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VASCULAR FLORA OF THE DEEP FORK RIVER IN OKMULGEE, CREEK AND OKFUSKEE COUNTIES, OKLAHOMA

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ABSTRACT.—This paper reports the results of an inventory of the vascular plants on the Deep Fork River in Creek, Okfuskee, and Okmulgee counties. A total of 500 taxa of vascular plant species in 293 genera and 99 families was collected. The largest families were the Poaceae (77 species), Asteraceae (58), Cyperaceae (46) and Fabaceae (36). One hundred and thirty-five species were annuals, 11 biennials, and 354 perennials. Seventy-four woody plant species were collected. Thirty-eight exotic species (7.6% of the total flora) were collected. No federally listed threatened or endangered species were found, but eight species tracked by the Oklahoma Natural Heritage Inventory were present.

INTRODUCTION

The primary objective of this study was to provide a comprehensive floristic inventory for resource managers at the Deep Fork Wildlife Management Area (DFWMA) and Eufaula Wildlife Management Area, Deep Fork Unit (EWMA). Such inventories aid managers in locating populations of sensitive species and documenting the occurrence of exotic and nuisance species (Barkley 2000). Ignorance of the presence of exotic species can be detrimental to sensitive species and/or exert adverse economic impacts (Ertter 2000).

This study is also a contribution toward a comprehensive inventory of the flora of the Deep Fork River, which is considered to be a significant conservation area because of extensive wetland habitats associated the river (Brabander et al. 1985). A review of records in the Oklahoma Vascular Plants Database (OVPD) indicates that floristic inventory efforts along the Deep Fork have been sporadic. The earliest botanical collections date from 2 May 1927 when M. Fielder collected *Chaerophyllum procumbens* and *Erigeron vernus* along the Deep Fork in Oklahoma County (Hoagland et al. 2005). The first specimens (*Astranthium integrifolium, Juncus effusus, Lepidium virginicum, Nuttallanthus texanus, Plantago virginica, Poa arachnifera,* and *Rumex hastatulus*) from the Deep Fork River in Okfuskee County were collected on 20 May 1972. In Okmulgee County, the first collections were made on 5 April 1956 by H. C. Pitchford who collected *Forestiera acuminata*.

STUDY AREA

The DFWMA encompasses over 4,816 hectares in Creek and Okfuskee counties (96.3692° W to 96.6013° W and 35.7119° N to 35.6257° N; Figure 1). The EWMA is located in Okmulgee County (35.4745° N - 35.4679° N and 95.8789° W - 95.8898° W) and encompasses 2,000 ha. Both sites are managed by the Oklahoma Department of Wildlife Conservation. The study sites are located within the Subtropical Humid (Cf) climate zone (Trewartha 1968). Summers are warm (mean July temperature = 28.3° C) and humid, and winters are relatively short and mild (mean January temperature = 39.5° C). Mean annual precipitation is 105.9 cm, with periodic severe droughts (Oklahoma Climatological Survey 2005). Physiographically, the Deep Fork River 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 and Ham 1979). The surface geology consists of Pennsylvanian sandstones and quaternary alluvium (Branson and Johnson 1979). Floodplain soils at the DFWMA are predominantly of the Roebuck series, which are poorly drained. Upland soils are members of the Stephensville series, medium depth soils over interbedded sandstone and shale and Darnell series, shallow, strongly sloping acid soils over red sandstone (Oakes et al. 1959). The predominant soil of the EWMA is the Verdigris-Lightning-Pulaski association, nearly level, deep, loamy floodplain soils (Sparwasser et al. 1968). However, these soils were altered when reaches of the Deep Fork in Lincoln County were channelized from 1912 -1923 (Harper 1938, Featherly 1940), resulting in sediment deposition exceeding 2.1 meters in some places (Featherly 1940). Potential natural vegetation in the study area includes post oak-blackjack forest, bottomland forest, and tallgrass prairie (Duck and Fletcher 1943).

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METHODS

Collection sites were established for intensive floristic sampling following review of U. S. Geological Survey 1:24,000 topographic maps and field reconnaissance. However, collecting was not restricted to these sites and previously uncollected species were gathered wherever they were encountered. The predominant vegetation association at these sites was classified according to Hoagland (2000). Inventory took place at EWMA from March to October 1996 and DFWMA from March to October 1998. Vouchers for exotic species were made from naturalized populations only, thus excluding cultivated and ornamental plants. Specimens were processed at the Robert Bebb Herbarium of the University of Oklahoma (OKL) following standard procedures. Specimens were identified using Waterfall (1973). Origin, either native or introduced, was determined using Taylor and Taylor (1991) and USDA-NRCS (2005). Nomenclature follows the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2005). Voucher specimens were deposited at OKL. Tabular summary of results follow Palmer et al. (1995).

RESULTS AND DISCUSSION

A total of 500 taxa of vascular plants in 99 families and 293 genera was collected at both the DFWMA and EWMA (Appendix 1, Table 1). Among the angiosperms, 154 were monocots and 336 were dicots. In addition, there were two equisetopyhta, seven pteridophyta, and one gymnosperm. The Poaceae (77), Asteraceae (58), Cyperaceae (46), and Fabaceae (36) had the greatest number of species. The largest genera were *Carex* (23 species), *Dichanthelium* (11), *Cyperus* (8), and *Juncus* (8). One hundred and thirty-five species were annuals, 11 biennials, and 354 perennials were present in the flora. Seventy-five species of woody plant were found, of which 39 were trees, 16 shrubs, and 20 woody vines.

At the EWMA, 162 taxa of vascular plants in 58 families and 126 genera were collected. Of the angiosperms, 45 were monocots and 115 were dicots. In addition, two pteridophytes were present. The Poaceae (25), Asteraceae (20), and Cyperaceae (11) had the greatest number of species. The largest genera were *Carex* (7 species), and *Polygonum* (4). Fifty-four species were annuals, 4 biennials, and 108 perennials were present in the flora. Seventy-four species of woody plant were found, of which 38 were trees, 16 shrubs, and 20 woody vines. Twenty-nine species of woody plant were found, of which 18 were trees, 7 shrubs, and 4 woody vines.

The flora of DFWMA was substantially larger than EWMA, most likely because of its greater size (Tables 2 and 3). At DFWMA, 434 taxa of vascular plants in 97 families and 287 genera were collected. Of the angiosperms, 124 were monocots and 300 were dicots. In addition, there were two equisetopyhta, seven pteridophyta, and one gymnosperm. The Poaceae (58), Asteraceae (54), Cyperaceae (39), and Fabaceae (32) had the greatest number of species. The largest genera were *Carex* (17 species), *Dichanthelium* (10), *Quercus* (7), and *Cyperus* (7). One hundred and eleven species were annuals, 7 biennials, and 314 perennials were present in the flora.

The total Deep Fork flora included 38 exotic species in 12 families, representing 7.6% of the flora. The greatest number of exotic species were in the Poaceae (15) and Fabaceae (10). At DFWMA, there were 28 exotic species from 12 families, representing 6% of the flora. The greatest number of exotic species were in the families Poaceae (9), Fabaceae (7), and Polygonaceae (3). At EWMA, there were 19 exotic species from 7 families, representing 11% of the flora. The greatest number of exotic species were in the families Poaceae (8), Fabaceae (4), and Polygonaceae (3). Interestingly, the greatest number of exotic species were present on the smallest of the two sites.

Based on floristic inventories from across Oklahoma, exotic species constitute 9% - 15% of the flora (Hoagland and Johnson 2001, Hoagland and Buthod 2003, Hoagland and Buthod 2004, Hoagland and Johnson 2004a, Hoagland and Johnson 2004b, Hoagland and Wallick 2003, Hoagland et al. 2004a, and Hoagland et al. 2004b). An exception comes from two sites in McCurtain County, where exotic species represented only 6.6% of flora (Hoagland and Johnson 2004c).

No federally listed threatened or endangered species were encountered. However, eight species tracked by the Oklahoma Natural Heritage Inventory (2005) were present (Table 4). Individuals of each tracked species were present at DFWMA, but only three (*Forestiera acuminata, Urtica chamaedryoides,* and *Vitis rupestris*) were located at EWMA.

Collection sites were located in seven vegetation associations. A brief description of each follows:

1. *Quercus stellata - Quercus marilandica - Carya texana* forest association

This habitat type was present at DFWMA only. Common associates included *Antennaria parlinii, Carex albicans, Cercis canadensis, Helianthus hirsutus, Hypericum hypericoides, Lespedeza procumbens,*

Luzula bulbosa, Monarda fistulosa, Muhlenbergia sobolifera, Passiflora lutea, Prunus mexicana, Schizachyrium scoparium, Symphyotrichum praealtum, Tradescantia ohiensis, Viburnum rufidulum, and *Zanthoxylum americanum.*

2. *Quercus palustris - Carya illinoinensis /Ilex decidua* forest association

This habitat type predominated at both DFWMA and EWMA. Associated species included *Ampelopsis cordata, Betula nigra, Boehmeria cylindrica, Carex frankii, Celtis laevigata, Cinna arundinacea, Crataegus viridis, Gleditsia triacanthos, Impatiens capensis, Morus rubra, Packera glabella, Platanus occidentalis,* and *Ulmus rubra. Piptochaetium avenaceum*, tracked by the ONHI, was found in this habitat type.

3. *Quercus muehlenbergii - Quercus shumardii* forest association

This habitat type was limited to mesic slopes at DFWMA. Associated species included *Carya cordiformis, C. illinoinensis, Commelina erecta, Geum canadense, Gymnocladus dioicus, Myosotis verna, Phacelia strictiflora, Prunella vulgaris, Prunus serotina,* and *Quercus macrocarpa*.

4. *Ulmus rubra - Celtis laevigata - Fraxinus pennsylvanica* forest association

This forest type was common at both DFWMA and EWMA, although its total extent was greater at DFWMA. Common associates included *Acer negundo, Ampelopsis arborea, Arisaema dracontium, Carya cordiformis, Chasmanthium latifolium, Cocculus carolinus, Elephantopus caroliniana, Elymus virginicus, Juglans nigra, Quercus shumardii, Sambucus nigra, Sapindus drummondii,* and *Thalictrum dasycarpum. Urtica chamaedryoides*, tracked by the ONHI, occurred in this habitat type at both DFWMA and EWMA.

5. *Andropogon gerardii - Schizachyrium scoparium - Sorghastrum nutans* herbaceous association

Grasslands occurred only at DFWMA. Common associated species *Amorpha canescens, Buchnera americana, Castilleja indivisa, Dichanthelium oligosanthes, Helianthus mollis, Hibiscus laevis, Panicum virgatum, Scutellaria lateriflora, Solidago missouriensis, Symphyotrichum ericoides,* and *Tridens flavus. Thalia dealbata*, tracked by the ONHI, was located in this habitat type at DFWMA.

6. Herbaceous wetland and aquatic vegetation (WETL)

Man-made and natural wetlands occurred throughout both study areas. Herbaceous wetland vegetation intergraded extensively at DFWMA and EWMA, thus individual wetland associations were not distinguished, and herbaceous wetlands were treated collectively in this category. Abundant species in herbaceous wetlands included *Amorpha fruticosa, Carex crus-crovi, Cephalanthus occidentalis, Echinochloa crus-galli, Juncus effusus, Salix nigra,* and *Typha latifolia*. Associated species included *Alopecurus carolinianus, Callitriche heterophylla, Campsis radicans, Cicuta maculata, Conoclinium coelestinum, Cyperus pseudovegetus, Eleocharis palustris, Forestiera acuminata, Glyceria striata, Gratiola neglecta, Iva annua, Ludwigia peploides, Mimulus alatus, Nelumbo lutea, Onoclea sensibilis, Penthorum sedoides, Polygonum amphibium, P. lapathifolium, Sagittaria latifolia, Scirpus atrovirens, Sisyrinchium angustifolium,* and *Xanthium strumarium. Azolla caroliniana*, tracked by the ONHI, was located in this habitat type at DFWMA.

7. Disturbed areas and old-field vegetation (DAOF)

This includes areas in crop cultivation, wildlife food plots, roadsides, and other areas exhibiting signs of physical disruption. Associated species included *Aristida desmantha, Chenopodium album, Cnidoscolus texanus, Cocculus carolinus, Cynodon dactylon, Daucus pusillus, Digitaria sanguinalis, Diodia teres, Diospyros virginiana, Geranium carolinianum, Gymnopogon ambiguus, Helenium amarum, Helianthus annuus, Lespedeza cuneata, Melilotus alba, Nuttallanthus texanus, Oenothera biennis, Passiflora incarnata, Phytolacca americana, Pycnanthemum tenuifolium, Pyrus communis, Rhus glabra, Solanum carolinense, Trifolium dubium, Verbascum thapsus,* and *Viola bicolor*.

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Figure 1: Location of the Deep Fork Wildlife Management Area and the Eufaula Wildlife Management Area, Deep Fork Unit, Oklahoma.

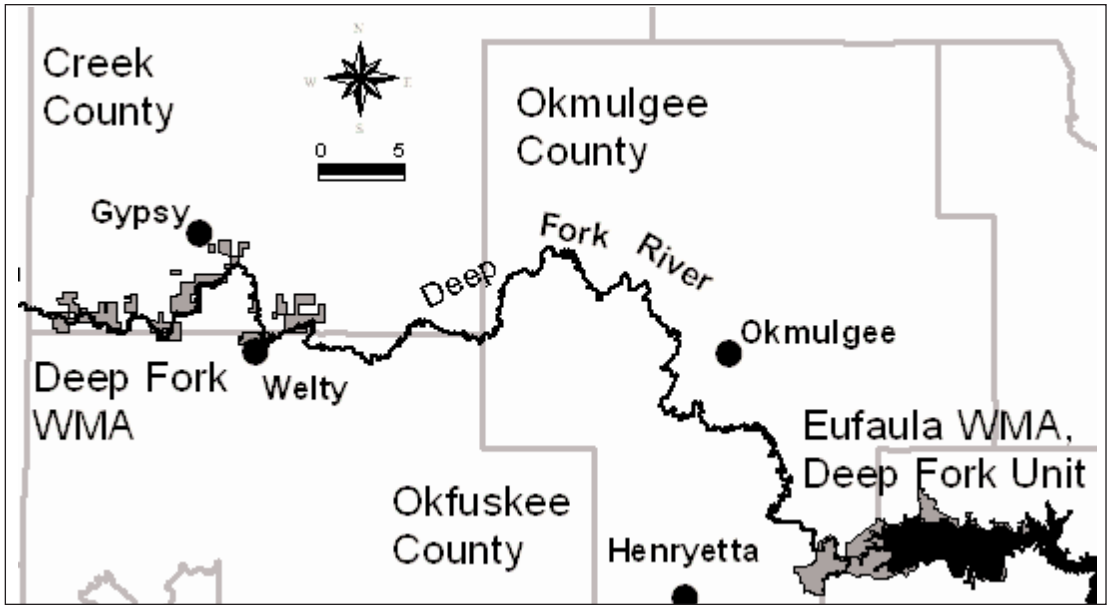

Table 1: Summary of floristic collections made along the Deep Fork River, Oklahoma.

Taxonomic group	Species	Native spp.	Introduced spp.
Equisetophyta	2	2	0
Pteridophyta	7	7	0
Coniferophyta	1	1	0
Magnoliophyta			
Magnoliopsida	3 36	31	24
Liliopsida	154	138	16
Total	500	462	38

Table 2: Summary of floristic collections made at the Deep Fork Wildlife Management Area, Creek and Okfuskee counties.

Taxonomic group	Species	Native spp.	Introduced spp.
Equisetophyta	1	1	0
Pteridophyta	7	7	0
Coniferophyta	1	1	0
Magnoliophyta			
Magnoliopsida	300	281	19
Liliopsida	125	115	10
Total	434	405	29

Table 3: Summary of floristic collections made at the Eufaula Wildlife Management Area, Deep Fork Unit, Okmulgee County.

Taxonomic group	Species	Native spp.	Introduced spp.
Equisetophyta	1	1	0
Pteridophyta	1	1	0
Magnoliophyta			
Magnoliopsida	115	104	11
Liliopsida	45	37	8
Total	162	143	19

Table 4: Species tracked by the Oklahoma Natural Heritage Inventory (2005) located at Deep Fork River sites. Species conservation ranks are presented at the state (S) and global (G) levels on a scale of 1 - 5; 1 representing species are most imperiled and 3 vulnerable (Groves et al. 1995). DFWMA = Deep Fork Wildlife Management Area in Creek and Okfuskee counties, EWMA = Eufaula Wildlife Management Area, Deep Fork Unit, Okmulgee County.

Species	G-rank	S-rank	L ocation
Azolla caroliniana	G5	S2	DFWMA
Carex oklahomensis	G4	S3	DFWMA
Forestiera acuminata	G5	S3S2	DFWMA, EWMA
Piptochaetium avenaceum	G5	S2	DFWMA
Thalia dealbata	G4	S3	DFWMA
Urtica chamaedryoides	G4G5	S3	DFWMA, EWMA
Vernonia missurica	G4G5	S3	DFWMA
Vitis rupestris	G3	S3	DFWMA, EWMA

APPENDIX 1

Annotated species list for sites occurring along the Deep Fork River. The entries are life history (A=annual, B=biennial, P=perennial), abundance (1 = least abundant, 5 = dominant [see Palmer et al. 1995]), habitat (QSCT = *Quercus stellata - Quercus marilandica - Carya* texana forest association, QPCI = *Quercus palustris - Carya illinoinensis/Ilex decidua* forest association, QMQS = *Quercus muehlenbergii - Quercus shumardii* forest association, URCO = *Ulmus rubra - Celtis occidentalis* forest association, AGSS = *Andropogon gerardii - Schizachyrium scoparium - Sorghastrum nutans* herbaceous association, WETL = wetland vegetation, DAOF = disturbed areas and old-field vegetation), and collection number. Species not native to North America are designated with an asterisk (*). Those numbers beginning with DFX were collected from the Deep Fork Wildlife Management Area in Creek and Okfuskee counties. Those beginning DF were collected from the Eufaula Wildlife Management Area, Deep Fork Unit, Okmulgee County. Voucher specimens were deposited at the Robert Bebb Herbarium at the University of Oklahoma (OKL).

EQUISETOPHYTA

Equisetaceae

Equisetum hyemale L. - P; 4; QPCI; DFX011
E. laevigatum A. Braun - P; 2; QPCI; DF0074

PTERIDOPHYTA

Aspleniaceae

Asplenium platyneuron (L.) B.S.P. - P; 3; QSCT; DFX325

Azollaceae

Azolla caroliniana Willd. - P; 2; WETL; DFX2581

Dryopteridaceae

Onoclea sensibilis L. - P; 3; QPCI; DFX482
Woodsia obtusa (Spreng.) Torr. - P; 3; QSCT; DFX026, DF0078

Ophioglossaceae

Botrychium virginianum (L.) Sw. - P; 3; QPCI; DFX095

Osmundaceae

Osmunda regalis L. - P; 4; WETL; DFX510

Pteridaceae

Pellaea atropurpurea (L.) Link - P; 3; QSCT; DFX023

PINOPHYTA

Cupressaceae

Juniperus virginiana L. - P; 3; QSCT; DFX581

MAGNOLIOPHYTA

MAGNOLIOPSIDA

Acanthaceae

Dicliptera brachiata (Pursh) Spreng. - P; 3; QPCI; DFX417
Ruellia humilis Nutt. - P; 3; DAOF; DFX235
R. strepens L. - P; 4; QPCI; DF0028, DFX459

Aceraceae

Acer negundo L. - P; 4; QPCI; DFX123, DF0104

Amaranthaceae

Amaranthus albus L. - A; 4; DAOF; DFX491, DF0165
A. rudis Sauer - A; 4; DAOF; DFX473
Froelichia floridana (Nutt.) Moq. - A; 4; DAOF; DFX377
Iresine rhizomatosa Standl. - P; 4; QPCI; DFX472

Anacardiaceae

Rhus aromatica Ait. - P; 3; QSCT; DFX009
R. copallinum L. - P; 4; DAOF; DFX248
R. glabra L. - P; 4; DAOF; DFX200

Apiaceae

Ammoselinum popei Torr. & Gray - A; 3; DAOF; DF0115
Chaerophyllum procumbens (L.) Crantz - A; 3; DAOF; DFX065
C. tainturieri Hook. - A; 3; DAOF; DF0087
Cicuta maculata L. - B; 4; DAOF; DFX246
Cryptotaenia canadensis (L.) DC. - P; 4; QPCI, QSCT; DFX185
Daucus pusillus Michx. - A; 4; DAOF; DFX275
Eryngium prostratum Nutt. ex DC. - P; 4; WETL; DFX513
Limnosciadium pinnatum (DC.) Mathias & Constance -A; 2; DAOF; DF0011
Osmorhiza longistylis (Torr.) DC. - P; 4; QSCT; DFX101
Ptilimnium nuttallii (DC.) Britt. - A; 3; DAOF; DFX223
Torilis arvensis (Huds.) Link* - A; 4; DAOF; DFX195

Apocynaceae

Apocynum cannabinum L. - P; 3; DAOF; DF0027

Aquifoliaceae

Ilex decidua Walt. - P; 3; QPCI; DFX046, DF0019

Aristolochiaceae

Aristolochia tomentosa Sims - P; 3; DAOF; DFX017, DF0012

Asclepiadaceae

Asclepias tuberosa L. - P; 3; DAOF; DFX176
A. viridis Walt. - P; 4; DAOF; DFX153
Matelea baldwyniana (Sweet) Woods. - P; 2; QMQS; DF0113
M. gonocarpos (Walt.) Shinners- P; 2; QPCI; DFX367

Asteraceae

Achillea millefolium L. - P; 4; DAOF; DFX151
Ageratina altissima (L.) King & H.E. Robins. - P; 4; QPCI; DFX587
Ambrosia artemisiifolia L. - A; 4; DAOF; DFX509, DF0203
A. bidentata Michx. - A; 4; DAOF; DFX433
A. psilostachya DC. - P; 4; DAOF; DFX528
A. trifida L. - A; 4; DAOF; DFX413, DF0197
Antennaria neglecta Green - P; 3; DAOF; DFX033
A. parlinii Fern. - P; 3; QSCT; DFX008
Astranthium integrifolium (Michx.) Nutt. - A; 4; DAOF; DFX148
Bidens aristosa (Michx.) Britt. - A; 3; DAOF; DFX551, DF0220
Chaetopappa asteroides Nutt. ex DC. - A; 4; QSCT, DAOF; DFX130
Chrysopsis pilosa Nutt. - A; 4; DAOF; DFX272, DF0202
Cirsium altissimum (L.) Hill - B; 3; DAOF; DF0193
C. texanum Buckl. - B; 3; DAOF; DFX174
C. undulatum (Nutt.) Spreng - B; 4; DAOF; DFX392
Conoclinium coelestinum (L.) DC. - P; 4; QPCI; DFX398, DF0213
Conyza canadensis (L.) Cronq. - A; 4; DAOF; DFX400, DF0176
Coreopsis grandiflora Hogg ex Sweet - P; 4; QSCT; DFX131, DF0139
C. tinctoria Nutt. - A; 4; DAOF; DFX206
Dracopis amplexicaulis (Vahl) Cass - A; 4; DAOF; DFX160, DF0070
Eclipta prostrata (L.) L. - P; 4; WETL; DFX409, DF0131
Elephantopus carolinianus Raeusch. - P; 4; QPCI, QMQS; DFX460
Erigeron philadelphicus L. - P; 3; QPCI; DFX054
E. strigosus Muhl. ex Willd.- A; 3; QSCT; DFX132, DF0103
E. serotinum Michx. - P; 4; DAOF; DFX531
Grindelia squarrosa (Pursh) Dunal - B; 4; DAOF; DFX352
Helenium amarum (Raf.) H. Rock. - A; 4; DAOF; DFX242, DF0163
Helianthus annuus L. - A; 3; DAOF; DFX454
H. hirsutus Raf. - P; 4; DAOF, QSCT; DFX379
H. mollis Lam. - P; 3; DAOF; DFX300
H. tuberosus L. - P; 4; QPCI; DFX418
Iva annua L. - A; 4; DAOF; DFX412, DF0177
Krigia cespitosa (Raf.) Chambers - A; 3; DAOF; DFX057, DF0137
Lactuca canadensis L. - A; 3; DAOF; DFX383
Liatris aspera Michx. - P; 4; DAOF; DFX378
Packera glabella (Poir) C. Jeffrey - A; 3; QPCI; DFX053, DF0118
P. obovata (Muhl. ex Willd.) W.A. Weber & A. Löve - P; 3; DAOF; DFX074
Pluchea camphorata (L.) DC. - P; 4; QPCI; DFX396
Pseudognaphalium obtusifolium (L.) Hilliard & Burtt - A; 3; DAOF; DFX519
Pyrrhopappus carolinianus (Walt.) DC. - B; 3; DAOF; DFX193, DF0010
P. pauciflorus (D. Don) DC.- P; 2: DAOF; DF0025
Ratibida columnifera (Nutt.) Woot. & Standl. - P; 4; DAOF; DFX225
Rudbeckia hirta L. - P; 4; DAOF; DFX175, DF0146
Silphium integrifolium Michx. - P; 4; QMQS; DFX203
Solidago canadensis L. var. *gilvocanescens* Rydb. - P; 4; DAOF; DFX420
S. gigantea Ait. - P; 3; QPCI; DFX346, DF0216
S. missouriensis Nutt. var. *fasciculata* Holz. - P; 4; QSCT; DFX574
S. radula Nutt. - P; 4; DAOF; DFX516
S. speciosa Nutt. var. *rigidiuscula* Torr. & Gray - P; 3; QSCT; DFX500
Symphyotrichum drummondii (Lindl.) Nesom - P; 4; DAOF; DFX558
*S. ericoide*s (L.) Nesom - P; 4; DAOF; DFX527, DF0221
S. praealtum (Poir.) Nesom - P; 3; AGSS; DF0210
S. subulatum (Michx.) Nesom - A; 4; DAOF, WETL; DFX391
Verbesina helianthoides Michx. - P; 3; DAOF; DFX570
V. virginica L. - P; 4; QPCI; DFX563
Vernonia baldwinii Torr. - P; 4; DAOF; DFX292
V. missurica Raf. - P; 4; QPCI; DFX395
Xanthium strumarium L. - A; 4; DAOF, WETL; DFX419, DF0198

Balsaminaceae

Impatiens capensis Meerb. - A; 4; QPCI; DFX344

Betulaceae

Betula nigra L. - P; 3; QPCI; DFX018, DF0105

Bignoniaceae

Campsis radicans (L.) Seem. ex Bureau. - P; 4; QPCI, DAOF; DFX205, DF0122

Boraginaceae

Heliotropium indicum L.* - A; 4; QPCI, WETL; DFX348, DF0147
Lithospermum incisum Lehm. - P; 3; AGSS, DAOF; DFX056
Myosotis verna Nutt. - A; 3; DAOF; DFX117, DF0086

Brassicaceae
Arabis canadensis L. - B; 3; DAOF; DFX218
Cardamine parviflora L. - A; 3; DAOF; DFX060
C. pensylvanica Muhl. ex Willd. - A; 3; DAOF; DF0041
Draba brachycarpa Nutt. ex Torr. & Gray - A; 3; DAOF; DFX005
Lepidium densiflorum Schrad. - A; 3; DAOF; DFX041, DF0008
Rorippa palustris (L.) Bess.- A; 3; WETL; DF0145
R. sessiliflora (Nutt.) A.S. Hitchc. - A; 3; WETL; DF0031
Sibara virginica (L.) Rollins - A; 3; DAOF; DFX006
Cactaceae
Opuntia humifusa (Raf.) Raf. - P; 3; DAOF; DFX535
Callitrichaceae
Callitriche heterophylla Pursh. - A; 4; WETL; DFX044
Campanulaceae
Lobelia cardinalis L. - P; 3; QPCI; DFX397
Triodanis leptocarpa (Nutt.) Nieuwl. - P; 3; DAOF; DFX140
T. perfoliata (L.) Nieuwl.- P; 3; DAOF; DF0037
Capparidaceae
Polanisia erosa (Nutt.) Iltis - A; 4; DAOF; DFX541
Caprifoliaceae
Lonicera japonica Thunb.* - P; 3; DAOF; DF0101
Sambucus nigra L. ssp. *canadensis* (L.) R. Bolli - P; 3; WETL; DFX158, DF0058
Caryophyllaceae
Cerastium nutans Raf. var. *brachypodum* Engelm. ex Gray - A; 3; DAOF; DFX004
Minuartia drummondii (Shinners) McNeill - A; 2; DAOF, DFX087
Paronychia fastigiata (Raf.) Fern.- A; 2; DAOF; DF0174
Silene stellata (L.) Ait. f. - P; 3; QSCT; DFX215
Stellaria media (L.) Vill.* - A; 3; DAOF; DFX012, DF0071
Celastraceae
Celastrus scandens L. - P; 4; DAOF; DFX115
Euonymus atropurpurea Jacq. - P; 3; QPCI; DFX559
Chenopodiaceae
Chenopodium album L. - A; 4; DAOF; DFX542
C. leptophyllum (Moq.) Nutt. ex S. Wats. - A; 4; DAOF; DFX451
C. standleyanum Aellen - A; 2; DAOF; DF0175
Clusiaceae
Hypericum drummondii (Grev. & Hook.) Torr. & Gray - A; 4; DAOF; DFX571
H. hypericoides (L.) Crantz - P; 3; QSCT; DFX314
H. punctatum Lam. - P; 4; QSCT, DAOF; DFX226
Convolvulaceae
Ipomoea lacunosa L. - A; 3; DAOF; DFX408
I. nil (L.) Roth - A; 2; DAOF; DFX555
I. pandurata (L.) G.F.W. Mey. - P; 3; DAOF; DFX283, DF0175
Cornaceae
Cornus drummondii C. A. Mey. - P; 3; QSQM, DAOF; DFX125, DF0068
C. florida L. - P; 3; QPCI; DFX016
Crassulaceae
Penthorum sedoides L. - P; 4; DAOF; DFX356
Cucurbitaceae
Melothria pendula L. - P; 4; DAOF; DFX470
Cuscutaceae
Cuscuta coryli Engelm. - P; 1; QPCI; DFX390
C. compacta Juss. ex Choisy - P; 1; DAOF; DF0129
Ebenaceae
Diospyros virginiana L. - P; 4; DAOF; DFX161, DF0021
Euphorbiaceae
Acalypha virginica L. - A; 4; DAOF; DFX562
Chamaesyce maculata (L.) Small - A; 3; DAOF; DFX357
C. nutans (Lag.) Small - A; 4; DAOF; DFX370
C. serpens (Kunth) Small - A; 2; DAOF; DF0159
Cnidoscolus texanus (Muell.-Arg.) Small - P; 4; DAOF; DFX328
Croton capitatus Michx. - A; 4; DAOF; DFX345
C. glandulosus L. var. *septentrionalis* Muell.-Arg. - A; 4; DAOF; DFX289
C. lindheimeranus Scheele - A; 3; QSCT; DFX498
Euphorbia dentata Michx. - A; 3; DAOF; DFX221
Stillingia sylvatica Garden ex L. - P; 3; DAOF; DFX538
Fabaceae
Amorpha canescens Pursh - P; 3; QSCT; DFX316
A. fruticosa L. - P; 3; URCO; DFX146
Apios americana Medik. - P; 4; DAOF; DFX359
Astragalus canadensis L. - P; 4; DAOF; DFX187
Baptisia bracteata Muhl. ex Ell. - P; 3; DAOF; DFX086
Cercis canadensis L. - P; 4; QSCT; DFX579
Chamaecrista fasciculata (Michx.) Greene - A; 4; DAOF; DFX245
Clitoria mariana L. - P; 4; QSCT; DFX502
Dalea multiflora (Nutt.) Shinners - P; 3; QSCT; DFX315
Desmanthus illinoensis (Michx.) MacM. ex B.L. Robins. & Fern. - P; 4; DAOF; DFX271
Desmodium canescens (L.) DC. - P; QSCT; DFX575
D. laevigatum (Nutt.) DC.- P; 3; DAOF, QSCT, QPCI; DFX416

Gleditsia triacanthos L. - P; 3; QPCI; DFX306, DF0048
Gymnocladus dioicus (L.) K. Koch - P; 4; QPCI; DFX190
Kummerowia stipulacea (Maxim.) Makino* - A; 3; DAOF; DFX469
Lathyrus hirsutus L.* - A; 4; DAOF; DFX186
Lespedeza capitata Michx. - P; 3; DAOF; DFX450
L. cuneata (Dum.-Cours.) G. Don* - P; 3; DAOF; DFX449, DF0206
L. violacea (L.) Pers. - P; 3; QSCT; DFX501
Melilotus alba Medikus* - A; 4; DAOF; DFX188
Mimosa nuttallii (DC.) B. L. Turner- P; 4; DAOF; DFX191
Neptunia lutea (Leavenworth) Benth. - P; 4; DAOF; DFX228
Psoralidium tenuiflorum (Pursh) Rydb. - P; 4; QSCT; DFX121
Rhynchosia latifolia Nutt. ex Torr. & Gray - P; 4; DAOF; DFX276
Robinia pseudoacacia L. - P; 3; QPCI; DFX098
Senna marilandica (L.) Link - A; 3; DAOF; DFX568
Sesbania herbacea (P. Mill.) McVaugh - A; 3; URCO; DFX566, DF0187
Strophostyles helvula (L.) Ell - A; 2; DAOF; DF0199
S. leiosperma (Torr. & Gray) Piper - P; 4; DAOF; DFX393
Trifolium campestre Schreb.* - A; 3; DAOF; DF0091
T. dubium Sibthrop* - A; 2; DAOF; DFX075
T. pratense L.* - A; 2; DAOF; DF0112
T. repens L.* - P; 4; DAOF; DFX251
T. vesiculosum Savi.* - A; 3; DAOF; DFX189
Vicia sativa L.* - A; 3; DAOF; DFX039
V. villosa Roth* - A; 3; DAOF; DF0033

Fagaceae
Quercus falcata Michx. - P; 3; DAOF; DFX088
Q. macrocarpa Michx. - P; 3; QPCI; DFX386, DF0185
Q. marilandica Muenchh. - P; 4; QSCT; DFX452
Q. muehlenbergii Engelm. - P; 3; QSCT; DFX499, DF0061
Q. palustris Muenchh. - P; 3; QPCI; DFX145, DF0184
Q. stellata Wangenh. - P; 5; QSCT; DFX330
Q. velutina Lam. - P; 4; QSCT; DFX280

Fumariaceae
Corydalis micrantha (Engelm. ex Gray) Gray - A; 3; DAOF; DFX049

Gentianaceae
Sabatia angularis (L.) Pursh - A; 3; DAOF, WETL; DFX310
S. campestris Nutt. - A; 4; DAOF, WETL; DFX234

Geraniaceae
Geranium carolinianum L. - A; 4; DAOF; DFX112, DF0035

Grossulariaceae
Ribes aureum Pursh - P; 3; DAOF; DFX015

Haloragaceae
Myriophyllum heterophyllum Michx. - P; 2: WETL; DF0218
M. pinnatum (Walt.) B.S.P. - P; 4; WETL; DFX309

Hydrophyllaceae
Ellisia nyctelea (L.) L. - A; 3; DAOF; DFX103
Phacelia strictiflora (Engelm. & Gray) Gray - A; 3; DAOF; DFX076

Juglandaceae
Carya cordiformis (Wangenh.) K. Koch - P; 4; QPCI; DFX382
C. illinoinensis (Wangenh.) K. Koch - P; 4; QPCI; DFX268, DF0183
C. texana Buckl. - P; 3; QSCT; DFX327
Juglans nigra L. - P; 3; QPCI; DFX229

Lamiaceae
Agastache nepetoides (L.) Kuntze - P; 3; QPCI; DFX560
Lamium amplexicaule L.* - A; 3; DAOF; DFX062
Lycopus americanus Muhl. ex W. Bart. - P; 4; URCO; DFX381
Monarda fistulosa L. - P; 3; DAOF; DFX227
M. punctata L. - A; 4; DAOF; DFX285, DF0205
Prunella vulgaris L. - P; 4; QPCI; DFX177
Pycnanthemum tenuifolium Schrad. - P; 3; DAOF, QSCT; DFX518
Scutellaria lateriflora L. - P; 4; URCO; DFX436
Teucrium canadense L. - P; 4; URCO, DAOF; DFX244, DF0141

Lentibulariaceae
Utricularia gibba L. - P; 4; WETL; DFX240

Lythraceae
Ammannia auriculata Willd.- A; 4; WETL; DFX212, DF0116
A. coccinea Rottb. - A; 2; WETL; DF0154
Lythrum alatum Pursh - P; 4; URCO; DFX361
Peplis diandra (Nutt. ex DC.) Wood - A; 4; WETL; DFX241
Rotala ramosior (L.) Koehne - A; 3; URCO; DFX423

Malvaceae
Hibiscus laevis All. - P; 2; WETL; DF0189
Sida spinosa L. - A; 3; DAOF; DFX384

Marantaceae
Thalia dealbata Fraser ex Roscoe - P; 4; URCO; DFX239

Melastomataceae
Rhexia mariana L. - P; 4; QPCI; DFX388

Menispermaceae
Cocculus carolinus (L.) DC. - P; 4; QPCI; DFX211
Moraceae
Morus alba L.* - P; 3; QPCI; DFX590
M. rubra L. - P; 4; QPCI, DAOF; DFX089, DF0109
Nyctaginaceae
Mirabilis albida (Walt.) Heimerl. - P; 3; AGSS; DFX534
Nymphaeaceae
Nelumbo lutea Willd. - P; 4; WETL; DFX471
Oleaceae
Forestiera acuminata (Michx.) Poir. - P; 4; URCO; DFX066, DF0009
Fraxinus pennsylvanica Marsh. - P; 3; QPCI; DFX284, DF0026
Onagraceae
Gaura suffulta Engelm. ex Gray - A; 3; DAOF; DFX455
Ludwigia alternifolia L. - P; 4; WETL; DFX440
L. decurrens Walt. - P; 4; URCO, QPCI; DFX402
L. glandulosa Walt. - P; 3; QPCI; DFX369
L. palustris (L.) Ell. - P; 4; WETL; DFX209
L. peploides (Kunth) Raven - P; 4; WETL; URCO; DFX210, DF0043
Oenothera biennis L. - B; 2; DAOF; DF0192
O. laciniata Hill - P; 3; DAOF; DFX293, DF0005
O. rhombipetala Nutt. ex Torr. & Gray - A; 4; DAOF; DFX269
Oxalidaceae
Oxalis stricta L. - P; 3; DAOF; DFX050, DF0006
O. violacea L. - P; 4; QSCT, QSCT; DFX119
Passifloraceae
Passiflora incarnata L. - P; 3; DAOF; DFX432
P. lutea L. - P; 3; QSCT; DFX224, DF0181
Phytolaccaceae
Phytolacca americana L. - P; 4; DAOF; DFX194, DF0167
Plantaginaceae
Plantago aristata Michx. - A; 4; DAOF; DFX243, DF0018
P. heterophylla Nutt. - A; 3; DAOF; DFX042
P. patagonica Jacq. - A; 4; DAOF; DFX133
P. rugelii Dcne. - P; 3; DAOF; DFX365, DF0179
P. virginica L. - A; 4; DAOF; DFX147, DF0007
Platanaceae
Platanus occidentalis L. - P; 4; QPCI; DFX124, DF0151
Polygonaceae
Polygonum amphibium L. - P; 4; URCO; DFX355
P. aviculare L.* - A; 4; DAOF; DFX372
P. hydropiperoides Michx. - P; 4; URCO; DFX415, DF0119
P. lapathifolium L. - A; 4; QPCI; DFX401, DF0169
P. persicaria L.* - P; 3; WETL: DF0215
P. ramosissimum Michx. - A; 4; DAOF; DF0219
Rumex acetosella L.* - P; 4; DAOF; DFX288, DF0073
*R. altissim*us Wood - P; 4; DAOF; DFX152, DF0096
R. crispus L.* - P; 4; DAOF; DFX181, DF0003
Portulacaceae
Claytonia virginica L. - P; 3; QSCT; DFX010
Ranunculaceae
Anemone virginiana L. - P; 3; QPCI; DFX198
Clematis pitcheri Torr. & Gray - P; 3; QSCT; DFX458, DF0144
C. versicolor Small ex Rydb. - P; 3; QMQS; DFX605
Delphinium carolinianum Walt. ssp. *virescens* (Nutt.) Brooks - P; 3; QSCT; DFX134
Ranunculus abortivus L. - P; 3; URCO, QSCT; DFX055
R. micranthus Nutt. - P; 2; QPCI; DF0124
R. pusillus Poir. - A; 4; QSCT; DFX082
Thalictrum dasycarpum Fisch. & Avé-Lall. - P; 4; QSCT; DFX196
Rhamnaceae
Ceanothus americanus L. - P; 3; DAOF; DFX270
Rosaceae
Agrimonia rostellata Wallr. - P; 4; QPCI; DFX399
Crataegus crus-galli L. - P; 3; DAOF; DFX343
C. mollis Scheele - P; 3; QPCI; DFX403
C. viridis L. - P; 3; QPCI, DAOF, QSCT; DFX070, DF0017
Geum canadense Jacq. - P; 4; QSCT; DFX083, DF0083
Prunus mexicana S. Wats. - P: 3; DAOF; DFX277, DF0106
P. rivularis Scheele - P; 4; DAOF; DFX068
P. serotina Ehrh. - P: 3; DAOF, QSCT; DFX336
Pyrus communis L.* - P; 3; QPCI; DFX304
Rosa multiflora Thunb. ex Murr.* - P: 3; QPCI; DFX237
R. setigera Michx. - P; 4; DAOF, QSCT; DFX172, DF0130
Rubus allegheniensis Porter - P; 3; DAOF; DFX094, DF0126
R. bushii Bailey - P; 3; DAOF; DFX222
R. trivialis Michx. - P; 4; DAOF; DFX067, DF0023
Rubiaceae
Cephalanthus occidentalis L. - P; 4; WETL; DFX204, DF0158
Diodia teres Walt. - A; 4; DAOF; DFX290, DF0140
D. virginiana L. - P; 2; WETL; DF0123
Galium aparine L. - A; 4; QSCT; DFX078
G. pilosum Ait. - P; 4; QSCT; DFX318
G. texense Gray - A; 2; AGSS, DAOF; DF0022

G. tinctorium L. - P; 3; WETL; DFX594
G. triflorum Michx. - P; 2; QMQS; DF0089
G. virgatum Nutt. - A; 3; DAOF; DFX149
Houstonia pusilla Schoepf. - A; 3; DAOF; DFX007
Spermacoce glabra Michx. - P; 3; URCO; DFX596, DF0140

Rutaceae
Zanthoxylum americanum P. Mill. - P; 4; QSCT; DFX577

Salicaceae
Populus deltoides Bartr. ex Marsh. - P; 4; QPCI; DFX582, DF0155
Salix nigra Marsh. - P; 4; URCO; DFX583, DF0016

Sapindaceae
Sapindus saponaria L. var. *drummondii* (Hook. & Arn.) L. Benson - P; 4; DAOF; DFX422

Scrophulariaceae
Agalinis fasciculata (Ell.) Raf. - A; 4; DAOF; DFX530
Buchnera americana L. - P; 4; DAOF; DFX202
Castilleja indivisa Engelm. - A; 4; DAOF; DFX051
Gratiola neglecta Torr. - A; 3; WETL; DFX080
Leucospora multifida (Michx.) Nutt. - A; 4; URCO; DFX429
Lindernia dubia (L.) Pennell - A; 4; DAOF; DFX214, DF0128
Mecardonia acuminata (Walt.) Small - P; 3; QPCI; DFX485
Mimulus alatus Ait. - P; 4; QPCI; DFX389
Nuttallanthus texanus (Scheele) D. A. Sutton - B; 3; DAOF; DFX037
Verbascum thapsus L.* - B; 4; DAOF; DFX301, DF0152
Veronica peregrina L. - A; 2; DAOF; DF0002

Simaroubaceae
Ailanthus altissima (P. Mill.) Swingle* - P; 3; DAOF; DFX197

Solanaceae
Lycium barbarum L.* - P; 3; DAOF; DFX576
Physalis longifolia Nutt. - P; 2; DAOF; DF0161
P. virginiana P. Mill. - P; 4; DAOF; DFX375
Solanum carolinense L. - P; 4; DAOF; DFX182, DF0024
S. ptychanthum Dunal. - A; 4; URCO; DFX424, DF0127

Ulmaceae
Celtis laevigata Willd. - P; 4; QPCI; DFX247
C. occidentalis L. - P; 4; QPCI; DFX585
Ulmus alata Michx. - P; 3; QMQS, QSCT; DFX028, DF0150
U. americana L. - P; 4; QMQS, QPCI, URCO; DFX126, DF0186
U. rubra Muhl. - P; 3; QMQS, QPCI, URCO; DFX358

Urticaceae
Boehmeria cylindrica (L.) Sw. - P; 4; QPCI; DFX162
Urtica chamaedryoides Pursh - A; 3; QPCI; DFX100, DF0121

Valerianaceae
Valerianella radiata (L.) Dufr. - A; 3; DAOF; DFX064

Verbenaceae
Glandularia canadensis (L.) Nutt. - P; 3; DAOF; DF0069, DFX083
Phyla lanceolata (Michx.) Greene - P; 4; URCO; DFX363, DF0148
Verbena bracteata Lag. & Rodr. - P; 3; DAOF; DFX380
V. hastata L. - P; 3; DAOF; DFX435
V. stricta Vent. - P; 4; DAOF; DFX286
V. urticifolia L. - P; 3; QSCT, roadside; DFX317

Violaceae
Viola bicolor Pursh - A; 3; DAOF; DFX003
V. palmata L. - P; 3; QSCT; DFX034
V. pubescens Ait. - P; 3; QSCT; DFX110
V. sororia Willd. - P; 3; QPCI; DFX059

Viscaceae
Phoradendron leucarpum (Raf.) Reveal & M. C. Johnst. - P; 3; QSCT; DFX001

Vitaceae
Ampelopsis arborea (L.) Koehne - P; 2; WETL;
A. cordata Michx. - P; 4; QSCT, QPCI; DFX167
Parthenocissus quinquefolia (L.) Planch. - P; 4; QPCI; DFX168
Vitis aestivalis Michx. - P; 4; QSCT; DFX116
V. cinerea (Engelm.) Millard - P; 4; QPCI; DFX166
V. riparia Michx. - P; 4; QPCI, QSCT; DFX333, DF0173
V. rupestris Scheele - P; 3; QPCI; DFX533, DF0095
V. vulpina L. - P; 3; DAOF, URCO; DFX155

LILIOPSIDA

Agavaceae
Yucca glauca Nutt. - P; 4; QSCT; DFX122

Alismataceae
Alisma subcordatum Raf. - P; 3; QPCI; DFX347, DF0166
Echinodorus berteroi (Spreng.) Fassett - P; 4; WETL; DFX410
Sagittaria latifolia Willd. - P; 4; WETL; DFX464, DF0190
S. platyphylla (Engelm.) J.G. Sm. - P; 3: WETL; DFX344

Araceae

Arisaema dracontium (L.) Schott - P; 3; QSCT; DFX102, DF0142

Commelinaceae

Commelina communis L. - P; 3; DAOF; DFX249
C. erecta L. var. *deamiana* Fern. - P; 4; DAOF; DFX291
Tradescantia ohiensis Raf. - P; 3; QSCT; DFX183

Cyperaceae

Carex albicans Willd. ex Spreng - P; 3; QSQM; DFX024
C. amphibola Steud. - P; 2; WETL; DF0032
C.arkansana (Bailey) Bailey - P; 2; QPCI; DF0046
C. austrina Mackenzie - P; 3; DAOF; DFX120
C. blanda Dewey - P; 4; QPCI; DFX045
C. bushii Mackenzie - P; 4; QPCI; DFX257
C. caroliniana Schwein. - P; 4; QPCI; DFX096
C. crus-corvi Shuttl. ex Kunze - P; 3; QPCI; DFX143, DF0045
C. flaccosperma Dewey - P; 2; QPCI; DF0093
C. frankii Kunth - P; 3; QPCI, WETL; DFX267
C. hirsutella Mackenzie - P; 2; QPCI; DF0098
C. hyalinolepis Steud. - P; 4; WETL; DFX097
C. leavenworthii Dewey - P; 3; QCPI; ; DFX058
C. lupuliformis Sartwell ex Dewey. - P; 3; WETL; DFX588
C. lupulina Muhl. ex Willd. - P; 4; QPCI; DFX414
C. normalis Mackenzie - P; 2; QPCI; DF0135
C. oklahomensis Mackenzie - P; 3; QSQM; DFX135
C. oligocarpa Schkuhr ex Willd. - P; 3; QSQM; DFX114
C. retroflexa Muhl. ex Willd. - P; 3; URCO; DFX052
C. squarrosa L. - P; 3; WETL; DF0081
C. triangularis Boeckl. - P; 3; DAOF; DFX157
C. tribuloides Wahlenb. - P; 4; WETL; DFX265
C. vulpinoidea Michx. - P; 3; DAOF; DFX113, DF0080
Cyperus echinatus (L.) Wood - P; 4; URCO; DFX434, DF0149
C. erythrorhizos Muhl. - P; 2; WETL; DF0195
C. esculentus L. - P; 3; URCO; DFX478
C. lupulinus (Spreng.) Marcks - P; 3; DAOF; DFX342
C. pseudovegetus Steud. - P; 3; QPCI; DFX207
C. squarrosa L. - A; 3; URCO; DFX260
C. retroflexus Buckl. - P; 4; DAOF; DFX577
C. strigosus L. - P; 3; DAOF; DFX208
Eleocharis compressa Sullivant - P; 3; WETL; DFX020, DF0040
E. obtusa (Willd.) J.A. Schult. - P; 3; URCO; DFX443, DF0036
E. palustris (L.) Roemer & J.A. Schultes - P; 4; WETL; DFX593
E. tenuis (Willd.) J.A. Schult. - P; 3; WETL; DFX019
Fimbristylis autumnalis (L.) Roemer & J.A. Schultes - A; 4; WETL; DFX511
F. vahlii (Lam.) Link - A; 4; WETL; DFX479
Fuirena simplex Vahl. - P; 3; URCO; DFX425
Isolepis carinata Hook. & Arn. ex Torr. - A; 3; DAOF; DFX027
Rhynchospora globularis (Chapman.) Small - P; 3; DAOF; DFX341
R. glomerata (L.) Vahl. - P; 4; URCO; DFX338
R. harveyi W. Boot. - P; 3; WETL; DFX296
Schoenoplectus fluviatilis (Torr.) M.T. Strong - P; 4; WETL; DFX595
Scirpus atrovirens Willd. - P; 3; WETL; DFX297
S. pendulus Muhl. - P; 3; DAOF; DFX156
Scleria ciliata Michx. - P; 4; URCO; DFX273

Juncaceae

Juncus brachycarpus Engelm. - P; 4; QPCI; DFX256
J. diffusissimus Buckl. - P; 3; QPCI, WETL; DFX178
J. effusus L. - P; 4; WETL, QPCI; DFX163, DF0056
J. interior Wieg. - P; 2; DAOF; DF0060
J. marginatus Rostk. - P; 4; QPCI; DFX258
J. nodatus Coville - P; 4; WETL; DFX602
J. tenuis Willd. - P; 2; URCO; DF0082
J. validus Coville - P; 4; QPCI; DFX232
Luzula bulbosa (Wood) Smyth & Smyth - P; 3;

Iridaceae

Sisyrinchium angustifolium P. Mill. - P; 3; DAOF; DF0072

Lemnaceae

Spirodela polyrhiza (L.) Schleiden - P; 4; WETL; DFX2583
Wolffia columbiana Karst. - P; 4; WETL; DFX026

Liliaceae

Allium canadense L.- P; 3; DAOF; DFX136, DF0102
Nothoscordum bivalve (L.) Britt. - P; 3; DAOF; DFX085
Ornithogalum umbellatum L.* - P; 3; DAOF; DFX077

Orchidaceae

Spiranthes vernalis Engelm. & Gray - P; 3; DAOF; DFX312

Poaceae

Agrostis hyemalis (Walt.) B.S.P. - P; 2; Wetl; DF0004
Alopecurus carolinianus Walt. - A; 2; WETL; DF0066
Andropogon gerardii Vitman - P; 4; AGSS; DFX495
A. glomeratus (Walt.) B. S. P. - P; 4; DAOF, WETL; DFX494
A. ternarius Michx. - P; 3; AGSS, DAOF; DFX545
Aristida desmantha Trin. & Rupr. - A; 3; DAOF; DFX544

A. lanosa Muhl. ex Ell. - P; 3; DAOF; DFX407
A. ramosissima Engelm. ex Gray - A; 4; DAOF; DFX517
Bromus japonicus Thunb. ex Murr.* - A; 4; AGSS, DAOF; DF0076
B. hordeaceus L.* - A; 2; DAOF; DF0092
B. pubescens Muhl. ex Willd. - P; 4; QPCI; DFX128
B. tectorum L.* - A; 4; DAOF; DFX108
Cenchrus spinifex Cav.- P; 3; DAOF; DFX339
Chasmanthium latifolium (Michx.) Yates - P; 4; QPCI; DFX262, DF0211
Coelorachis cylindrica (Michx.) Nash - P; 3; DAOF; DFX295
Cynodon dactylon (L.) Pers.* - P; 3: DAOF; DF0034
Dichanthelium aciculare (Desv. ex Poir.) Gould &
D. acuminatum (Sw.) Gould & C.A. Clark - P; 4; QPCI; DFX484, DF0117
D. commutatum (J.A. Schultes) Gould - P; 4; QPCI; DFX164
D. latifolium (L.) Gould & C.A. Clark - P; 3; DAOF, QPCI; DFX192
D. laxiflorum (Lam.) Gould - P; 3; QSCT; DFX324
D. linearifolium (Scribn. ex Nash) Gould - P; 4; QSCT; DFX138
D. malacophyllum (Nash) Gould- P; 2; QMQS; DF0063
D. oligosanthes (J.A. Schultes) Gould - P; 4; QSCT, DAOF; DFX139
D. ravenelii (Scribn. & Merr.) Gould - P; 3; DAOF; DFX092
D. scoparium (Lam.) Gould - P; 3; QSCT; DFX321
*D. sphaerocarpon (*Ell.) Gould - P; 3; QSCT; DFX320
Digitaria sanguinalis (L.) Scop. - A; 4; DAOF; DFX474, DF0188
Echinochloa colona (L.) Link* - A; 3; DAOF, WETL; DF0170
E. crus-galli (L.) Beauv.* - A; 4; DAOF, URCO, WETL; DFX349, DF0164
Eleusine indica (L.) Gaertn.* - A; 3; DAOF; DFX475
Elymus villosus Muhl. ex Willd.- P; 2; QMQS; DF0067
E. virginicus L. - P; 3; QPCI; DFX179
Eragrostis cilianensis (All.) Vign. ex Janchen* - A; 3; QSCT; DFX323
E. curvula (Schrad.) Nees* - P; 4; QSCT; DFX334
E. hirsuta (Michx.) Nees - P; 4; DAOF, WETL; DFX550
E. hypnoides (Lam.) B.S.P.- A; 2; WETL; DF0194
E. pectinacea (Michx.) Nees ex Steud.- P; 2; DAOF; DF0200
E. secundiflora J. Presl. ssp. oxylepis (Torr.) S. D. Koch - P; 4; QSCT; DFX335
Festuca arundinacea (Schreb.) S.J. Darbyshire* - P: 3; DAOF; DF0001
F. subverticillata (Pers.) Alexeev - P; 2; DAOF; DF0100
Glyceria striata (Lam.) A.S. Hitchc. - P; 3; DAOF; DFX287
Gymnopogon ambiguus (Michx.) B.S.P. - P; 4; DAOF; DFX546
Hordeum pusillum Nutt. - A; 4; DAOF; DFX106
Leersia oryzoides (L.) Sw. - P; 4; WETL; DFX493
Leptochloa fusca (L.) Kunth ssp. *fascicularis* (Lam.) N. Snow - A; 2; WETL; DF0156
Limnodea arkansana (Nutt.) L. H. Dewey - A; 4; URCO; DFX213
Lolium perenne L.* - P; 4; DAOF; DFX107, DF0088

Muhlenbergia schreberi J.F. Gmel. - P; 4; URCO; DFX506
M. sobolifera (Muhl. ex Willd.) Trin. - P; 3; QSCT; DFX504
Panicum anceps Michx. - P; 4; QPCI, DAOF; DF0178, DFX394
P. capillare L. - A; 4; DAOF; DFX599
P. philadelphicum Bernh. & Trin. - A; 4; DAOF; DFX573
P. rigidulum Bosc ex Nees - P; 3; URCO; DFX406
P. virgatum L. - P; 3; URCO; DFX351, DF0196
Paspalum laeve Michx.- P; 3; DAOF; DFX524
P. floridanum Michx. - P; 2; QPCI, DAOF; DF0214
P. setaceum Michx. - P; 3; DAOF; DFX294
Piptochaetium avenaceum (L.) Parodi - P; 3; QPCI; DFX604
Poa annua L.* - A; 4; DAOF; DFX036
P. arida Vasey - P; 4; QSCT; DFX079
P. compressa L.* - P; 3; QSCT; DFX109
P. pratensis L.* - P; 3; DAOF; DFX137
Schizachyrium scoparium (Michx.) Nash - P; 3; AGSS, QSCT; DFX505
Setaria parviflora (Poir.) Kerguélen - P; 4; DAOF, WETL; DFX303
S. viridis (L.) Beauv.* - A; 2; DAOF; DF0153
Sorghastrum nutans (L.) Nash - P; 3; DAOF; DFX536
Spartina pectinata Bosc ex Link - P; 2; WETL; DF0219
Sphenopholis intermedia (Rydb.) Rydb. - P; 4; QPCI; DFX127
S. obtusata (Michx.) Scribn.- P; 2; WETL.; DF0075
Sporobolus cryptandrus (Torr.) Gray - P; 4; DAOF; DFX548
S. vaginiflorus (Torr. ex Gray) Wood - A; 4; DAOF; DFX539
C.A. Clark - P; 4; URCO; DFX431

Tridens flavus (L.) A.S. Hitchc. - P; 4; DAOF; DFX523, DF0209
T. strictus (Nutt.) Nash - P; 3; DAOF; DFX520
Tripsacum dactyloides (L.) L. - P; 3; DAOF; DFX457
Vulpia octoflora (Walt.) Rydb. - A; 4; DAOF; DF0065, DFX118
Zizaniopsis miliacea (Michx.) Doell & Aschers.- P; 2; WETL; DF0044

Potamogetonaceae

Potamogeton diversifolius Raf. - P; 4; WETL; DFX308

Smilacaceae

Smilax bona-nox L. - P; 4; QPCI, QSCT; DFX170
S. rotundifolia L. - P; 4; QPCI; DFX171
S. tamnoides L. - P; 3; QPCI; DFX556

Typhaceae

Typha angustifolia L. - P; 4; WETL; DFX199, DF0222
T. latifolia L. - P; 4; WETL; DFX438