

THEACEAE

**Camellia japonica* L. – IF; [cult]; *Z* 1460; *H* 1281.

TYPHACEAE

Sparganium americanum Nutt. – CS, GB, JB; wetland; rare; *Z* 1896 [uni]; *H* 1028; *P* 2656, 2657.

*†*Typha angustifolia* L. – CS; wetland; occasional; *Z* 1741.

Typha latifolia L. – IF, OF; disturbed/wetland; occasional; *Z* 1846; *H* 1073.

ULMACEAE

Ulmus alata Michx. – IF, PA; disturbed/upland; infrequent; *Z* 1875; *H* 1074.

Ulmus rubra Muhl. – CS; disturbed; infrequent; *H* 1075.

URTICACEAE

Boehmeria cylindrica (L.) Sw. – IF, JB; disturbed/wetland; common; *Z* 1860; *H* 1271.

†*Pilea pumila* (L.) A. Gray – GB; wetland; common; *Z* 1711.

*†*Urtica dioica* L. – BI; upland; common; *Z* 1821.

VERBENACEAE

*†*Verbena bonariensis* L. – [Cat4]; CS; disturbed; rare; *Z* 1620.

Verbena urticifolia L. – OF, SC; disturbed, upland; occasional; *Z* 1852; *H* 1087.

VIOLACEAE

†*Viola bicolor* Pursh – PA; upland; common; *Z* 1422.

Viola hastata Michx. – BI, GB; upland; infrequent; *Z* 1474; *H* 2666.

Viola palmata L. – PA; upland; infrequent; *H* 2667.

Viola ×*primulifolia* L. – BI, PA; upland; rare; *Z* 1500 [uni]; *H* 2669.

Viola pubescens Aiton var. *scabriuscula* Schwein. ex Torr. & A. Gray – CS; disturbed; rare; *H* 2668.

Viola sororia Willd. – PA; disturbed, upland; common; *Z* 1436; *H* 2670.

Viola tripartita Elliott var. *glaberrima* (DC.) Harper – GB; upland; infrequent; *H* 2671.

VITACEAE

Parthenocissus quinquefolia (L.) Planch. – IF; disturbed, upland; occasional; *Z* 1755; *H* 841.

Vitis aestivalis Michx. – PA; habitat?; common; *H* 2672.

Vitis cinerea (Engelm.) Engelm. ex Millardet var. *baileyana* (Munson) Comeaux – BI; habitat?; infrequent; *H* 2673.

Vitis labrusca L. – GB; habitat?; common; *H* 2674.

Vitis rotundifolia Michx. – GB, PA, VC; upland; occasional; *Z* 1603; *H* 2675, 2676.

†*Vitis vulpina* L. – JF; disturbed/upland; common; *Z* 1802.

XANTHORRHOEACEAE

**Hemerocallis fulva* (L.) L. – GB, IF; upland; infrequent; *Z* 1725; *H* 1504 [cult].

APPENDIX 2

VASCULAR PLANTS REPORTED FROM
CHATTAHOOCHEE RIVER NATIONAL RECREATION AREA

The following 156 unvouchered vascular plant species have been reported for the CRNRA (and/or surrounding areas) in various publications provided by NPS (Brown 2009; Brown et al. 2009; Ek 2004; Ettman 1977; Georgia Power 2005a, b, c; Heiman 2000, 2002; Lee 1974, 1976; Troxel and Haynes 1985) and compiled by coauthors Reynolds and Zomlefer. 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" (Appendix 1) of vouchered specimens.

ACANTHACEAE: *Justicia americana* (L.) Vahl

ADOXACEAE: *Viburnum dentatum* L.

AMARYLLIDACEAE: *Allium speculae* Ownbey & Aase

APIACEAE: *Aegopodium podagraria* L., *Conium maculatum* L., *Osmorhiza longistylis* (Torr.) DC.

APOCYNACEAE: *Asclepias quadrifolia* Jacq.

ARALIACEAE: *Hydrocotyle umbellata* L.

ASPARAGACEAE: *Liriope spicata* Lour.

ASPLENIACEAE: *Asplenium montanum* Willd.

ASTERACEAE: *Achillea millefolium* L., *Echinacea laevigata* (C.L. Boynton & Beadle) S.F. Blake, *Centaurea cyanus* L., *Crepis vesicaria* L., *Croptilon divaricatum* (Nutt.) Raf., *Elephantopus nudatus* A. Gray, *Erigeron quercifolius* Lam., *Helenium autumnale* L., *Helianthus divaricatus* L., *Heterotheca subaxillaris* (Lam.) Britton & Rusby, *Lactuca floridana* (L.) Gaertn., *Prenanthes alba* L., *P. serpentaria* Pursh, *Sericocarpus asteroides* (L.) Britton, Sterns & Poggenb., *Solidago bicolor* L., *S. canadensis* L., *S. rugosa* Mill., *S. squarrosa* Nutt., *Symphyotrichum lowrleanum* (Porter) G.L. Nesom, *S. puniceum* (L.) G.L. Nesom, *S. retroflexum* (Lindl. ex DC.) G.L. Nesom

BETULACEAE: *Corylus cornuta* Marshall

BORAGINACEAE: *Buglossoides arvensis* (L.) I.M. Johnst. [= *Lithospermum arvense* L.]

BRASSICACEAE: *Arabidopsis thaliana* (L.) Heynh., *Arabis georgiana* R.M. Harper, *Brassica juncea* (L.) Czern., *B. napus* L., *B. rapa* L., *Cardamine dissecta* (Leavenw.) Al-Shehbaz [= *Dentaria multifida* Muhl. ex Elliott], *Draba brachycarpa* Nutt. ex Torr. & A. Gray, *Erysimum cheiranthoides* L., *Hesperis matronalis* L., *Microthlaspi perfoliatum* (L.) F.K. Mey.

CAPRIFOLIACEAE: *Valerianella locusta* (L.) Laterr.

CARYOPHYLLACEAE: *Cerastium fontanum* Baumg. subsp. *vulgare* (Hartm.) Greuter & Burdet, *Sagina decumbens* (Elliott) Torr. & A. Gray, *Silene virginica* L.

CELASTRACEAE: *Parnassia asarifolia* Vent.

CORNACEAE: *Cornus alternifolia* L. f.

CYPERACEAE: *Carex albicans* Willd. ex Spreng. [= *Carex artitecta* Mack.], *C. amphibola* Steud., *C. atlantica* L.H. Bailey [= *Carex incompta*

- E.P. Bicknell], *C. nigromarginata* Schwein., *C. striatula* Michx., *C. venusta* Dewey, *C. willdenowii* Schkuhr ex Willd., *Isolepis carinata* Hook. & Arn. ex Torr., *Kyllinga pumila* Michx.
- DENNSTAEDTIACEAE: *Dennstaedtia punctilobula* (Michx.) T. Moore
- DRYOPTERIDACEAE: *Dryopteris intermedia* (Muhlenb. ex Willd.) A. Gray
- ERICACEAE: *Hypopitys monotropa* Crantz [= *Monotropa hypopithys* L.], *Rhododendron flammeum* (Michx.) Sarg., *R. periclymenoides* (Michx.) Shinnery, *Vaccinium pallidum* Aiton
- FABACEAE: *Amorpha schwerinii* C.K. Schneid., *Baptisia alba* (L.) Vent., *Crotalaria spectabilis* Roth, *Desmodium lineatum* DC., *D. perplexum* B.C. Schub., *D. strictum* (Pursh) DC., *Kummerowia stipulacea* Makino, *Lathyrus hirsutus* L., *Lespedeza repens* (L.) Barton, *L. stuevei* Nutt., *L. violacea* (L.) Pers. [= *L. intermedia* (S. Watson) Britton], *Rhynchosia tomentosa* (L.) Hook. & Arn., *Wisteria frutescens* (L.) Poir.
- FAGACEAE: *Quercus montana* Willd.
- GENTIANACEAE: *Bartonia verna* (Michx.) Raf. ex Barton, *Gentiana saponaria* L., *G. villosa* L., *Gentianella quinquefolia* (L.) Small [= *Gentiana quinquefolia* L.]
- HYDRANGEACEAE: *Philadelphus hirsutus* Nutt.
- HYPERICACEAE: *Hypericum gentianoides* (L.) Britton, Sterns & Poggenb., *H. nudiflorum* Michx. ex Willd.
- IRIDACEAE: *Iris cristata* Aiton, *I. verna* L.
- JUGLANDACEAE: *Carya laciniosa* (Michx. f.) G. Don
- JUNCACEAE: *Luzula bulbosa* (Alph.Wood) Smyth & L.C.R. Smyth, *L. multiflora* (Ehrh.) Lej.
- LAMIACEAE: *Mentha suaveolens* Ehrh., *Pycnanthemum curvipes* (Greene) E. Grant & Epling, *Salvia urticifolia* L., *Scutellaria lateriflora* L.
- LILIACEAE: *Lilium canadense* L.
- MELANTHIACEAE: *Stenanthium gramineum* (Ker Gawl.) Morong, *Trillium cernuum* L., *Veratrum latifolium* (Desr.) Zomlefer [= *Melanthium latifolium* Desr.]
- ONAGRACEAE: *Ludwigia bonariensis* (Micheli) H. Hara, *Oenothera fruticosa* L.
- ORCHIDACEAE: *Cypripedium parviflorum* Salisb. var. *parviflorum*, *C. parviflorum* Salisb. var. *pubescens* (Willd.) Knight, *Galearis spectabilis* (L.) Raf.
- OROBANCHACEAE: *Agalinis obtusifolia* (Elliott) Raf., *A. purpurea* (L.) Pennell, *Pedicularis canadensis* L.
- OXALIDACEAE: *Oxalis stricta* L.
- PLANTAGINACEAE: *Plantago pusilla* Nutt.
- POACEAE: *Alopecurus carolinianus* Walter, *Cenchrus spinifex* Cav., *Dichanthelium depauperatum* (Muhl.) Gould, *Echinochloa crusgalli* (L.) P. Beauv., *Gymnopogon ambiguus* (Michx.) Britton, Sterns & Poggenb., *Luziola fluitans* (Michx.) Terrell & H. Rob., *Panicum dichotomiflorum* Michx., *Pennisetum glaucum* (L.) R. Br., *Saccharum brevibarbe* (Michx.) Pers. var. *contortum* (Elliott) R. Webster [= *Erianthus contortus* Elliott], *Vulpia octoflora* (Walter) Rydb. var. *octoflora*
- POLEMONIACEAE: *Phlox divaricata* L., *P. paniculata* L.
- POLYGONACEAE: *Persicaria maculosa* S.F. Gray [= *Polygonum persicaria* L.], *Reynoutria japonica* Houtt. [= *Polygonum cuspidatum* Siebold & Zucc.], *Rumex obtusifolius* L., *R. pulcher* L.
- POLYPODIACEAE: *Polypodium virginianum* L.

- RANUNCULACEAE: *Actaea pachypoda* Elliott, *Anemone quinquefolia* L., *Hydrastis canadensis* L., *Ranunculus parviflorus* L., *Thalictrum clavatum* DC., *T. revolutum* DC.
- ROSACEAE: *Agrimonia parviflora* Aiton, *A. rostellata* Wallr., *Amelanchier stolonifera* Wiegand, *Crataegus flava* Aiton, *C. phaenopyrum* Borkh., *Geum lobatum* (Baldwin) Smedmark [= *Waldsteinia lobata* (Baldwin) Torr. & A. Gray], *Potentilla norvegica* L., *Prunus caroliniana* (Mill.) Aiton, *P. mahaleb* L.
- RUBIACEAE: *Houstonia caerulea* L., *H. tenuifolia* Nutt.
- SANTALACEAE: *Nestronia umbellula* Raf.
- SAPINDACEAE: *Acer saccharinum* L.
- SAPOTACEAE: *Sideroxylon lycioides* L.
- SCHISANDRACEAE: *Illicium floridanum* Ellis [The voucher, *Heiman 1539*, is from a cultivated plant.]
- SELAGINELLACEAE: *Selaginella apoda* (L.) Spring
- SMILACACEAE: *Smilax biltmoreana* (Small) J.B.S. Norton ex Pennell, *S. laurifolia* L.
- SOLANACEAE: *Datura stramonium* L.
- STYRACACEAE: *Halesia carolina* L.
- THEACEAE: *Stewartia ovata* (Cav.) Weath.
- ULMACEAE: *Ulmus americana* L.
- URTICACEAE: *Laportea canadensis* (L.) Wedd.
- VIOLACEAE: *Viola arvensis* Murray, *V. pedata* L.