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Vascular Flora of Yalobusha County, Mississippi

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ABSTRACT

Yalobusha County, located in the north-central portion of Mississippi, consists of 130,535 hectares. Vascular plants were collected and documented between August 1998 and April 2001. A total of 805 species is documented, representing 414 genera and 133 families. Poaceae is the largest family (11.3%), followed by Asteraceae (10.6%) and Cyperaceae (9.0%). One hundred eighteen species can be considered exotic. A new state record, the fern *Deparia petersenii*, is reported. Eight state-listed species, *Scleria reticularis* (S1), *Carex stricta* (S2), *Celastrus scandens* (S2/S3), *Chelone glabra* (S3), *Matelea carolinensis* (S3), *Panax quinquefolium* (S3), *Staphylea trifolia* (S3), and *Muhlenbergia sylvatica* (SU) are reported. Voucher specimens of each species are deposited at Delta State University (DSC).

INTRODUCTION

Yalobusha County is located in the north central portion of Mississippi (Figure 1). The county is approximately 38.6 km long and 32.2 km wide with a total area of 130,535 ha (Huddleston et al. 1978). Of the total area, 9,129 ha are part of the Grenada and Enid flood-control lakes. Elevation ranges from 58 m along the Skuna River in the southern part of the county to about 152 m on ridges in the northeastern part of the county.

The climate of Yalobusha County is strongly influenced by the subtropical latitude, the large land mass to the north, the effects of the warm waters of the Gulf of Mexico, and prevailing southerly winds (Trewartha 1954). These factors combine to produce a climate that, while moist and tropical in the summer, may bring extended periods without rain. A typical winter will alternate moist, tropical air with dry, polar air. Most rainfall occurs in the winter and spring but seasonal rainfall differences are often relatively small. Precipitation in the summer and fall is often in the form of localized and intermittent thunderstorms.

Rainfall totals for most of the months in 1999 were below normal, and the temperature averages were above normal (National Weather Service, pers. comm. January 15, 2001). In 1999, 128 cm of rainfall was recorded, 15 cm less than normal. Rainfall was especially low in the latter part of the year. The mean temperature in 1999 was 17°C, 2°C above normal. The first six months of 2000 showed similar trends with below average rainfall totals and above average temperatures.

The western edge of the county is covered with a thin veneer of Pleistocene loess (Turner 1952). Tertiary sediments of the Claiborne Group of Eocene age underlie the central and western portions of the county. Underlying the eastern part of the county are sediments of the Wilcox Group of Paleocene age.

Ten soil associations occur in Yalobusha County (Huddleston et al. 1978). However, four associations account for over 75% of the soils in the county. Yalobusha County soils tend to be

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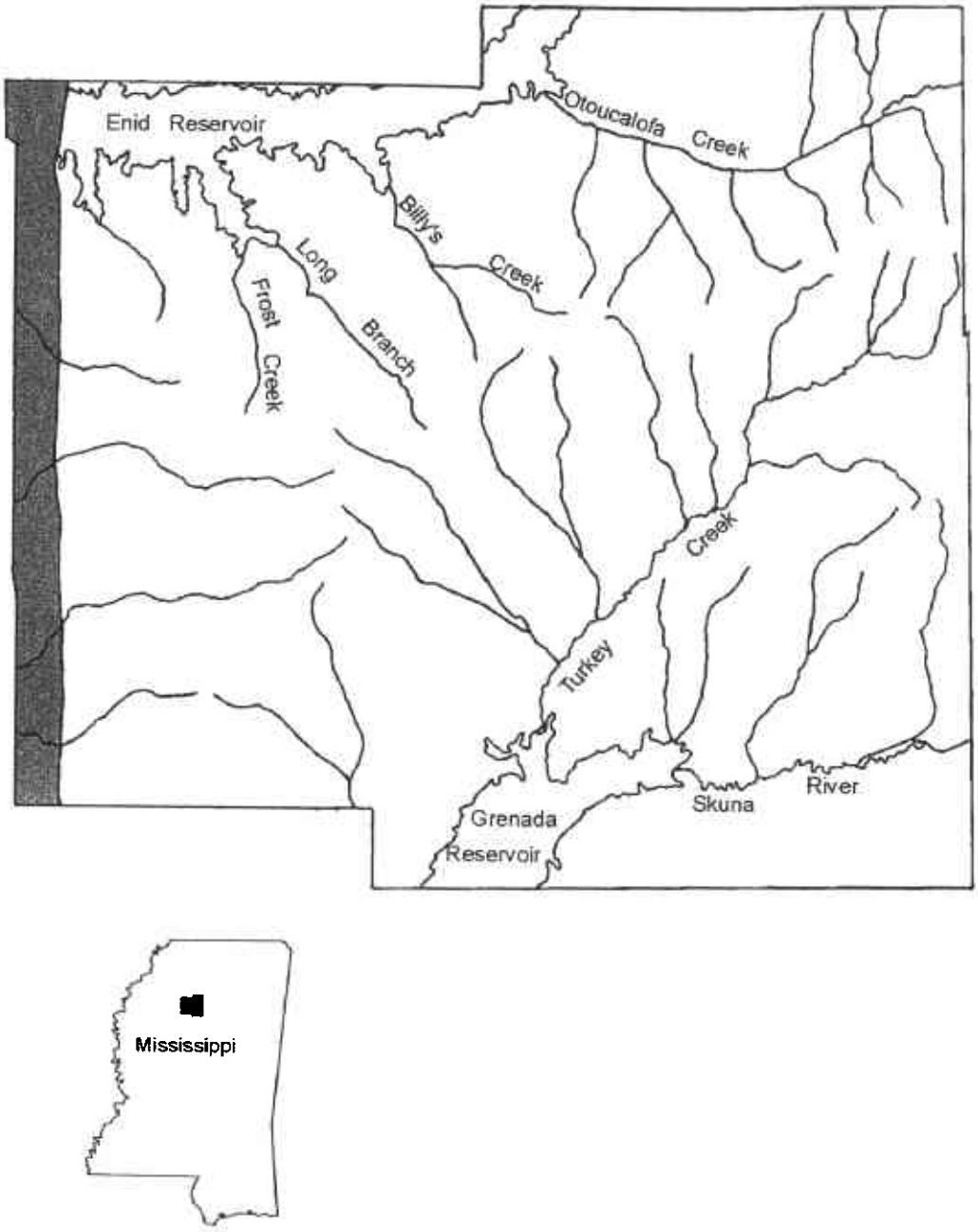

Figure 1. Major drainageways of Yalobusha County. The shaded area represents the portion of the county described by Lowe (1921) as the Loess or Bluff Physiographic Region. The remaining portion of the county is located in the North Central Plateau Physiographic Region. The location of the county within Mississippi is blackened in the locator map.

strongly acidic. The well-drained loams of the Smithdale-Providence association include about 51% of the soils and occur on slopes throughout the county. Predominant on narrow stream flats are the well-drained silty soils of the Collins-Oaklimiter Association that have a seasonally high water table and account for 11% of the soils in the county. The less well-drained Oaklimiter-Gillsburg soils occur along larger streams and make up about 9% of the county. In the western part of the county, Loring-Memphis soils comprise about 7% of the county total. These are silty soils with a significant loess component.

Creeks in the northern part of the county drain into Enid Reservoir. Main drainages into the Enid Reservoir are Otoucalofa Creek, Billy's Creek, Frost Creek, and Long Branch Creek.

Most main drainages in the eastern or southern portion of the county flow into Grenada Reservoir, Turkey Creek, or the Skuna River (Figure 1).

According to Lowe (1921) most of Yalobusha County is located in the North Central Plateau Physiographic Region (Figure 1). The extreme western border is located in the Loess or Bluff Physiographic Region. Braun (1950) placed the county in the Mississippi Embayment Section of the Western Mesophytic Forest Region. The Mississippi Embayment Section is a northern extension of the Gulf Coastal Plain and includes a variety of vegetation types. Oak-hickory communities are common on forested upland slopes, whereas more mesic assemblages are frequent on lower slopes and narrow stream flats. Bottomland hardwood forests and remnants of swamp forests can be found near the flood control reservoirs.

Floristic studies that have been conducted near Yalobusha County are Grenada County (Morris 1987), Monroe County (MacDonald 1996), Attala County (Winstead 1990), northern Tippah County (Meeks 1984), Choctaw County (Massey 1974), Clay County (Simmons 1968), and DeSoto County (Ferrari 1970). Alford (1999) provided a listing of floristic surveys for counties in Mississippi and parishes in Louisiana.

METHODS

Vascular plants were collected between August 1998 and April 2001. Sampling took place in each season at greater than 40 habitats in the county. Most habitats sampled showed evidence of human disturbance. Efforts were made to sample representative locations of all major habitats found in Yalobusha County. Voucher specimens were catalogued along with pertinent field data and can be found in the herbarium of Delta State University (DSC). The collections of the Institute for Botanical Exploration (IBE), the Southern Weed Science Lab (SWSL), the University of Mississippi (MISS), and Charles T. Bryson's personal collection (ctb) were checked for additional county records. Identification of most plants was done using Radford et al. (1968) and Smith (1994). Other sources used include Clewell (1985), Yatskievych (1999), and Flora of North America (FNA 1993).

RESULTS AND DISCUSSION

Survey of the Flora

A total of 805 vascular plant species are documented, representing 414 genera in 133 families. The species found include 21 spore-bearing vascular plants, 4 gymnosperms, 246 monocots, and 534 dicots. Poaceae is the largest family (11.3%), followed by Asteraceae (10.6%) and Cyperaceae (9.0%). One hundred eighteen exotic species were found, including *Imperata cylindrica*, which is increasing its invasive range in Mississippi from the south to the central and northern portions of the state. Exotic species are considered not native to North America north of Mexico and persist without cultivation. Wunderlin (1998), Bailey (1949) and Fernald (1950) were used as sources to identify the exotic species in Yalobusha County.

Most habitats found in Yalobusha County show obvious signs of man's activities. Many hectares of uplands are planted in commercial plantations of *Pinus taeda*. Agricultural influences on the land are prevalent. Cotton and soybeans are just two of the crops cultivated on several thousand hectares in the county. The few places that have not been as heavily disturbed are forested areas with deep hollows and steep slopes.

Rare Species

The first record of the fern *Deparia petersenii* is reported from the state. It was found along a wooded drainage ditch between county road 436 and nearby agricultural fields north of Coffeeville. This fern is native to southeastern Asia but is naturalized in parts of the southeastern United States. This is considered a state record based on Radford et al. (1968), Yatskievych (1999), and FNA (1993). The nearest known location is the eastern edge of Alabama (FNA 1993).

Several species more commonly seen on the Lower Coastal Plain were found. These include *Eriocaulon decangulare*, *Aletris aurea*, *Polygala cruciata*, *Sabatia campanulata*, *Pogonia ophioglossoides*, and *Myrica cerifera*.

Eight species occurring on the Mississippi Natural Heritage Program (2000) Special Plant List were found. These are *Scleria reticularis* (S1), *Carex stricta* (S2), *Celastrus scandens* (S2/S3), *Chelone glabra* (S3), *Matelea carolinensis* (S3), *Panax quinquefolium* (S3), *Staphylea trifolia* (S3), and *Muhlenbergia sylvatica* (SU).

Plant Communities

The following are the most common plant comminutes found in Yalobusha County. There was no obvious association with the location of the communities and the location of the two physiographic regions.

Oak-hickory dominated communities are common on forested upland slopes, as well as pine-hardwood communities. These two communities are very similar: both are found on drier, sandier sites where the humus layer is not well developed. Pine-hardwood communities contain *Pinus echinata* and *Pinus taeda* in addition to the common species of the oak-hickory communities. Characteristic hardwood components of the canopy include *Quercus velutina*, *Q. stellata*, *Q. rubra*, *Q. marilandica*, *Q. falcata*, *Liquidambar stryaciflua*, *Ulmus alata*, *Carya tomentosa*, *C. glabra*, *C. ovalis*, *C. pallida*, *Acer rubrum*, and *Nyssa sylvatica*. Understory representatives include *Cornus florida*, *Vaccinium arboreum*, *Styrax grandifolia*, *Cercis canadensis*, *Diospyros virginiana*, and *Callicarpa americana*. Herbaceous understory components include *Antennaria plantaginifolia*, *Desmodium rotundifolium*, *D. ciliare*, *Cyperus plukenetii*, *Phlox pilosa*, *Euphorbia corollata*, and the fern *Pteridium aquilinum*.

Mesophytic forests are common in deep ravines, on stream bluffs, and west- and north-facing slopes. *Quercus alba*, *Q. rubra*, *Q. nigra*, *Magnolia acuminata*, *Juglans nigra*, *Fagus grandifolia*, *Acer rubrum*, and *Liriodendron tulipifera* often occupy the canopy. Typical understory species include *Hamamelis virginiana*, *Hydrangea arborescens*, *Ilex opaca*, *Lindera benzoin*, *Aesculus pavia*, *Asimina triloba*, *Cornus florida*, *Ostrya virginiana*, *Carpinus caroliniana*, and *Vaccinium arboreum*. Herbaceous representatives include *Podophyllum peltatum*, *Arisaema triphyllum*, *A. dracontium*, *Trillium recurvatum*, *Silene stellata*, *Iris cristata*, *Chamaelirium luteum*, and *Desmodium pauciflorum*. Ferns include *Thelypteris hexagonoptera*, *Athyrium asplenioides*, *Polystichum acrostichioides*, and *Adiantum pedatum*.

Remnants of swamp forests support small stands of *Taxodium distichum*. *Cephalanthus occidentalis*, *Quercus lyrata*, *Planera aquatica*, and *Ilex decidua* occupy edges of these forests and may be part of the understory. Aquatic and hydrophilic herbaceous plants often found include *Juncus effusus*, *Scirpus cyperinus*, *Hypericum walterii*, *Azolla caroliniana*, *Lemna perpusilla*, *Potamogeton diversifolius*, *Saururus cernuus*, and *Polygonum hydropiperoides*. Seasonally inundated bottomlands along the edges of the flood-control reservoirs support dense stands of *Planera aquatica* and *Forestiera acuminata* along with *Fraxinus pennsylvanica*.

The bottomland hardwood forest communities are found in areas of lower elevations but not where the soil remains saturated several months of the year. The tree diversity is greater than in a swamp forest and includes *Quercus lyrata*, *Q. nigra*, *Q. phellos*, *Liquidambar styraciflua*, *Platanus occidentalis*, *Carya aquatica*, *Diospyros virginiana*, *Acer rubrum*, *A. barbatum*, *Fraxinus americana*, and *F. pennsylvanica*. Herbaceous representatives include *Ludwigia alternifolia*, *Lycopus virginicus*, *Myosotis macrosperma*, *Impatiens capensis*, *Microstegium vimineum*, *Carex vulpinoides*, *C. debilis*, *Tradescantia hirsutiflora*, and *Vitis palmata*. Representative understory shrubs or small trees are *Ilex opaca*, *Itea virginica*, and *Cornus foemina*.

Bogs and seepage areas can occur on sandy sites where slopes and stream flats meet. Seepage often results in mucky substrates supporting species such as *Viburnum nudum*, *Cephalanthus occidentalis*, *Toxicodendron vernix*, *Ilex verticillata*, *Alnus serrulata*, and *Cornus foemina*. On these sites, *Osmunda cinnamomea*, *O. regalis*, and *Woodwardia areolata* are common. *Toxicodendron vernix*, *Myrica cerifera*, and rarely *Magnolia virginiana* and *Nyssa biflora* are found near or in the muck or along the borders of nearby springs. Herbaceous representatives include *Chelone glabra*, *Xyris jupicai*, *Rhexia virginica*, *Rhynchospora glomerata*, *Platanthera clavellata*, *P. ciliaris*, *Carex leptalea*, *Spiranthes cernua*, *Cinna arundinacea*, and *Fuirena squarrosa*.

CATALOGUE OF VASCULAR PLANTS

Most nomenclature follows Wunderlin (1998). The division and class arrangement is as found in Cronquist (1981). Families and genera are arranged alphabetically within classes. Collection numbers of the first author are printed after each species in the list. Collections by another botanist are followed by the collector's name, collection number or *s.n.*, and the herbarium where the voucher specimen is located, i.e. *MacDonald 5543* (IBE). Rare species found in Yalobusha County, Mississippi according to the Mississippi Natural Heritage Program (MNHP 2000) are noted by appropriate abbreviations following the collection number: S1, critically imperiled species; S2, imperiled species; S3, rare and uncommon species; S4, apparently secure species; S5, demonstrably secure species. Species with a ranking of SU, uncertain status, require more information to determine ranking. An asterisk precedes exotic species (*).

PTERIDOPHYTES

EQUISETOPHYTA

EQUISETACAEAE

Equisetum hyemale L., *529*

LYCOPODIOPHYTA

LYCOPODIACEAE

Lycopodiella alopecuroides (L.) Cranfill, *1567*
Lycopodiella appressa (Chapm.) Cranfill, *919*

POLYPODIOPHYTA

ADIANTACEAE

Adiantum pedatum L., *629, 1165*

ASPLENIACEAE

Asplenium platyneuron (L.) Oakes, *249*

AZOLLACEAE

Azolla caroliniana Willd., *970*

BLECHNACEAE

Woodwardia areolata (L.) T. Moore, *505*

DENNSTAEDTIACEAE

Pteridium aquilinum (L.) Kuhn, *500*

DRYOPTERIDACEAE

Polystichum acrostichoides (Michx.) Schott, *250, 366*

OPHIOGLOSSACEAE

Botrychium biternatum (Sav.) Underwood, *587*
Botrychium virginianum (L.) Sw., *568*
Ophioglossum vulgatum L. var. *pycnostichum* Fernald, *441*

OSMUNDACEAE

Osmunda cinnamomea L., *703*
Osmunda regalis L. var. *spectabilis* (Willd.) A. Gray, *700*

POLYPODIACEAE

Polypodium polypodioides (L.) Watt., *456*

THELYPTERIDACEAE

Phegopteris hexagonoptera (Michx.) Fée, *584, 1166*
Thelypteris palustris Schott, *1376*

WOODSIACEAE

Athyrium felix-femina (L.) Roth ex Mert., *248, 590, 722, 1092*
**Deparia petersenii* (Kunze) M. Kato, *660, 1400*
Onoclea sensibilis L., *1192*
Woodsia obtusa (Spreng.) Torr., *722*

GYMNOSPERMS

PINOPHYTA

CUPRESSACEAE

Juniperus virginiana L., *324, 973*
Taxodium distichum (L.) Rich., *1016*

PINACEAE

Pinus echinata Mill., *408*
Pinus taeda L., *991*

ANGIOSPERMS

MAGNOLIOPHYTA (LILIOPSIDA)

AGAVACEAE

Polianthes virginica (L.) Shinners, *465, 941*
Yucca aloifolia L., *653, 939*

ALISMATACEAE

Sagittaria australis (J. G. Smith) J. K. Small, *952*
Sagittaria graminea Michx., *1054*
Sagittaria latifolia Willd., *818*
Sagittaria longirostra J. G. Smith, *694*
Sagittaria platyphylla (Engelm.) J. G. Smith, *1302*

AMARYLLIDACEAE

Allium canadense L., *544*
**Allium vineale* L., *633, 796*
**Hemerocallis fulva* L., *711*
**Ipheion uniflorum* (Graham) Raf., *389*
**Leucojum aestivum* L., *345*
**Narcissus incomparibilis* Mill., *327, 379*
**Narcissus jonquilla* L., *346*
**Narcissus poeticus* L., *326, 378*
**Narcissus pseudo-narcissus* L., *361*
**Narcissus medioluteus* Miller, *329, 360*
Nothoscordum bivalve (L.) Britton, *353*

ARACEAE

Arisaema dracontium (L.) Schott, *1127*

Arisaema quinatum (Nutt.) Schott, *440, 652*
Arisaema triphyllum (L.) Schott, *1107*
**Colocasia esculenta* (L.) Schott var. *aquatilis* Hasskarl, *1538*

COMMELINACEAE

**Commelina communis* L., *321, 1384*
Commelina virginica L., *904, 1446*
Tradescantia hirsutiflora Bush, *1204, 1289*
Tradescantia ohiensis Raf., *400, 1392*

CYPERACEAE

Carex abscondita Mackenzie, *Bryson 10621, 12467* (ctb)
Carex albicans Willd. ex Sprengel var. *australis* (Bailey) Rettig, *Bryson 5308, 10617* (ctb)
Carex albolutescens Schweinitz, *551, 800, 1139*
Carex amphibola Steud., *1090, 1180*
Carex annectens Bicknell, *484, 1160*
Carex atlantica Bailey, *674, 705, 1091*
Carex basiantha Schkuhr, *575, 1128*
Carex blanda Dewey, *610, 1159*
Carex bushii Mackenzie, *1123, 1158*
Carex caroliniana Schweinitz, *523, 1131*
Carex cephalophora Muhl. ex Schkuhr, *626, 1117*
Carex cherokeensis Schweinitz, *Bryson 12457* (ctb)
Carex complanata Torrey & Hooker, *772, 1157*
Carex crebriflora Wiegand, *Bryson 5314* (ctb)
Carex debilis Michx., *577, 1089*
Carex digitalis Willd., *526, 1075*
Carex festucacea Schkuhr, *479, 1130*
Carex flaccosperma Dewey, *579, 647*
Carex frankii Kunth., *1193, 1271*
Carex glaucodea (Tuck.) Kunth., *Bryson 10615* (ctb)
Carex hirsutella Mackenzie, *598, 1137*
Carex intumescens Rudge, *1209*
Carex leavenworthii Dewey, *1098*
Carex leptalea Wahlenberg, *1252, 1426*
Carex lupulina Muhl. ex Schkuhr, *759*
Carex lurida Wahlenberg, *716, 780*
Carex longii Mackenzie, *1555*
Carex meadii Dewey, *Bryson 10618* (ctb)
Carex mitchelliana M.A. Curtis, *398, 695*
Carex muhlenbergii Schkuhr, *677, 1140*
Carex oxylepis Torrey & Hooker, *517, 738*
Carex planispicata Naczi, *Bryson 10625* (MICH, ctb)
Carex reniformis (Bailey) Small, *553*
Carex retroflexa Muhl. ex Schkuhr, *559, 1118*
Carex rosea Schkuhr, *578, 739, 1171*
Carex striatula Michx., *597, 679, 1119*
Carex stricta Lam., *1435,* **S2**
Carex texensis (Torrey) Bailey, *Bryson 10610, 13385* (ctb)
Carex triangularis Boeckler, *1104*
Carex tribuloides Wahlenberg, *552, 731*
Carex umbellata Schkuhr, *1143*
Carex vulpinoidea Michx., *548, 782, 1178*
Cyperus croceus Vahl, *793, 1274*
Cyperus echinatus (L.) Wood, *712*
Cyperus erythrorhizos Muhl., *302, 965*
Cyperus esculentus L., *844*
Cyperus haspan L., *1382*
Cyperus iria L., *1537*
Cyperus odoratus L., *Bryson 10966* (ctb)
Cyperus plukenetii Fernald, *1365*
Cyperus pseudovegetus Steudel, *758, 799*
Cyperus retrorsus Chapman, *862, 893*
Cyperus rotundus L., *1442, 1547*
Cyperus strigosus L., *1051, 1304, 1388*
Eleocharis obtusa (Willd.) Schultes, *307, 1018*
Eleocharis tenuis (Willd.) Schultes, *1425*
Fimbristylis autumnalis (L.) R. & S., *915, 1431*
Fimbristylis vahlii (Lam.) Link, *300, 412*
Fuirena squarrosa Michx., *1368*
Kyllinga odorata Vahl, *997*
Kyllinga pumila Michx., *1396*
Rhynchospora capitellata (Michx.) Vahl, *1447*
Rhynchospora corniculata (Lam.) A. Gray, *1451*
Rhynchospora globularis (Chapm.) Small, *1378*
Rhynchospora glomerata (L.) Vahl, *922a, 1379, 1417*
Rhynchospora gracilenta A. Gray, *1416*
Scirpus atrovirens Willd., *746*
Scirpus cyperinus (L.) Kunth, *918, 1278*
Scirpus koilolepis (Steud.) Gleason, *477, 1085*
Scirpus pungens Pers., *1182*
Scleria oligantha Michx., *678, 1145*
Scleria reticularis Michx., *1374, 1413,* **S1**
Scleria triglomerata Michx., *1201*

DIOSCOREACEAE

**Dioscorea batatas* Dcne., *905*
Dioscorea quaternata (Walter) J. F. Gmel., *581, 1361*

ERIOCAULACEAE

Eriocaulon decangulare L., *1367*

HYDROCHARITACEAE

Limnobium spongia (Bosc) Rich. ex Steud., *1489*

IRIDACEAE

**Gladiolus byzantinus* Mill., *1176*
Iris cristata Aiton, *572, 1093*
Sisyrinchium angustifolium Mill., *397, 1133*
Sisyrinchium rosulatum E.P. Bicknell, *650*

JUNCACEAE

Juncus acuminatus Michx., *487, 538, 725*
Juncus brachycarpus Engelm., *797*
Juncus canadensis J. Gay ex La Harpe, *1423*
Juncus coriaceus Mack., *925a, 1314*
Juncus dichotomus Ell., *537*
Juncus diffusissimus Buckl., *753*
Juncus effusus L., *486, 925a*
Juncus elliottii Chapm., *533, 1190*
Juncus marginatus Rostk., *802, 1188*
Juncus scirpoides Lam., *1185*
Juncus tenuis Willd., *483, 732, 1102*
Juncus validus Coville, *871, 1312*
Luzula echinata (Small) F.J. Hermann, *368, 1064, 1115*

LEMNACEAE

Lemna perpusilla Torr., *754*
Spirodela polyrrhiza (L.) Schleid., *970a*
Wolffia columbiana Karsten, *970b*

LILIACEAE

Aletris aurea Walter, *1454*
**Asparagus officinalis* L., *201, 1233*
Chamaelirium luteum (L.) A. Gray, *467a, 594*
Maianthemum racemosum (L.) Link, *247, 510*
**Muscari racemosum* (L.) Mill., *367*
**Ornithogalum umbellatum* L., *508*

Polygonatum biflorum (Walt.) Ell., *513, 673*
Trillium recurvatum Beck., *620, 1151*
Uvularia grandiflora Smith, *1072*
Uvularia sessilifolia L., *560*

ORCHIDACEAE

Malaxis unifolia Michx., *Bryson 15337* (ctb)
Platanthera ciliaris (L.) Lindl., *1414*
Platanthera clavellata (Michx.) Luer, *1253, 1462*
Pogonia ophioglossoides (L.) Jussieu, *1579*
Spiranthes cernua (L.) Rich., *993*
Spiranthes tuberosa Raf., *1272*
Spiranthes vernalis Engelm. & A. Gray, *809*
Tipularia discolor (Pursh) Nutt., *446*

POACEAE

Agrostis hyemalis (Walt.) BSP., *542*
**Aira elegans* Willd. ex Gaudin, *522, 721*
Alopecurus carolinianus Walt., *387, 485*
Andropogon gyrans Ashe, *1557*
Andropogon scoparius Michx., *1039*
Andropogon ternarius Michx., *1558*
Andropogon virginicus L., *1035*
Aristida oligantha Michx., *971*
Aristida purpurascens Poir., *1546*
**Arthraxon hispidus* (Thunb.) Makino, *304, 1430*
Arundinaria gigantea (Walt.) Walt. ex Muhl., *365*
**Avena fatua* L., *1112*
Axonopus fissifolius (Raddi) Kuhlm., *1432*
Brachyelytrum erectum (Schreb. ex Spreng.) P. Beauv., *1009*
**Briza minor* L., *656*
**Bromus commutatus* Schrad., *566, 1199*
Chasmanthium latifolium (Michx.) Yates, *235*
Chasmanthium laxum (L.) Yates, *944a, 1433*
Chasmanthium sessiliflorum (Poir.) Yates, *257, 833*
Cinna arundinacea L., *1428, 1467*
**Cynodon dactylon* (L.) Pers., *788*
**Dactylis glomerata* L., *765*
Danthonia spicata (L.) Beauv. ex R. & S., *1170*
Digitaria ciliaris (Retz.) Koel, *861, 1403*
**Digitaria ischaemum* (Schreb. ex Schweigg) Schreb. ex Muhl., *1491*
**Echinochloa colonum* (L.) Link, *1408*
**Echinochloa crusgalli* (L.) P. Beauv., *305, 804, 953*
**Eleusine indica* (L.) Gaertn., *966, 1492*
Elymus virginicus L., *763, 801*
**Eragrostis curvula* (Schrad.) Nees., *1475*
Eragrostis hypnoides (Lam.) BSP., *299, 1458*
Eragrostis intermedia Hitchc., *1444*
Eragrostis pectinacea (Michx.) Nees. ex Jedwabn., *1402, 1445*
**Eragrostis poaeoides* Beauvois, *1448*
Eragrostis spectabilis (Pursh) Steud., *1453*
Eragrostis virginica (Zucc.) Steud., *1418*
**Festuca elatior* L., *530, 657*
Festuca subverticillata (Pers.) E.B. Alexeev, *546, 681*
Hordeum pusillum Nutt., *488*
**Imperata cylindrica* (L.) P. Beauv., *1200*
Leersia oryzoides (L.) Sw., *1050*
Leersia virginica Willd., *950, 1465*
**Leptochloa panicoides* (J. Presl.) Hitchc., *963, 1549*
Leptochloa uninervia (J. Presl.) Hitchc. & Chase, *1405*
**Lolium perenne* L., *531, 792*
Melica mutica Walt., *1187*
**Microstegium vimineum* (Trin.) A. Camus, *1560*
Muhlenbergia sylvatica (Torr.) Torr. ex Gray, *1408a*, **SU**
Panicum anceps Michx., *834, 940*
Panicum boscii Poir., *511, 715*
Panicum clandestinum L., *1411*
Panicum commutatum Schult., *1262*
Panicum depauperatum Muhl., *564*
Panicum dichotomiflorum Michx., *296*
Panicum dichotomum L., *Bryson 12519* (ctb)
Panicum hians Ell., *724*
Panicum laxiflorum Lam., *645, 1273*
Panicum lindheimeri Nash, *228, 747, 1251*
Panicum polyanthes Schultes, *1221, 1286*
Panicum ravenelii Scribn. & Merr., *1267*
Panicum rigidulum Bosc ex Nees., *819, 1057*
Panicum scoparium Lam., *921, 609*
Panicum sphaerocarpon Ell., *1270*
Panicum virgatum L., *314, 880, 1281*
Paspalum boscianum Flüggé, *1429, 1534*
**Paspalum dilatatum* Poir., *786*
Paspalum floridanum Michx., *926, 888, 1322*
Paspalum laeve Michx., *1434*
Paspalum notatum Flüggé, *980, 1223*
**Paspalum urvillei* Steud., *795, 929*
Phalaris caroliniana Walt., *756*
Piptochaetium avenacea (L.) Parodi, *682, 1094*
**Poa annua* L., *362, 374*
Poa autumnalis Muhl. ex Ell., *491*
Poa chapmaniana Scribn., *1575*
**Poa pratensis* L., *1198*
Saccharum giganteum (Walt.) Pers., *311, 1506*
Saccharum baldwinii Spreng., *1293*
**Setaria faberi* Herrm., *1224*
Setaria glauca (L.) P. Beauv., *789, 850*
Setaria parviflora (Poir.) Kerguélen, *843, 849*
Sorghastrum nutans (L.) Nash, *924, 998*
**Sorghum halepense* (L.) Pers., *784, 1455*
Sphenopholis nitida (Biehler) Scribn., *1162*
Sphenopholis obtusata (Michx.) Scribn., *748*
Tridens flavus (L.) Hitchc., *1015, 1034*
Tridens strictus (Nutt.) Nash, *852, 964*
Tripsacum dactyloides (L.) L., *714, 964*
**Triticum aestivum* L., *1147*
**Vulpia myuros* (L.) C.C. Gmel., *658, 1189*
Vulpia octoflora (Walt.) Rydb., *764*

PONTEDERIACEAE

**Eichhornia crassipes* (Mart.) Solms., *1232*
Heteranthera limosa (Sw.) Willd., *1186*
Heteranthera reniformis R. & P., *1055*

POTAMOGETONACEAE

Potamogeton diversifolius Raf, *1344, 1514*
Potamogeton nodosus Poir., *1022, 1053*

SMILACACEAE

Smilax bona-nox L., *574, 981*
Smilax glauca Walt., *1059, 1226*
Smilax rotundifolia L., *444, 1024, 1464*
Smilax smallii Morong, *1014, 1264*
Smilax tamnoides L., *1386*

TYPHACEAE

Typha domingensis Pers., *605*
Typha latifolia L., *1231*

XYRIDACEAE

Xyris jupicai Rich., *922, 1381*

MAGNOLIOPHYTA (MAGNOLIOPSIDA)

ACANTHACEAE

Ruellia caroliniensis (J.F. Gmel.) Steudel, *858*

ACERACEAE

Acer drummondii (H. & A.) Sargent, *1422*
Acer negundo L., *639*
Acer rubrum L., *251, 422*
Acer saccharinum L., *318*
Acer saccharum Marshall subsp. *floridanum* (Chapm.) Desmarais, *624*

AMARANTHACEAE

**Alternanthera philoxeroides* (Mart.) Griseb., *1184*
Amaranthus hybridus L., *1406, 1523*
Amaranthus spinosus L., *846, 1390*
Amaranthus viridis L., *309*

ANACARDIACEAE

Rhus copallina L., *1227*
Rhus glabra L., *659, 1031*
Toxicodendron vernix (L.) Kuntze, *1244a*
Toxicodendron radicans (L.) Kuntze, *781*

ANNONACEAE

Asimina triloba (L.) Dunal, *630*

APIACEAE

Chaerophyllum tainturieri Hooker, *420, 1099*
Cicuta maculata L., *1203, 1478*
Cryptotaenia canadensis (L.) DC., *628*
**Daucus carota* L., *655*
Daucus pusillus Michx., *1316*
Eryngium integrifolium Walt., *1370*
Eryngium prostratum Nutt. ex DC., *1250*
Eryngium yuccifolium Michx., *692*
Hydrocotyle ranunculoides L. f., *498*
Hydrocotyle verticillata Thunberg, *1136*
Ptilimnium capillaceum (Michx.) Raf., *751, 1248*
Ptilimnium nuttallii (DC.) Britt., *1258*
Sanicula canadensis L., *585, 1010*
Sanicula smallii E.P. Bicknell, *466, 571*
Thaspium trifoliatum (L.) Gray, *445, 775*
Trepocarpus aethusae Nutt. ex DC., *762*

APOCYNACEAE

Amsonia tabernaemontana Walt., *521*
Apocynum cannabinum L., *1244, 1441*
Trachelospermum difforme (Walt.) Gray, *619, 823*
**Vinca major* L., *369*

AQUIFOLIACEAE

Ilex decidua Walt., *663*
Ilex opaca Aiton, *455*
Ilex verticillata (L.) A. Gray, *668, 1427*

ARALIACEAE

Aralia spinosa L., *872*
**Hedera helix* L., *1339*
Panax quinquefolium L., *1208*, **S3**

ARISTOLOCHIACEAE

Aristolochia serpentaria L., *561, 1155*

ASCLEPIADACEAE

Asclepias amplexicaulis Smith, *777, 1169*
Asclepias tuberosa L., *719*
Asclepias variegata L., *592, 1309*
Asclepias viridiflora Raf., *1323*
Cynanchum laeve (Michx.) Persoon, *1340, 1528*
Matelea carolinensis (Jacl.) Woodson, *1484*, **S3**
Matelea gonocarpos (Walt.) Shinners, *1228*

ASTERACEAE

Ambrosia artemisiifolia L., *215, 1342*
Ambrosia trifida L., *983, 1457*
Antennaria plantaginifolia (L.) Richardson, *502, 586*
Arnoglossum atriplicifolium (L.) H. Rob., *1029*
Aster concolor L., *1041*
Aster dumosus L., *1005*
Aster lateriflorus (L.) Britt., *976, 1027*
Aster paludosus subsp. *hemisphaericus* (Alex.) Cronquist, *323, 914, 990*
Aster patens Aiton, *936*
Aster pilosus Willd., *1005a, 1181*
Aster undulatus L., *1043*
Baccharis halimifolia L., *612*
Bidens aristosa (Michx.) Britt., *767, 984*
Bidens discoidea (T. & G.) Britt., *956*
Bidens frondosa L., *1554*
Boltonia asteroides (L.) L'Hér., *949*
Boltonia diffusa Ell., *837, 1006*
Brickellia eupatorioides (L.) Shinners, *1541*
Chrysopsis mariana (L.) Ell., *989, 1038*
Cirsium discolor (Muhl.) Sprengel, *1348*
Cirsium horridulum Michx., *490*
Conoclinium coelestinum (L.) DC., *1040, 1252*
Conyza bonariensis (L.) Cronquist, *1265*
Conyza canadensis L., *845, 1033*
Coreopsis lanceolata L., *409*
Coreopsis pubescens Ell., *644*
Coreopsis tinctoria Nutt., *794*
Coreopsis tripteris L., *911, 1329*
Eclipta prostrata (L.) L., *840*
Elephantopus carolinianus Raeusch., *903*
Elephantopus tomentosus L., *253, 836*
Erechtites hieracifolia (L.) Raf., *315, 969*
Erigeron annuus (L.) Persoon, *778*
Erigeron philadelphicus L., *1153*
Erigeron pulchellus Michx., *1571*
Erigeron strigosus Muhl. ex Willd., *718*
Eupatorium album L., *1332*
Eupatorium altissimum L., *1011, 1524, 1543*
Eupatorium capillifolium (Lam.) Small, *1017*
Eupatorium fistulosum Barratt, *1220*
Eupatorium perfoliatum L., *891*
Eupatorium rotundifolium L., *776, 937*
Eupatorium serotinum Michx., *213, 856*
Fleischmannia incarnata (Walt.) R.M. King & H. Rob., *1519*
Gnaphalium obtusifolium L., *1030*
Gnaphalium purpureum L., *536, 699*
Helenium amarum (Raf.) H. Rock, *206, 790*
Helianthus angustifolius L., *1510*
Helianthus divaricatus L., *933, 1007*
Helianthus grosseserratus Martens, *1493, 1530*

Helianthus hirsutus Raf., *1488*
Helianthus microcephalus T. & G., *1540*
Helianthus silphioides Nutt., *1511*
Heliopsis helianthoides (L.) Sweet, *687*
Hieracium gronovii L., *832, 1013*
Krigia cespitosa (Raf.) K.L. Chambers, *1105*
Krigia dandelion (L.) Nutt., *226, 430*
Krigia virginica (L.) Willd., *1576*
Lactuca canadensis L., *1268, 1349*
Lactuca floridana (L.) Gaertner, *899, 1460*
Liatris squarrosa (L.) Michx., *870, 1327*
Liatris squarrulosa Michx., *992*
Mikania scandens (L.) Willd., *317, 239*
Pityopsis graminifolia (Michx.) Nutt., *1328*
Pluchea camphorata (L.) DC., *967*
Prenanthes altissima L., *1049*
Pyrrhopappus carolinianus (Walt.) DC., *632, 1334*
Rudbeckia hirta L., *229, 768, 1331*
Senecio glabellus Poir., *Copeland s.n.* (IBE)
Silphium integrifolium Michx., *854, 1324*
Solidago caesia L., *909, 1012*
Solidago canadensis L. var. *scabra* T. & G., *255, 984a*
Solidago gigantea Aiton, *892*
Solidago nemoralis Aiton, *322*
Solidago odora Aiton, *928a, 1008*
Solidago patula Muhl. ex Willd., *977, 1347*
Solidago rugosa Miller, *1504, 1536*
Solidago ulmifolia Muhl. ex Willd., *972, 1002*
Soliva sessilis Ruiz & Pavón, *341*
**Sonchus asper* (L.) Hill, *1114*
**Taraxacum officinale* Weber ex F.H. Wigg., *1397*
Verbesina alternifolia (L.) Britton ex Kearney, *927*
Verbesina helianthoides Michx., *733*
Vernonia missurica Raf., *1449*
Vernonia gigantea (Walt.) Trel., *890, 1350*
**Xanthium strumarium* L., *316*

BALSAMINACEAE

Impatiens capensis Meerb., *994*

BERBERIDACEAE

Podophyllum peltatum L., *441*

BETULACEAE

Alnus serrulata (Aiton) Willd., *1346*
Betula nigra L., *207*
Carpinus caroliniana Walt., *433, 664*
Corylus americana Walt., *1362*
Ostrya virginiana (Mill.) K. Koch, *437*

BIGNONIACEAE

Bignonia capreolata L., *429*
Campsis radicans (L.) Seeman ex Bureau, *640, 760*
Catalpa bignonioides Walt., *1113, 1531*

BORAGINACEAE

**Buglossoides arvensis* (L.) I.M. Johnst., *1568*
Cynoglossum virginianum L., *627*
Myosotis macrosperma Engelm., *518, 761*
Myosotis verna Nutt., *1122*
Onosmodium virginianum (L.) DC., *689*

BRASSICACEAE

**Arabidopsis thaliana* (L.) Heynh., *1087*
**Brassica napus* L., *349*
**Capsella bursa-pastoris* (L.) Medik., *1565*
**Cardamine hirsuta* L., *382*
**Coronopus didymus* (L.) Sm., *1126*
Draba brachycarpa Nutt. ex T. & G., *1083*
Lepidium virginicum L., *1077*
Rorippa sessiliflora (Nutt.) Hitchc., *481*

BUDDLEJACEAE

Polypremum procumbens L., *807, 860*

CABOMBACEAE

Brasenia schreberi J.F. Gmel., *497*

CACTACEAE

Opuntia humifusa (Raf.) Raf., *489*

CALLITRICHACEAE

Callitriche heterophylla Pursh., *482, 607*
Callitriche pedunculosa Nutt., *413, 1125*

CAMPANULACEAE

Lobelia cardinalis L., *306, 978*
Lobelia puberula Michx., *254, 1045*
Lobelia spicata Lam., *770*
Triodanis biflora (R. & P.) Greene, *528, 1191*
Triodanis perfoliata (L.) Nieuwl., *1161*

CAPRIFOLIACEAE

**Lonicera japonica* Thunberg, *635*
Lonicera sempervirens L., *402*
Sambucus canadensis L., *549*
Symphoricarpos orbiculatus Moench., *1240*
Viburnum nudum L., *567, 1436*
Viburnum rufidulum Raf., *672, 1134*

CARYOPHYLLACEAE

**Arenaria serpyllifolia* L., *1101*
**Cerastium glomeratum* Thuillier, *371, 1065*
Sagina decumbens (Ell.) T. & G., *1186*
**Saponaria officinalis* L., *1398*
Silene antirrhina L., *680*
Silene stellata (L.) Aiton f., *1206, 1237*
Silene virginica L., *1146, 1168*
**Stellaria media* (L.) Vill., *331, 357*

CELASTRACEAE

Celastrus scandens L., *737*, **S2/S3**
Euonymus americanus L., *464*
**Euonymus fortunei* (Turcz.) Hand.-Mazz., *1335*

CHENOPODIACEAE

Chenopodium album L., *1495*
**Chenopodium ambrosioides* L., *1535*

CISTACEAE

Lechea mucronata Raf., *1275*
Lechea tenuifolia Michx., *1196*

CLUSIACEAE

Hypericum drummondii (Grev. & Hook.) T. & G., *225, 822*
Hypericum hypericoides (L.) Crantz, *827, 835*
Hypericum mutilum L., *216, 298, 869*
Hypericum punctatum Lam., *1257, 1353*
Hypericum stragalum P. Adams & Robson, *1452*
Triadenum walteri (J.F. Gmel.) Gleason, *955*

CONVOLVULACEAE

Cuscuta compacta Juss. ex Choisy, *1241, 1307*
Cuscuta gronovii Willd. ex Schult., *901*
Cuscuta pentagona Engelm., *808, 1243*
Dichondra caroliniensis Michx., *606a*
**Ipomoea hederacea* Jacq., *841, 906, 1387*
Ipomoea lacunosa L., *241, 910*
Ipomoea pandurata (L.) G. Mey., *230, 879, 1299*
Jacquemontia tamnifolia (L.) Griseb., *1476*

CORNACEAE

Cornus florida L., *404*
Cornus foemina Mill., *1437*

CUCURBITACEAE

Melothria pendula L., *1483, 1522*

EBENACEAE

Diospyros virginiana L., *670*

ELAEAGNACEAE

**Elaeagnus umbellata* Thunb., *928*

ERICACEAE

Monotropa hypopithys L., *Bryson 15335* (ctb)
Vaccinium arboreum Marshall, *438, 661, 1150*
Vaccinium corymbosum L., *1191a*
Vaccinium stamineum L., *463, 671, 930*

ESCALLONIACEAE

Itea virginica L., *506, 662*

EUPHORBIACEAE

Acalypha gracilens A. Gray, *895, 1469*
Acalypha ostryifolia Riddell, *1389*
Acalypha rhomboidea Raf., *307*
Acalypha virginica L., *1505*
Croton capitatus Michx., *1032*
Croton glandulosus L., *988, 1315*
Croton monanthogynus Michx., *1438*
Euphorbia humistrata Engelm., *806, 1515*
Euphorbia maculata L., *1318, 1388*
Euphorbia nutans Lag., *243, 847, 1439*
Euphorbia pubentissima Michx., *717, 873*

FABACEAE

**Albizia julibrissin* Durazzini, *638*
Amphicarpaea bracteata (L.) Fernald, *1486*
Apios americana Medik., *319*
Centrosema virginianum (L.) Bentham, *825, 935*
Cercis canadensis L., *426*
Chamaecrista fasciculata (Michx.) Greene, *1047*
Chamaecrista nictitans (L.) Moench, *222, 320*
Clitoria mariana L., *684, 830*
Crotalaria sagittalis L., *932*
Desmanthus illinoensis (Michx.) MacM. ex B.L. Rob. & Fernald, *1261*
Desmodium ciliare (Muhl. ex Willd.) DC., *927a, 1499*
Desmodium glutinosum (Muhl. ex Willd.) Wood, *1284, 1311*
Desmodium nudiflorum (L.) DC., *1280*
Desmodium nuttallii (Schindler) Schubert, *1513*
Desmodium paniculatum (L.) DC., *312, 877, 1404*
Desmodium pauciflorum (Nutt.) DC., *1218*
Desmodium perplexum Schubert, *1481, 1539*
Desmodium rotundifolium DC., *1485*
Desmodium viridiflorum (L.) DC., *1487*
Galactia volubilis (L.) Britt., *1269, 1412*
Gleditsia aquatica Marshall, *1036*
Gleditsia triacanthos L., *1120*
**Kummerowia stipulacea* (Maxim.) Schindl., *1409*
**Kummerowia striata* (Thunb.) Schindl., *204, 995, 1354*
Lathyrus hirsutus L., *526, 783*
**Lespedeza bicolor* Turcz., *1363*
**Lespedeza cuneata* (Dum. Cours.) G. Don., *238, 1343*
Lespedeza hirta (L.) Hornem., *1500*
Lespedeza procumbens Michx., *848*
Lespedeza repens (L.) W.P.C. Barton, *685*
Lespedeza stuevei Nutt., *1333*
Lespedeza violacea (L.) Pers., *MacDonald 9591b* (IBE)
Lespedeza virginica (L.) Britt., *878, 1325*
**Medicago arabica* (L.) Huds., *391*
**Melilotus alba* Desr., *1443*
Mimosa microphylla (Torr. & A. Gray) Barneby, *1195*
Orbexilum pedunculatum (Mill.) Rydb., *512*
Phaseolus polystachios (L.) BSP., *1358*
**Pueraria montana* (Lour.) Merr., *857*
Rhynchosia tomentosa (L.) H. & A., *1290*
Robinia pseudoacacia L., *415, 602*
Senna marilandica (L.) Link, *1239, 1351*
**Senna obtusifolia* (L.) H.S. Irwin & Barneby, *1352*
Sesbania herbacea (Mill.) McVaugh, *968*
Strophostyles helvula (L.) Ell., *218, 867*
Strophostyles leiosperma (T. & G.) Piper, *202*
Strophostyles umbellata (Muhl. ex Willd.) Britton, *774, 1525*
Stylosanthes biflora (L.) BSP., *769, 881*
Tephrosia spicata (Walt.) T. & G., *1222, 1326*
Tephrosia virginiana (L.) Persoon, *1046*
**Trifolium campestre* Schreber, *424, 451, 1082*
**Trifolium dubium* Sibthorp, *495*
**Trifolium incarnatum* L., *401*
**Trifolium pratense* L., *1104a*
**Trifolium repens* L., *1080, 1108*
**Trifolium resupinatum* L., *1173*
**Trifolium vesiculosum* Savi, *709*
Vicia caroliniana Walt., *1063*
Vicia grandiflora Scopoli, *403*
**Vicia sativa* L., *540*
Vicia tetrasperma (L.) Schreb., *418, 1138*
Vicia villosa Roth, *631*
Wisteria frutescens (L.) Poiret, *237*
**Wisteria sinensis* (Sims) Sweet, *237, 419, 740*

FAGACEAE

Castanea dentata (Marshall) Borkh., *583*
Castanea pumila (L.) Mill., *1559*
Fagus grandifolia Ehrh., *459*
Quercus alba L., *1244*
Quercus coccinea Muenchh., *999, 1149*
Quercus falcata Michx., *1148*
Quercus lyrata Walt., *428, 472, 1177*
Quercus marilandica Muenchh., *405, 421*
Quercus michauxii Nutt., *1135*
Quercus muehlenbergii Engelm., *651*
Quercus nigra L., *646, 1025*
Quercus pagoda Raf., *1122a*
Quercus phellos L., *473*

Quercus rubra L., *493, 654, 896*
Quercus stellata Wang., *599*
Quercus velutina Lam., *1482*

GENTIANACEAE

Gentiana villosa L., *1580*
Sabatia campanulata (L.) Torrey, *1415*

GERANIACEAE

Geranium carolinianum L., *1078*
Geranium dissectum L., *393, 524, 1103*

HALORAGACEAE

**Myriophyllum aquaticum* Vellozo, *395*

HAMAMELIDACEAE

Hamamelis virginiana L., *439, 943a*
Liquidambar styraciflua L., *245, 462*

HIPPOCASTANACEAE

Aesculus pavia L., *1095*

HYDRANGEACEAE

Decumaria barbara L., *600, 669, 1242*
Hydrangea arborescens L., *641, 706, 771*
Hydrangea quercifolia W. Bartram, *443*

HYDROPHYLLACEAE

Hydrolea uniflora Raf., *959*

JUGLANDACEAE

Carya aquatica (F. Michx.) Nutt., *1247*
Carya carolinae-septentrionalis (Ashe) Engl. & Graebn., *697*
Carya cordiformis (Wang.) K. Koch, *743*
Carya glabra (Mill.) Sweet, *697, 987, 1468*
Carya illinoensis (Wang.) K. Koch, *1020*
Carya ovalis (Wang.) Sargent, *736, 1026*
Carya ovata (Miller) K. Koch, *1212*
Carya pallida (Ashe) Engl. & Graebn., *407, 616, 1288*
Carya tomentosa Nutt., *246, 613, 696*
Juglans nigra L., *1321*

LAMIACEAE

Blephilia ciliata (L.) Benth., *745, 1167*
Collinsonia canadensis L., *1023*
**Glechoma hederacea* L., *1206*
**Lamium amplexicaule* L., *359*
**Lamium purpureum* L., *330, 370*
Lycopus rubellus Moench., *1472*
Lycopus virginicus L., *900, 908*
Monarda fistulosa L., *773*
Physostegia virginiana (L.) Benth., *1197*
**Prunella vulgaris* L., *643, 1154*
Pycnanthemum albescens T. & G. ex A. Gray, *1048, 1501*
Pycnanthemum tenuifolium Schrader, *889*
Salvia lyrata L., *417, 1480*
Scutellaria incana Biehler, *859*
Scutellaria integrifolia L., *690, 726, 829*
Scutellaria parvula Michx., *1106*
Teucrium canadense L., *866, 1213, 1383*

LAURACEAE

Lindera benzoin (L.) Blume, *665a, 1285*
Sassafras albidum (Nutt.) Nees., *461, 1066*

LENTIBULARIACEAE

Utricularia subulata L., *1371*

LINACEAE

Linum medium (Planch.) Britton, *1194*

LOGANIACEAE

Mitreola petiolata (J.F. Gmel.) T. & G., *1496*
Spigelia marilandica (L.) L., *573*

LYTHRACEAE

Ammannia coccinea Rottboell, *882, 1551*
Lagerstroemia indica (L.) Elliott, *1336*
Lythrum alatum Pursh var. *lanceolatum* (Elliott) Torr. & A. Gray ex Rothr., *1456*

MAGNOLIACEAE

Liriodendron tulipifera L., *460*
Magnolia acuminata L., *595, 1164*
Magnolia grandiflora L., *1205*
Magnolia virginiana L., *1060*

MALVACEAE

Abutilon theophrasti Medik., *1440*
Hibiscus lasiocarpos Cav., *839, 942*
**Sida rhombifolia* L., *1521*
**Sida spinosa* L., *960, 1393*

MARTYNIACEAE

Proboscidea louisianica (Miller) Thell., *1556*

MELASTOMATACEAE

Rhexia mariana L., *803, 826*
Rhexia virginica L., *1369*

MELIACEAE

**Melia azedarach* L., *1109*

MENISPERMACEAE

Calycocarpum lyonii (Pursh) A. Gray, *744*
Cocculus carolinus (L.) DC., *1142*

MOLLUGINACEAE

**Mollugo verticillata* L., *1298*

MORACEAE

**Broussonetia papyrifera* (L.) Vent, *601*
**Maclura pomifera* (Raf.) C.K. Schneid., *604, 947*
Morus rubra L., *448, 831*

MYRICACEAE

Myrica cerifera L., *931, 1225*

NYSSACEAE

Nyssa biflora Walter, *1421*
Nyssa sylvatica Marshall, *567a*

OLEACEAE

Forestiera acuminata (Michx.) Poiret, *475*
Fraxinus americana L., *435, 618, 1459*
Fraxinus pennsylvanica Marshall, *1577*
**Ligustrum sinense* Lour., *534*

ONAGRACEAE

Gaura biennis L., *943*

Ludwigia alternifolia L., *798*
Ludwigia decurrens Walt., *1450, 1471*
Ludwigia palustris (L.) Ell., *815, 1463*
Ludwigia peploides HBK. subsp. *glabrescens* (Kuntze) Shinners, *707, 944, 1056*
Oenothera biennis L., *864, 1550*
Oenothera laciniata Hill, *541, 805, 1097*
Oenothera speciosa Nutt., *507*

OROBANCHACEAE

Epifagus virginiana (L.) Barton, *1061*

OXALIDACEAE

Oxalis dillenii Jacquin, *232, 375, 1100*
Oxalis rubra St. Hill, *1132*
Oxalis stricta L., *396, 406, 1076*
Oxalis violacea L., *450*

PAPAVERACEAE

Sanguinaria canadensis L., *1563*

PASSIFLORACEAE

Passiflora incarnata L., *231*
Passiflora lutea L., *509*

PHRYMACEAE

Phryma leptostachya L., *735, 1283*

PHYTOLACCACEAE

Phytolacca americana L., *1219*

PLANTAGINACEAE

Plantago aristata Michx., *634, 755*
Plantago heterophylla Nutt., *1088*
**Plantago lanceolata* L., *642*
Plantago rugelii Decne., *1234*
Plantago virginica L., *364, 431, 1079*

PLATANACEAE

Platanus occidentalis L., *1320*

POLEMONIACEAE

Phlox divaricata L., *1573*
Phlox pilosa L., *449, 688, 1070*

POLYGALACEAE

Polygala cruciata L., *1366*
Polygala mariana Miller, *1266*
Polygala sanguinea L., *1214*

POLYGONACEAE

Brunnichia ovata (Walter) Shinners, *853*
Polygonum aviculare L., *1021*
**Polygonum cespitosum* Blume var. *longisetum* (Bruijn) Steward, *728, 985*
Polygonum hydropiperoides Michx., *308, 749, 954*
Polygonum lapathifolium L., *210*
Polygonum pensylvanicum L., *951, 1529*
Polygonum punctatum Ell., *1466*
Polygonum sagittatum L., *916, 1508*
Polygonum scandens L., *912*
Polygonum setaceum Baldwin, *1424*
Polygonum virginianum L., *902*
Rumex crispus L., *532*

PORTULACACEAE

Claytonia virginica L., *335, 355, 471*
**Portulaca amilis* Speg., *1294, 1359*
**Portulaca oleracea* L., *1399*

RANUNCULACEAE

Actaea pachypoda Elliott, *1210*
Clematis virginiana L., *233*
Ranunculus abortivus L., *1111*
Ranunculus fascicularis Muhl., *354*
Ranunculus pusillus Poir., *1124*
Ranunculus recurvatus Poir., *588*
Ranunculus sardous Crantz, *390, 1096*
Thalictrum pubescens Pursh., *1172*

RHAMNACEAE

Berchemia scandens (Hill) K. Koch., *454*
Ceanothus americanus L., *734*
Rhamnus caroliniana Walt., 593

ROSACEAE

Agrimonia parviflora Aiton, *1407*
Agrimonia rostellata Wallroth, *1479*
Amelanchier arborea (Michx. f.) Fernald, *558, 925, 1310*
**Aphanes microcarpa* (Boiss & Reut.) Rothm., *1562*
Crataegus calpodendron (Ehrhart) Medicus, *1001*
Crataegus crus-galli L., *667*
Crataegus marshallii Eggl., *698, 1473*
**Duchesnea indica* (Andrews) Focke, *1110*
Geum canadense Jacquin, *742, 1461*
**Potentilla recta* L., *535*
Potentilla simplex Michx., *410*
Prunus angustifolia Marshall, *603*
Prunus caroliniana (Mill.) Aiton, *1235*
Prunus mexicana S. Wats., *348*
**Prunus persica* (L.) Batsch, *348*
Prunus serotina Ehrhart, *436*
**Pyrus calleryana* Decne, *332, 351, 710*
Rosa carolina L., *649a, 938*
**Rosa chinensis* Jacq., *649*
**Rosa multiflora* Thunberg, *1121*
Rosa palustris Marshall, *727*
Rubus argutus Link, *372, 1116*
Rubus trivialis Michx., *372*
**Spiraea prunifolia* Sieb. & Zucc., *325*

RUBIACEAE

Cephalanthus occidentalis L., *208*
Diodia teres Walt., *227, 821*
Diodia virginiana L., *203, 752, 842*
Galium aparine L., *358*
Galium circaezans Michx., *563*
Galium obtusum Bigelow, *1263*
Galium parisiense L., *478, 787*
Galium tinctorium L., *516, 757*
Galium triflorum Michx., *1216, 1313*
Hedyotis australis Lewis & Moore, *1084*
Hedyotis boscii DC., *1249*
Hedyotis crassifolia Raf., *336, 356*
Hedyotis purpurea (L.) T. & G., *514, 691, 1152*
Hedyotis uniflora (L.) Lam., *1372*
Mitchella repens L., *580*
**Sherardia arvensis* L., *383*

SALICACEAE

**Populus alba* L., *608*
Populus deltoides W. Bartram ex Marshall, *1387*
Salix nigra Marshall, *636*

SAURURACEAE

Saururus cernuus L., *1183*

SAXIFRAGACEAE

Penthorum sedoides L., *813, 1380*

SCROPHULARIACEAE

Agalinis fasciculata (Ell.) Raf., *934*
Agalinis tenuifolia (Vahl) Raf., *1004*
Aureolaria flava (L.) Farwell, *1000*
Aureolaria pedicularia (L.) Raf., *1364*
Chelone glabra L., *979*, **S3**
Gratiola neglecta Torrey, *480, 515*
Gratiola pilosa Michx., *1373*
Gratiola virginiana L., *499, 686*
Linaria canadensis (L.) Chaz., *394, 527*
Lindernia dubia (L.) Pennell, *868, 883*
**Mazus pumilus* (Burm. f.) Steenis, *373*
Mecardonia acuminata (Walt.) Small, *1502*
Micranthemum umbrosum (J. F. Gmelin) Blake, *1052, 1305*
Mimulus alatus Aiton, *411, 945, 1377*
Pedicularis canadensis L., *1067*
Penstemon laxiflorus Pennell, *693, 1144*
**Verbascum blattaria* L., *1174*
**Verbascum thapsus* L., *1260*
**Veronica arvensis* L., *1081*
**Veronica peregrina* L., *340*
Veronicastrum virginicum (L.) Farwell, *1003*

SIMAROUBACEAE

**Ailanthus altissima* (Miller) Swingle, *1578*

SOLANACEAE

Datura stramonium L., *1410*
**Lycopersicon esculentum* Miller, *1341*
Physalis angulata L., *1470*
Physalis heterophylla Nees., *730, 1292*
Physalis virginiana Miller, *1548*
Solanum carolinense L., *637, 1317*
Solanum ptycanthum Dun., *1338*

STAPHYLEACEAE

Staphylea trifolia L., *621, 701*, **S3**

STYRACACEAE

Styrax grandifolius Aiton, *432, 596, 898*

SYMPLOCACEAE

Symplocos tinctoria (L.) L'Her., *665, 816, 1211*

ULMACEAE

Celtis laevigata Willd., *1215*
Celtis occidentalis L., *557, 1141*
Planera aquatica J. F. Gmelin, *476*
Ulmus alata Michx., *425*
Ulmus americana L., *496, 1156*

URTICACEAE

Boehmeria cylindrica (L.) Sw., *303, 812*
Pilea pumila (L.) A. Gray, *1544*

VALERIANACEAE

Valerianella radiata (L.) Dufr., *384*

VERBENACEAE

Callicarpa americana L., *256*
Phyla lanceolata (Michx.) Greene, *240, 1345*
**Verbena bonariensis* L., *1246*
**Verbena brasiliensis* Velloza, *234*
Verbena urticifolia L., *907, 962*

VIOLACEAE

Viola affinis LeConte, *392, 467, 585*
Viola palmata L., *470, 1073*
Viola primulifolia L., *503, 1062, 1566*

VISCACEAE

Phoradendron leucarpum (Raf.) Reveal & M.C. Johnst., *1337*

VITACEAE

Ampelopsis cordata Michx., *1356*
Parthenocissus quinquefolia (L.) Planchon, *452*
Vitis aestivalis Michx., *494, 556*
Vitus cinerea Engelm. ex Millardet, *614, 1401*
Vitis palmata Vahl., *1245*
Vitis rotundifolia Michx., *427, 453*
Vitis vulpina L., *1474*

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