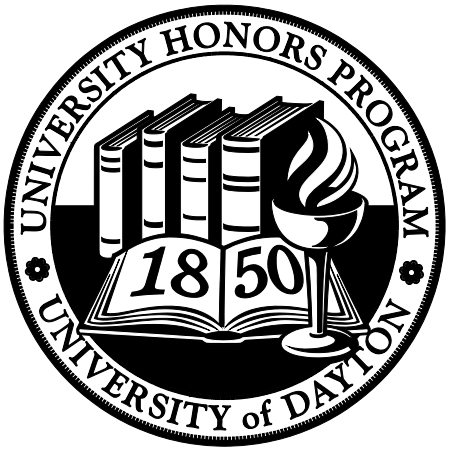
4-1-2019

The Vascular Flora of Bill Yeck Park: Supporting the Conservation of Local Biodiversity

Taylor Sparbanie
University of Dayton

The Vascular Flora of Bill Yeck Park: Supporting the Conservation of Local Biodiversity



Honors Thesis

Taylor Sparbanie

Department: Biology

Advisor: Ryan McEwan, Ph.D.

April 2019

The Vascular Flora of Bill Yeck Park: Supporting the Conservation of Local Biodiversity

Honors Thesis
Taylor Sparbanie
Department: Biology
Advisor: Ryan McEwan, Ph.D.
April 2019

Abstract

Maintaining and fostering biodiversity is a critical component of natural areas management and conservation because of its known links to ecosystem function and stability. Identifying and documenting species through a floristic inventory is an important strategy for detecting the presence of rare or unique species, as well as invasive species that pose a threat to biodiversity. Bill Yeck Park is a 194-acre nature park maintained by Centerville-Washington Park District and is largely surrounded by residential areas. The goal of this project was to generate list of vascular plant species for Bill Yeck Park, a large park within the Centerville-Washington Township park district. Floristic surveys for this project began in March of 2017, and continued through 2018. Through these efforts we identified 251 species across a variety of habitats, including meadows, riparian corridors, and upland forest. Plant species were identified in a multitude of life forms, including fern + fern allies, graminoids, forbs, trees, shrubs, and woody vines. All identifications were made using a dichotomous key. A biodiversity inventory was developed and critical areas for conservation were identified with attention given to rare native and invasive species. Specifically, nascent foci of threatening invasive species were located for optimal efficiency of removal efforts. The resultant species list and locations of conservational interest within the park were given to park management in order to support science-based management strategies within the park, and the ultimately protect Bill Yeck Park as an urban green space whose biodiversity provides ecosystem services and recreational opportunities to the Dayton area.

Acknowledgements

Thank you to the University of Dayton Honors Program, the University of Dayton Biology Department, Centerville Washington Park District, and the Stander Undergraduate Fellowship for funding. Thank you to Dr. Ryan McEwan and Julia Chapman for their support, mentorship, and teaching. Thank you to Elise Erhart, Grace Attea, Mitch Kukla, and Eric Borth for their help with field work.

Table of Contents

Abstract

Maintaining and fostering biodiversity is a critical component of natural areas management and conservation because of its known links to ecosystem function and stability. Identifying and documenting species through a floristic inventory is an important strategy for detecting the presence of rare or unique species, as well as invasive species that pose a threat to biodiversity. Bill Yeck Park is a 194-acre nature park maintained by Centerville-Washington Park District and is largely surrounded by residential areas. The goal of this project was to generate list of vascular plant species for Bill Yeck Park, a large park within the Centerville-Washington Township park district. Floristic surveys for this project began in March of 2017, and continued through 2018. Through these efforts we identified 251 species across a variety of habitats, including meadows, riparian corridors, and upland forest. Plant species were identified in a multitude of life forms, including fern + fern allies, graminoids, forbs, trees, shrubs, and woody vines. All identifications were made using a dichotomous key. A biodiversity inventory was developed and critical areas for conservation were identified with attention given to rare native and invasive species. Specifically, nascent foci of threatening invasive species were located for optimal efficiency of removal efforts. The resultant species list and locations of conservational interest within the park were given to park management in order to support science-based management strategies within the park, and the ultimately protect Bill Yeck Park as an urban green space whose biodiversity provides ecosystem services and recreational opportunities to the Dayton area.

Introduction

Biodiversity is a critical indicator of ecosystem health and function, and is a conservation and restoration target for many natural areas. Human societies are dependent upon healthy and productive ecosystems, which could not persist without the presence of diverse plant and animal communities. High levels of biodiversity, determined by assessing both species richness (how many unique species there are) and evenness (the prevalence of species present), help to promote and maintain a variety of critical ecosystem functions and environmental processes, such as nutrient cycling, carbon storage, air and water quality improvement, and soil formation and stabilization (Hooper et al. 2005). Biodiversity levels also partially determine the stability, or resilience of ecosystems, which is the ability of an ecosystem to withstand and recover from a disturbance event (Loreau et al. 2001; Burton et al., 2001). Economic benefits include biological nitrogen fixation, organic waste disposal, biological pest control, plant pollination services, and bioremediation of chemical pollution (Pimentel et al., 1997). In the face of increasing human activities and land use, the study and conservation of all these biodiversity benefits have become increasingly important goals for ecologists.

Biodiversity, as a pillar of ecological stability, function, and health, is currently under siege by ever-increasing human development of land and impacts on natural systems. Rapidly growing human population and activity has led to modern extinction rates which are estimated to range anywhere from 1,000 to 10,000 times higher than natural extinction rates (Pimentel et al. 1997). Specifically, the present and pressing threats to biodiversity include climate change, invasive species introductions, and habitat fragmentation. With climate change, many species which have evolved to survive in

habitats specific to their current locations will no longer be successful, as their optimal climatic conditions will have shifted to a different geographical area, or will have disappeared altogether (Mantyka-Pringle et al., 2012). Plants are especially vulnerable to this threat due to their lack of voluntary individual mobility apart from reproductive dispersal strategies. Invasive species threaten biodiversity by outcompeting native species for available resources including light, nutrients, space, and water (Diaz et al., 2006). By displacing native species and ultimately lowering biodiversity, invasive organisms have the potential to alter an ecosystem's functioning capacity (Powell et al., 2011). Increasing human land use causes many natural spaces to suffer from habitat loss and/or fragmentation, which has negative effects on biodiversity by altering the connectivity of plant and animal populations across the landscape. This can lead to local extinctions of vulnerable species (Fahrig 2003).

There is great interest in protecting biodiversity from all of these threats because communities that contain of a variety of organisms with differing life history characteristics and resource use strategies will be better able to maintain critical functions and processes amidst changing and fluctuating conditions (Diaz et al. 2006). Therefore, biodiversity will play a major role in maintaining the stability of natural and human communities. Human-induced losses of key species through either local or total extinction can have disastrous consequences for the ecosystem goods and services we rely on and can also have significant economic impacts.

The undertaking of a floristic inventory and subsequent compilation of a vascular flora species list is an important step in managing to protect against human-induced losses of biodiversity. Plant communities and biodiversity provide the basis for healthy ecosystem

functioning. More biodiverse plant communities are tied to greater primary production, nutrient retention, and stability of ecosystem processes (Tilman, 2000). Plant community diversity is also linked to more diverse insect communities (Panzer & Schwartz 1998) and animal communities (Jimenez-Alfaro et al. 1972). Proper knowledge of plant biodiversity within the park is vital for the continued prevention of further development and efforts towards conservation within the jurisdiction of Centerville-Washington Park District. This project provides scientific acumen to promote informed park management and foster healthy ecosystems with community green space. This both bolsters ecosystem health and productivity while increasing community satisfaction because it provides the opportunity to create educational material for community members on the composition and features of the park. Management and conservation for biodiversity also improves community satisfaction with the park because plant biodiversity supports birds, mammals, insects, and other species which may attract attention and draw visitors.

Methods

Bill Yeck Park is a 194-acre park surrounded by a developed suburban landscape, with homes, neighborhoods, and busy streets on all borders of the park (Fig. 1). The Bill Yeck Park Vascular Flora Species List was created by performing frequent visual encounter surveys. These surveys occurred on a weekly basis during the growing season (April to August) and approximately bi-weekly during the rest of the year (September to March). From these surveys, known species were identified in the field and unknown species were taken as a sample to be identified in the lab. Visual encounter surveys were performed via three methods: (1) by random walks off-trail, (2) hiking along all of the

trails in the park, and (3) walking along systematic transects through different areas of the park. These transects were parallel, approximately 10 meters apart, and extended to either the opposite edge of the area of interest or to the park boundary. Key features of tall trees were assessed using binoculars. The length of the transects were walked while visually searching for previously unidentified species. For each of the three methods mentioned above, samples of plants were collected in a vasculum (a hard-walled container containing moist paper towels) for transportation back to the lab for further identification under a dissecting microscope. Samples were identified using a dichotomous key, such as the *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* (Gleason and Cronquist 1991). Collected and identified samples were pressed, mounted on acid-free paper, and labeled for deposition into the University of Dayton herbarium. Samples were also documented electronically in a database using Microsoft Excel. The R statistical software will be used to generate basic summaries of the flora.

Criteria for habitat delineations were documented in a field notebook while on visual encounter surveys for further development and organization. This included rapid assessments of soil moisture, soil types, topographic characteristics (elevation, aspect, slope), and dominant plant species. The locations of invasive species populations and rare native plant species were identified in the field and mapped using GIS software.

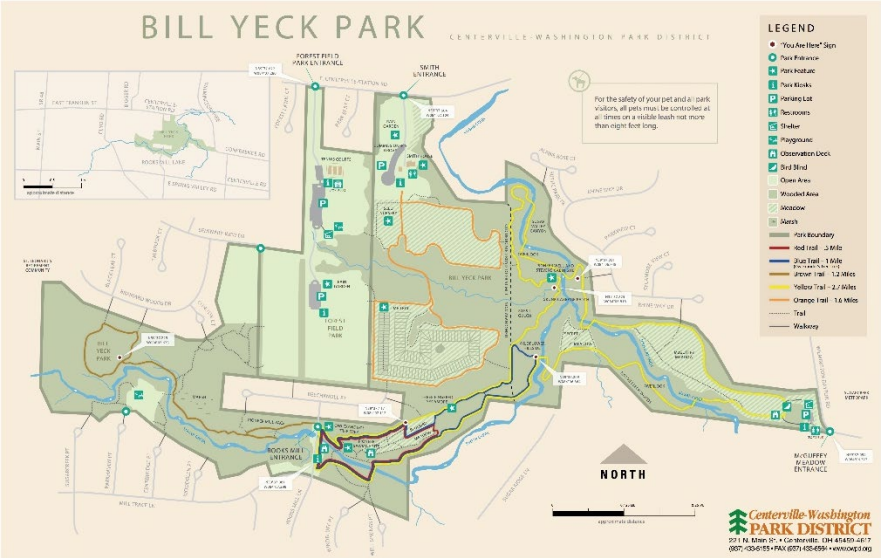


Fig. 1: Map of Bill Yeck Park showing surrounding residential suburban areas. http://www.cwpd.org/wp-content/uploads/2016/07/bill_yeck_park_map.pdf

Results

251 unique plant species have been identified within the boundaries of Bill Yeck Park (Table 1). All identified species can be found in Appendix 1, listed by growth habit, and then alphabetically by family, then genus and species. In addition, 8 general habitat types have been identified including: lowland meadow, riparian forest, slope/palisade forest, upland forest, open wetland, cove forest, upland prairie, and forest edge. Rare native species, like American Ginseng (*Panax quinquefolis)* and putty root orchid (*Aplectrum hyemale)* were identified and nascent foci of invasive plants like winter creeper (*Euonymus fortunei)* were located.

The most species richness within the park was documented within the forb life form (Table 1). The least species richness was documented within the fern + fern allies

life form and the woody vines life form, with only 3 species and 6 species identified respectively (Table 1).

Life Form	Number of Families	Number of Genera	Number of Species
Fern + Fern Allies	2	3	3
Graminoid	3	15	23
Forb	53	126	158
Tree	21	29	42
Shrub	5	8	10
Woody Vine	4	6	6
Total	82	194	251

Table 1: Results of the Bill Yeck Park vascular flora species list. 251 plant species displayed by growth habit and classification.

Discussion

The compilation of a vascular flora for Bill Yeck Park produced helpful insight to pass along to Centerville-Washington Park District management and community members including documentation of species richness within the park, noted areas of pique conservation concern with rare native species and invasive threats, and delivered habitat delineations. This information allows the park management staff to make science-based decisions which promote biodiversity, therefore supporting ecosystem services to the surrounding urban-suburban area, enhancing the stability of ecosystem processes, and protecting the species and recreational activities of interest to community members.

Additionally, this project provided opportunities for community communication and engagement. A meeting was held with the park district board to communicate project findings, and a hike was organized with interested community members to share botanical findings and knowledge. This type of open communication among scientists,

land managers, and community members is increasingly important in the coming age of ecological reclamation efforts. Especially when the continual development of land and resultant increasing importance of urban green spaces are considered, this process of community-sought scientific involvement is greatly encouraging to the hope of protecting natural spaces in the future in Dayton.

More protected nature parks in suburban landscapes can help to mitigate the effects of human-induced biodiversity loss. On a local scale, habitat fragmentation and human land use development are specifically countered by proper management and local commitments to the value of green spaces. On a global scale, climate change is inevitably changing the distribution of and pressures on vulnerable plant species, but the carbon sequestration and habitat refuge of urban green spaces cannot be overvalued.

References

Burton, P.J., Balisky, A.C., Coward, L.P., Kneeshaw, D.D, Cumming, S.G.. 1992. The value of managing for biodiversity. *The Forestry Chronicle* 68: 225–237.

Diaz, S., Fargione, J., Chapin III, F.S., Tilman, D. 2006. Biodiversity loss threatens human well-being. *PLoS Biology* 4: 1300–1305.

Fahrig, L. 2003. Effects of habitat fragmentation on biodiversity. *Annual Review of Ecology, Evolution, and Systematics* 34: 487–515.

Gleason, H.A., Cronquist, A. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada.* New York Botanical Garden Press, New York. 910 p.

Hooper, D.U., Chapin III, F.S., Ewel, J.J. 2005. Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. *Ecological Monographs* 75: 3–35.

Jimenez-Alfaro, B., Chytry, M., Mucina, L., Grace, J.B., & Rejmanek, M. 1972. Disentangling vegetation from climate-energy and habitat heterogeneity for explaining animal geographic patterns. *Ecology and Evolution* 6(5): 1515-1526.

Loreau, M., Naeem, S., Inchausti, P., Bengtsson, J., Grime, J.P., Hector, A., Hooper, D.U., Huston, M.A., Raffaelli, D., Schmid, B., Tilman, D. ,Wardle, D.A. 2001. Biodiversity and ecosystem functioning: current knowledge and future challenges. *Science* 294: 804–808.

Mantyka-Pringle, C., Martin, T., Rhodes, J. 2012. Interactions between climate and habitat loss effects on biodiversity: A systematic review and meta-analysis. *Global Change Biology 4: 1239-1252.*

Panzer, R., Schwartz, M.W. 1998. Effectiveness of a vegetation-based approach to insect conservation. *Conservation Biology* 12(3): 693-702.

Pimentel, D., Wilson, C., McCullum, C., Huang, R., Dwen, P., Flack, J., Tran, Q., Saltman, T., Cliff, B. 1997. Economic and environmental benefits of biodiversity. *BioScience* 47: 747–757.

Powell, K.I., Chase, J.M., Knight, T.M. 2011. A synthesis of plant invasion effects on biodiversity across spatial scales. *American Journal of Botany* 98: 539–548.

Appendix 1

Vascular flora species list for Bill Yeck Park.

Species	Family	Common Name
Ferns and fern allies		
Cystopteris protrusa	Dryopteridaceae	fragile fern
Polystichum acrostichoides	Dryopteridaceae	Christmas fern
Botrypus virginianus	Ophiogossacaceae	rattlesnake fern
Wildflowers		
Ruellia strepens	Acanthaceae	limestone wild petunia
Alisma subcordatum	Alismataceae	American water plantain

Sagittaria sp.	Alismataceae	
Cicuta maculata	Apiaceae	water hemlock
Conium maculatum	Apiaceae	poison hemlock
Cryptotaenia canadensis	Apiaceae	honewort
Daucus carota	Apiaceae	wild carrot/Queen Anne's lace
Erigenia bulbosa	Apiaceae	harbinger of spring
Osmorhiza claytonii	Apiaceae	sweet cicely
Sanicula canadensis	Apiaceae	Canadian blacksnakeroot
Sanicula odorata	Apiaceae	clustered blacksnakeroot
Apocynum cannabinum	Apocynaceae	dogbane
Arisaema triphyllum	Araceae	jack in the pulpit
Symplocarpus foetidus	Araceae	skunk cabbage
Panax quinquefolius	Araliaceae	American ginseng
Asarum canadense	Aristolochiaceae	wild ginger/Canadian snakeroot
Asclepias incarnata	Asclepiadaceae	swamp milkweed
Asparagus officinalis	Asparagaceae	garden asparagus
Achillea millefolium	Asteraceae	common yarrow
Ageratina altissima	Asteraceae	white snakeroot
Ambrosia artemisiifolia	Asteraceae	common ragweed
Ambrosia trifida	Asteraceae	giant ragweed
Arctium minus	Asteraceae	common burdock/beggar's button
Bidens frondosa	Asteraceae	devil's beggar ticks
Cichorium intybus	Asteraceae	wild chicory/common chicory
Cirsium arvensis	Asteraceae	Canada thistle
Conyza canadensis	Asteraceae	horseweed
Coreopsis lanceolata	Asteraceae	lanceleaf tickseed
Coreopsis rosea	Asteraceae	pink threadleaf
Coreopsis tinctoria	Asteraceae	plains tickseed/golden tickseed
Echinacea purpurea	Asteraceae	purple coneflower
Erechtites hieracifolia	Asteraceae	pilewort/fireweed
Erigeron annuus	Asteraceae	annual fleabane
Erigeron philadelphicus	Asteraceae	Philadelphia fleabane
Eupatorium perfoliatum	Asteraceae	common boneset
Eupatorium purpureum	Asteraceae	Purple-node joe-pye weed
Eurybia divaricata	Asteraceae	white wood aster
Heliopsis helianthoides	Asteraceae	smooth oxeye/false sunflower
Lactuca canadensis	Asteraceae	wild lettuce
Leucanthemum vulgare	Asteraceae	ox-eye daisy
Packera aurea	Asteraceae	golden ragwort
Packera glabella	Asteraceae	butterweed
Packera obovata	Asteraceae	roundleaf ragwort

Prenanthes altissima	Asteraceae	tall white lettuce
Ratibida columnifera	Asteraceae	upright prairie coneflower
Rudbeckia hirta	Asteraceae	black-eyed susan
Silphium perfoliatum	Asteraceae	cup plant
Taraxacum officinale	Asteraceae	common dandelion
Verbesina alternifolia	Asteraceae	wingstem
Impatiens capensis	Balsaminaceae	orange jewelweed/touch-me-not
Impatiens pallida	Balsaminaceae	pale jewelweed/yellow jewelweed
Jeffersonia diphylla	Berberidaceae	twinleaf
Podophyllum peltatum	Berberidaceae	mayapple
Alliaria petiolata	Brassicaceae	garlic mustard
Barbarea vulgaris	Brassicaceae	yellow rocket/bittercress
Cardamine douglassii	Brassicaceae	purple cress/limestone bittercress
Dentaria laciniata	Brassicaceae	cutleaf toothwort
Hesperis matronalis	Brassicaceae	dame's rocket
Iodanthus pinnatifidus	Brassicaceae	purple rocket
Chamaecrista fasciculata	Caesalpiniaceae	partridge pea
Campanulastrum americanum	Campanulaceae	small american bellflower
Lobelia inflata	Campanulaceae	Indian tobacco/puke weed
Lobelia siphilitica	Campanulaceae	great blue lobelia
Dipsacus fullonum	Caprifoliaceae	wild teasel
Silene regia	Caryophyllaceae	royal catchfly
Stellaria media	Caryophyllaceae	common chickweed
Ipomoea pandurata	Convolculaceae	wild sweet potato
Equisetum arvense	Equisetaceae	horsetail
Equisetum hyemale	Equisetaceae	rough horsetail/souring rush
Amphicarpaea bracteata	Fabaceae	American hogpeanut
Desmodium sp.	Fabaceae	
Medicago lupulina	Fabaceae	black medick
Medicago sativa	Fabaceae	alfalfa/lucerne
Melilotus officinalis	Fabaceae	yellow sweet clover
Securigera varia	Fabaceae	crownvetch
Trifolium campestre	Fabaceae	field clover
Trifolium incarnatum	Fabaceae	crimson clover
Trifolium pratense	Fabaceae	red clover
Trifolium repens	Fabaceae	white clover
Hydrangea arborescens	Hydrangeaceae	smooth hydrangea/wild hydrangea
Hydrophyllum canadense	Hydrophyllaceae	bluntleaf waterleaf
Hypericum perforatum	Hypericaceae	St. John's wort
Hypericum punctatum	Hypericaceae / Clusiaceae	black dotted St. John's wort

Sisyrinchium angustifolium	Iridaceae	narrowleaf blue-eyed grass
Scutellaria	Lamiaceae	
Lamiastrum galeobdolon	Lamiaceae	yellow archangel
Lycopus americanus	Lamiaceae	American bugleweed
Monarda fistulosa	Lamiaceae	wild bergamot
Prunella vulgaris	Lamiaceae	selfheal
Teucrium canadense	Lamiaceae	Canada germander
Allium canadense	Liliaceae	candadian garlic/meadow garlic
Allium tricoccum	Liliaceae	wild leek/ramp
Erythronium albidum	Liliaceae	white fawnlily/white trout lily
Erythronium americanum	Liliaceae	trout lily/yellow trout lily
Maianthemum racemosum	Liliaceae	false Solomon's seal
Narcissus sp	Liliaceae	daffodil
Ornithogalum umbellatum	Liliaceae	star-of-Bethlehem/grass lily
Polygonatum biflorum	Liliaceae	Solomon's seal
Trillium grandiflorum	Liliaceae	white trillium
Trillium sessile	Liliaceae	toadshade
Floerkea proserpinacoides	Limnanthaceae	false mermaid
Menispermum canadense	Menispermaceae	common moonseed
Ligustrum vulgare	Oleaceae	common privet/European privet
Circaea lutetiana	Onagraceae	enchanter's nightshade
Gaura biennis	Onagraceae	biennial beeblossom
Oenothera parviflora	Onagraceae	small flowered evening primrose
Oenothera speciosa	Onagraceae	showy evening primrose
Aplectrum hyemale	Orchidaceae	putty root orchid
Platanthera lacera	Orchidaceae	ragged fringed orchid
Epifagus virginiana	Orobanchaceae	beechdrops
Oxalis stricta	Oxalidaceae	yellow woodsorrel
Plantago rugelii	Pantaginaceae	blackseed plantain
Sanguinaria canadensis	Papaveraceae	bloodroot
Stylophorum diphyllum	Papaveraceae	celandine poppy
Phytolacca americana	Phytolaccaceae	pokeweed
Penstemon hirsutus	Plantaginaceae	hairy beardtongue
Plantago lanceolata	Plantaginaceae	English plantain/narrowleaf plantain
Elymus canadensis	Poaceae	Candada wild rye
Panicum virgatum	Poaceae	switchgrass
Phlox divaricata	Polemoniaceae	woodland phlox
Polygonum caespitosum	Polygonaceae	Oriental lady's thumb
Polygonum virginianum	Polygonaceae	jumpseed
Rumex crispus	Polygonaceae	curly dock
Rumex obtusifolius	Polygonaceae	bitter dock

Pontederia cordata	Pontederiaceae	pickerelweed
Claytonia virginica	Portulaceae	Virginia springbeauty/fairy spud
Anagallis arvensis	Primulaceae	scarlet pimpernel
Lysimachia nummularia	Primulaceae	creeping Jenny/moneywort
Actaea pachypoda	Ranunculaceae	white baneberry
Anemone virginiana	Ranunculaceae	tall thimbleweed
Anemonella thalictroides	Ranunculaceae	rue anemone
Cimicifuga racemosa	Ranunculaceae	black snakeroot/black cohosh
Ranunculus abortivus	Ranunculaceae	littleleaf buttercup
Ranunculus ficaria	Ranunculaceae	fig buttercup
Ranunculus recurvatus	Ranunculaceae	blisterwort
Thalictrum revolutum	Ranunculaceae	waxyleaf meadow-rue
Agrimonia gryposepala	Rosaceae	tall hairy agrimony/common agrimony
Agrimonia parviflora	Rosaceae	harvestlice
Geum canadense	Rosaceae	white avens
Geum vernum	Rosaceae	spring avens
Potentilla norvegica	Rosaceae	Norwegian cinquefoil
Galium aparine	Rubiaceae	goosegrass/stickywilly
Galium circaezans	Rubiaceae	wild licorice
Galium triflorum	Rubiaceae	fragant bedstraw/cudweed
Verbascum blattaria	Scrophulariaceae	moth mullein
Digitalis purpurea	Scrophulariaceae	foxglove
Mimulus ringens	Scrophulariaceae	Allegheny monkeyflower
Datura stramonium	Solanaceae	jimsonweed/devil's snare
Solanum carolinense	Solanaceae	Carolina horsenettle
Laportea canadensis	Urticaceae	wood nettle
Pilea pumila	Urticaceae	clearweed
Valerianella chenopodiifolia	Valerianaceae	goosefoot cornsalad
Phryma leptostachya	Verbenaceae	lopseed
Verbena urticifolia	Verbenaceae	white vervain
Viola pubescens	Violaceae	downy yellow violet
Viola sororia	Violaceae	common blue violet
Viola sororia var. priceana	Violaceae	
Viola striata	Violaceae	striped cream violet
Hackelia virginiana		
Hosta sp.		
Solidago sp.	Asteraceae	
Symphyotrichum sp.		
Typha sp.		
Vernonia gigantea		

Grasses and grass-like plants		
Carex albursina	Cyperaceae	white bear sedge
Carex blanda	Cyperaceae	common woodland sedge
Carex frankii	Cyperaceae	Frank's sedge
Carex jamesii	Cyperaceae	James' sedge
Carex laxiculmis	Cyperaceae	spreading sedge
Carex oligocarpa	Cyperaceae	rich woods sedge/few fruit sedge
Carex sparganioides	Cyperaceae	bur-reed sedge
Cyperus strigosus	Cyperaceae	strawcolored flatsedge
Scirpus atrovirens	Cyperaceae	green bulrush
Scirpus validus	Cyperaceae	softstem bulrush
Juncus tenuis	Juncaceae	slender rush/path rush
Agrostis capillaris	Poaceae	common bent
Bromus commutatus	Poaceae	meadow brome
Dactylis glomerata	Poaceae	orchard grass
Elymus villosus	Poaceae	silky wild rye
Elytrigia repens	Poaceae	quackgrass
Festuca subverticillata	Poaceae	nodding fescue
Leersia virginica	Poaceae	whitegrass
Microstegium vimineum	Poaceae	Napalese browntop
Phleum pratense	Poaceae	timothy
Setaria faberi	Poaceae	Japanese bristlegrass
Setaria glauca	Poaceae	yellow foxtail
Sorghum halepense	Poaceae	johnsongrass
Trees and shrubs		
Lonicera japonica	Caprifoliaceae	Japanese honeysuckle
Lonicera maackii	Caprifoliaceae	amur honeysuckle
Sambucus canadensis	Caprifoliaceae	American black elderberry
Viburnum prunifolium	Caprifoliaceae	blackhaw
Euonymus alatus	Celastraceae	burning bush
Euonymus atropurpureus	Celastraceae	Eastern wahoo
Elaeagnus umbellata	Elaeagnaceae	autumn olive
Lindera benzoin	Loraceae	spicebush
Rosa multiflora	Rosaceae	multiflora rose/Japanese rose
Rubus occidentalis	Rosaceae	black raspberry
Acer negundo	Aceraceae	box elder
Acer rubrum	Aceraceae	red maple
Acer saccharinum	Aceraceae	silver maple

Acer saccharum	Aceraceae	sugar maple
Asimina triloba	Annonaceae	paw paw
Carpinus caroliniana	Betulaceae	ironwood
Ostrya virginiana	Betulaceae	American hop hornbeam
Cornus alternifolia	Cornaceae	alternate-leaf dogwood
Cornus amomum	Cornaceae	knob-styled dogwood
Cornus drummondii	Cornaceae	rough-leaved dogwood
Juniperus virginiana	Cupressaceae	Eastern red cedar
Cercis canadensis	Fabaceae	eastern redbud
Gleditsia triacanthos	Fabaceae	honey locust
Gymnocladus dioica	Fabaceae	Kentucky Coffeetree
Robinia pseudoacacia	Fabaceae	black locust
Fagus grandifolia	Fagacaeae	American beech
Quercus alba	Fagacaeae	white oak
Quercus muehlenbergii	Fagacaeae	chinkapin oak
Quercus rubra	Fagacaeae	red oak
Quercus macrocarpa	Fagaceae	bur oak
Liquidambar styraciflua	Hamamelidaceae	sweetgum
Aesculus glabra	Hippocastanaceae	Ohio buckeye
Carya cordiformis	Juglandaceae	bitternut hickory
Carya ovata	Juglandaceae	shagbark hickory
Carya tomentosa	Juglandaceae	mockernut hickory
Juglans nigra	Juglandaceae	Black walnut
Liriodendron tulipifera	Magnoliaceae	yellow poplar
Maclura pomifera	Moraceae	osage orange/monkeybrains
Morus rubra	Moraceae	Red mulberry
Fraxinus americana	Oleaceae	white ash
Fraxinus pennsylvanica	Oleaceae	Green ash
Fraxinus quadrangulata	Oleaceae	blue ash
Pinus strobus	Pinaceae	white pine
Platanus occidentalis	Platanaceae	American sycamore
Prunus serotina	Rosaceae	black cherry
Pyrus calleryana	Rosaceae	callery pear
Populus deltoides	Salicaceae	eastern cottonwood
Ailanthus altissima	Simaroubaceae	tree-of-heaven
Tilia americana	Tiliaceae	Basswood/Linden
Celtis occidentalis	Ulmaceae	hackberry
Ulmus americana	Ulmaceae	American elm
Ulmus rubra	Ulmaceae	Slippery elm
Malus sp.		

Vines

Toxicodendron radicans	Anacardiaceae	Poison ivy
Celastrus orbiculatus	Celastraceae	oriental bittersweet
Euonymus fortunei	Celastraceae	winter creeper
Smilax hispida (tamnoides?)*	Smilaceae	bristly greenbrier
Parthenocissus quinquefolia	Vitaceae	Virginia creeper
Vitis sp.	Vitaceae	
Clematis sp.		
Cuscuta sp.		Dodder