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The Vascular Flora of the J.T. Nickel Family Nature and Wildlife Preserve, Cherokee County, Oklahoma

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ABSTRACT We report the results of an inventory of the vascular plants at the J.T. Nickel Family Nature and Wildlife Preserve in Cherokee County, Oklahoma. We collected a total of 597 taxa in 358 genera and 118 families. The greatest number of species were from Asteraceae (87), Poaceae (66), and Fabaceae (44). Ninety-one species of woody plants were present. Seventy-two non-native species were present representing 12.1% of the flora. Species present that are tracked by the Oklahoma Natural Heritage Inventory were *Brachyelytrum erectum*, *Brasenia schreberi*, *Carex cephalophora*, *C. oklahomensis*, *C. oxylepis*, *Clematis virginiana*, *Cypripedium parviflorum* var. *parviflorum*, *Impatiens pallida*, *Iris cristata*, *Phaseolus polystachios*, *Physocarpus opulifolius* var. *intermedius*, *Silene regia*, and *Tradescantia ernestiana*. This study reports the first records for *Glyceria acutiflora* and *Microstegium vimineum* (Poaceae) from Oklahoma.

INTRODUCTION Floristic study of the Ozark Plateau in Oklahoma began with Thomas Nuttall in 1819. One route on Nuttall's itinerary followed the Grand River, where he collected the first specimen of *Cotinus obovatus* (Pennell 1936, Little 1943). Interest in the region resumed in 1909 when Robert Bebb, namesake of the University of Oklahoma Herbarium (OKL), collected *Solanum rostratum*. But it was Charles S. Wallis who completed the most thorough botanical study of the Oklahoma Ozarks, depositing 14,048 specimens in OKL and the Herbarium at Oklahoma State University (OKLA) between 1942 and 1969, for a total of 1,674 species (Hoagland et al. 2006). During that time, he collected 2,975 specimens from Cherokee County representing 1,214 species, including *Asplenium bradleyi*, *Desmodium pauciflorum*, *Draba aprica*, and *Valerianella ozarkana*, which are considered rare in Oklahoma. The work of Wallis is summarized in Wallis (1953, 1957, 1959), Wallis and Waterfall (1953), and Waterfall and Wallis (1962, 1963).

Cherokee County lies on the western edge of the Ozark Plateau in Oklahoma. At present, 1,442 taxa have been recorded from the county (Hoagland et al. 2006). The first plant collections from the county were specimens of *Gleditsia triacanthos*, by C.W. Prier in June of 1922, and *Verbena urticifolia*, collected by E.L. Chase in August of 1922. The first significant numbers of specimens were collected by Prier from March 1924 to July 1925 (Hoagland et al. 2006). Elbert Little collected 630 plant specimens representing 194 taxa in the county from 1928 to 1981, including *Castanea pumila* var. *ozarkensis* and *Panax quinquefolius*, both rare in Oklahoma. Robert Bebb collected 134 species from the county from 1928 to 1948. Sporadic collections have made in Cherokee County since that time, but a systematic inventory has not been conducted.

The objective of this study was to complete a floristic inventory at The Nature Conservancy's John T. Nickel Family Nature and Wildlife Preserve (JTN [and 36.09°N to 35.98°N and 94.92°W to 94.78°W]) as a management aid for personnel at the site. Several rare species tracked by the Oklahoma Natural Heritage Inventory (ONHI) occur in Cherokee County and a systematic inventory might yield additional occurrence informa-

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tion. The JTN was established in 2000 and protects 6,070 hectares (Nature Conservancy 2006). The climate is Subtropical Humid (Cf) (Trewartha 1968). Summers are warm (mean July temperature = 26.9°C) and humid, and winters are relatively short and mild (mean January temperature = 2.7°C). Mean annual precipitation is 122 cm (Oklahoma Climatological Survey 2006).

Physiographically, the study area is located on the deeply dissected Ozark Plateau (Hunt 1974, Curtis and Ham 1979). Elevation ranges from 184 m to 381 m above sea-level. The surface geology is predominantly Mississippian limestone and chert (Branson and Johnson 1979). Soils at the site belong to either the Sallisaw-Elsah-Staser Association (deep, gravelly or loamy, nearly level to sloping soils on floodplains and benches) or the Clark-Baxter-Locust Association (deep, stony and cherty, very gently sloping to steeply sloping on timbered uplands (Everett 1970). Potential natural vegetation at JTN is oak-hickory-pine forest (Duck and Fletcher 1943). Previous landowners had converted the broad valley bottoms and level uplands to pastures of *Schedonorus phoenix* which were cut for hay. Since acquisition, The Nature Conservancy initiated a program to eradicate *S. phoenix* and replant with native tallgrass prairie species. A fire regime has also been reintroduced to create a mosaic of grassland, woodland and forest vegetation as described for the Ozark Plateau by authors such as Beilman and Brenner (1951).

METHODS Ten collection sites were regularly visited for floristic sampling. Additional collections were also made opportunistically throughout the JTN. Collecting began in March and continued through October 1999. Sites were selected following a review of United States Geological Survey 1:24,000 topographic maps and field reconnaissance. The predominant vegetation association at these sites was classified according to Hoagland (2000). Vouchers for non-native species were made from naturalized populations only, thus excluding cultivated and ornamental plants. Specimens were processed following standard procedures and deposited at the Robert Bebb Herbarium at the University of Oklahoma (OKL). Manuals used for specimen identification included Waterfall (1973), Diggs et al. (1999), and Yatskevych (1999).

Table 1. Summary of floristic collections at the John T. Nickel Family Nature and Wildlife Preserve, Cherokee County, Oklahoma. Format follows Palmer et al. (1995)

Taxonomic Group	Taxa	Native	Non-native
Pteridophyta	12	12	0
Coniferophyta	2	2	0
Magnoliophyta	583	510	73
Magnoliopsida	448	393	55
Liliopsida	135	117	18
Total	597	524	73

Origin, either native or introduced to North America, was determined using the USDA-NRCS (2007). Nomenclature follows the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2007).

RESULTS AND DISCUSSION A total of 597 taxa of vascular plants in 118 families and 358 genera were collected at the JTN (Appendix). Of the angiosperms, 135 species were Liliopsida and 448 were Magnoliopsida (Table 1). Ninety-one species were trees, shrubs, and woody vines. In addition, there were twelve Pteridophyta and two Coniferophyta. *Physalis pubescens* and *Dichantherium acuminatum* both had two varieties. The Asteraceae (87), Poaceae (66), and Fabaceae (44) had the greatest number of species. The largest genus was *Carex* with 17 species. One hundred and seventy-two species were annuals, 5 were biennials and 418 were perennials. In addition, the flora included two hybrids, *Baptisia* × *sulphurea* and *Mentha* × *piperita*. If one were to subtract the two varieties and hybrids, the total number of species at JNT would equal 591. Fifty species previously unreported for Cherokee County were collected. *Glyceria acutiflora* and *Microstegium vimineum* were collected for the first time in Oklahoma. *Glyceria acutiflora* is an obligate wetland species that is listed as rare, threatened or of special concern by the States of Indiana, Kentucky, Maine, Maryland, Michigan, New Hampshire, Ohio, Tennessee, and Vermont (USDA-NRCS 2007). Approximately 200 stems of *G. acutiflora* occurred in a large pond at JNT. *Microstegium vimineum* is a non-native, invasive annual grass that occupies disturbed lowland sites (Gibson et al. 2002). Unlike *G. acutiflora*, *M. vimineum* occurred at numerous locations throughout JNT.

Seventy-two species (12.1% of the flora) in 25 families were non-native to Oklahoma. The families with the greatest number of introduced species were Poaceae (15), Fabaceae (10), and Asteraceae (9). The genus *Trifolium* had the most non-native species (4). Floristic surveys from throughout Oklahoma report that non-native species constitute 9–15% of the flora (Hoagland and Buthod 2004, Hoagland and Johnson 2005), with the exception of two sites in McCurtain County, where 6.6% of the flora consisted of non-native species (Hoagland and Johnson 2004).

Sixteen species tracked by the Oklahoma Natural Heritage Inventory (2006) were encountered (Table 2). Species are ranked according to level of imperilment at the state (S) and global (G) levels on a scale of 1–5, where 1 represents a species that is imperiled and 5 a species that it is secure (Groves et al. 1995). *Castanea pumila* var. *ozarkensis* and *Silene regia* were candidates for listing under the Endangered Species Act. *Physocarpus opulifolius* var. *intermedius* was last collected by Wallis in 1953. *Clematis virginiana* was last collected by Wallis in 1958, and only four records exist in the Oklahoma Vascular Plants Database, all from Cherokee County (Hoagland et al. 2006).

Collection sites selected at JTN occurred within seven vegetation associations. Several of the upland forest types intergrade, a problem confounded by the broad distribution of *Pinus echinata* at JTN. At sites where *P. echinata* was absent, it was noticed that the broadleaf canopy species and associated woody species were the same as those in stands dominated by *P. echinata*. Quantitative studies are necessary to clarify this observation. Nevertheless, for this study forest associations were merged into the broad categories of xeric and mesic forest. A description of each vegetation category follows:

1. Xeric Forests [XF]

This category subsumes the *Pinus echinata*-*Quercus stellata*-*Quercus marilandica*, *Quercus stellata*-*Quercus marilandica*-*Carya (glabra, texana)*/*Vaccinium arboreum* and *Quercus alba*-*Quercus falcata* forest associations. Xeric forests predominate on south-facing and exposed slopes. Associated species include *Ame-lanchier arborea*, *Baptisia bracteata*, *Carex albicans*, *Clitoria mariana*, *Coreopsis tripteris*, *Danthonia spicata*, *Echinacea pallida*, *Erythro-*

Table 2. Species tracked by the Oklahoma Natural Heritage Inventory (2006) that occurred at The Nature Conservancy's John T. Nickel Family Wildlife and Nature Preserve*

Species	G Rank	S Rank
<i>Brachyelytrum erectum</i>	G5	S1
<i>Brasenia schreberi</i>	G5	S1
<i>Carex cephalophora</i>	G5	S2
<i>Carex oklahomensis</i>	G3?	S?
<i>Carex oxylepis</i>	G5?	S2
<i>Clematis virginiana</i>	G5	S1S2
<i>Cypripedium parviflorum</i> var. <i>parviflorum</i>	G5	S2
<i>Impatiens pallida</i>	G5	S2
<i>Iris cristata</i>	G5	S2
<i>Phaseolus polystachios</i>	G4	S1
<i>Physocarpus opulifolius</i> var. <i>intermedius</i>	G5	S1S3
<i>Silene regia</i>	G3	S1
<i>Tradescantia ernestiana</i>	G3?Q	S?
<i>Tradescantia ozarkana</i>	G3	S1S2
<i>Urtica chamaedryoides</i>	G4G5	S?
<i>Uvularia grandiflora</i>	G5	S2S3

*The conservation rank provided for each species is the level of imperilment at the state (S) and global (G) scales.

nium mesochoreum, *Gamochaeta purpurea*, *Parthenium integrifolium*, *Rhododendron prinophyllum*, *Rudbeckia hirta*, *Tephrosia virginiana*, *Vaccinium arboreum*, and *V. pallidum*.

2. Mesic Forests [MF]

The *Pinus echinata*-*Quercus alba* and *Quercus alba*-*Carya alba* forest associations are merged into this category. Mesic forests are prevalent on north-facing and low slope positions. Associated species include *Adiantum pedatum*, *Amsonia tabernaemontana*, *Asclepias quadrifolia*, *Bromus pubescens*, *Enemion biternatum*, *Desmodium glutinosum*, *Dichantheium boscii*, *Elephantopus carolinianus*, *Galium aparine*, *Geranium maculatum*, *Hypericum hypericoides*, *Myosotis verna*, *Nyssa sylvatica*, *Ostrya virginiana*, *Pedicularis canadensis*, *Pteridium aquilinum*, *Rudbeckia laciniata*, *Sanicula canadensis*, *Silene virginica*, *Smallanthus uvedalius*, *Symphyotrichum patens*, *Viburnum rufidulum*, and *Woodsia obtusa*.

3. *Platanus occidentalis*-*Acer negundo* forest association [POAN]

This association is restricted to the floodplains of high order streams. Associated species include *Arundinaria gigantea*, *Betula nigra*, *Elymus hystrix*, *Ilex decidua*, *Impatiens capensis*, *Leersia virginica*, *Ruellia strepens*, *Rudbeckia triloba*, *Sambucus nigra*, and *Zizia aurea*.

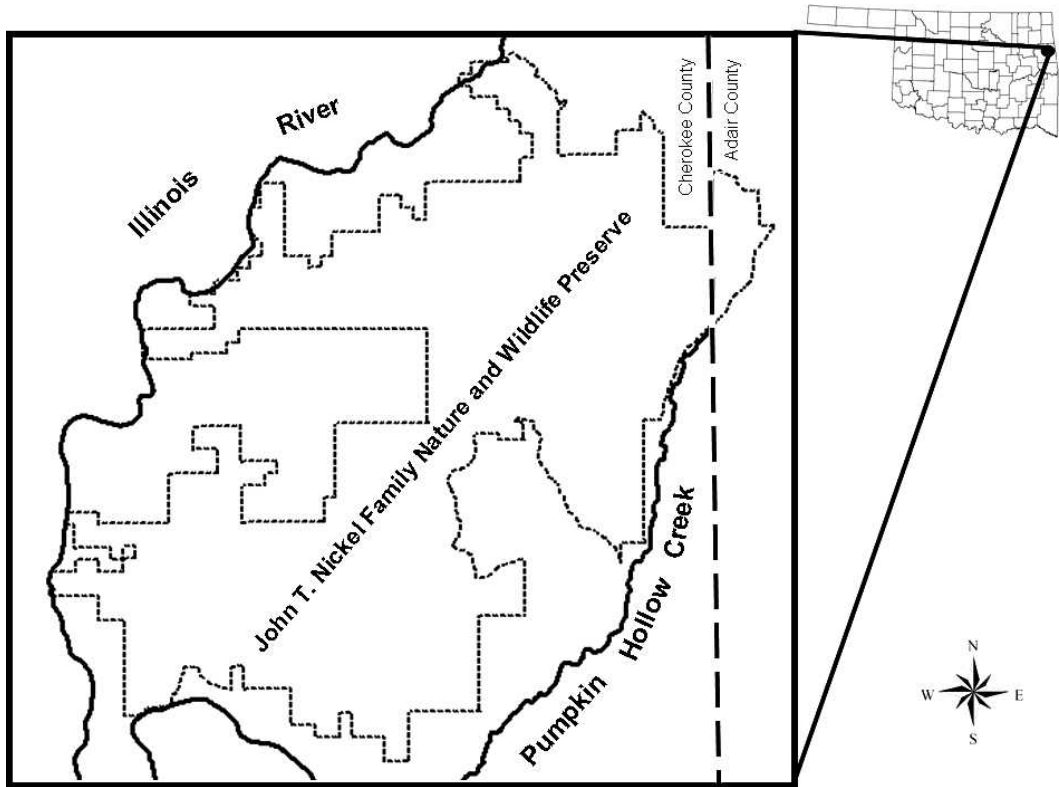


Figure 1. Location of The Nature Conservancy's J.T. Nickel Family Nature and Wildlife Preserve in the Ozark Plateau of Oklahoma.

4. *Sedum nuttallianum-Plantago virginica* herbaceous association [SNPV]

This association represents limestone glade habitats at JTN. Although limited in extent, this vegetation type contributes several species to the flora of JTN, including *Arabis canadensis*, *Croton willdenowii*, *Draba cuneifolia*, *Hedeoma hispida*, *Lechea mucronata*, *Minuartia patula*, *Phemeranthus parviflorus*, *Polygala verticillata*, *Scutellaria ovata*, and *Sedum pulchellum*.

5. *Schizachyrium scoparium-Bouteloua curtipendula* herbaceous association [SSBC]

This association represents grassy openings on more well-developed soils than the glades. They commonly occur on south-facing toeslopes. Associated species include *Ceanothus americanus*, *Collinsia violacea*, *Cyperus echinatus*, *Dalea candida*, *Euphorbia corollata*, *Hymenopappus scabiosaeus*, *Lespedeza stuevei*, *Lithospermum canescens*, *Manfreda virginica*, *Mimosa nuttallii*, *Monarda fistulosa*, *Nothoscordum bivalve*, *Opuntia humifusa*, *Penstemon tubiflorus*, *Rhynchosia latifolia*, *Salvia azurea*, and *Solidago petiolaris*.

6. Wetland Vegetation [WETL]

Although relatively distinct wetland vegetation associations occur at JTN, many share species. Therefore, we decided to merge wetlands into one category. Notes on the more distinctive wetland types follow. The *Nasturtium officinale* herbaceous association is associated with the numerous springs at JTN. The *Brasenia schreberi* herbaceous association typically occurs in the many small ponds at JTN. *Utricularia gibba* and *Potamogeton diversifolius* are associates in open water and pond margins are lined with *Eleocharis quadrangulata*. The *Nelumbo lutea* herbaceous association occurs in only one large pond, but it was in this habitat that *Glyceria acutiflora* was encountered. Wetland species that occur in these include *Agrostis hyemalis*, *Bidens cernua*, *Carex frankii*, *Eclipta prostrata*, *Glyceria striata*, *Hydrocotyle verticillata*, *Justicia americana*, *Leersia oryzoides*, *Lindernia dubia*, *Lobelia cardinalis*, *Ludwigia palustris*, *Mimulus alatus*, *Polygonum lapathifolium*, *P. persicaria*, *Sagittaria graminea*, and *Typha latifolia*.

7. Disturbed areas and old-field vegetation [DAOF]

Disturbed areas were designated as sites used by visitors, mowed lawns, roadsides, and other sites exhibiting signs of denudation and soil disturbance. Common plants in disturbed areas include *Cynodon dactylon*, *Daucus pusillus*, *Digitaria sanguinalis*, *Lespedeza cuneata*, *Kummerowia stipulacea*, *Melilotus officinalis*, *Mollugo verticillata*, *Rhus glabra*, and *Trifolium dubium*. Old-fields are characterized by *Ambrosia artemisiifolia*, *Andropogon virginicus*, *Aristida oligantha*, *Conyza canadensis*, and *Descurainia pinnata*. Non-native, invasive species such as *Sorghum halepense* covers extensive areas of retired crop land, roadsides, and drainage ditches. *Microstegium vimineum*, also an invasive species, occurs along roads traversing mesic forests.

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APPENDIX Annotated species list for The Nature Conservancy's J.T. Nickel Family Nature and Wildlife Preserve, Cherokee County, Oklahoma. The first entry is vegetation association, the second is life history (A = annual, B = biennial, P = perennial), and the third is collection number. Non-native species are denoted with an asterisk. Voucher specimens were deposited at OKL.

PTERIDOPHYTA
ASPLENIACEAE

Asplenium platyneuron (L.) B.S.P. - MF, XF; P; NICK668

DENNSTAETIDIACEAE

Pteridium aquilinum (L.) Kuhn var. *pseudocaudatum* (Clute) Heller - MF, XF; P; NICK307

DRYOPTERIDACEAE

Cystopteris tennesseensis Shaver - MF; P; NICK394

Dryopteris marginalis (L.) Gray - MF; P; NICK666

Polystichum acrostichoides (Michx.) Schott - MF; P; NICK654

Woodsia obtusa (Spreng.) Torr. - MF; P; NICK641

OPHIOGLOSSACEAE

Botrychium dissectum Spreng. - MF, XF; P; NICK547

Botrychium virginianum (L.) Sw. - MF, XF; P; NICK020

POLYPODIACEAE

Pleopeltis polypodioides (L.) Andrews & Windham - MF; P; NICK683

PTERIDACEAE

Adiantum pedatum L. - MF, POAN; P; NICK662

Cheilanthes lanosa (Michx.) D.C. Eat. - MF, SSBC; P; NICK026

THELYPTERIDACEAE

Phegopteris hexagonoptera (Michx.) Fée - MF; P; NICK665

CONIFEROPHYTA
CUPRESSACEAE

Juniperus virginiana L. - DAOF, XF; P; NICK033

PINACEAE

Pinus echinata P. Mill. - MF, XF; P; NICK577

MAGNOLIOPHYTA
MAGNOLIOPSIDA
ACANTHACEAE

Dicliptera brachiata (Pursh) Spreng. - MF, POAN; A; NICK481

Justicia americana (L.) Vahl - WETL; P; NICK091

Ruellia humilis Nutt. - DAOF; P; NICK254

Ruellia strepens L. - MF, POAN; P; NICK276

ACERACEAE

- Acer negundo* L. - POAN; P; NICK645
Acer rubrum L. - MF, POAN; P; NICK389
Acer saccharinum L. - POAN; P; NICK686
Acer saccharum Marsh. - MF; P; NICK644

AMARANTHACEAE

- Amaranthus palmeri* S. Wats. - DAOF; A; NICK670
 **Amaranthus spinosus* L. - DAOF; A; NICK325

ANACARDIACEAE

- Rhus glabra* L. - DAOF; P; NICK249
Toxicodendron radicans (L.) Kuntze - DOAF, MF, POAN; P;
 NICK748

APIACEAE

- Angelica venenosa* (Greenway) Fern. - MF; A;
 NICK532
Chaerophyllum tainturieri Hook. - DAOF; A; NICK019
 **Daucus carota* L. - DAOF; P; NICK181
Daucus pusillus Michx. - DAOF; A; NICK224
Eryngium yuccifolium Michx. - DAOF, XF; P; NICK436
Hydrocotyle verticillata Thunb. - WETL; P; NICK643
Osmorhiza longistylis (Torr.) DC. - MF; P; NICK115
Ptilimnium nuttallii (DC.) Britt. - SSBC; A; NICK174
Sanicula canadensis L. - MF, POAN; P; NICK235
Taenidia integerrima (L.) Drude - MF; P; NICK560
Thaspium barbinode (Michx.) Nutt. - MF; P; NICK177
Zizia aurea (L.) W. D. J. Koch - MF, POAN; P; NICK561

APOCYNACEAE

- Amsonia tabernaemontana* Walt. - MF; P; NICK302

AQUIFOLIACEAE

- Ilex decidua* Walt. - MF, POAN; P; NICK135

ARISTOLOCHIACEAE

- Asarum canadense* L. - MF; P; NICK045

ASCLEPIADACEAE

- Asclepias hirtella* (Pennell) Woods. - DAOF, SSBC; P;
 NICK483
Asclepias quadrifolia Jacq. - MF; P; NICK075
Asclepias tuberosa L. - DAOF, SSBC; P; NICK208
Asclepias verticillata L. - SSBC; P; NICK268
Asclepias viridis Walt. - DAOF, SSBC; P; NICK124
Matelea baldwyniana (Sweet) Woods. - DAOF; P; NICK119
Matelea gonocarpos (Walt.) Shinnery - MF; P; NICK485

ASTERACEAE

- Ageratina altissima* (L.) King & H. E. Robins. - MF; P;
 NICK473
Ambrosia artemisiifolia L. - DAOF; A; NICK600
Ambrosia bidentata Michx. - DAOF; A; NICK582
Ambrosia trifida L. - DAOF; A; NICK753
Amphichyris dracunculoides (DC.) Nutt. - DAOF; A;
 NICK583
Antennaria parlinii Fern. - DAOF; P; NICK355
 **Arctium minus* (Michx.) Britt. - DAOF; A; NICK211
Arnoglossum atriplicifolium (L.) H.E. Robins. - XF, SSBC; P;
 NICK147
 **Artemisia annua* L. - DAOF; A; NICK761
Astranthium integrifolium (Michx.) Nutt. - DAOF, SNPV; A;
 NICK542
Bidens aristosa (Michx.) Britt. - WETL; A; NICK704

- Bidens bipinnata* L. - DAOF, MF; A; NICK493
Bidens cernua L. - WETL; A; NICK708
Bidens frondosa L. - WETL; A; NICK757
 **Carduus nutans* L. - DAOF; B; NICK230
Chrysopsis pilosa Nutt. - DAOF, SSBC; A; NICK452
 **Cichorium intybus* L. - DAOF; P; NICK410
Cirsium altissimum (L.) Hill - DAOF, MF; P; NICK413
 **Cirsium vulgare* (Savi) Ten. - DAOF; A; NICK410
Conoclinium coelestinum (L.) DC. - WETL; P; 1713-bwh
Conyza canadensis (L.) Cronq. - DAOF; A; NICK585
Coreopsis grandiflora Hogg ex Sweet - DAOF, SSBC, XF; P;
 NICK512
Coreopsis lanceolata L. - DAOF, SSBC, XF; P; NICK161
Coreopsis palmata Nutt. - DAOF, SSBC, XF; P; NICK156
Coreopsis pubescens Ell. - DAOF, SSBC, XF; P; NICK706
Coreopsis tinctoria Nutt. - DAOF, WETL; A; NICK143
Coreopsis tripteris L. - DAOF, SSBC, XF; P; NICK424
Dracopis amplexicaulis (Vahl.) Cass - DAOF, WETL; A;
 NICK707
Echinacea pallida (Nutt.) Nutt. - SSBC, XF; P; NICK239
Echinacea purpurea (L.) Moench - MF; P; NICK261
Eclipta prostrata (L.) L. - WETL; A; NICK576
Elephantopus carolinianus Raeusch. - MF, POAN; P;
 NICK624
Erechtites hieraciifolia (L.) Raf. ex DC. - WETL, MF; A;
 NICK489
Erigeron annuus (L.) Pers. - DAOF; A; NICK472
Erigeron pulchellus Michx. - MF; P; NICK567
Erigeron strigosus Muhl. ex Willd. - DAOF, MF; A; NICK200
Erigeron tenuis Torr. & Gray - DAOF; P; NICK568
Eupatorium altissimum L. - MF; P; NICK494
Eupatorium fistulosum Barratt - MF, POAN; P; NICK463
Eupatorium hyssopifolium L. - MF; P; NICK625
Eupatorium perfoliatum L. - WETL; P; NICK430
Eupatorium purpureum L. - MF; P; 1713-bwh
Eurybia hemispherica (Alexander) Nesom - SSBC, XF; P;
 NICK613
Fleischmannia incarnata (Walt.) King & H.E. Robins. - MF,
 POAN; P; NICK599
Gamochaeta purpurea (L.) Cabrera - DAOF; P; NICK538
Helenium amarum (Raf.) H. Rock - DAOF; A; NICK142
Helenium flexuosum Raf. - WETL; P; NICK347
Helianthus mollis Lam. - SSBC; P; NICK281
Helianthus petiolaris Nutt. - DAOF; A; NICK769
Helianthus tuberosus L. - DAOF; P; NICK417
Heliopsis helianthoides (L.) Sweet - MF; P; NICK129
Hieracium gronovii L. - XF; P; NICK112
Hymenopappus scabiosaeus L'Her - SSBC; P; NICK172
Iva annua L. - DAOF, WETL; A; NICK754
Krigia biflora (Walt.) Blake - MF; P; NICK513
Krigia occidentalis Nutt. - MF; A; NICK383
Lactuca canadensis L. - DAOF; A; NICK528
 **Lactuca serriola* L. - DAOF; A; NICK285
 **Leucanthemum vulgare* Lam. - DAOF; P; NICK255
Liatris aspera Michx. - SSBC; P; 1736-bwh
Liatris squarrosa (L.) Michx. - SSBC; P; NICK457
Packera glabella (Poir.) C. Jeffrey - MF, POAN; A;
 NICK397
Packera plattensis (Nutt.) W.A. Weber & A. Love - MF; B;
 NICK367
Parthenium integrifolium L. - XF; P; NICK223
Pseudognaphalium obtusifolium (L.) Hilliard & Burt - DAOF;
 A; NICK598
Ratibida columnifera (Nutt.) Woot. & Standl. - DAOF, SSBC;
 P; NICK232
Rudbeckia hirta L. - DAOF, SSBC; P; NICK258
Rudbeckia laciniata L. - MF; P; NICK734

Rudbeckia triloba L. - WETL; P; NICK303
Silphium asteriscus L. - SSBC; P; NICK171
Silphium perfoliatum L. - DAOF; P; NICK752
Smallanthus uvedalius (L.) Mackenzie ex Small - MF; P; NICK407
Solidago caesia L. - MF; P; NICK711
Solidago hispida Muhl. ex Willd. - MF; P; NICK633
Solidago petiolaris Ait. - XF, SSBC; P; NICK709
Solidago ulmifolia Muhl. ex Willd. - MF, XF; P; NICK426
Symphytotrichum anomalum (Engelm.) Nesom - MF; P; NICK597
Symphytotrichum drummondii (Lindl.) Nesom - MF; P; NICK705
Symphytotrichum lanceolatum (Willd.) Nesom - MF, WETL; P; NICK663
Symphytotrichum ontarionis (Wieg.) Nesom - MF; P; NICK710
Symphytotrichum oolentangiense (Riddell) Nesom - DAOF, MF; P; NICK712
Symphytotrichum patens (Ait.) Nesom - MF; P; NICK441
**Taraxacum officinale* G. H. Weber ex Wiggers - DAOF; P; NICK038
Verbesina alternifolia (L.) Britt. ex Kearney - DAOF, MF; P; NICK590
Verbesina helianthoides Michx. - MF; P; NICK132
Verbesina virginica L. - MF; P; NICK442
Vernonia baldwinii Torr. - DAOF, SSBC; P; NICK342

BALSAMINACEAE

Impatiens capensis Merrb. - POAN, WETL; P; NICK446
Impatiens pallida Nutt. - PONA, WETL; P; NICK212

BERBERIDACEAE

Podophyllum peltatum L. - MF, POAN; P; NICK004

BETULACEAE

Betula nigra L. - POAN; P; NICK490
Corylus americana Walt. - MF; P; NICK273
Ostrya virginiana (P. Mill.) K. Koch - MF; P; NICK402

BIGNONIACEAE

Campsis radicans (L.) Seem. ex Bureau - WETL; P; NICK329

BORAGINACEAE

**Heliotropium indicum* L. - WETL; A; NICK524
Lithospermum canescens (Michx.) Lehm. - MF, SSBC; P; NICK393
Myosotis verna Nutt. - MF; A; NICK676

BRASSICACEAE

Arabis canadensis L. - MF; B; NICK695
Arabis laevigata (Muhl. ex Willd.) Poir. - MF; B; NICK659
Arabis missouriensis Greene - MF; A; NICK376
Barbarea vulgaris Ait. f. - DAOF; P; NICK380
**Capsella bursa-pastoris* (L.) Medik. - DAOF; A; NICK039
Cardamine hirsuta L. - MF; A; NICK361
Cardamine parviflora L. - DAOF; A; NICK037
Draba brachycarpa Nutt. ex Torr. & Gray - DAOF; A; NICK384
Draba cuneifolia Nutt. ex Torr. & Gray - DAOF; A; NICK036
Lepidium densiflorum Schrad. - DAOF; A; NICK130
Lepidium virginicum L. - DAOF; A; NICK390
**Nasturtium officinale* Ait. f. - WETL; P; NICK375
Rorippa palustris (L.) Bess. - WETL; A; NICK158
Sibara virginica (L.) Rollins - DAOF; A; NICK035
**Sisymbrium officinale* (L.) Scop. - DAOF; A; NICK193

CABOMBACEAE

Brasenia schreberi J.F. Gmel. - WETL; P; NICK140

CACTACEAE

Opuntia humifusa (Raf.) Raf. - SSBC; P; NICK202

CAMPANULACEAE

Campanulastrum americanum (L.) Small - MF; P; NICK328
Lobelia appendiculata A. DC. - MF; P; NICK187
Lobelia cardinalis L. - WETL; P; NICK608
Triodanis biflora (Ruiz & Pavón) Greene - DAOF, MF; A; NICK188
Triodanis perfoliata (L.) Nieuwl. - DAOF; A; NICK550

CAPPARACEAE

Cleome serrulata Pursh - DAOF, POAN; A; 1717-bwh
Polanisia dodecandra (L.) DC. - DAOF, WETL; A; NICK274

CAPRIFOLIACEAE

Lonicera flava Sims - MF; P; NICK687
**Lonicera japonica* Thunb. - DAOF, MF; P; NICK434
Sambucus nigra L. ssp. *canadensis* (L.) R. Bolli - WETL; P; NICK217
Symphoricarpos orbiculatus Moench - MF, XF; P; NICK443
Viburnum rufidulum Raf. - XF; P; NICK260

CARYOPHYLLACEAE

**Arenaria serpyllifolia* L. - DAOF; A; NICK692
**Cerastium glomeratum* Thuill. - DAOF; A; NICK358
**Cerastium pumilum* W. Curtis - DAOF; A; NICK150
**Dianthus armeria* L. - DAOF; A; NICK256
Minuartia patula (Michx.) Mattf. - SNPV; A; NICK372
**Saponaria officinalis* L. - DAOF; P; NICK435
Silene stellata (L.) Ait. f. - MF; P; NICK095
Silene regia Sims - MF; P; 1657-bwh
Silene virginica L. - MF; P; NICK057
**Stellaria media* (L.) Vill. - DAOF, MF; A; NICK034

CELASTRACEAE

Celastrus scandens L. - MF; P; 1738-bwh

CHENOPODIACEAE

**Chenopodium ambrosioides* L. - DAOF; A; NICK669
**Chenopodium pumilio* R. Br. - DAOF; A; NICK125

CISTACEAE

Lechea mucronata Raf. - SSBC, XF; P; NICK629
Lechea tenuifolia Michx. - SNPV, XF; P; NICK186

CLUSIACEAE

Hypericum hypericoides (L.) Crantz - MF, XF; P; NICK326
Hypericum mutilum L. - SNPV; P; NICK337
**Hypericum perforatum* L. - DAOF; P; NICK340
Hypericum prolificum L. - MF; P; 1696-bwh
Hypericum punctatum Lam. - SSBC; P; NICK477
Hypericum sphaerocarpum Michx. - DAOF, SSBC; P; NICK339

CONVOLVULACEAE

**Ipomoea coccinea* L. - DAOF; A; NICK610
Ipomoea pandurata (L.) G.F.W. Mey. - DAOF; P; NICK534

CORNACEAE

Cornus drummondii C.A. Mey. - DAOF, MF; P; NICK467
Cornus florida L. - MF; P; NICK573

CRASSULACEAE

- Sedum nuttallianum* Raf. - SNPW; A; NICK213
Sedum pulchellum Michx. - SNPW; A; NICK215

CUCURBITACEAE

- Melothria pendula* L. - DAOF; P; NICK312
Sicyos angulatus L. - DAOF; A; NICK482

CUSCUTACEAE

- Cuscuta gronovii* Willd. ex J. A. Schultes - DAOF; A; NICK637
Cuscuta indecora Choisy - DAOF; A; NICK658

DIPSACACEAE

- **Dipsacus fullonum* L. - DAOF; B; NICK093

EBENACEAE

- Diospyros virginiana* L. - DAOF, MF, XF; P; NICK588

ERICACEAE

- Rhododendron prinophyllum* (Small) Millais - XF; P; NICK084
Vaccinium arboreum Marsh. - XF; P; NICK554
Vaccinium pallidum Ait. - XF; P; NICK012
Vaccinium stamineum L. - MF, XF; P; NICK062

EUPHORBIACEAE

- Acalypha monococca* (Engelm. ex Gray) L. Mill. & Gandhi - DAOF, MF; A; NICK612
Acalypha rhomboidea Raf. - DAOF, MF; A; NICK352
Acalypha virginica L. - DAOF, MF; A; 1730-bwh
Chamaesyce maculata (L.) Small - DAOF; A; NICK458
Chamaesyce nutans (Lag.) Small - DAOF; A; NICK657
Croton capitatus Michx. - DAOF; A; NICK630
Croton glandulosus L. - DAOF, SNPW; A; NICK454
Croton willdenowii G.L. Webster - SNPW; A; NICK284
Euphorbia corollata L. - DAOF; P; NICK207
Euphorbia dentata Michx. - DAOF; A; NICK246

FABACEAE

- **Albizia julibrissin* Durazz. - DAOF; P; NICK649
Amorpha canescens Pursh - SSBC, XF; P; 1686-bwh
Amphicarpaea bracteata (L.) Fern. - XF; A; NICK615
Baptisia alba (L.) Vent var. *macrophylla* (Larisey) Isely - SSBC; P; NICK346
Baptisia bracteata Muhl. ex Ell. var. *leucophaea* (Nutt.) Kartesz & Gandhi - MF, SSBC, XF; P; NICK507
Baptisia × *sulphurea* (pro. sp.) - XF; P; NICK509
Cercis canadensis L. - DOAF, MF; P; NICK059
Chamaecrista fasciculata (Michx.) Greene - DOAF, MF; A; NICK448
Chamaecrista nictitans (L.) Moench - DAOF, SSBC; A; NICK602
Clitoria mariana L. - MF, XF; P; NICK136
Dalea candida Michx. ex Willd. - SSBC; P; NICK516
Dalea purpurea Vent. - SSBC; P; NICK237
Desmodium ciliare (Muhl. ex Willd.) DC. - MF; P; NICK635
Desmodium cuspidatum (Muhl. ex Willd.) DC. ex Loud. - MF; P; NICK592
Desmodium glutinosum (Muhl. ex Willd.) Wood - MF; P; NICK341
Desmodium nudiflorum (L.) DC. - MF; P; NICK486
Desmodium paniculatum (L.) DC. - DAOF, SSBC, XF; P; NICK471
Desmodium rotundifolium DC. - XF; P; NICK594
Galactia volubilis (L.) Britt. - MF; P; AB-4046

- **Kummerowia stipulacea* (Maxim.) Makino - DAOF; A; NICK578

- **Kummerowia striata* (Thumb.) Schindl. - DAOF; A; NICK563
 **Lespedeza cuneata* (Dum.-Cours.) G. Don - DAOF; P; NICK437

- Lespedeza hirta* (L.) Hornem. - SSBC; P; NICK606
Lespedeza procumbens Michx. - MF, XF; P; NICK456
Lespedeza stuevei Nutt. - SSBC; P; NICK596
Lespedeza violacea (L.) Pers. - MF, XF; P; NICK648
Lespedeza virginica (L.) Britt. - SSBC; P; NICK595
Mimosa nuttallii (DC.) B.L. Turner - DAOF, SSBC; P; NICK310
Phaseolus polystachios (L.) B.S.P. - MF, XF; P; NICK620
Rhynchosia latifolia Nutt. ex Torr. & Gray - XF; P; NICK241
Robinia pseudoacacia L. - DAOF; P, T; NICK099
Senna marilandica (L.) Link - DAOF, WETL; P; NICK336
Sesbania herbacea (P. Mill.) McVaugh - DAOF, WETL; A; NICK758

- Strophostyles helvula* (L.) Ell. - DAOF; P; NICK501
Stylosanthes biflora (L.) B.S.P. - DAOF, SSBC, SNPV; P; NICK242
Tephrosia virginiana (L.) Pers. - SSBC, XF; P; NICK159
 **Trifolium arvense* L. - DAOF; A; NICK257
 **Trifolium dubium* Sibthorp - DAOF; A; NICK131
 **Trifolium pratense* L. - DAOF; A; NICK548
 **Trifolium reflexum* L. - DAOF; P; NICK128
Vicia caroliniana Walt. - MF; P; NICK102
Vicia minutiflora F.G. Dietr. - MF; A; NICK378
 **Vicia sativa* L. - DAOF; A; NICK377
 **Vicia villosa* Roth - DAOF; A; NICK031

FAGACEAE

- Castanea pumila* (L.) P. Mill. var. *ozarkensis* (Ashe) Tucker - XF; P; AB-4022
Quercus alba L. - MF, XF; P; NICK604
Quercus macrocarpa Michx. - MF; P; NICK356
Quercus marilandica Muenchh. - XF; P; NICK651
Quercus muehlenbergii Engelm. - MF; P; NICK050
Quercus palustris Muenchh. - MF, POAN; P; NICK661
Quercus rubra L. - MF; P; NICK141
Quercus shumardii Buckl. - MF, POAN; P; NICK101
Quercus stellata Wangenh. - MF, XF; P; NICK587
Quercus velutina Lam. - XF; P; NICK199

FUMARIACEAE

- Corydalis flavula* (Raf.) DC. - MF; A; NICK007

GENTIANACEAE

- Sabatia angularis* (L.) Pursh - DAOF, WETL; A; NICK408

GERANIACEAE

- Geranium carolinianum* L. - DAOF; A; NICK195
Geranium maculatum L. - MF; P; NICK685

HIPPOCASTANACEAE

- Aesculus glabra* Willd. - MF; P; NICK060

HYDRANGEACEAE

- Hydrangea arborescens* L. - MF; P; NICK114

HYDROCHARITACEAE

- Elodea canadensis* Michx. - WETL; P; 1697-bwh

HYDROPHYLLACEAE

- Ellisia nyctelea* (L.) L. - DAOF; P; NICK690
Hydrophyllum virginianum L. - MF; P; NICK546
Phacelia hirsuta Nutt. - MF; A; NICK544

JUGLANDACEAE

- Carya alba* (L.) Nutt. ex Ell. - MF; P; NICK703
Carya cordiformis (Wangenh.) K. Koch - MF; P; NICK591
Carya texana Buckl. - XF; P; NICK495
Juglans nigra L. - MF; P; NICK318

LAMIACEAE

- Agastache scrophulariifolia* (Willd.) Kuntze - MF; P; NICK650
Cunila origanoides (L.) Britt. - MF, XF; P; NICK603
Hedeoma hispida Pursh - SSBC, SNPV; A; NICK552
 **Lamium amplexicaule* L. - DAOF; A; NICK680
 **Lamium purpureum* L. - DAOF; A; NICK046
 **Mentha × piperita* L. (pro. sp.) - WETL; P; NICK453
Monarda fistulosa L. - SSBC, XF; P; NICK330
Monarda russeliana Nutt. ex Sims - MF; P; NICK557
 **Perilla frutescens* (L.) Britt. - DAOF, MF; A; NICK580
Physostegia angustifolia Fern. - DAOF, SSBC; P; NICK138
Prunella vulgaris L. - DAOF, MF, POAN; P; NICK227
Pycnanthemum albescens Torr. & Gray - XF; P; NICK462
Pycnanthemum tenuifolium Schrad. - DAOF, MF; P; NICK462
Pycnanthemum verticillatum (Michx.) Pers. var. *pilosum*
 (Nutt.) Cooperrider - DAOF; P; NICK484
Salvia azurea Michx. ex Lam. - DAOF, SSBC; P; NICK579
Salvia lyrata L. - MF; P; NICK072
Scutellaria ovata Hill - SSBC, SNPV; P; NICK259

LAURACEAE

- Lindera benzoin* (L.) Blume - MF; P; NICK040
Sassafras albidum (Nutt.) Nees - MF; P; NICK607

LENTIBULARIACEAE

- Utricularia gibba* L. - WETL; P; NICK659

LINACEAE

- Linum medium* (Planch.) Britt. var. *texanum* (Planch.) Fern. -
 SSBC, SNPV; A; NICK415

LYTHRACEAE

- Cuphea viscosissima* Jacq. - WETL; A; NICK464

MALVACEAE

- Callirhoe digitata* Nutt. - SSBC; P; NICK279
Hibiscus moscheutos L. - WETL; P; NICK412
 **Hibiscus syriacus* L. - DAOF; P; NICK466
Sida spinosa L. - DAOF; A; NICK627

MENISPERMACEAE

- Cocculus carolinus* (L.) DC. - DAOF, MF; P; NICK314
Menispermum canadense L. - MF; P; NICK439

MOLLUGINACEAE

- Mollugo verticillata* L. - DAOF; A; NICK233

MORACEAE

- Morus rubra* L. - MF; P; NICK266

NELUMBONACEAE

- Nelumbo lutea* Willd. - WETL; P; NICK321

NYCTAGINACEAE

- Mirabilis albidia* (Walt.) Heimerl - DAOF, SSBC; P; NICK474

NYSSACEAE

- Nyssa sylvatica* Marsh. - MF; P; NICK619

OLEACEAE

- Fraxinus americana* L. - MF; P; NICK514
Fraxinus pennsylvanica Marsh. - MF, POAN; P; NICK196
 **Ligustrum sinense* Lour. - DAOF, MF; P; NICK432

ONAGRACEAE

- Gaura longiflora* Spach - SSBC; A; NICK500
Ludwigia alternifolia L. - WETL; P; NICK351
Ludwigia decurrens Walt. - WETL; P; NICK759
Ludwigia palustris (L.) Ell. - WETL; P; NICK166
Oenothera biennis L. - DAOF; P; NICK460
Oenothera laciniata Hill - DAOF; P; NICK108
Oenothera linifolia Nutt. - SNPV; A; NICK283

OXALIDACEAE

- Oxalis stricta* L. - DAOF; P; NICK682
Oxalis violacea L. - XF; P; NICK061

PAPAVERACEAE

- **Papaver dubium* L. - DAOF; A; NICK536
Sanguinaria canadensis L. - MF; P; NICK001

PASSIFLORACEAE

- Passiflora incarnata* L. - DAOF; P; NICK221
Passiflora lutea L. - MF, XF; P; NICK315

PHYTOLACCACEAE

- Phytolacca americana* L. - DAOF; P; NICK231

PLANTAGINACEAE

- Plantago aristata* Michx. - DAOF, SNPW; A; NICK090
Plantago rugelii Dcne. - DAOF; P; NICK525
Plantago virginica L. - SNPV; A; NICK558

PLATANACEAE

- Platanus occidentalis* L. - POAN; P; NICK601

POLEMONIACEAE

- Phlox divaricata* L. - MF; P; NICK363
Polemonium reptans L. - MF; P; NICK054

POLYGALACEAE

- Polygala sanguinea* L. - SSBC; A; 1691-bwh
Polygala verticillata L. - SSBC, XF; A; NICK170

POLYGONACEAE

- **Fagopyrum esculentum* Moench - DAOF; A; NICK308
 **Polygonum hydropiper* L. - WETL; A; NICK178
Polygonum hydropiperoides Michx. - WETL; P; NICK631
Polygonum lapathifolium L. - WETL; A; NICK440
Polygonum persicaria L. - WETL; A; NICK111
Polygonum scandens L. - DAOF; P; NICK263
Polygonum virginianum L. - MF, POAN; P; NICK574
Rumex crispus L. - DAOF, WETL; P; NICK451
Rumex hastatulus Baldw. - DAOF; A; NICK052
 **Rumex obtusifolius* L. - DAOF; P; NICK269

PORTULACACEAE

- Claytonia virginica* L. - DAOF; P; NICK027
Phemeranthus parviflorus (Nutt.) Kiger - SNPV; P; NICK077
Portulaca oleracea L. - DAOF, SNPV; A; NICK621

PRIMULACEAE

- Lysimachia lanceolata* Walt. - WETL; P; NICK745

RANUNCULACEAE

- Anemone virginiana* L. - DAOF; P; NICK203
Clematis versicolor Small ex Rydb. - DAOF, MF; P; NICK191
Clematis virginiana L. - DAOF, MF; P; NICK475
Delphinium carolinianum Walt. - DAOF, SSBC; P; NICK081
Enemion biternatum Raf. - MF; P; NICK025
Ranunculus fascicularis Muhl. ex Bigelow - MF; P; NICK382
Ranunculus harveyi (Gray) Britt. - MF; A; NICK369
Ranunculus hispidus Michx. - DAOF; P; NICK017
Ranunculus micranthus Nutt. - MF; A; NICK354

RHAMNACEAE

- Ceanothus americanus* L. - SSBC, XF; P; NICK155
Frangula caroliniana (Walt.) Gray - MF; P; NICK572

ROSACEAE

- Agrimonia rostellata* Wallr. - MF; P; NICK277
Amelanchier arborea (Michx. f.) Fern. - MF, XF; P; NICK220
Crataegus crus-galli L. - XF; P; NICK406
Crataegus pruinosa (Wendl. f.) K. Koch - MF; P; 1678-bwh
Crataegus punctata Jacq. - MF; P; 1679-bwh
Crataegus viridis L. - MF; P; NICK418
Geum canadense Jacq. - MF; P; NICK264
Geum vernum (Raf.) Torr. & Gray - MF; P; NICK566
Physocarpus opulifolius (L.) Maxim. var. *intermedius* (Rydb.) B.L. Robins. - POAN; P; NICK774
 **Potentilla recta* L. - DAOF; P; NICK071
Potentilla simplex Michx. - MF; P; NICK461
Prunus americana Marsh. - DAOF; P; NICK152
Prunus mexicana S. Wats. - DAOF, XF; P; NICK134
Prunus serotina Ehrh. - MF, XF; P; NICK368
 **Pyrus calleryana* Dcne. - DAOF; P; NICK345
 **Rosa multiflora* Thunb. ex Murr. - DAOF; P; NICK074
Rosa setigera Michx. - SSBC, MF; P; NICK540
Rubus bushii Bailey - MF; P; NICK120
Rubus occidentalis L. - DAOF; P; NICK673

RUBIACEAE

- Cephalanthus occidentalis* L. - WETL; P; NICK747
Diodia virginiana L. - WETL; P; NICK324
Galium aparine L. - DAOF; A; NICK083
Galium circaezans Michx. - MF; P; NICK118
Galium obtusum Bigelow - MF; P; NICK103
Galium pilosum Ait. - MF; P; 1729-bwh
Galium virgatum Nutt. - DAOF; A; NICK044
Houstonia longifolia Gaertn. - DAOF, SNPV; P; NICK160
Houstonia purpurea L. - DAOF, SNPV; P; NICK664
Houstonia pusilla Schoepf - DAOF, SNPV; A; NICK024

RUTACEAE

- Ptelea trifoliata* L. - SSBC, XF; P; 1663-bwh

SALICACEAE

- **Populus alba* L. - DAOF; P, T; NICK414
Salix caroliniana Michx. - POAN; P; NICK605

SANTALACEAE

- Comandra umbellata* (L.) Nutt. - SSBC; P; NICK018

SAPOTACEAE

- Sideroxylon lanuginosum* Michx. - MF, XF; P; NICK064

SAURURACEAE

- Saururus cernuus* L. - WETL; P; NICK431

SAXIFRAGACEAE

- Heuchera americana* L. - MF; P; NICK688
Saxifraga virginiana Michx. - MF; P; NICK023

SCROPHULARIACEAE

- Aureolaria grandiflora* (Benth.) Pennell - MF; A; NICK270
Collinsia violacea Nutt. - DAOF, MF; A; NICK379
Gratiola neglecta Torr. - WETL; A; NICK113
Kickxia elatine (L.) Dumort. - DAOF; A; NICK331
Leucospora multifida (Michx.) Nutt. - DAOF, WETL; A; NICK526
Lindernia dubia (L.) Pennell var. *anagallidea* (Michx.) Cooperrider - WETL; A; NICK469
Mimulus alatus Ait. - WETL; P; 1721-bwh
Nuttallanthus texanus (Scheele) D.A. Sutton - DAOF; A; NICK543
Pedicularis canadensis L. - MF; P; NICK053
Penstemon digitalis Nutt. ex Sims - DAOF; P; NICK551
Penstemon tubiflorus Nutt. - DAOF; P; NICK133
Scrophularia marilandica L. - MF; A; NICK459
 **Verbascum blattaria* L. - DAOF; A; NICK559
 **Verbascum thapsus* L. - DAOF; A; NICK229
Veronica peregrina L. - DAOF; A; NICK386

SIMAROUBACEAE

- **Ailanthus altissima* (P. Mill.) Swingle - DAOF; P; NICK219

SOLANACEAE

- **Datura stramonium* L. - DAOF; A; NICK349
Physalis angulata L. - DAOF; A; NICK296
Physalis pubescens L. var. *pubescens* - DAOF; A; NICK628
Physalis pubescens L. var. *integrifolia* (Dunal) Waterfall - DAOF; A; NICK276
Physalis virginiana P. Mill. - DAOF; P; NICK299
Solanum americanum P. Mill. - DAOF; A; NICK189
Solanum carolinense L. - DAOF; P; NICK280
 **Solanum physalifolium* Rusby - DAOF; A; NICK110

STAPHYLEACEAE

- Staphylea trifolia* L. - MF; P; NICK146

TILIACEAE

- Tilia americana* L. - MF; P; 1667-bwh

ULMACEAE

- Celtis laevigata* Willd. - MF; P; NICK319
Ulmus alata Michx. - MF, XF; P; 1724-bwh
Ulmus americana L. - MF; P; NICK320
Ulmus rubra Muhl. - MF; P; NICK618

URTICACEAE

- Boehmeria cylindrica* (L.) Sw. - MF; P; NICK327
Parietaria pensylvanica Muhl. ex Willd. - DAOF, MF, POAN; A; NICK416
Urtica chamaedryoides Pursh - MF, POAN; A; NICK672

VALERIANACEAE

- Valerianella longiflora* (Torr. & Gray) Walp. - POAN; A; NICK570
Valerianella radiata (L.) Dufur. - DAOF, WETL; A; NICK399

VERBENACEAE

- Phyla lanceolata* (Michx.) Greene - DAOF, WETL; P; NICK762
Phryma leptostachya L. - MF; P; NICK449

Verbena stricta Vent. - WETL; P; NICK226
Verbena urticifolia L. - MF, POAN; A; NICK184

VIOLACEAE

Viola bicolor Pursh - DAOF; A; NICK022
Viola palmata L. - MF; P; NICK008
Viola pedata L. - MF; P; NICK014
Viola pubescens Ait. - MF; P; NICK364
Viola sororia Willd. - DAOF, MF; P; NICK381
Viola villosa Walt. - MF; P; NICK396

VISCACEAE

Phoradendron leucarpum (Raf.) Reveal & M.C. Johnston - MF, XF; P; NICK655

VITACEAE

Ampelopsis arborea (L.) Koehne - DAOF, WETL; P; NICK433
Ampelopsis cordata Michx. - DAOF; P; NICK253
Parthenocissus quinquefolia (L.) Planch. - DAOF; P; NICK751
Vitis aestivalis Michx. - MF, XF; P; NICK529
Vitis cinerea (Engelm.) Millard - MF; P; NICK192
Vitis palmata Vahl - MF; P, V; NICK153
Vitis riparia Michx. - MF; P; NICK689

LILIOPSIDA

AGAVACEAE

Manfreda virginica (L.) Salisb. ex Rose - SSBC, SNPV; P; NICK096

ALISMATACEAE

Sagittaria ambigua J.G. Smith - WETL; P; AB-4146
Sagittaria graminea Michx. - WETL; P; NICK182
Sagittaria latifolia Willd. - WETL; P; NICK614

ARACEAE

Arisaema dracontium (L.) Schott - MF; P; NICK079

COMMELINACEAE

Commelina erecta L. - MF; P; NICK291
Commelina virginica L. - MF; P; NICK638
Tradescantia ernestiana E.S. Anderson & Woods. - MF; P; NICK392
Tradescantia ozarkana E.S. Anderson & Woods. - MF; P; NICK691

CYPERACEAE

Bulbostylis capillaris (L.) Kunth ex C.B. Clarke - SSBC, SNPV; A; NICK290
Carex albicans Willd. ex Spreng. - MF, XF; P; NICK005
Carex blanda Dewey - MF, POAN; P; NICK724
Carex brevior (Dewey) Mackenzie - DAOF, SSBC; P; NICK728
Carex bushii Mackenzie - DAOF; P; NICK716
Carex cephalophora Muhl. ex Willd. - MF; P; NICK729
Carex digitalis Willd. - MF; P; NICK730
Carex festucacea Schkuhr ex Willd. - MF; P; NICK718
Carex frankii Kunth - WETL; P; NICK287
Carex gravida Bailey - MF; P; NICK715
Carex hirsutella Mackenzie - MF; P; NICK722
Carex louisianica Bailey - WETL; P; NICK727
Carex oklahomensis Mackenzie - MF; P; NICK727
Carex oligocarpa Schkuhr ex Willd. - MF; P; NICK731
Carex oxylepis Torr. & Hook. - MF; P; NICK721
Carex retroflexa Muhl. ex Willd. - MF, XF; P; NICK719
Carex squarrosa L. - WETL; P; NICK674
Carex vulpinoidea Michx. - WETL; P; NICK725

Cyperus acuminatus Torr. & Hook. ex Torr. - DAOF; P; NICK121

Cyperus echinatus (L.) Wood - DAOF; P; NICK245
**Cyperus iria* L. - DAOF, WETL; P; NICK428
Cyperus squarrosus L. - WETL; A; NICK313
Eleocharis acicularis (L.) Roemer & J.A. Schultes - WETL; A; NICK533
Eleocharis erythropoda Steud. - WETL; P; NICK169
Eleocharis lanceolata Fern. - WETL; A; NICK420
Eleocharis obtusa (Willd.) J.A. Schultes - WETL; A; NICK201
Eleocharis quadrangulata (Michx.) Roemer & J.A. Schultes - WETL; P; NICK137
Fimbristylis autumnalis (L.) Roemer & J.A. Schultes - WETL; A; 1690-bwh
Isolepis carinata Hook. & Arn. ex Torr. - DAOF; A; NICK541
Scirpus atrovirens Willd. - DAOF; P; NICK700

DIOSCOREACEAE

Dioscorea quaternata J.F. Gmel. - MF; P; NICK549
Dioscorea villosa L. - MF; P; NICK194

IRIDACEAE

Iris cristata Ait. - MF, POAN; P; NICK013

JUNCACEAE

Juncus diffusissimus Buckl. - WETL; P; NICK214
Juncus dudleyi Wieg. - WETL; P; NICK123
Juncus marginatus Rostk. - DAOF; P; NICK122
Juncus tenuis Willd. - DAOF; P; NICK127
Juncus torreyi Coville - DAOF; P; NICK353
Luzula bulbosa (Wood) Smyth & Smyth - DAOF, MF, XF; A; NICK011

LEMNACEAE

Spirodela polyrrhiza (L.) Schleid. - WETL; P; s.n.
Wolffia columbiana Karst - WETL; A; s.n.

LILIACEAE

Allium canadense L. - MF; P; NICK697
**Allium vineale* L. - DAOF; P; NICK465
Camassia scilloides (Raf.) Cory - SSBC, MF; P; NICK070
Erythronium mesochoreum Knerr - MF; P; NICK043
Maianthemum racemosum (L.) Link - MF; P; NICK085
Nothoscordum bivalve (L.) Britt. - DAOF, SSBC; P; NICK048
Polygonatum biflorum (Walt.) Ell. - MF; P; NICK293
Trillium sessile L. - MF; P; NICK401
Trillium viridescens Nutt. - MF; P; NICK681
Uvularia grandiflora Sm. - MF; P; NICK400

ORCHIDACEAE

Cypripedium parviflorum Salisb. var. *parviflorum* - MF; P; NICK702
Spiranthes vernalis Engelm. & Gray - DAOF; P; NICK282

POACEAE

Agrostis hyemalis (Walt.) B.S.P. - WETL; P; NICK508
Agrostis stolonifera L. - MF; P; NICK735
**Aira elegans* Willd. ex Kunth - DAOF; A; NICK520
Alopecurus carolinianus Walt. - WETL; A; NICK068
Andropogon gerardii Vitman - DAOF, SSBC; P; NICK316
Andropogon virginicus L. - DAOF; P; NICK488
Aristida basiramea Engelm. ex Vasey - DAOF; A; NICK502
Arundinaria gigantea (Walt.) Muhl. - POAN; P; NICK058
**Arthraxon hispidus* (Thunb.) Makinl - WETL; A; 1740-bwh
Bouteloua curtipendula (Michx.) Torr. - SSBC; P; NICK750

- Brachyelytrum erectum* (Schreb. ex Spreng.) Beauv. - MF; P; NICK427
- **Bromus hordeaceus* L. - DAOF; A; NICK518
- Bromus pubescens* Muhl. ex Willd. - MF; P; NICK149
- **Bromus tectorum* L. - DAOF; A; NICK049
- Chasmanthium latifolium* (Michx.) Yates - POAN; P; NICK755
- Cinna arundinacea* L. - MF, POAN; P; NICK760
- **Cynodon dactylon* (L.) Pers. - DAOF; P; NICK234
- **Dactylis glomerata* L. - DAOF; P; NICK076
- Danthonia spicata* (L.) Beauv. ex Roemer & J.A. Schultes - MF, XF; P; NICK740
- Dichanthelium aciculare* (Desv. ex Poir.) Gould & C.A. Clark - MF; P; NICK523
- Dichanthelium acuminatum* (Sw.) Gould & C.A. Clark var. *fasciculatum* (Torr.) Freckmann - DAOF, MF; P; NICK204
- Dichanthelium acuminatum* (Sw.) Gould & C.A. Clark var. *lindheimeri* (Nash) Gould & C.A. Clark - DAOF, MF; P; NICK338
- Dichanthelium boscii* (Poir.) Gould & C.A. Clark - MF; P; NICK183
- Dichanthelium clandestinum* (L.) Gould - MF; P; NICK167
- Dichanthelium dichotomum* (L.) Gould - DAOF; A; NICK522
- Dichanthelium linearifolium* (Scribn. ex Nash) Gould - MF; P; NICK515
- Dichanthelium oligosanthes* (J.A. Schultes) Gould var. *scribnerianum* (Nash) Gould - DAOF, SSBC; P; NICK639
- **Echinochloa crus-galli* (L.) Beauv. - DAOF, WETL; A; NICK765
- **Eleusine indica* (L.) Gaertn. - DAOF; A; NICK584
- Elymus canadensis* L. - DAOF, MF; P; NICK105
- Elymus hystrix* L. - MF, POAN; P; NICK218
- Elymus virginicus* L. - DAOF; P; NICK092
- Eragrostis capillaris* (L.) Nees - SSBC; A; NICK422
- Eragrostis hirsuta* (Michx.) Nees - SSBC; P; NICK301
- Eragrostis intermedia* A. S. Hitchc. - DAOF; P; NICK423
- Eragrostis pectinacea* (Michx.) Nees ex Steud. - DAOF; A; NICK468
- **Eragrostis pilosa* (L.) Beauv. - DAOF; A; NICK288
- Eragrostis trichodes* (Nutt.) Wood - DAOF; P; NICK503
- Festuca paradoxa* Desv. - MF; P; NICK739
- Festuca subverticillata* (Pers.) Alexeev - MF; P; NICK738
- Glyceria acutiflora* Torr. - WETL; P; NICK746
- Glyceria striata* (Lam.) A.S. Hitchc. - WETL; P; NICK107
- Leersia oryzoides* (L.) Sw. - WETL; P; NICK616
- Leersia virginica* Willd. - MF; P; NICK617
- **Lolium perenne* L. - DAOF; P; NICK244
- Melica nitens* (Scribn.) Nutt. ex Piper - MF; P; NICK510
- **Microstegium vimineum* (Trin.) A. Camus - DAOF; A; NICK632
- Muhlenbergia sobolifera* (Muhl. ex Willd.) Trin. - XF; P; NICK763
- Panicum anceps* Michx. - DAOF, MF; P; NICK445
- Panicum capillare* L. - DAOF; A; NICK749
- Panicum dichotomiflorum* Michx. - DAOF; P; NICK496
- Paspalum laeve* Michx. - DAOF; P; NICK343
- **Phleum pratense* L. - DAOF; A; NICK322
- **Poa annua* L. - DAOF; A; NICK028
- Poa champaniana* Scribn. - MF; A; NICK678
- Poa sylvestris* Gray - MF; P; NICK564
- **Schedonorus phoenix* (Scop.) Holub - DAOF; P; NICK701
- **Setaria italica* (L.) Beauv. - DAOF; A; NICK297
- Setaria pumila* (Poir.) Roemer & J.A. Schultes - DAOF; A; NICK403
- Setaria viridis* (L.) Beauv. - DAOF; A; NICK487
- Sorghastrum nutans* (L.) Nash - DAOF, SSBC; P; NICK447
- **Sorghum halepense* (L.) Pers. - DAOF; P; NICK317
- Sporobolus vaginiflorus* (Torr. ex Gray) Wood - ; A; NICK764
- Sphenopholis intermedia* (Rydb.) Rydb. - WETL; P; NICK736
- Tridens flavus* (L.) A.S. Hitchc. - DAOF, XF; P; NICK450
- Vulpia octoflora* (Walt.) Rydb. - DAOF, SSBC, SNPV; A; NICK069

PONTEDERIACEAE

Heteranthera limosa (Sw.) Willd. - WETL; A; AB-4145

POTAMOGETONACEAE

Potamogeton diversifolius Raf. - WETL; P; 1659-bwh

SMILACACEAE

Smilax bona-nox L. - MF, XF; P; NICK693

Smilax rotundifolia L. - MF, XF; P; NICK067

Smilax tamnoides L. - MF; P; NICK647

SPARGANIACEAE

Sparganium americanum Nutt. - WETL; P; NICK745

TYPHACEAE

Typha latifolia L. - WETL; P; NICK098