

A FLORISTIC INVENTORY OF THE NORTH SIDE OF ARCADIA LAKE, EDMOND, OKLAHOMA

Micah J. Friedman

Jennifer A. Messick

Department of Biology

University of Central Oklahoma

Edmond, OK 73034

mfriedman@uco.edu

jmessick1@uco.edu

Keywords: *vascular plants, Cross Timbers, biodiversity, iNaturalist*

ABSTRACT

A floristic inventory was conducted on the north side of Arcadia Lake in Edmond, Oklahoma. Fieldwork was conducted from April 2022 to July 2023. The survey documented 356 plant species representing 79 plant families and 233 genera. A total of 214 species were collected, and their corresponding vouchers were deposited at the University of Central Oklahoma Herbarium (CSU). Forty-one plant species were not collected, but were observed, photographed, and uploaded to iNaturalist by the authors. One hundred and one additional plant species found in the study site were observed by the iNaturalist community and verified by the authors. One species tracked by the Oklahoma Natural Heritage Inventory was observed and vouchered. Eighty-three percent of observed species were native, while seventeen percent were non-native.

INTRODUCTION AND STUDY AREA

Arcadia Lake is in northeastern Oklahoma County, six miles east of Edmond, Oklahoma. The county is centrally located in the state. Arcadia Lake is a human-made reservoir constructed in 1984 to supply the city of Edmond with water, control flooding, and provide outdoor recreation for the surrounding communities. This land is a mixture of five Edmond city parks, Edmond's municipal water facilities, and the University of Central Oklahoma Boathouse (The City of Edmond 2024). The lake has approximately 26 miles of shoreline and 736 ha of surface area (U.S. Army Corps of Engineers 2024). Approximately 1,560 ha of recreational land surrounds the lake (Figure 1). The north side study site is approximately 274 ha, between E. 2nd Street on the north side, the lake shore to the south, N. Air Depot Boulevard on the

west, and N. Post Road on the east (Figure 1). The study site ranges between the latitude 35.652685 and 35.644860 and longitude -97.407465 and -97.35392.

Arcadia Lake is within the Cross Timbers Ecoregion, which stretches from north-central Texas through central Oklahoma to its northern reaches in southern Kansas (Figure 1). The Cross Timbers is over 4.8 million hectares, approximately half of it in Oklahoma (Küchler 1964; Thomas and Hoagland 2011). It is a mixture of diverse habitats: forest, savanna, grassland, and wetland. The predominant tree species are *Quercus stellata* Wangenh. (post oak) and *Quercus marilandica* Münchh. (blackjack oak) (Duck and Fletcher 1945). Arcadia Lake falls within the temperate humid subtropical climate zone. This climate zone is characterized by hot and humid summers and cool to mild winters (Köppen 1936). Oklahoma County's average annual climate

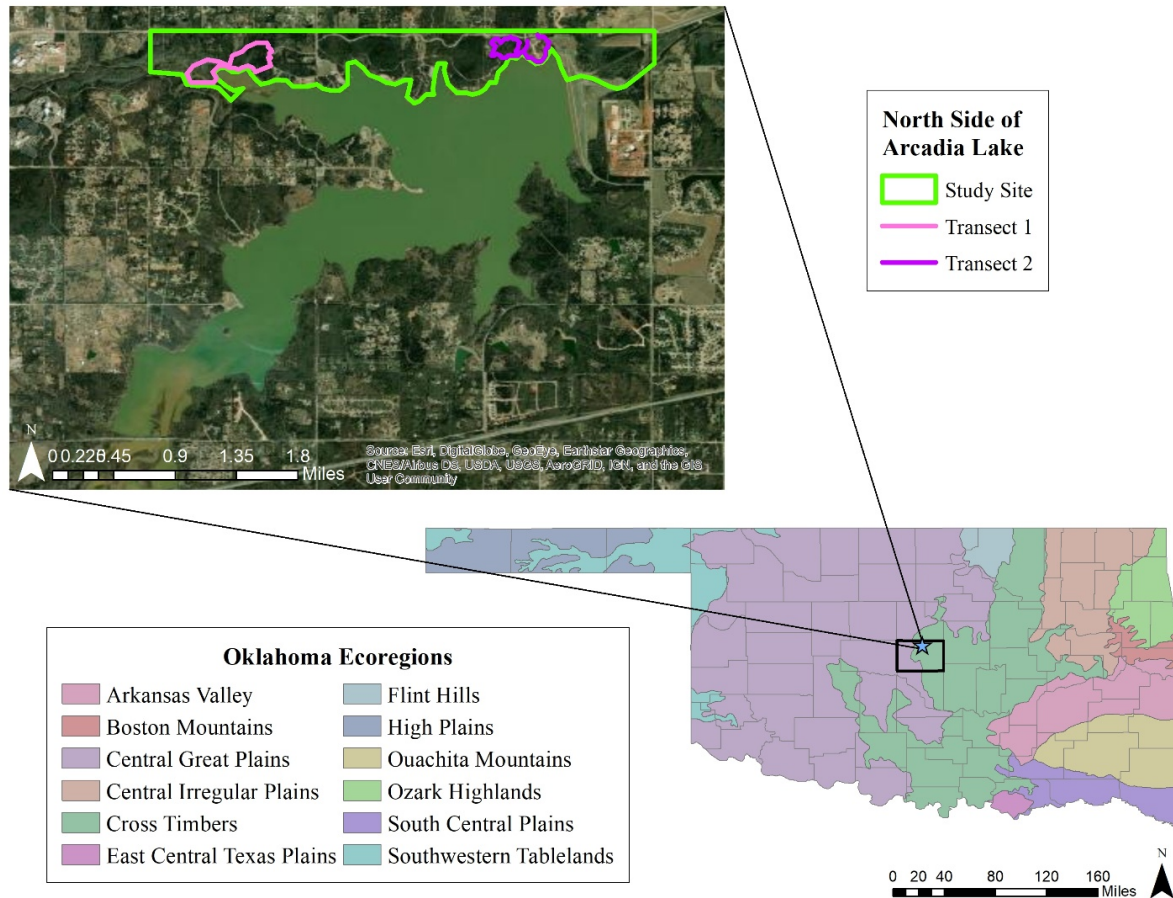


Figure 1 Oklahoma ecoregions and Arcadia Lake study site.

statistics include a growing season of 213 days, 92.4 cm of rainfall, and a temperature of 15.5°C. The average last spring freeze is April 4, and the average first fall freeze is November 2. Average annual snowfall is 17.5 cm, and average wind speed is 12.8 kph. The record high temperature is 45°C, and the record low is - 26°C. The latest recorded freeze date is April 20, and the earliest is October 21 (Oklahoma Climatological Survey 2000; Mesonet 2023).

METHODS

Fieldwork was conducted from 5 April 2022 to 24 July 2023. Twenty-nine site visits were made during this time. Site visit frequency was determined by the likelihood of flowering plants being more abundant, typically once every two weeks during the growing season (March through October) and

once monthly in the winter. Two transects were established to cover as many habitat types as possible and to observe and collect as many species as possible. Transect 1 was 2.082 km and crossed through forest, grassland, and wetland habitats (Figure 1). Transect 2 was 1.718 km and crossed forest, grassland, wetland, and disturbed habitats (Figure 1). Most plants were collected along the two transects, but some were collected in the broader study area. In most cases, plants were collected while flowering and documented with an iPhone 11 camera and posted on iNaturalist. Plants not abundant (< 10) were not collected but photographed and photos uploaded to iNaturalist. After each site visit, specimens were pressed in a plant press and dried in a drying cabinet. An iNaturalist project, Flora of Arcadia Lake (<https://www.inaturalist.org/projects/flora>

[of-arcadia-lake](#)), was created for the entirety of Arcadia Lake. Plant species not observed during the fieldwork but found on the iNaturalist app (within the study area) were added to the overall plant species count. Only species that could be confidently identified through the image uploaded on iNaturalist were added to the species list.

Specimens and iNaturalist observations were identified using *Flora of Oklahoma: Keys and Descriptions* (Ryburn et al. 2018; Fishbein et al. 2024) and *Illustrated Flora of North Central Texas* (Diggs et al. 2000). After identification, the corresponding iNaturalist post was updated with the correct genus and species. The USDA PLANTS Database (2023) was used to determine nativity, duration, and growth habit. Nomenclature and classification follow the Integrated Taxonomic Information System (2024). All vouchers were deposited at the University of Central Oklahoma Herbarium (CSU).

RESULTS AND DISCUSSION

A total of 356 plant species representing 79 plant families and 233 genera were observed and documented on the north side of Arcadia Lake (Appendix). Two hundred and fourteen species were collected, identified, and vouchered. Forty-one were documented via iNaturalist due to low abundance on the date observed, i.e. *Agalinis heterophylla* (Nutt.) Small (prairie false foxglove) and *Hypericum hypericoides* (L.) Crantz (St. Andrew's cross). The remaining 101 were observed by iNaturalist users. Plant duration statistics include 146 annuals (41%), 195 perennials (54.8%), and 15 biennials (4.2%). The growth habits statistics were 248 forbs (69.7%), 47 graminoids (13.2%), 14 shrubs (3.9%), 12 vines (3.4%), five ferns (1.4%), and 30 trees (8.4%). The most prominent plant families observed were Asteraceae with 73 species (20.5%), Fabaceae with 30 species (8.4%), and Poaceae with 31 species (8.7%). Plant families with the most non-native species were Asteraceae (7), Poaceae (7), Brassicaceae (6), Caryophyllaceae (6), and

Fabaceae (6). The total number of native species was 297 (83.4%), while 59 species (16.6%) were non-native. The 356 vascular plant species observed on the north side of Arcadia Lake constitute 13.4% of the 2,657 vascular plant species found in Oklahoma (Fishbein et al. 2024).

The current Arcadia inventory had the second greatest species richness compared to four other plant inventories in the region (Table 1). This might be due to utilizing iNaturalist observations or the large study site with varying habitats. The four nearest inventories were found in Oklahoma, Cleveland, Canadian, and McClain counties. Eleven county records were collected: *Myosotis macrosperma* Engelm., *Samolus valerandi* L., *Scleranthus annuus* L., *Trepocarpus aethusae* Nutt. ex DC., *Erigeron modestus* A. Gray, *Facelis retusa* (Lam.) Sch. Bip., *Juncus acuminatus* Michx., *Lolium multiflorum* Lam., *Carex crus-corvi* Shuttlew. ex Kunze, *Carex lurida* Wahlenb. and *Eragrostis sessilispica* Buckley (Figure 2 and Figure 3). One county record, *Dalea multiflora* (Nutt.) Shinnery, was not collected but observed on iNaturalist (Figure 3). Three of these county records are non-native, *Scleranthus annuus*, *Lolium multiflorum*, and *Facelis retusa*. One species tracked by the Oklahoma Natural Heritage Inventory (2024) was observed and collected: *Mimulus ringens* L. (Allegheny monkeyflower) (Figure 4). *Mimulus ringens* has a state conservation status of SH (historically known from Oklahoma) and a global conservation status of G5 (globally secure). The Oklahoma Natural Heritage Inventory lists *Mimulus ringens* as possibly extirpated. Prior to this research, *Mimulus ringens* had been documented twice in Oklahoma County in 1940 and 1941 and seven times in all of Oklahoma, the last time being in 1988 (TORCH Data Portal 2024). According to iNaturalist (2024), *M. ringens* has had no observations in Oklahoma. Three county records, *Trepocarpus aethusae*, *Carex*

Table 1 The four closest plant inventories to the Arcadia Lake study site.

Study Site	County	Reference	Size of site	Number of Taxa	Percent non-native
Arcadia Lake	Oklahoma	Friedman 2024a	274 ha	356	16.6%
E.C. Hafer Park	Oklahoma	Caddell et al. 2017	49 ha	270	22.2%
John W. Nichols Scout Ranch	Canadian	Crosswhite & Ryburn 2019	150 ha	152	13.6%
University of Oklahoma's Kessler Atmospheric and Ecological Field Station	McClain	Buthod & Hoagland 2016	146 ha	361	14.7%
Belle Isle at the Deep Fork River (plant survey)	Oklahoma	Friedman 2024b	83 ha	135	32.6%

lurida, and *Juncus acuminatus*, were observed near a stream flowing into the lake surrounded by a natural wetland area (Figure 5). Many wild waterways within Oklahoma County have been decimated due to urban infrastructure projects. This may be why no prior records of these taxa have been documented.

Like many natural areas, Arcadia Lake is constantly threatened by development projects. Previous projects and developments have occurred in the vicinity of the lake, including a water treatment facility, home construction, recreation buildings, and widening of walking and biking trails. In 2022, the City of Edmond signed a deal with

LandPlan Consultants to develop a master plan for development projects on Arcadia Lake. Development projects could be as simple as maintaining and building new trails or as big as building a marina, resort, restaurants, hotels, floating cabins, or a new RV park (Tomlinson 2022). It's up to citizens, land managers, the City of Edmond, conservation organizations, scientists, and the business community to decide how to manage Arcadia Lake. With 297 native vascular plant species, twelve county records, and one plant species tracked by ONHI, Arcadia Lake is a natural area worth protecting.



Figure 2 Oklahoma County records, a) *Scleranthus annuus* L., b) *Erigeron modestus* A. Gray, c) *Facelis retusa* (Lam.) Sch. Bip., d) *Trepocarpus aethusae* Nutt. ex DC., e) *Juncus acuminatus* Michx., f) *Lolium multiflorum* Lam. Photos by Micah Friedman.



Figure 3 Oklahoma County records, a) *Myosotis macrosperma* Engelm., b) *Carex lurida* Wahlenb., c) *Eragrostis sessilispica* Buckley, d) *Carex crus-corvi* Shuttlew. ex Kunz., e) *Samolus valerandi* L. (Photos by Micah Friedman), f) *Dalea multiflora* (Nutt.) Shinn. *D. multiflora* (photo by @sjcyoung 2019).



Figure 4 *Mimulus ringens* L., listed by the ONHI as possibly extirpated in Oklahoma (2024). Photo by Micah Friedman.



Figure 5 Wetland area where three county record native plant species were collected, 35.649748, -97.376541. Photo by Micah Friedman.

Micah J. Friedman and Jennifer A. Messick

ACKNOWLEDGMENTS

We would like to thank Texas Oklahoma Regional Consortium of Herbaria, the Oklahoma Natural Heritage Inventory, and the University of Central Oklahoma Herbarium for assisting in plant identification and species conservation status. We thank Grace Payne for assisting in field work and vouchering specimens. We also thank the City of Edmond, OK, for granting permission to conduct fieldwork at Arcadia Lake.

LITERATURE CITED

- Buthod, A.K. and B.W. Hoagland. 2016. [A Floristic Inventory of the University of Oklahoma's Kessler Atmospheric and Ecological Field Station, McClain County, Oklahoma](#). *Oklahoma Native Plant Record* 16:45-63.
- Caddell, G.M., K. Christoffel, C. Esqueda, and A. Smith. 2017. [Vascular flora of E.C. Hafer Park, Edmond, Oklahoma](#). *Oklahoma Native Plant Record* 17:53-68.
- The City of Edmond. Arcadia Lake Park Office. 2024. <https://www.edmondok.gov/350/Lake-Recreation> (15 March 2024).
- Crosswhite, A. and A. Ryburn. 2019. [A Floristic Inventory of the John W. Nichols Scout Ranch, Canadian County, Oklahoma](#). *Oklahoma Native Plant Record* 19:17-29.
- Diggs, G. M., B.L. Lipscomb, and R.J. O'Kennon. 2000. *Shinner's and Mahler's Illustrated Flora of North Central Texas*. Fort Worth (TX): Botanical Research Institute of Texas.
- Duck, L.G. and J.B. Fletcher. 1943. A game type map of Oklahoma. A survey of the game and furbearing animals of Oklahoma. Oklahoma City (OK): Oklahoma Department of Wildlife Conservation.
- Fishbein, M., A. Buthod, G.M. Caddell, J.R. Estes, J.A. Messick, A.J. Moore, C.L. Murray, A. K. Ryburn, B.A. Smith, R.A. Thompson, and L.E. Watson. 2024. *Flora of Oklahoma: Keys and Descriptions*, 3rd Edition. Oklahoma City (OK): Flora Oklahoma, Incorporated.
- Friedman, M.J. 2024a. Chapter 2: A Floristic Inventory of the North Side of Arcadia Lake, Edmond, Oklahoma. In: *Oklahoma County Flora: Plant Surveys and Floristic Quality Assessment*. [Master's Thesis] Edmond (OK): University of Central Oklahoma.
- Friedman, M.J. 2024b. Chapter 3: A Floristic Survey at Belle Isle and the Deep Fork River in Oklahoma City, Oklahoma. In: *Oklahoma County Flora: Plant Surveys and Floristic Quality Assessment*. [Master's Thesis] Edmond (OK): University of Central Oklahoma.
- Integrated Taxonomic Information System. 2024. <http://www.itis.gov> (February - May 2024).
- Köppen, W. 1936. *Das geographische System der Klimate*. Berlin (Germany): Gebrüder Borntraeger.
- Kuchler, A.W. 1964. *Potential Natural Vegetation of the Conterminous United States*. Special Publication Number 36. Washington (DC): American Geological Society.
- Mesonet: Oklahoma's Weather Network. 2023. The University of Oklahoma and Oklahoma State University. <https://www.mesonet.org/> (April 2024).
- Oklahoma Climatological Survey. 2000. Oklahoma County Climate. https://climate.ok.gov/county_climate/Products/County_Climatologies/county_climate_oklahoma.pdf (15 March 2024).
- Oklahoma Natural Heritage Inventory. 2024. Oklahoma Biodiversity Information System. <http://obis.ou.edu/#/collaborators/search/main> (15 Mar 2024).
- Ryburn, A., S. Barber, P. Buck, G. Caddell, W. Elisens, J. Estes, M. Fishbein, P. Folley, L. Magrath, A. Moore, C. Murray, B. Smith, C. Taylor, R. Thompson, R. Tyrl, J. Walker, and L. Watson. 2018. *Flora of Oklahoma Keys*

- and Descriptions*, 2nd edition. Oklahoma City (OK): Flora Oklahoma Incorporated.
- Thomas, R. E. and B.W. Hoagland. 2011. [The Changing Forests of Central Oklahoma: A Look at the Composition of the Cross Timbers Prior to Euro-American Settlement, in the 1950s, and Today.](#) *Oklahoma Native Plant Record* 11:61-74.
- Tomlinson, J. 2022. Citizen ‘dream team’ shapes Arcadia Lake master plan. *NonDoc*. <https://nondoc.com/2022/05/06/arcadia-lake-master-plan/> (March 2024).
- TORCH Data Portal. 2024. The Texas Oklahoma Regional Consortium of Herbaria. <https://portal.torcherbaria.org/portal/index.php> (January - May 2024).
- U.S. Army Corps of Engineers. 2024. Arcadia Lake Project Office. <https://www.swt.usace.army.mil/Locations/Tulsa-District-Lakes/Oklahoma/Arcadia-Lake/> (15 March 2024).
- USDA, NRCS. 2023. The PLANTS database. <https://plants.usda.gov>

APPENDIX

List of vascular plant species from Arcadia Lake, Oklahoma County, Oklahoma.

Species list with duration, growth habit, collection number, nativity, and heritage status.

A=annual, P=perennial, B= biennial; F=forb, FN=fern, S= shrub/subshrub, V=vine, G= graminoid, T=tree. If a plant was collected, Friedman's collection number follows; NC denotes a plant that was not collected but was posted on iNaturalist; iNat denotes a plant not observed by the authors but posted on iNaturalist and observed within the northside study area. Exotic species are denoted with an asterisk (*). Species tracked by the Oklahoma Natural Heritage Inventory are denoted with a dagger (†).

Acanthaceae

Ruellia humilis Nutt. (hairy ruellia); P; F; 571

Amaranthaceae

Amaranthus arenicola I.M. Johnst. (sand amaranth); A; F; NC

Chenopodium pratericola Rydb. (desert goosefoot); A; F; 470

Froelichia gracilis (Hook.) Moq. (slender snakecotton); A; F; 416

Amaryllidaceae

Allium canadense L. (Canadian meadow garlic); P; F; 556

**Allium vineale* L. (wild garlic); P; F; NC

Nothoscordum bivalve (L.) Britton (crowpoison); P; F; 498

Anacardiaceae

**Pistacia chinensis* Bunge (Chinese pistache); P; T; iNat

Rhus copallinum L. (shining sumac); P; S; 642

Rhus glabra L. (smooth sumac); P; S; 594

Toxicodendron pubescens Mill. (Atlantic poison oak); P; S; NC

Toxicodendron radicans (L.) Kuntze (eastern poison ivy); P; S/V; NC

Apiaceae

Chaerophyllum procumbens (L.) Crantz (spreading chervil); A; F; iNat

Chaerophyllum tainturieri Hook. (hairyfruit chervil); A; F; 529

**Conium maculatum* L. (poison hemlock); B; F; 585

Daucus pusillus Michx. (American wild carrot); A; F; 566

Polytaenia nuttallii DC. (prairie parsley); B; F; 545

Sanicula canadensis L. (black snakeroot); B; F; 591

Trepocarpus aethusae Nutt. ex DC. (whitenymph); A; F; 599

Apocynaceae

Asclepias tuberosa L. (butterfly milkweed); P; F; 588

Asclepias verticillata L. (whorled milkweed); P; F; iNat

Asclepias viridiflora Raf. (green comet milkweed); P; F; 617

Asclepias viridis Walter (green antelopehorns); P; F; NC

**Vinca major* L. (greater periwinkle); P; F; iNat

Aquifoliaceae

Ilex vomitoria Aiton (yaupon holly); P; S; iNat

Araliaceae

**Hedera helix* L. (common ivy); P; V; iNat

Hydrocotyle verticillata Thunb. (whorled pennywort); P; F; 435

Asparagaceae

Androstaphium coeruleum (Scheele) Greene (funnel-flower); P; F; iNat

**Ornithogalum umbellatum* L. (common star-of-Bethlehem); P; F; iNat

Yucca arkansana Trel. (Arkansas yucca); P; F; iNat

Yucca glauca Nutt. (Great Plains yucca); P; F; NC

Aspleniaceae

Asplenium platyneuron (L.) Britton, Sterns & Poggenb. (ebony spleenwort); P; FN; 542

Asteraceae

Achillea millefolium L. (common yarrow); P; F; 561

Ageratina altissima (L.) King & H. Rob. (white snakeroot); P; F; NC

Ambrosia bidentata Michx. (lanceleaf ragweed); A; F; 593

Ambrosia psilostachya DC. (western ragweed); A; F; 471

Ambrosia trifida L. (giant ragweed); A; F; 474

Amphiachyris dracunculoides (DC.) Nutt. (prairie broomweed); A; F; 668

Antennaria neglecta Greene (field pussytoes); P; F; iNat

Antennaria parlinii Fernald (Parlin's pussytoes); P; F; iNat

Antennaria plantaginifolia (L.) Richardson (plantain-leaved pussytoes); P; F; 539

Artemisia ludoviciana Nutt. (silver wormwood); P; F; NC

Bidens aristosa (Michx.) Britton (bearded beggarticks); A; F; NC

Bidens bipinnata L. (Spanish needles); A; F; 472

Bidens polylepis S.F. Blake (tickseed sunflower); A; F; 481

Bradburia pilosa (Nutt.) Semple (soft goldaster); A; F; 621

**Carduus nutans* L. (musk thistle); B; F; 578

Cirsium altissimum (L.) Hilln (tall thistle); B; F; 431

Cirsium undulatum (Nutt.) Spreng. (wavyleaf thistle); B; F; 664

Conoclinium coelestinum (L.) DC (blue mistflower); P; F; 480

Coreopsis grandiflora Hogg ex Sweet (large-flowered tickseed); P; F; 575

Coreopsis tinctoria Nutt. (plains coreopsis); P; F; 389

Diaperia prolifera (Nutt. ex DC.) Nutt. (flathead rabbit tobacco); A; F; 538

Diaperia verna (Raf.) Morefield (many stem evax); A; F; iNat

Echinacea angustifolia DC. (narrow-leaved purple coneflower); P; F; 577

Eclipta prostrata (L.) L. (false daisy); A; F; 422

Elephantopus carolinianus Raeusch. (leafy elephant's-foot); P; F; 488

Erigeron canadensis (L.) Cronquist (horseweed); A; F; 644

Erigeron modestus A. Gray (plains fleabane); P; F; 602

Erigeron philadelphicus L. (Philadelphia fleabane); B; F; 555

Erigeron strigosus Muhl. ex Willd. (daisy fleabane); A; F; 587

Eupatorium serotinum Michx. (late boneset); P; F; 648

- *Facelis retusa* (Lam.) Sch. Bip. (annual trampweed); A; F; 554
Gaillardia aestivalis (Walter) H. Rock (lanceleaf blanketflower); P; F; 444
Gaillardia pulchella Foug. (Indian blanket); P; F; iNat
Gaillardia suavis (A. Gray & Engelm.) Britton & Rusby (perfumeballs); P; F; 549
Gamochaeta pensylvanica (Willd.) Cabrera (Pennsylvania cudweed); A; F; 655
Gamochaeta purpurea (L.) Cabrera (purple cudweed); A; F; 537
Grindelia ciliata (Nutt.) Spreng. (Spanish gold); A; F; 467
Helenium amarum (Raf.) H. Rock (bitterweed); A; F; NC
Helianthus annuus L. (common sunflower); A; F; 660
Helianthus maximiliani Schrad. (Maximilian sunflower); P; F; iNat
Helianthus tuberosus L. (Jerusalem artichoke); P; F; 466
Heterotheca subaxillaris (Lam.) Britton & Rusby (camphorweed); A; F; 455
Hymenopappus scabiosaeus L'Hér. (Carolina woollywhite); B; F; 544
Krigia occidentalis (dwarf dandelion); A; F; iNat
Lactuca floridana (L.) Gaertn. (woodland lettuce); A; F; 458
**Lactuca serriola* L. (prickly lettuce); A; F; 643
Liatris punctata Hook. (dotted gayfeather); P; F; 475
Palafoxia rosea Bush (Cory) (rosy palafox); A; F; 432
Pluchea odorata (L.) Cass. (marsh fleabane); A; F; 453
Pseudognaphalium obtusifolium (L.) Hilliard & B.L. Burt (sweet everlasting); A; F; NC
Pyrrhopappus carolinianus (Walter) DC. (Carolina desert-chicory); B; F; 658
Pyrrhopappus grandiflorus (Nutt.) Nutt. (tuberous desert-chicory); P; F; 528
Pyrrhopappus pauciflorus (D. Don) DC. (smallflower desert-chicory); A; F; iNat
Ratibida columnifera (Nutt.) Woot. & Standl. (upright prairie coneflower); P; F; 623
Rudbeckia hirta L. (black-eyed Susan); A; F; 620
**Senecio vulgaris* L. (common groundsel); A; F; iNat
Solidago canadensis L. (Canada goldenrod); P; F; iNat
Solidago missouriensis Nutt. (Missouri goldenrod); P; F; 456
Solidago nemoralis Aiton (field goldenrod); P; F; 484
Solidago rigida L. (stiff-leaved goldenrod); P; F; 485
**Sonchus asper* (L.) Hill (prickly sowthistle); A; F; iNat
Symphotrichum divaricatum (Nutt.) G.L. Nesom (southern annual saltmarsh aster); A; F; iNat
Symphotrichum drummondii (Lindl.) G.L. Nesom (Drummond's aster); P; F; 486
Symphotrichum ericoides (S.F. Blake) G.L. Nesom (white heath aster); P; F; 469
Symphotrichum oblongifolium (Nutt.) G.L. Nesom (aromatic aster); P; F; NC
Symphotrichum subulatum (Michx.) G.L. Nesom (annual saltmarsh aster); A; F; 397
**Taraxacum officinale* F.H. Wigg. (common dandelion); P; F; iNat
Thelesperma filifolium (Hook.) A. Gray (stiff green thread); A; F; NC
**Tragopogon dubius* Scop. (yellow salsify); A; F; NC
Verbesina encelioides (Cav.) Benth. & Hook. f. ex A. Gray (cowpen daisy); A; F; 651
Verbesina virginica L. (frostweed); B; F; iNat
Vernonia baldwinii Torr. (western ironweed); P; F; 647
Xanthium strumarium L. (rough cocklebur); A; F; 459

Berberidaceae

- *Nandina domestica* Thunb. (heavenly bamboo); P; S; iNat

Bignoniaceae

Campsis radicans (L.) Seem. ex Bureau (American trumpet vine); P; V; 668

Boraginaceae

**Buglossoides arvensis* (L.) I.M. Johnst. (corn gromwell); A; F; iNat

Heliotropium tenellum (Nutt.) Torr. (pasture heliotrope); A; F; 382

Lithospermum incisum Lehm. (narrowleaf puccoon); P; F; 515

Myosotis macrosperma Engelm. (large-seeded forget-me-not); A; F; 667

Myosotis verna Nutt. (early forget-me-not); A; F; 534

Brassicaceae

**Camelina microcarpa* DC. (littlepod false flax); A; F; 540

**Cardamine hirsuta* L. (hairy bittercress); A; F; 505

**Chorispora tenella* (Pall.) DC. (crossflower); A; F; iNat

**Descurainia pinnata* (Walter) Britton (western Tansymustard); A; F; iNat

**Descurainia sophia* (L.) Webb ex Prantl (flixweed); A; F; 512

Draba brachycarpa Nutt. ex Torr. & A. Gray (short-fruited draba); A; F; iNat

Draba cuneifolia Nutt. ex Torr. & A. Gray (wedgeleaf draba); A; F; 494

**Lepidium densiflorum* Schrad. (common peppergrass); A; F; 506

Lepidium virginicum L. (Virginia pepperweed); A; F; 532

Rorippa palustris (L.) Besser (bog yellowcress); A; F; NC

Rorippa sessiliflora (Nutt.) Hitchc. (stalkless yellowcress); A; F; 614

Cactaceae

Escobaria missouriensis (Sweet) D.R. Hunt (Missouri foxtail cactus); P; S; iNat

Opuntia macrorhiza Engelm. (prairie pricklypear); P; S; NC

Campanulaceae

Lobelia cardinalis L. (Cardinal flower); P; F; 479

Triodanis holzingeri McVaugh (Holzinger's venus' looking-glass); A; F; 605

Triodanis perfoliata (L.) Nieuwl. (clasping venus's looking glass); A; F; 581

Cannabaceae

Celtis laevigata Willd. (sugar hackberry); P; T; 509

Celtis occidentalis L. (common hackberry); P; T; iNat

Caprifoliaceae

**Lonicera japonica* Thunb. (Japanese honeysuckle); P; V; iNat

Symphoricarpos orbiculatus Moench (coralberry); P; S; iNat

Valerianella radiata (L.) Dufr. (beaked cornsalad); A; F; iNat

Caryophyllaceae

**Arenaria serpyllifolia* L. (thyme-leaved sandwort); A; F; iNat

**Cerastium glomeratum* Thuill. (sticky mouse-ear chickweed); A; F; iNat

**Cerastium pumilum* W. Curtis (dwarf mouse-ear); A; F; 508

**Holosteum umbellatum* L. (jagged chickweed); A; F; 495

**Scleranthus annuus* L. (annual knawel); A; F; 527

**Stellaria media* (L.) Vill. (common chickweed); A; F; 507

Celastraceae

**Euonymus fortunei* (Turcz.) Hand.-Maz. (wintercreeper); P; S; iNat

Commelinaceae

**Commelina communis* L. (Asiatic dayflower); A; F; 607

Commelina erecta L. (whitemouth dayflower); P; F; iNat

Tradescantia ohiensis Raf. (bluejacket); P; F; 560

Convolvulaceae

**Ipomoea hederacea* Jacq. (ivy-leaved morning-glory); A; V; iNat

Cornaceae

Cornus drummondii C.A. Mey. (roughleaf dogwood); P; S; 576

Cupressaceae

Juniperus virginiana L. (eastern redcedar); P; T; 589

Cyperaceae

Carex blanda Dewey (eastern woodland sedge); P; G; 535

Carex crus-corvi Shuttlew. ex Kunze (ravenfoot sedge); P; G; 564

Carex grisea Wahlenb. (inflated narrow-leaved sedge); P; G; iNat

Carex hyalinolepis Steud. (shoreline sedge); P; G; iNat

Carex lurida Wahlenb. (sallow sedge); P; G; 609

Cyperus croceus Vahl (Baldwin's flatsedge); P; G; 650

Cyperus echinatus (L.) Alph. Wood (globe flatsedge); P; G; 611

Cyperus squarrosus L. (bearded flatsedge); A; G; NC

Eleocharis acicularis (L.) Roem. & Schult. (needle spikerush); A; G; 429

Eleocharis obtusa (Willd.) Schult. (blunt spikerush); P; G; NC

Eleocharis palustris (L.) Roem. & Schult. (common spike-rush); P; G; iNat

Fuirena simplex Vahl (western umbrella-sedge); P; G; 396

Ebenaceae

Diospyros virginiana L. (common persimmon); P; T; 580

Equisetaceae

Equisetum hyemale A. Braun (rough horsetail); P; FN; 606

Equisetum laevigatum A. Braun (smooth horsetail); P; FN; iNat

Euphorbiaceae

Acalypha ostryifolia Riddell (hophornbeam copperleaf); A; F; 413

Acalypha virginica L. (Virginia three-seed mercury); A; F; 468

Chamaesyce maculata (L.) Small (spotted spurge); A; F; 400

Croton capitatus Michx. (hogwort); P; F; NC

**Croton glandulosus* L. (tropic croton); A; F; 411

Croton lindheimerianus Scheele (threeseed croton); A; F; iNat

Croton monanthogynus Michx. (prairie tea); A; F; 390

Euphorbia corollata L. (flowering spurge); P; F; 476

**Euphorbia dentata* Michx. (green poinsettia); A; F; 410

Euphorbia hexagona Nutt. ex Spreng. (sixangle spurge); A; F; 463
Euphorbia nutans Lag. (nodding spurge); A; F; 448
Euphorbia spathulata Lam. (reticulate-seeded spurge); A; F; 550

Fabaceae

Astragalus lotiflorus Hook. (low milkvetch); P; F; 513
Baptisia australis (L.) R. Br. (tall blue wild indigo); P; F; 551
Cercis canadensis L. (eastern redbud); P; T; NC
Chamaecrista fasciculata (Michx.) Greene (partridge pea); A; F; 421
Clitoria mariana L. (pigeonwings); P; F; iNat
Dalea aurea Nutt. ex Fraser (golden prairie clover); P; F; 645
Dalea candida Michx. ex Willd. (white prairie clover); P; F; 616
Dalea enneandra Nutt. ex Fraser (nine-anther prairie clover); P; F; 634
Dalea multiflora (Nutt.) Shinnery (roundhead prairie clover); P; F; iNat
Dalea purpurea Vent. (purple prairie clover); P; F; iNat
Desmanthus illinoensis (Michx.) MacMill. ex B.L. Rob. & Fernald (Illinois bundleflower); P; S; iNat
Desmodium sessilifolium (Torr.) Torr. & A. Gray (sessileleaf ticktrefoil); P; F; 443
Gleditsia triacanthos L. (honey locust); P; T; 557
Gymnocladus dioica (L.) K. Koch (Kentucky coffeetree); P; T; iNat
Lespedeza capitata Michx. (round-headed bush clover); P; F; NC
**Lespedeza cuneata* (Dum. Cours.) G. Don (Chinese bushclover); P; F; 451
Lespedeza virginica (L.) Britton (slender bush clover); P; F; iNat
**Medicago minima* (L.) L. (little bur-clover); A; F; iNat
Mimosa nuttallii (DC. ex Britton & Rose) B.L. Turner (catclaw briar); P; F; iNat
Mimosa quadrivalvis L. (fourvalve mimosa); P; F; 573
Neptunia lutea (Leavenw.) Benth. (yellow puff); P; F; 638
Pediomelum digitatum (Nutt. ex Torr. & A. Gray) Isely (palmleaf indian breadroot); P; F; 624
Psoralidium tenuiflorum (Pursh) Rydb. (slimflower scurfpea); P; F; 445
Strophostyles helvola (L.) Elliott (trailing fuzzy-bean); A; F; 464
Strophostyles leiosperma (Torr. & A. Gray) Piper (slickseed fuzzybean); A; F; 465
Stylosanthes biflora (L.) Britton, Sterns & Poggenb. (sidebeak pencilflower); P; F; 603
**Trifolium arvense* L. (rabbitfoot clover); A; F; 619
**Trifolium campestre* Schreb. (hop trefoil); A; F; iNat
**Vicia sativa* L. (common vetch); A; F; 517
**Vicia villosa* Roth (hairy vetch); A; F; 583

Fagaceae

Quercus macrocarpa Michx. (bur oak); P; T; iNat
Quercus marilandica Münchh. (blackjack oak); P; T; 510
Quercus muehlenbergii Engelm. (chinkapin oak); P; T; iNat
Quercus shumardii Buckley (Shumard's oak); P; T; iNat
Quercus stellata Wangenh. (post oak); P; T; 541

Gentianaceae

Sabatia campestris Nutt. (meadow pink); A; F; 615

Geraniaceae

**Erodium cicutarium* (L.) L'Hér. ex Aiton (redstem stork's-bill); A; F; 490
Geranium carolinianum L. (Carolina crane's-bill); A; F; 530

Grossulariaceae

Ribes aureum L. (golden currant); P; S; 501

Hypericaceae

Hypericum hypericoides (L.) Crantz (St. Andrew's cross); P; F; NC

Iridaceae

Sisyrinchium angustifolium Mill. (narrow-leaved blue-eyed grass); P; F; iNat

Juglandaceae

Juglans nigra L. (eastern black walnut); P; T; iNat

Juncaceae

Juncus acuminatus Michx. (tapered rush); P; G; 569
Juncus diffusissimus Buckley (slim-pod rush); P; G; 613
Juncus torreyi Coville (Torrey's rush); P; G; 393
Juncus validus Coville (roundhead rush); P; G; 610

Krameriaceae

Krameria lanceolata Torr. (trailing rhatany); P; F; 596

Lamiaceae

Hedeoma hispida Pursh (rough false pennyroyal); A; F; 568
Hedeoma reverchonii (A. Gray) A. Gray (Reverchon's false pennyroyal); P; F; 665
**Lamium amplexicaule* L. (henbit deadnettle); A; F; iNat
Monarda clinopodioides A. Gray (basil beebalm); A; F; 636
Monarda punctata L. (spotted horse mint); A; F; 635
Salvia azurea L. (giant blue sage); P; F; 477
Teucrium canadense L. (American germander); P; F; 667

Linaceae

Linum rigidum Pursh (yellow flax); A; F; NC
Linum sulcatum Riddell (grooved yellow flax); A; F; iNat

Linderniaceae

Lindernia dubia (L.) Pennell (yellowseed false pimpernel); A; F; 438

Loasaceae

Mentzelia oligosperma Nutt. ex Sims (stick-leaf); P; F; 639

Lythraceae

Ammannia coccinea Rottb. (scarlet toothcup); A; F; 439
Lythrum alatum Pursh (winged loosestrife); P; F; NC

Malvaceae

Callirhoe involucrata (Torr. & A. Gray) A. Gray (winecup mallow); P; F; 633

Hibiscus moscheutos L. (swamp rose mallow); A; F; NC

Sida spinosa L. (prickly fanpetals); A; F; 427

Mazaceae

**Mazus pumilus* (Burm. f.) Steenis (Japanese mazus); A; F; NC

Menispermaceae

Cocculus carolinus (L.) DC. (Carolina snailseed); P; V; iNat

Molluginaceae

Mollugo verticillata L. (green carpetweed); A; F; 418

Montiaceae

Claytonia virginica L. (Virginia springbeauty); P; F; NC

Moraceae

Maclura pomifera (Raf.) C.K.Schneid. (Osage-orange); P; T; NC

Morus rubra L. (red mulberry); P; T; NC

Nyctaginaceae

Mirabilis albida (Walter) Heimerl (white four o'clock); P; F; 478

Oleaceae

Fraxinus americana L. (white ash); P; T; iNat

Fraxinus pennsylvanica Marshall (green ash); P; T; iNat

Onagraceae

Ludwigia peploides (Kunth) P.H. Raven (floating primrose-willow); P; F; iNat

Oenothera berlandieri (Spach) Steud. (Berlandier's sundrops); A; F; 552

Oenothera biennis L. (common evening-primrose); B; F; 460

Oenothera curtiflora W.L. Wagner & Hoch (velvetweed); A; F; 391

Oenothera filiformis (Small) W.L. Wagner & Hoch (longflower beeblossom); A; F; 388

Oenothera glaucifolia W.L. Wagner & Hoch (false gaura); B; F; NC

Oenothera laciniata Hill (cutleaf evening primrose); A; F; 553

Ophioglossaceae

Ophioglossum engelmannii Prantl (limestone adder's-tongue); P; FN; iNat

Orobanchaceae

Agalinis heterophylla (Nutt.) Small (prairie false foxglove); A; F; NC

Castilleja indivisa Engelm. (Texas paintbrush); A; F; 394

Oxalidaceae

Oxalis corniculata L. (creeping woodsorrel); A; F; iNat

Oxalis dillenii Jacq. (slender yellow woodsorrel); P; F; NC

Oxalis violacea L. (violet woodsorrel); P; F; iNat

Papaveraceae*Argemone polyanthemus* (Fedde) G.B. Ownbey (thistle poppy); A; F; 442*Corydalis aurea* Willd. (golden corydalis); A; F; iNat*Corydalis micrantha* (Engelm. ex A. Gray) A. Gray (smallflower fumewort); A; F; 511**Passifloraceae***Passiflora incarnata* L. (purple passionflower); P; V; 449**Phrymaceae**†*Mimulus ringens* L. (Allegheny monkeyflower); P; F; 666**Plantaginaceae***Leucospora multifida* (Michx.) Nutt. (Obi-Wan conobea); A; F; 395*Nuttallanthus texanus* (Scheele) D.A. Sutton (Texas toadflax); A; F; 526*Penstemon cobaea* Nutt. (cobaea beardtongue); P; F; 572*Penstemon laxiflorus* Pennell (nodding beardtongue); P; F; 559*Plantago aristata* Michx. (bracted plantain); A; F; 586**Plantago lanceolata* L. (ribwort plantain); A; F; NC*Plantago patagonica* Jacq. (woolly plantain); A; F; 597*Plantago rhodosperma* Decne. (redseed plantain); A; F; 531*Veronica anagallis-aquatica* L. (blue water-speedwell); B; F; iNat**Veronica arvensis* L. (corn speedwell); A; F; iNat*Veronica peregrina* L. (purslane Speedwell); A; F; iNat**Poaceae***Andropogon gerardii* Vitman (big bluestem); P; G; iNat*Andropogon ternarius* Michx. (splitbeard bluestem); P; G; iNat*Andropogon virginicus* L. (broomsedge bluestem); P; G; iNat**Bothriochloa ischaemum* (L.) Keng (king ranch bluestem); P; G; 622*Bothriochloa laguroides* (DC.) Herter (silver bluestem); P; G; iNat*Bouteloua curtipendula* (Michx.) Torr. (sideoats grama); P; G; 653*Bouteloua dactyloides* (Nutt.) Columbus (buffalograss); P; G; 562*Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths (blue grama); P; G; iNat*Bouteloua hirsuta* Lag. (hairy grama); P; G; 659**Bromus catharticus* Vahl (rescue brome); P; G; iNat**Bromus tectorum* L. (cheatgrass); A; G; 520*Cenchrus spinifex* Cav. (coastal sandbur); A; G; 434*Chasmanthium latifolium* (Michx.) Yates (inland wood oats); P; G; iNat*Chasmanthium laxum* (L.) H.O. Yates (slender spikegrass); P; G; NC*Dichanthelium oligosanthos* (Schult.) Gould (Heller's rosette grass); P; G; 563*Digitaria cognata* (Schult.) Pilg. (fall witchgrass); P; G; iNat*Elymus glabriflorus* (Vasey ex L.H. Dewey) Scribn. & C.R. Ball (southeastern wildrye); P; G; iNat*Eragrostis secundiflora* J. Presl (red lovegrass); P; G; 654*Eragrostis sessilispica* Buckley (tumble lovegrass); P; G; 656**Lolium multiflorum* Lam. (Italian ryegrass); A; G; 604**Lolium perenne* L. (perennial ryegrass); A; G; 595*Muhlenbergia schreberi* J.F. Gmel. (nimblewill); P; G; iNat

Paspalum setaceum Michx. (thin paspalum); P; G; NC
Schizachyrium scoparium (Michx.) Nash (little bluestem); P; G; iNat
**Setaria faberi* Herrm. (giant foxtail); A; G; iNat
**Setaria pumila* (Poir.) Roem. & Schult. (yellow foxtail); A; G; 649
Sorghastrum nutans (L.) Nash (Indiangrass); P; G; iNat
Sphenopholis obtusata (Michx.) Scribn. (prairie wedge grass); A; G; 582
Tridens albescens (Vasey) Wooton & Standl. (white tridens); P; G; NC
Tridens flavus (L.) Hitchc. (purpletop tridens); P; G; iNat
Vulpia octoflora (Walter) Rydb. (sixweeks fescue); A; G; NC

Polygonaceae

Eriogonum annuum Nutt. (annual buckwheat); A; F; 415
Eriogonum longifolium Nutt. (longleaf buckwheat); P; F; 426
**Polygonum persicaria* L. (lady's thumb); A; F; iNat
Persicaria punctata (Elliott) Small (dotted knotweed); A; F; 436
**Rumex crispus* L. (curly dock); P; F; 584
Rumex hastatulus Baldwin (hastate-leaved dock); P; F; 570

Primulaceae

Samolus valerandi L. (seaside brookweed); P; F; 612

Ranunculaceae

Ranunculus abortivus L. (small-flowered buttercup); B; F; iNat
Ranunculus sceleratus L. (cursed crowfoot); A; F; iNat

Rosaceae

Geum canadense Jacq. (white avens); P; F; iNat
Prunus angustifolia Marshall (Chickasaw plum); P; S; 499
Prunus mexicana S.Watson (Mexican plum); P; T; NC
**Rosa multiflora* Thunb. (multiflora rose); P; V; iNat
Rubus trivialis Michx. (southern dewberry); P; V; 579

Rubiaceae

Cephalanthus occidentalis L. (buttonbush); P; S; 216
Diodia teres Walter (rough buttonweed); P; F; 387
Diodia virginiana L. (buttonweed); A; F; 608
Galium aparine L. (catchweed bedstraw); A; F; iNat
Galium virgatum Nutt. (southwestern bedstraw); A; F; NC
Houstonia pusilla Schoepf (tiny bluet); A; F; 496
**Sherardia arvensis* L. (field madder); A; F; NC
Stenaria nigricans (Lam.) Terrell (diamond-flowers); P; F; iNat

Salicaceae

Populus deltoides W. Bartram ex Marshall (eastern cottonwood); P; T; iNat
Salix nigra Marshall (black willow); P; T; iNat

Sapindaceae

Acer negundo L. (boxelder); P; T; iNat

Acer saccharinum L. (silver maple); P; T; iNat

**Koelreuteria paniculata* Laxm. (goldenrain tree); P; T; 645

Sapindus drummondii Hook. & Arn. (western soapberry); P; T; 618

Sapotaceae

Sideroxylon lanuginosum Michx. (gum bumelia); P; T; 637

Scrophulariaceae

**Verbascum thapsus* L. (great mullein); B; F; 440

Smilacaceae

Smilax bona-nox L. (saw greenbrier); P; V; 547

Solanaceae

**Datura wrightii* Regel (sacred datura); P; F; iNat

Physalis angulata L. (cutleaf groundcherry); A; F; 446

Solanum carolinense L. (carolina horsenettle); P; F; 590

Solanum dimidiatum Raf. (western horsenettle); P; F; 558

Solanum rostratum Dunal (buffalo-bur); A; F; 441

Ulmaceae

Ulmus americana L. (American elm); P; T; 491

**Ulmus pumila* L. (Siberian elm); P; T; iNat

Ulmus rubra Muhl. (slippery elm); P; T; iNat

Urticaceae

Parietaria pensylvanica Muhl. ex Willd. (Pennsylvania pellitory); A; F; 592

Verbenaceae

Glandularia pumila (Rydb.) Umber (dwarf verbena); A; F; 533

Phyla nodiflora (L.) Greene (turkey tangle frogfruit); P; F; 425

Verbena stricta Vent. (hoary vervain); A; F; NC

Verbena urticifolia L. (white vervain); P; F; 433

Viburnaceae

Viburnum rufidulum Raf. (rusty blackhaw); P; T; iNat

Violaceae

Viola rafinesquii Greene (American field pansy); A; F; 502

Viola sororia Willd. (common blue violet); A; F; iNat

Viola villosa Walter (Carolina violet); P; F; iNat

Vitaceae

Parthenocissus quinquefolia (L.) Planch. (Virginia creeper); P; V; iNat

Vitis vulpina L. (frost grape); P; V; 565

Woodsiaceae

Woodsia obtusa (Spreng.) Torr. (blunt woodsia); P; FN; 546