



# Narrows Natural Area

## Floristic Quality Assessment Results

A Floristic Quality Assessment of Narrows 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 Narrows Natural Area the total number of species and native species are:

Native Species	Total Species
293	376

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 10 is assigned to invasive species, also called adventives. At Narrows Natural Area the mean C-values are:

Native Mean C	Mean C w/ Adventives
4.4	3.4

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 Narrows Natural Area the mean coefficients of wetness are:

Native Mean W	Mean W w/ Adventives
-1.5	-0.7

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 Narrows Natural Area the FQI's are:

Native FQI	FQI w/ Adventives
75.3	38.8

May, L 2014. Floristic Quality Assessment and Habitat Mapping of Narrows Natural Area.

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.

## Narrows Natural Area - All Communities

**Narrows Natural Area (all)**

10/21/14

Narrows Natural Area

Lake Leelanau

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:

Includes all communities within Narrows Natural Area

Other Notes:

Private/Public:

Private

**Conservatism-Based Metrics:**

Total Mean C: 3.4  
 Native Mean C: 4.4  
 Total FQI: 65.9  
 Native FQI: 75.3  
 Adjusted FQI: 38.8  
 % C value 0: 24.7  
 % C value 1-3: 26.3  
 % C value 4-6: 37.5  
 % C value 7-10: 11.4  
 Native Tree Mean C: 3.9  
 Native Shrub Mean C: 4.1  
 Native Herbaceous Mean C: 4.5

**Species Richness:**

Total Species: 376  
 Native Species: 293 77.90%  
 Non-native Species: 83 22.10%

**Species Wetness:**

Mean Wetness: -0.7  
 Native Mean Wetness: -1.5

**Physiognomy Metrics:**

Tree: 33 8.80%  
 Shrub: 36 9.60%  
 Vine: 8 2.10%  
 Forb: 206 54.80%  
 Grass: 27 7.20%  
 Sedge: 44 11.70%  
 Rush: 0 0%  
 Fern: 22 5.90%  
 Bryophyte: 0 0%

**Duration Metrics:**

Annual: 23 6.10%  
 Perennial: 338 89.90%  
 Biennial: 15 4%  
 Native Annual: 14 3.70%  
 Native Perennial: 276 73.40%  
 Native Biennial: 3 0.80%

**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
Acer spicatum	Sapindaceae	ACESPI	native	5	3	tree	perennial	mountain maple
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow
Acorus calamus	Acoraceae	ACOCAL	non-native	0	-5	forb	perennial	calamus
Adiantum pedatum	Pteridaceae	ADIPED	native	6	3	fern	perennial	maidenhair fern
Agrimonia gryposepala	Rosaceae	AGRGRY	native	2	3	forb	perennial	tall agrimony
Agrostis gigantea	Poaceae	AGRIGI	non-native	0	-3	grass	perennial	redtop
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegass
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder
Ambrosia artemisiifolia	Asteraceae	AMBART	native	0	3	forb	annual	common ragweed
Anaphalis margaritacea	Asteraceae	ANAMAR	native	3	5	forb	perennial	pearly everlasting
Anemone canadensis	Ranunculaceae	ANECAN	native	4	-3	forb	perennial	canada anemone
Apocynum androsaemifolium	Apocynaceae	APOAND	native	3	5	forb	perennial	spreading dogbane
Aralia nudicaulis	Araliaceae	ARANUD	native	5	3	forb	perennial	wild sarsaparilla
Aralia racemosa	Araliaceae	ARARAC	native	8	3	forb	perennial	spikenard
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 incarnata	Apocynaceae	ASCINC	native	6	-5	forb	perennial	swamp milkweed
Asclepias syriaca	Apocynaceae	ASCSYR	native	1	5	forb	perennial	common milkweed

# Appendix A

## Narrows Natural Area - All Communities

Asparagus officinalis	Asparagaceae	ASPOFF	non-native	0	3	forb	perennial	garden asparagus
Athyrium filix-femina	Athyriaceae	ATHFIL	native	4	0	fern	perennial	lady fern
Barbarea vulgaris	Brassicaceae	BARVUL	non-native	0	0	forb	biennial	yellow rocket
Berberis thunbergii	Berberidaceae	BERTHU	non-native	0	3	shrub	perennial	japanese barberry
Berteroa incana	Brassicaceae	BERINC	non-native	0	5	forb	annual	hoary Alyssum
Betula alleghaniensis	Betulaceae	BETALL	native	7	0	tree	perennial	yellow birch
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch
Bidens cernua	Asteraceae	BIDCER	native	3	-5	forb	annual	nodding beggar-ticks
Bidens connata	Asteraceae	BIDCON	native	5	-3	forb	annual	purple-stemmed tickseed
Bidens frondosa	Asteraceae	BIDFRO	native	1	-3	forb	annual	common beggar-ticks
Boehmeria cylindrica	Urticaceae	BOEICYL	native	5	-5	forb	perennial	false nettle
Bromus inermis	Poaceae	BROINE	non-native	0	5	grass	perennial	smooth brome
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint
Calamagrostis stricta; c. inexpansa; c. lacustris	Poaceae	CALSTR	native	10	-3	grass	perennial	narrow-leaved reedgrass
Caltha palustris	Ranunculaceae	CALPAR	native	6	-5	forb	perennial	marsh-marigold
Calystegia sepium	Convolvulaceae	CALSEP	native	2	0	vine	perennial	hedge bindweed
Campanula aparinoides	Campanulaceae	CAMPAPA	native	7	-5	forb	perennial	marsh bellflower
Cardamine diphylla; dentaria d.	Brassicaceae	CARDIP	native	5	3	forb	perennial	two-leaved toothwort
Carex alata	Cyperaceae	CXALAT	native	10	-5	sedge	perennial	winged sedge
Carex aquatilis	Cyperaceae	CXAQUA	native	7	-5	sedge	perennial	sedge
Carex arcta	Cyperaceae	CXARTA	native	8	-5	sedge	perennial	sedge
Carex arctata	Cyperaceae	CXARTT	native	3	5	sedge	perennial	sedge
Carex aurea	Cyperaceae	CXAURE	native	3	-3	sedge	perennial	sedge
Carex bebbii	Cyperaceae	CXBEBB	native	4	-5	sedge	perennial	sedge
Carex communis	Cyperaceae	CXCOMM	native	2	5	sedge	perennial	sedge
Carex comosa	Cyperaceae	CXCOMO	native	5	-5	sedge	perennial	sedge
Carex cryptolepis	Cyperaceae	CXCryp	native	8	-5	sedge	perennial	sedge
Carex disperma	Cyperaceae	CXDISP	native	10	-5	sedge	perennial	sedge
Carex flava	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge
Carex gracillima	Cyperaceae	CXGRAA	native	4	3	sedge	perennial	sedge
Carex granularis	Cyperaceae	CXGRAN	native	2	-3	sedge	perennial	sedge
Carex hystericina	Cyperaceae	CXHYST	native	2	-5	sedge	perennial	sedge
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge
Carex intumescens	Cyperaceae	CXINTU	native	3	-3	sedge	perennial	sedge
Carex lacustris	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge
Carex leptalea	Cyperaceae	CXLEPA	native	5	-5	sedge	perennial	sedge
Carex leptonevia	Cyperaceae	CXLEPO	native	3	0	sedge	perennial	sedge
Carex ormostachya	Cyperaceae	CXORMO	native	5	5	sedge	perennial	sedge
Carex pedunculata	Cyperaceae	CXPEDU	native	5	3	sedge	perennial	sedge
Carex pellita; c. lanuginosa	Cyperaceae	CXPELL	native	2	-5	sedge	perennial	sedge
Carex praegracilis	Cyperaceae	CXPRAE	non-native	0	-3	sedge	perennial	sedge
Carex pseudo-cyperus	Cyperaceae	CXPSEU	native	5	-5	sedge	perennial	sedge
Carex retrorsa	Cyperaceae	CXRETS	native	3	-5	sedge	perennial	sedge
Carex scabrata	Cyperaceae	CXSCAB	native	4	-5	sedge	perennial	sedge
Carex scoparia	Cyperaceae	CXSCOP	native	4	-3	sedge	perennial	sedge
Carex stipata	Cyperaceae	CXSTIP	native	1	-5	sedge	perennial	sedge
Carex swanii	Cyperaceae	CXSWAN	native	4	3	sedge	perennial	sedge
Carex tribuloides	Cyperaceae	CXTRIB	native	3	-3	sedge	perennial	sedge
Carex utriculata; c. rostrata	Cyperaceae	CXUTRI	native	5	-5	sedge	perennial	sedge
Carex vulpinoidea	Cyperaceae	CXVULP	native	1	-5	sedge	perennial	sedge
Centaurea diffusa	Asteraceae	CENDIF	non-native	0	5	forb	annual	tumble knapweed
Centaurea stoebe; c. maculosa	Asteraceae	CENSTO	non-native	0	5	forb	biennial	spotted knapweed
Cerastium fontanum	Caryophyllaceae	CERFON	non-native	0	3	forb	perennial	mouse-ear chickweed
Chelone glabra	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead
Chimaphila umbellata	Ericaceae	CHIUMB	native	8	5	shrub	perennial	pipisissewa
Chrysosplenium americanum	Saxifragaceae	CHROME	native	6	-5	forb	perennial	golden saxifrage
Cichorium intybus	Asteraceae	CICINT	non-native	0	3	forb	perennial	chicory
Cicuta bulbifera	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock
Circaea alpina	Onagraceae	CIRALP	native	4	-3	forb	perennial	small enchanters-nightshade
Circaea canadensis; c. lutetiana	Onagraceae	CIRCAN	native	2	3	forb	perennial	enchanters-nightshade
Cirsium arvense	Asteraceae	CIRARV	non-native	0	3	forb	perennial	canada thistle
Cirsium palustre	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial	marsh thistle
Cirsium vulgare	Asteraceae	CIRVUL	non-native	0	3	forb	biennial	bull thistle
Cladium mariscoides	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush
Clematis virginiana	Ranunculaceae	CLEVIR	native	4	0	vine	perennial	virgins bower
Clinopodium vulgare	Lamiaceae	CLIVUL	native	3	5	forb	perennial	wild-basil
Clintonia borealis	Convallariaceae	CLIBUL	native	5	0	forb	perennial	bluebead-lily; corn-lily
Comarum palustre; potentilla p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil
Conyza canadensis	Asteraceae	CONCAN	native	0	3	forb	annual	horseweed
Coptis trifolia	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread
Cornus alternifolia	Cornaceae	CORALT	native	5	3	tree	perennial	alternate-leaved dogwood
Cornus amomum	Cornaceae	CORAMO	native	2	-3	shrub	perennial	silky dogwood
Cornus sericea; c. stolonifera	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier
Cypripedium reginae	Orchidaceae	CYPREG	native	9	-3	forb	perennial	showy or queens lady-slipper
Cystopteris bulbifera	Cystopteridaceae	CYSBUL	native	5	-3	fern	perennial	bulblet fern
Dactylis glomerata	Poaceae	DACGLO	non-native	0	3	grass	perennial	orchard grass
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
Decodon verticillatus	Lythraceae	DECVER	native	7	-5	shrub	perennial	whorled or swamp loosestrife
Dendrolycopodium dendroideum; lycopodium d.	Lycopodiaceae	DENDEN	native	5	3	fern	perennial	tree clubmoss
Dianthus armeria	Caryophyllaceae	DIAARM	non-native	0	5	forb	annual	deptford pink
Dianthus barbatus	Caryophyllaceae	DIABAR	non-native	0	5	forb	perennial	sweet william
Dichanthelium implicatum; panicum i.	Poaceae	DICIMP	native	3	0	grass	perennial	panic grass
Digitaria cognata; leptoloma c.	Poaceae	DIGCOG	native	3	5	grass	perennial	fall witch grass
Dipsacus laciniatus	Dipsacaceae	DIPLAC	non-native	0	3	forb	biennial	cut-leaf teasel

## Narrows Natural Area - All Communities

<i>Drosera rotundifolia</i>	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew
<i>Dryopteris carthusiana</i>	Dryopteridaceae	DRYCAR	native	5	-3	fern	perennial	spinulose woodfern
<i>Dryopteris cristata</i>	Dryopteridaceae	DRYCRI	native	6	-5	fern	perennial	crested shield fern
<i>Dryopteris intermedia</i>	Dryopteridaceae	DRYINT	native	5	0	fern	perennial	evergreen woodfern
<i>Dulichium arundinaceum</i>	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge
<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>Eleocharis obtusa</i>	Cyperaceae	ELEOBT	native	3	-5	sedge	annual	spike-rush
<i>Eleocharis palustris</i> ; e. smallii	Cyperaceae	ELEPAL	native	5	-5	sedge	perennial	spike-rush
<i>Eleocharis quinqueflora</i> ; e. pauciflora	Cyperaceae	ELEQUI	native	10	-5	sedge	perennial	spike-rush
<i>Elodea canadensis</i>	Hydrocharitaceae	ELOCAN	native	1	-5	forb	perennial	common waterweed
<i>Elymus repens</i> ; agropyron r.	Poaceae	ELYREP	non-native	0	3	grass	perennial	quack grass
<i>Epilobium ciliatum</i>	Onagraceae	EPICIL	native	3	-3	forb	perennial	willow-herb
<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
<i>Epilobium leptophyllum</i>	Onagraceae	EPILEP	native	6	-5	forb	perennial	fen willow-herb
<i>Epilobium parviflorum</i>	Onagraceae	EPIPAR	non-native	0	-5	forb	perennial	willow-herb
<i>Epipactis helleborine</i>	Orchidaceae	EPIHEL	non-native	0	0	forb	perennial	helleborine
<i>Equisetum arvense</i>	Equisetaceae	EQUARV	native	0	0	fern	perennial	common horsetail
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail
<i>Equisetum hyemale</i>	Equisetaceae	EQUHYE	native	2	0	fern	perennial	scouring rush
<i>Equisetum scirpoides</i>	Equisetaceae	EQUSCI	native	7	0	fern	perennial	dwarf scouring rush
<i>Equisetum sylvaticum</i>	Equisetaceae	EQUSYL	native	5	-3	fern	perennial	woodland horsetail
<i>Equisetum variegatum</i>	Equisetaceae	EQUVAR	native	6	-3	fern	perennial	variegated scouring rush
<i>Eragrostis spectabilis</i>	Poaceae	ERASPE	native	3	5	grass	perennial	purple love grass
<i>Erechtites hieracifolius</i>	Asteraceae	EREHIE	native	2	3	forb	annual	fireweed
<i>Erigeron philadelphicus</i>	Asteraceae	ERIPHI	native	2	0	forb	perennial	philadelphia fleabane
<i>Erigeron strigosus</i>	Asteraceae	ERISTR	native	4	3	forb	perennial	daisy fleabane
<i>Erythronium americanum</i>	Liliaceae	ERYAME	native	5	5	forb	perennial	yellow trout lily
<i>Eupatorium perfoliatum</i>	Asteraceae	EUPPER	native	4	-3	forb	perennial	boneset
<i>Euphorbia maculata</i>	Euphorbiaceae	EUPMAC	native	0	3	forb	annual	spotted spurge
<i>Euphorbia virgata</i> ; e. esula	Euphorbiaceae	EUPVIR	non-native	0	5	forb	perennial	leafy spurge
<i>Euthamia graminifolia</i>	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod
<i>Eutrochium maculatum</i> ; eupatorium m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed
<i>Fagus grandifolia</i>	Fagaceae	FAGGRA	native	6	3	tree	perennial	american beech
<i>Festuca rubra</i>	Poaceae	FESRUB	non-native	0	3	grass	perennial	red fescue
<i>Festuca saximontana</i>	Poaceae	FESSAX	native	6	5	grass	perennial	fescue
<i>Fragaria virginiana</i>	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry
<i>Fraxinus americana</i>	Oleaceae	FRAAME	native	5	3	tree	perennial	white ash
<i>Fraxinus nigra</i>	Oleaceae	FRANIG	native	6	-3	tree	perennial	black ash
<i>Fraxinus pennsylvanica</i>	Oleaceae	FRAPEN	native	2	-3	tree	perennial	red ash
<i>Galeopsis tetrahit</i>	Lamiaceae	GALTET	non-native	0	3	forb	annual	hemp-nettle
<i>Galium aparine</i>	Rubiaceae	GALAPA	native	0	3	forb	annual	annual bedstraw
<i>Galium labradoricum</i>	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw
<i>Galium palustre</i>	Rubiaceae	GALPAL	native	3	-5	forb	perennial	marsh bedstraw
<i>Galium tinctorium</i>	Rubiaceae	GALTIN	native	5	-5	forb	perennial	stiff bedstraw
<i>Galium trifidum</i>	Rubiaceae	GALTRD	native	6	-3	forb	perennial	small bedstraw
<i>Galium triflorum</i>	Rubiaceae	GALTRR	native	4	3	forb	perennial	fragrant bedstraw
<i>Galium verum</i>	Rubiaceae	GALVEM	non-native	0	5	forb	perennial	yellow bedstraw
<i>Geranium robertianum</i>	Geraniaceae	GERRROB	native	3	3	forb	annual	herb robert
<i>Geum aleppicum</i>	Rosaceae	GEUALE	native	3	0	forb	perennial	yellow avens
<i>Geum rivale</i>	Rosaceae	GEURIV	native	7	-5	forb	perennial	purple avens
<i>Glyceria striata</i>	Poaceae	GLYSTR	native	4	-5	grass	perennial	fowl manna grass
<i>Gymnocarpium dryopteris</i>	Cystopteridaceae	GYMDRY	native	5	3	fern	perennial	oak fern
<i>Hackelia virginiana</i>	Boraginaceae	HACVIR	native	1	3	forb	biennial	beggars lice
<i>Hieracium aurantiacum</i>	Asteraceae	HIEAUR	non-native	0	5	forb	perennial	orange hawkweed
<i>Hieracium piloselloides</i>	Asteraceae	HIEPIS	non-native	0	5	forb	perennial	king devil
<i>Hieracium scabrum</i>	Asteraceae	HIESCA	native	3	5	forb	perennial	rough hawkweed
<i>Hypericum perforatum</i>	Hypericaceae	HYPPER	non-native	0	5	forb	perennial	common st. johns-wort
<i>Hypopitys monotropa</i> ; monotropa hypopithys	Ericaceae	HYPMON	native	6	5	forb	perennial	pinenap
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly
<i>Impatiens capensis</i>	Balsaminaceae	IMPACP	native	2	-3	forb	annual	spotted touch-me-not
<i>Iris pseudacorus</i>	Iridaceae	IRIPSE	non-native	0	-5	forb	perennial	yellow flag
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag
<i>Iris virginica</i>	Iridaceae	IRIVIR	native	5	-5	forb	perennial	southern blue flag
<i>Juncus alpinoarticulatus</i> ; j. alpinus	Juncaceae	JUNALP	native	5	-5	forb	perennial	rush
<i>Juncus antheratus</i> ; j. tenuis	Juncaceae	JUNANT	native	3	-3	forb	perennial	large path rush
<i>Juncus articulatus</i>	Juncaceae	JUNART	native	3	-5	forb	perennial	jointed rush
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush
<i>Juncus dudleyi</i>	Juncaceae	JUNDUD	native	1	-3	forb	perennial	dudleys rush
<i>Juncus effusus</i>	Juncaceae	JUNEFF	native	3	-5	forb	perennial	soft-stemmed rush
<i>Juncus nodosus</i>	Juncaceae	JUNNOD	native	5	-5	forb	perennial	joint rush
<i>Juncus tenuis</i>	Juncaceae	JUNTEN	native	1	0	forb	perennial	path rush
<i>Juniperus communis</i>	Cupressaceae	JUNCOI	native	4	3	shrub	perennial	common or ground juniper
<i>Laportea canadensis</i>	Urticaceae	LAPCAN	native	4	-3	forb	perennial	wood nettle
<i>Lapsana communis</i>	Asteraceae	LAPCOM	non-native	0	3	forb	annual	nipplewort
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack
<i>Lathyrus palustris</i>	Fabaceae	LATPAL	native	7	-3	vine	perennial	marsh pea
<i>Leersia oryzoides</i>	Poaceae	LEORYZ	native	3	-5	grass	perennial	cut grass
<i>Lemna trisulca</i>	Araceae	LEMTRI	native	6	-5	forb	perennial	star duckweed
<i>Lemna turionifera</i> ; l. minor	Araceae	LEMTUR	native	5	-5	forb	perennial	red duckweed
<i>Lepidium campestre</i>	Brassicaceae	LEPCAM	non-native	0	5	forb	biennial	field cress
<i>Leucanthemum vulgare</i> ; chrysanthemum leucanthemum	Asteraceae	LEUVUL	non-native	0	5	forb	perennial	ox-eye daisy
<i>Ligustrum vulgare</i>	Oleaceae	LIGVUL	non-native	0	3	shrub	perennial	common privet
<i>Linaria vulgaris</i>	Plantaginaceae	LINVUL	non-native	0	5	forb	perennial	butter-and-eggs
<i>Linnaea borealis</i>	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinflower

# Appendix A

## Narrows Natural Area - All Communities

Lobelia cardinalis	Campanulaceae	LOBCAR	native	7	-5	forb	perennial	cardinal-flower
Lonicera dioica	Caprifoliaceae	LONDIO	native	5	3	vine	perennial	red honeysuckle
Lonicera morrowii	Caprifoliaceae	LONMOR	non-native	0	3	shrub	perennial	morrow honeysuckle
Lonicera vóbella	Caprifoliaceae	LONBEL	non-native	0	3	shrub	perennial	hybrid honeysuckle
Ludwigia palustris	Onagraceae	LUDPAL	native	4	-5	forb	perennial	water-purslane
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 nummularia	Myrsinaceae	LYSNUM	non-native	0	-3	forb	perennial	moneywort
Lysimachia thyrsoiflora	Myrsinaceae	LYSTHY	native	6	-5	forb	perennial	tufted loosestrife
Lythrum salicaria	Lythraceae	LYTSAL	non-native	0	-5	forb	perennial	purple loosestrife
Maianthemum canadense	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower
Maianthemum trifolium; smilacina t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower
Malus pumila	Rosaceae	MALPUM	non-native	0	5	tree	perennial	apple
Matteuccia struthiopteris	Onocleaceae	MATSTR	native	3	0	fern	perennial	ostrich fern
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
Menyanthes trifoliata	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean
Mimulus ringens	Phrymaceae	MIMRIN	native	5	-5	forb	perennial	monkey-flower
Mirabilis nyctaginea	Nyctaginaceae	MIRNYC	non-native	0	5	forb	perennial	wild four-oclock
Mitchella repens	Rubiaceae	MITREP	native	5	3	forb	perennial	partridge-berry
Mitella nuda	Saxifragaceae	MITNUD	native	8	-3	forb	perennial	naked miterwort
Monotropa uniflora	Ericaceae	MONOUN	native	5	3	forb	perennial	indian-pipe
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy
Muhlenbergia mexicana	Poaceae	MUHMEX	native	3	-3	grass	perennial	leafy satin grass
Muhlenbergia sylvatica	Poaceae	MUHSYL	native	8	-3	grass	perennial	woodland satin grass
Myosotis scorpioides	Boraginaceae	MYOSCO	non-native	0	-5	forb	perennial	forget-me-not
Myosotis sylvatica	Boraginaceae	MYOSYL	non-native	0	5	forb	perennial	garden forget-me-not
Myrica gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale
Myriophyllum heterophyllum	Haloragaceae	MYRHET	native	6	-5	forb	perennial	various-leaved water-milfoil
Nasturtium microphyllum; n. officinale	Brassicaceae	NASMIC	non-native	0	-5	forb	perennial	watercress
Nasturtium officinale	Brassicaceae	NASOFF	native	4	-5	forb	perennial	watercress
Nuphar variegata	Nymphaeaceae	NUPVAR	native	7	-5	forb	perennial	yellow pond-lily
Nymphaea odorata	Nymphaeaceae	NYMODO	native	6	-5	forb	perennial	sweet-scented waterlily
Oenothera biennis	Onagraceae	OENBIE	native	2	3	forb	biennial	common evening-primrose
Onoclea sensibilis	Onocleaceae	ONOSEN	native	2	-3	fern	perennial	sensitive fern
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
Parthenocissus quinquefolia	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
Penstemon digitalis	Plantaginaceae	PENDIG	native	2	0	forb	perennial	foxglove beard-tongue
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
Persicaria hydropiperoides; polygonum h.	Polygonaceae	PERHYS	native	5	-5	forb	perennial	mild water-pepper
Phalaris arundinacea	Poaceae	PHAARU	native	0	-3	grass	perennial	reed canary grass
Phleum pratense	Poaceae	PHLPRA	non-native	0	3	grass	perennial	timothy
Phragmites australis var. americanus	Poaceae	PHRAUM	native	5	-3	grass	perennial	reed
Phragmites australis var. australis	Poaceae	PHRAUU	non-native	0	-3	grass	perennial	reed
Physalis heterophylla	Solanaceae	PHYHET	native	3	5	forb	perennial	clammy ground-cherry
Phytolacca americana	Phytolaccaceae	PHYAME	native	2	3	forb	perennial	pokeweed
Pilea fontana	Urticaceae	PILFON	native	5	-3	forb	annual	bog clearweed
Pinus banksiana	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine
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 major	Plantaginaceae	PLAMAJ	non-native	0	3	forb	perennial	common plantain
Platanthera lacera; habenaria l.	Orchidaceae	PLALAC	native	6	-3	forb	perennial	green-fringed orchid
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
Polygala polygama	Polygalaceae	POLPOL	native	9	3	forb	biennial	racemed milkwort
Polygonatum pubescens	Convallariaceae	POLPUB	native	5	5	forb	perennial	downy solomon seal
Populus alba	Salicaceae	POPALB	non-native	0	5	tree	perennial	white poplar
Populus balsamifera	Salicaceae	POPBAL	native	2	-3	tree	perennial	balsam poplar
Populus grandidentata	Salicaceae	POPGRA	native	4	3	tree	perennial	big-tooth aspen
Populus tremuloides	Salicaceae	POPTRE	native	1	0	tree	perennial	quaking aspen
Potamogeton illinoensis	Potamogetonaceae	POTILL	native	5	-5	forb	perennial	illinois pondweed
Potamogeton natans	Potamogetonaceae	POTNAT	native	5	-5	forb	perennial	pondweed
Potamogeton obtusifolius	Potamogetonaceae	POTOBT	native	10	-5	forb	perennial	pondweed
Potamogeton richardsonii	Potamogetonaceae	POTRIC	native	5	-5	forb	perennial	richardsons pondweed
Potamogeton zosteriformis	Potamogetonaceae	POTZOS	native	5	-5	forb	perennial	flat-stemmed pondweed
Potentilla norvegica	Rosaceae	POTNOR	native	0	0	forb	annual	rough cinquefoil
Prunella vulgaris	Lamiaceae	PRUVUL	native	0	0	forb	perennial	self-heal
Prunus pensylvanica	Rosaceae	PRUPEN	native	3	3	tree	perennial	pin cherry
Prunus serotina	Rosaceae	PRUSER	native	2	3	tree	perennial	wild black cherry
Pteridium aquilinum	Dennstaedtiaceae	PTEAQU	native	0	3	fern	perennial	bracken fern
Pyrola elliptica	Ericaceae	PYRELL	native	6	3	forb	perennial	large-leaved shinleaf
Quercus rubra	Fagaceae	QUERUB	native	5	3	tree	perennial	red oak
Ranunculus acris	Ranunculaceae	RANACR	non-native	0	0	forb	perennial	tall or common buttercup
Ranunculus hispidus	Ranunculaceae	RANHIS	native	5	0	forb	perennial	swamp buttercup
Ranunculus recurvatus	Ranunculaceae	RANREC	native	5	-3	forb	perennial	hooked crowfoot
Rhamnus alnifolia	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn
Rhamnus cathartica	Rhamnaceae	RHCATC	non-native	0	0	tree	perennial	common buckthorn

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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 hudsonianum	Grossulariaceae	RIBHUD	native	10	-5	shrub	perennial	northern black currant
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 hispids	Rosaceae	RUBHIS	native	4	-3	shrub	perennial	swamp dewberry
Rubus pubescens	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry
Rubus strigosus	Rosaceae	RUBSTR	native	2	0	shrub	perennial	wild red raspberry
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 alba	Salicaceae	SALALB	non-native	0	-3	tree	perennial	white willow
Salix bebbiana	Salicaceae	SALBEB	native	1	-3	shrub	perennial	bebbs willow
Salix discolor	Salicaceae	SALDIS	native	1	-3	shrub	perennial	pussy willow
Salix eriocephala	Salicaceae	SALERI	native	2	-3	shrub	perennial	willow
Salix exigua	Salicaceae	SALEXI	native	1	-3	shrub	perennial	sandbar willow
Salix lucida	Salicaceae	SALLUC	native	3	-3	shrub	perennial	shining willow
Salix nigra	Salicaceae	SALNIG	native	5	-5	tree	perennial	black willow
Sambucus canadensis	Adoxaceae	SAMCAN	native	3	-3	shrub	perennial	elderberry
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
Scirpus pendulus	Cyperaceae	SCIPEN	native	3	-5	sedge	perennial	bulrush
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 vulgaris	Caryophyllaceae	SILVUL	non-native	0	5	forb	perennial	bladder campion
Sium suave	Apiaceae	SIUSUA	native	5	-5	forb	perennial	water-parsnip
Solanum dulcamara	Solanaceae	SOLDUL	non-native	0	0	vine	perennial	bittersweet 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 juncea	Asteraceae	SOLJUN	native	3	5	forb	perennial	early 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
Sonchus arvensis; s. uliginosus	Asteraceae	SONARV	non-native	0	3	forb	perennial	perennial sow-thistle
Sonchus asper	Asteraceae	SONASP	non-native	0	3	forb	annual	prickly sow-thistle
Sparganium americanum	Typhaceae	SPAAME	native	6	-5	forb	perennial	american bur-reed
Sparganium eurycarpum	Typhaceae	SPAEUR	native	5	-5	forb	perennial	common bur-reed
Spiraea vóvanhouttei	Rosaceae	SPIVAN	non-native	0	5	shrub	perennial	bridal-wreath
Spirodela polyrhiza	Araceae	SPIPOL	native	6	-5	forb	perennial	greater duckweed
Sporobolus cryptandrus	Poaceae	SPOCRY	native	3	3	grass	perennial	sand dropseed
Stuckenia filiformis; potamogeton f.; p. vaginatus	Potamogetonaceae	STUFIL	native	7	-5	forb	perennial	narrow-leaved pondweed
Stuckenia pectinata; potamogeton p.	Potamogetonaceae	STUPEC	native	3	-5	forb	perennial	sago pondweed
Symphotrichum cordifolium; aster c.	Asteraceae	SYMCOR	native	4	5	forb	perennial	heart-leaved aster
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 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 puniceum; aster p.	Asteraceae	SYMOUN	native	5	-5	forb	perennial	swamp aster
Taraxacum officinale	Asteraceae	TAROFF	non-native	0	3	forb	perennial	common dandelion
Thalictrum dioicum	Ranunculaceae	THADIO	native	6	3	forb	perennial	early meadow-rue
Thelypteris noveboracensis	Thelypteridaceae	THENOV	native	5	0	fern	perennial	new york fern
Thelypteris palustris	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae
Tiarella cordifolia	Saxifragaceae	TIACOR	native	9	3	forb	perennial	foamflower
Tilia americana	Malvaceae	TILAME	native	5	3	tree	perennial	basswood
Toxicodendron rydbergii; t. radicans	Anacardiaceae	TOXRYD	native	3	0	shrub	perennial	poison-ivy
Tragopogon dubius	Asteraceae	TRADUB	non-native	0	5	forb	biennial	goats beard
Tragopogon pratensis	Asteraceae	TRAPRA	non-native	0	5	forb	biennial	common goats beard
Triadenum fraseri	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort
Trientalis borealis	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower
Trifolium aureum	Fabaceae	TRIAUM	non-native	0	5	forb	annual	hop clover
Trifolium campestre	Fabaceae	TRICAM	non-native	0	5	forb	annual	low hop clover
Trifolium pratense	Fabaceae	TRIPRA	non-native	0	3	forb	perennial	red clover
Triglochin palustris	Juncaginaceae	TRIPAL	native	8	-5	forb	perennial	slender bog arrow-grass
Trillium grandiflorum	Trilliaceae	TRIGRA	native	5	3	forb	perennial	common trillium
Tsuga canadensis	Pinaceae	TSUCAN	native	5	3	tree	perennial	hemlock
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
Urtica dioica	Urticaceae	URTDIO	native	1	0	forb	perennial	stinging nettle
Utricularia intermedia	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort
Utricularia minor	Lentibulariaceae	UTRMIN	native	10	-5	forb	perennial	small bladderwort
Utricularia vulgaris	Lentibulariaceae	UTRVUL	native	6	-5	forb	perennial	common bladderwort
Verbascum thapsus	Scrophulariaceae	VERTHA	non-native	0	5	forb	biennial	common mullein
Verbena hastata	Verbenaceae	VERHAS	native	4	-3	forb	perennial	blue vervain
Veronica beccabunga var. americana	Plantaginaceae	VERBEA	native	10	-5	forb	perennial	american brooklime
Veronica officinalis	Plantaginaceae	VEROOF	non-native	0	3	forb	perennial	common speedwell

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Veronica serpyllifolia	Plantaginaceae	VERSER	non-native	0	0	forb	perennial	thyme-leaved speedwell
Viburnum acerifolium	Adoxaceae	VIBACE	native	6	5	shrub	perennial	maple-leaved viburnum
Viburnum lentago	Adoxaceae	VIBLEN	native	4	0	shrub	perennial	nannyberry
Viburnum opulus	Adoxaceae	VIBOPU	non-native	0	-3	shrub	perennial	european highbush-cranberry
Vicia villosa	Fabaceae	VICVIL	non-native	0	5	vine	annual	hairy vetch
Viola cucullata	Violaceae	VIOCUC	native	5	-5	forb	perennial	marsh violet
Viola labradorica; v. conspersa	Violaceae	VIOLAB	native	3	0	forb	perennial	dog violet
Viola pubescens	Violaceae	VIOPUB	native	4	3	forb	perennial	yellow violet
Vitis riparia	Vitaceae	VITRIP	native	3	0	vine	perennial	river-bank grape
Wolffia columbiana	Araceae	WOLCOL	native	5	-5	forb	perennial	common water meal