



Chippewa Run Natural Area

Floristic Quality Assessment Results

A Floristic Quality Assessment of Chippewa Run Natural Area was conducted by Liana May during the summer of 2014.

Floristic quality assessments (FQAs) are a useful tool to measure a plant community's conservation value. To perform an FQA, all vascular plant species in a community are quantified and an index representing the rarity of these species is summed to give a ranking that can be compared across different ecosystem types. This information can then be used to identify high-quality species and groupings of species in order to prioritize conservation and management efforts. At Chippewa Run Natural Area the total number of species and native species are:

Native Species	Total Species
231	317

The coefficient of conservation (C) is a value between 0 and 10 assigned to each species, representing the species likelihood to occur in an unaltered, pre-European settlement landscape in the state of Michigan (Herman et al 2001). A C-value of 0 is assigned to species with low fidelity to their natural habitat and the ability to persist in numerous habitat conditions. A C-value of 0 is assigned to invasive species, also called adventives. At Chippewa Run Natural Area the mean C-values are:

Native Mean C	Mean C w/ Adventives
3.8	2.8

The coefficient of wetness (W) is assigned to each species depending on their probability to occur in wetlands, where species with a W-value of -5 are obligatory wetland species, and those with a W-value of +5 are upland species. At Chippewa Run Natural Area the mean coefficients of wetness are:

Native Mean W	Mean W w/ Adventives
-0.3	0.5

FQIs less than 20 have minimal significance, while FQIs greater than 35 represent areas of conservation importance and are floristically significant on a statewide level. Areas with FQIs greater than 50 are extremely rare and represent areas of significant native biodiversity (Herman et al 2001). At Chippewa Run Natural Area the FQI's are:

Native FQI	FQI w/ Adventives
57.8	48.9

May, L. 2012. Floristic Quality Assessment and Habitat Mapping of Belanger Creek Preserve

Herman, K. D., L. A. Masters, M. R. Penskar, A. A. Reznicek, G. S. Wilhelm, W. W. Brodovich, and K. P. Gardiner. 2001. Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan – Revised, 2nd Edition. Michigan Department of Natural Resources, Wildlife, Natural Heritage Program. Lansing, MI. 19 pp. + Appendices.

Chippewa Run Natural Area All Communities

Chippewa Run Natural Area (all)

10/21/14

Chippewa Run Natural Area

Empire

Leelanau

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, Liana May

Practitioner:

Latitude:

Longitude:

Weather Notes:

Duration Notes:

Growing season 2014

Community Type Notes:

All communities on property included

Other Notes:

Private/Public:

Public

Conservatism-Based Metrics:

Total Mean C:	2.8
Native Mean C:	3.8
Total FQI:	49.9
Native FQI:	57.8
Adjusted FQI:	32.4
% C value 0:	30.3
% C value 1-3:	30.3
% C value 4-6:	33.4
% C value 7-10:	6
Native Tree Mean C:	3.5
Native Shrub Mean C:	3.8
Native Herbaceous Mean C:	3.8

Species Richness:

Total Species:	317	
Native Species:	231	72.90%
Non-native Species:	86	27.10%

Species Wetness:

Mean Wetness:	0.5
Native Mean Wetness:	-0.3

Physiognomy Metrics:

Tree:	41	12.90%
Shrub:	30	9.50%
Vine:	5	1.60%
Forb:	162	51.10%
Grass:	27	8.50%
Sedge:	36	11.40%
Rush:	0	0%
Fern:	16	5%
Bryophyte:	0	0%

Duration Metrics:

Annual:	27	8.50%
Perennial:	274	86.40%
Biennial:	16	5%
Native Annual:	14	4.40%
Native Perennial:	213	67.20%
Native Biennial:	4	1.30%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Abies balsamea	Pinaceae	ABIBAL	native	3	0	tree	perennial	balsam fir
Acer negundo	Sapindaceae	ACENEG	native	0	0	tree	perennial	box-elder
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple
Acer saccharum	Sapindaceae	ACESAU	native	5	3	tree	perennial	sugar maple
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow
Actaea pachypoda	Ranunculaceae	ACTPAC	native	7	5	forb	perennial	dolls-eyes
Agrimonia gryposepala	Rosaceae	AGRGRY	native	2	3	forb	perennial	tall agrimony
Agrostis gigantea	Poaceae	AGRIGG	non-native	0	-3	grass	perennial	redtop
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 vineale	Alliaceae	ALLVIN	non-native	0	3	forb	perennial	field garlic
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder
Ambrosia artemisiifolia	Asteraceae	AMBART	native	0	3	forb	annual	common ragweed
Amelanchier arborea	Rosaceae	AMEARB	native	4	3	tree	perennial	juneberry
Amelanchier interior	Rosaceae	AMEINT	native	4	5	shrub	perennial	serviceberry
Amelanchier laevis	Rosaceae	AMELAE	native	4	5	tree	perennial	smooth shadbush
Amelanchier sanguinea	Rosaceae	AMESAN	native	5	5	shrub	perennial	round-leaved serviceberry
Anaphalis margaritacea	Asteraceae	ANAMAR	native	3	5	forb	perennial	pearly everlasting
Andropogon gerardii	Poaceae	ANDGER	native	5	0	grass	perennial	big bluestem
Anemone canadensis	Ranunculaceae	ANECAN	native	4	-3	forb	perennial	canada anemone
Antennaria parlinii	Asteraceae	ANTPAL	native	2	5	forb	perennial	smooth pussytoes
Apocynum androsaemifolium	Apocynaceae	APOAND	native	3	5	forb	perennial	spreading dogbane

Appendix A

Chippewa Run Natural Area All Communities

<i>Aralia nudicaulis</i>	Araliaceae	ARANUD	native	5	3	forb	perennial	wild sarsaparilla
<i>Arctium minus</i>	Asteraceae	ARCMIN	non-native	0	3	forb	biennial	common burdock
<i>Arenaria serpyllifolia</i>	Caryophyllaceae	ARESER	non-native	0	0	forb	annual	thyme-leaved sandwort
<i>Arisaema triphyllum</i>	Araceae	ARITRI	native	5	0	forb	perennial	jack-in-the-pulpit
<i>Aristida basiramea</i>	Poaceae	ARIBAS	native	3	5	grass	annual	fork-tipped three-awned grass
<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>Asparagus officinalis</i>	Asparagaceae	ASPOFF	non-native	0	3	forb	perennial	garden asparagus
<i>Asplenium platyneuron</i>	Aspleniaceae	ASPPLA	native	2	3	fern	perennial	ebony spleenwort
<i>Athyrium filix-femina</i>	Athyriaceae	ATHFIL	native	4	0	fern	perennial	lady fern
<i>Barbarea vulgaris</i>	Brassicaceae	BARVUL	non-native	0	0	forb	biennial	yellow rocket
<i>Berteroa incana</i>	Brassicaceae	BERINC	non-native	0	5	forb	annual	hoary alyssum
<i>Betula alleghaniensis</i>	Betulaceae	BETALL	native	7	0	tree	perennial	yellow birch
<i>Betula papyrifera</i>	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch
<i>Bidens cernua</i>	Asteraceae	BIDCER	native	3	-5	forb	annual	nodding beggar-ticks
<i>Botrypus virginianus</i>	Ophioglossaceae	BOTVIR	native	5	3	fern	perennial	rattlesnake fern
<i>Brachypodium sylvaticum</i>	Poaceae	BRASYL	non-native	0	5	grass	perennial	slender false brome
<i>Bromus inermis</i>	Poaceae	BROINE	non-native	0	5	grass	perennial	smooth brome
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint
<i>Calamovilfa longifolia</i>	Poaceae	CALLON	native	10	5	grass	perennial	sand reed grass
<i>Cardamine diphylla; dentaria d.</i>	Brassicaceae	CARDIP	native	5	3	forb	perennial	two-leaved toothwort
<i>Carex aquatilis</i>	Cyperaceae	CXAQUA	native	7	-5	sedge	perennial	sedge
<i>Carex arctata</i>	Cyperaceae	CXARTT	native	3	5	sedge	perennial	sedge
<i>Carex atlantica; c. howei</i>	Cyperaceae	CXATLA	native	7	-3	sedge	perennial	sedge
<i>Carex aurea</i>	Cyperaceae	CXAURE	native	3	-3	sedge	perennial	sedge
<i>Carex bebbii</i>	Cyperaceae	CXBEBB	native	4	-5	sedge	perennial	sedge
<i>Carex communis</i>	Cyperaceae	CXCOMM	native	2	5	sedge	perennial	sedge
<i>Carex crinita</i>	Cyperaceae	CXCRIN	native	4	-5	sedge	perennial	sedge
<i>Carex cristatella</i>	Cyperaceae	CXCRI	native	3	-3	sedge	perennial	sedge
<i>Carex deweyana</i>	Cyperaceae	CXDWE	native	3	3	sedge	perennial	sedge
<i>Carex eburnea</i>	Cyperaceae	CXEBUR	native	7	3	sedge	perennial	sedge
<i>Carex gracillima</i>	Cyperaceae	CXGRA	native	4	3	sedge	perennial	sedge
<i>Carex hystericina</i>	Cyperaceae	CXHYS	native	2	-5	sedge	perennial	sedge
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge
<i>Carex intumescens</i>	Cyperaceae	CXINTU	native	3	-3	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 leptalea</i>	Cyperaceae	CXLEPA	native	5	-5	sedge	perennial	sedge
<i>Carex pedunculata</i>	Cyperaceae	CXPEDU	native	5	3	sedge	perennial	sedge
<i>Carex pellita; c. lanuginosa</i>	Cyperaceae	CXPELL	native	2	-5	sedge	perennial	sedge
<i>Carex pensylvanica</i>	Cyperaceae	CXPENS	native	4	5	sedge	perennial	sedge
<i>Carex praegracilis</i>	Cyperaceae	CXPRAE	non-native	0	-3	sedge	perennial	sedge
<i>Carex pseudo-cyperus</i>	Cyperaceae	CXPSEU	native	5	-5	sedge	perennial	sedge
<i>Carex retrorsa</i>	Cyperaceae	CXRETS	native	3	-5	sedge	perennial	sedge
<i>Carex rosea; c. convoluta</i>	Cyperaceae	CXROSE	native	2	5	sedge	perennial	curly-styled wood sedge
<i>Carex scoparia</i>	Cyperaceae	CXSCOP	native	4	-3	sedge	perennial	sedge
<i>Carex stipata</i>	Cyperaceae	CXSTIP	native	1	-5	sedge	perennial	sedge
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge
<i>Carex tribuloides</i>	Cyperaceae	CXTRIB	native	3	-3	sedge	perennial	sedge
<i>Carex utriculata; c. rostrata</i>	Cyperaceae	CXUTRI	native	5	-5	sedge	perennial	sedge
<i>Carex viridula</i>	Cyperaceae	CXVIRU	native	4	-5	sedge	perennial	sedge
<i>Carex vulpinoidea</i>	Cyperaceae	CXVULP	native	1	-5	sedge	perennial	sedge
<i>Caulophyllum thalictroides</i>	Berberidaceae	CAUTHA	native	5	5	forb	perennial	blue cohosh
<i>Centaurea diffusa</i>	Asteraceae	CENDIF	non-native	0	5	forb	annual	tumble knapweed
<i>Centaurea stoebe; c. maculosa</i>	Asteraceae	CENSTO	non-native	0	5	forb	biennial	spotted knapweed
<i>Cerastium fontanum</i>	Caryophyllaceae	CERFON	non-native	0	3	forb	perennial	mouse-ear chickweed
<i>Cerastium nutans</i>	Caryophyllaceae	CERNUT	native	4	3	forb	annual	nodding chickweed
<i>Cerastium semidecandrum</i>	Caryophyllaceae	CERSEM	non-native	0	5	forb	annual	small mouse-ear chickweed
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock
<i>Circaea alpina</i>	Onagraceae	CIRALP	native	4	-3	forb	perennial	small enchanters-nightshade
<i>Circaea canadensis; c. lutetiana</i>	Onagraceae	CIRCAN	native	2	3	forb	perennial	enchanters-nightshade
<i>Cirsium arvense</i>	Asteraceae	CIRARV	non-native	0	3	forb	perennial	canada thistle
<i>Cirsium vulgare</i>	Asteraceae	CIRVUL	non-native	0	3	forb	biennial	bull thistle
<i>Clinopodium vulgare</i>	Lamiaceae	CLIVUL	native	3	5	forb	perennial	wild-basil
<i>Coreopsis lanceolata</i>	Asteraceae	CORLAN	native	8	3	forb	perennial	sand coreopsis
<i>Cornus alternifolia</i>	Cornaceae	CORALT	native	5	3	tree	perennial	alternate-leaved dogwood
<i>Cornus amomum</i>	Cornaceae	CORAMO	native	2	-3	shrub	perennial	silky dogwood
<i>Cornus sericea; c. stolonifera</i>	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier
<i>Cynoglossum officinale</i>	Boraginaceae	CYNOFF	non-native	0	5	forb	biennial	hounds-tongue
<i>Dactylis glomerata</i>	Poaceae	DACGLO	non-native	0	3	grass	perennial	orchard grass
<i>Danthonia spicata</i>	Poaceae	DANSPI	native	4	5	grass	perennial	poverty grass; oatgrass
<i>Daucus carota</i>	Apiaceae	DAUCAR	non-native	0	5	forb	biennial	queen-annes-lace
<i>Dianthus armeria</i>	Caryophyllaceae	DIAARM	non-native	0	5	forb	annual	deptford pink
<i>Dianthus deltoides</i>	Caryophyllaceae	DIADEL	non-native	0	5	forb	perennial	maiden pink
<i>Dichanthelium implicatum; panicum i.</i>	Poaceae	DICIMP	native	3	0	grass	perennial	panic grass
<i>Digitaria cognata; leptoloma c.</i>	Poaceae	DIGCOG	native	3	5	grass	perennial	fall witch grass
<i>Dryopteris carthusiana</i>	Dryopteridaceae	DRYCAR	native	5	-3	fern	perennial	spinulose woodfern
<i>Dryopteris intermedia</i>	Dryopteridaceae	DRYINT	native	5	0	fern	perennial	evergreen woodfern
<i>Dryopteris marginalis</i>	Dryopteridaceae	DRYMAR	native	5	3	fern	perennial	marginal woodfern
<i>Echium vulgare</i>	Boraginaceae	ECHVUL	non-native	0	5	forb	biennial	vipers bugloss
<i>Elaeagnus umbellata</i>	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive
<i>Eleocharis erythropoda</i>	Cyperaceae	ELEERY	native	4	-5	sedge	perennial	spike-rush
<i>Elymus repens; agropyron r.</i>	Poaceae	ELYREP	non-native	0	3	grass	perennial	quack grass
<i>Epifagus virginiana</i>	Orobanchaceae	EPIVIR	native	10	5	forb	annual	beech-drops
<i>Epilobium coloratum</i>	Onagraceae	EPICOL	native	3	-5	forb	perennial	cinnamon willow-herb
<i>Epilobium hirsutum</i>	Onagraceae	EPIHIR	non-native	0	-3	forb	perennial	great hairy willow-herb

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Epilobium parviflorum	Onagraceae	EPIPAR	non-native	0	-5	forb	perennial	willow-herb
Epipactis helleborine	Orchidaceae	EPIHEL	non-native	0	0	forb	perennial	helleborine
Equisetum arvense	Equisetaceae	EQUARV	native	0	0	fern	perennial	common horsetail
Equisetum fluviatile	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail
Equisetum sylvaticum	Equisetaceae	EQUASYL	native	5	-3	fern	perennial	woodland horsetail
Eragrostis spectabilis	Poaceae	ERASPE	native	3	5	grass	perennial	purple love grass
Erechtites hieraciifolius	Asteraceae	EREHIE	native	2	3	forb	annual	fireweed
Erigeron philadelphicus	Asteraceae	ERIPHI	native	2	0	forb	perennial	philadelphia fleabane
Erigeron strigosus	Asteraceae	ERISTR	native	4	3	forb	perennial	daisy fleabane
Erythronium americanum	Liliaceae	ERYAME	native	5	5	forb	perennial	yellow trout lily
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
Fagus grandifolia	Fagaceae	FAGGRA	native	6	3	tree	perennial	american beech
Festuca rubra	Poaceae	FESRUB	non-native	0	3	grass	perennial	red fescue
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry
Fraxinus americana	Oleaceae	FRAAME	native	5	3	tree	perennial	white ash
Fraxinus pennsylvanica	Oleaceae	FRAPEN	native	2	-3	tree	perennial	red ash
Galium aparine	Rubiaceae	GALAPA	native	0	3	forb	annual	annual bedstraw
Galium odoratum	Rubiaceae	GALODO	non-native	0	5	forb	perennial	sweet woodruff
Galium palustre	Rubiaceae	GALPAL	native	3	-5	forb	perennial	marsh bedstraw
Galium pilosum	Rubiaceae	GALPIL	native	6	5	forb	perennial	hairy bedstraw
Galium tinctorium	Rubiaceae	GALTIN	native	5	-5	forb	perennial	stiff bedstraw
Galium triflorum	Rubiaceae	GALTRR	native	4	3	forb	perennial	fragrant bedstraw
Gentiana andrewsii	Gentianaceae	GENAND	native	5	-3	forb	perennial	bottle gentian
Geranium robertianum	Geraniaceae	GERROB	native	3	3	forb	annual	herb robert
Geum canadense	Rosaceae	GEUCAN	native	1	0	forb	perennial	white avens
Glyceria striata	Poaceae	GLYSTR	native	4	-5	grass	perennial	fowl manna grass
Hackelia deflexa	Boraginaceae	HACDEF	native	2	5	forb	biennial	stickseed
Hackelia virginiana	Boraginaceae	HACVIR	native	1	3	forb	biennial	beggars lice
Hamamelis virginiana	Hamamelidaceae	HAMVIR	native	5	3	shrub	perennial	witch-hazel
Hepatica acutiloba	Ranunculaceae	HEPACU	native	8	5	forb	perennial	sharp-lobed hepatica
Hieracium aurantiacum	Asteraceae	HIEAUR	non-native	0	5	forb	perennial	orange hawkweed
Hieracium piloselloides	Asteraceae	HIEPIS	non-native	0	5	forb	perennial	king devil
Holcus lanatus	Poaceae	HOLLAN	non-native	0	3	grass	perennial	velvet grass
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 germanica	Iridaceae	IRIGER	non-native	0	5	forb	perennial	fleur-de-lys
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag
Juglans nigra	Juglandaceae	JUGNIG	native	5	3	tree	perennial	black walnut
Juncus articulatus	Juncaceae	JUNART	native	3	-5	forb	perennial	jointed rush
Juncus balticus	Juncaceae	JUNBAL	native	4	-5	forb	perennial	rush
Juncus dudleyi	Juncaceae	JUNDUD	native	1	-3	forb	perennial	dudleys rush
Juncus effusus	Juncaceae	JUNEFF	native	3	-5	forb	perennial	soft-stemmed 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
Lapsana communis	Asteraceae	LAPCOM	non-native	0	3	forb	annual	nipplewort
Lathyrus palustris	Fabaceae	LATPAL	native	7	-3	vine	perennial	marsh pea
Leersia oryzoides	Poaceae	LEEORY	native	3	-5	grass	perennial	cut grass
Lemna turionifera; l. minor	Araceae	LEMTUR	native	5	-5	forb	perennial	red duckweed
Leonurus cardiaca	Lamiaceae	LEOCAR	non-native	0	5	forb	perennial	motherwort
Leucanthemum vulgare; chrysanthemum leucanthemum	Asteraceae	LEUVUL	non-native	0	5	forb	perennial	ox-eye daisy
Lonicera morrowii	Caprifoliaceae	LONMOR	non-native	0	3	shrub	perennial	morrow honeysuckle
Lonicera vóbella	Caprifoliaceae	LONBEL	non-native	0	3	shrub	perennial	hybrid honeysuckle
Lycopus americanus	Lamiaceae	LYCAME	native	2	-5	forb	perennial	common water horehound
Lycopus uniflorus	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed
Maianthemum canadense	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower
Maianthemum racemosum; smilacina r.	Convallariaceae	MAIRAC	native	5	3	forb	perennial	false spikenard
Malus pumila	Rosaceae	MALPUM	non-native	0	5	tree	perennial	apple
Matteuccia struthiopteris	Onocleaceae	MATSTR	native	3	0	fern	perennial	ostrich fern
Medeola virginiana	Convallariaceae	MEDVIR	native	10	3	forb	perennial	indian cucumber-root
Melilotus albus	Fabaceae	MELALB	non-native	0	3	forb	biennial	white sweet-clover
Mentha canadensis; m. arvensis	Lamiaceae	MENCAS	native	3	-3	forb	perennial	wild mint
Mentha vópiperita	Lamiaceae	MENPIP	non-native	0	-5	forb	perennial	peppermint
Mitchella repens	Rubiaceae	MITREP	native	5	3	forb	perennial	partridge-berry
Monarda fistulosa	Lamiaceae	MONFIS	native	2	3	forb	perennial	wild-bergamot
Monarda punctata	Lamiaceae	MONPUN	native	4	5	forb	perennial	horse mint
Morus alba	Moraceae	MORALB	non-native	0	3	tree	perennial	white mulberry
Muhlenbergia mexicana	Poaceae	MUHMEX	native	3	-3	grass	perennial	leafy satin grass
Nasturtium microphyllum; n. officinale	Brassicaceae	NASMIC	non-native	0	-5	forb	perennial	watercress
Nasturtium officinale	Brassicaceae	NASOFF	native	4	-5	forb	perennial	watercress
Nepeta cataria	Lamiaceae	NEPCAT	non-native	0	3	forb	perennial	catnip
Nuphar variegata	Nymphaeaceae	NUPVAR	native	7	-5	forb	perennial	yellow pond-lily
Oenothera biennis	Onagraceae	OENBIE	native	2	3	forb	biennial	common evening-primrose
Onoclea sensibilis	Onocleaceae	ONOSEN	native	2	-3	fern	perennial	sensitive fern
Osmorhiza claytonii	Apiaceae	OSMCLI	native	4	3	forb	perennial	hairy sweet-cicely
Osmunda cinnamomea	Osmundaceae	OSMCIN	native	5	-3	fern	perennial	cinnamon fern
Osmunda claytoniana	Osmundaceae	OSMCLN	native	6	0	fern	perennial	interrupted fern
Osmunda regalis	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern
Ostrya virginiana	Betulaceae	OSTVIR	native	5	3	tree	perennial	ironwood; hop-hornbeam
Oxalis dillenii; o. stricta	Oxalidaceae	OXADIL	native	0	3	forb	perennial	common yellow wood-sorrel
Panicum virgatum	Poaceae	PANVIR	native	4	0	grass	perennial	switch grass
Parthenocissus quinquefolia	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
Persicaria amphibia; polygonum a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed
Persicaria hydropiper; polygonum h.	Polygonaceae	PERHYR	native	1	-5	forb	annual	water-pepper

Appendix A

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Persicaria maculosa; polygonum persicaria	Polygonaceae	PERMAC	non-native	0	0	forb	annual	lady's-thumb
Phalaris arundinacea	Poaceae	PHAAU	native	0	-3	grass	perennial	reed canary grass
Phleum pratense	Poaceae	PHLPR	non-native	0	3	grass	perennial	timothy
Phragmites australis var. australis	Poaceae	PHRAU	non-native	0	-3	grass	perennial	reed
Physalis heterophylla	Solanaceae	PHYHET	native	3	5	forb	perennial	clammy ground-cherry
Picea abies	Pinaceae	PICABI	non-native	0	5	tree	perennial	norway spruce
Picea glauca	Pinaceae	PICGLA	native	3	3	tree	perennial	white spruce
Picea pungens	Pinaceae	PICPUN	non-native	0	3	tree	perennial	blue spruce
Pilea fontana	Urticaceae	PILFON	native	5	-3	forb	annual	bog clearweed
Pinus resinosa	Pinaceae	PINRES	native	6	3	tree	perennial	red pine
Pinus strobus	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine
Pinus sylvestris	Pinaceae	PINSYL	non-native	0	3	tree	perennial	scotch pine
Plantago lanceolata	Plantaginaceae	PLALAN	non-native	0	3	forb	perennial	english plantain
Plantago rugelii	Plantaginaceae	PLARUG	native	0	0	forb	perennial	red-stalked plantain
Poa compressa	Poaceae	POACOM	non-native	0	3	grass	perennial	canada bluegrass
Poa nemoralis	Poaceae	POANEM	non-native	0	3	grass	perennial	bluegrass
Poa palustris	Poaceae	POAPAS	native	3	-3	grass	perennial	fowl meadow grass
Poa pratensis	Poaceae	POAPRA	non-native	0	3	grass	perennial	kentucky bluegrass
Polygonatum pubescens	Convallariaceae	POLPUB	native	5	5	forb	perennial	dowry solomon seal
Populus balsamifera	Salicaceae	POPBAL	native	2	-3	tree	perennial	balsam poplar
Populus deltoides	Salicaceae	POPDEL	native	1	0	tree	perennial	cottonwood
Populus grandidentata	Salicaceae	POPGRA	native	4	3	tree	perennial	big-tooth aspen
Populus tremuloides	Salicaceae	POPTRE	native	1	0	tree	perennial	quaking aspen
Potamogeton natans	Potamogetonaceae	POTNAT	native	5	-5	forb	perennial	pondweed
Potentilla argentea	Rosaceae	POTARG	non-native	0	3	forb	perennial	silvery cinquefoil
Potentilla norvegica	Rosaceae	POTNOR	native	0	0	forb	annual	rough cinquefoil
Potentilla recta	Rosaceae	POTREC	non-native	0	5	forb	perennial	rough-fruited cinquefoil
Prunella vulgaris	Lamiaceae	PRUVUL	native	0	0	forb	perennial	self-heal
Prunus mahaleb	Rosaceae	PRUMAH	non-native	0	5	tree	perennial	perfumed cherry
Prunus pensylvanica	Rosaceae	PRUPEN	native	3	3	tree	perennial	pin cherry
Prunus serotina	Rosaceae	PRUSER	native	2	3	tree	perennial	wild black cherry
Prunus virginiana	Rosaceae	PRUVIR	native	2	3	shrub	perennial	choke cherry
Pseudotsuga menziesii	Pinaceae	PSEMEN	non-native	0	3	tree	perennial	douglas-fir
Pteridium aquilinum	Dennstaedtiaceae	PTEAQU	native	0	3	fern	perennial	bracken fern
Pyrola elliptica	Ericaceae	PYRELL	native	6	3	forb	perennial	large-leaved shinleaf
Ranunculus acris	Ranunculaceae	RANACR	non-native	0	0	forb	perennial	tall or common buttercup
Ranunculus pensylvanicus	Ranunculaceae	RANPEN	native	6	-5	forb	annual	bristly crowfoot
Ranunculus recurvatus	Ranunculaceae	RANREC	native	5	-3	forb	perennial	hooked crowfoot
Rhus typhina	Anacardiaceae	RHUTYP	native	2	3	shrub	perennial	staghorn sumac
Ribes americanum	Grossulariaceae	RIBAME	native	6	-3	shrub	perennial	wild black currant
Ribes cynosbati	Grossulariaceae	RIBCYN	native	4	3	shrub	perennial	prickly or wild gooseberry
Ribes triste	Grossulariaceae	RIBTRI	native	6	-5	shrub	perennial	swamp red currant
Robinia pseudoacacia	Fabaceae	ROBPSE	non-native	0	3	tree	perennial	black locust
Rosa multiflora	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
Rosa palustris	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose
Rubus allegheniensis	Rosaceae	RUBALL	native	1	3	shrub	perennial	common blackberry
Rubus pubescens	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry
Rubus strigosus	Rosaceae	RUBSTR	native	2	0	shrub	perennial	wild red raspberry
Rudbeckia hirta	Asteraceae	RUDHIR	native	1	3	forb	perennial	black-eyed susan
Rumex acetosella	Polygonaceae	RUMACL	non-native	0	3	forb	perennial	sheep sorrel
Rumex crispus	Polygonaceae	RUMCRI	non-native	0	0	forb	perennial	curly dock
Rumex obtusifolius	Polygonaceae	RUMOBT	non-native	0	0	forb	perennial	bitter dock
Rumex orbiculatus	Polygonaceae	RUMORB	native	9	-5	forb	perennial	great water dock
Sagittaria latifolia	Alismataceae	SAGLAT	native	4	-5	forb	perennial	common arrowhead
Salix amygdaloides	Salicaceae	SALAMY	native	3	-3	tree	perennial	peach-leaved willow
Salix bebbiana	Salicaceae	SALBEB	native	1	-3	shrub	perennial	bebbs willow
Salix discolor	Salicaceae	SALDIS	native	1	-3	shrub	perennial	pussy willow
Salix fragilis	Salicaceae	SALFRA	non-native	0	0	tree	perennial	crack willow
Salix myricoides	Salicaceae	SALMYR	native	9	-3	shrub	perennial	blueleaf willow
Salix nigra	Salicaceae	SALNIG	native	5	-5	tree	perennial	black willow
Salix petiolaris	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow
Sambucus canadensis	Adoxaceae	SAMCAN	native	3	-3	shrub	perennial	elderberry
Schizachyrium scoparium; andropogon s.	Poaceae	SCHSCO	native	5	3	grass	perennial	little bluestem
Schoenoplectus acutus; scirpus a.	Cyperaceae	SCHACU	native	5	-5	sedge	perennial	hardstem bulrush
Schoenoplectus tabernaemontani; scirpus validus	Cyperaceae	SCHTAB	native	4	-5	sedge	perennial	softstem bulrush
Scirpus atrovirens	Cyperaceae	SCIATV	native	3	-5	sedge	perennial	bulrush
Scirpus cyperinus	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass
Scrophularia lanceolata	Scrophulariaceae	SCRLAN	native	5	3	forb	perennial	early figwort
Scutellaria galericulata	Lamiaceae	SCUGAL	native	5	-5	forb	perennial	marsh skullcap
Scutellaria lateriflora	Lamiaceae	SCULAT	native	5	-5	forb	perennial	mad-dog skullcap
Shepherdia canadensis	Elaeagnaceae	SHECAN	native	7	5	shrub	perennial	soapberry
Silene latifolia; s. pratensis	Caryophyllaceae	SILLAT	non-native	0	5	forb	annual	white campion
Silene vulgaris	Caryophyllaceae	SILVUL	non-native	0	5	forb	perennial	bladder campion
Sium suave	Apiaceae	SISUUA	native	5	-5	forb	perennial	water-parsnip
Solanum dulcamara	Solanaceae	SOLDUL	non-native	0	0	vine	perennial	bittersweet nightshade
Solanum ptychanthum	Solanaceae	SOLPTY	native	1	3	forb	annual	black nightshade
Solidago altissima	Asteraceae	SOLALT	native	1	3	forb	perennial	tall goldenrod
Solidago caesia	Asteraceae	SOLCAE	native	6	3	forb	perennial	bluestem goldenrod
Solidago flexicaulis	Asteraceae	SOLFLE	native	6	3	forb	perennial	zigzag goldenrod
Solidago gigantea	Asteraceae	SOLGIG	native	3	-3	forb	perennial	late goldenrod
Solidago nemoralis	Asteraceae	SOLNEM	native	2	5	forb	perennial	old-field goldenrod
Solidago rugosa	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod
Sorbus decora	Rosaceae	SORDEC	native	4	3	tree	perennial	mountain-ash
Stachys arenicola; s. palustris	Lamiaceae	STAARE	native	5	-3	forb	perennial	hedge-nettle
Stachys pilosa; s. palustris	Lamiaceae	STAPIL	native	5	-3	forb	perennial	hedge-nettle
Stellaria pallida	Caryophyllaceae	STEPAL	non-native	0	5	forb	annual	least chickweed

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<i>Symphotrichum lanceolatum</i> ; aster l.	Asteraceae	SYMLAN	native	2	-3	forb	perennial	panicled aster
<i>Symphotrichum lateriflorum</i> ; aster l.	Asteraceae	SYMLAT	native	2	0	forb	perennial	calico aster
<i>Syringa vulgaris</i>	Oleaceae	SYRVUL	non-native	0	5	shrub	perennial	common lilac
<i>Taraxacum officinale</i>	Asteraceae	TAROFF	non-native	0	3	forb	perennial	common dandelion
<i>Thelypteris palustris</i>	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae
<i>Tiarella cordifolia</i>	Saxifragaceae	TIACOR	native	9	3	forb	perennial	foamflower
<i>Tilia americana</i>	Malvaceae	TILAME	native	5	3	tree	perennial	basswood
<i>Toxicodendron rydbergii</i> ; t. radicans	Anacardiaceae	TOXRYP	native	3	0	shrub	perennial	poison-ivy
<i>Tragopogon dubius</i>	Asteraceae	TRADUB	non-native	0	5	forb	biennial	goats beard
<i>Tragopogon pratensis</i>	Asteraceae	TRAPRA	non-native	0	5	forb	biennial	common goats beard
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort
<i>Trientalis borealis</i>	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower
<i>Trifolium dubium</i>	Fabaceae	TRIDUB	non-native	0	3	forb	annual	little hop clover
<i>Trifolium repens</i>	Fabaceae	TRIREP	non-native	0	3	forb	perennial	white clover
<i>Trillium grandiflorum</i>	Trilliaceae	TRIGRA	native	5	3	forb	perennial	common trillium
<i>Tsuga canadensis</i>	Pinaceae	TSUCAN	native	5	3	tree	perennial	hemlock
<i>Turritis glabra</i> ; arabis g.	Brassicaceae	TURGLA	native	3	5	forb	biennial	tower mustard
<i>Typha angustifolia</i>	Typhaceae	TYPANG	non-native	0	-5	forb	perennial	narrow-leaved cat-tail
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail
<i>Ulmus americana</i>	Ulmaceae	ULMAME	native	1	-3	tree	perennial	american elm
<i>Urtica dioica</i>	Urticaceae	URTDIO	native	1	0	forb	perennial	stinging nettle
<i>Utricularia vulgaris</i>	Lentibulariaceae	UTRVUL	native	6	-5	forb	perennial	common bladderwort
<i>Verbascum thapsus</i>	Scrophulariaceae	VERTHA	non-native	0	5	forb	biennial	common mullein
<i>Verbena hastata</i>	Verbenaceae	VERHAS	native	4	-3	forb	perennial	blue vervain
<i>Veronica arvensis</i>	Plantaginaceae	VERARV	non-native	0	3	forb	annual	corn speedwell
<i>Veronica beccabunga</i> var. <i>americana</i>	Plantaginaceae	VERBEA	native	10	-5	forb	perennial	american brooklime
<i>Veronica officinalis</i>	Plantaginaceae	VEROOF	non-native	0	3	forb	perennial	common speedwell
<i>Veronica serpyllifolia</i>	Plantaginaceae	VERSER	non-native	0	0	forb	perennial	thyme-leaved speedwell
<i>Veronica verna</i>	Plantaginaceae	VERVER	non-native	0	5	forb	annual	spring corn speedwell
<i>Viburnum acerifolium</i>	Adoxaceae	VIBACE	native	6	5	shrub	perennial	maple-leaved viburnum
<i>Viburnum opulus</i>	Adoxaceae	VIBOPU	non-native	0	-3	shrub	perennial	european highbush-cranberry
<i>Vicia villosa</i>	Fabaceae	VICVIL	non-native	0	5	vine	annual	hairy vetch
<i>Viola cucullata</i>	Violaceae	VIOCUC	native	5	-5	forb	perennial	marsh violet
<i>Viola labradorica</i> ; v. <i>conspersa</i>	Violaceae	VIOLAB	native	3	0	forb	perennial	dog violet
<i>Viola pubescens</i>	Violaceae	VIOPUB	native	4	3	forb	perennial	yellow violet
<i>Vitis riparia</i>	Vitaceae	VITRIP	native	3	0	vine	perennial	river-bank grape