A FLORISTICS STUDY OF LAKE MURPHYSBORO STATE PARK, ILLINOIS

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ABSTRACT.—A descriptive account of the plant habitats at Lake Murphysboro State Park in southwestern Illinois is presented. This is followed by an annotated checklist of the vascular plants found in the park, a list containing 731 species.

Lake Murphysboro State Park is located approximately in the center of Jackson County, Illinois, immediately north of Illinois highway 149, one-and-one-half miles west of Murphysboro in extreme southwestern

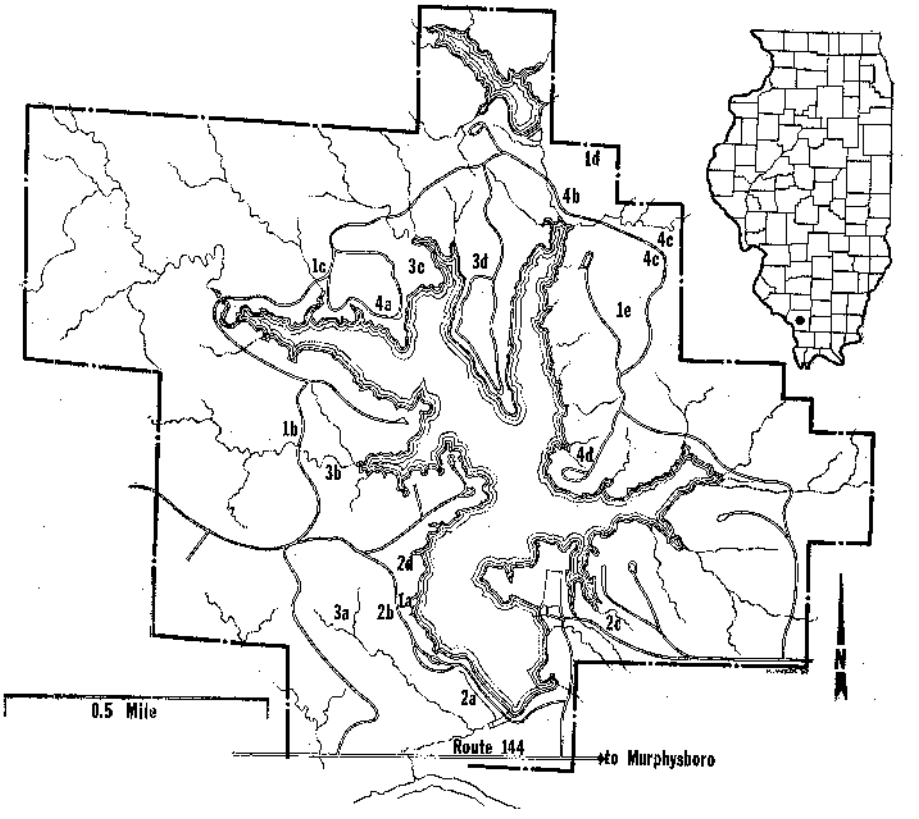

Figure 1.—Map of Lake Murphysboro State Park. Figures 1-4d refer to study areas described in text.

Illinois. The park is situated in parts of sections 25 and 36 in T 8 S, R 3 W, section 31 of T 8 S, R 2 W, section 1 of T 9 S, R 3 W, and section 6 of T 9 S, R 2 W. The park covers 904 acres, including 174 surface acres of water. The lake has a watershed area of 1700 acres with a shoreline of four miles.

There are two lakes within the park. The large Lake Murphysboro was built in 1949 and completed in 1950. The water source came from damming Indian Creek, a source which can be traced to the foothills of the Shawnee Forest, thus supplying the large amount of watershed. A smaller, eight-acre lake was built for erosion control in 1958. It is located 200 yards north of the large lake, and is at an elevation 100 feet above the large lake.

The park area was mostly wooded area and open fields before the state purchased the land to develop into a state park. Some of the lower land, mostly covered by the lake, was tillable farm land. However, a large portion of the wooded areas found in Lake Murphysboro State Park at the present time is preclimax forest. Some reforestation has been done by the state, although the majority of the area remains virtually undisturbed.

Lake Murphysboro State Park is in the physiographic division of the Mt. Vernon Hill Country which is located on the southern edge of the Illinoian glacial drift which came across Illinois about 100,000 years ago. The terminal moraine from the glacier and the wind-blown loess from the Mississippi River valley compose the parent material of the present soil types. Underlining this gravelly mass, fine sand, and silt loam is the bedrock stratum of Pennsylvanian sandstone.

The classification of the soils in the park is of five types. The Eroded silt loam in the Ava area covers 75%, while the Drury fine sandy loam has an area of 15%. The Ava silt loam, youthful phase, the Ava silt loam immature phase, and the Bluford silt loam, immature phase, divide the remaining 10% (Norton, 1933). These soil types are useful indicators as to the types of vegetation present in Lake Murphysboro State Park.

Systematic collections of vascular plants at the park have been made throughout each year since 1954. During the summer of 1963, a graduate class in Botany from Southern Illinois University made extensive studies at the park. Data from all these efforts form the basis for this paper. Students contributing to this paper are William Allen, Larry Contri, James Ellis, Paul Fore, Eldred Mueller, David Nielsen, Dale O'dell, Donald Stookey, and Kay Walker. Voucher specimens of each species are in the herbarium of Southern Illinois University.

For quantitative data in the forested areas, the random pair method was employed. For convenience of study and discussion, the park was divided into five basic habitat types —ridge top woods, mid-slope woods, lowland woods, lakes and shoreline, and fields and waste areas. A descriptive account of these habitats is included, followed by an annotated list of vascular plants from the park.

Ridge Top Woods

Many of the ridge tops in the park are unsuitable for botanical study be-

cause of the disturbance caused by numerous roadways and picnic areas on the ridge tops. Five undisturbed areas were used in this study. These occurred within a belt extending for a distance of three-and-one-half miles, starting at the southern entrance to the park and continuing along the western and northern boundaries of the lake (Areas 1a, 1b, 1c, 1d, and 1e on map). The ridge tops studied are approximately 400 feet above mean sea level and range in width from 20-75 feet across.

A generally dense canopy provided by the larger trees allows few areas to be exposed to full sunlight. The forest floor is characterized by a deep layer of leaf litter ranging from 2-5 inches in depth. Low-growing species such as virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Rhus radicans*), sorrel (*Oxalis stricta*), and milk pea (*Galactia volubilis*) produce a moderate cover over the forest floor under these conditions. An undergrowth of many shrubby trees such as flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*), winged elm (*Ulmus alata*), and redbud (*Cercis canadensis*) can be found growing beneath stands of shagbark hickory (*Carya ovata*), mockernut hickory (*Carya tomentosa*), black oak (*Quercus velutina*), and post oak (*Q. stellata*). Except for a few specimens, most of the trees on these ridge tops are relatively small, the average dbh of the trees being 6.5 inches.

Mid-slope Woods

Surrounding Lake Murphysboro is a series of slopes which runs from a gentle to a moderately steep incline and is broken by roads, gullies, and moist ravines. Four areas were selected for study (2a, 2b, 2c, 2d on map).

Area 2a. Beginning at the west end of the dam and running west parallel to the dam road is a typical slope within the park. At the end of the dam the slope is from 100-125 yards wide. The slope diminishes in width westward until it is only 25 yards wide at its most western part. The area is characterized by a loose, light soil near the top of the slope, which progressively becomes darker and more compact as the slope proceeds downward toward the moist ravine. The soil is covered by a thick layer of leaf litter. The dominant trees of this slope are white oak (*Quercus alba*), black oak, and mockernut hickory. Subdominant trees are the flowering dogwood, post oak, and winged elm. The most conspicuous herbaceous plants are poison ivy and virginia creeper. Sedges (*Carex* spp.), bloodroot (*Sanguinaria canadensis*), and false solomon's-seal (*Smilacina racemosa*) are also common.

Area 2b. This area is situated west of the lake and northwest of area 2a. The slope runs north and south with the road and a deep gully forming the boundaries. It is 250 yards long with an average width of 150 yards. The slope has several shallow, moist basin areas which are about 20 feet in diameter. The soil is a sandy loam which is relatively loose with a moderate covering of leaf litter. Two small sandstone outcroppings are also located on this slope. Dominant trees of this slope are white and black oak. Subdominant trees are flowering dogwood, red oak (*Quercus rubra*), and pignut hickory (*Carya glabra*). Poison ivy and virginia creeper were the most prevalent herbaceous plants. Other common plants were bloodroot and cat-brier (*Smilax glauca*).

Area 2c. This area is located east of the lake and north of the blacktop entrance road. This slope runs north and south and, for the most part, has a very steep incline (45°). The slope is interspersed with gullies, ravines, basin areas, and several small sandstone outcroppings. A temporary stream bed is found at the base of the slope. The slope is 350 yards long and varies from 100-175 yards wide. The soil is a clay-loam mixture and very compact. The dense leaf litter which characterized the other slopes was absent; however, in the shallow basins and gullies, accumulations were noted. Dominant trees of this area were white oak, sugar maple (*Acer saccharum*), and black gum (*Nyssa sylvatica*). Subdominants are redbud, pignut hickory, and flowering dogwood. Poison ivy and christmas fern (*Polystichum acrostichoides*) were the most conspicuous herbaceous plants. Other common plants included virginia creeper, cleft violet (*Viola falcata*), and *Panicum microcarpon*.

Area 2d. This area is located 200 yards northeast of area 2b. The general topography and vegetation of this slope are similar to area 2b. It is 120 yards long and varies from 75-150 yards wide. The soil is a sandy loam which is relatively loose with a moderate covering of leaf litter. Dominant trees are white oak and

flowering dogwood. Subdominant trees are flowering dogwoods and redbuds. Poison ivy and virginia creeper are the most prevalent herbaceous plants, while daisy fleabane (*Erigeron annuus*) and black-eyed susans (*Rudbeckia hirta*) are common.

The Lowland Woods

Considerable lowland areas exist in the park. These are located primarily around the lake and along Indian Creek and tributaries to this creek. The lowlands are characterized by a dense undergrowth of herbaceous plants and shrubs. Trees in these areas usually develop rapidly, some of them reaching a height of 75-100 feet and a dbh of 20 inches. The soil is usually low in organic matter, probably because of the frequent flooding and washing these areas receive during rains. The soil in certain areas remains soaked and spongy throughout the year.

In the lowland areas where the soil is less moist are communities of white oak, shagbark hickory, red maple (*Acer rubrum*), and American elm (*Ulmus americana*). As the soil moisture increases, these trees are replaced by black willow (*Salix nigra*), cottonwood (*Populus deltoides*), and sweet gum (*Liquidambar styraciflua*). The most conspicuous herbaceous plants in this type of community are *Brachyelytrum erectum*, *Ammannia coccinea*, clearweed (*Pilea pumila*), poison ivy, and virginia creeper. Other common species are *Panicum anceps*, *Eleocharis obtusa*, and *Carex frankii*.

Four lowland areas were selected for study (3a, 3b, 3c, 3d on map).

Open Areas and Waste Ground

Several abandoned fields occur in the park. Most of these were previously under cultivation. None of the fields is adjacent to the edge of the lake. All are bordered on at least two sides by woods. The slope of the fields ranges from 0-15 per cent. Yellow pine (*Pinus echinata*) has been planted in certain portions of these areas.

Ecological measurements were limited to an undisturbed area on the northeast side of the lake, although plants were collected in all open areas where natural vegitation occurred. Twenty-five one-meter square quadrats were taken by the meter quadrat method. The quadrats were placed sixty feet apart.

Area 4a consists of two fields which lie on either side of the circle road. Data from this area indicate that the most conspicuous species, ragweed (*Ambrosia artemisiifolia*), has a frequency of 88%. Other common species include trumpet creeper (*Campsis radicans*), partridge pea (*Cassia fasciculata*), bush clover (*Lespedeza stipulacea*), and *Panicum gattingeri*.

Area 4b is bordered on the north, east, and west by woods and on the south by a roadway. Data in this area showed goldenrod (*Solidago canadensis*) and blackberry (*Rubus allegheniensis*) to have 100% frequency. Other common species were *Ambrosia artemisiifolia*, broomsedge (*Andropogon virginicus*), partridge pea, and wild rye (*Elymus virginicus*).

The area designated 4c consists of a large field cut into two portions by a roadway. The field is encircled by woods, with numerous yellow pine planted throughout the field. Dewberry (*Rubus flagellaris*) was the most common species, followed by aster (*Aster pilosus*), plantain (*Plantago lanceolata*), and canada blue grass (*Poa compressa*).

Area 4d consists of a large field bordered on the north, east, and west by a woods and on the south by a roadway. Bush clover (*Lespedeza stipulacea*) is most prominent in this community, along with ragweed, poison ivy, and goldenrod (*Solidago canadensis*).

Aquatic and Shoreline Communities

The aquatic phase of this floristics study included the vascular plants of two eutrophic lakes and their supralittoral shorelines. Supalittoral is defined as the zone within one meter of the water.

Lake Murphysboro is the larger of the two lakes, having a surface area of 166 acres. The four-mile irregular shoreline supports a densely wooded upland (75%) which drops off into the water, gently sloping lowland woods (10%), and marshy climax conditions at the terminal necks of the more shallow coves (15%). In addition, the woodland community of the shoreline is inundated for short periods each year. These habitats promote the growth of a varied number of herbs, shrubs, and trees adjacent to the water.

During the summer, the physical and chemical features of the aquatic environment of Lake Murphysboro are summarized as follows: 166 surface acres, typical depth 15 (1-40) feet, drainage basin 1700 acres, average light penetration 10 (1-15) feet (Secchi disc), hydrogen ion activity pH 7.6 (6.0-9.4), (Hellige), calcium carbonate hardness 86 (70-120), (methyl orange alkalinity), and surface temperature 29° (22-35) C. Luxurious stands of hydrophytic plants are maintained under such favorable conditions (Penfound, 1956).

Built for erosion control, the smaller eight-acre lake is situated 200 yards north of, and at an elevation of 100 feet above, Lake Murphysboro. This alkaline lake, with an average depth of 10 feet, has a shoreline of steep upland slopes (90%) and marshy coves (10%). Although more sparse in number, the species of plants at this location are essentially the same as those of the larger lake area; no attempt is made to separate the two lakes in the annotated checklist.

The aquatic and shoreline plants of Lake Murphysboro may be separated into the following types: floating aquatics, submerged hydrophytes, emergent plants, and moist and dry shoreline inhabitants. Only two species are free-floating on the surface — *Lemna minor* and *Spirodela polyrhiza*. Submerged (sometimes floating on the surface), rooted hydrophytes (*Potamogeton nodosus, P. foliosus, Chara braunii, C. globularis, Ceratophyllum demersum,* and *Naias guadalupensis*), are characteristic of the deeper littoral area. Self-supporting, emergent aquatics, which often grow in extensive dense stands (*Typha latifolia* and *Nelumbo lutea*), delimit the zone of shallow water (*Alisma subcordatum, Sagittaria latifolia,* and *Scirpus atrovirens*). Numerous lowland herbs (*Phyla lanceolata, Lysimachia nummularia, Cyperus strigosus, Carex* spp., *Leersia virginica, Impatiens biflora,* and *Eleocharis obtusa*), shrubs (*Cephalanthus occidentalis* and *Ilex decidua*), and trees (*Liquidambar styraciflua, Betula nigra,* and *Salix nigra*) typify the moist shoreline. Representative upland species (*Hypericum punctatum, Lespedeza stipulacea, Cornus drummondii, Vitis aestivalis,* and *Quercus velutina*), due primarily to the abrupt wooded slopes, grow in drier soil next to the water.

Annotated Checklist of Vascular Plants Collected in Lake Murphysboro State Park

Seven hundred and thirty-one species of vascular plants have been recorded from Lake Murphysboro State Park. This compares favorably with the total number of vascular plants known from other southern Illinois areas, notably the Pine Hills, with 1005 species (Mohlenbrock and Voigt, 1965), Giant City State Park, with 820 species (Mohlenbrock, 1954), Ferne Clyffe State Park, with 701 species (Mohlenbrock, *et al.*, 1966), and Devil's Kitchen Lake, with 573 species (Mohlenbrock, *et al.*, 1962). All of the latter areas are with extensive rocky outcroppings; Lake Murphysboro has none.

Several unusual species have been found within the park. The nine species of orchids have been the subject of a separate paper (Mohlenbrock, 1960). Three species are known in Illinois only from the park (*Lilium superbum, Smilax herbacea,* and *Carex striatula*). *Naias minor, Trillium recurvatum* f. *shayii,* and *Scutellaria nervosa* f. *alba* were first collected in Illinois from Lake Murphysboro State Park.

Nomenclature essentially follows Fernald (1950) in Gray's Manual of Botany. The numbers following the binomials indicate the habitat types where each species was collected. (1=ridge top woods, 2=mid-slope woods, 3=lowland woods, 4=open areas and waste ground, 5=aquatic and shoreline).

Annotated List of Species

Equisetaceae Michx

Equisetum arvense L. 5.
Equisetum hyemale L. 5.

Ophioglossaceae Presl

Botrychium obliquum Muhl. 2.
Botrychium virginianum (L.) Sw. 2, 3.
Ophioglossum vulgatum L. 3.

Polypodiaceae R. Br.

Adiantum pedatum L. 2, 3.
Asplenium platyneuron (L.) Oakes. 1, 2.
Athyrium angustum (Willd.) Presl. 2, 3.
Athyrium thelypterioides (Michx.) Desv. 3.
Camptosorus rhizophyllus (L.) 3.
Cystopteris fragilis (L.) Bernh. 1, 2, 3.

Dryopteris hexagonoptera (Michx.) C. Chr. 3.
Onoclea sensibilis L. 3.
Polystichum acrostichoides (Michx.) Schott. 1, 2, 3.
Woodsia obtusa (Spreng.) Torr. 1, 2.

Cupressaceae Horan.
Juniperus virginiana L. 1, 2, 3, 4.

Typhaceae J. St. Hil.
Typha latifolia L. 5.

Naiadaceae Lindley
Naias flexilis (Willd.) Rostk. & Schmidt. 5.
Naias guadalupensis (Spreng.) Magnus. 5.
Naias minor All. 5.

Potamogetonaceae Engler
Potamogeton nodosus Poir. 5.
Potamogeton foliosus Raf. 5.
Potamogeton pectinatus L. 5.

Alismaceae DC.
Alisma subcordatum Raf. 5.
Sagittaria calycina Engelm. 5.
Sagittaria graminea Michx. 5.
Sagittaria latifolia Willd. 5.

Gramineae Juss.
Agrostis alba L. 4.
Agrostis hyemalis (Walt.) BSP. 4.
Agrostis perennans (Walt.) Tuckerm. 4.
Alopecurus carolinianus Walt. 4.
Andropogon gerardii Vitman. 4.
Andropogon scoparius Michx. 4.
Andropogon virginicus L. 4.
Arundinaria gigantea (Walt.) Muhl. 3.
Brachyelytrum erectum (Schreb.) Beauv. 2.
Bromus ciliatus L. 2, 4.
Bromus commutatus Schrad. 4.
Bromus inermis Leyss. 4, 5.
Bromus japonicus Thunb. 4.
Bromus purgans L. 1, 2, 3.
Bromus secalinus L. 4.
Bromus tectorum L. 4.
Cenchrus pauciflorus Benth. 4.
Cinna arundinacea L. 1.
Cynodon dactylon (L.) Pers. 4.
Dactylis glomerata L. 4.
Danthonia spicata (L.) Beauv. 1, 2.
Digitaria sanguinalis (L.) Scop. 4.
Echinochloa crusgalli (L.) Beauv. 4, 5.
Echinochloa pungens (Poir.) Rydb. 5.
Eleusine indica (L.) Gaertn. 4.
Elymus canadensis L. 1, 2, 4.
Elymus villosus Muhl. 2.
Elymus virginicus L. 1, 2, 4.
Eragrostis cilianensis (All.) Link. 4.
Eragrostis frankii C. A. Mey. 5.
Eragrostis hypnoides (Lam.) BSP. 5.
Eragrostis pectinacea (Michx.) Necs. 4.
Eragrostis poaeoides Beauv. 4.
Eragrostis spectabilis (Pursh) Steud. 4.
Erianthus alopecuroides (L.) Ell. 4.
Festuca elatior L. 4.
Festuca octoflora Walt. 1, 2.
Festuca rubra L. 4.
Glyceria striata (Lam.) Hitchc. 3, 5.
Hordeum jubatum L. 4.
Hystrix patula Moench. 1, 2, 4.
Hordeum pusillum Nutt. 4.
Leersia oryzoides (L.) Sw. 5.
Leersia virginica Willd. 2, 3.
Lolium multiflorum Lam. 4.
Lolium perenne L. 4.
Muhlenbergia frondosa (Poir.) Fern. 4.
Muhlenbergia racemosa (Michx.) BSP. 5.
Muhlenbergia schreberi J. F. Gmel. 4.
Muhlenbergia sobolifera (Muhl.) Trin. 2.
Muhlenbergia sylvatica Torr. 3.
Panicum agrostoides Spreng. 5.
Panicum anceps Michx. 4, 5.
Panicum boscii Poir. 2, 3.
Panicum capillare L. 4.
Panicum clandestinum L. 2.
Panicum depauperatum Muhl. 2, 4.
Panicum dichotomiflorum Michx. 4.
Panicum dichotomum L. 1, 2, 3.
Panicum dichotomum var. *barbulatum* (Michx.) Wood. 2.
Panicum huachucae Ashe. 4.
Panicum latifolium L. 3.
Panicum microcarpon Muhl. 5.
Panicum polyanthes Schult. 5.
Panicum sphaerocarpon Ell. 4.
Panicum tennesseense Ashe. 5.
Panicum virgatum L. 4.
Panicum xalapense H B K 2.
Paspalum circulare Nash. 4.
Paspalum pubescens Muhl. 5.
Paspalum stramineum Nash. 5.
Phleum pratense L. 4.
Poa annua L. 4.
Poa compressa L. 2, 4.
Poa pratensis L. 2, 4.
Poa sylvestris A. Gray. 3.
Secale cereale L. 4.
Setaria faberi Herrm. 4.
Setaria lutescens (Weigel) F. T. Hubb. 4.
Setaria viridis (L.) Beauv. 4.
Sorghastrum nutans (L.) Nash. 4.
Sorghum halepense (L.) Pers. 4.
Triodia flava (L.) Smyth. 4.
Uniola latifolia Michx. 1, 3, 5.
Zea mays L. 4.

Cyperaceae J. St. Hil.
Carex albursina Sheldon. 3.
Carex annectens Bickn. 3.
Carex artitecta Mack. 2.
Carex blanda Dewey. 3.
Carex brevior (Dewey) Mack. 2.

Carex bushii Mack. 2.
Carex cephalophora Muhl. 1, 2, 4.
Carex convoluta Mack. 3.
Carex flaccosperma Dewey. 2.
Carex frankii Kunth. 4.
Carex glaucodea Tuckerm. 2, 3.
Carex gracilescens Steud. 2.
Carex grayii Carey. 3.
Carex grisea Wahl. 3.
Carex hirsutella Mack. 2.
Carex hirtifolia Mack. 2.
Carex jamesii Schw. 3.
Carex lurida Wahl. 5.
Carex muhlenbergii Schk. 2.
Carex normalis Mack. 2.
Carex oligocarpa Schk. 2.
Carex projecta Mack. 5.
Carex retroflexa Muhl. 2.
Carex rosea Schk. 3.
Carex scoparia Schk. 5.
Carex shortiana Dewey. 5.
Carex sparganioides Muhl. 3.
Carex squarrosa L. 3.
Carex styloflexa Buckl. 2.
Carex tribuloides Wahl. 4.
Carex typhina Michx. 5.
Carex vulpinoidea Michx. 3, 5.
Cyperus acuminatus Torr. & Hook. 5.
Cyperus densicaespitosus Mattf. & Kukenth. 5.
Cyperus erythrorhizos Muhl. 5.
Cyperus esculentus L. 4, 5.
Cyperus flavescens L. 5.
Cyperus inflexus Muhl. 5.
Cyperus ferruginescens Boeck. 5.
Cyperus ovularis (Michx.) Torr. 3, 4, 5.
Cyperus strigosus L. 4, 5.
Eleocharis acicularis (L.) Roem. & Schultes. 5.
Eleocharis obtusa (Willd.) Schultes. 5.
Eleocharis tenuis (Willd.) Schultes. 5.
Scirpus americanus Pers. 5.
Scirpus atrovirens Willd. 5.
Scirpus cyperinus (L.) Kunth. 5.
Scirpus lineatus Michx. 5.

Araceae Necker
Arisaema dracontium (L.) Schott. 3.
Arisaema triphyllum (L.) Schott. 3.

Lemnaceae Dumort.
Lemna minor L. 5.
Spirodela polyrhiza (L.) Schleid. 5.

Commelinaceae Reichenb
Commelina communis L. 3.
Commelina diffusa Burm. f. 4.
Tradescantia ohiensis Raf. 2.
Tradescantia subaspera Ker-Gawler. 1, 2, 3.
Tradescantia virginiana L. 2, 4.

Juncaceae (Vent.) Dumort.
Juncus acuminatus Michx. 5.
Juncus biflorus Ell. 3.
Juncus brachycarpus Engelm. 5.
Juncus canadensis J. Gay. 5.
Juncus effusus L. 5.
Juncus tenuis Willd. 1, 4.
Luzula bulbosa (Wood.) Rydb. 2.
Luzula echinata (Small) Hermann. 2.
Luzula multiflora (Retz.) Lejeune. 2.

Liliaceae Adans.
Allium canadense L. 3, 4, 5.
Allium vineale L. 4.
Asparagus officinalis L. 4.
Erythronium albidum Nutt. 3.
Hemerocallis fulva L. 4.
Lilium michiganense Farwell. 2.
Lilium superbum L. 3.
Ornithogalum umbellatum L. 4.
Polygonatum commutatum (J. H. Schultes) A. Dietr. 1, 2, 3.
Smilacina racemosa (L.) Desf. 1, 2, 3.
Smilax ecirrata (Engelm.) S. Wats. 3.
Smilax glauca Walt. 2, 3, 4.
Smilax herbacea L.2.
Smilax hispida Muhl. 2, 4.
Smilax lasioneura Hook. 2.
Smilax pulverulenta Michx. 2.
Smilax rotundifolia L. 1.
Trillium recurvatum Beck. 3.
Uvularia grandiflora Sm. 3
Uvularia sessilifolia L. 3.

Dioscoreaceae Lindley
Dioscorea quaternata (Walt.) J. F. Gmel. 3, 4.
Dioscorea villosa L. 2, 3.

Amaryllidaceae Lindley
Agave virginica L. 2.
Hymenocallis occidentalis (Le Conte) Kunth. 3.
Hypoxis hirsuta (L.) Coville. 1.

Iridaceae Lindley
Sisyrinchium albidum Raf. 4.
Sisyrinchium graminoides Bickn. 4.

Orchidaceae Lindley
Aplectrum hyemale (Muhl.) Torr. 3.
Corallorhiza odontorhiza (Willd.) Nutt. 2.
Corallorhiza wisteriana Conrad. 2.
Cypripedium parviflorum Salisb. 2.
Habenaria peramoena A. Gray. 5.
Liparis liliifolia (L.) Rich. 2.
Orchis spectabilis L. 3.
Spiranthes gracilis (Bigel.) Beck. 1, 2.
Spiranthes grayi Ames. 1, 2.

Saururaceae Lindley
Saururus cernuus L. 5.

Salicaceae Horan.
Populus deltoides Marsh. 3, 5.
Salix caroliniana Michx. 5.
Salix nigra Marsh. 3, 5.

Juglandaceae Horan.
Carya cordiformis (Wangenh.) K. Koch. 1, 2, 3.
Carya glabra (Mill.) Sweet. 1, 2, 3, 4, 5.
Carya illinoensis (Wangenh.) K. Koch. 3.
Carya ovalis (Wangenh.) Sarg. 2.
Carya tomentosa (Poir.) Nutt. 2.
Juglans nigra L. 1, 2, 3.

Betulaceae Agardh.
Betula nigra L. 5.
Carpinus caroliniana Walt. 3.
Corylus americana Walt. 2, 4.
Ostrya virginiana (Mill.) K. Koch. 1, 2, 3.

Fagaceae A. Br.
Fagus grandifolia Ehrh. 2, 3.
Quercus alba L. 1, 2, 3.
Quercus bicolor Willd. 5.
Quercus falcata Michx. 2.
Quercus imbricaria Michx. 3, 5.
Quercus macrocarpa Michx. 3.
Quercus marilandica Muenchh. 1, 2.
Quercus muhlenbergii Engelm. 1, 2, 3.
Quercus palustris Muenchh. 3, 5.
Quercus rubra L. 1, 2, 3, 4.
Quercus stellata Wangh. 1, 2.
Quercus velutina Lam. 1, 2, 3.

Ulmaceae Mirbel
Celtis laevigata Willd. 5.
Celtis occidentalis L. 2, 3.
Ulmus alata Michx. 1, 2, 3, 4.
Ulmus americana L. 1, 2, 3.
Ulmus rubra Muhl. 1, 2, 3.

Moraceae Lindley
Morus rubra L. 2, 4.

Urticaceae Reichenb.
Boehneria cylindrica (L.) Sw. 3, 5.
Laportea canadensis (L.) Gaudich. 5.
Parietaria pennsylvanica Muhl. 2.
Pilea pumila (L.) A. Gray. 3, 5.

Santalaceae R. Br.
Comandra umbellata (L.) Nutt. 2.

Aristolochiaceae Juss.
Aristolochia serpentaria L. 2.
Asarum reflexum Bickn. 3.

Polygonaceae Horan.
Polygonum aviculare L. 4.
Polygonum convolvulus L. 2.
Polygonum hydropiper L. 5.
Polygonum hydropiperoides Michx. 5.
Polygonum lapathifolium L. 5.
Polygonum opelousanum Riddell. 5.
Polygonum pennsylvanicum L. 4.
Polygonum punctatum Ell. 5.
Polygonum virginianum L. 2, 3.
Rumex acetosella L. 4.
Rumex crispus L. 4.
Rumex verticillatus L. 5.

Chenopodiaceae Dumort.
Chenopodium album L. 2, 4.
Chenopodium ambrosioides L. 4.
Chenopodium boscianum Moq. 2.

Amaranthaceae J. St. Hil.
Acnida altissima (Riddell) Riddell. 5.
Amaranthus albus L. 4.
Amaranthus graecizans L. 4.
Amaranthus hybridus L. 4.
Amaranthus retroflexus L. 4.
Amaranthus spinosus L. 4.

Phytolaccaceae Lindley
Phytolacca americana L. 1, 2, 3, 4.

Aizoaceae A. Br.
Mollugo verticillata L. 4, 5.

Portulacaceae Reichenb.
Claytonia virginica L. 1, 2, 3.
Portulaca oleracea L. 4.

Caryophyllaceae Reichenb.
Agrostemma githago L. 4.
Arenaria serpyllifolia L. 4.
Cerastium brachypodum (Engelm.) B. D. Robins. 4.
Cerastium nutans Raf. 4.
Cerastium viscosum L. 4.
Cerastium vulgatum L. 4.
Dianthus armeria L. 4.
Dianthus barbatus L. 4.
Sagina decumbens (Ell.) Torr. & Gray. 4.
Silene antirrhina L. 2, 4.
Silene stellata (L.) Ait. 2.
Stellaria media (L.) Vill. 4.

Magnoliaceae J. St. Hil.
Liriodendron tulipifera L. 2, 3, 5.

Annonaceae R. Br.
Asimina triloba (L.) Dunal. 2, 3.

Ranunculaceae Juss.
Actaea alba (L.) Mill. 3.
Anemone canadensis L. 3.
Anemone virginiana L. 2, 3.
Clematis virginiana L. 5.
Delphinium tricorne Michx. 3.
Hydrastis canadensis L. 3.
Isopyrum biternatum (Raf.) Torr. & Gray. 3.
Myosurus minimus L. 3, 4.
Ranunculus abortivus L. 3, 4.
Ranunculus fascicularis Muhl. 2.
Ranunculus hispidus Michx. 2.
Ranunculus micranthus Nutt. 2.
Ranunculus recurvatus Poir. 3.
Ranunculus septentrionalis Poir. 3, 5.
Thalictrum dasycarpum Fisch. & Lall. 5.
Thalictrum dioicum L. 3, 5.

Thalictrum hypoglaucum Rydb. 5.
Thalictrum revolutum DC. 4, 5.

Nelumbonaceae Lindley
Nelumbo lutea (Willd.) Pers. 5.

Ceratophyllaceae A. Gray
Ceratophyllum demersum L. 5.

Berberidaceae Torr. & Gray
Caulophyllum thalictroides (L.) Michx. 3.
Podophyllum peltatum L. 1, 2, 3.

Menispermaceae DC.
Menispermum canadense L. 2.

Papaveraceae B. Juss.
Sanguinaria canadensis L. 3.

Cruciferae Juss.
Arabidopsis thaliana (L.) Heynh. 4.
Arabis laevigata (Muhl.) Poir. 2, 3.
Arabis virginica (L.) Poir. 4.
Barbarea vulgaris R. Br. 4.
Capsella bursa-pastoris (L.) Medic. 4.
Cardamine arenicola Britt. 3.
Cardamine bulbosa (Schreb.) BSP. 3.
Cardamine pennsylvanica Muhl. 2, 3.
Dentaria laciniata Muhl. 3.
Draba brachycarpa Nutt. 4.
Draba verna L. 4.
Lepidium virginicum L. 4.
Rorippa islandica (Oeder) Borbas. 5.
Rorippa sessiliflora (Nutt.) Hitchc. 5.
Thlaspi arvense L. 4.

Crassulaceae DC.
Penthorum sedoides L. 5.

Saxifragaceae DC.
Heuchera hirsuticaulis (Wheelock) Rydb. 2.

Hydrangeaceae Dumort.
Hydrangea arborescens L. 1, 2, 3.

Hamamelidaceae Lindley
Liquidambar styraciflua L. 3, 5.

Platanaceae Lindley
Platanus occidentalis L. 3, 4, 5.

Rosaceae B. Juss.
Agrimonia pubescens Wallr. 2.
Agrimonia rostellata Wallr. 2.
Amelanchier arborea (Michx.f.) Fernald. 1, 2.
Aruncus dioicus (Walt.) Fern. 3.
Crataegus crusgalli L. 1, 2.
Crataegus macrosperma Ashe. 1, 2.
Crataegus mollis (Torr. & Gray) Scheele. 2.
Fragaria americana (Porter) Britton. 4.
Fragaria virginiana Duch. 4.
Geum canadense Jacq. 1, 2, 3.
Geum vernum (Raf.) Torr. & Gray. 2.
Geum virginianum L. 2, 3.
Gillenia stipulata (Muhl.) Trel. 2.
Malus coronaria (L.) Mill. 2, 4.
Malus ioensis (Wood) Britt. 2.
Malus coronaria (L.) Mill. 2, 4
Potentilla recta L. 4.
Potentilla simplex Michx. 1, 2, 3, 4.
Prunus americana Marsh. 2.
Prunus hortulana Bailey. 2.
Prunus serotina Ehrh. 1, 2, 3.
Rosa carolina L. 1, 2, 4.
Rosa multiflora Thunb. 4.
Rosa setigera Michx. 2.
Rubus allegheniensis Porter. 2, 4.
Rubus flagellaris Willd. 1, 2, 4.
Rubus occidentalis L. 2.
Rubus ostryifolius Rydb 1, 2, 4.
Rubus pennsylvanicus Poir. 2.

Leguminosae P. F. Gmel.
Amphicarpa comosa (L.) G. Don. 2.
Cassia fasciculata Michx. 4, 5.
Cassia marilandica L. 2.
Cassia nictitans L. 4.
Cercis canadensis L. 1, 2, 3.
Crotalaria sagittalis L. 2.
Desmodium glabellum (Michx.) DC. 2.
Desmodium glutinosum (Muhl.) Wood. 3.
Desmodium illinoense A. Gray. 1, 2, 4.
Desmodium marilandicum (L.) DC. 1, 2.
Desmodium nudiflorum (L.) DC. 1, 2, 3.
Desmodium paniculatum (L.) DC. 2.
Desmodium pauciflorum (Nutt.) DC. 2.
Galactia volubilis (L.) Britton. 2.
Gleditsia triacanthos L. 3, 5.
Lespedeza capitata Michx. 2.
Lespedeza bicolor Turcz. 4.
Lespedeza cuneata (Dum-Cours.) G. Don. 4.
Lespedeza hirta (L.) Hornem. 1, 2.
Lespedeza procumbens Michx. 2.
Lespedeza repens (L.) Bart. 1, 2.
Lespedeza stipulacea Maxim. 4.
Lespedeza striata (Thunb.) Hook. & Arnott. 4.
Lespedeza violacea (L.) Pers. 1, 2.
Lespedeza thunbergii (DC.) Nakai. 4.
Lespedeza virginica (L.) Britton. 2.
Medicago lupulina L. 4.
Medicago sativa L. 4.
Melilotus alba Desr. 4.
Melilotus officinalis (L.) Lam. 4.
Phaseolus polystachyus (L.). BSP. 2.
Psoralea psoralioides (Walt.) Cory. 1, 2.
Robinia pseudoacacia L. 2, 4.
Strophostyles helvola (L.) Britt. 2, 4.
Strophostyles leiosperma (Torr. & Gray) Piper. 4.
Stylosanthes biflora (L.) BSP. 1, 2.
Trifolium hybridum L. 4.

Trifolium pratense L. 4.
Trifolium procumbens L. 4.
Trifolium repens L. 4.
Vicia cracca L. 4.
Vicia sativa L. 4.
Vicia villosa Roth. 4.

Geraniaceae J. St. Hil.
Geranium carolinianum L. 1, 2, 4.
Geranium maculatum L. 3.

Oxalidaceae Lindley
Oxalis cymosa Small. 4.
Oxalis stricta L. 1, 2, 3, 4, 5.
Oxalis violacea L. 1, 2.

Linaceae Dumort.
Linum striatum Walt. 5.

Balsaminaceae Dumort.
Impatiens biflora Walt. 3, 5.

Polygalaceae Reichenb.
Polygala sanguinea L. 4.

Euphorbiaceae J. St. Hil.
Acalypha gracilens A. Gray. 2, 4.
Acalypha rhomboidea Raf. 2, 4.
Acalypha virginica L. 1, 2, 4.
Chamaesyce maculata (L.) Small. 4.
Chamaesyce supina (Raf.) Moldenke. 5.
Euphorbia corollata L. 1, 2, 4.

Celastraceae Lindley
Celastrus scandens L. 2.

Anacardiaceae Lindley
Rhus aromatica Ait. 1, 2, 4.
Rhus copallina L. 1, 2, 4.
Rhus glabra L. 1, 2, 4, 5.
Rhus radicans L. 1, 2, 3, 4, 5.

Staphyleaceae (DC.) Lindley
Staphylea trifolia L. 2, 3.

Aceraceae J. St. Hil.
Acer negundo L. 3, 5.
Acer rubrum L. 1, 2, 3, 5.
Acer saccharinum L. 3, 5.
Acer saccharum Marsh. 1, 2, 3.

Rhamnaceae (R. Br.) Horan.
Ceanothus americanus L. 1, 2.

Vitaceae Lindley
Ampelopsis cordata Michx. 2.
Parthenocissus quinquefolia (L.) Planch. 1, 2, 3, 4.
Vitis aestivalis Michx. 2, 5.
Vitis cinerea Engelm. 1, 2.
Vitis vulpina L. 2, 4.

Tiliaceae Juss.
Tilia americana L. 3.

Malvaceae Necker
Abutilon theophrastii Medic. 4.
Hibiscus lasiocarpus Cav. 5.
Sida spinosa L. 4.

Hypericaceae Lindley
Ascyrum multicaule Michx. 1, 2.
Hypericum gentianoides (L.). 1.
Hypericum mutilum L. 5.
Hypericum perforatum L. 4.
Hypericum prolificum L. 1, 2.
Hypericum punctatum Lam. 1, 2, 4.
Hypericum sphaerocarpum Michx. 2.

Cistaceae Horan.
Lechea tenuifolia Michx. 1.

Violaceae DC.
Hybanthus concolor (Forst.) Spreng. 2, 3.
Viola eriocarpa Schw. 3.
Viola falcata Greene. 2.
Viola missouriensis Greene. 3.
Viola papilionacea Pursh. 1, 2, 3.
Viola rafinesquii Greene. 4.
Viola sagittata Ait. 3.
Viola sororia Willd. 3.
Viola striata Ait. 3.

Lauraceae Lindley
Lindera benzoin (L.) Blume. 3.
Sassafras albidum (Nutt.) Nees. 1, 2, 3, 4, 5.

Lythraceae Lindley
Ammannia coccinea Rottb. 5.
Lythrum alatum Pursh. 5.
Rotala ramosior (L.) Koehne. 5.

Passifloraceae Dumort.
Passiflora lutea L. 1, 2.

Cucurbitaceae B. Juss.
Sicyos angulatus L. 3.

Onagraceae Dumort.
Circaea latifolia Hill. 3.
Epilobium coloratum Muhl. 5.
Jussiaea diffusa Forskal. 5.
Ludwigia alternifolia L. 5.
Ludwigia palustris (L.) Ell. 5.
Oenothera biennis L. 4, 5.
Oenothera laciniata Hill. 4.
Oenothera strigosa (Rydb.) Mack. & Bush. 4.

Callitrichaceae Lindley
Callitriche terrestris Raf. 3.

Cornaceae Link
Cornus drummondii C. A. Mey. 3, 5.
Cornus florida L. 1, 2, 3.
Cornus obliqua Raf. 5.
Cornus racemosa Lam. 4.
Cornus stolonifera Michx. 5.
Nyssa sylvatica Marsh. 2, 3, 5.

Araliaceae Vent.
Panax quinquefolius L. 3.

Umbelliferae Scop.
Chaerophyllum procumbens (L.) Crantz. 4.
Chaerophyllum tainturieri Hook. 4.
Cicuta maculata L. 5.
Conium maculatum L. 5.
Cryptotaenia canadensis (L.) DC. 3.
Daucus carota L. 4, 5.
Erigenia bulbosa (Michx.) Nutt. 3.
Osmorhiza claytonii (Michx.) Clarke. 3.
Osmorhiza longistylis (Torr.) DC. 3.
Sanicula canadensis L. 1, 2, 3.
Sanicula gregaria Bickn. 1, 2.
Thaspium trifoliatum (L.) A. Gray. 3.

Ericaceae DC.
Monotropa lanuginosa Michx. 2.
Monotropa uniflora L. 2.

Ebenaceae Vent.
Diospyros virginiana L. 1, 2, 3, 4, 5.

Primulaceae Vent.
Dodecatheon meadia L. 1, 2.
Lysimachia ciliata L. 5.
Lysimachia lanceolata Walt. 3, 5.
Lysimachia nummularia L. 5.
Samolus parviflorus Raf. 3.

Oleaceae Lindley
Forestiera acuminata (Michx.) Poir. 3.
Fraxinus americana L. 1, 2, 3.
Fraxinus lanceolata Borkh. 5.

Loganiaceae Dumort.
Spigelia marilandica L. 3.

Gentianaceae Dumort.
Frasera caroliniensis Walt. 2.
Obolaria virginica L. 3.
Sabatia angularis (L.) Pursh. 5.

Apocynaceae Lindley
Apocynum androsaemifolium L. 4.
Apocynum cannabinum L. 4.
Apocynum pubescens R. Br. 4.
Apocynum sibiricum Jacq. Hort. 4.

Asclepiadaceae Lindley
Ampelamus albidus (Nutt.) Britt. 4.
Asclepias exaltata L. 3.
Asclepias incarnata L. 5.
Asclepias purpurascens L. 2.
Asclepias syriaca L. 4, 5.
Asclepias tuberosa L. 4.
Asclepias variegata L. 2.

Convolvulaceae Vent.
Convolvulus americanus (Sims) Greene. 4.
Convolvulus arvensis L. 4.
Cuscuta gronovii Willd. 4.
Ipomoea hederacea Jacq. 4.
Ipomoea lacunosa L. 4.
Ipomoea pandurata (L.) Meyer. 4.
Ipomoea purpurea (L.) Roth. 4.

Polemoniaceae Juss.
Phlox divaricata L. 2, 3.
Phlox glaberrima L. 1, 2.
Phlox paniculata L. 2.
Phlox pilosa L. 2, 3.
Polemonium reptans L. 3.

Hydrophyllaceae Lindley
Hydrophyllum virginianum L. 3.

Boraginaceae Lindley
Cynoglossum officinale L. 4.
Cynoglossum virginianum L. 2.
Hackelia virginiana (L.) I. M. Johnston. 2, 3.
Heliotropium indicum L. 4, 5.
Lithospermum arvense L. 4.
Lithospermum canescens (Michx.) Lehm. 2.
Lithospermum croceum Fern. 2.
Lithospermum latifolium Michx. 3.
Mertensia virginica (L.) Pers. 3.
Myosotis macrosperma Engelm. 1, 2.
Myosotis verna Nutt. 1, 2.

Verbenaceae Juss.
Phryma leptostachya L. 2.
Phyla lanceolata (Michx.) Greene. 5.
Verbena bracteata Lag. & Rodr. 4.
Verbena hastata L. 4.
Verbena simplex Lehm. 4.
Verbena stricta Vent. 4.
Verbena urticifolia L. 2, 4.

Labiatae B. Juss.
Blephilia ciliata (L.) 1.
Blephilia hirsuta (Pursh) Benth. 1, 2.
Cunila origanoides (L.) Britt. 1, 2.
Hedeoma hispida Pursh. 2.
Hedeoma pulegioides (L.) Pers. 2.
Lamium amplexicaule L. 4.
Lamium purpureum L. 4.
Lycopus americanus Muhl. 5.
Monarda bradburiana Beck. 2.
Monarda fistulosa L. 1, 2.
Perilla frutescens (L.) Britt. 5.
Physostegia virginiana (L.) Benth. 3, 5.
Prunella vulgaris L. 3, 4, 5.
Pycnanthemum flexuosum (Walt.) BSP. 1, 2.
Pycnanthemum pilosum Nutt. 2.
Pycnanthemum pycnanthemoides (Leavenw.) Fern. 2, 4.
Scutellaria incana Biehler. 1, 2.
Scutellaria lateriflora L. 5.
Scutellaria nervosa Pursh. 2.
Scutellaria ovata Hill. 1, 2.
Stachys arenicola Britt. 5.
Stachys tenuifolia Willd. 5.
Teucrium canadense L. 5.

Solanaceae Pers.
Datura stramonium L. 4.
Physalis heterophylla Nees. 4.
Physalis pruinosa L. 4.
Physalis pubescens L. 4.
Physalis subglabrata Mack. & Bush. 4.
Physalis virginiana Mill. 4.
Solanum carolinense L. 1, 3, 4.
Solanum nigrum L. 4.

Scrophulariaceae Lindley
Aureolaria flava (L.) Farwell. 2.
Bacopa rotundifolia (Michx.) Wettst. 5.
Dasistoma macrophylla (Nutt.) Raf. 2.
Gerardia purpurea L. 5.
Gerardia tenuifolia Vahl. 3, 5.
Gratiola neglecta Torr. 5.
Leucospora multifida (Michx.) Nutt. 5.
Lindernia anagallidea (Michx.) Pennell. 5.
Lindernia dubia (L.) Pennell. 5.
Mimulus alatus Ait. 3, 5.
Penstemon calycosus Small. 2.
Penstemon digitalis Nutt. 2.
Penstemon pallidus Small. 1, 2, 4.
Scrophularia marilandica L. 2, 3.
Verbascum blattaria L. 4.
Verbascum thapsus L. 4.
Veronica arvensis L. 4.
Veronica peregrina L. 4.
Veronicastrum virginicum (L.) Farwell. 2.

Acanthaceae J. St. Hil.
Ruellia humilis Nutt. 1, 2.
Ruellia pedunculata Torr. 2.
Ruellia strepens L. 2.

Bignoniaceae Pers.
Campsis radicans (L.) Seem. 1, 2, 3, 4.

Plantaginaceae Lindley
Plantago aristata Michx. 4.
Plantago cordata Lam. 5.
Plantago lanceolata L. 4.
Plantago pusilla Nutt. 4.
Plantago rugelii Dec. 4.
Plantago virginica L. 4.

Rubiaceae B. Juss.
Cephalanthus occidentalis L. 3, 5.
Diodia teres Walt. 4, 5.
Galium aparine L. 4.
Galium circaezans Michx. 2.
Galium concinnum Torr. & Gray. 2.
Galium obtusum Bigel. 3, 5.
Galium pilosum Ait. 2.
Houstonia lanceolata (Poir.) Britton. 1, 2.
Houstonia longifolia Gaertn. 2.
Houstonia pusilla Schoepf. 1, 2.
Spermacoce glabra Michx. 5.

Caprifoliaceae Vent.
Lonicera japonica Thunb. 1, 2, 3, 4.
Sambucus canadensis L. 1, 2, 4.
Symphoricarpos orbiculatus Moench. 1, 2, 3, 4.
Triosteum angustifolium L. 2.
Viburnum prunifolium L. 3.
Viburnum rufidulum Raf. 3.

Campanulaceae Juss.
Campanula americana L. 1, 2, 3.
Triodanis perfoliata (L.) Nieuwl. 1, 2, 4.

Lobeliaceae Juss.
Lobelia cardinalis L. 5.
Lobelia inflata L. 4, 5.
Lobelia siphilitica L. 5.
Lobelia spicata Lam. 2.

Valerianaceae Batsch.
Valerianella radiata (L.) Dufr. 5.

Compositae P. F. Gmel.
Achillea lanulosa Nutt. 4.
Achillea millefolium L. 4.
Ambrosia artemisiifolia L. 1, 2, 3, 4, 5.
Ambrosia bidentata Michx. 4.
Ambrosia trifida L. 4, 5.
Antennaria plantaginifolia (L.) Hook. 1, 2.
Aster anomalus Engelm. 1, 2.
Aster drummondii Lindl. 2.
Aster ericoides L. 4.
Aster exiguus (Fern.) Rydb. 4.
Aster laevis L. 5.
Aster lateriflorus (L.) Britt. 5.
Aster novae-angliae L. 1, 2.
Aster ontarionis Wieg. 4, 5.
Aster patens Ait. 2.
Aster pilosus Willd. 4.
Aster praealtus Poir. 4.
Aster sagittifolius Wedem. 1, 2.
Aster shortii Lindl. 2.
Aster simplex Willd. 5.
Aster vimineus Lam. 5.
Bidens aristosa (Michx.) Britt. 4, 5.
Bidens bipinnata L. 4, 5.
Bidens comosa (A. Gray) Wieg. 5.
Bidens connata Muhl. 5.
Bidens coronata (L.) Britt. 5.
Bidens frondosa L. 4, 5.
Bidens vulgata Greene. 4.
Boltonia interior (Fern. & Griscom) G. N. Jones. 5.
Boltonia recognita (Fern. & Griscom) G. N. Jones. 5.
Cacalia atriplicifolia L. 2.
Cacalia muhlenbergii (Schultz-Bip.) Fern. 2.
Chrysanthemum leucanthemum L. 1, 2, 4.
Cirsium altissimum (L.) Spreng. 4.
Cirsium discolor (Muhl.) Spreng. 3, 4.
Cirsium vulgare (Savi) Airy-Shaw. 4.
Coreopsis palmata Nutt. 4.
Coreopsis pubescens Ell. 2.

Coreopsis tripteris L. 2, 4.
Echinacea purpurea (L.) Moench. 2.
Eclipta alba (L.) Hassk. 5.
Elephantopus carolinianus Willd. 1, 2.
Erigeron annuus (L.) Pers. 2, 4.
Erigeron canadensis L. 4, 5.
Erigeron divaricatus Michx. 4.
Erigeron philadelphicus L. 2, 4.
Erigeron pulchellus Michx. 1, 2.
Erigeron strigosus Muhl. 1, 2, 3, 4, 5.
Eupatorium altissimum L. 5.
Eupatorium coelestinum L. 5.
Eupatorium perfoliatum L. 5.
Eupatorium purpureum L. 2.
Eupatorium rugosum Houtt. 3, 5.
Eupatorium serotinum Michx. 4, 5.
Gnaphalium purpureum L. 2, 4.
Helianthus decapetalus L. 2.
Helianthus divaricatus L. 2.
Helianthus grosseserratus Martens. 2.
Helainthus hirsutus Raf. 2, 4.
Helianthus strumosus L. 1, 2, 4.
Helianthus tomentosus Michx. 4.
Heliopsis helianthoides (L.) Sweet. 2.
Hieracium gronovii L. 1, 2.
Krigia biflora (Walt.) Blake. 1, 2.
Krigia dandelion (L.) Nutt. 2.
Krigia oppositifolia Raf. 5.
Lactuca canadensis L. 2, 4.
Lactuca floridana (L.) Gaertn. 2.
Lactuca scariola L. 4.
Liatris aspera Michx. 4.
Liatris scabra (Greene) K. Schum. 4.
Pyrrhopappus, carolinianus (Walt.) DC. 4.
Rudbeckia laciniata L. 4.
Rudbeckia hirta L. 1, 2, 4.
Rudbeckia subtomentosa Pursh. 4.
Senecio glabellus Poir. 3, 5.
Silphium integrifolium Michx. 2, 4.
Silphium perfoliatum L. 2, 4.
Solidago altissima L. 4.
Solidago canadensis L. 4.
Solidago caesia L. 2, 3.
Solidago hirtella (Greene) Bush. 5.
Solidago juncea Ait. 2, 4.
Solidago latifolia L. 3.
Solidago media (Greene) Bush. 4, 5.
Solidago nemoralis Ait. 2, 4.
Solidago rugosa Mill. 5.
Solidago ulmifolia Muhl. 1, 2.
Taraxacum officinale Wiggers, 4.
Verbesina alternifolia (L.) Britt. 2, 5.
Verbesina helianthoides Michx. 2.
Vernonia altissima Nutt. 2, 4.
Vernonia fasciculata Michx. 4, 5.
Vernonia missurica Raf. 4.
Xanthium commune Britt. 5.

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