

# Vascular Flora of a Site in the Slick Hills, Caddo County, Oklahoma

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**A total of 286 taxa of vascular plants in 213 genera and 71 families were collected at a site in the Slick Hills region of Caddo County. The families with the greatest number of species were Poaceae (47), Asteraceae (43), Fabaceae (16), Cyperaceae (11), and Euphorbiaceae (10). Ninety-three species were annuals, and 193 were perennials. Thirty-six woody plant species were collected. Thirty-two species (11.5% of the flora) were exotic to Oklahoma. Five species tracked by the Oklahoma Natural Heritage Inventory (*Argythamnia humilis*, *Cuscuta umbellata*, *Dalea frutescens*, *Echinocereus reichenbachii*, and *Muhlenbergia bushii*) were present. This study reports 64 species previously not documented in Caddo County. © 2006 Oklahoma Academy of Science**

## INTRODUCTION

Caddo County is located in southwest Oklahoma. The majority of the county falls within the Western Sandstone Hills and Central Redbed Plains geomorphic provinces, which consists of Permian red sandstones and shale (Curtis and Ham 1979). In the southwestern corner of the county where the study site is located, there is a region known colloquially as the Slicks Hills or the Limestone Hills geomorphic province (Curtis and Ham (1979). Flanked by Permian sandstones to the north and the granites and rhyolites to the south, the Slick Hills are an island of carbonate rocks. As such, floristic elements may occur in the Slick Hills that are not found in the neighboring physiographic provinces.

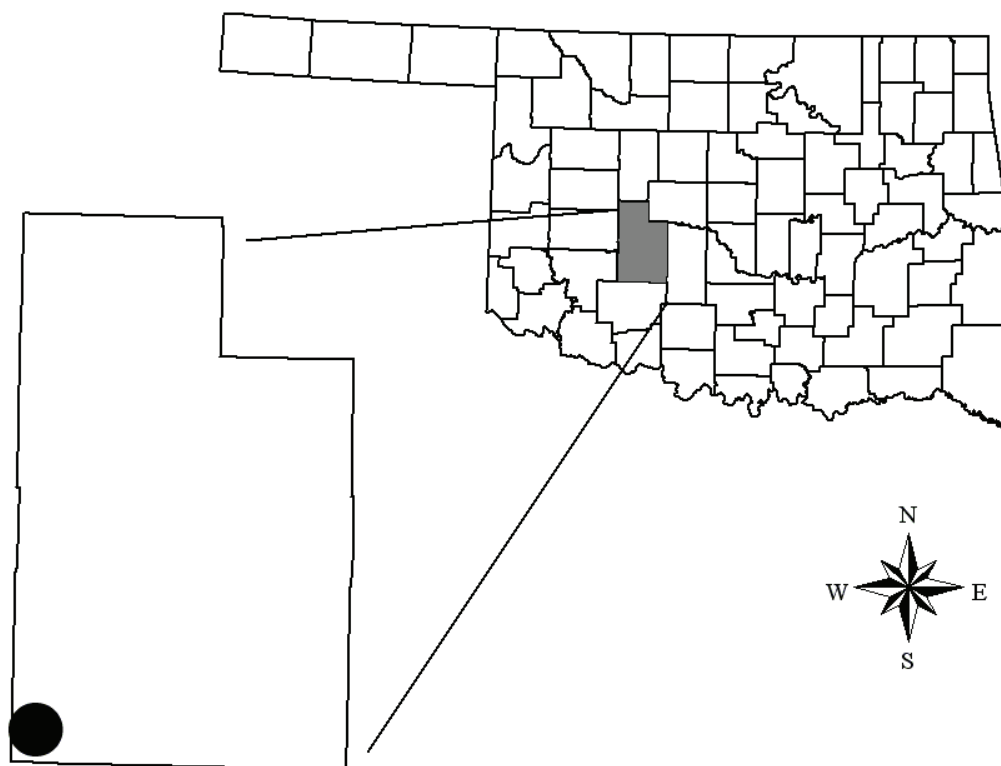
Caddo County has a long history of botanical research. The Oklahoma Vascular Plant Database (OVPD) lists 698 taxa for the county prior to 2003, when this study began (Hoagland et al 2006). The first plant collections in Caddo County were by Albert Van Vleet in May of 1903. In that year, he collected 49 taxa of vascular plants. Peak

years for plant collecting in Caddo County were 1936 (various collectors, 138 specimens); 1944 (Milton Hopkins and Aven and Ruth Nelson, 113 specimens); 1962 (various collectors, 130 specimens); 1976 (various collectors, 142 specimens); 1979 (various collectors, 172 specimens); 1983 (various collectors, but primarily Elbert Little, 168 specimens); and 2000 (Amy Buthod and Newell McCarty, 111 specimens). On average, fewer than 10 specimens per year from Caddo County have been deposited in Oklahoma herbaria. The objective of this study was to document the flora of a site in the Slick Hills region of Caddo County.

## STUDY AREA

The site encompasses over 63.8 hectares in Caddo County (Fig. 1). Latitudinal extent ranges from 34.906°N to 34.898°N and longitudinal extent from 98.497°W to 98.506°W. Elevation ranges from 488 m to 442 m. The study area is located within the Subtropical Humid (Cf) climate zone (Trewartha 1968). Summers are warm (mean July temperature = 27.5° C) and humid, and winters are

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**Figure 1: Location of Caddo County study area.**

relatively short and mild (mean January temperature =  $1.6^{\circ}\text{C}$ ). Mean annual precipitation is 81.3 cm, with periodic severe droughts (Oklahoma Climatological Survey 2006). The study area is located in the Osage Plains section of the Central Lowlands province (Hunt 1974) and within the Limestone Hills province of Oklahoma (Curtis and Ham 1979). The surface geology consists of Ordovician limestones in the upland and recent sedimentary deposits along the streams (Branson and Johnson 1979). Two soil associations occur at the site. The Talpa-Rock Outcrop, which predominates, is a very shallow, loamy soil on sloping to steep limestone outcrops. The Port-Gracemont-Pulaski Association is a deep loamy sand that occurs on floodplains (Moffatt 1973).

The predominant potential vegetation at the site is mixedgrass prairie (Duck and Fletcher 1943). The grassland areas have been grazed for several decades, but to

a lesser extent during the past ten years. Areas adjacent to the primary stream at the site serve as a youth recreation area.

## METHODS

Three collection sites were established for intensive floristic sampling. Sites were visited once a month from June 2002 through October 2003. Sites were selected following a review of US Geological Survey 1:24,000 topographic maps and field reconnaissance. The predominant vegetation associations at these sites were classified according to Hoagland (2000). However, collecting was not restricted to these sites, and previously uncollected species were gathered wherever they were encountered. 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. Manuals used for specimen identification included Waterfall (1973) and Barkley (1986). Origin, either native or introduced, was determined by using Taylor and Taylor (1991) and USDA-NRCS (2005). Nomenclature follows the US Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2005). Voucher specimens were deposited at OKL.

## RESULTS AND DISCUSSION

A total of 286 taxa of vascular plants in 213 genera and 71 families were collected (Table 1). Among the angiosperms, 72 were monocots and 209 were dicots. Three species of Pteridophytes and one gymnosperm were also present. The families with the greatest number of species were Poaceae (47), Asteraceae (43), Fabaceae (16), Cyperaceae (11) and Euphorbiaceae (10). The largest genera were *Carex* (6), *Dalea* (4), *Ulmus* (4), and *Galium* (4). Ninety-three species were annuals and 193 were perennials. Thirty-six woody plant species were present. Prior to this study, the OVPD listed 698 taxa of vascular plants from Caddo County (Hoagland et al 2006). Of the 283 species reported in this study, 64 were county records. A complete listing of plants is found in the Appendix.

Thirty-three species from 14 families were exotic, representing 11.5% of the flora. The most exotic species were in the family Poaceae (10) and the genus *Bromus* (3). Flo-

risitic surveys from throughout Oklahoma report that exotic species constitute 9-15% of the flora (Hoagland and Johnson 2001, 2004a, 2004b; Hoagland and Buthod 2003, 2004; Hoagland and Wallick 2003, Hoagland, Buthod, and Elisens 2004, Hoagland, Crawford-Callahan et al 2004, Hoagland and Buthod 2005a, Hoagland and Buthod 2005b, Hoagland and Johnson 2005), with the exception of two sites in McCurtain County, where 6.6% of the flora consisted of exotic species (Hoagland and Johnson 2004c).

No federally listed threatened or endangered species were encountered. Five species tracked by the Oklahoma Natural Heritage Inventory (ONHI; 2006) were present: *Argythamnia humilis* (G5S2S3), *Cuscuta umbellata* (G5S1S2), *Dalea frutescens* (G5S2S3), *Echinocereus reichenbachii* (G5S2?), and *Muhlenbergia bushii* (G5S1S2). Species conservation ranks, presented parenthetically, are assigned according to the level of imperilment at the state (S) and global (G) levels on a scale of 1 - 5, with 1 representing a species that is imperiled and 5 a species that it is secure (Groves et al 1995).

Collection were made from four vegetation associations. A brief description of each follows:

### 1. *Schizachyrium scoparium*-*Bouteloua curtipendula* herbaceous association

This vegetation type occurred on shallow, limestone derived soils. Common associated species included *Ambrosia*

**Table 1: Summary of floristic collections made in Caddo County, Oklahoma.\***

Taxonomic group	Species	Native spp.	Exotic spp.
Pteridophyta	3	3	0
Coniferophyta	1	1	0
Magnoliophyta			
Magnoliopsida	209	188	11
Liliopsida	73	62	22
Total	286	253	33

\* Table format follows Palmer et al (1995).

*psilostachya*, *Asclepias viridis*, *Berlandiera texana*, *Bouteloua hirsuta*, *B. rigidiseta*, *Bromus tectorum*, *Calylophus serrulatus*, *Dalea frutescens*, *D. purpureum*, *Dichanthelium oligosanthes* var. *scribnerianum*, *Echinocereus reichenbachii*, *Erioneuron pilosum*, *Erysimum asperum*, *Hedyotis nigricans*, *Liatris punctata*, *Lindheimera texana*, *Mirabilis albida*, *Monarda clinopodioides*, *Opuntia phaeacantha*, *Paronychia jamesii*, *Rabttibida columnifera*, *Ruellia humilis*, *Tetraneuris scaposa*, and *Yucca glauca*. *Argythamnia humilis*, *Dalea frutescens*, *Echinocereus reichenbachii*, species tracked by ONHI, occurred in this habitat.

### 2. *Quercus muehlenbergi*-*Q. shumardii* forest association

This vegetation type occurred along the stream and adjacent mesic sites. Common associates included *Arisaema dracontium*, *Carya illinoensis*, *Celastrus scandens*, *Chasmanthium latifolium*, *Geum canadense*, *Polygonatum biflorum*, *Menispermum canadense*, *Parietaria pensylvanica*, *Parthenocissus quinquefolia*, *Phryma leptostachya*, *Quercus macrocarpa*, *Sanicula canadensis*, *Sideroxylon lanuginosum*, *Smilax bon-nox*, *Symphoricarpos orbiculatus*, and *Viburnum rufidulum*. *Muhlenbergia bushii*, a species tracked by ONHI, was found in this habitat.

### 3. Wetland

This vegetation type was restricted to the margins of the creek and a small pond on the property. Common associates included *Amorpha fruticosa*, *Dracopis amplexicaulis*, *Cephalanthus occidentalis*, *Eleocharis montevidensis*, *Justicia americana*, *Ludwigia repens*, *Panicum virgatum*, *Polygonum lapathifolium*, *Salix nigra*, *Scirpus lineatus* and *Xanthium strumarium*. *Cuscuta umbellata*, a species tracked by ONHI, was found in this habitat.

### 4. Disturbed areas

Disturbed areas were designated as sites exhibiting signs of physical disruption, such as roadsides, frequently mowed areas, and camping sites. Common plants in disturbed

areas included *Ambrosia trifida*, *Arenaria serpyllifolia*, *Bothriochloa saccharoides*, *Diospyros virginiana*, *Helianthus annuus*, *Melilotus officinalis*, *Phytolacca americana*, *Schedonnardus paniculatus*, *Sisyrinchium angustifolium*, *Solanum rostratum*, *Torilis arvensis*, and *Viola bicolor*.

## ACKNOWLEDGMENTS

We thank Todd Fagin and Kim Shannon for field assistance and an anonymous reviewer for constructive comments.

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Received: June 20, 2006; Accepted November 16, 2006.



## APPENDIX

Annotated species list for a site in the Slick Hills of southern Caddo County. The first entry is the life history (A = annual, B = biennial, P = perennial), followed by the collection number, and habitat (QM QS = *Quercus muehlenbergii*-*Q. shumardii* forest association, SSBC = *Schizachyrium scoparium*-*Bouteloua curtipendula* herbaceous association, WETL = wetland and aquatic vegetation, DA = disturbed areas). Exotic species are denoted with an asterisk. Voucher specimens were deposited at the Robert Bebb Herbarium at the University of Oklahoma (OKL).

## PTERIDOPHYTA

## Ophioglossaceae

*Ophioglossum engelmannii* Pranthl - P; 2431-bwh; QM QS

## Pteridaceae

*Cheilanthes fei* T. Moore - P; 2546-bwh; SSBC  
*Pellaea atropurpurea* (L.) Link - P; 2479-bwh; QM QS

## CONIFEROPHYTA

## Cupressaceae

*Juniperus virginiana* L. - P; 2369-bwh; QM QS

## MAGNOLIOPHYTA

## MAGNOLIOPSIDA

## Acanthaceae

*Justicia americana* (L.) Vahl - P; 2453-bwh; WETL  
*Ruellia humilis* Nutt - P; 2439; SSBC

## Amaranthaceae

*Amaranthus tuberculatus* (Moq.) Sauer - A; 2604-bwh; DA

## Anacardiaceae

*Rhus aromatica* Ait. - P; 2376-bwh; SSBC  
*R. glabra* L. - P; 2375-bwh; QM QS  
*Toxicodendron radicans* (L.) Kuntze - P; 2567-bwh; DA, QM QS

## Apiaceae

*Chaerophyllum taintureri* Hook. var. *dasycarpum* Hook. ex S. Wats. - A; AB-7081; DA, SSBC  
*Daucus pusillus* Michx. - A; 2381-bwh; SSBC  
*Eryngium leavenworthii* Torr. & Gray - A; 2500-bwh; SSBC  
*Lomatium foeniculaceum* (Nutt.) Coult. & Rose - P; 2416-bwh; SSBC  
*Polytaenia nuttallii* DC. - P; 2482-bwh; SSBC  
*Sanicula canadensis* L. - P; 2354-bwh; QM QS  
*Spermolepis inermis* (Nutt. ex DC.) Mathias & Constance - A; 2354-bwh; SSBC  
*Torilis arvensis* (Huds.) Link\* - A; 2405-bwh; DA, SSBC  
*T. nodosa* (L.) Gaertn.\* - A; 2505-bwh; DA, SSBC

## Apocynaceae

*Amsonia ciliata* Walt. - P; 2534-bwh; SSBC  
*Apocynum cannabinum* L. - P; AB-7091; DA, SSBC

## Asclepiadaceae

*Asclepias engelmanniana* Woods. - P; 2337-bwh; SSBC  
*A. viridiflora* Raf. - P; 2428-bwh; SSBC  
*A. viridis* Walt. - P; 2457-bwh; SSBC  
*Matelea biflora* (Raf.) Woods. - P; 2433-bwh; QM QS

## Asteraceae

*Achillea millefolium* L. - P; 2483-bwh; SSBC  
*Ambrosia psilostachya* DC. - P; 2336-bwh; DA, SSBC  
*A. trifida* L. - A; 2489-bwh; DA, QM QS  
*Amphiachyris dracunculoides* (DC.) Nutt. - A; 2552-bwh; DA, SSBC  
*Artemisia ludoviciana* Nutt. - P; 2904-bwh; SSBC  
*Berlandiera texana* DC. - P; 2506-bwh; SSBC  
*Bidens frondosa* L. - A; 2339-bwh; WETL  
*Centaurea americana* Nutt. - A; 2459-bwh; SSBC  
*Cirsium undulatum* (Nutt.) Spreng. - P; 2341-bwh; SSBC  
*Conyza canadensis* (L.) Cronq. - A; 2491-bwh; DA  
*Dracopis amplexicaulis* (Vahl) Cass. - A; 2437-bwh; SSBC  
*Echinacea angustifolia* DC. - P; 2440-bwh; SSBC  
*Engelmannia peristenia* (Raf.) Goodman & Lawson - P; 2475-bwh; SSBC  
*Erigeron modestus* Gray - P; 2908-bwh; SSBC  
*E. strigosus* Muhl. ex Willd. - A; 2526-bwh; DA, SSBC  
*Eupatorium serotinum* Michx. - P; 2501-bwh; QM QS  
*Evax prolifera* Nutt. ex DC. - A; 2468-bwh; DA, SSBC  
*Gaillardia pulchella* Foug. - A; 2476-bwh; SSBC  
*G. suavis* (Gray & Engelm.) Britt. & Rusby - P; 2425-bwh; SSBC  
*Grindelia nuda* Wood - P; 2541-bwh; DA  
*G. papposa* Nesom & Suh - A; 2902-bwh; SSBC  
*Helenium microcephalum* DC. - A; 2452-bwh; WETL  
*Helianthus annuus* L. - A; 2537-bwh; DA  
*Heterotheca canescens* (DC.) Shinnners - P; 2903-bwh; SSBC  
*H. villosa* (Pursh) Shinnners - P; 2540-bwh; SSBC  
*Hymenopappus scabiosaeus* L'Hér. - P; 2466-bwh; SSBC  
*Lactuca canadensis* L. - A; 2343-bwh; QM QS  
*L. ludoviciana* (Nutt.) Riddell - A; 2905-bwh; SSBC  
*L. scariola* L. - A; 2338-bwh; DA

- Liatris punctata* Hook. – P; 2901-bwh; SSBC  
*Lindheimeria texana* Gray & Engelm. – A; 2424-bwh; SSBC  
*Packera plattensis* (Nutt.) W. A. Weber & A. Löve – P; 2529-bwh; SSBC  
*Pyrrhopappus grandiflorus* (Nutt.) Nutt. – P; 2422-bwh; DA, SSBC  
*Ratibida columnifera* (Nutt.) Woot. & Standl. – P; 2427-bwh; SSBC  
*Smallanthus uvedalius* (L.) Mackenzie ex Small – P; 2895-bwh; QMQS  
*Solidago missouriensis* Nutt. – P; 2599-bwh; SSBC  
*S. nemoralis* Ait. – P; 2598-bwh; SSBC  
*Tetranneuris scaposa* (DC.) Greene – P; 2906-bwh; SSBC  
*Thelesperma filifolium* (Hook.) Gray – P; 2473-bwh; SSBC  
*Tragopogon dubius* Scop.\* – A; 2445-bwh; DA, SSBC  
*Vernonia baldwinii* Torr. – P; 2495-bwh; SSBC  
*Xanthisma texanum* DC. – A; 2385-bwh; SSBC  
*Xanthium strumarium* L. – A; 2488-bwh; WETL
- Boraginaceae**  
*Buglossoides arvensis* (L.) I. M. Johnston – A; 2884-bwh; DA, SSBC  
*Heliotropium tenellum* (Nutt.) Torr. – A; 2553-bwh; SSBC
- Brassicaceae**  
*Camelina microcarpa* DC.\* – A; 2564-bwh; DA, SSBC  
*Draba brachycarpa* Nutt. ex Torr. & Gray – A; 2889-bwh; DA, SSBC  
*D. cuneifolia* Nutt. ex Torr. & Gray – A; 2886-bwh; DA, SSBC  
*D. reptans* (Lam.) Fern. – A; 2887-bwh; DA, SSBC  
*Erysimum asperum* (Nutt.) DC. – A; 2413-bwh; SSBC  
*E. repandum* L.\* – A; 2892-bwh; DA, SSBC  
*Lepidium densiflorum* Schrad. – A; AB-7077; DA, SSBC  
*L. virginianum* L. – A; AB-7115; DA, SSBC  
*Lesquerella ovalifolia* Rydb. ex Britt. P; 2458-bwh; SSBC  
*Nasturtium officinale* Ait. f.\* – P; 2894-bwh; WETL
- Cactaceae**  
*Echinocereus reichenbachii* (Terscheck ex Walp.) Haage f. – P; 2510-bwh; SSBC  
*Escobaria vivapra* (Nutt.) Buxbaum – P; 0490-98; SSBC  
*Opuntia engelmannii* Salm-Dyck – P; 0492-98; SSBC  
*O. humifusa* (Raf.) Raf. – P; 2418-bwh; SSBC  
*O. macrorhiza* Engelm. – P; 0491-98; QMQS, SSBC
- Campanulaceae**  
*Triodanis perfoliata* (L.) Nieuwl. – A; 2524-bwh; SSBC
- Caprifoliaceae**  
*Symphoricarpos orbiculatus* Moench – P; 2356-bwh; QMQS  
*Viburnum rufidulum* Raf. – P; 2340-bwh; QMQS
- Caryophyllaceae**  
*Arenaria serpyllifolia* L.\* – A; 2412-bwh; DA, SSBC  
*Paronychia jamesii* Torr. & Gray – P; 2434-bwh; SSBC  
*Stellaria media* (L.) Will.\* – A; 2883-bwh; DA
- Celastraceae**  
*Celastrus scandens* L. – P; 2554-bwh; QMQS
- Convolvulaceae**  
*Convolvulus equitans* Benth. – P; 2465-bwh; DA  
*Evolvulus nuttallianus* J. A. Schultes – P; 2474-bwh; SSBC  
*Ipomoea shumardiana* (Torr.) Shinnery – P; AB-7118; SSBC
- Cornaceae**  
*Cornus drummondii* C. A. Mey. – P; 2360-bwh; QMQS
- Cucurbitaceae**  
*Cucurbita foetidissima* Kunth – P; 2438-bwh; SSBC
- Cuscutaceae**  
*Cuscuta umbellata* Kunth – A; AB-7108; WETL
- Ebenaceae**  
*Diospyros virginiana* L. – P; 2355-bwh; QMQS
- Euphorbiaceae**  
*Acalypha gracilens* Gray – A; 2597-bwh; SSBC  
*Argythamnia humilis* (Engelm. & Gray) Muell.-Arg. – P; 2384-bwh; SSBC  
*Chamaesyce maculata* (L.) Small – A; AB-7112; DA, SSBC  
*C. missurica* (Raf.) Shinnery – A; AB-7114; SSBC  
*Croton monanthogynus* Michx. – A; 2478-bwh; DA, SSBC  
*Euphorbia dentata* Michx. – A; 2485-bwh; DA, QMQS  
*E. longicuris* Scheele – A; 2394-bwh; SSBC  
*E. spathulata* Lam. – A; 2469-bwh; SSBC  
*Phyllanthus polygonoides* Nutt. ex Spreng. – P; 2423-bwh; SSBC  
*Tragia ramosa* Torr. – P; AB-7117; SSBC
- Fabaceae**  
*Acacia angustissima* (P. Mill.) Kuntze – P; 2447-bwh; SSBC  
*Baptisia australis* (L.) R. Br. Ex Ait. f. – P; 2523-bwh; SSBC  
*Cercis canadensis* L. – P; 2367-bwh; QMQS  
*Dalea aurea* Nutt. ex Pursh – P; 2402-bwh; SSBC  
*D. frutescens* Gray – P; 2896-bwh; SSBC  
*D. multiflora* (Nutt.) Shinnery – P; 2487-bwh; SSBC  
*D. purpurea* Vent. – P; 2481-bwh; SSBC

- Desmodium tweedyi* Britt. – P; 2516-bwh; SSBC  
*Lathyrus hirsutus* L.\* - A; 2390-bwh; DA  
*Medicago minima* (L.) L.\* - A; 2411-bwh; DA  
*M. orbicularis* (L.) Bartalini\* - A; 2532-bwh; DA  
*Melilotus officinalis* (L.) Lam.\* - A; 2532-bwh; DA  
*Pediemelum cuspidatum* (Pursh) Rydb. – P; 2612-bwh; SSBC  
*P. digitatum* (Nutt. ex Torr. & Gray) Isley – P; 2611-bwh; SSBC  
*P. esculentum* (Pursh) Rydb. – P; 2596-bwh; SSBC  
*Robinia pseudoacacia* L. - P; 2358-bwh; QMQS
- Fagaceae  
*Quercus macrocarpa* Michx. – P; 2368-bwh; QMQS  
*Q. muehlenbergii* Engelm. – P; 2366-bwh; QMQS  
*Q. shumardii* Buckl. – P; AB-7090; QMQS
- Geraniaceae  
*Erodium cicutarium* (L.) L'Hér. Ex Ait.\* - A; 2528-bwh; DA  
*G. carolinianum* L. – A; 2456-bwh; DA, SSBC
- Hydrophyllaceae  
*Phacelia congesta* Hook. – A; 2530-bwh; SSBC
- Juglandaceae  
*Carya illinoensis* (Wangenh.) K. Koch – P; 2371-bwh; QMQS  
*Juglans microcarpa* Berl. – P; 2351-bwh; QMQS  
*J. nigra* L. – P; 2378-bwh; QMQS
- Krameriaceae  
*Krameria lanceolata* Torr. – P; 2563-bwh; SSBC
- Lamiaceae  
*Hedeoma drummondii* Benth. – P; 2435-bwh; SSBC  
*Lamium amplexicaule* L.\* - A; 2882-bwh; DA  
*Monarda clinopodioides* Gray – A; 2464-bwh; SSBC  
*Salvia azurea* Michx. ex Lam. – P; 2549-bwh; SSBC  
*Scutellaria wrightii* Gray – P; 2616-bwh; SSBC
- Linaceae  
*Linum lewisii* Pursh - A; 2444-bwh; SSBC  
*L. rigidum* Pursh - A; 2513-bwh; SSBC
- Loasaceae  
*Mentzelia oligosperma* Nutt. ex Sims – P; 2442-bwh; SSBC
- Malvaceae  
*Callirhoe digitata* Nutt. – P; AB-7116; SSBC  
*C. involucrata* (Torr. & Gray) Gray – P; 2480-bwh; SSBC  
*C. pedata* (Nutt. ex Hook.) Gray – P; 2512-bwh; SSBC  
*Sida spinosa* L. – A; 2498-bwh; DA, SSBC
- Menispermaceae  
*Cocculus carolinus* (L.) DC. – P; 2392-bwh; QMQS  
*Menispermum canadense* L. – P; 2372-bwh; QMQS
- Molluginaceae  
*Mollugo verticillata* L. – A; 2548-bwh; DA, SSBC
- Moraceae  
*Fatoua villosa* (Thunb.) Nakai\* - A; 2352-bwh; DA  
*Morus alba* L.\* - P; 2373-bwh; QMQS
- Nyctaginaceae  
*Mirabilis albida* (Walt.) Heimerl – P; bwh-2559; SSBC  
*M. nyctaginea* (Michx.) MacM. – P; bwh-2606; SSBC
- Oleaceae  
*Fraxinus pennsylvanica* Marsh. – P; 2401-bwh; QMQS
- Onagraceae  
*Calylophus serrulatus* (Nutt.) Raven – P; 2462-bwh; SSBC  
*Gaura longiflora* Spach – A; 2414-bwh; DA, SSBC  
*G. suffulta* Engelm. ex Gray – A; 2539-bwh; SSBC  
*Ludwigia repens* J. R. Forst. – P; 2539-bwh; WETL  
*Oenothera macrocarpa* Nutt. – P; 2441-bwh; SSBC  
*Stenosiphon linifolius* (Nutt. ex James) Heynh. – P; 2448-bwh; SSBC
- Oxalidaceae  
*Oxalis stricta* L. – P; 2450-bwh; DA, SSBC
- Passifloraceae  
*Passiflora lutea* L. – P; 2353-bwh; QMQS
- Phytolaccaceae  
*Phytolacca americana* L. – P; 2451-bwh; QMQS
- Plantaginaceae  
*Plantago lanecolata* L.\* - P; 2386-bwh; DA, SSBC  
*P. patagonica* Jacq. – A; AB-7113; SSBC  
*P. rhodosperma* Dcne. – A, H; 2408-bwh; SSBC
- Polemoniaceae  
*Phlox pilosa* L. – P; 2518-bwh; SSBC
- Polygonaceae  
*Eriogonum langifolium* Nutt. – P; 2348-bwh; SSBC  
*Polygonum lapathifolium* L. – A; 2396-bwh; WETL  
*P. persicaria* L. – A; 2499-bwh; WETL  
*Rumex altissimus* Wood – P; 2393-bwh; WETL  
*R. crispus* L.\* - P; 2607-bwh; DA  
*R. verticillatus* L. – P; 2608-bwh; WETL
- Primulaceae  
*Androsace occidentalis* Pursh – A; 2888-bwh; SSBC
- Ranunculaceae  
*Delphinium carolinianum* Walt. – P; 2421-bwh; SSBC
- Rosaceae  
*Geum canadense* Jacq. – P; 2436-bwh; QMQS  
*Prunus angustifolia* Marsh. – P; 2379-bwh; SSBC



- P. mexicana* S. Wats. – P; 2362-bwh; QMQS  
*Rosa multiflora* Thunb. ex Murr.\* – P; 2566-bwh; QMQS
- Rubiaceae**  
*Cephalanthus occidentalis* L. – P; 2556-bwh; WETL  
*Galium aparine* L. – A; 2519-bwh; DA  
*G. circaezans* Michx. – P; 2410-bwh; QMQS  
*G. pilosum* Ait. – P; 2614-bwh; QMQS  
*G. virgatum* Nutt. – A; 2383-bwh; SSBC  
*Hedyotis nigricans* (Lam.) Fosberg – P; 2461-bwh; SSBC
- Salicaceae**  
*Salix nigra* Marsh. – P; 2538-bwh; WETL
- Sapindaceae**  
*Sapindus saponaria* L. – P; 2364-bwh; QMQS
- Sapotaceae**  
*Sideroxylon lanuginosum* Michx. – P; 2374-bwh; QMQS
- Scrophulariaceae**  
*Castilleja sessiliflora* Pursh – P; 2409-bwh; SSBC  
*Leucospora multifida* (Michx.) Nutt. – A; 2551-bwh; DA  
*Penstemon cobaea* Nutt. – P; 2527-bwh; SSBC
- Solanaceae**  
*Physalis viscosa* L. – P; 2502-bwh; DA, SSBC  
*Solanum dimidiatum* Raf. – A; 2419-bwh; DA, SSBC  
*S. elaeagnifolium* Cav. – P; 2395-bwh; DA, SSBC  
*S. rostratum* Dunal – A; 2463-bwh; DA
- Ulmaceae**  
*Celtis laevigata* Willd. – P; 2365-bwh; SSBC  
*Ulmus americana* L. – P; AB-7078; SSBC  
*U. parvifolia* Jacq.\* P; 2361-bwh; SSBC  
*U. pumila* L.\* P; 2399-bwh; SSBC  
*U. rubra* Muhl. P; 2308-bwh; SSBC
- Urticaceae**  
*Parietaria pennsylvanica* Muhl. ex Willd. – A; 2350-bwh; QMQS
- Valerianaceae**  
*Valerianella radiata* (L.) Dufur. – A; 2443-bwh; SSBC
- Verbenaceae**  
*Glandularia bipinnatifida* (Nutt.) Nutt. – A; 2470-bwh; SSBC  
*Phryma leptostachya* L. – P; 2426-bwh; QMQS  
*Verbena bracteata* Lag. & Rodr. – A; 2603-bwh; DA
- Violaceae**  
*Viola bicolor* Pursh – A; 2885-bwh; DA  
*V. sororia* Willd. – P; 2891-bwh; QMQS
- Vitaceae**  
*Ampelopsis cordata* Michx. – P; 2391-bwh; QMQS  
*Cissus trifoliata* (L.) L. – P; 2545-bwh; SSBC  
*Parthenocissus quinquefolia* (L.) Planch. – P; 2363-bwh; QMQS  
*Vitis cinerea* (Engelm.) Engelm. – P; AB-7079; QMQS
- Zygophyllaceae**  
*Kallstroemia hirsutissima* Vail ex Small – A; 2497-bwh; SSBC
- LILIOPSIDA**
- Agavaceae**  
*Yucca glauca* Nutt. – P; 2415-bwh; DA, SSBC
- Araceae**  
*Arisaema dracontium* (L.) Schott – P; 2404-bwh; QMQS
- Commelinaceae**  
*Commelina erecta* L. – P; 2560-bwh; DA, SSBC  
*Tradescantia occidentalis* (Britt.) Smyth – P; 2521-bwh; SSBC  
*T. ohiensis* Raf. – P; 2522-bwh; SSBC
- Cyperaceae**  
*Carex amphibola* Steud. – P, G; AB-7139; WETL  
*C. annectens* (Bickn.) Bickn. – P; AB-7087; WETL  
*C. cherokeensis* Schwein. – P; 2515-bwh; WETL  
*C. frankii* Kunth – P; 7088-bwh; WETL  
*C. grvida* Bailey – P; AB-7086; WETL  
*C. muehlenbergii* Schkuhr ex Willd. – P; AB-7089; QMQS  
*Cyperus retroflexus* Buckl. – P; AB-7084; WETL  
*C. setigerus* Torr. & Hook. – P; AB-7083; WETL  
*Eleocharis compressa* Sullivant – P; 2454-bwh; WETL  
*E. montevidensis* Kunth – P; AB-7082; WETL  
*Scirpus pendulus* Muhl. – P; AB-7085; WETL
- Iridaceae**  
*Sisyrinchium angustifolium* P. Mill. – P; AB-7107; SSBC
- Juncaceae**  
*Juncus secundus* Beauv. ex Poir. – P; 2600-bwh; SSBC, WETL
- Liliaceae**  
*Erythronium mesochoreum* Knerr – P; 2918-bwh; QMQS  
*Nothoscordum bivalve* (L.) Britt. – P; 2605-bwh; SSBC  
*Polygonatum biflorum* (Walt.) Ell. – P; 2359-bwh; QMQS
- Najadaceae**  
*Najas guadalupensis* (Spreng.) Magnus – A, H; AB-7141; WETL

## Poaceae

- Aegilops cylindrica* Host\* - A; 2562-bwh; DA, SSBC  
*Andropogon gerardii* Vitman - P; 2897-bwh; SSBC  
*Aristida purpurea* Nutt. - P; 2460-bwh; SSBC  
*Bothriochloa saccharoides* (Sw.) Rydb. - P; AB-7092; DA, SSBC  
*Bouteloua curtipendula* (Michx.) Torr. - P; 2558-bwh; SSBC  
*B. hirsuta* Lag. - P; 2547-bwh; SSBC  
*B. rigidiseta* (Steud.) A. S. Hitchc. - P; 2400-bwh; SSBC  
*Bromus catharticus* Vahl\* - A; 2486-bwh; DA, SSBC  
*B. japonicus* Thunb. ex Murr.\* - A; 2508-bwh; DA, SSBC  
*B. pubescens* Muhf. Ex Willd. - P; 2432-bwh; QMQS  
*B. tectorum* L.\* - A; 2417-bwh; DA, SSBC  
*Buchloe dactyloides* (Nutt.) Engelm. - P; 2344-bwh; SSBC  
*Chasmanthium latifolium* (Michx.) Yates - P; 2555-bwh; QMQS  
*Chloris verticillata* Nutt. - P; 2477-bwh; DA  
*Dichanthelium acuminatum* (Sw.) Gould & C. A. Clark - P; AB-7105; QMQS, SSBC  
*D. oligoanthes* (J. A. Schultes) Gould var. *scribnerianum* (Nash) Gould - P; AB-7099; SSBC  
*Digitaria sanguinalis* (L.) Scop.\* - A; 2388-bwh; DA, SSBC  
*Echinochloa muricata* (Beauv.) Fern. - A; AB-7095; WETL  
*Elymus virginicus* L. - P; 2484-bwh; QMQS  
*Eragrostis cilianensis* (All.) Vign. ex Janchen\* - A; 2900-bwh; DA  
*Erioneuron pilosum* (Buckl.) Nash - P; 2471-bwh; SSBC  
*Glyceria striata* (Lam.) A. S. Hitchc. - P; 2407-bwh; WETL  
*Hesperostipa comata* (Trin. & Rupr.) Barkworth ssp. *comata* - P; AB-7100; SSBC  
*Hordeum jubatum* L. - P; 2472-bwh; DA, SSBC  
*Lolium perenne* L.\* - P; 2387-bwh; DA, SSBC  
*Melica nitens* (Scribn.) Nutt. ex Piper - P; 2535-bwh; WETL  
*Muhlenbergia bushii* Pohl - P; AB-7104; QMQS  
*Nassella leucotricha* (Trin. & Rupr.) Pohl - P; 2507-bwh; SSBC  
*Panicum capillare* L. - A; 2342-bwh; SSBC  
*P. dichotomiflorum* Michx. - A; AB-7096; WETL  
*P. virgatum* L. - P; 2542-bwh; SSBC  
*Paspalum distichum* L. - P; AB-7097; WETL  
*P. leave* Michx. - P; 2455-bwh; DA  
*P. setaceum* Michx. - P; 2899-bwh; DA, SSBC  
*Phalaris caroliniana* Walt. - A; AB-7102; WETL  
*Poa annua* L.\* - A; 2562-bwh; DA  
*P. arachnifera* Torr. - P; AB-7101; DA, SSBC  
*Schedonardus paniculatus* (Nutt.) Trel. - P; 2347-bwh; DA  
*Schedonorus phoenix* (Scop.) Holub.\* - P; AB-7093; DA  
*Schizachyrium scoparium* (Michx.) Nash - P; 2496-bwh; SSBC  
*Setaria viridis* (L.) Beauv.\* - A; AB-7098; DA  
*Sorghum halepense* (L.) Pers.\* - P; 2382-bwh; DA  
*Sphenopholis obtusata* (Michx.) Scribn. - A; AB-7094; WETL  
*Sporobolus cryptandrus* (Torr.) Gray - P; 2346-bwh; DA  
*Tridens albescens* (Vasey) Woot. & Standl. - P; 2602-bwh; SSBC  
*T. flavus* (L.) A. S. Hitchc. - P; 2544-bwh; SSBC  
*T. muticus* (Torr.) Nash - P; AB-7103; SSBC

## Smilacaceae

- Smilax bon-nox* L. - P; 2557-bwh; QMQS  
*S. rotundifolia* L. - P; 2370-bwh; QMQS  
*S. tamnoides* L. - P; 2398-bwh; QMQS