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Vascular Flora of the Deep Fork National Wildlife Refuge, Okmulgee County, Oklahoma

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ABSTRACT The Deep Fork National Wildlife Refuge (3,925 ha) is located in east-central Oklahoma. We report 584 taxa of vascular plants (565 species and 19 infraspecific taxa), 349 genera, and 106 families. The largest families were the Poaceae (with 84 taxa), Asteraceae (73 taxa), and Fabaceae (45 taxa). Eighty introduced taxa and 13 taxa tracked by the Oklahoma Natural Heritage Inventory were encountered.

Key words: Oklahoma, plant inventory, vascular plants.

INTRODUCTION The Deep Fork River (or the Deep Fork of the Canadian River) is 370 km in length from its headwaters in the Oklahoma City metropolitan area to Lake Eufaula in east central Oklahoma. It is a low-gradient stream that meanders in a broad floodplain and was subject to frequent flooding. In an attempt to alleviate this problem, the upper reaches of the Deep Fork River were channelized through a series of projects beginning in 1912 and ending in 1923 (Harper and Gray 1954). Extensive siltation on much of the floodplain was the unintended outcome of this effort, which also affected the growth and vigor of woody plants (Harper 1937, Harper and Garman 1948). Despite this, Brabander et al. (1985) identified ecologically significant bottomland forest at multiple locations in the Deep Fork basin.

Today, the Deep Fork flows through three conservation areas. The Deep Fork Wildlife Management Area (DFWMA) and the Eufaula Wildlife Management Area Deep Fork Arm (EWMA) are both managed by the Oklahoma Department of Wildlife Conservation. The third area is the Deep Fork National Wildlife Refuge (DFNWR), which is a facility of the United States Fish and Wildlife Service. Lists of vascular plants have been published for two

of these facilities. In 1996, Hoagland and Johnson (2005) inventoried the vascular plants of the DFWMA and a moist soils management unit at the EWMA. These units occupy areas of 4,816 and 2,000 ha respectively. They reported 162 taxa of vascular plants in 58 families and 126 genera at the EWMA and 434 taxa of vascular plants in 97 families and 287 genera at the DFWMA. There were a total of 500 taxa of vascular plants in 99 families and 293 genera when both lists were combined. The largest families were the Poaceae (with 77 taxa), Asteraceae (58), Cyperaceae (46), and Fabaceae (36). One hundred and seventy-seven taxa were annuals, 16 were biennials, and 391 were perennials. The objective of this study was to complete a similar taxa list for the DFNWR. The results will serve as a resource for Refuge managers and a baseline for future monitoring.

STUDY AREA The Deep Fork National Wildlife Refuge (096°00'21.6"W to 095°54'39.6"W and 35°34'51.6"N to 35°32'24.0"N, Figure 1) was established in 1993. It currently protects 3,925 ha of upland forest, old fields, bottomland forests, and emergent wetlands (United States Fish and Wildlife Service 2015). The DFNWR is located in the Subtropical Humid (Cf) climate zone (Trewartha 1968). Summers are warm (mean July temperature 27.2°C) and humid; winters are relatively short and mild (mean

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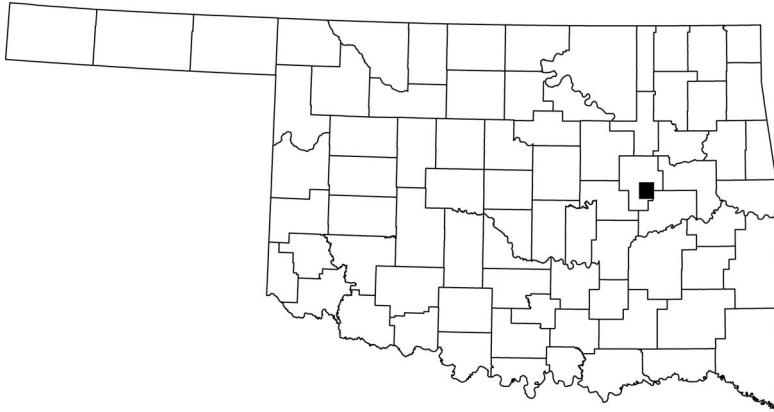


Figure 1. Location of the Deep Fork National Wildlife Refuge, Okmulgee County, Oklahoma.

January temperature 2.6°C). Mean annual precipitation is 110 cm (Oklahoma Climatological Survey 2016).

The DFNWR is located in the Osage Plains section of the Central Lowlands province (Hunt 1974) and within the Eastern Sandstone Cuesta Plains province of Oklahoma (Curtis et al. 2008). The surface geology consists of Pennsylvanian sandstones and quaternary alluvium (Johnson 2008). Floodplain soil associations at the DFNWR are predominantly the Verdigris-Lightning-Pulaski association (nearly level, deep, loamy floodplain soils) and the Konawa-Stidham (nearly level to sloping, deep, sandy soils). Upland soil associations include the Hector-Hartsells (very gently sloping to steep, moderately deep soils on forested uplands) and the Taloka (nearly level, deep soils on prairies; Sparwasser et al. 1968).

Potential natural vegetation of Okmulgee County consists of post oak-blackjack oak forests and tallgrass prairie in the uplands and bottomland forests (Duck and Fletcher 1943). Clearing and conversion to agriculture of the bottomland forests along the Deep Fork began in the 19th century, with restricted clearing following removal of the Creek Nation to Indian Territory and accelerating as the century progressed. In the mid-20th century, land abandonment allowed some areas to return to *Quercus palustris*-*Carya illinoensis*/*Ilex decidua* and *Ulmus rubra*-*Celtis laevigata*-*Fraxinus pennsylvanica* bottomlands forests. Many hectares in the area are still used for pasturage, much of which was converted from native grasses to

Schedonorus arundinaceus (Sparwasser et al. 1968).

METHODS Vouchers of vascular plants were made throughout the growing season (March to October) of 2014. Vouchers for introduced taxa were made from naturalized populations only, thus excluding cultivated and ornamental plants. Specimens were processed and deposited at the Robert Bebb Herbarium (OKL) at the University of Oklahoma following standard procedures. Manuals used for specimen identification included Yatskievych (1999, 2006) and Tyrl et al. (2010). Identifications were verified by comparison with collections from the Robert Bebb Herbarium. The PLANTS Database (USDA, NRSC 2016) and Taylor and Taylor (1991) were consulted to determine whether species were native or introduced to North America. Nomenclature and classification follow the Integrated Taxonomic Information System (ITIS 2016) and Angiosperm Phylogeny Group III (Stevens 2001 and onwards).

RESULTS AND DISCUSSION We collected 565 species and 19 infraspecific taxa in 349 genera and 106 families (Table 1, Appendix). The Poaceae (84 taxa), Asteraceae (73 taxa), and Fabaceae (45 taxa) were the largest families. There were 80 introduced taxa recorded from the DFNWR, with Poaceae (15) and the Fabaceae (12) contributing the most taxa. Perennial taxa (67%) predominated the flora, followed by annuals (30%) and biennials (3%). Thirteen taxa tracked by the Oklahoma Natural Heritage

Table 1. Summary of collections from the Deep Fork National Wildlife Refuge, Okmulgee County, Oklahoma. Format follows Palmer and Richardson (2012). Tracked taxa are rare species monitored by the Oklahoma Natural Heritage Inventory. Introduced taxa are those nonnative to North America, excluding cultivated and ornamental plants.

Classification	Number of Taxa
Families	106
Genera	349
Species	565
Infraspecific taxa	19
Tracked taxa	13
Introduced taxa	80
Perennials	391
Annuals	177
Biennials	16

Inventory (Oklahoma Natural Heritage Inventory 2016; Table 2) were encountered.

Seven vegetation types were identified at DFNWR and are described below. The vegetation associations listed follow Hoagland (2000).

Upland Forest Associations

1. *Quercus stellata*-*Q. marilandica*-*Carya texana*/*Vaccinium arboreum* forest association (QSCT). This association predominates under xeric conditions, such as ridgelines and south-facing slopes. Regionally, these forests are known as cross timbers. Common associates included *Antennaria neglecta*, *Carex albicans*, *Cercis canadensis*, *Helianthus hirsutus*, *Hypericum hypericoides*, *Lespedeza repens*, *Luzula bulbosa*, *Monarda fistulosa*,

Muhlenbergia sobolifera, *Passiflora lutea*, *Prunus mexicana*, *Schizachyrium scoparium*, *Symphotrichum patens* var. *patens*, *Tradescantia ohiensis*, and *Viburnum rufidulum*.

2. *Quercus stellata*-*Q. shumardii*-*Carya cordiformis* forest association (QSCC). This association was common on east and north aspects or low slope positions above the floodplain and terraces. Although many of the associated species are shared with the cross timber forest type, additional associates included *Clitoria mariana*, *Cornus florida*, *Danthonia spicata*, *Monarda rus-seliana*, *Muhlenbergia sobolifera*, *Myosotis macrosperma*, *Sanicula canadensis*, and *Vitis palmata*. *Hexalectris spicata*, which is tracked by the ONHI, occurred in this forest association.

Bottomland Forest Associations

3. *Quercus palustris*-*Carya illinoensis*/*Ilex decidua* forest association (QPCI). This habitat type predominated in backswamps and abandoned meander scrolls. Associated species included *Ampelopsis arborea*, *Boehmeria cylindrica*, *Carex crus-corvi*, *Forestiera acuminata*, *Crataegus viridis*, *Gleditsia triacanthos*, *Impatiens capensis*, *Morus rubra*, and *Packera glabella*.

4. *Platanus occidentalis*-*Acer negundo* forest association (POAN). This forest association was common along streambanks. Associated species included *Acer saccharinum*, *Chas-*

Table 2. Taxa tracked by the Oklahoma Natural Heritage Inventory that occur at the Deep Fork National Wildlife Refuge. Taxa are ranked according to level of imperilment at the subnational (S) and global (G) levels on a scale of 1 to 5: a 1 represents a taxon that is imperiled, and a 5 represents a taxon that is secure. ? = rank score is uncertain (Groves et al. 1995).

Taxon	Family	G Rank	S Rank
<i>Azolla filiculoides</i> Lam.	Azollaceae	5	2
<i>Carex fissa</i> Mack.	Cyperaceae	4?	3
<i>Carex typhina</i> Michx.	Cyperaceae	5	1
<i>Cornus foemina</i> Mill.	Cornaceae	5	2
<i>Cuscuta indecora</i> Choisey var. <i>attenuata</i> (Waterfall) Costea	Convolvulaceae	2	1
<i>Hexalectris spicata</i> (Walter) Barnhart	Orchidaceae	5	1
<i>Marsilea vestita</i> Hook. & Grev.	Marsilaceae	5	3
<i>Penstemon oklahomensis</i> Pennell	Plantaginaceae	3	3
<i>Physostegia intermedia</i> (Nutt.) Engelm. & A. Gray	Lamiaceae	5	1
<i>Rumex verticillatus</i> L.	Polygonaceae	5	3
<i>Thalia dealbata</i> Fraser ex Roscoe	Marantaceae	4	3
<i>Thalictrum revolutum</i> DC.	Ranunculaceae	5	2
<i>Urtica chamaedryoides</i> Pursh	Urticaceae	4/5	3

- manthium latifolium*, *Populus deltoides*, and *Zizia aurea*.
5. *Ulmus rubra-Celtis laevigata-Fraxinus pennsylvanica forest association (URFP)*. This association occurred on infrequently inundated portions of the floodplain and terraces of the Deep Fork River and on the floodplain of larger streams. It often intergraded with *Platanus occidentalis-Acer negundo* forest association. Associated species included *Arisaema dracontium*, *Bromus pubescens*, *Carex blanda*, *Carex cherokeensis*, *Cinna arundinacea*, *Cryptotaenia canadensis*, *Desmodium glutinosum*, *Elephantopus carolinianus*, *Geum canadense*, *Persicaria virginiana*, *Phryma leptostachya*, *Quercus macrocarpa*, and *Ruellia strepens*. Three tracked species occur in this association: *Cornus foemina*, *Thalictrum revolutum*, and *Urtica chamaedryoides*.
 6. *Herbaceous wetland vegetation (WETL)*. Several WETL associations were present at DFNWR. However, because they heavily intergrade, all were subsumed into one category. Examples of the *Typha latifolia* herbaceous association and the *Ludwigia peploides-Persicaria hydropiperoides* herbaceous association predominated. Common wetland taxa included *Cephalanthus occidentalis*, *Hibiscus laevis*, *Juncus effusus*, *Nelumbo lutea*, *Persicaria amphibia*, *Sagittaria graminea*, and *Salix nigra*. Tracked species occurring in herbaceous wetlands included *Azolla filiculoides*, *Carex fissa*, *Carex typhina*, *Marsilea vestita*, *Physostegia intermedia*, *Rumex verticillatus*, and *Thalia dealbata*.
 7. *Disturbed areas and old-field vegetation (DAOF)*. DAOF consisted of parking areas, mowed lawns, roadsides, and other sites exhibiting signs of physical disruption. Common plants in disturbed areas included *Ambrosia artemisiifolia*, *A. trifida*, *Andropogon virginicus*, *Conyza canadensis*, *Daucus pusillus*, *Digitaria ciliaris*, *Lespedeza cuneata*, *Melilotus officinalis*, *Mollugo verticillata*, *Rhus glabra*, *Sorghum halepense*, and *Trifolium dubium*. Tracked species occurring in this habitat included *Cuscuta indecora* var. *attenuata* and *Penstemon oklahomensis*.

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APPENDIX Annotated list of vascular plant taxa collected at the Deep Fork National Wildlife Refuge, Okmulgee County, Oklahoma. Each entry includes life history (A = annual, B = biennial, or P = perennial); growth form (F = forb, G = graminoid, S = shrub, T = tree, or V = woody vine); habitat (DAOF = disturbed area/old field, POAN = *Platanus occidentalis*-*Acer negundo* forest association, QPCI = *Quercus palustris*-*Carya illinoensis*/*Ilex decidua* forest association, QSCC = *Quercus stellata*-*Q. shumardii*-*Carya cordiformis* forest association, QSCT = *Quercus stellata*-*Q. marilandica*-*Carya texana*/*Vaccinium arboreum* forest association, URFP = *Ulmus rubra*-*Celtis laevigata*-*Fraxinus pennsylvanica* forest association, WETL = herbaceous wetland vegetation); and collection number. Introduced taxa are denoted with an asterisk (*) and taxa tracked by the Oklahoma Natural Heritage Inventory are denoted with a dagger (†).

ACANTHACEAE

- Justicia americana* (L.) Vahl.: P; F; WETL; DF-026
Ruellia humilis Nutt.: P; F; DAOF; DF-025
Ruellia strepens L.: P; F; QSCC, URFP; DF-024

ADOXACEAE

- Sambucus nigra* L.: P; S; DAOF; DF-160
Viburnum rufidulum Raf.: P; S; QSCT; DF-162

ALISMATACEAE

- Alisma subcordatum* Raf.: P; F; WETL; DF-032
Echinodorus cordifolius (L.) Griseb.: P; F; WETL; DF-033
Sagittaria brevirostra Mackenzie & Bush: P; F; WETL; DF-034
Sagittaria platyphylla (Engelm.) J.G. Sm.: P; F; WETL; DF-030

AMARANTHACEAE

- Amaranthus tuberculatus* (Moq.) Sauer: A; F; DAOF; DF-038
 **Chenopodium album* L.: A; F; DAOF; DF-229
Chenopodium pratericola Rydb.: A; F; DAOF; DF-226
Dysphania ambrosioides (L.) Mosyakin & Clemants: A; F; DAOF; DF-230
Froelichia floridana (Nutt.) Moq.: A; F; DAOF; DF-039

Iresine rhizomatosa Standl.: A; F; DAOF; DF-040

AMARYLLIDACEAE

Allium canadense L.: P; F; DAOF; DF-716

Nothoscordum bivalve (L.) Britton: P; F; DAOF; DF-335

ANACARDIACEAE

Rhus copallinum L.: P; S; DAOF; DF-044

Rhus glabra L.: P; S; DAOF; DF-042

Rhus aromatica Aiton: P; S; DAOF; DF-043

Toxicodendron pubescens P. Mill.: P; S; DAOF; DF-041

APIACEAE

Chaerophyllum procumbens (L.) Crantz: A; F; DAOF; DF-017

Chaerophyllum tainturieri Hook.: A; F; DAOF; DF-013

Cicuta maculata L.: B; F; DAOF; DF-023

**Conium maculatum* L.: B; F; DAOF, WETL; DF-020

Cryptotaenia canadensis (L.) DC.: P; F; QSCC, URFP; DF-022

**Daucus carota* L.: B; F; DAOF; DF-010

Daucus pusillus Michx.: A; F; DAOF; DF-021

Limnoscium pinnatum (DC.) Mathias & Constance: A; F; WETL; DF-009

Osmorhiza longistylis (Torr.) DC.: P; F; QSCC, URFP; DF-018

Polytaenia nuttallii DC.: P; F; DAOF; DF-014

Ptilimnium nuttallii (DC.) Britt.: A; F; DAOF; DF-008

Sanicula canadensis L.: P; F; QSCC, URFP; DF-007

Sanicula odorata (Raf.) K.M. Pryer & L.R. Phillippe: P; F; QSCC, URFP; DF-015

Spermolepis divaricata (Walt.) Raf. ex Ser.: A; F; DAOF; DF-019

Spermolepis inermis (Nutt. ex DC.) Mathias & Constance: A; F; DAOF; DF-011

**Torilis arvensis* (Huds.) Link: A; F; DAOF; DF-006

Trepocarpus aethusae Nutt. ex DC.: A; F; POAN, URFP; DF-012

Zizia aurea (L.) W.D.J. Koch: A; F; POAN, URFP; DF-016

APOCYNACEAE

Apocynum cannabinum L.: P; F; DAOF; DF-001

Asclepias verticillata L.: P; F; DAOF; DF-047

Asclepias viridis Walt.: P; F; DAOF; DF-046

Cynanchum laeve (Michx.) Pers.: P; F; DAOF; DF-048

Gonolobus suberosus (L.) R. Br. var. *suberosus*: P; F; DAOF; DF-045

AQUIFOLIACEAE

Ilex decidua Walt.: P; T; QPCI, URFP; DF-002

ARACEAE

Arisaema dracontium (L.) Schott: P; F; QSCC, URFP; DF-003

Lemna minor L.: P; F; WETL; DF-717

Spirodela polyrrhiza (L.) Schleid.: P; F; WETL; DF-718

ARISTOLOCHIACEAE

Aristolochia tomentosa Sims: P; V; DAOF; DF-004

ASPARAGACEAE

**Liriope spicata* (Thunb.) Lour.: P; F; POAN; DF-349

**Muscari botryoides* (L.) Mill.: P; F; DAOF; DF-337

ASPLENIACEAE

Asplenium platyneuron (L.) B.S.P.: P; F; QSCC, QSCT; DF-050

ASTERACEAE

Achillea millefolium L.: P; F; DAOF; DF-119

Ambrosia artemisiifolia L.: A; F; DAOF; DF-068

Ambrosia bidentata Michx.: A; F; DAOF; DF-087

Ambrosia psilostachya DC.: P; F; DAOF; DF-082

Ambrosia trifida L.: A; F; DAOF; DF-083

Amphiachyris dracunculoides (DC.) Nutt.: A; F; DAOF; DF-137

Antennaria neglecta Greene: P; F; QSCC, QSCT; DF-054

Antennaria parlinii Fern. spp. *fallax* (Greene) Bayer & Stebbins: P; F; QSCC, QSCT; DF-118

Artemisia ludoviciana Nutt.: P; F; DAOF; DF-110

Astranthium integrifolium (Michx.) Nutt.: A; F; DAOF; DF-122

Bidens bipinnata L.: A; F; URFP; DF-136

Bidens frondosa L.: A; F; WETL; DF-071

Bidens polylepis S.F. Blake: A; F; WETL; DF-114

Boltonia diffusa Elliot: P; F; WETL; DF-131

Bradburia pilosa (Nutt.) Semple: A; F; DAOF; DF-078

**Carduus nutans* L.: B; F; DAOF; DF-115

Cirsium altissimum (L.) Hill: P; F; DAOF; DF-080

**Cirsium vulgare* (Savi) Ten.: B; F; DAOF; DF-143

Conoclinium coelestinum (L.) DC.: P; F; WETL; DF-081

Conyza canadensis (L.) Cronquist: A; F; DAOF; DF-089

Coreopsis grandiflora Hogg ex Sweet: P; F; DAOF; DF-125

Coreopsis tinctoria Nutt.: B; F; DAOF, WETL; DF-077

Echinacea angustifolia DC.: P; F; DAOF; DF-120

Eclipta prostrata (L.) L.: P; F; WETL; DF-061

Elephantopus carolinianus Raesch.: P; F; QSCC, URFP; DF-055

Erechtites hieraciiifolius (L.) Raf. ex DC.: A; F; DAOF, QSCC; DF-135

Erigeron strigosus Muhl. ex Willd.: P; F; DAOF; DF-097

Eupatorium perfoliatum L.: P; F; WETL; DF-065

Eupatorium serotinum Michx.: P; F; DAOF; DF-094

Euthamia gymnospermoides Greene: P; F; DAOF; DF-073

Gamochaeta purpurea (L.) Cabrera: A; F; DAOF; DF-128

Grindelia ciliata (Nutt.) Spreng.: A; F; DAOF; DF-102

Helenium amarum (Raf.) H. Rock: A; F; DAOF; DF-074

Helianthus hirsutus Raf.: P; F; QSCC, QSCT; DF-057

Helianthus mollis Lam.: P; F; DAOF; DF-058

Heterotheca subaxillaris (Lam.) Britton & Rusby: A; F; DAOF; DF-113

Hieracium longipilum Torr.: P; F; DAOF; DF-101

- Iva angustifolia* Nutt. ex DC.: A; F; DAOF; DF-141
Iva annua L.: A; F; DAOF; DF-090
Krigia caespitosa (Raf.) K.L. Chambers: A; F; WETL; DF-117
Krigia dandelion (L.) Nutt.: P; F; DAOF; DF-123
Krigia occidentalis Nutt.: A; F; DAOF; DF-127
Lactuca canadensis L.: A; F; DAOF; DF-111
Lactuca ludoviciana (Nutt.) Riddell: A; F; DAOF; DF-064
 **Lactuca serriola* L.: B; F; DAOF; DF-063
Liatriis aspera Michx.: P; F; DAOF; DF-059
Liatriis punctata Hook.: P; F; DAOF; DF-142
Packera glabella (Poir) C. Jeffrey: A; F; QPCI, WETL; DF-056
Packera obovata (Muhl. ex Willd.) W.A. Weber & A. Löve: P; F; DAOF; DF-052
Pluchea camphorata (L.) DC.: P; F; DAOF, WETL; DF-139
Pseudognaphalium obtusifolium (L.) Hilliard & B.L. Burt: B; F; DAOF; DF-096
Pyrrhopappus carolinianus (Walter) DC.: B; F; DAOF; DF-121
Pyrrhopappus grandiflorus (Nutt.) Nutt.: P; F; DAOF; DF-126
Rudbeckia amplexicaulis Vahl: A; F; WETL; DF-076
Rudbeckia grandiflora (D. Don) J.F. Gmel. ex DC.: P; F; DAOF; DF-112
Rudbeckia hirta L.: P; F; DAOF; DF-075
Rudbeckia triloba L.: P; F; POAN, URFP, WETL; DF-098
Silphium radula Nutt.: P; F; DAOF; DF-109
Smallanthus wedalia (L.) Mack. ex Small: P; F; QCSS; DF-070
Solidago canadensis L.: P; F; DAOF; DF-072
Solidago radula Nutt.: P; F; DAOF; DF-103
Solidago ulmifolia Muhl. ex Willd.: P; F; QSCC, QSCT; DF-107
 **Sonchus asper* (L.) Hill: A; F; DAOF; DF-124
Symphytotrichum ericoides (L.) G.L. Nesom var. *ericoides*: P; F; DAOF; DF-066
Symphytotrichum oblongifolium (Nutt.) G.L. Nesom: P; F; DAOF; DF-130
Symphytotrichum oolentangiense (Riddell) G.L. Nesom: P; F; DAOF; DF-132
Symphytotrichum patens (Aiton) G.L. Nesom var. *patens*: P; F; QSCC, QSCT; DF-084
Symphytotrichum praealtum (Poir.) G.L. Nesom: P; F; DAOF; DF-129
 **Taraxacum officinale* F.H. Wigg.: P; F; DAOF; DF-053
Verbesina alternifolia (L.) Britton ex Kearney: P; F; QSCC, QSCT; DF-140
Verbesina virginica L.: P; F; QSCC, QSCT; DF-079
Vernonia baldwinii Torr.: P; F; DAOF; DF-062
Xanthium strumarium L.: A; F; DAOF; DF-085

AZOLLACEAE

- †*Azolla filiculoides* Lam.: A; F; WETL; DF-719

BALSAMINACEAE

- Impatiens capensis* Meerb.: A; F; QPCI, WETL, URFP; DF-192

BIGNONIACEAE

- Campsis radicans* (L.) Seem. ex Bureau: P; V; DAOF; DF-190
Catalpa speciosa (Warder) Warder ex Engelm.: P; T; DAOF; DF-191

BORAGINACEAE

- **Buglossoides arvensis* (L.) I.M. Johnston: A; F; DAOF; DF-186
Lithospermum incisum Lehm.: P; F; DAOF; DF-185
Myosotis macrosperma Engelm.: A; F; QSCC; DF-187

BRASSICACEAE

- **Barbarea vulgaris* W.T. Aiton: B; F; DAOF; DF-181
Boechera canadensis (L.) Al-Shehbaz: B; F; QSCC, QSCT; DF-176
 **Capsella bursa-pastoris* (L.) Medik.: A; F; DAOF; DF-721
 **Cardamine hirsuta* L.: A; F; DAOF; DF-182
Cardamine parviflora L.: A; F; DAOF; DF-183
Cardamine pensylvanica Muhl. ex Willd.: A; F; DAOF; DF-180
Draba brachycarpa Nutt. ex Torr. & A. Gray: A; F; DAOF; DF-173
Lepidium densiflorum Schrad.: B; F; DAOF; DF-178
Lepidium virginicum L.: A; F; DAOF; DF-184
Rorippa sessiliflora (Nutt.) Hitchc.: A; F; WETL; DF-179

CACTACEAE

- Opuntia macrorhiza* Engelm.: P; F; DAOF, QSCT; DF-170

CAMPANULACEAE

- Lobelia cardinalis* L.: P; F; WETL; DF-165
Lobelia spicata Lam.: P; F; DAOF; DF-169
Triodanis perfoliata (L.) Nieuwl. ssp. *biflora* (Ruiz & Pav.) Lammers: A; F; DAOF; DF-167
Triodanis perfoliata (L.) Nieuwl.: A; F; DAOF; DF-166

CANNABACEAE

- Celtis laevigata* Willd.: P; T; QPCI, QSCC, URFP; DF-584

CAPRIFOLIACEAE

- **Lonicera japonica* Thunb.: P; V; DAOF, QSCC, URFL; DF-161
Lonicera sempervirens L.: P; V; QSCC, QSCT; DF-163
Symphoricarpos orbiculatus Moench: P; S; DAOF; DF-164

CARYOPHYLLACEAE

- **Arenaria serpyllifolia* L.: A; F; DAOF; DF-156
 **Cerastium glomeratum* Thuill.: A; F; DAOF; DF-150
 **Cerastium pumilum* W. Curtis: A; F; DAOF; DF-151
 **Dianthus armeria* L.: A; F; DAOF; DF-157
Minuartia drummondii (Shinners) McNeill: A; F; DAOF; DF-155
Paronychia fastigiata (Raf.) Fernald: A; F; DAOF; DF-147

Sagina decumbens (Elliot) Torr. & A. Gray: A; F; DAOF; DF-149

**Saponaria officinalis* L.: P; F; DAOF; DF-148

**Scleranthus annuus* L.: A; F; DAOF; DF-152

Silene antirrhina L.: A; F; DAOF; DF-159

Silene stellata (L.) W.T. Aiton: P; F; QSCC; DF-146

**Stellaria media* (L.) Vill.: A; F; DAOF; DF-153

CELASTRACEAE

Celastrus scandens L.: P; V; DAOF; DF-144

**Euonymus bungeanus* Maxim: P; V; DAOF; DF-145

CISTACEAE

Lechea mucronata Raf.: P; F; DAOF; DF-225

Lechea tenuifolia Michx.: P; F; DAOF; DF-224

COMMELINACEAE

**Commelina communis* L.: A; F; DAOF; DF-213

Commelina virginica L.: P; F; URFP, WETL; DF-215

Tradescantia ohioensis Raf.: P; F; DAOF; DF-214

CONVOLVULACEAE

Cuscuta cuspidata Engelm.: P; F; DAOF; DF-198

†*Cuscuta indecora* Choisey var. *attenuata* (Waterfall)

Costea: P; F; DAOF; DF-201

Cuscuta gronovii Willd. ex Schult.: P; F; DAOF; DF-200

Cuscuta pentagona Engelm.: P; F; DAOF; DF-196

**Ipomoea hederacea* Jacq.: A; F; DAOF; DF-212

Ipomoea lacunosa L.: A; F; DAOF; DF-209

Ipomoea pandurata (L.) G. Mey.: P; F; DAOF; DF-211

CORNACEAE

Cornus florida L.: P; S; QSCC, URFL; DF-207

†*Cornus foemina* Mill.: P; S; URFL; DF-715

CUCURBITACEAE

Melothria pendula L.: P; F; DAOF; DF-204

CUPRESSACEAE

Juniperus virginiana L.: P; T; DAOF, QSCT; DF-203

CYPERACEAE

Carex albicans Willd. ex Spreng.: P; G; QSCC, QSCT; DF-677

Carex annectens (E.P. Bicknell) E.P. Bicknell: P; G; WETL; DF-687

Carex aureolensis Steud.: P; G; WETL; DF-692

Carex austrina Mack.: P; G; WETL; DF-700

Carex blanda Dewey: P; G; QSCC, URFP; DF-689

Carex bushii Mack.: P; G; DAOF; DF-698

Carex caroliniana Schwein.: P; G; WETL; DF-690

Carex cherokeensis Schwein.: P; G; QSCC, URFP; DF-680

Carex crus-corvi Shuttlw. ex Kunze: P; G; QPCI; DF-678

†*Carex fissa* Mack.: P; G; WETL; DF-686

Carex gravida L.H. Bailey: P; G; WETL; DF-702

Carex jamesii Schwein.: P; G; URFP; DF-685

Carex leavenworthii Dewey: P; G; DAOF; DF-696

Carex lupuliformis Sartwell ex Dewey: P; G; WETL; DF-675

Carex muehlenbergii Schkuhr ex Willd.: P; G; QSCC; DF-703

Carex oxylepis Torr. & Hook.: P; G; URFP; DF-683

Carex retroflexa Muhl. ex Willd.: P; G; QSCC; DF-699

Carex tribuloides Wahlenb.: P; G; URFP; DF-695

†*Carex typhina* Michx.: P; G; WETL; DF-673

Cyperus acuminatus Torr. & Hook. ex Torr.: P; G; WETL; DF-671

Cyperus echinatus (L.) Alph. Wood: P; G; DAOF; DF-664

Cyperus erythrorhizos Muhl.: P; G; WETL; DF-670

Cyperus lupulinus (Spreng.) Marcks spp. *lupulinus*: P; G; DAOF; DF-666

Cyperus odoratus L.: P; G; WETL; DF-668

Cyperus pseudovegetus Steud.: P; G; WETL; DF-665

Cyperus strigosus L.: P; G; WETL; DF-667

Eleocharis ovata (Roth) Roemer & J.A. Schultes: P; G; WETL; DF-655

Fimbristylis puberula (Michx.) Vahl: P; G; WETL; DF-662

Fimbristylis vahlii (Lam.) Link: P; G; WETL; DF-704

Isolepis carinata Hook. & Arn. ex Torr.: P; G; DAOF; DF-659

Rhynchospora corniculata (Lam.) A. Gray: P; G; WETL; DF-663

Rhynchospora globularis (Chapman) Small: P; G; WETL; DF-661

Rhynchospora harveyi W. Boott: P; G; DAOF; DF-672

Scirpus pendulus Muhl.: P; G; WETL; DF-658

EBENACEAE

Diospyros virginiana L.: P; T; DAOF; DF-195

EQUISETACEAE

Equisetum hyemale L.: P; F; WETL; DF-194

ERICACEAE

Vaccinium arboreum Marsh: P; S; QSCT; DF-193

EUPHORBIACEAE

Acalypha gracilens A. Gray: A; F; DAOF; DF-326

Acalypha monococca (Engelm. ex A. Gray) Lill. W. Mill. & Gandhi: A; F; DAOF; DF-319

Acalypha rhomboidea Raf.: A; F; DAOF; DF-324

Acalypha virginica L.: A; F; DAOF; DF-328

Cnidoscolus texanus (Muell.-Arg.) Small: P; F; DAOF; DF-316

Croton capitatus Michx.: A; F; DAOF; DF-318

Croton glandulosus L.: A; F; DAOF; DF-313

Croton michauxii G.L. Webster var. *elliptica* (Willd.) B.W. van Ee & P.E. Berry: A; F; DAOF; DF-317

Croton monanthogynus Michx.: A; F; DAOF; DF-312

Euphorbia cyathophora Murray: A; F; DAOF; DF-314

Euphorbia dentata Michx.: A; F; DAOF; DF-315

Euphorbia maculata L.: A; F; DAOF; DF-323

Euphorbia nutans Lag.: A; F; DAOF; DF-322

Euphorbia spathulata Lam.: A; F; DAOF; DF-327

FABACEAE

- **Albizia julibrissin* Durazz.: P; T; DAOF; DF-251
Amorpha fruticosa L.: P; T; WETL; DF-249
Amphicarpaea bracteata (L.) Fernald: P; F; QSCC, URFP; DF-263
Apios americana Medik.: P; F; POAN, URFL; DF-275
Baptisia leucophaea Nutt.: P; F; DAOF; DF-271
Cercis canadensis L.: P; T; QSCC, QSCT; DF-233
Chamaecrista fasciculata (Michx.) Greene: A; F; DAOF; DF-244
Chamaecrista nictitans (L.) Moench: A; F; DAOF; DF-261
Clitoria mariana L.: P; F; QSCC, QSCT; DAOF; DF-239
Dalea purpurea Vent.: P; F; DAOF; DF-247
Desmanthus illinoensis (Michx.) MacM. ex B.L. Rob. & Fernald: P; F; WETL; DF-240
Desmodium ciliare (Muhl. ex Willd.) DC.: P; F; QSCC; DF-257
Desmodium glabellum (Michx.) DC.: P; F; QSCC; DF-253
Desmodium glutinosum (Muhl. ex Willd.) Alph. Wood: P; F; URFP; DF-245
Desmodium laevigatum (Nutt.) DC.: P; F; QSCT; DF-254
Desmodium pauciflorum (Nutt.) DC.: P; F; QSCC; DF-276
Desmodium perplexum B.G. Schub.: P; F; URFP; DF-277
Desmodium sessilifolium (Torr.) Torr. & A. Gray: P; F; DAOF; DF-242
Galactia regularis (L.) Britton, Sterns & Poggenb.: P; F; QSCC; DF-262
Gleditsia triacanthos L.: P; T; QPCI; DF-243
Gymnocladus dioica (L.) K. Koch: P; T; URFP; DF-266
 **Kummerowia striata* (Thunb.) Schindl.: A; F; DAOF; DF-256
 **Lathyrus hirsutus* L.: A; F; DAOF; DF-246
Lespedeza capitata Michx.: P; F; DAOF; DF-274
 **Lespedeza cuneata* (Dum. Cours.) G. Don: P; F; DAOF; DF-238
Lespedeza repens (L.) W.P.C. Barton: P; F; QSCT; DF-258
Lespedeza virginica (L.) Britton: P; F; DAOF; DF-234
 **Medicago lupulina* L.: P; F; DAOF; DF-259
 **Melilotus officinalis* (L.) Lam.: A; F; DAOF; DF-269
Mimosa nuttallii (DC. ex Britton & Rose) B.L. Turner: P; F; DAOF; DF-273
Neptunia lutea (Leavenw.) Benth.: P; F; DAOF; DF-241
Psoralidium tenuiflorum (Pursh) Rydb.: P; F; DAOF; DF-265
Robinia hispida L.: P; T; DAOF; DF-268
Robinia pseudoacacia L.: P; T; DAOF; DF-270
Senna marilandica (L.) Link: P; F; DAOF; DF-231
Sesbania herbacea (Mill.) McVaugh: A; F; WETL; DF-255
Strophostyles helvola (L.) Elliott: A; F; DAOF; DF-236
Strophostyles leioperma (Torr. & A. Gray) Piper: A; F; DAOF; DF-260

- Stylosanthes biflora* (L.) Britton, Sterns & Poggenb.: P; F; DAOF; DF-248
 **Trifolium arvense* L.: A; F; DAOF; DF-267
 **Trifolium campestre* Schreb.: A; F; DAOF; DF-264
 **Trifolium pratense* L.: P; F; DAOF; DF-237
 **Trifolium repens* L.: P; F; DAOF; DF-252
 **Vicia sativa* L.: A; F; DAOF; DF-232
 **Vicia villosa* Roth: A; F; DAOF; DF-272

FAGACEAE

- Quercus falcata* Michx.: P; T; QSCT; DF-307
Quercus macrocarpa Michx.: P; T; QSCC, URFP; DF-302
Quercus marilandica Münchh.: P; T; QSCT; DF-306
Quercus muehlenbergii Engelm.: P; T; QSCC; DF-301
Quercus palustris Münchh.: P; T; QPCI; DF-303
Quercus shumardii Buckley: P; T; QSCC; DF-309
Quercus stellata Wangenh.: P; T; QSCT; DF-300
Quercus velutina Lam.: P; T; QSCT; DF-308

GENTIANACEAE

- Sabatia angularis* (L.) Pursh: A; F; WETL; DF-293
Sabatia campestris Nutt.: A; F; DAOF; DF-294

GERANIACEAE

- Geranium carolinianum* L.: A; F; DAOF; DF-290
 **Geranium dissectum* L.: A; F; DAOF; DF-292

HELIOTROPIACEAE

- **Heliotropium indicum* L.: A; F; WETL; DF-189

HALORAGACEAE

- Proserpinaca palustris* L.: P; F; WETL; DF-329

HYDROLEACEAE

- Hydrolea ovata* Nutt. ex Choisy: P; F; WETL; DF-287

HYDROPHYLLACEAE

- Phacelia hirsuta* Nutt.: A; F; URFP; DF-288

HYPERICACEAE

- Hypericum drummondii* (Grev. & Hook.) Torr. & A. Gray: A; F; DAOF; DF-223
Hypericum hypericoides (L.) Crantz: P; S; QSCC, QSCT; DF-221
Hypericum mutilum L.: P; F; WETL; DF-216
 **Hypericum perforatum* L.: P; F; DAOF; DF-219
Hypericum punctatum Lam.: P; F; DAOF; DF-217

HYPOXIDACEAE

- Hypoxis hirsuta* (L.) Coville: P; F; QSCT; DF-339

IRIDACEAE

- Sisyrinchium angustifolium* Mill.: P; F; DAOF; DF-286
Sisyrinchium campestre E.P. Bicknell: P; F; DAOF; DF-285

JUGLANDACEAE

- Carya cordiformis* (Wangenh.) K. Koch: P; T; QSCC, URFP; DF-282

Carya illinoensis (Wangenh.) K. Koch: P; T; QPCI;
DF-278

Carya texana Buckley: P; T; QSCT; DF-279

Juglans nigra L.: P; T; URFP; DF-283

JUNCACEAE

Juncus brachycarpus Engelm.: P; G; WETL; DF-374

Juncus diffusissimus Buckley: P; G; WETL; DF-369

Juncus effusus L.: P; G; WETL; DF-367

Juncus interior Wiegand: P; G; DAOF; DF-378

Juncus marginatus Rostk.: P; G; WETL; DF-376

Juncus tenuis Willd.: P; G; DAOF; DF-368

Juncus torreyi Coville: P; G; WETL; DF-371

Juncus validus Coville: P; G; WETL; DF-372

Luzula bulbosa (Alph. Wood) Smyth & L.C.R. Smyth:
P; G; QSCC; DF-370

LAMIACEAE

Hedeoma hispida Pursh: A; F; DAOF; DF-362

**Lamium amplexicaule* L.: A; F; DAOF; DF-352

**Lamium purpureum* L.: A; F; DAOF; DF-351

Lycopus americanus Muhl. ex W.P.C. Bartram: P; F;
WETL; DF-353

Monarda fistulosa L.: P; F; DAOF; DF-358

Monarda punctata L.: P; F; DAOF; DF-354

Monarda russeliana Nutt. ex Sims: P; F; QSCC; DF-360

**Perilla frutescens* (L.) Britton: A; F; DAOF; DF-366

†*Physostegia intermedia* (Nutt.) Engelm. & A. Gray: P;
F; DAOF; DF-363

Prunella vulgaris L.: P; F; DAOF, URFP; DF-365

Pycnanthemum tenuifolium Schrad.: P; F; DAOF; DF-
359

Scutellaria lateriflora L.: P; F; WETL; DF-357

Scutellaria ovata Hill: P; F; QSCC; DF-36

Stachys tenuifolia Willd.: P; F; WETL; DF-356

Teucrium canadense L.: P; F; POAN, URFP; DF-355

LENTIBULARIACEAE

Utricularia gibba L.: P; F; WETL; DF-350

LILIACEAE

Erythronium mesochoreum Kner: P; F; QSCT, URFP;
DF-334

LINACEAE

Linum sulcatum Riddell: A; F; DAOF; DF-333

LINDERNIACEAE

Lindernia dubia (L.) Pennell: A; F; WETL; DF-524

LYTHRACEAE

Ammannia coccinea Rottb.: A; F; WETL; DF-331

Lythrum alatum Pursh: P; F; WETL; DF-332

Rotala ramosior (L.) Koehne: A; F; WETL; DF-330

MALVACEAE

Callirhoe alcaeoides (Michx.) A. Gray: P; F; DAOF; DF-
391

Hibiscus laevis All.: P; F; WETL; DF-390

Hibiscus moscheutos L. ssp. *lasiocarpos* (Cav.) O.J.
Blanch.: P; F; WETL; DF-387

**Hibiscus syriacus* L.: P; S; DAOF; DF-389

Sida spinosa L.: A; F; DAOF; DF-388

MARANTACEAE

†*Thalia dealbata* Fraser ex Roscoe: P; F; WETL; DF-
385

MARSILEACEAE

†*Marsilea vestita* Hook. & Grev.: P; F; WETL; DF-386

MENISPERMACEAE

Cocculus carolinus (L.) DC.: P; V; DAOF; DF-384

MOLLUGINACEAE

**Glinus lotoides* L.: A; F; WETL; DF-383

Mollugo verticillata L.: A; F; DAOF; DF-382

MONTIACEAE

Claytonia virginica L.: P; F; DAOF; DF-484

MORACEAE

Maclura pomifera (Raf.) C.K. Schneid.: P; T; DAOF;
DF-348

**Morus alba* L.: P; T; DAOF; DF-381

Morus rubra L.: P; T; POAN, URFP; DF-379

NELUMBONACEAE

Nelumbo lutea Willd.: P; F; WETL; DF-347

OLEACEAE

Forestiera acuminata (Michx.) Poir.: P; S; QPCI; DF-
343

Fraxinus americana L.: P; T; QSCC; DF-346

Fraxinus pennsylvanica Marsh.: P; T; POAN, URFP;
DF-340

**Ligustrum sinense* Lour.: P; S; DAOF; DF-341

ONAGRACEAE

Ludwigia alternifolia L.: P; F; WETL; DF-420

Ludwigia decurrens (DC.) Walter: P; F; WETL; DF-419

Ludwigia palustris (L.) Elliot: P; F; WETL; DF-417

Ludwigia peploides (Kunth) P.H. Raven: P; F; WETL;
DF-415

Ludwigia repens J.R. Forst.: P; F; WETL; DF-416

Oenothera filiformis (Small) W.L. Wagner & Hoch: B;
F; DAOF; DF 412

Oenothera laciniata Hill: A; F; DAOF; DF-413

Oenothera linifolia Nutt.: A; F; DAOF; DF-414

Oenothera villosa Thunb.: B; V; DAOF; DF-421

OPHIOGLOSSACEAE

Botrychium dissectum Spreng.: P; F; QSCC; DF-411

ORCHIDACEAE

†*Hexalectris spicata* (Walter) Barnhart: P; F; QSCT;
DF-410

Spiranthes cernua (L.) Rich.: P; F; WETL; DF-409

Spiranthes lacera (Raf.) Raf. var. *gracilis* (Bigelow) Luer: P; F; DAOF; DF-406
Spiranthes magnicamporum Sheviak: P; F; DAOF; DF-407

OSMUNDACEAE

Osmundastrum cinnamomea (L.) C. Presl: P; F; DAOF; DF-405

OROBANCHACEAE

Agalinis fasciculata (Elliot.) Raf.: A; F; DAOF; DF-529
Agalinis gattingeri (Small) Small: A; F; DAOF; DF-528
Agalinis heterophylla (Nutt.) Small: A; F; DAOF; DF-521
Castilleja indivisa Engelm.: A; F; DAOF; DF-526

OXALIDACEAE

Oxalis corniculata L.: A; F; DAOF; DF-403
Oxalis violacea L.: P; F; QSCC; DF-404

PAPAVERACEAE

Corydalis micrantha (Engelm. ex A. Gray) A. Gray: A; F; QSCC; DF-295

PASSIFLORACEAE

Passiflora incarnata L.: P; F; DAOF; DF-401
Passiflora lutea L.: P; F; QSCT; DF-400

PENTHORACEAE

Penthorum sedoides L.: P; F; WETL; DF-205

PHYLLANTHACEAE

Phyllanthus carolinienensis Walter: A; F; DAOF; DF-321

PHYTOLACCACEAE

Phytolacca americana L.: P; F; DAOF; DF-399

PHYRAMACEAE

**Mazus pumilus* (Burm. f.) Steenis: A; F; DAOF; DF-516
Mimulus alatus Aiton: P; F; WETL; DF-527
Phryma leptostachya L.: P; F; URFP; DF-570

PLANTAGINACEAE

Bacopa rotundifolia (Michx.) Wettst.: P; F; WETL; DF-522
Collinsia violacea Nutt.: A; F; QSCC; DF-513
Leucospora multifida (Michx.) Nutt.: A; F; WETL; DF-523
Nuttallanthus texanus (Scheele) D.A. Sutton: B; F; DAOF; DF-511
Penstemon laxiflorus Pennell: P; F; DAOF; DF-515
†*Penstemon oklahomensis* Pennell: P; F; DAOF; DF-512
Plantago aristata Michx.: A; F; DAOF; DF-392
Plantago patagonica Jacq.: A; F; DAOF; DF-394
Plantago pusilla Nutt.: A; F; DAOF; DF-395
Plantago rugelii Decne.: P; F; URCL; DF-397
Plantago virginica L.: A; F; DAOF; DF-396
**Veronica arvensis* L.: A; F; DAOF; DF-510

Veronica peregrina L.: A; F; DAOF; DF-517

PLATANACEAE

Platanus occidentalis L.: P; T; POAN; DF-398

POACEAE

Agrostis hyemalis (Walt.) Britton, Sterns & Poggenb.: P; G; DAOF; DF-632
**Aira elegantissima* Schur: A; G; DAOF; DF-629
Alopecurus carolinianus Walter: A; G; WETL; DF-451
Andropogon gerardii Vitman: P; G; DAOF; DF-464
Andropogon ternarius Michx.: P; G; DAOF; DF-459
Andropogon virginicus L.: P; G; DAOF; DF-460
Aristida longespica Poir.: A; G; DAOF; DF-623
Aristida oligantha Michx.: A; G; DAOF; DF-622
Aristida purpurascens Poir.: P; G; DAOF; DF-604
**Bothriochloa ischaemum* (L.) Keng: P; G; DAOF; DF-433
Bothriochloa laguroides (DC.) Herter: P; G; DAOF; DF-438
Bouteloua dactyloides (Nutt.) Columbus: P; G; DAOF; DF-466
**Bromus catharticus* Vahl: A; G; DAOF; DF-457
**Bromus commutatus* Schrad.: A; G; DAOF; DF-712
Bromus pubescens Muhl. ex Willd.: P; G; URFP; DF-634
**Bromus sterilis* L.: A; G; DAOF; DF-628
Cenchrus spinifex Cav.: P; G; DAOF; DF-439
Chasmanthium latifolium (Michx.) H.O. Yates: P; G; POAN, URFP; DF-429
Cinna arundinacea L.: P; G; QSCC, URFP; DF-431
Coleataenia anceps (Michx.) Soreng: P; G; POAN, URFP; DF-435
Coleataenia longifolia (Torr.) Soreng ssp. *rigidula* (Bosc ex Nees) Soreng: P; G; DAOF; DF-432
**Cynodon dactylon* (L.) Pers.: P; G; DAOF; DF-471
Danthonia spicata (L.) P. Beauv. ex Roem. & Schult.: P; G; QSCT; DF-453
Dichantherium aciculare (Desv. ex Poir.) Gould & C.A. Clark: P; G; QSCC; DF-713
Dichantherium acuminatum (Sw.) Gould & C.A. Clark var. *acuminatum*: P; G; DAOF; DF-442
Dichantherium acuminatum (Sw.) Gould & C.A. Clark var. *lindheimeri* (Nash) Gould & C.A. Clark: P; G; DAOF; DF-617
Dichantherium clandestinum (L.) Gould: P; G; DAOF; DF-601
Dichantherium commutatum (Schult.) Gould: P; G; QCSS; DF-620
Dichantherium linearifolium (Scribn.) Gould: P; G; QSCT; DF-452
Dichantherium malacophyllum (Nash) Gould: P; G; QCSS, URFP; DF-711
Dichantherium polyanthes (J.A. Schult.) Mohlenbr.: P; G; QSCC; DF-714
Dichantherium scoparium (Lam.) Gould: P; G; WETL; DF-441
Digitaria ciliaris (Retz.) Koeler: A; G; DAOF; DF-710

- Echinochloa muricata* (P. Beauv.) Fern.: A; G; WETL; DF-443
 **Eleusine indica* (L.) Gaertn.: A; G; DAOF; DF-465
Elymus virginicus L.: P; G; QCSS; DF-624
Eragrostis curtipepicellata Buckley: P; G; DAOF; DF-444
Eragrostis frankii C.A. Mey. ex Steud.: A; G; DAOF; DF-621
Eragrostis hirsuta (Michx.) Nees: P; G; DAOF, QSCT; DF-606
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.: A; G; WETL; DF-638
 **Eragrostis japonica* (Thunb.) Trin.: A; G; WETL; DF-607
 **Eragrostis pilosa* (L.) P. Beauv.: A; G; DAOF; DF-709
Eragrostis secundiflora J. Presl ssp. *oxylepis* (Torr.) S.D. Koch: P; G; DAOF; DF-470
Eriochloa contracta Hitchc.: A; G; DAOF; DF-626
Festuca subverticillata (Pers.) E.B. Alexeev: P; G; QSCC, URFP; DF-650
Glyceria striata (Lam.) Hitchc.: P; G; WETL; DF-456
Hordeum pusillum Nutt.: A; G; DAOF; DF-454
Leersia lenticularis Michx.: P; G; WETL; DF-608
Leersia oryzoides (L.) Sw.: P; G; WETL; DF-705
Leersia virginica Willd.: P; G; URFP; DF-437
Leptochloa panicea (Retz.) Ohwi: A; G; WETL; DF-445
 **Lolium perenne* L.: A; G; DAOF; DF-631
Mnesithea cylindrica (Michx.) de Koning & Sosef: P; G; DAOF; DF-436
Muhlenbergia capillaris (Lam.) Trin.: P; G; QSCC; DF-706
Muhlenbergia paniculata (Nutt.) Columbus: P; G; DAOF; DF-450
Muhlenbergia sobolifera (Muhl. ex Willd.) Trin.: P; G; QSCT; DF-615
Panicum capillare L.: P; G; DAOF; DF-619
Panicum dichotomiflorum Michx.: A; G; DAOF; DF-707
Panicum flexile (Gatt.) Scribn.: A; G; DAOF; DF-616
Panicum virgatum L.: P; G; DAOF, WETL; DF-462
 **Paspalum dilatatum* Poir.: P; G; DAOF; DF-609
Paspalum floridanum Michx.: P; G; DAOF, WETL; DF-597
Paspalum repens P.J. Bergius: A; G; WETL; DF-461
Paspalum setaceum Michx.: P; G; DAOF; DF-446
 **Poa annua* L.: A; G; DAOF; DF-458
 **Poa pratensis* L.: P; G; DAOF; DF-386
 **Schedonorus arundinaceus* (Schreb.) Dumort.: P; G; DAOF; DF-639
Schizachyrium scoparium (Michx.) Nash: P; G; DAOF; DF-467
Setaria parviflora (Poir.) Kerguelen: A; G; DAOF; DF-447
Sorghastrum nutans (L.) Nash: P; G; DAOF; DF-468
 **Sorghum halepense* (L.) Pers.: P; G; DAOF; DF-428
Spartina pectinata Link: P; G; WETL; DF-430
Sphenopholis intermedia (Rydb.) Rydb.: P; G; WETL; DF-635
Sphenopholis obtusata (Michx.) Scribn.: P; G; WETL; DF-625
Sporobolus compositus (Poir.) Merr.: P; G; DAOF; DF-423
Sporobolus pyramidatus (Lam.) Hitchc.: P; G; DAOF; DF-614
Sporobolus vaginiflorus (Torr. ex A. Gray) Alph. Wood: A; G; DAOF; DF-708
Steinchisma hians (Elliot) Nash: P; G; WETL; DF-424
Tridens flavus (L.) Hitchc.: P; G; DAOF; DF-434
Tridens strictus (Nutt.) Nash: P; G; DAOF; DF-610
Tripsacum dactyloides (L.) L.: P; G; DAOF; DF-426
Triticum aestivum L.: A; G; DAOF; DF-630
Vulpia octoflora (Walter) Rydb.: A; G; DAOF; DF-633
Zizaniopsis miliacea (Michx.) Döll & Asch: P; G; WETL; DF-425
- POLEMONIACEAE
- Phlox pilosa* L.: P; F; QSCC; DF-422
- POLYGALACEAE
- Polygala incarnata* L.: A; F; DAOF; DF-504
- POLYGONACEAE
- Fallopia scandens* (L.) Holub: P; F; WETL; DF-493
Persicaria amphibia (L.) Delarb.: P; F; WETL; DF-491
Persicaria hydropiperoides (Michx.) Small: P; F; WETL; DF-500
Persicaria lapathifolia (L.) Gray: A; F; WETL; DF-494
Persicaria pensylvanica (L.) M. Gómez: A; F; WETL; DF-495
 **Persicaria posumbu* (Buch.-Ham. ex D. Don) H. Gross: A; F; WETL; DF-496
Persicaria virginiana (L.) Gaertn.: P; F; URFP; DF-492
 **Polygonum aviculare* L. ssp. *buxiforme* (Small) Costea & Tardif: A; F; DAOF; DF-501
Polygonum tenue Michx.: A; F; DAOF; DF-502
 **Rumex crispus* L.: P; F; DAOF; DF-489
Rumex hastatulus Baldwin: P; F; DAOF; DF-487
 †*Rumex verticillatus* L.: P; F; WETL; DF-490
- PORTULACACEAE
- Portulaca oleracea* L.: A; F; DAOF; DF-486
- POTAMOGETONACEAE
- Potamogeton nodosus* Poir.: P; F; WETL; DF-483
Stuckenia pectinata (L.) Börner: P; F; WETL; DF-482
- RANUNCULACEAE
- Clematis pitcheri* Torr. & A. Gray: P; F; DAOF; DF-474
Delphinium carolinianum Walter ssp. *virescens* (Nutt.) R.E. Brooks: P; F; DAOF; DF-472
Ranunculus abortivus L.: P; F; WETL; DF-480
Ranunculus laxicaulis (Torr. & A. Gray) Darby: P; F; WETL; DF-476
 **Ranunculus sardous* Crantz: P; F; DAOF; DF-481
Ranunculus sceleratus L.: P; F; WETL; DF-477

†*Thalictrum revolutum* DC.: P, F; URFP; DF-473

ROSACEAE

- Agrimonia rostellata* Wallr.: P, F; QSCC; DF-560
Amelanchier arborea (F. Michx.) Fern.: P, T; QSCT; DF-551
Crataegus crus-galli L.: P, T; QSCT; DF-557
Crataegus spathulata Michx.: P, T; QSCT; DF-562
Crataegus viridis L.: P, T; QPCI; DF-558
 **Duchesnea indica* (Andrews) Focke: P, F; DAOF; DF-552
Geum canadense Jacq.: P, F; URFP; DF-561
Prunus angustifolia Marshall: P, T; DAOF; DF-547
Prunus mexicana S. Watson: P, T; QSCT; DF-559
Prunus serotina Ehrh.: P, T; QSCC; DF-549
 **Pyrus calleryana* Decne.: P, T; DAOF; DF-550
 **Rosa multiflora* Thunb.: P, V; DAOF; DF-548
Rosa setigera Michx.: P, V; DAOF; DF-546
Rubus argutus Link: P, V; DAOF; DF-556
 **Rubus bifrons* Vest: P, V; QSCC; DF-554
Rubus flagellaris Willd.: P, V; URFP; DF-555

RUBIACEAE

- Cephalanthus occidentalis* L.: P, S; WETL; DF-535
 **Cruciata pedemontana* (Bellardi) Ehrend.: A, F; DAOF; DF-541
Diodelia teres (Walter) Small: A, F; WETL; DF-544
Diodia virginiana L.: P, F; WETL; DF-542
Galium aparine L.: A, F; DAOF; DF-537
Galium circaezans Michx.: P, F; URFP; DF-545
Galium obtusum Bigelow: P, F; DAOF; DF-539
Houstonia pusilla Schoepf: A, F; DAOF; DF-540
 **Sherardia arvensis* L.: A, F; DAOF; DF-338
Spermacoce glabra Michx.: P, F; DAOF; DF-543

RUTACEAE

Zanthoxylum americanum Mill.: P, T; QSCC; DF-534

SALICACEAE

- Populus deltoides* W. Bartr. ex Marshall: P, T; POAN; DF-533
Salix nigra Marshall: P, T; WETL; DF-532

SANTALACEAE

Phoradendron serotinum (Raf.) M.C. Johnst. ssp. *serotinum*: P, F; QSCC; DF-567

SAPINDACEAE

- Acer negundo* L.: P, T; POAN, QPCI, URFP; DF-028
Acer saccharinum L.: P, T; POAN, QPCI, URFP; DF-027
Sapindus saponaria L. var. *drummondii* (Hook. & Arn.) L.D. Benson: P, T; DAOF; DF-531

SAPOTACEAE

Sideroxylon lanuginosum Michx.: P, T; QSCT; DF-530

SCROPHULARIACEAE

- Scrophularia marilandica* L.: P, F; QSCC; DF-519
 **Verbascum thapsus* L.: B, F; DAOF; DF-525

SIMAROUBACEAE

**Ailanthus altissima* (Mill.) Swingle: P, T; DAOF; DF-509

SMILACACEAE

- Smilax bona-nox* L.: P, V; DAOF, QSCC; DF-508
Smilax tamnoides L.: P, V; QSCC, QSCT; DF-507

SOLANACEAE

- Physalis angulata* L.: A, F; DAOF; DF-592
Physalis heterophylla Nees: P, F; DAOF; DF-594
Physalis longifolia Nutt.: P, F; DAOF, QSCC; DF-593
Physalis pubescens L.: A, F; DAOF; DF-591
Solanum carolinense L.: P, F; DAOF; DF-596
Solanum elaeagnifolium Cav.: P, F; DAOF; DF-598
Solanum rostratum Dunal: A, F; DAOF; DF-600
Solanum ptychanthum Dunal: A, F; DAOF; DF-595

TETRACHONDROCEAE

Polypremum procumbens L.: A, F; DAOF; DF-17

TYPHACEAE

Typha latifolia L.: P, F; WETL; DF-583

ULMACEAE

- Ulmus alata* Michx.: P, T; QSCT; DF-586
Ulmus americana L.: P, T; URFP; DF-588
 **Ulmus pumila* L.: P, T; DAOF; DF-589
Ulmus rubra Muhl.: P, T; URFP; DF-585

URTICACEAE

- Boehmeria cylindrica* (L.) Sw.: P, F; QPCI; DF-579
Pilea pumila (L.) A. Gray: A, F; URFP; DF-578
 †*Urtica chamaedryoides* Pursh: A, F; URFP; DF-580
 **Urtica urens* L.: A, F; URFP; DF-582

VALERIANACEAE

Valerianella radiata (L.) Dufur: A, F; DAOF; DF-577

VERBENACEAE

- Glandularia canadensis* (L.) Nutt.: P, F; DAOF; DF-569
Phyla lanceolata (Michx.) Greene: P, F; WETL; DF-572
Phyla nodiflora (L.) Greene: P, F; WETL; DF-573
Verbena bracteata Cav. ex Lag. & Rodr.: P, F; DAOF; DF-568
Verbena hastata L.: P, F; WETL; DF-576
Verbena simplex Lehm.: P, F; DAOF; DF-575
Verbena stricta Vent.: P, F; URFP; DF-574
Verbena urticifolia L.: P, F; WETL; DF-571

VIOLACEAE

- Viola bicolor* Pursh: A, F; DAOF; DF-564
Viola pubescens Aiton: P, F; URFP; DF-563
Viola sororia Willd.: P, F; URFP; DF-565
Viola sororia Willd. var. *missouriensis* (Greene) L.E. McKinney: P, F; URFP; DF-566

VITACEAE

Ampelopsis arborea (L.) Koehne: P; V; QCPI, URFP;
DF-643

Ampelopsis cordata Michx.: P; V; URFP; DF-642

Parthenocissus quinquefolia (L.) Planch.: P; V; DAOF;
DF-641

Vitis aestivalis Michx.: P; V; QSCT; DF-644

Vitis palmata Vahl: P; V; QSCC; DF-645

WOODSIACEAE

Woodsia obtusa (Spreng.) Torr.: P; F; QSCC; DF-647

ZYGOPHYLLACEAE

**Tribulus terrestris* L.: A; F; DAOF; DF-640