

Floristic Quality Assessment and Invasive Species Surveys of Watkins Lake State and County Park, Washtenaw County, Michigan



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Cover photograph: Southern wet meadow and prairie fen at Northern Wetland habitat zone, August 23, 2016. Photograph by B.S. Slaughter.

Introduction

In summer 2016, Washtenaw County Parks and Recreation Commission (WCPRC) contracted with Michigan Natural Features Inventory (MNFI) to conduct Floristic Quality Assessments (FQAs) and invasive species maps for three habitat zones in Watkins Lake State and County Park in Manchester Township, Washtenaw County, Michigan. The three habitat zones indicated for surveys were the 16 hectare (40 acre) “Northern Wetland” (NW) and 32 ha (80 ac) “Central Forest” (CF), located in the SW1/4 of Section 7 and NW1/4 of Section 17, T04S R03E, and “Western Grassland, Wetland, and RR Corridor” (WGW), located in Section 8, T04S R03E (Figure 1).

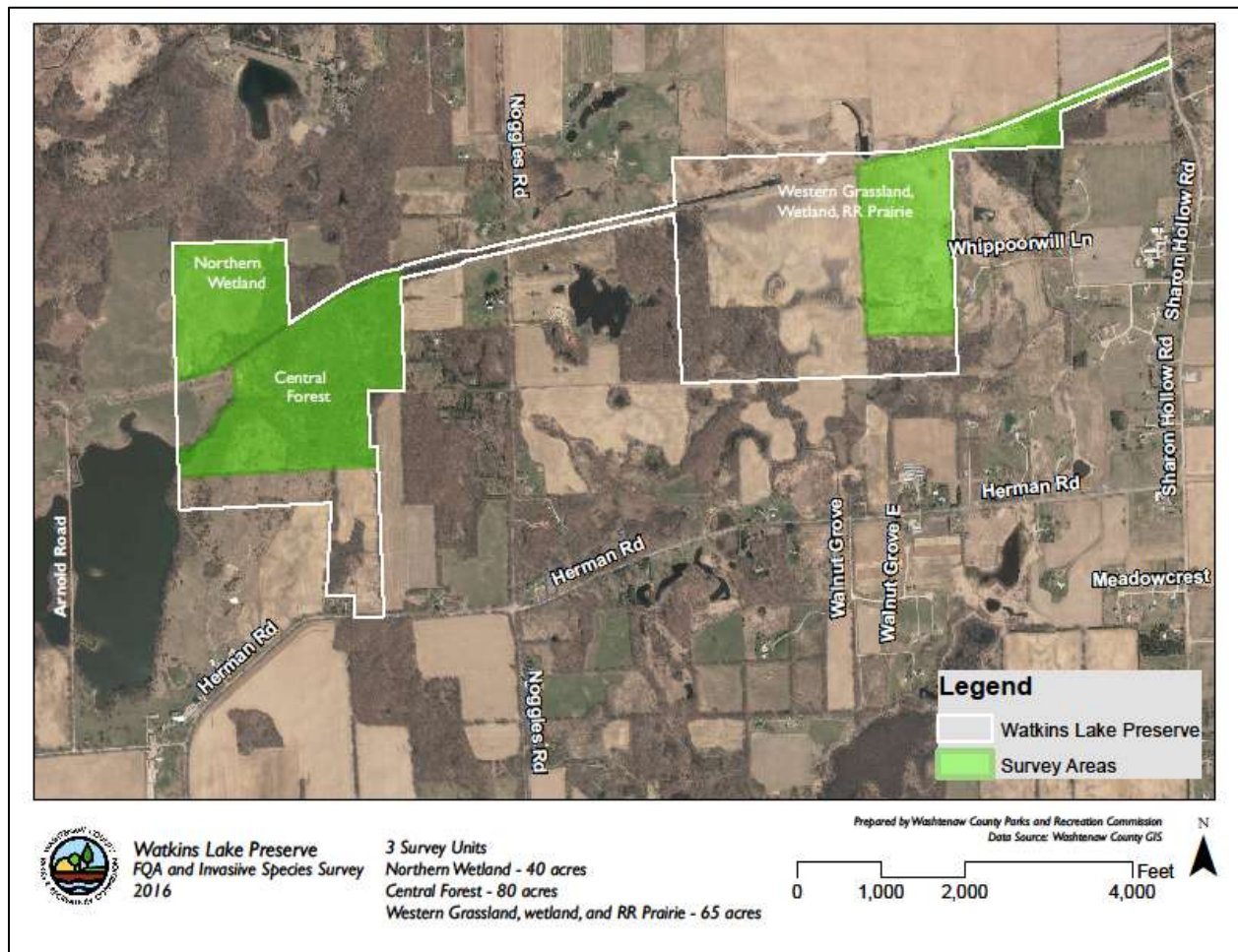


Figure 1. Watkins Lake State and County Park, Jackson and Washtenaw Cos., MI. Survey sites shaded in green.

Methods

Meander surveys of the three habitat zones were conducted July 20, August 11, and August 23, 2016 (Northern Wetland), August 11 and 23, 2016 (Central Forest), and August 10 and 24, 2016 (Western Grassland, Wetland, and RR Corridor). Lists of all vascular plants identified or keyed during surveys were developed. Species lists were entered into the Universal FQA Calculator (Freyman et al. 2016) following the Michigan Floristic Quality Assessment Database (Reznicek et al. 2014). Natural communities were

identified following Cohen et al. (2014). GPS waypoints were taken at locations of priority terrestrial invasive plant species (provided by WCPRC) and shapefiles delineating the extent of the populations were created following field surveys.

Results

The three habitat zones identified for inventory supported a variety of mostly degraded habitats. The NW consisted primarily of southern wet meadow, with a small area of prairie fen in the northeastern portion of the depression. The margins consisted primarily of old field, with some areas of ecotonal wet-mesic prairie. CF was the most diverse zone, supporting primarily badly degraded dry-mesic southern forest, most of which was successional growth on formerly cleared land. Dense tangles of vines and shrubs occurred in more recently cleared areas and along roads and utility corridors. A thin band of recognizable but essentially destroyed oak openings was noted at the northeastern margin of NW. A small inundated shrub swamp was noted in the E-W utility corridor that passes through the southern portion of the CF. WGW was the most degraded habitat zone, consisting primarily of old field, including formerly pastured wetland. Degraded southern wet meadow and emergent marsh were also present.

The number of vascular plant taxa identified to the species level ranged from 110 to 188, with native species comprising 65 – 85% of species per site (Table 1). NW supported the highest mean C, native mean C, and FQI scores, whereas WGW supported the lowest scores for each value. FQAs for each habitat zone are provided in the Appendix.

Table 1. Floristic Quality Assessment Summary.

Site	# Taxa*	Total Mean C	# Native Taxa*	Native Mean C	Total FQI	Native FQI	Adjusted FQI
Northern Wetland (NW)	122	3.8	104 (85%)	4.5	42.0	45.9	41.5
Central Forest (CF)	188	2.8	144 (77%)	3.7	38.4	44.4	32.4
Western Grassland, Wetland, RR Prairie (WGW)	110	1.9	71 (65%)	3.0	19.9	25.3	24.1

*Identified to species or subspecies.

Populations of three priority terrestrial invasive plant species were documented at CF: *Ailanthus altissima* (tree-of-heaven), *Celastrus orbiculatus* (Oriental bittersweet), and *Vincetoxicum rossicum* (dog-strangling vine) (Figures 2, 3). Populations of all three species appeared to be localized (Figure 4). No priority terrestrial invasive plant species were documented at NW or WGW. However, several other invasive species were widespread at all three sites, and non-native species comprised a significant percentage of the overall flora at CF and especially WGW (Appendix).



Figure 2. *Vincetoxicum rossicum* (dog-strangling vine) was locally dense in CF.



Figure 3. *Ailanthus altissima* (tree-of-heaven) was especially prevalent in the open utility corridor passing E-W through CF.

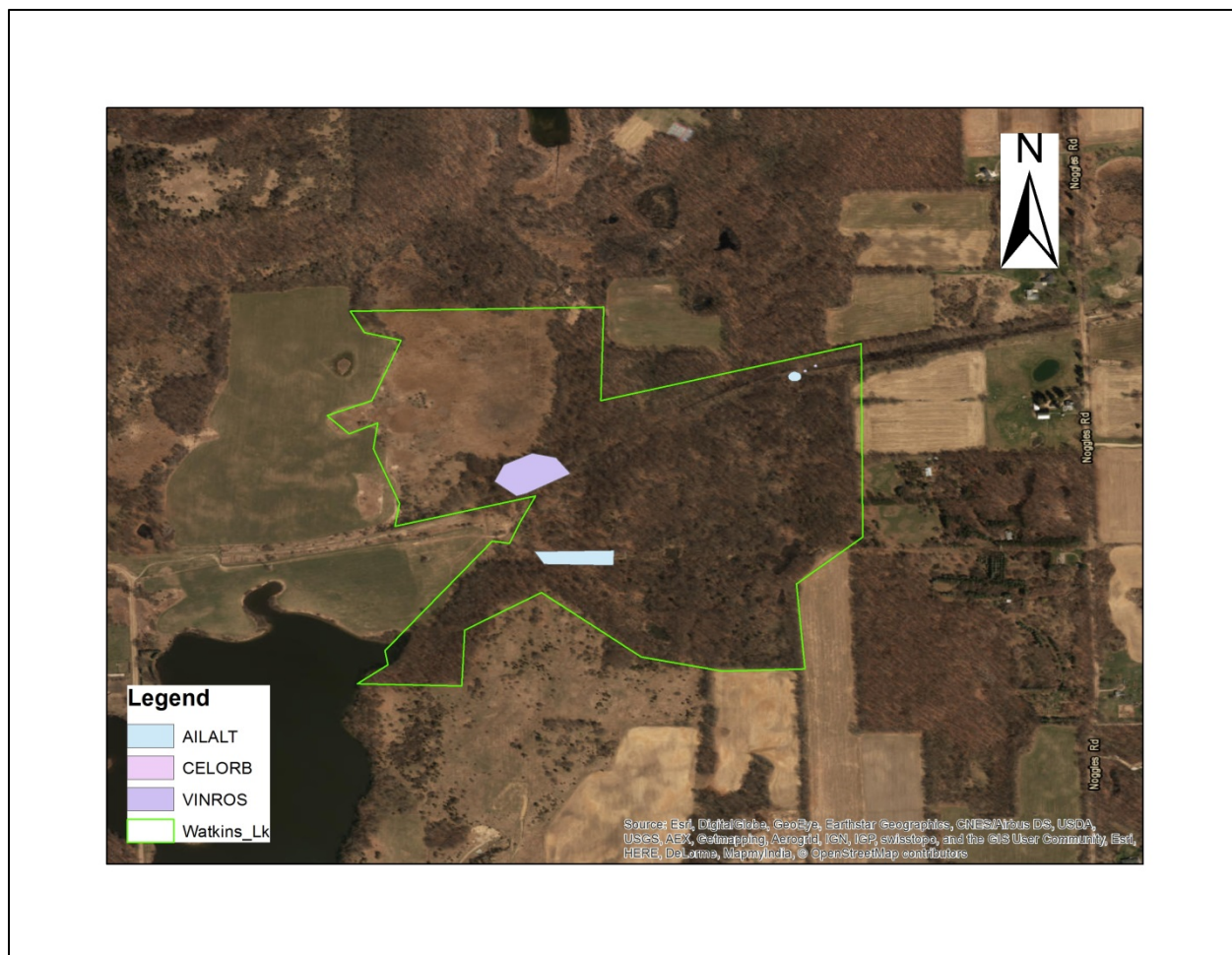


Figure 4. Populations of three priority terrestrial invasive plant species were documented and mapped at CF.

Discussion

The NW habitat zone supported the highest ecological and floristic integrity of the three survey areas. Comprised primarily of southern wet meadow and prairie fen, the site appears to have been impacted by haying and grazing, with tillage limited to the margins. Traditional restoration techniques such as mechanical treatment of invasive species and application of prescribed fire are recommended to maintain these natural communities. On the other hand, more aggressive restoration will be required in the other two habitat zones (CF and WGW). Very little remnant forest persists in CF; most of the acreage has reforested in recent decades following clearing and tillage and is characterized by weedy species, many of them invasive (e.g., black locust, white mulberry, Japanese barberry, Oriental bittersweet, garlic mustard, hedge-parsley, etc.; see Appendix). Restoration of this secondary forest to conditions more closely approximating primary forest will be challenging due to a variety of factors, including the prevalence of invasive propagules and altered soil structure, chemistry, and biota. Rhizomatous species, barochores (gravity-dispersed species), and myrmecochores (ant-dispersed species) may need to be introduced to secondary forests due to their limited ability to recolonize previously cultivated areas (Bellemare et al. 2002, Dyer 2010).

The WGW habitat zone was the most degraded of the three survey sites. WGW consisted primarily of low-richness upland old field, with an area of ditched and pastured wet meadow. The most conservative species observed were wetland generalists such as *Asclepias incarnata* (swamp milkweed), *Carex lacustris* (lake sedge), and *Persicaria amphibia* (water smartweed), all of which occurred in the wettest, least disturbed portions of the wetland. The most notable species in the uplands were a few prairie/savanna generalists such as *Andropogon gerardii* (big bluestem), *Euphorbia corollata* (flowering spurge), and *Tradescantia ohioensis* (Ohio spiderwort). These species were at least partly adventive on the railbed, and nowhere suggested evidence of remnant prairie. However, the upland old fields in this tract provide an opportunity for the establishment of a more structurally and compositionally diverse grassland comprised of native species.

Acknowledgements

We thank Allison Krueger, Stewardship Coordinator with Washtenaw County Parks & Recreation, for initiating botanical surveys and providing MNFI with site information, maps, and general guidance. Mike Penskar (University of Michigan Herbarium and Lead Botanist Emeritus with MNFI) assisted with field surveys and interpretation of natural communities. We also thank Robin Lenkart, Nancy Toben, and Brian Klatt (MNFI) for administrative support.

Literature Cited

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Appendix. Floristic Quality Assessments.

Watkins Lake State and County Park, Northern Wetland

07/20/2016

Watkins Lake SP

Washtenaw

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

FQA DB Description:

Reznicek, A.A., M.R. Penskar, B.S. Walters, and B.S. Slaughter. 2014. Michigan Floristic Quality Assessment Database. Herbarium, University of Michigan, Ann Arbor, MI and Michigan Natural Features Inventory, Michigan State University, Lansing, MI. <http://michiganflora.net>

Practitioner:

Mike Penskar and Josh Cohen (7/20); Brad Slaughter (8/11); B. Slaughter and M. Penskar (8/23)

Latitude:

42.133318

Longitude:

-84.130671

Weather Notes:

Duration Notes:

Community Type Notes:

Old field, southern wet meadow, prairie fen with small upland "islands"

Other Notes:

Also noted: *Crataegus* sp.

Conservatism-Based Metrics:

Total Mean C: 3.8

Native Mean C: 4.5

Total FQI: 42

Native FQI: 45.9

Adjusted FQI: 41.5

% C value 0: 15.6

% C value 1-3: 33.6

% C value 4-6: 34.4

% C value 7-10: 16.4

Native Tree Mean C: 1.7

Native Shrub Mean C: 4.7

Native Herbaceous Mean C: 4.5

Species Richness:

Total Species:	122	
Native Species:	104	85.20%
Non-native Species:	18	14.80%

Species Wetness:

Mean Wetness:	-2	
Native Mean Wetness:	-2.7	

Physiognomy Metrics:

Tree:	3	2.50%
Shrub:	18	14.80%
Vine:	3	2.50%
Forb:	69	56.60%
Grass:	13	10.70%
Sedge:	14	11.50%
Rush:	0	0%
Fern:	2	1.60%
Bryophyte:	0	0%

Duration Metrics:

Annual:	3	2.50%
Perennial:	112	91.80%
Biennial:	7	5.70%
Native Annual:	1	0.80%
Native Perennial:	101	82.80%
Native Biennial:	2	1.60%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow
Agrostis gigantea	Poaceae	AGRIGIG	non-native	0	-3	grass	perennial	redtop
Andropogon gerardii	Poaceae	ANDGER	native	5	0	grass	perennial	big bluestem

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
<i>Apios americana</i>	Fabaceae	APIAME	native	3	-3	vine	perennial	groundnut
<i>Apocynum cannabinum</i> ; a. <i>sibiricum</i>	Apocynaceae	APOCAN	native	3	0	forb	perennial	indian-hemp
<i>Asclepias incarnata</i>	Apocynaceae	ASCINC	native	6	-5	forb	perennial	swamp milkweed
<i>Asclepias syriaca</i>	Apocynaceae	ASCSYR	native	1	5	forb	perennial	common milkweed
<i>Asclepias tuberosa</i>	Apocynaceae	ASCTUB	native	5	5	forb	perennial	butterfly-weed
<i>Betula pumila</i>	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch
<i>Bidens trichosperma</i> ; b. <i>coronatus</i>	Asteraceae	BIDTRI	native	7	-5	forb	annual	tickseed-sunflower
<i>Bromus ciliatus</i>	Poaceae	BROCIL	native	6	-3	grass	perennial	fringed brome
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint
<i>Calystegia sepium</i>	Convolvulaceae	CALSEP	native	2	0	vine	perennial	hedge bindweed
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower
<i>Carduus nutans</i>	Asteraceae	CARNUT	non-native	0	3	forb	biennial	musk thistle
<i>Carex buxbaumii</i>	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge
<i>Carex cristatella</i>	Cyperaceae	CXCRIS	native	3	-3	sedge	perennial	sedge
<i>Carex hystericina</i>	Cyperaceae	CXHYST	native	2	-5	sedge	perennial	sedge
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge
<i>Carex lacustris</i>	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge
<i>Carex sterilis</i>	Cyperaceae	CXSTER	native	10	-5	sedge	perennial	sedge
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge
<i>Carex vulpinoidea</i>	Cyperaceae	CXVULP	native	1	-5	sedge	perennial	sedge
<i>Centaurea stoebe</i> ; c. <i>maculosa</i>	Asteraceae	CENSTO	non-native	0	5	forb	biennial	spotted knapweed
<i>Chelone glabra</i>	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead
<i>Cicuta maculata</i>	Apiaceae	CICMAC	native	4	-5	forb	biennial	water hemlock
<i>Cirsium arvense</i>	Asteraceae	CIRARV	non-native	0	3	forb	perennial	canada thistle
<i>Cirsium muticum</i>	Asteraceae	CIRMUT	native	6	-5	forb	biennial	swamp thistle
<i>Cirsium vulgare</i>	Asteraceae	CIRVUL	non-native	0	3	forb	biennial	bull thistle
<i>Cornus amomum</i>	Cornaceae	CORAMO	native	2	-3	shrub	perennial	silky dogwood
<i>Cornus sericea</i> ; c. <i>stolonifera</i>	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier
<i>Dasiphora fruticosa</i> ; <i>potentilla</i> f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil
<i>Daucus carota</i>	Apiaceae	DAUCAR	non-native	0	5	forb	biennial	queen-annes-lace
<i>Doellingeria umbellata</i> ; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster
<i>Elaeagnus umbellata</i>	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Elymus trachycaulus; agropyron t.	Poaceae	ELYTRA	native	8	3	grass	perennial	slender wheatgrass
Epilobium leptophyllum	Onagraceae	EPILEP	native	6	-5	forb	perennial	fen willow-herb
Eupatorium perfoliatum	Asteraceae	EUPPER	native	4	-3	forb	perennial	boneset
Euthamia graminifolia	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod
Eutrochium maculatum; eupatorium m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry
Galium labradoricum	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw
Geum aleppicum	Rosaceae	GEUALE	native	3	0	forb	perennial	yellow avens
Geum rivale	Rosaceae	GEURIV	native	7	-5	forb	perennial	purple avens
Helianthus giganteus	Asteraceae	HELGIG	native	5	-3	forb	perennial	tall sunflower
Hypericum perforatum	Hypericaceae	HYPPER	non-native	0	5	forb	perennial	common st. johns-wort
Iris virginica	Iridaceae	IRIVIR	native	5	-5	forb	perennial	southern blue flag
Juncus biflorus	Juncaceae	JUNBIF	native	8	-3	forb	perennial	two-flowered rush
Juncus dudleyi	Juncaceae	JUNDUD	native	1	-3	forb	perennial	dudleys rush
Juncus tenuis	Juncaceae	JUNTEN	native	1	0	forb	perennial	path rush
Juniperus communis	Cupressaceae	JUNCOI	native	4	3	shrub	perennial	common or ground juniper
Juniperus virginiana	Cupressaceae	JUNVIR	native	3	3	tree	perennial	red-cedar
Lilium michiganense	Liliaceae	LILMIC	native	5	-3	forb	perennial	michigan lily
Lobelia kalmii	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia
Lycopus americanus	Lamiaceae	LYCAME	native	2	-5	forb	perennial	common water horehound
Lycopus uniflorus	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed
Lysimachia quadriflora	Myrsinaceae	LYSQUR	native	10	-5	forb	perennial	whorled loosestrife
Lythrum salicaria	Lythraceae	LYTSAL	non-native	0	-5	forb	perennial	purple loosestrife
Medicago sativa	Fabaceae	MEDSAT	non-native	0	5	forb	perennial	alfalfa
Melilotus albus	Fabaceae	MELALB	non-native	0	3	forb	biennial	white sweet-clover
Monarda fistulosa	Lamiaceae	MONFIS	native	2	3	forb	perennial	wild-bergamot
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy
Muhlenbergia mexicana	Poaceae	MUHMEX	native	3	-3	grass	perennial	leafy satin grass
Onoclea sensibilis	Onocleaceae	ONOSEN	native	2	-3	fern	perennial	sensitive fern
Oxypolis rigidior	Apiaceae	OXYRIG	native	6	-5	forb	perennial	cowbane
Packera aurea; senecio a.	Asteraceae	PACAUR	native	5	-3	forb	perennial	golden ragwort
Pedicularis lanceolata	Orobanchaceae	PEDLAN	native	8	-3	forb	perennial	swamp-betony
Persicaria amphibia; polygonum a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
<i>Phalaris arundinacea</i>	Poaceae	PHAARU	native	0	-3	grass	perennial	reed canary grass
<i>Phleum pratense</i>	Poaceae	PHLPR	non-native	0	3	grass	perennial	timothy
<i>Poa compressa</i>	Poaceae	POACOM	non-native	0	3	grass	perennial	canada bluegrass
<i>Populus tremuloides</i>	Salicaceae	POPTRE	native	1	0	tree	perennial	quaking aspen
<i>Pycnanthemum virginianum</i>	Lamiaceae	PYCVIR	native	5	-3	forb	perennial	common mountain mint
<i>Ratibida pinnata</i>	Asteraceae	RATPIN	native	4	5	forb	perennial	yellow coneflower
<i>Rhamnus alnifolia</i>	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn
<i>Ribes americanum</i>	Grossulariaceae	RIBAME	native	6	-3	shrub	perennial	wild black currant
<i>Ribes hirtellum</i>	Grossulariaceae	RIBHIR	native	6	-3	shrub	perennial	swamp gooseberry
<i>Rosa multiflora</i>	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry
<i>Rudbeckia hirta</i>	Asteraceae	RUDHIR	native	1	3	forb	perennial	black-eyed susan
<i>Salix bebbiana</i>	Salicaceae	SALBEB	native	1	-3	shrub	perennial	bebbs willow
<i>Salix candida</i>	Salicaceae	SALCAN	native	9	-5	shrub	perennial	hoary willow
<i>Salix discolor</i>	Salicaceae	SALDIS	native	1	-3	shrub	perennial	pussy willow
<i>Salix petiolaris</i>	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow
<i>Schizachyrium scoparium</i> ; andropogon s.	Poaceae	SCHSCO	native	5	3	grass	perennial	little bluestem
<i>Schoenoplectus acutus</i> ; scirpus a.	Cyperaceae	SCHACU	native	5	-5	sedge	perennial	hardstem bulrush
<i>Scirpus atrocinctus</i> ; s. cyperinus	Cyperaceae	SCIATC	native	5	-5	sedge	perennial	wool-grass
<i>Scirpus atrovirens</i>	Cyperaceae	SCIATV	native	3	-5	sedge	perennial	bulrush
<i>Scirpus cyperinus</i>	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass
<i>Scirpus pendulus</i>	Cyperaceae	SCIPEN	native	3	-5	sedge	perennial	bulrush
<i>Scutellaria galericulata</i>	Lamiaceae	SCUGAL	native	5	-5	forb	perennial	marsh skullcap
<i>Solanum dulcamara</i>	Solanaceae	SOLDUL	non-native	0	0	vine	perennial	bittersweet nightshade
<i>Solidago altissima</i>	Asteraceae	SOLALT	native	1	3	forb	perennial	tall goldenrod
<i>Solidago canadensis</i>	Asteraceae	SOLCAN	native	1	3	forb	perennial	canada goldenrod
<i>Solidago gigantea</i>	Asteraceae	SOLGIG	native	3	-3	forb	perennial	late goldenrod
<i>Solidago juncea</i>	Asteraceae	SOLJUN	native	3	5	forb	perennial	early goldenrod
<i>Solidago ohioensis</i>	Asteraceae	SOLOHI	native	8	-5	forb	perennial	ohio goldenrod
<i>Solidago patula</i>	Asteraceae	SOLPAT	native	6	-5	forb	perennial	swamp goldenrod
<i>Solidago riddellii</i>	Asteraceae	SOLRID	native	6	-5	forb	perennial	riddells goldenrod
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Sonchus asper	Asteraceae	SONASP	non-native	0	3	forb	annual	prickly sow-thistle
Spartina pectinata	Poaceae	SPAPEC	native	5	-3	grass	perennial	cordgrass
Sphenopholis intermedia	Poaceae	SPHINT	native	4	0	grass	perennial	slender wedgrass
Spiraea alba	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet
Symphotrichum firmum; aster puniceus	Asteraceae	SYMFIR	native	4	-3	forb	perennial	smooth swamp aster
Symphotrichum lanceolatum; aster l.	Asteraceae	SYMLAN	native	2	-3	forb	perennial	panicled aster
Symphotrichum novae-angliae; aster n.	Asteraceae	SYMNOV	native	3	-3	forb	perennial	new england aster
Symphotrichum pilosum; aster p.	Asteraceae	SYMPIL	native	1	3	forb	perennial	hairy aster
Symphotrichum puniceum; aster p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster
Symplocarpus foetidus	Araceae	SYMFOE	native	6	-5	forb	perennial	skunk-cabbage
Thalictrum dasycarpum	Ranunculaceae	THADAS	native	3	-3	forb	perennial	purple meadow-rue
Thelypteris palustris	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern
Torilis japonica	Apiaceae	TORJAP	non-native	0	3	forb	annual	hedge-parsley
Toxicodendron vernix	Anacardiaceae	TOXVER	native	6	-5	shrub	perennial	poison sumac
Typha angustifolia	Typhaceae	TYPANG	non-native	0	-5	forb	perennial	narrow-leaved cat-tail
Typha latifolia	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail
Ulmus americana	Ulmaceae	ULMAME	native	1	-3	tree	perennial	american elm
Valeriana uliginosa	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian
Verbena hastata	Verbenaceae	VERHAS	native	4	-3	forb	perennial	blue vervain
Zizia aurea	Apiaceae	ZIZAUR	native	6	0	forb	perennial	golden alexanders

Watkins Lake State and County Park, Central Forest

08/11/2016

Watkins Lake SP

Washtenaw

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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FQA DB Description:

Practitioner:

Brad Slaughter

Latitude:

42.132673

Longitude:

-84.126496

Weather Notes:

Duration Notes:

Community Type Notes:

Dry-mesic southern forest, old field, very small area of degraded oak openings

Other Notes:

Additional spp. recorded 8/23/16 by B. Slaughter and Mike Penskar. Also noted: *Carex* sp., *Chenopodium* sp., *Prenanthes* sp.

Conservatism-Based Metrics:

Total Mean C:	2.8
Native Mean C:	3.7
Total FQI:	38.4
Native FQI:	44.4
Adjusted FQI:	32.4
% C value 0:	29.8
% C value 1-3:	24.5
% C value 4-6:	41.5
% C value 7-10:	4.3
Native Tree Mean C:	3.8
Native Shrub Mean C:	3.4

Native Herbaceous Mean C:	3.7	
Species Richness:		
Total Species:	188	
Native Species:	144	76.60%
Non-native Species:	44	23.40%
Species Wetness:		
Mean Wetness:	2.3	
Native Mean Wetness:	2	
Physiognomy Metrics:		
Tree:	23	12.20%
Shrub:	13	6.90%
Vine:	12	6.40%
Forb:	110	58.50%
Grass:	20	10.60%
Sedge:	5	2.70%
Rush:	0	0%
Fern:	5	2.70%
Bryophyte:	0	0%
Duration Metrics:		
Annual:	20	10.60%
Perennial:	155	82.40%
Biennial:	13	6.90%
Native Annual:	11	5.90%
Native Perennial:	128	68.10%
Native Biennial:	5	2.70%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer negundo	Sapindaceae	ACNEGE	native	0	0	tree	perennial	box-elder
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer saccharum	Sapindaceae	ACESAU	native	5	3	tree	perennial	sugar maple
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow
Adiantum pedatum	Pteridaceae	ADIPED	native	6	3	fern	perennial	maidenhair fern
Ageratina altissima; eupatorium rugosum	Asteraceae	AGEALT	native	4	3	forb	perennial	white snakeroot
Agrimonia gryposepala	Rosaceae	AGRGRY	native	2	3	forb	perennial	tall agrimony
Agrimonia pubescens	Rosaceae	AGRPUB	native	5	5	forb	perennial	soft agrimony
Agrostis gigantea	Poaceae	AGRIGIG	non-native	0	-3	grass	perennial	redtop
Agrostis stolonifera	Poaceae	AGRSTO	non-native	0	-3	grass	perennial	creeping bent
Ailanthus altissima	Simaroubaceae	AILALT	non-native	0	5	tree	perennial	tree-of-heaven
Alliaria petiolata	Brassicaceae	ALLPET	non-native	0	3	forb	biennial	garlic mustard
Allium cernuum	Alliaceae	ALLCER	native	5	3	forb	perennial	nodding wild onion
Ambrosia artemisiifolia	Asteraceae	AMBART	native	0	3	forb	annual	common ragweed
Ambrosia trifida	Asteraceae	AMBTRI	native	0	0	forb	annual	giant ragweed
Amphicarpaea bracteata	Fabaceae	AMPBRA	native	5	0	vine	annual	hog-peanut
Andropogon gerardii	Poaceae	ANDGER	native	5	0	grass	perennial	big bluestem
Anemone virginiana	Ranunculaceae	ANEVIR	native	3	3	forb	perennial	thimbleweed
Apocynum androsaemifolium	Apocynaceae	APOAND	native	3	5	forb	perennial	spreading dogbane
Arctium minus	Asteraceae	ARCMIN	non-native	0	3	forb	biennial	common burdock
Arisaema triphyllum	Araceae	ARITRI	native	5	0	forb	perennial	jack-in-the-pulpit
Asclepias exaltata	Apocynaceae	ASCEXA	native	6	5	forb	perennial	poke milkweed
Asclepias syriaca	Apocynaceae	ASCSYR	native	1	5	forb	perennial	common milkweed
Asplenium platyneuron	Aspleniaceae	ASPPLA	native	2	3	fern	perennial	ebony spleenwort
Athyrium filix-femina	Athyriaceae	ATHFIL	native	4	0	fern	perennial	lady fern
Berberis thunbergii	Berberidaceae	BERTHU	non-native	0	3	shrub	perennial	japanese barberry
Berteroa incana	Brassicaceae	BERINC	non-native	0	5	forb	annual	hoary Alyssum
Bidens frondosa	Asteraceae	BIDFRO	native	1	-3	forb	annual	common beggar-ticks
Bromus inermis	Poaceae	BROINE	non-native	0	5	grass	perennial	smooth brome
Bromus pubescens	Poaceae	BROPUB	native	5	3	grass	perennial	Canada brome
Campanula rotundifolia	Campanulaceae	CAMROT	native	6	3	forb	perennial	harebell
Campanulastrum americanum; campanula a.	Campanulaceae	CAMAME	native	8	0	forb	biennial	tall bellflower
Carduus nutans	Asteraceae	CARNUT	non-native	0	3	forb	biennial	musk thistle
Carex crinita	Cyperaceae	CXCRIN	native	4	-5	sedge	perennial	sedge
Carex hirtifolia	Cyperaceae	CXHIRI	native	5	3	sedge	perennial	sedge

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Carex pensylvanica	Cyperaceae	CXPENS	native	4	5	sedge	perennial	sedge
Carex rosea; c. convoluta	Cyperaceae	CXROSE	native	2	5	sedge	perennial	curly-styled wood sedge
Carex vulpinoidea	Cyperaceae	CXVULP	native	1	-5	sedge	perennial	sedge
Carya glabra	Juglandaceae	CARGLA	native	5	3	tree	perennial	pignut hickory
Carya ovata	Juglandaceae	CAROVA	native	5	3	tree	perennial	shagbark hickory
Celastrus orbiculatus	Celastraceae	CELORB	non-native	0	5	vine	perennial	oriental bitterweet
Celtis occidentalis	Cannabaceae	CELOCC	native	5	0	tree	perennial	hackberry
Cerastium fontanum	Caryophyllaceae	CERFON	non-native	0	3	forb	perennial	mouse-ear chickweed
Chenopodium album	Amaranthaceae	CHEALB	non-native	0	3	forb	annual	lambs-quarters
Cichorium intybus	Asteraceae	CICINT	non-native	0	3	forb	perennial	chicory
Cinna arundinacea	Poaceae	CINARU	native	7	-3	grass	perennial	wood reedgrass
Circaea canadensis; c. lutetiana	Onagraceae	CIRCAN	native	2	3	forb	perennial	enchanters-nightshade
Cirsium altissimum	Asteraceae	CIRALT	native	5	5	forb	perennial	tall thistle
Collinsonia canadensis	Lamiaceae	COLCAN	native	8	0	forb	perennial	richweed
Comandra umbellata	Santalaceae	COMUMB	native	5	3	forb	perennial	bastard-toadflax
Conyza canadensis	Asteraceae	CONCAN	native	0	3	forb	annual	horseweed
Cryptotaenia canadensis	Apiaceae	CRYCAN	native	2	0	forb	perennial	honewort
Cuscuta gronovii	Convolvulaceae	CUSGRO	native	3	-3	vine	annual	common dodder
Dactylis glomerata	Poaceae	DACGLO	non-native	0	3	grass	perennial	orchard grass
Daucus carota	Apiaceae	DAUCAR	non-native	0	5	forb	biennial	queen-annes-lace
Desmodium paniculatum	Fabaceae	DESPAN	native	4	3	forb	perennial	panicked tick-trefoil
Digitaria cognata; leptoloma c.	Poaceae	DIGCOG	native	3	5	grass	perennial	fall witch grass
Digitaria sanguinalis	Poaceae	DIGSAN	non-native	0	3	grass	annual	hairy crab grass
Dioscorea villosa; dioscorea villosa	Dioscoreaceae	DIOVIL	native	4	0	forb	perennial	wild yam
Dryopteris carthusiana	Dryopteridaceae	DRYCAR	native	5	-3	fern	perennial	spinulose woodfern
Elaeagnus umbellata	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive
Elymus hystrix; hystrix patula	Poaceae	ELYHYS	native	5	3	grass	perennial	bottlebrush grass
Elymus repens; agropyron r.	Poaceae	ELYREP	non-native	0	3	grass	perennial	quack grass
Elymus villosus	Poaceae	ELYVIL	native	5	3	grass	perennial	silky wild-rye
Erigeron annuus	Asteraceae	ERIANN	native	0	3	forb	biennial	daisy fleabane
Erigeron philadelphicus	Asteraceae	ERIPHI	native	2	0	forb	perennial	philadelphia fleabane
Erigeron strigosus	Asteraceae	ERISTR	native	4	3	forb	perennial	daisy fleabane
Euphorbia corollata	Euphorbiaceae	EUPCOR	native	4	5	forb	perennial	flowering spurge

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Eurybia macrophylla; aster m.	Asteraceae	EURMAC	native	4	5	forb	perennial	big-leaved aster
Euthamia graminifolia	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod
Eutrochium purpureum; eupatorium p.	Asteraceae	EUTPUR	native	5	0	forb	perennial	green-stemmed joe-pye-weed
Fallopia scandens; polygonum s.	Polygonaceae	FALSCA	native	2	0	vine	perennial	false buckwheat
Festuca subverticillata; f. obtusa	Poaceae	FESSUB	native	5	3	grass	perennial	nodding fescue
Fraxinus americana	Oleaceae	FRAAME	native	5	3	tree	perennial	white ash
Galium aparine	Rubiaceae	GALAPA	native	0	3	forb	annual	annual bedstraw
Galium boreale	Rubiaceae	GALBOR	native	3	0	forb	perennial	northern bedstraw
Galium circaezans	Rubiaceae	GALCIR	native	4	3	forb	perennial	white wild licorice
Galium concinnum	Rubiaceae	GALCON	native	5	3	forb	perennial	shining bedstraw
Galium triflorum	Rubiaceae	GALTRR	native	4	3	forb	perennial	fragrant bedstraw
Geranium maculatum	Geraniaceae	GERMAC	native	4	3	forb	perennial	wild geranium
Geranium robertianum	Geraniaceae	GERROB	native	3	3	forb	annual	herb robert
Geum canadense	Rosaceae	GEUCAN	native	1	0	forb	perennial	white avens
Geum virginianum	Rosaceae	GEUVIR	native	6	3	forb	perennial	pale avens
Hackelia virginiana	Boraginaceae	HACVIR	native	1	3	forb	biennial	beggars lice
Helianthus divaricatus	Asteraceae	HELDIV	native	5	5	forb	perennial	woodland sunflower
Helianthus strumosus	Asteraceae	HELSTR	native	4	5	forb	perennial	pale-leaved sunflower
Hepatica americana	Ranunculaceae	HEPAME	native	6	5	forb	perennial	round-lobed hepatica
Hesperis matronalis	Brassicaceae	HESMAT	non-native	0	3	forb	perennial	dames rocket
Hylodesmum glutinosum; desmodium g.	Fabaceae	HYLGLU	native	5	5	forb	perennial	clustered-leaved tick-trefoil
Hylodesmum nudiflorum; desmodium n.	Fabaceae	HYLNUD	native	7	5	forb	perennial	naked tick-trefoil
Hypericum punctatum	Hypericaceae	HYPPUN	native	4	0	forb	perennial	spotted st. johns-wort
Juglans nigra	Juglandaceae	JUGNIG	native	5	3	tree	perennial	black walnut
Juniperus communis	Cupressaceae	JUNCOI	native	4	3	shrub	perennial	common or ground juniper
Juniperus virginiana	Cupressaceae	JUNVIR	native	3	3	tree	perennial	red-cedar
Lactuca biennis	Asteraceae	LACBIE	native	2	0	forb	biennial	tall blue lettuce
Laportea canadensis	Urticaceae	LAPCAN	native	4	-3	forb	perennial	wood nettle
Leersia virginica	Poaceae	LEEVIR	native	5	-3	grass	perennial	white grass
Leonurus cardiaca	Lamiaceae	LEOCAR	non-native	0	5	forb	perennial	motherwort
Lepidium campestre	Brassicaceae	LEPCAM	non-native	0	5	forb	biennial	field cress
Leucanthemum vulgare; chrysanthemum leucanthemum	Asteraceae	LEUVUL	non-native	0	5	forb	perennial	ox-eye daisy
Ligustrum vulgare	Oleaceae	LIGVUL	non-native	0	3	shrub	perennial	common privet

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Lilium michiganense	Liliaceae	LILMIC	native	5	-3	forb	perennial	michigan lily
Lindera benzoin	Lauraceae	LINBEN	native	7	-3	shrub	perennial	spicebush
Lobelia siphilitica	Campanulaceae	LOBSIP	native	4	-3	forb	perennial	great blue lobelia
Lonicera maackii	Caprifoliaceae	LONMAA	non-native	0	5	shrub	perennial	amur honeysuckle
Maianthemum racemosum; smilacina r.	Convallariaceae	MAIRAC	native	5	3	forb	perennial	false spikenard
Malus pumila	Rosaceae	MALPUM	non-native	0	5	tree	perennial	apple
Melilotus albus	Fabaceae	MELALB	non-native	0	3	forb	biennial	white sweet-clover
Monarda fistulosa	Lamiaceae	MONFIS	native	2	3	forb	perennial	wild-bergamot
Morus alba	Moraceae	MORALB	non-native	0	3	tree	perennial	white mulberry
Muhlenbergia frondosa	Poaceae	MUHFRO	native	3	-3	grass	perennial	common satin grass
Muhlenbergia tenuiflora	Poaceae	MUHTEN	native	8	5	grass	perennial	slender satin grass
Nepeta cataria	Lamiaceae	NEPCAT	non-native	0	3	forb	perennial	catnip
Osmorhiza claytonii	Apiaceae	OSMCLI	native	4	3	forb	perennial	hairy sweet-cicely
Osmorhiza longistylis	Apiaceae	OSMLON	native	3	3	forb	perennial	smooth sweet-cicely
Oxalis stricta; o. fontana	Oxalidaceae	OXASTR	native	0	3	forb	perennial	yellow wood-sorrel
Panicum capillare	Poaceae	PANCAP	native	0	0	grass	annual	witch grass
Parthenocissus inserta	Vitaceae	PARINS	native	4	3	vine	perennial	thicket creeper
Parthenocissus quinquefolia	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
Persicaria longiseta; polygonum cespitosum	Polygonaceae	PERLON	non-native	0	0	forb	annual	creeping smartweed
Persicaria virginiana; polygonum v.	Polygonaceae	PERVIR	native	4	0	forb	perennial	jumpseed
Phalaris arundinacea	Poaceae	PHAARU	native	0	-3	grass	perennial	reed canary grass
Phleum pratense	Poaceae	PHLPRA	non-native	0	3	grass	perennial	timothy
Phryma leptostachya	Phrymaceae	PHRLEP	native	4	3	forb	perennial	lopseed
Phytolacca americana	Phytolaccaceae	PHYAME	native	2	3	forb	perennial	pokeweed
Pilea pumila	Urticaceae	PILPUM	native	5	-3	forb	annual	clearweed
Plantago rugelii	Plantaginaceae	PLARUG	native	0	0	forb	perennial	red-stalked plantain
Podophyllum peltatum	Berberidaceae	PODPEL	native	3	3	forb	perennial	may-apple
Polygonatum pubescens	Convallariaceae	POLPUB	native	5	5	forb	perennial	downy solomon seal
Polygonum aviculare	Polygonaceae	POLAVI	non-native	0	3	forb	annual	knotweed
Populus grandidentata	Salicaceae	POPGRA	native	4	3	tree	perennial	big-tooth aspen
Potentilla simplex	Rosaceae	POTSIM	native	2	3	forb	perennial	old-field cinquefoil
Prunella vulgaris	Lamiaceae	PRUVUL	native	0	0	forb	perennial	self-heal
Prunus avium	Rosaceae	PRUAVI	non-native	0	5	tree	perennial	sweet cherry

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Prunus serotina	Rosaceae	PRUSER	native	2	3	tree	perennial	wild black cherry
Pteridium aquilinum	Dennstaedtiaceae	PTEAQU	native	0	3	fern	perennial	bracken fern
Quercus alba	Fagaceae	QUEALB	native	5	3	tree	perennial	white oak
Quercus rubra	Fagaceae	QUERUB	native	5	3	tree	perennial	red oak
Quercus velutina	Fagaceae	QUEVEL	native	6	5	tree	perennial	black oak
Ratibida pinnata	Asteraceae	RATPIN	native	4	5	forb	perennial	yellow coneflower
Ribes cynosbati	Grossulariaceae	RIBCYN	native	4	3	shrub	perennial	prickly or wild gooseberry
Robinia pseudoacacia	Fabaceae	ROBPSE	non-native	0	3	tree	perennial	black locust
Rosa carolina	Rosaceae	ROSCAR	native	4	3	shrub	perennial	pasture rose
Rosa multiflora	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
Rubus allegheniensis	Rosaceae	RUBALL	native	1	3	shrub	perennial	common blackberry
Rubus occidentalis	Rosaceae	RUBOCC	native	1	5	shrub	perennial	black raspberry
Rudbeckia hirta	Asteraceae	RUDHIR	native	1	3	forb	perennial	black-eyed susan
Rumex obtusifolius	Polygonaceae	RUMOBT	non-native	0	0	forb	perennial	bitter dock
Sambucus canadensis	Adoxaceae	SAMCAN	native	3	-3	shrub	perennial	elderberry
Sanicula trifoliata	Apiaceae	SANTRI	native	6	5	forb	biennial	black snakeroot
Sassafras albidum	Lauraceae	SASALB	native	5	3	tree	perennial	sassafras
Setaria faberi	Poaceae	SETFAB	non-native	0	3	grass	annual	giant foxtail
Silene antirrhina	Caryophyllaceae	SILANT	native	2	5	forb	annual	sleepy catchfly
Silene latifolia; s. pratensis	Caryophyllaceae	SILLAT	non-native	0	5	forb	annual	white campion
Smilax ecirrata	Smilacaceae	SMIECI	native	6	5	forb	perennial	upright carrion-flower
Smilax hispida; s. tamnoides	Smilacaceae	SMIHIS	native	5	0	vine	perennial	bristly greenbrier
Smilax lasioneura	Smilacaceae	SMILAS	native	5	5	vine	perennial	carrion-flower
Solanum carolinense	Solanaceae	SOLCAR	non-native	0	3	forb	perennial	horse-nettle
Solidago altissima	Asteraceae	SOLALT	native	1	3	forb	perennial	tall goldenrod
Solidago ulmifolia	Asteraceae	SOLULM	native	5	5	forb	perennial	elm-leaved goldenrod
Sonchus asper	Asteraceae	SONASP	non-native	0	3	forb	annual	prickly sow-thistle
Symphotrichum cordifolium; aster c.	Asteraceae	SYMCOR	native	4	5	forb	perennial	heart-leaved aster
Symphotrichum lateriflorum; aster l.	Asteraceae	SYMLAT	native	2	0	forb	perennial	calico aster
Symphotrichum novae-angliae; aster n.	Asteraceae	SYMNOV	native	3	-3	forb	perennial	new england aster
Symphotrichum urophyllum; aster sagittifolius	Asteraceae	SYMURO	native	2	5	forb	perennial	arrow-leaved aster
Taenidia integerrima	Apiaceae	TAEINT	native	8	5	forb	perennial	yellow-pimpernel
Thalictrum dioicum	Ranunculaceae	THADIO	native	6	3	forb	perennial	early meadow-rue

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Tilia americana	Malvaceae	TILAME	native	5	3	tree	perennial	basswood
Torilis japonica	Apiaceae	TORJAP	non-native	0	3	forb	annual	hedge-parsley
Toxicodendron radicans	Anacardiaceae	TOXRAD	native	2	0	vine	perennial	poison-ivy
Tradescantia ohiensis	Commelinaceae	TRAOHI	native	5	3	forb	perennial	common spiderwort
Trifolium pratense	Fabaceae	TRIPRA	non-native	0	3	forb	perennial	red clover
Trillium grandiflorum	Trilliaceae	TRIGRA	native	5	3	forb	perennial	common trillium
Ulmus americana	Ulmaceae	ULMAME	native	1	-3	tree	perennial	american elm
Ulmus rubra	Ulmaceae	ULMRUB	native	2	0	tree	perennial	slippery elm
Urtica dioica	Urticaceae	URTDIO	native	1	0	forb	perennial	stinging nettle
Uvularia grandiflora	Convallariaceae	UVUGRA	native	5	5	forb	perennial	bellwort
Verbascum blattaria	Scrophulariaceae	VERBLA	non-native	0	3	forb	biennial	moth mullein
Verbascum thapsus	Scrophulariaceae	VERTHA	non-native	0	5	forb	biennial	common mullein
Verbena urticifolia	Verbenaceae	VERURT	native	4	0	forb	perennial	white vervain
Veronicastrum virginicum	Plantaginaceae	VERVIR	native	8	0	forb	perennial	culvers-root
Vincetoxicum rossicum	Apocynaceae	VINROS	non-native	0	5	vine	perennial	dog-strangling vine
Viola pubescens	Violaceae	VIOPUB	native	4	3	forb	perennial	yellow violet
Viola sororia	Violaceae	VIOSOR	native	1	0	forb	perennial	common blue violet
Vitis aestivalis	Vitaceae	VITAES	native	6	3	vine	perennial	summer grape
Vitis riparia	Vitaceae	VITRIP	native	3	0	vine	perennial	river-bank grape
Zanthoxylum americanum	Rutaceae	ZANAME	native	3	3	shrub	perennial	prickly-ash
Zizia aurea	Apiaceae	ZIZAUR	native	6	0	forb	perennial	golden alexanders

Watkins Lake State and County Park, Western Grassland, Wetland, RR Prairie

08/10/2016

Watkins Lake SP

Washtenaw

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

FQA DB Description:

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Practitioner:

Brad Slaughter, Mike Penskar

Latitude:

42.135911

Longitude:

-84.101782

Weather Notes:

Duration Notes:

Community Type Notes:

Old field, southern wet meadow

Other Notes:

Additional spp. noted 8/24/16 (B. Slaughter). Also: *Carex ?brevior*, *Crataegus* sp., *Lemna* min/tur, *Lonicera* mor/xbel, *Nasturtium* sp.

Conservatism-Based Metrics:

Total Mean C: 1.9

Native Mean C: 3

Total FQI: 19.9

Native FQI: 25.3

Adjusted FQI: 24.1

% C value 0: 38.2

% C value 1-3: 35.5

% C value 4-6: 26.4

% C value 7-10: 0

Native Tree Mean C: 3.5

Native Shrub Mean C: 1.6

Native Herbaceous Mean C: 3.1

Species Richness:

Total Species: 110
Native Species: 71 64.50%
Non-native Species: 39 35.50%

Species Wetness:

Mean Wetness: 1.1
Native Mean Wetness: 0.1

Physiognomy Metrics:

Tree: 16 14.50%
Shrub: 9 8.20%
Vine: 4 3.60%
Forb: 61 55.50%
Grass: 10 9.10%
Sedge: 8 7.30%
Rush: 0 0%
Fern: 2 1.80%
Bryophyte: 0 0%

Duration Metrics:

Annual: 8 7.30%
Perennial: 93 84.50%
Biennial: 9 8.20%
Native Annual: 3 2.70%
Native Perennial: 67 60.90%
Native Biennial: 1 0.90%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer negundo	Sapindaceae	ACENEG	native	0	0	tree	perennial	box-elder
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow

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Agrostis gigantea	Poaceae	AGRGIG	non-native	0	-3	grass	perennial	redtop
Amphicarpaea bracteata	Fabaceae	AMPBRA	native	5	0	vine	annual	hog-peanut
Andropogon gerardii	Poaceae	ANDGER	native	5	0	grass	perennial	big bluestem
Anemone virginiana	Ranunculaceae	ANEVIR	native	3	3	forb	perennial	thimbleweed
Antennaria howellii	Asteraceae	ANTHOW	native	2	5	forb	perennial	small pussytoes
Apocynum cannabinum; a. sibiricum	Apocynaceae	APOCAN	native	3	0	forb	perennial	indian-hemp
Asclepias incarnata	Apocynaceae	ASCINC	native	6	-5	forb	perennial	swamp milkweed
Asclepias syriaca	Apocynaceae	ASCSYR	native	1	5	forb	perennial	common milkweed
Asplenium platyneuron	Aspleniaceae	ASPPLA	native	2	3	fern	perennial	ebony spleenwort
Berteroa incana	Brassicaceae	BERINC	non-native	0	5	forb	annual	hoary Alyssum
Bromus inermis	Poaceae	BROINE	non-native	0	5	grass	perennial	smooth brome
Carduus nutans	Asteraceae	CARNUT	non-native	0	3	forb	biennial	musk thistle
Carex comosa	Cyperaceae	CXCOMO	native	5	-5	sedge	perennial	sedge
Carex hystericina	Cyperaceae	CXHYST	native	2	-5	sedge	perennial	sedge
Carex lacustris	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge
Carex pellita; c. lanuginosa	Cyperaceae	CXPELL	native	2	-5	sedge	perennial	sedge
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge
Carya glabra	Juglandaceae	CARGLA	native	5	3	tree	perennial	pignut hickory
Centaurea stoebe; c. maculosa	Asteraceae	CENSTO	non-native	0	5	forb	biennial	spotted knapweed
Chondrilla juncea	Asteraceae	CHOJUN	non-native	0	5	forb	perennial	skeleton-weed
Cicuta bulbifera	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock
Cirsium arvense	Asteraceae	CIRARV	non-native	0	3	forb	perennial	Canada thistle
Conyza canadensis	Asteraceae	CONCAN	native	0	3	forb	annual	horseweed
Cornus foemina	Cornaceae	CORFOE	native	1	0	shrub	perennial	gray dogwood
Danthonia spicata	Poaceae	DANSPI	native	4	5	grass	perennial	poverty grass; oatgrass
Daucus carota	Apiaceae	DAUCAR	non-native	0	5	forb	biennial	queen-annes-lace
Dipsacus fullonum	Dipsacaceae	DIPFUL	non-native	0	3	forb	perennial	wild teasel
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster
Elaeagnus umbellata	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive
Elymus repens; agropyron r.	Poaceae	ELYREP	non-native	0	3	grass	perennial	quack grass
Equisetum hyemale	Equisetaceae	EQUHYE	native	2	0	fern	perennial	scouring rush
Eragrostis spectabilis	Poaceae	ERASPE	native	3	5	grass	perennial	purple love grass
Eupatorium perfoliatum	Asteraceae	EUPPER	native	4	-3	forb	perennial	boneset

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Euphorbia corollata	Euphorbiaceae	EUPCOR	native	4	5	forb	perennial	flowering spurge
Euthamia graminifolia	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod
Fraxinus americana	Oleaceae	FRAAME	native	5	3	tree	perennial	white ash
Glycine max	Fabaceae	GLYMAX	non-native	0	5	forb	annual	soybean
Hackelia virginiana	Boraginaceae	HACVIR	native	1	3	forb	biennial	beggars lice
Hypericum perforatum	Hypericaceae	HYPPER	non-native	0	5	forb	perennial	common st. johns-wort
Impatiens capensis	Balsaminaceae	IMPCAP	native	2	-3	forb	annual	spotted touch-me-not
Iris virginica	Iridaceae	IRIVIR	native	5	-5	forb	perennial	southern blue flag
Juglans nigra	Juglandaceae	JUGNIG	native	5	3	tree	perennial	black walnut
Juncus dudleyi	Juncaceae	JUNDUD	native	1	-3	forb	perennial	dudleys rush
Juncus tenuis	Juncaceae	JUNTEN	native	1	0	forb	perennial	path rush
Juniperus virginiana	Cupressaceae	JUNVIR	native	3	3	tree	perennial	red-cedar
Lespedeza capitata	Fabaceae	LESCAP	native	5	3	forb	perennial	round-headed bush-clover
Lonicera morrowii	Caprifoliaceae	LONMOR	non-native	0	3	shrub	perennial	morrow honeysuckle
Lycopus uniflorus	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed
Lythrum salicaria	Lythraceae	LYTSAL	non-native	0	-5	forb	perennial	purple loosestrife
Medicago lupulina	Fabaceae	MEDLUP	non-native	0	3	forb	annual	black medick
Melilotus albus	Fabaceae	MELALB	non-native	0	3	forb	biennial	white sweet-clover
Melilotus officinalis	Fabaceae	MELLOF	non-native	0	3	forb	biennial	yellow sweet-clover
Monarda fistulosa	Lamiaceae	MONFIS	native	2	3	forb	perennial	wild-bergamot
Morus alba	Moraceae	MORALB	non-native	0	3	tree	perennial	white mulberry
Nepeta cataria	Lamiaceae	NEPCAT	non-native	0	3	forb	perennial	catnip
Parthenocissus quinquefolia	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
Persicaria amphibia; polygonum a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed
Phalaris arundinacea	Poaceae	PHAARU	native	0	-3	grass	perennial	reed canary grass
Phleum pratense	Poaceae	PHLPRA	non-native	0	3	grass	perennial	timothy
Physalis heterophylla	Solanaceae	PHYHET	native	3	5	forb	perennial	clammy ground-cherry
Physalis virginiana	Solanaceae	PHYVIG	native	4	5	forb	perennial	virginia ground-cherry
Phytolacca americana	Phytolaccaceae	PHYAME	native	2	3	forb	perennial	pokeweed
Picea abies	Pinaceae	PICABI	non-native	0	5	tree	perennial	norway spruce
Plantago lanceolata	Plantaginaceae	PLALAN	non-native	0	3	forb	perennial	english plantain
Poa compressa	Poaceae	POACOM	non-native	0	3	grass	perennial	canada bluegrass
Poa pratensis	Poaceae	POAPRA	non-native	0	3	grass	perennial	kentucky bluegrass

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Populus deltoides	Salicaceae	POPDEL	native	1	0	tree	perennial	cottonwood
Prunus serotina	Rosaceae	PRUSER	native	2	3	tree	perennial	wild black cherry
Pycnanthemum virginianum	Lamiaceae	PYCVIR	native	5	-3	forb	perennial	common mountain mint
Quercus alba	Fagaceae	QUEALB	native	5	3	tree	perennial	white oak
Quercus rubra	Fagaceae	QUERUB	native	5	3	tree	perennial	red oak
Quercus velutina	Fagaceae	QUEVEL	native	6	5	tree	perennial	black oak
Rhamnus cathartica	Rhamnaceae	RHACAT	non-native	0	0	tree	perennial	common buckthorn
Robinia pseudoacacia	Fabaceae	ROBPSE	non-native	0	3	tree	perennial	black locust
Rosa multiflora	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
Rubus allegheniensis	Rosaceae	RUBALL	native	1	3	shrub	perennial	common blackberry
Rubus occidentalis	Rosaceae	RUBOCC	native	1	5	shrub	perennial	black raspberry
Rubus strigosus	Rosaceae	RUBSTR	native	2	0	shrub	perennial	wild red raspberry
Rumex crispus	Polygonaceae	RUMCRI	non-native	0	0	forb	perennial	curly dock
Sambucus canadensis	Adoxaceae	SAMCAN	native	3	-3	shrub	perennial	elderberry
Saponaria officinalis	Caryophyllaceae	SAPOFF	non-native	0	3	forb	perennial	bouncing bet
Schoenoplectus tabernaemontani; scirpus validus	Cyperaceae	SCHTAB	native	4	-5	sedge	perennial	softstem bulrush
Scirpus atrovirens	Cyperaceae	SCIATV	native	3	-5	sedge	perennial	bulrush
Scirpus pendulus	Cyperaceae	SCIPEN	native	3	-5	sedge	perennial	bulrush
Solanum carolinense	Solanaceae	SOLCAR	non-native	0	3	forb	perennial	horse-nettle
Solidago altissima	Asteraceae	SOLALT	native	1	3	forb	perennial	tall goldenrod
Solidago canadensis	Asteraceae	SOLCAN	native	1	3	forb	perennial	canada goldenrod
Solidago juncea	Asteraceae	SOLJUN	native	3	5	forb	perennial	early goldenrod
Sonchus asper	Asteraceae	SONASP	non-native	0	3	forb	annual	prickly sow-thistle
Sparganium eurycarpum	Typhaceae	SPAEUR	native	5	-5	forb	perennial	common bur-reed
Symphotrichum firmum; aster puniceus	Asteraceae	SYMFIR	native	4	-3	forb	perennial	smooth swamp aster
Symphotrichum lanceolatum; aster l.	Asteraceae	SYMLAN	native	2	-3	forb	perennial	panicked aster
Symphotrichum pilosum; aster p.	Asteraceae	SYMPIL	native	1	3	forb	perennial	hairy aster
Torilis japonica	Apiaceae	TORJAP	non-native	0	3	forb	annual	hedge-parsley
Toxicodendron radicans	Anacardiaceae	TOXRAD	native	2	0	vine	perennial	poison-ivy
Tradescantia ohiensis	Commelinaceae	TRAOHI	native	5	3	forb	perennial	common spiderwort
Tragopogon dubius	Asteraceae	TRADUB	non-native	0	5	forb	biennial	goats beard
Trifolium pratense	Fabaceae	TRIPRA	non-native	0	3	forb	perennial	red clover
Typha latifolia	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail

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Ulmus americana	Ulmaceae	ULMAME	native	1	-3	tree	perennial	american elm
Ulmus pumila	Ulmaceae	ULMPUM	non-native	0	3	tree	perennial	siberian elm
Urtica dioica	Urticaceae	URTDIO	native	1	0	forb	perennial	stinging nettle
Verbascum blattaria	Scrophulariaceae	VERBLA	non-native	0	3	forb	biennial	moth mullein
Verbascum thapsus	Scrophulariaceae	VERTHA	non-native	0	5	forb	biennial	common mullein
Verbena hastata	Verbenaceae	VERHAS	native	4	-3	forb	perennial	blue vervain
Vernonia missurica	Asteraceae	VERMIS	native	4	0	forb	perennial	missouri ironweed
Viburnum opulus	Adoxaceae	VIBOPU	non-native	0	-3	shrub	perennial	european highbush-cranberry
Vitis riparia	Vitaceae	VITRIP	native	3	0	vine	perennial	river-bank grape