

**GROUNDWATER-DEPENDENT ECOSYSTEM (GDE) AND ASSOCIATED RARE SPECIES SURVEYS, HIAWATHA  
NATIONAL FOREST, MI: SUMMARY OF 2013 – 2015 ACTIVITIES**



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**FOR:**

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Cover photograph: Patterned fen, Pointe aux Chenes, Mackinac Co., MI, August 26, 2014.  
Photo by Bradford S. Slaughter.

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## Introduction

In 2012, the United States Forest Service, in partnership with The Nature Conservancy, Oregon Chapter published *Groundwater-dependent Ecosystems: Level I Inventory Field Guide* and *Groundwater-dependent Ecosystems: Level II Inventory Field Guide* to improve the awareness and management of groundwater-dependent ecosystems (GDEs) (USDA 2012a, b). These field guides describe standardized protocols for the collection of data on the location, extent, characterization, and condition of GDEs for use in project development and planning, particularly on national forest lands affected or potentially pressured by a variety of societal needs such as water, minerals, and energy, and other land use activities such as livestock grazing, road and trail management, and ecological restoration activities (USDA 2012a, b). Specifically, the field guide focuses on a subset of GDEs consisting of springs, peatlands, and a variety of other minerogenic wetlands formed where groundwater is in contact with mineral soils or bedrock (USDA 2012a, b).

The Hiawatha National Forest (HNF) encompasses ca. 895,000 acres (362,000 ha) in the eastern Upper Peninsula of Michigan. Much of the HNF occurs on poorly drained lakeplain and outwash soils, with extensive wetlands (Albert 1995). Among the 77 natural community types described by Cohen et al. (2015), 20 types (26%) potentially fall within the category of groundwater-dependent wetlands on the Hiawatha National Forest, including five types (*italicized* below) that are less characteristic but sometimes encompass minerogenic zones:

- Submergent marsh
- Emergent marsh
- Great Lakes marsh
- Northern wet meadow
- Intermittent wetland
- Interdunal wetland
- Northern fen
- Coastal fen
- Patterned fen
- Poor fen
- ***Bog***
- ***Muskeg***
- Northern shrub thicket
- ***Poor conifer swamp***
- Rich conifer swamp
- Rich tamarack swamp
- Hardwood-conifer swamp
- Northern hardwood swamp
- ***Floodplain forest***
- ***Wooded dune and swale complex***



Of particular note on the Hiawatha National Forest is the presence of extensive peatlands, one of the foci of the GDE field guides. Among these peatlands are ombrogenous or weakly minerotrophic bogs, muskegs, and poor conifer swamps, and minerotrophic fens, including state imperiled (S2) coastal fen and patterned fen and state vulnerable (S3) northern fen and poor fen (Cohen et al. 2015).

In 2013, Michigan Natural Features Inventory (MNFI) worked with HNF staff to develop a plan to conduct Level I and Level II GDE inventories on HNF lands. We decided to focus our efforts on three of the four aforementioned non-forested fen types (northern fen, patterned fen, and poor fen), all of which were considered to be underrepresented in the MNFI natural heritage database (NHD). In addition, these fen ecosystems are known to support several rare plant and animal taxa, including federally listed taxa such as the endangered *Somatochlora hineana* (Hine's emerald dragonfly) and threatened *Solidago houghtonii* (Houghton's goldenrod) and undersurveyed state-listed species such as the endangered *Rubus acaulis* (dwarf raspberry) and special concern *Somatochlora incurvata* (incurvate emerald). The objectives of the peatland inventories were to (1) conduct GDE Level I and partial Level II analyses of targeted peatlands, including natural community classification, characterization of hydrogeological setting and vegetation, and threats assessments; (2) update existing natural community element occurrences (EOs) and document new occurrences of targeted peatland types; and (3) conduct rare species surveys, focusing on vascular plants and dragonflies.

## Methods

### *Site Identification*

In winter 2013 we reviewed aerial imagery and identified ca. 35 open peatlands on HNF lands for potential survey, focusing on potentially high quality examples of northern fen, patterned fen, poor fen, and muskeg that had not been previously surveyed and/or entered into the NHD. Potential survey sites were also identified by HNF staff.

### *GDE Inventories and Natural Community Surveys*

Field surveys were conducted in August 2013, August 2014, and August 2015. GDE Level I and Level II inventories involved meander surveys of field sites and the location of reference points, at which data on vegetative composition, soils, and water table depth were collected. In addition, we compiled comprehensive vascular plant species lists and lists of observed animals, identified disturbances (e.g., hydrologic alteration, soil alteration, recreational effects), and completed the USFS Management Indicator Tool for each site (Appendix A). MNFI natural community field survey forms were also completed for each site. In addition to the aforementioned data collected for the GDE Level I and Level II inventories, natural community surveys included:

- Describing site-specific structural attributes and ecological processes
- Measuring tree diameter at breast height (DBH) of representative canopy trees
- Evaluating potential threats
- Ground-truthing aerial photographic interpretation using GPS (Ashtech Mobile Mapper 10 and Android tablet units were utilized)

- Taking digital photos and GPS points at significant locations
- Surveying adjacent lands when possible to assess landscape context
- Evaluating the natural community classification (following Cohen et al. 2015) and mapped ecological boundaries
- Assigning or updating element occurrence ranks

Following completion of field surveys, natural community element occurrence data was processed and entered into the MNFI NHD.

#### *Rare Species Surveys*

Meander surveys for rare species were conducted at all field sites. Voucher specimens were collected from previously undocumented populations of rare plants and deposited at the University of Michigan Herbarium (MICH). Populations of previously documented rare plant populations were photo-documented when rediscovered. Dragonfly voucher specimens were collected and will be deposited at the Michigan State University Albert J. Cook Arthropod Research Collection (ARC).

## **Results**

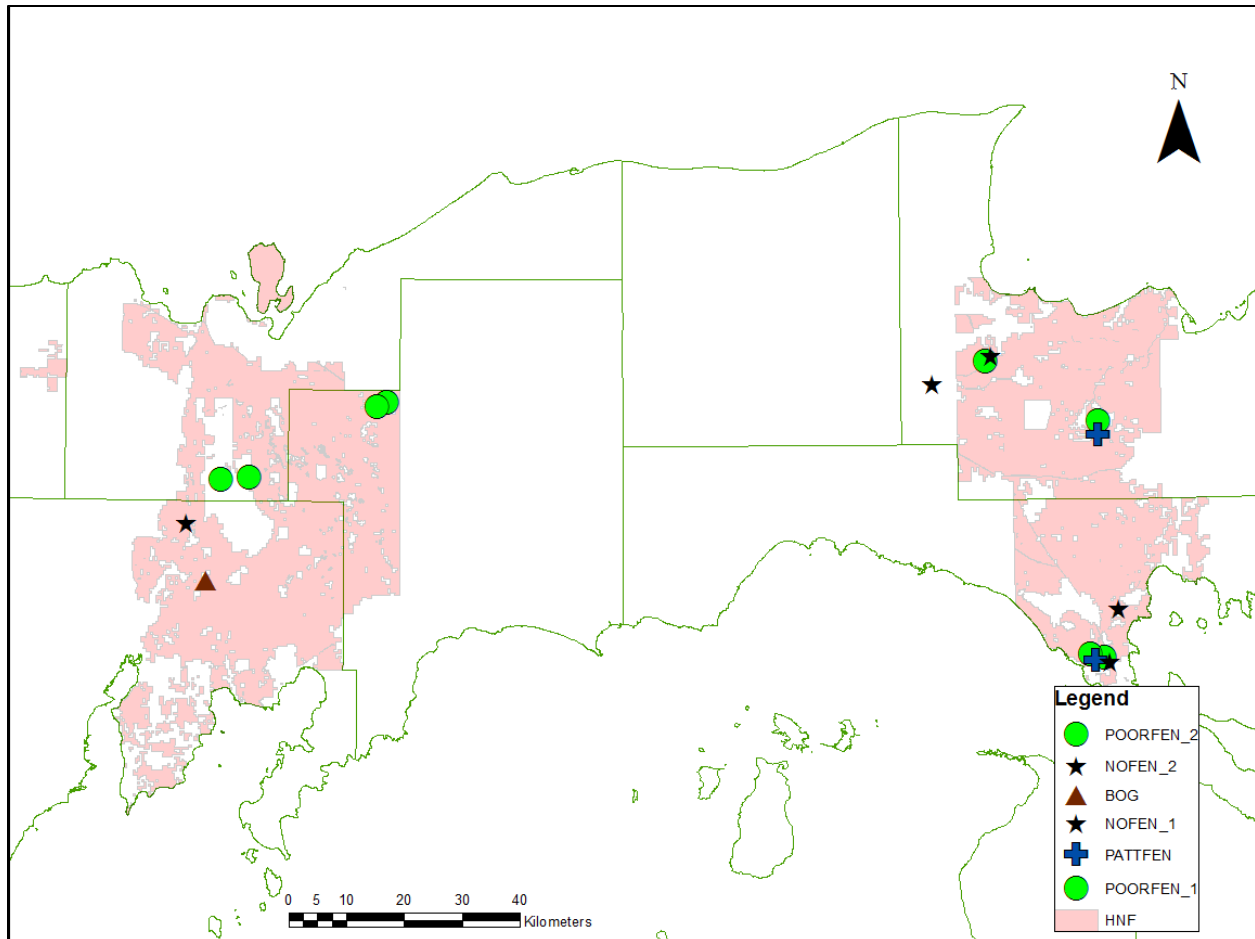
#### *GDE Inventories and Natural Community Surveys*

From 2013 – 2015, we surveyed 17 peatland element occurrences, including six northern fens (four new EOs), two patterned fens (one new EO), eight poor fens (six new EOs), and one bog (new EO) (Figure 1; Table 1). Collectively, these 17 occurrences comprise 2,831 acres (1,146 ha, or 4.4 square miles), including 2,205 ac (892 ha, or 78%) on HNF ownership. Site descriptions and Floristic Quality Assessments are provided in Appendix B.

#### *Rare Species Surveys*

Seven previously documented rare plant populations were resurveyed, including one population each of *Amerorchis rotundifolia* (round-leaved orchis), *Carex heleonastes* (Hudson Bay sedge), and *Drosera anglica* (English sundew), and two populations each of *Juncus stygius* (moor rush) and *Rubus acaulis* (dwarf raspberry) (Table 1). The populations of round-leaved orchis, English sundew, and dwarf raspberry were reconfirmed, but the populations of Hudson Bay sedge and moor rush were not observed despite careful surveys. In addition to these updates, three new populations of state-listed plants were documented, including one population each of the endangered dwarf raspberry, special concern *Carex billingsii* (Billings' sedge), and special concern *Spinulum canadense* (clubmoss) (Figure 2; Table 1).

Three previously documented populations of *Somatochlora incurvata* (incurvate emerald) were resurveyed (Table 1) and EO ranks were updated. In addition, six new occurrences were documented, including three sites with ranks of A or AB.



**Figure 1.** Distribution of peatland survey sites, eastern Upper Michigan, 2013 – 2015.

## Discussion and Recommendations

### *GDE Inventories and Natural Community Surveys*

To date, 29 fens encompassing 5,660 acres (2,290 ha, or 9 square miles) on HNF lands have been surveyed and entered into the MNFI NHD. Sixteen of these sites were surveyed from 2013 – 2015, including 11 new EOs. Among these EOs are one coastal fen, six patterned fens, 10 poor fens, and 12 northern fens. Several priority sites have yet to be inventoried, including two or three patterned fens. Additional unsurveyed peatlands supporting more common peatland natural communities (e.g., poor fen, muskeg) cover thousands of additional acres within HNF, particularly in southwestern Chippewa County, western Schoolcraft County, and northeastern Delta County. Because GDEs cover extensive acreage on the HNF, we recommend a targeted approach for future survey work that emphasizes identifying and surveying a subset of uncommon, vulnerable GDE types:

- (1) Continued aerial photographic interpretation to identify examples of coastal fen, northern fen, and patterned fen on HNF lands
- (2) Natural community surveys of all potential coastal fens, northern fens, and patterned fens identified via aerial photographic interpretation or other resources

- (3) GDE Level I and partial Level II surveys (see Methods) of GDEs potentially impacted by proposed projects
- (4) The establishment of permanent monitoring plots in selected GDEs, emphasizing collection of data on vegetative structure and composition, soil characteristics, and hydrology



**Figure 2.** The state special concern *Carex billingsii* (Billings' sedge) forms dense, fine tufts on low sphagnum hummocks in acidic bog habitats.

### *Rare Species Surveys*

Only ca. 20 rare vascular plant taxa, or 5% of the listed taxa of Michigan, are known to occur in coastal fen, northern fen, patterned fen, and poor fen (MNFI 2007). Among these fen communities, highly calcareous marl fens in the Mackinac Straits region are particularly rich in rare plant populations, supporting several taxa that are absent in fens developed over deeper soils where limestone bedrock is not close to the surface, such as *Empetrum nigrum* (black crowberry), *Erigeron hyssopifolius* (hyssop-leaved fleabane), and *Pinguicula vulgaris* (butterwort) (MNFI 2016). Interior northern fens, patterned fens, and poor fens support high numbers of conservative taxa but low richness of rare species (MNFI 2016; see Appendix B). However, these natural communities appear to be strongholds for at least four plant taxa: *Drosera anglica* (English sundew), *Juncus stygius* (moor rush), *Petasites sagittatus* (sweet-coltsfoot), and *Rubus acaulis* (dwarf raspberry); and one rare dragonfly, *Somatochlora incurvata*



(incurvate emerald) (MNFI 2016). During our 2013 – 2015 dragonfly surveys, we found incurvate emeralds at most sites when the survey conditions were adequate (sunny, warm days with low winds). The documentation of incurvate emerald on many of the survey sites will likely lead to the recommendation for this species to be removed from the state special concern and the Forest Sensitive Species lists. For future rare species work, we recommend:

- (1) Resurveys of known populations of rare peatland plants on HNF, particularly of species not targeted during 2013 – 2015 surveys (e.g., black crowberry), focusing on improving estimates of population size, distribution, and threats
- (2) Resurvey of known populations of rare peatland insects during the early season on HNF, particularly of species not targeted during 2013 – 2015 surveys (e.g., peatland butterflies and ebony boghaunter, *Williamsonia fletcheri*) focusing on improving estimates of relative population size, distribution, and threats.
- (3) Targeted *de novo* surveys for rare plant and animal taxa
- (4) The establishment of permanent monitoring plots at selected populations of rare plant taxa

### **Acknowledgements**

Several current and former Hiawatha National Forest staff assisted with the development and implementation of peatland surveys, including Kirk Piehler, Jim Gries, Danding Gan, and Deb LeBlanc. Administrative support was provided by Brian Klatt, Nancy Toben and Sue Ridge of MNFI. Rebecca Rogers (MNFI) assisted with processing new and updated entries into the MNFI natural heritage database.

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**Table 1.** Hiawatha National Forest peatland and TES species element occurrences identified 2013 – 2015. **Bold EOID** indicates new EO.

Site	Unit	County	Central TRS	Natural Community (EOID)	EO Rank	TES Species (EOID)	Acres (Acres HNF)
Eckerman Fen	E	Chippewa	T46N R06W S15	Northern Fen (17873)	AB	<i>Rubus acaulis</i> (18707), <i>Spinulum canadense</i> ( <b>20544</b> ), <i>Somatochlora incurvata</i> (5323)	165.0
St. Ignace – Trout Lake Trail	E	Mackinac	T41N R04W S34	Northern Fen ( <b>19457</b> )	B		108.7 (101.4)
Satago Lake	E	Mackinac	T42N R04W S36	Northern Fen ( <b>19926</b> )	B	<i>Somatochlora incurvata</i> ( <b>19905</b> )	20.1 (18.3)
Hulbert Fen <sup>1</sup>	E	Chippewa	T46N R07W S34	Northern Fen ( <b>20371</b> )	A	<i>Rubus acaulis</i> ( <b>20410</b> ), <i>Somatochlora incurvata</i> ( <b>20551</b> )	139.6 (0)
Pointe aux Chenes	E	Mackinac	T41N R04W S33	Patterned Fen (11084)	AB	<i>Juncus stygius</i> <sup>2</sup> (13160)	98.5
Forest Road 3136	E	Chippewa	T45N R04W S34	Patterned Fen ( <b>19906</b> )	B		80.4 (21.0)
Pine River Complex	E	Chippewa	T45N R04W S34	Poor Fen (17347)	AB	<i>Somatochlora incurvata</i> (20073)	328.5 (266.3)
Pointe aux Chenes	E	Mackinac	T41N R04W S29	Poor Fen (19959*)	AB	<i>Somatochlora incurvata</i> ( <b>20553</b> )	668.6 (629.0)
Castle Rock Road SW	E	Mackinac	T41N R04W S34	Poor Fen ( <b>19960</b> )	C	<i>Somatochlora incurvata</i> (14379)	37.0
Eckerman Fen	E	Chippewa	T46N R06W S15	Poor Fen ( <b>19961</b> )	B	<i>Rubus acaulis</i> (18707), <i>Somatochlora incurvata</i> (5323)	42.2 (40.4)
McDonald Lake S	W	Delta	T42N R20W S15	Bog ( <b>20370</b> )		<i>Carex billingsii</i> ( <b>20496</b> )	12.4
Upper Eighteenmile Lake cRNA	W	Delta	T43N R20W S17	Northern Fen ( <b>19458</b> )	BC	<i>Juncus stygius</i> <sup>2</sup> (12983)	5.9



Site	Unit	County	Central TRS	Natural Community (EOID)	EO Rank	TES Species (EOID)	Acres (Acres HNF)
<b>Shingleton Fen</b>	W	Schoolcraft	T45N R17W S06	Northern Fen (20543*)	B	<i>Amerorchis rotundifolia</i> (8929), <i>Carex heleonastes</i> <sup>2</sup> (133), <i>Drosera anglica</i> (4410), <i>Rubus acaulis</i> (10389)	155.7 (130.8)
<b>Old Plank Road</b>	W	Alger	T44N R19W S20	Poor Fen ( <b>19459</b> )	B	<i>Somatochlora incurvata</i> ( <b>20556</b> )	305.4 (187.2)
<b>Hickey Creek Truck Trail South</b>	W	Schoolcraft	T45N R17W S10	Poor Fen ( <b>19962</b> )	B	<i>Somatochlora incurvata</i> ( <b>20557</b> )	71.5
<b>Hickey Creek Truck Trail North</b>	W	Schoolcraft	T45N R17W S11	Poor Fen ( <b>19963</b> )	AB	<i>Somatochlora incurvata</i> ( <b>20557</b> )	276.3
<b>Lake Stella NE</b>	W	Alger	T44N R20W S23	Poor Fen ( <b>20369</b> )	B	<i>Somatochlora incurvata</i> ( <b>20555</b> )	315.5 (65.3)

<sup>1</sup>Lake Superior State Forest adjacent to Hiawatha National Forest

<sup>2</sup>Negative survey

\*Reclassified from existing EO

**Appendix A. USFS GDE Level I Inventory Management Indicator Tool.**

## Forest Service GDE Level I Inventory

### Management Indicator Tool (p. \_\_)

Management Indicators	True (Yes)	False (No)	Does not apply	Unable to assess	Comment
<b>Hydrology</b>					
1. <i>Aquifer Functionality</i> : No evidence suggests that the aquifer supplying groundwater to the site is being affected by groundwater withdrawal or loss of recharge.					
2. <i>Watershed Functionality</i> : Within the watershed, no evidence suggests upstream/upgradient hydrologic alteration that could adversely affect the GDE site.					
3. <i>Water Quality</i> : Changes in water quality (surface or subsurface) are not affecting the groundwater dependent ecosystem site.					
<b>Geomorphology and Soils</b>					
4. <i>Landform Stability</i> : No evidence indicates human-caused mass movement or other surface disturbance affecting the GDE site stability.					
5. <i>Runout Channel</i> : The channel, if present, is functioning naturally and is not entrenched, eroded, or otherwise substantially altered.					
6. <i>Soil Integrity</i> : Soils are intact and functional. For example, saturation is sufficient to maintain hydric soils, if present; there is not excessive erosion or deposition.					
<b>Biology</b>					
7. <i>Vegetation Composition</i> : The site includes anticipated cover of plant species associated with the site environment, and no evidence suggests that upland species are replacing hydric species.					
8. <i>Vegetation Condition</i> : Vegetation exhibits seasonally appropriate health and vigor.					
9. <i>TES, SOI/SOC, Focal Floral Species</i> : Anticipated floral species are present (will vary by ecological region and will require some baseline information).					
10. <i>Faunal Species</i> : Anticipated aquatic and terrestrial faunal species associated with the site environment are present.					
11. <i>TES, SOI/SOC, Focal Faunal Species</i> : Anticipated faunal species are present (will vary by ecological region and will require some baseline information).					
12. <i>Invasive Species</i> : Invasive floral and faunal species are not established at the site.					

### Forest Service GDE Level I Inventory

Management Indicators	True (Yes)	False (No)	Does not apply	Unable to assess	Comment
<b>Disturbances</b>					
13. <i>Flow Regulation:</i> Flow regulation is not adversely affecting the site.					
14. <i>Construction and Road Effects:</i> Construction, reconstruction, or maintenance of physical improvements, including roads, is not adversely affecting the site.					
15. <i>Fencing Effects:</i> Protection fencing and exclosures are appropriate and functional.					
16. <i>Herbivore Effects:</i> Herbivory is not adversely affecting the site.					
17. <i>Recreational Effects:</i> Recreational uses, including trails, are not adversely affecting the site.					
18. <i>Other Disturbance Effects:</i> Wildland fire, insect, disease, wind throw, avalanches, or other disturbances are not adversely affecting the site.					
<b>Administrative Context</b>					
19. <i>Cultural Values:</i> Archaeological, historical, or tribal values will not affect inventory, restoration, use, or management of this site.					
20. <i>Land Ownership:</i> The entire site and immediate area is under the jurisdiction and management of the Forest Service.					
21. <i>Other Landonner Actions:</i> Activities or management on lands outside Forest Service jurisdiction are not adversely affecting the site.					
22. <i>Land Management Plan:</i> The land and resource management Plan provides for effective site protection.					
23. <i>Environmental Compliance:</i> Authorized and administrative uses are in compliance and are not adversely affecting the site.					
24. <i>Water Uses:</i> There are no substantial water uses in the watershed, or in the aquifer supplying groundwater to the site, that could directly or cumulatively adversely affect the GDE.					
25. <i>Water Rights:</i> Water rights have been filed for the site under state law or water uses exempted under state law are documented. Forest Service federal reserved rights are documented as appropriate. Third-party water use is in accordance with all elements of the water right or conditions of the exemption, and with the Forest Service authorization that allows the use of					

## **Appendix B. Site Descriptions and Floristic Quality Assessments.**

**Site:** Eckerman Fen  
**Community Type:** Northern Fen  
**EOID:** 17873  
**County:** Chippewa  
**Central TRS:** T46N R06W S15  
**Size:** 165.0 acres  
**EO Rank:** AB

### Setting

A northern fen complex situated on poorly drained glacial lakeplain, surrounded by rich conifer swamp and mesic northern forest in a heavily forested landscape.

### Soils

The fen is developed on slightly acidic to mildly alkaline (pH= 6.5-7.5), shallow to deep, primarily hemic sedge and mixed peats.

### Natural Processes

The northern fen openings are influenced by groundwater discharge and drainage and seasonal ponding, which restrict the growth of the stunted conifers scattered within the site and favor the dominant sedges and subdominant low shrubs. Sphagnum-capped hummocks provide microsites suitable for species typical of acidic conditions, whereas the majority of the vegetation is rooted in peat saturated by calcareous groundwater.

### Anthropogenic Disturbances and Threats

The only anthropogenic disturbance noted was winter-cut cedar stumps at the northeastern margin of the fen opening. No invasive plants were noted within the fen.

### Vegetation

The eastern large opening was surveyed in 2013. This opening is dominated by sedges, especially *Carex stricta* (tussock sedge), *C. flava* (yellow sedge), *C. lasiocarpa* (wiregrass sedge), *Trichophorum cespitosum* (tufted bulrush), *T. alpinum* (alpine bulrush), and *Rhynchospora alba* (white beak-rush) and *Eleocharis elliptica* (golden-seeded spike-rush) in depressions and wet flats. Other common herbaceous species include *Solidago uliginosa* (bog goldenrod), *Sarracenia purpurea* (pitcher-plant), *Doellingeria umbellata* (flat-topped white aster), *Osmunda regalis* (royal fern), *Viola nephrophylla* (northern bog violet), *Drosera rotundifolia* (round-leaved sundew), *Eriophorum angustifolium* (narrow-leaved cotton-grass), *Valeriana uliginosa* (bog valerian), and *Lobelia kalmii* (Kalm's lobelia). Low shrubs and dwarf conifers are subdominant in much of the fen. Characteristic woody species include *Larix laricina* (tamarack), *Thuja occidentalis* (northern white-cedar), *Dasiphora fruticosa* (shrubby cinquefoil), *Alnus incana* (tag alder), *Chamaedaphne calyculata* (leatherleaf), *Rhododendron groenlandicum* (Labrador-tea), *Lonicera villosa* (mountain fly honeysuckle), *Andromeda glaucophylla* (bog rosemary), *Myrica gale*



(sweet gale), *Betula pumila* (bog birch), and *Vaccinium oxycoccos* (small cranberry). *Sphagnum* spp. are common on hummocks.



*Scheuchzeria palustris* (arrow-grass) is locally common in wet sedge flats.

**Eckerman Northern Fen (Hiawatha NF)**

08/21/2013

Eckerman Fen

Eckerman

Chippewa

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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>

FQA DB Description:

Practitioner:

Brad Slaughter, Dave Cuthrell

Latitude:

46.3813

Longitude:

-85.0343

Weather Notes:

hazy, ~84F

Duration Notes:

Community Type Notes:

northern fen (EOID 17873; SE opening)

Other Notes:

Conservatism-Based Metrics:

Total Mean C: 6.8

Native Mean C: 6.8

Total FQI: 52.2

Native FQI: 52.2

Adjusted FQI: 68

% C value 0: 0

% C value 1-3: 6.8

% C value 4-6: 40.7

% C value 7-10: 52.5

Native Tree Mean C: 5

Native Shrub Mean C: 7

Native Herbaceous Mean C: 6.9

Species Richness:

Total Species:	59	
Native Species:	59	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.4
Native Mean Wetness:	-3.4

Physiognomy Metrics:

Tree:	3	5.10%
Shrub:	13	22%
Vine:	0	0%
Forb:	30	50.80%
Grass:	1	1.70%
Sedge:	11	18.60%
Rush:	0	0%
Fern:	1	1.70%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	59	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	59	100%
Native Biennial:	0	0%

**Species:**

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	O
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	C
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Anemone quinquefolia	Ranunculaceae	ANEQUI	native	5	3	forb	perennial	wood anemone	O
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	LC

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Carex exilis	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	O
Carex flava	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge	C-LD
Carex gynocrates	Cyperaceae	CXGYNO	native	10	-5	sedge	perennial	sedge	U
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	C
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	C-LD
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C
Chelone glabra	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	U
Coptis trifolia	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	LO
Cornus canadensis	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	O
Cornus sericea; c. stolonifera	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier	U
Cypripedium parviflorum; c. calceolus	Orchidaceae	CYPPAR	native	5	0	forb	perennial	yellow lady-slipper	U
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	D-CD
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	C
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	C
Eleocharis elliptica	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	LC
Eriophorum angustifolium	Cyperaceae	ERiang	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	LC
Eriophorum tenellum	Cyperaceae	ERITEN	native	10	-5	sedge	perennial	cotton-grass	LC
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry	U
Gentiana rubricaulis	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	U
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	O
Juncus brevicaudatus	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	LC
Juncus canadensis	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	U
Juniperus horizontalis	Cupressaceae	JUNHOR	native	10	3	shrub	perennial	creeping juniper	U-LC
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	CD
Lilium philadelphicum	Liliaceae	LILPHI	native	7	0	forb	perennial	wood lily	LO
Linnaea borealis	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinflower	LC
Lobelia kalmii	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia	LC
Lonicera villosa	Caprifoliaceae	LONVIL	native	8	-3	shrub	perennial	mountain fly honeysuckle	C
Menyanthes trifoliata	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	U
Myrica gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	C
Oclemena nemoralis; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	LO
Osmunda regalis	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	C
Parnassia glauca	Parnassiaceae	PARGLA	native	8	-5	forb	perennial	grass-of-parnassus	U-LC
Picea mariana	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	U-LC

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Platanthera clavellata; habenaria c.	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	U
Pogonia ophioglossoides	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	LC
Polygala paucifolia	Polygalaceae	POLPAU	native	7	3	forb	perennial	gay-wings	U
Pyrola americana; p. rotundifolia	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	U-O
Rhododendron groenlandicum; ledum g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	C
Rhynchospora alba	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-LD
Rubus pubescens	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	LC
Sarracenia purpurea	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
Scheuchzeria palustris	Scheuchzeriaceae	SCHPAL	native	10	-5	forb	perennial	arrow-grass	LA
Solidago rugosa	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	C
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
Spiranthes cernua	Orchidaceae	SPICER	native	4	-3	forb	perennial	nodding ladies-tresses	O
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	CD
Trichophorum alpinum; scirpus hudsonianus	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	C
Trichophorum cespitosum; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C
Typha latifolia	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	LC
Utricularia intermedia	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	LC
Vaccinium oxycoccos	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
Valeriana uliginosa	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian	LC-U
Viola nephrophylla	Violaceae	VIONEP	native	8	-3	forb	perennial	northern bog violet	C

**Site:** St. Ignace – Trout Lake Trail  
**Community Type:** Northern Fen  
**EOID:** 19457  
**County:** Mackinac  
**Central TRS:** T41N R04W S34  
**Size:** 108.7 acres  
**EO Rank:** B

### Setting

A large sedge- and shrub-dominated rich fen in a wide swale at the northeastern margin of an extensive wooded dune and swale complex on glacial lakeplain in a primarily natural, heavily forested landscape impacted by urban and rural development (in and near St. Ignace), roads, and utility corridors.

### Soils

The fen is situated on deep, primarily hemic, slightly acid to neutral (pH= 6.5-7.0) sedge peats.

### Natural Processes

Groundwater seepage emanates from forested beach ridges and dunes at the north margin of the complex and is enriched by the presence of limestone at shallow depths. Tree growth is slowed as a result of peat saturation, resulting in dwarfed conifers throughout much of the site. Colonization of hummocks by sphagnum mosses provides acidic microhabitats within the fen.

### Anthropogenic Disturbances and Threats

The primary disturbance to the site is the St. Ignace - Trout Lake rail trail that bisects the open fen, impacting local hydrology and providing a corridor for invasive species, although no species of significance were noted in the open fen.

### Vegetation

Sedge- and shrub-dominated rich fen with scattered, stunted *Thuja occidentalis* (northern white-cedar) and *Larix laricina* (tamarack) and, less commonly, *Picea mariana* (black spruce) and *Pinus strobus* (white pine). Sedge-dominated flats and low hummocks are generally dominated by *Carex lasiocarpa* (wiregrass sedge), associated with *Rhynchospora alba* (white beak-rush, which is co-dominant in wet depressions), *Carex livida* (livid sedge), *C. exilis* (coastal sedge), *Trichophorum cespitosum* (tufted bulrush), *T. alpinum* (alpine bulrush), *Equisetum fluviatile* (water horsetail), *Sarracenia purpurea* (pitcher-plant), *Osmunda regalis* (royal fern), *Solidago uliginosa* (bog goldenrod), *Oclemena nemoralis* (bog aster), *Muhlenbergia glomerata* (marsh wild-timothy), *Pyrola americana* (round-leaved pyrola), and *Pogonia ophioglossoides* (rose pogonia). Shrubs occur primarily on hummocks, many Sphagnum-capped; common species include *Chamaedaphne calyculata* (leatherleaf), *Dasiphora fruticosa* (shrubby cinquefoil), *Alnus incana* (tag alder; mostly dwarfed), *Rhododendron groenlandicum* (Labrador-tea), *Andromeda glaucophylla* (bog rosemary), *Aronia prunifolia* (chokeberry), *Myrica gale* (sweet gale), and



*Vaccinium oxycoccos* (small cranberry). Conifer and shrub "tails" that separate some of the fen openings in the western portion of the site are dominated by northern white-cedar, black spruce, tamarack, tag alder, *Viburnum cassinoides* (wild-raisin), leatherleaf, Labrador-tea, *Vaccinium angustifolium* (low sweet blueberry), royal fern, water horsetail, and wiregrass sedge.



Stunted and contorted conifers such as this northern white-cedar are characteristic of the St. Ignace – Trout Lake Northern Fen.

**St. Ignace - Trout Lake Rail Trail Northern Fen (Hiawatha NF)**

08/20/2013

St. Ignace-Trout Lk RT

Mackinac

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:

Brad Slaughter, Dave Cuthrell

Latitude:

45.9023

Longitude:

-84.7802

Weather Notes:

clear, ~85F

Duration Notes:

Community Type Notes:

northern fen (EOID 19457)

Other Notes:

Also noted: *Platanthera* sp., *Viola* sp.

Conservatism-Based Metrics:

Total Mean C:

6.4

Native Mean C:

6.5

Total FQI:

59.4

Native FQI:

59.9

Adjusted FQI:

64.6

% C value 0:

1.2

% C value 1-3:

12.8

% C value 4-6:

39.5

% C value 7-10:

46.5

Native Tree Mean C:

3.5

Native Shrub Mean C:

6.2

Native Herbaceous Mean C:

6.9

Species Richness:

Total Species:	86	
Native Species:	85	98.80%
Non-native Species:	1	1.20%

Species Wetness:

Mean Wetness:	-3.6
Native Mean Wetness:	-3.6

Physiognomy Metrics:

Tree:	6	7%
Shrub:	21	24.40%
Vine:	0	0%
Forb:	35	40.70%
Grass:	4	4.70%
Sedge:	16	18.60%
Rush:	0	0%
Fern:	4	4.70%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	86	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	85	98.80%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	U
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	C

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	O
Calopogon tuberosus	Orchidaceae	CALTUB	native	9	-5	forb	perennial	grass-pink	U
Caltha palustris	Ranunculaceae	CALPAR	native	6	-5	forb	perennial	marsh-marigold	U
Campanula aparinoides	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	U-O
Carex buxbaumii	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge	U
Carex exilis	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	LC
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	O
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
Carex limosa	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	O
Carex livida	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
Carex sterilis	Cyperaceae	CXSTER	native	10	-5	sedge	perennial	sedge	LC
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	O
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-D
Cicuta bulbifera	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	U
Cladium mariscoides	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	O
Comarum palustre; potentilla p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	U-LO
Coptis trifolia	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	U-LO
Cornus canadensis	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	U-LO
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	C
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	LC-U
Drosera intermedia	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	U
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	C
Dulichium arundinaceum	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	LC-U
Eleocharis elliptica	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	LC
Epilobium leptophyllum	Onagraceae	EPILEP	native	6	-5	forb	perennial	fen willow-herb	U
Epipactis helleborine	Orchidaceae	EPIHEL	non-native	0	0	forb	perennial	helleborine	R
Equisetum fluviatile	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	C
Eriophorum angustifolium	Cyperaceae	ERiang	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	O-C
Eriophorum virginicum	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	U
Eutrochium maculatum; eupatorium m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	U

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Gaultheria hispidula</i>	Ericaceae	GAUHis	native	8	-3	shrub	perennial	creeping-snowberry	U-LO
<i>Gaultheria procumbens</i>	Ericaceae	GAUPRO	native	5	3	shrub	perennial	wintergreen	U
<i>Ilex mucronata</i> ; <i>nemopanthus m.</i>	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	LO
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	O
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	LC
<i>Kalmia polifolia</i>	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	O
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C-LCD
<i>Lilium philadelphicum</i>	Liliaceae	LILPHI	native	7	0	forb	perennial	wood lily	R
<i>Lobelia kalmii</i>	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia	LO-U
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U-LO
<i>Maianthemum canadense</i>	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower	U
<i>Menyanthes trifoliata</i>	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	LC
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	O-C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LC
<i>Nymphaea odorata</i>	Nymphaeaceae	NYMODO	native	6	-5	forb	perennial	sweet-scented waterlily	LC
<i>Oclemena nemoralis</i> ; <i>aster n.</i>	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
<i>Osmunda cinnamomea</i>	Osmundaceae	OSMCIN	native	5	-3	fern	perennial	cinnamon fern	LO
<i>Osmunda regalis</i>	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	C
<i>Phragmites australis</i> var. <i>americanus</i>	Poaceae	PHRAUM	native	5	-3	grass	perennial	reed	LC
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	O-U
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	U
<i>Platanthera clavellata</i> ; <i>habenaria c.</i>	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	U-O
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	C
<i>Pyrola americana</i> ; <i>p. rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	C
<i>Rhododendron groenlandicum</i> ; <i>ledum g.</i>	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	C
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-LCD
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	LC
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	U
<i>Salix lucida</i>	Salicaceae	SALLUC	native	3	-3	shrub	perennial	shining willow	U
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	U
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	LO
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Spiraea alba</i>	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	U
<i>Symphotrichum boreale</i> ; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	O
<i>Thelypteris palustris</i>	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern	LC
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C-D
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	U
<i>Triantha glutinosa</i> ; tofieldia g.	Melanthiaceae	TRIGLU	native	10	-5	forb	perennial	false asphodel	U
<i>Trichophorum alpinum</i> ; scirpus hudsonianus	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	LC
<i>Trichophorum cespitosum</i> ; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C-LCD
<i>Trientalis borealis</i>	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	U-LO
<i>Triglochin maritima</i>	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	U
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	U-LC
<i>Utricularia cornuta</i>	Lentibulariaceae	UTRCOR	native	10	-5	forb	perennial	horned bladderwort	LO
<i>Utricularia intermedia</i>	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	LO
<i>Vaccinium angustifolium</i>	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	LC
<i>Vaccinium myrtilloides</i>	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	LC
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	LC



**Site:** Satago Lake Fen  
**Community Type:** Northern Fen  
**EOID:** 19926  
**County:** Mackinac  
**Central TRS:** T42N R04W S36  
**Size:** 20.1 acres  
**EO Rank:** B

### Setting

Lakeshore fen, marl flats, and marl seeps on the south side of Satago Lake grading into northern wet meadow and northern shrub thicket on the east and west sides of the lake.

### Soils

Soils range from deep, moderately alkaline (pH= 8.0-8.2) marl beds streaked with organic matter to accumulations of medium acid to mildly alkaline (pH= 5.8-7.5) hemic peat over sand. Locally, mossy hummocks provide more acidic microhabitats.

### Natural Processes

This fen is developing in a shallow lake basin. Numerous groundwater discharge zones are present at the upper margin of the fen, with marl pools and rivulets draining towards the lake. Peat has accumulated to significant depths in between these marl seeps. Acidic microhabitats are not well-developed compared to similar but older fens in the surrounding area.

### Anthropogenic Disturbances and Threats

The surrounding forest has been impacted by historic logging. Deer browse and the invasive *Cirsium palustre* (marsh thistle) are threats, although they primarily impact the adjacent forest.

### Vegetation

Marl flats are dominated by *Eleocharis rostellata* (beaked spike-rush), *Cladium mariscoides* (twig-rush), and *Schoenoplectus acutus* (hardstem bulrush) with locally abundant *Eleocharis quinqueflora* (few-flowered spike-rush); rises and mossy hummocks support dwarfed *Thuja occidentalis* (northern white-cedar), *Dasiphora fruticosa* (shrubby cinquefoil), and *Myrica gale* (sweet gale). Additional herbaceous species include *Solidago uliginosa* (bog goldenrod), *Symphyotrichum boreale* (northern bog aster), *Spiranthes cernua* (nodding ladies'-tresses), *Muhlenbergia glomerata* (marsh wild-timothy), and *Lobelia kalmii* (Kalm's lobelia). Hummocky upper margins of the marl seeps are characterized by sweet gale, *Rhododendron groenlandicum* (Labrador-tea), *Gaylussacia baccata* (huckleberry), stunted northern white-cedar, *Drosera rotundifolia* (round-leaved sundew), *Linnaea borealis* (twinline), *Cornus canadensis* (bunchberry), marsh wild-timothy, *Gentianopsis virgata* (small fringed gentian), *Primula mistassinica* (bird's-eye primrose), *Solidago rugosa* (rough-leaved goldenrod), bog goldenrod, *Viola nephrophylla* (northern bog violet), Kalm's lobelia, and *Sphagnum* spp. Elevated bands of northern

white-cedar, *Larix laricina* (tamarack), shrubby cinquefoil, sweet gale, and *Carex flava* (yellow sedge) occur in between the marl seeps. *Chara* spp. (stoneworts) are locally abundant in rivulets through the marl beds.



Satago Lake Fen supports several marl seeps separated by elevated bands of dwarfed conifers and shrubs on elevated drier peats.

**Satago Lake Northern Fen (Hiawatha NF)**

08/27/2014

Satago Lake

Mackinac

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:

Brad Slaughter, Dave Cuthrell

Latitude:

45.985

Longitude:

-84.7561

Weather Notes:

Duration Notes:

Community Type Notes:

Northern fen (EOID 19926)

Other Notes:

Conservatism-Based Metrics:

Total Mean C:

6

Native Mean C:

6.1

Total FQI:

56

Native FQI:

56.2

Adjusted FQI:

60.3

% C value 0:

3.4

% C value 1-3:

17.2

% C value 4-6:

32.2

% C value 7-10:

47.1

Native Tree Mean C:

3.6

Native Shrub Mean C:

6.4

Native Herbaceous Mean C:

6.3

Species Richness:

Total Species:

87

Native Species: 85 97.70%  
 Non-native Species: 2 2.30%

Species Wetness:  
 Mean Wetness: -3.1  
 Native Mean Wetness: -3.1

Physiognomy Metrics:  
 Tree: 5 5.70%  
 Shrub: 20 23%  
 Vine: 1 1.10%  
 Forb: 41 47.10%  
 Grass: 4 4.60%  
 Sedge: 13 14.90%  
 Rush: 0 0%  
 Fern: 3 3.40%  
 Bryophyte: 0 0%

Duration Metrics:  
 Annual: 1 1.10%  
 Perennial: 85 97.70%  
 Biennial: 1 1.10%  
 Native Annual: 1 1.10%  
 Native Perennial: 84 96.60%  
 Native Biennial: 0 0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	U
Achillea millefolium	Asteraceae	ACHMIL	native	1	3	forb	perennial	yarrow	U
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	LO
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	LC
Campanula aparinoides	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	LO
Carex aquatilis	Cyperaceae	CXAQUA	native	7	-5	sedge	perennial	sedge	LC-LCD
Carex aurea	Cyperaceae	CXAURE	native	3	-3	sedge	perennial	sedge	U

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Carex buxbaumii	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge	U
Carex flava	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge	LC
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	O
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	LC-LD
Cirsium palustre	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial	marsh thistle	LO
Cladium mariscoides	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	C-CD
Comarum palustre; potentilla p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	LC
Cornus canadensis	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	LC
Cornus sericea; c. stolonifera	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier	U
Cypripedium parviflorum; c. calceolus	Orchidaceae	CYPPAR	native	5	0	forb	perennial	yellow lady-slipper	LO-LC
Cypripedium reginae	Orchidaceae	CYPREG	native	9	-3	forb	perennial	showy or queens lady-slipper	U
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	C-D
Dichanthelium lindheimeri; panicum l.	Poaceae	DICLID	native	8	-5	grass	perennial	panic grass	LC
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	C
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	LC
Eleocharis quinqueflora; e. pauciflora	Cyperaceae	ELEQUI	native	10	-5	sedge	perennial	spike-rush	C-A
Eleocharis rostellata	Cyperaceae	ELEROS	native	10	-5	sedge	perennial	spike-rush	D
Epipactis helleborine	Orchidaceae	EPIHEL	non-native	0	0	forb	perennial	helleborine	O
Equisetum arvense	Equisetaceae	EQUARV	native	0	0	fern	perennial	common horsetail	U
Euthamia graminifolia	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod	O
Eutrochium maculatum; eupatorium m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	O
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry	LC
Gaultheria hispidula	Ericaceae	GAUHis	native	8	-3	shrub	perennial	creeping-snowberry	LC
Gaylussacia baccata	Ericaceae	GAYBAC	native	7	3	shrub	perennial	huckleberry	U
Gentiana rubricaulis	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	U
Gentianopsis virgata; g. procera	Gentianaceae	GENVIR	native	8	-5	forb	annual	small fringed gentian	C
Hypericum kalmianum	Hypericaceae	HYPKAL	native	10	-3	shrub	perennial	kalms st. johns-wort	C
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	LC
Juncus brevicaudatus	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	U
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
Lathyrus palustris	Fabaceae	LATPAL	native	7	-3	vine	perennial	marsh pea	U
Linnaea borealis	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinflower	O-LC
Liparis loeselii	Orchidaceae	LIPLOE	native	5	-3	forb	perennial	loesels twayblade	C
Lobelia kalmii	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia	C
Lonicera oblongifolia	Caprifoliaceae	LONOB	native	8	-5	shrub	perennial	swamp fly honeysuckle	U
Lycopus uniflorus	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	C
Myrica gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	C-CD
Osmunda regalis	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	LO
Packera paupercula; senecio p.; senecio plattensis	Asteraceae	PACPAU	native	3	0	forb	perennial	balsam ragwort	LC
Persicaria amphibia; polygonum a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed	LC
Picea mariana	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	U
Polygala paucifolia	Polygalaceae	POLPAU	native	7	3	forb	perennial	gay-wings	O
Potentilla anserina	Rosaceae	POTANS	native	5	-3	forb	perennial	silverweed	LC
Primula mistassinica	Primulaceae	PRIMIS	native	10	-3	forb	perennial	birds-eye primrose	LA
Pyrola americana; p. rotundifolia	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	U
Rhamnus alnifolia	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn	O
Rhododendron groenlandicum; ledum g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	LC
Rhynchospora capillacea	Cyperaceae	RHYCAL	native	10	-5	sedge	perennial	beak-rush	LCD/LA
Rubus pubescens	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	U
Salix candida	Salicaceae	SALCAN	native	9	-5	shrub	perennial	hoary willow	U
Salix lucida	Salicaceae	SALLUC	native	3	-3	shrub	perennial	shining willow	LO
Schoenoplectus acutus; scirpus a.	Cyperaceae	SCHACU	native	5	-5	sedge	perennial	hardstem bulrush	C
Shepherdia canadensis	Elaeagnaceae	SHECAN	native	7	5	shrub	perennial	soapberry	U
Solidago ohioensis	Asteraceae	SOLOHI	native	8	-5	forb	perennial	ohio goldenrod	U
Solidago rugosa	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	C
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
Spiraea alba	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	C
Spiranthes cernua	Orchidaceae	SPICER	native	4	-3	forb	perennial	nodding ladies-tresses	C
Spiranthes romanzoffiana	Orchidaceae	SPIROM	native	8	-5	forb	perennial	hooded ladies-tresses	U
Symphotrichum boreale; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	O
Symphotrichum lateriflorum; aster l.	Asteraceae	SYMLAT	native	2	0	forb	perennial	calico aster	LC
Symphotrichum puniceum; aster p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	U
Thelypteris palustris	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern	LC
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C
Triadenum fraseri	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	O
Triantha glutinosa; tofieldia g.	Melanthiaceae	TRIGLU	native	10	-5	forb	perennial	false asphodel	C
Trichophorum alpinum; scirpus hudsonianus	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	LC
Trichophorum cespitosum; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	U
Trientalis borealis	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	U
Triglochin maritima	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	C
Triglochin palustris	Juncaginaceae	TRIPAL	native	8	-5	forb	perennial	slender bog arrow-grass	U

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Utricularia intermedia	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	O
Vaccinium angustifolium	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	LC
Vaccinium macrocarpon	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry	LC
Vaccinium myrtilloides	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	LO
Vaccinium oxycoccos	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	O
Viola nephrophylla	Violaceae	VIONEP	native	8	-3	forb	perennial	northern bog violet	LA

**Site:** Hulbert Fen  
**Community Type:** Northern Fen  
**EOID:** 20371  
**County:** Chippewa  
**Central TRS:** T46N R07W S34  
**Size:** 139.6 acres  
**EO Rank:** A

### Setting

A northern fen consisting of several open water tracks surrounded by rich conifer swamp in a bowl-like depression, situated in a largely natural landscape impacted primarily by logging infrastructure. The water tracks slope from west to east, widening and coalescing downslope, where they terminate at the base of a rich conifer swamp perched below an adjacent steep forested ridge.

### Soils

The fen is developed on deep (>36"), primarily hemic sedge- and mixed peats of neutral (pH= 7.0) reaction.

### Natural Processes

Groundwater discharge and flow across the water tracks; paludification of springheads and water track margins; ponding; insect outbreaks.

### Anthropogenic Disturbances and Threats

No significant disturbances to the immediate area except historic logging and the invasion of marsh thistle into the wetland.

### Vegetation

The margins of the water tracks are characterized primarily by dwarfed conifers and shrubs on sphagnum-capped hummocks, especially *Larix laricina* (tamarack), *Picea mariana* (black spruce), *Dasiphora fruticosa* (shrubby cinquefoil), *Chamaedaphne calyculata* (leatherleaf), *Rhododendron groenlandicum* (Labrador-tea), *Andromeda glaucophylla* (bog rosemary), *Rhamnus alnifolia* (alder-leaved buckthorn), *Betula pumila* (bog birch), *Lonicera villosa* (mountain fly honeysuckle), and *Vaccinium angustifolium* (low sweet blueberry). Common herbaceous spp. include *Carex stricta* (tussock sedge), *Trichophorum cespitosum* (tufted bulrush), *Parnassia glauca* (grass-of-Parnassus), and *Lobelia kalmii* (Kalm's lobelia). Wetter, open water tracks are sedge-dominated with lower cover of conifers, shrubs, and sphagnum mosses. Dominants include *Carex lasiocarpa* (wiregrass sedge), *C. livida* (livid sedge), tufted bulrush, and *Rhynchospora alba* (white beak-rush), with *Typha latifolia* (broad-leaved cat-tail) locally common in the lowest parts of the water tracks. Characteristic associates include grass-of-Parnassus, Kalm's lobelia, *Sarracenia purpurea* (pitcher-plant), *Menyanthes trifoliata* (buckbean),



*Eleocharis elliptica* (golden-seeded spike-rush), *Carex interior* (inland sedge), and *Triglochin maritima* (common bog arrow-grass).



This northern fen is dominated by sedges and dwarfed shrubs and conifers.

**Hulbert Fen**

8/27/2015

Hulbert Fen

Chippewa

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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>

FQA DB Description:

Practitioner:

Brad Slaughter, Dave Cuthrell

Latitude:

46.339310,

Longitude:

-85.167023

Weather Notes:

Duration Notes:

Community Type Notes:

Northern fen

Other Notes:

Also: Lactuca sp., Viola sp.

## Conservatism-Based Metrics:

Total Mean C: 6.8

Native Mean C: 6.8

Total FQI: 57.7

Native FQI: 57.3

Adjusted FQI: 67.5

% C value 0: 1.4

% C value 1-3: 8.3

% C value 4-6: 37.5

% C value 7-10: 52.8

Native Tree Mean C: 4

Native Shrub Mean C: 7.2

Native Herbaceous Mean C: 6.9

Species Richness:

Total Species:	72	
Native Species:	71	98.60%
Non-native Species:	1	1.40%

Species Wetness:

Mean Wetness:	-3.4
Native Mean Wetness:	-3.4

Physiognomy Metrics:

Tree:	4	5.60%
Shrub:	22	30.60%
Vine:	0	0%
Forb:	31	43.10%
Grass:	1	1.40%
Sedge:	13	18.10%
Rush:	0	0%
Fern:	1	1.40%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	71	98.60%
Biennial:	1	1.40%
Native Annual:	0	0%
Native Perennial:	71	98.60%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	O
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Anemone quinquefolia	Ranunculaceae	ANEQUI	native	5	3	forb	perennial	wood anemone	C
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	O
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	C
Caltha palustris	Ranunculaceae	CALPAR	native	6	-5	forb	perennial	marsh-marigold	LO

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Carex exilis	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	O
Carex flava	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge	O
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	C
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
Carex limosa	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	O
Carex livida	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C-LCD
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-LCD
Cirsium palustre	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial	marsh thistle	O
Cladium mariscoides	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	R
Coptis trifolia	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	LC
Cornus canadensis	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	C
Cornus sericea; c. stolonifera	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier	O
Cypripedium parviflorum; c. calceolus	Orchidaceae	CYPPAR	native	5	0	forb	perennial	yellow lady-slipper	O
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	C-LD
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	C
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	C
Eleocharis elliptica	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C
Eriophorum angustifolium	Cyperaceae	ERIANG	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	C
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry	C
Gaultheria hispidula	Ericaceae	GAUHIS	native	8	-3	shrub	perennial	creeping-snowberry	C
Gentiana rubricaulis	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	R
Geocaulon lividum	Santalaceae	GEOLIV	native	9	0	forb	perennial	geocaulon	U
Geum rivale	Rosaceae	GEURIV	native	7	-5	forb	perennial	purple avens	O
Juniperus horizontalis	Cupressaceae	JUNHOR	native	10	3	shrub	perennial	creeping juniper	R
Kalmia polifolia	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	O-C
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
Linnaea borealis	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinline	O
Lobelia kalmii	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia	C
Lonicera oblongifolia	Caprifoliaceae	LONOBL	native	8	-5	shrub	perennial	swamp fly honeysuckle	U
Lonicera villosa	Caprifoliaceae	LONVIL	native	8	-3	shrub	perennial	mountain fly honeysuckle	C
Maianthemum canadense	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower	C
Maianthemum trifolium; smilacina t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	C
Menyanthes trifoliata	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	LC
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	O

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LC
<i>Osmunda regalis</i>	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	O
<i>Parnassia glauca</i>	Parnassiaceae	PARGLA	native	8	-5	forb	perennial	grass-of-parnassus	C-A
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Platanthera aquilonis</i> ; <i>habenaria hyperborea</i>	Orchidaceae	PLAAQU	native	5	-3	forb	perennial	northern green orchid	O
<i>Platanthera dilatata</i> ; <i>habenaria d.</i>	Orchidaceae	PLADIL	native	10	-5	forb	perennial	tall white bog orchid	O
<i>Polygala paucifolia</i>	Polygalaceae	POLPAU	native	7	3	forb	perennial	gay-wings	LO
<i>Pyrola americana</i> ; <i>p. rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	O
<i>Rhamnus alnifolia</i>	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn	C
<i>Rhododendron groenlandicum</i> ; <i>ledum g.</i>	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	C
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-LCD
<i>Ribes hirtellum</i>	Grossulariaceae	RIBHIR	native	6	-3	shrub	perennial	swamp gooseberry	R
<i>Rubus acaulis</i>	Rosaceae	RUBACA	native	10	-3	shrub	perennial	dwarf raspberry	LC
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	C
<i>Salix candida</i>	Salicaceae	SALCAN	native	9	-5	shrub	perennial	hoary willow	O
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	C
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiranthes cernua</i>	Orchidaceae	SPICER	native	4	-3	forb	perennial	nodding ladies-tresses	O
<i>Symphotrichum boreale</i> ; <i>aster b.</i>	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	O
<i>Symphotrichum puniceum</i> ; <i>aster p.</i>	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	U
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	LC
<i>Triantha glutinosa</i> ; <i>tofieldia g.</i>	Melanthiaceae	TRIGLU	native	10	-5	forb	perennial	false asphodel	O-LC
<i>Trichophorum alpinum</i> ; <i>scirpus hudsonianus</i>	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	LC
<i>Trichophorum cespitosum</i> ; <i>scirpus c.</i>	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C
<i>Triglochin maritima</i>	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	C
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	C
<i>Vaccinium angustifolium</i>	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	C
<i>Vaccinium myrtilloides</i>	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	U
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Valeriana uliginosa</i>	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian	C

**Site:** Pointe aux Chenes  
**Community Type:** Patterned Fen  
**EOID:** 11084  
**County:** Mackinac  
**Central TRS:** T41N R04W S33  
**Size:** 98.5 acres  
**EO Rank:** AB

### Setting

A small area of ribbed fen in several short water tracks within a much larger wetland complex at the northern margin of an extensive wooded dune and swale complex. The fen water tracks slope to the south/southwest where a diffuse drainage network occurs at the base of another forested upland.

### Soils

The patterned fen area consists of alternating sphagnum-covered strings that support stunted conifers and low shrubs and wet, sedge-dominated flarks, all situated on primarily hemic, slightly acid to neutral (pH= 6.5-7.0) sedge peats over hydric sand. Sphagnum mosses on hummocks create extremely acid to very strongly acid (pH= 4.5) microsites colonized by species that are poor competitors with more nutrient-demanding species.

### Natural Processes

Groundwater discharge and sheetflow shape the structure and composition of the patterned fen. The water tracks slope rather strongly (in comparison to many patterned fens in Michigan) over a short distance. Water flows diffusely across the water tracks to a diffuse drainage system situated at the base of another, more pronounced upland ridge at the south margin of the fen. Relatively stable, high water tables significantly slow conifer growth and restrict the encroachment of woody vegetation.

### Anthropogenic Disturbances and Threats

No disturbances were noted to the fen, although adjacent uplands have been impacted by logging in the past.

### Vegetation

The patterned fen supports areas of unpatterned sedge fen, patterned sedge- and shrub-fen, conifer-dominated "tails" and margins, and springs with floating mats. Hummocks and strings are typically sphagnum-capped and support a diversity of dwarfed conifers, shrubs, and herbaceous species, including *Thuja occidentalis* (northern white-cedar), *Larix laricina* (tamarack), *Picea mariana* (black spruce), *Alnus incana* (tag alder), *Chamaedaphne calyculata* (leatherleaf), *Andromeda glaucophylla* (bog rosemary), *Dasiphora fruticosa* (shrubby cinquefoil), *Vaccinium oxycoccos* (small cranberry), *Carex lasiocarpa* (wiregrass sedge), *C. exilis* (coastal sedge), *Trichophorum cespitosum* (tufted bulrush), *Oclemena nemoralis* (bog aster), *Rhynchospora alba* (white beak-rush), *Osmunda regalis* (royal fern),



*Sarracenia purpurea* (pitcher-plant), *Muhlenbergia glomerata* (marsh wild-timothy), and *Solidago uliginosa* (bog goldenrod). Depressions and flarks are dominated by sedges, particularly wiregrass sedge and white beak-rush, associated with coastal sedge, *Carex livida* (livid sedge), *C. limosa* (bog sedge), *Cladium mariscoides* (twig-rush), *Eleocharis elliptica* (golden-seeded spike-rush), *Phragmites australis* subsp. *americanus* (common reed), *Equisetum fluviatile* (water horsetail), *Menyanthes trifoliata* (buckbean), royal fern, and *Drosera intermedia* (spatulate-leaved sundew). *Utricularia* spp. (bladderworts) are locally common. The conifer-dominated tails are characterized by northern white-cedar, tamarack, tag alder, *Myrica gale* (sweet gale), *Rhododendron groenlandicum* (Labrador-tea), shrubby cinquefoil, *Chamaedaphne calyculata* (leatherleaf), *Vaccinium angustifolium* (low sweet blueberry), royal fern, wiregrass sedge, etc. At the lower base of the slope, a diffuse network of drainages supports many cold pools and floating mats. These areas support dense colonies of buckbean, associated with wiregrass sedge, *Carex prairea* (prairie sedge), and *Caltha palustris* (marsh-marigold).



The Pointe aux Chenes wetland complex supports a small area of distinctly ribbed fen.

**Pointe aux Chenes Patterned Fen (Hiawatha NF)**

08/19/2013

Pointe aux Chenes

Mackinac

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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>

FQA DB Description:

Practitioner:

Brad Slaughter, Dave Cuthrell

Latitude:

45.9051

Longitude:

-84.8055

Weather Notes:

partly cloudy, ~78F

Duration Notes:

Community Type Notes:

patterned fen (EOID 11084)

Other Notes:

Also noted: *Epilobium* sp. Includes spp. noted on separate briefer visit on 26 August 2014.

Conservatism-Based Metrics:

Total Mean C: 6.9

Native Mean C: 6.9

Total FQI: 65.1

Native FQI: 65.1

Adjusted FQI: 69

% C value 0: 0

% C value 1-3: 9

% C value 4-6: 38.2

% C value 7-10: 52.8

Native Tree Mean C: 4

Native Shrub Mean C: 6.4

Native Herbaceous Mean C: 7.2

Species Richness:



Total Species:	89	
Native Species:	89	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.5
Native Mean Wetness:	-3.5

Physiognomy Metrics:

Tree:	5	5.60%
Shrub:	19	21.30%
Vine:	1	1.10%
Forb:	40	44.90%
Grass:	4	4.50%
Sedge:	17	19.10%
Rush:	0	0%
Fern:	3	3.40%
Bryophyte:	0	0%

Duration Metrics:

Annual:	1	1.10%
Perennial:	88	98.90%
Biennial:	0	0%
Native Annual:	1	1.10%
Native Perennial:	88	98.90%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	C
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	CD
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	O-LC
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	O
Calla palustris	Araceae	CALPAU	native	10	-5	forb	perennial	wild calla	LC
Calopogon tuberosus	Orchidaceae	CALTUB	native	9	-5	forb	perennial	grass-pink	U

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Caltha palustris</i>	Ranunculaceae	CALPAR	native	6	-5	forb	perennial	marsh-marigold	LC
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	O
<i>Carex comosa</i>	Cyperaceae	CXCOMO	native	5	-5	sedge	perennial	sedge	LO
<i>Carex exilis</i>	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	C-CD
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	C-CD
<i>Carex limosa</i>	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	O-LC
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
<i>Carex michauxiana</i>	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	U-LC
<i>Carex pauciflora</i>	Cyperaceae	CXPAUC	native	10	-5	sedge	perennial	sedge	L
<i>Carex prairea</i>	Cyperaceae	CXPRAI	native	10	-3	sedge	perennial	sedge	LC
<i>Carex sterilis</i>	Cyperaceae	CXSTER	native	10	-5	sedge	perennial	sedge	LO
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	CD
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	LO
<i>Cladium mariscoides</i>	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	C
<i>Comarum palustre; potentilla p.</i>	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	O
<i>Coptis trifolia</i>	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	O
<i>Cypripedium acaule</i>	Orchidaceae	CYPACA	native	5	-3	forb	perennial	pink lady-slipper; moccasin flower	U
<i>Dasiphora fruticosa; potentilla f.</i>	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	O-C
<i>Doellingeria umbellata; aster u.</i>	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	U-LO
<i>Drosera intermedia</i>	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	LC
<i>Drosera rotundifolia</i>	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	C
<i>Dulichium arundinaceum</i>	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	LC
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	O-C
<i>Epilobium leptophyllum</i>	Onagraceae	EPILEP	native	6	-5	forb	perennial	fen willow-herb	U
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	C
<i>Eriophorum angustifolium</i>	Cyperaceae	ERiang	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	O
<i>Eutrochium maculatum; eupatorium m.</i>	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	U
<i>Gaultheria hispida</i>	Ericaceae	GAUHis	native	8	-3	shrub	perennial	creeping-snowberry	U
<i>Gaultheria procumbens</i>	Ericaceae	GAUPRO	native	5	3	shrub	perennial	wintergreen	U
<i>Gaylussacia baccata</i>	Ericaceae	GAYBAC	native	7	3	shrub	perennial	huckleberry	U-LC
<i>Geocaulon lividum</i>	Santalaceae	GEOLIV	native	9	0	forb	perennial	geocaulon	U
<i>Ilex mucronata; nemopanthus m.</i>	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	LC
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	U
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	O
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	O
<i>Juncus pelocarpus</i>	Juncaceae	JUNPEL	native	8	-5	forb	perennial	brown-fruited rush	O

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Kalmia polifolia</i>	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	LO
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C-CD
<i>Lonicera dioica</i>	Caprifoliaceae	LONDIO	native	5	3	vine	perennial	red honeysuckle	U
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	LO
<i>Lysimachia thyrsoiflora</i>	Myrsinaceae	LYSTHY	native	6	-5	forb	perennial	tufted loosestrife	U
<i>Maianthemum trifolium</i> ; <i>smilacina</i> t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	U
<i>Malaxis unifolia</i>	Orchidaceae	MALUNI	native	8	0	forb	perennial	green adders-mouth	U
<i>Melampyrum lineare</i>	Orobanchaceae	MELLIN	native	6	3	forb	annual	cow-wheat	U
<i>Menyanthes trifoliata</i>	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	C
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LC
<i>Oclemena nemoralis</i> ; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
<i>Osmunda regalis</i>	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	C
<i>Phragmites australis</i> var. <i>americanus</i>	Poaceae	PHRAUM	native	5	-3	grass	perennial	reed	C
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	U
<i>Platanthera clavellata</i> ; <i>habenaria</i> c.	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	LO
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	C
<i>Pyrola americana</i> ; p. <i>rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	O
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	LC
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-CD
<i>Rhynchospora fusca</i>	Cyperaceae	RHYFUS	native	7	-5	sedge	perennial	beak-rush	LO-U
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	LC
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	U
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Scheuchzeria palustris</i>	Scheuchzeriaceae	SCHPAL	native	10	-5	forb	perennial	arrow-grass	U
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	O
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiranthes romanzoffiana</i>	Orchidaceae	SPIROM	native	8	-5	forb	perennial	hooded ladies-tresses	U
<i>Symphotrichum boreale</i> ; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	O
<i>Thelypteris palustris</i>	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern	U-O
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C-CD
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	LU
<i>Triantha glutinosa</i> ; <i>tofieldia</i> g.	Melanthiaceae	TRIGLU	native	10	-5	forb	perennial	false asphodel	U
<i>Trichophorum alpinum</i> ; <i>scirpus hudsonianus</i>	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	O
<i>Trichophorum cespitosum</i> ; <i>scirpus</i> c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C-CD

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
<i>Trientalis borealis</i>	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	U-LO
<i>Triglochin maritima</i>	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	U
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	LO
<i>Utricularia cornuta</i>	Lentibulariaceae	UTRCOR	native	10	-5	forb	perennial	horned bladderwort	LC
<i>Utricularia intermedia</i>	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	LC
<i>Vaccinium angustifolium</i>	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	U-LC
<i>Vaccinium myrtilloides</i>	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	LO
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	O

**Site:** Forest Road 3136  
**Community Type:** Patterned Fen  
**EOID:** 19906  
**County:** Chippewa  
**Central TRS:** T45N R04W S34  
**Size:** 80.4 acres  
**EO Rank:** B

### Setting

A small area of ribbed fen associated with a larger area of unpatterned poor fen in an extensive, heavily forested, poorly drained glacial lakeplain consisting primarily of braided, relatively narrow drainages, impacted by historic and current beaver activity, occurring between old sandy dune ridges supporting dry northern forest and dry-mesic northern forest.

### Soils

The substrate consists of strongly acid to neutral (pH= 5.5-6.8) hemic sedge peat to >36" (but shallower in places), with more acidic conditions in the upper layers of sphagnum hummocks.

### Natural Processes

Groundwater discharge and sheet flow shape fen structure and composition. Strings and flarks in the western portion of the complex are perpendicular to the direction of water movement.

### Anthropogenic Disturbances and Threats

The fen is minimally disturbed, although long-term fire suppression may result in increased woody cover, especially if climate change results in drier conditions.

### Vegetation

The core area of ribbed fen consists of broad flarks separated by low sphagnum-carpeted strings. Flarks are sedge-dominated, characterized by *Rhynchospora alba* (white beak-rush), *Cladium mariscoides* (twig-rush), *Carex exilis* (coastal sedge), and *Rhynchospora fusca* (beak-rush), associated with *Menyanthes trifoliata* (buckbean), *Sarracenia purpurea* (pitcher-plant), *Drosera intermedia* (spatulate-leaved sundew), and *Scheuchzeria palustris* (arrow-grass). Isolated sphagnum hummocks within the flarks are dominated by stunted *Larix laricina* (tamarack), *Myrica gale* (sweet gale), *Betula pumila* (bog birch), and *Andromeda glaucophylla* (bog rosemary), with occasional stunted *Picea mariana* (black spruce). Narrower flarks support lawns of *Carex livida* (livid sedge), *C. lasiocarpa* (wiregrass sedge), and coastal sedge. Strings are sphagnum-capped and co-dominated by shrubs and herbaceous species, with occasional stunted tamarack and white pine. Characteristic shrubs include bog birch, *Chamaedaphne calyculata* (leatherleaf), *Aronia prunifolia* (chokeberry), and *Kalmia polifolia* (bog laurel). Common herbs include *Carex utriculata* (common beaked sedge), coastal sedge, *C. buxbaumii* (Buxbaum's sedge), *C. oligosperma* (few-seeded sedge), *Trichophorum cespitosum* (tufted bulrush), *Oclemena nemoralis* (bog

aster), and *Eriophorum virginicum* (tawny cotton-grass). Species composition is similar elsewhere in the fen where patterning is not evident; species typical of strings are common in hummocky areas and species typical of flarks are concentrated in wet flats with less pronounced microtopography. Additional ground layer species of local importance include *Iris versicolor* (wild blue flag), *Solidago uliginosa* (bog goldenrod), *Calamagrostis canadensis* (blue-joint), *Carex michauxiana* (Michaux's sedge), *Vaccinium macrocarpon* (large cranberry), and *Pogonia ophioglossoides* (rose pogonia).



Patterned fens are characterized by elongated sedge-dominated depressions (flarks; foreground) and hummocks (strings; middle) that support low shrubs and stunted conifers.

**Forest Road 3136 Patterned Fen (Hiawatha NF)**

08/29/2014

Forest Road 3136

Chippewa

MI

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:

Brad Slaughter, Dave Cuthrell

Latitude:

46.2573

Longitude:

-84.798

Weather Notes:

overcast, showers, ~64F

Duration Notes:

Community Type Notes:

patterned fen (EOID 19906)

Other Notes:

Conservatism-Based Metrics:

Total Mean C:

6.9

Native Mean C:

6.9

Total FQI:

52.5

Native FQI:

52.5

Adjusted FQI:

69

% C value 0:

0

% C value 1-3:

12.1

% C value 4-6:

34.5

% C value 7-10:

53.4

Native Tree Mean C:

4

Native Shrub Mean C:

6.8

Native Herbaceous Mean C:

7.4

Species Richness:

Total Species:	58	
Native Species:	58	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-4.1
Native Mean Wetness:	-4.1

Physiognomy Metrics:

Tree:	6	10.30%
Shrub:	16	27.60%
Vine:	0	0%
Forb:	16	27.60%
Grass:	3	5.20%
Sedge:	16	27.60%
Rush:	0	0%
Fern:	1	1.70%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	58	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	58	100%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	O
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	O



Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	C-D
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	C
Carex buxbaumii	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge	C
Carex chordorrhiza	Cyperaceae	CXCHOR	native	10	-5	sedge	perennial	sedge	LC
Carex exilis	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	C-LCD
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	LC
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
Carex livida	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	LC
Carex michauxiana	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	O-LA/D
Carex oligosperma	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	C-LD
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	O
Carex utriculata; c. rostrata	Cyperaceae	CXUTRI	native	5	-5	sedge	perennial	sedge	C-D
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-CD
Cladium mariscoides	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	C-LD
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	O
Drosera intermedia	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	LC
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	U
Eriophorum angustifolium	Cyperaceae	ERIANG	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	O
Eriophorum virginicum	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	C
Ilex mucronata; nemopanthus m.	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	C
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C
Juncus canadensis	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	O
Juncus pelocarpus	Juncaceae	JUNPEL	native	8	-5	forb	perennial	brown-fruited rush	U
Kalmia polifolia	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	O
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
Lycopus uniflorus	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U
Menyanthes trifoliata	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	LC
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	U
Myrica gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LA/D
Oclemena nemoralis; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
Osmunda regalis	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	O

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	O
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	O
<i>Platanthera clavellata</i> ; <i>habenaria c.</i>	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	LC
<i>Platanthera huronensis</i> ; <i>habenaria hyperborea</i>	Orchidaceae	PLAHUR	native	5	-3	forb	perennial	lake huron green orchid	R
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	LA
<i>Rhododendron groenlandicum</i> ; <i>ledum g.</i>	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	LO
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-D
<i>Rhynchospora fusca</i>	Cyperaceae	RHYFUS	native	7	-5	sedge	perennial	beak-rush	LC
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	O
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	U
<i>Salix petiolaris</i>	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow	U
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Scheuchzeria palustris</i>	Scheuchzeriaceae	SCHPAL	native	10	-5	forb	perennial	arrow-grass	O
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Symphotrichum boreale</i> ; <i>aster b.</i>	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	U
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	U-O
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	O
<i>Trichophorum cespitosum</i> ; <i>scirpus c.</i>	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C-LCD
<i>Vaccinium macrocarpon</i>	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry	LA
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	O

**Site:** Pine River Complex  
**Community Type:** Poor Fen  
**EOID:** 17347  
**County:** Chippewa  
**Central TRS:** T45N R04W S34  
**Size:** 328.5 acres  
**EO Rank:** AB

### Setting

Several areas of sedge-dominated poor fen in an extensive, heavily forested, poorly drained glacial lakeplain consisting primarily of braided, relatively narrow drainages, impacted by historic and current beaver activity, occurring between old sandy dune ridges supporting dry northern forest and dry-mesic northern forest.

### Soils

The substrate consists of strongly acid to medium acid (pH= 5.5-6.0) hemic sedge peat to >30" over hydric, fine medium acid to slightly acid (pH= 6.0-6.5) sands.

### Natural Processes

Fen water tracks drain generally west to east, and are separated by narrow to wide conifer- and shrub-dominated bands or "tails," often developed downslope of isolated dune ridges. Groundwater discharge and sheet flow shape fen structure and composition.

### Anthropogenic Disturbances and Threats

The fen is impacted locally by road crossings, which have altered hydrology and promoted increased woody cover locally.

### Vegetation

The fen south of FR-3136 is characterized by a broad sedge lawn, with *Carex lasiocarpa* (wiregrass sedge) and *C. interior/echinata* (inland or star sedge) the primary dominants, associated with *Calamagrostis stricta* (narrow-leaved reedgrass), *Carex oligosperma* (few-seeded sedge), and patches of *C. lacustris* (lake sedge) and *C. utriculata* (common bladder sedge). Other characteristic herbaceous species include *Eleocharis elliptica* (golden-seeded spike-rush), *Iris versicolor* (wild blue flag), *Symphyotrichum boreale* (northern bog aster), *Doellingeria umbellata* (flat-topped white aster), *Solidago uliginosa* (bog goldenrod), *Lysimachia thysiflora* (tufted loosestrife), *Triadenum fraseri* (marsh St. John's-wort), *Viola* sp. (violet), *Oclemena nemoralis* (bog aster), and *Campanula aparinoides* (marsh bellflower). Tall shrubs form dense bands around upland islands and at the margins of the fen. *Betula pumila* (bog birch) and *Salix petiolaris* (slender willow) are characteristic, associated with *Rosa palustris* (swamp rose), *Aronia prunifolia* (chokeberry), *Alnus incana* (tag alder), and *Viburnum cassinoides* (wild-raisin). *Larix laricina* (tamarack) is also found primarily at the margins of the fen. Patches of low shrubs,

especially *Chamaedaphne calyculata* (leatherleaf) and *Rubus setosus* (bristly blackberry), occur throughout the fen.



This broad, low-diversity sedge-dominated water track is characteristic of the poor fens in the Pine River Complex.

**FR-3136 Poor Fen**

08/28/2015

Hiawatha NF

Chippewa

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:

Brad Slaughter, Dave Cuthrell

Latitude:

46.259751

Longitude:

-84.779915

Weather Notes:

Partly cloudy

Duration Notes:

Community Type Notes:

Poor fen

Other Notes:

Additional spp.: *Viola* sp.

Conservatism-Based Metrics:

Total Mean C: 5.7

Native Mean C: 5.7

Total FQI: 39.9

Native FQI: 39.9

Adjusted FQI: 57

% C value 0: 0

% C value 1-3: 18.4

% C value 4-6: 44.9

% C value 7-10: 36.7

Native Tree Mean C: 3.7

Native Shrub Mean C: 5.7

Native Herbaceous Mean C: 5.9

Species Richness:

Total Species:	49	
Native Species:	49	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.7
Native Mean Wetness:	-3.7

Physiognomy Metrics:

Tree:	3	6.10%
Shrub:	15	30.60%
Vine:	0	0%
Forb:	18	36.70%
Grass:	4	8.20%
Sedge:	9	18.40%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	49	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	49	100%
Native Biennial:	0	0%

**Species:**

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	LC
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	O
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	D

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	O
<i>Calamagrostis stricta</i> ; c. <i>inexpansa</i> ; c. <i>lacustris</i>	Poaceae	CALSTR	native	10	-3	grass	perennial	narrow-leaved reedgrass	C
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	C
<i>Carex buxbaumii</i>	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge	O
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	C
<i>Carex lacustris</i>	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge	LD
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D-CD
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	C
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC-U
<i>Carex utriculata</i> ; c. <i>rostrata</i>	Cyperaceae	CXUTRI	native	5	-5	sedge	perennial	sedge	LC-CD
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	LCD
<i>Chelone glabra</i>	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	O
<i>Comarum palustre</i> ; <i>potentilla</i> p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	O
<i>Dasiphora fruticosa</i> ; <i>potentilla</i> f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	LO
<i>Doellingeria umbellata</i> ; <i>aster</i> u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	C
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C
<i>Euthamia graminifolia</i>	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod	U
<i>Eutrochium maculatum</i> ; <i>eupatorium</i> m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	U
<i>Glyceria canadensis</i>	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	O
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C
<i>Juncus canadensis</i>	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	O
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	O
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	LC
<i>Lysimachia thyrsoiflora</i>	Myrsinaceae	LYSTHY	native	6	-5	forb	perennial	tufted loosestrife	C
<i>Oclemena nemoralis</i> ; <i>aster</i> n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	O-C
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	U
<i>Populus tremuloides</i>	Salicaceae	POPTRE	native	1	0	tree	perennial	quaking aspen	U
<i>Prenanthes racemosa</i>	Asteraceae	PRERAC	native	8	-3	forb	perennial	glaucous white lettuce	U
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	U-L
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	C
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	C
<i>Salix discolor</i>	Salicaceae	SALDIS	native	1	-3	shrub	perennial	pussy willow	U
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	U
<i>Salix petiolaris</i>	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow	C



<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Salix pyrifolia	Salicaceae	SALPYR	native	8	-3	shrub	perennial	balsam willow	U-LC
Scirpus cyperinus	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass	O
Solidago rugosa	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	U
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
Spiraea alba	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	O-LC
Stachys hispida; s. tenuifolia	Lamiaceae	STAHIS	native	5	-3	forb	perennial	hedge-nettle	O
Symphotrichum boreale; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C
Symphotrichum puniceum; aster p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	U
Triadenum fraseri	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	C
Vaccinium macrocarpon	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry	LC
Viburnum cassinoides	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	U-LC

**Site:** Pointe aux Chenes  
**Community Type:** Poor Fen  
**EOID:** 19959  
**County:** Mackinac  
**Central TRS:** T41N R04W S29  
**Size:** 668.6 acres  
**EO Rank:** AB

### Setting

A moderate to large, minimally disturbed poor fen developed in a series of broad, shallow interdunal swales at the northeastern margin of an extensive wooded dune and swale complex.

### Soils

The poor fen occurs on deep (>36" over much of the area), medium to slightly acid (pH= 5.8-6.5), primarily hemic sedge peats.

### Natural Processes

Water ponds in the broad, flat swales, with sluggish drainage suggesting vertical fluctuation of the water table, rather than movement of water across the peatland, is the primary factor driving structure and composition of the fen.

### Anthropogenic Disturbances and Threats

The poor fen is minimally disturbed. The far southwestern margin of the complex is impacted by a utility corridor that passes through one of the swales. Tire tracks are common in the corridor, locally impacting hydrology, and providing a potential conduit for invasive species.

### Vegetation

The swales support vast sedge-dominated fen lawns dominated primarily by *Carex lasiocarpa* (wiregrass sedge), associated with *C. exilis* (coastal sedge), *C. oligosperma* (few-seeded sedge), *C. livida* (livid sedge), *C. limosa* (bog sedge), *C. chordorrhiza* (creeping sedge), and *Rhynchospora alba* (white beak-rush), with local areas dominated by *Dulichium arundinaceum* (three-way sedge) or by *Carex stricta* (tussock sedge) and *Calamagrostis canadensis* (blue-joint). Other common herbaceous spp. include *Osmunda regalis* (royal fern), *Iris versicolor* (wild blue flag), *Sarracenia purpurea* (pitcher-plant), *Equisetum fluviatile* (water horsetail), *Thelypteris palustris* (marsh fern), *Symphotrichum boreale* (northern bog aster), *Scheuchzeria palustris* (arrow-grass), *Solidago uliginosa* (bog goldenrod), and *Phragmites australis* subsp. *americanus* (common reed). Low shrubs are scattered to locally dominant; the primary dominants are *Myrica gale* (sweet gale) and *Chamaedaphne calyculata* (leatherleaf), associated with *Alnus incana* (tag alder), *Ilex verticillata* (Michigan holly), *Rosa palustris* (swamp rose), *Aronia prunifolia* (chokeberry), *Salix pedicellaris* (bog willow), *Andromeda glaucophylla* (bog rosemary), and *Dasiphora fruticosa* (shrubby cinquefoil). *Sphagnum* spp. and brown mosses carpet many of these

shrub-dominated hummocks. Scattered, at least moderately stunted conifers occur throughout the complex, in places represented by *Thuja occidentalis* (northern white-cedar), *Larix laricina* (tamarack), and *Picea mariana* (black spruce), with tamarack strongly dominant in places where it associates with *Pinus strobus* (white pine) and black spruce.



Vast sedge lawns characterize broad swales in the Pointe aux Chenes poor fen.

**Pointe aux Chenes Poor Fen**

08/26/2014

Pointe aux Chenes

Mackinac

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:

Brad Slaughter, Dave Cuthrell

Latitude:

45.9148

Longitude:

-84.8197

Weather Notes:

Duration Notes:

Community Type Notes:

Poor fen (EOID 19959)

Other Notes:

Also noted: Viola sp.

Conservatism-Based Metrics:

Total Mean C: 6.3

Native Mean C: 6.3

Total FQI: 57.4

Native FQI: 57.4

Adjusted FQI: 63

% C value 0: 0

% C value 1-3: 13.3

% C value 4-6: 41

% C value 7-10: 45.8

Native Tree Mean C: 3.5

Native Shrub Mean C: 6.5

Native Herbaceous Mean C: 6.6

Species Richness:

Total Species:	83	
Native Species:	83	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.6
Native Mean Wetness:	-3.6

Physiognomy Metrics:

Tree:	6	7.20%
Shrub:	24	28.90%
Vine:	0	0%
Forb:	27	32.50%
Grass:	4	4.80%
Sedge:	18	21.70%
Rush:	0	0%
Fern:	4	4.80%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	83	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	83	100%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	U
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	U
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	C
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Aronia prunifolia</i>	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
<i>Betula papyrifera</i>	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	C
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	O
<i>Carex aquatilis</i>	Cyperaceae	CXAQUA	native	7	-5	sedge	perennial	sedge	LD
<i>Carex chordorrhiza</i>	Cyperaceae	CXCHOR	native	10	-5	sedge	perennial	sedge	C
<i>Carex exilis</i>	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	LC
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	U
<i>Carex lacustris</i>	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge	LC
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
<i>Carex limosa</i>	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	C
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	U-LO
<i>Carex sterilis</i>	Cyperaceae	CXSTER	native	10	-5	sedge	perennial	sedge	LC
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC-LD
<i>Carex trisperma</i>	Cyperaceae	CXTRIS	native	9	-5	sedge	perennial	sedge	U
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-CD
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	U
<i>Comarum palustre</i> ; <i>potentilla</i> p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	O
<i>Coptis trifolia</i>	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	O
<i>Cornus canadensis</i>	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	U
<i>Dasiphora fruticosa</i> ; <i>potentilla</i> f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	O
<i>Doellingeria umbellata</i> ; <i>aster</i> u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	U
<i>Drosera rotundifolia</i>	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	U
<i>Dulichium arundinaceum</i>	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	LC
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	C
<i>Eriophorum tenellum</i>	Cyperaceae	ERITEN	native	10	-5	sedge	perennial	cotton-grass	U-LC
<i>Eutrochium maculatum</i> ; <i>eupatorium</i> m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	O
<i>Gaultheria hispidula</i>	Ericaceae	GAUHIS	native	8	-3	shrub	perennial	creeping-snowberry	U
<i>Glyceria canadensis</i>	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	O-C
<i>Ilex mucronata</i> ; <i>nemopanthus</i> m.	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	U
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	C
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Juncus canadensis</i>	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	U
<i>Kalmia polifolia</i>	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	LO
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
<i>Lilium philadelphicum</i>	Liliaceae	LILPHI	native	7	0	forb	perennial	wood lily	R
<i>Lonicera oblongifolia</i>	Caprifoliaceae	LONOBL	native	8	-5	shrub	perennial	swamp fly honeysuckle	U
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U
<i>Lysimachia thyrsoiflora</i>	Myrsinaceae	LYSTHY	native	6	-5	forb	perennial	tufted loosestrife	U
<i>Maianthemum canadense</i>	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower	O
<i>Maianthemum trifolium</i> ; <i>smilacina</i> t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	LC
<i>Malaxis unifolia</i>	Orchidaceae	MALUNI	native	8	0	forb	perennial	green adders-mouth	U
<i>Menyanthes trifoliata</i>	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	O
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	C-D
<i>Oclemena nemoralis</i> ; <i>aster</i> n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
<i>Osmunda cinnamomea</i>	Osmundaceae	OSMCIN	native	5	-3	fern	perennial	cinnamon fern	U
<i>Osmunda regalis</i>	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	C
<i>Persicaria amphibia</i> ; <i>polygonum</i> a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed	LC
<i>Phragmites australis</i> var. <i>americanus</i>	Poaceae	PHRAUM	native	5	-3	grass	perennial	reed	LC
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	U
<i>Pyrola americana</i> ; <i>p. rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	O
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	LO
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	LC-U
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	C
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	U
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	O
<i>Rubus strigosus</i>	Rosaceae	RUBSTR	native	2	0	shrub	perennial	wild red raspberry	U
<i>Salix candida</i>	Salicaceae	SALCAN	native	9	-5	shrub	perennial	hoary willow	U
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	C
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Scheuchzeria palustris</i>	Scheuchzeriaceae	SCHPAL	native	10	-5	forb	perennial	arrow-grass	C
<i>Scirpus cyperinus</i>	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass	U
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	C
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiraea alba</i>	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	U

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
<i>Symphotrichum boreale</i> ; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C
<i>Thelypteris palustris</i>	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern	C
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C
<i>Trichophorum alpinum</i> ; scirpus hudsonianus	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	LC
<i>Trientalis borealis</i>	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	O
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	O
<i>Utricularia intermedia</i>	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	O
<i>Vaccinium angustifolium</i>	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	U
<i>Vaccinium macrocarpon</i>	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry	LC
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	U-O



**Site:** Castle Rock Road SW  
**Community Type:** Poor Fen  
**EOID:** 19960  
**County:** Mackinac  
**Central TRS:** T41N R04W S34  
**Size:** 37.0 acres  
**EO Rank:** C

### Setting

A small fen on sandy lakeplain, surrounded by forested ridges impacted by timber management.

### Soils

Shallow, medium acid to slightly acid (pH= 6.0-6.5) mucks and sedge peats over sand.

### Natural Processes

The broadly fluctuating water table shapes community dynamics. Peat depths are very shallow in places. On deeper peats, sphagnum mosses stabilize hydrology.

### Anthropogenic Disturbances and Threats

The southeastern portion of the wetland is furrowed, perhaps due to historic attempts to plant trees in the area. Furrowing has disturbed soil and altered hydrology, resulting in woody encroachment and chaotic vegetation patterns. In less disturbed areas, sedge lawns and bog-like areas predominate. No invasive plants were noted in the fen.

### Vegetation

The fen consists of open sedge lawns with scattered sphagnum hummocks, dominated by *Carex lasiocarpa* (wiregrass sedge), *C. echinata/interior* (star sedge or inland sedge), *C. livida* (livid sedge), *C. oligosperma* (few-seeded sedge), and *C. aquatilis* (water sedge), associated with *Salix pedicellaris* (bog willow), *Symphyotrichum borealis* (northern bog aster), *Lysimachia terrestris* (swamp-candles), *Iris versicolor* (wild blue flag), *Solidago uliginosa* (bog goldenrod), *Oclemena nemoralis* (bog aster), *Sarracenia purpurea* (pitcher-plant), *Agrostis scabra* (ticklegrass), *Eleocharis elliptica* (golden-seeded spike-rush), *Rhynchospora alba* (white beak-rush), and *Vaccinium macrocarpon* (large cranberry). Sedge lawns grade to hummocky, sphagnum-dominated poor fen at the margins with scattered *Larix laricina* (tamarack) and *Picea mariana* (black spruce) associated with *Pinus banksiana* (jack pine), *P. strobus* (white pine), *Aronia prunifolia* (chokeberry), *Chamaedaphne calyculata* (leatherleaf), and *Andromeda glaucophylla* (bog rosemary).

**Castle Rock Road SW (Hiawatha NF)**

08/20/2013

Castle Rock Rd SW

Mackinac

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:

Brad Slaughter, Dave Cuthrell

Latitude:

45.9136

Longitude:

-84.7899

Weather Notes:

Duration Notes:

Community Type Notes:

Poor fen (EOID 19960)

Other Notes:

Also noted: *Dichanthelium* sp.

Conservatism-Based Metrics:

Total Mean C: 6.4

Native Mean C: 6.4

Total FQI: 42.5

Native FQI: 42.5

Adjusted FQI: 64

% C value 0: 2.3

% C value 1-3: 9.1

% C value 4-6: 45.5

% C value 7-10: 43.2

Native Tree Mean C: 4.8

Native Shrub Mean C: 6.1

Native Herbaceous Mean C: 7

Species Richness:

Total Species:	44	
Native Species:	44	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.5
Native Mean Wetness:	-3.5

Physiognomy Metrics:

Tree:	6	13.60%
Shrub:	14	31.80%
Vine:	0	0%
Forb:	10	22.70%
Grass:	4	9.10%
Sedge:	10	22.70%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	1	2.30%
Perennial:	43	97.70%
Biennial:	0	0%
Native Annual:	1	2.30%
Native Perennial:	43	97.70%
Native Biennial:	0	0%

Species:								
Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint
Carex aquatilis	Cyperaceae	CXAQUA	native	7	-5	sedge	perennial	sedge
Carex interior	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge
Carex lacustris	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge
Carex livida	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge
Carex oligosperma	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil
Eleocharis elliptica	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush
Eriophorum tenellum	Cyperaceae	ERITEN	native	10	-5	sedge	perennial	cotton-grass
Eriophorum virginicum	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass
Glyceria canadensis	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass
Ilex mucronata; nemopanthus m.	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly
Ilex verticillata	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack
Lysimachia terrestris	Myrsinaceae	LYSTER	native	6	-5	forb	perennial	swamp-candles
Maianthemum trifolium; smilacina t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower
Muhlenbergia glomerata	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy
Myrica gale	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale
Oclemena nemoralis; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster
Persicaria lapathifolia; polygonum l.	Polygonaceae	PERLAP	native	0	-3	forb	annual	nodding smartweed
Picea mariana	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce
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
Platanthera clavellata; habenaria c.	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid
Pogonia ophioglossoides	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia
Rhynchospora alba	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush
Salix pedicellaris	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow
Salix petiolaris	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>
Sarracenia purpurea	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod
Spiraea alba	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet
Symphotrichum boreale; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae
Vaccinium angustifolium	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry
Vaccinium macrocarpon	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry
Viburnum cassinoides	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin

**Site:** Eckerman Fen  
**Community Type:** Poor Fen  
**EOID:** 19961  
**County:** Chippewa  
**Central TRS:** T46N R06W S15  
**Size:** 42.2 acres  
**EO Rank:** B

### Setting

A small poor fen complex consisting of several sedge- and shrub-dominated fen openings situated at the margin of a poorly drained glacial lakeplain, surrounded by rich conifer swamp and mesic northern forest in a heavily forested landscape.

### Soils

Shallow, mostly slightly acid (pH= 6.5) hemic sedge peats over hydric sand.

### Natural Processes

Community composition and structure is driven largely by groundwater dynamics and a seasonally fluctuating water table, with seasonal ponding and desiccation limiting woody encroachment.

### Anthropogenic Disturbances and Threats

The primary anthropogenic disturbance is a powerline corridor cut through the far western margin of the fen complex, where vehicle ruts and gullies were noted.

### Vegetation

The sedge- and shrub-dominated fen is characterized by open lawns of sedges and other herbaceous species, primarily *Carex lasiocarpa* (wiregrass sedge), *C. livida* (livid sedge), *C. exilis* (coastal sedge), *C. flava* (yellow sedge), *C. stricta* (tussock sedge), *Eleocharis elliptica* (golden-seeded spike-rush), *Glyceria canadensis* (rattlesnake grass), *Solidago uliginosa* (bog goldenrod), *Muhlenbergia glomerata* (marsh wild-timothy), *Agrostis scabra* (ticklegass), *Iris versicolor* (wild blue flag), and *Viola nephrophylla* (northern bog violet). Shrubs occur at the margins and in small to large "islands" within the fen; characteristic species are *Betula pumila* (bog birch), *Salix* spp. (willows), *Aronia prunifolia* (chokeberry), *Dasiphora fruticosa* (shrubby cinquefoil), *Myrica gale* (sweet gale), *Andromeda glaucophylla* (bog rosemary), *Salix pedicellaris* (bog willow), *Rubus setosus* (bristly blackberry), and *Chamaedaphne calyculata* (leatherleaf). Scattered, stunted *Thuja occidentalis* (northern white-cedar), *Larix laricina* (tamarack), and *Picea mariana* (black spruce) occur throughout the area.

**Eckerman Poor Fen (Hiawatha NF)**

08/21/2013

Eckerman Poor Fen

Chippewa

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:

Brad Slaughter, Dave Cuthrell

Latitude:

46.3758

Longitude:

-85.043

Weather Notes:

Duration Notes:

Community Type Notes:

Poor fen (EOID 19961)

Other Notes:

Also noted: Salix sp.

Conservatism-Based Metrics:

Total Mean C: 6.5

Native Mean C: 6.5

Total FQI: 44.6

Native FQI: 44.6

Adjusted FQI: 65

% C value 0: 0

% C value 1-3: 12.8

% C value 4-6: 38.3

% C value 7-10: 48.9

Native Tree Mean C: 4.6

Native Shrub Mean C: 6.9

Native Herbaceous Mean C: 6.7

Species Richness:

Total Species:	47	
Native Species:	47	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.9
Native Mean Wetness:	-3.9

Physiognomy Metrics:

Tree:	5	10.60%
Shrub:	14	29.80%
Vine:	0	0%
Forb:	12	25.50%
Grass:	6	12.80%
Sedge:	10	21.30%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	47	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	47	100%
Native Biennial:	0	0%

**Species:**

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	C
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	C-D
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	O



Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Calamagrostis stricta</i> ; <i>c. inexpansa</i> ; <i>c. lacustris</i>	Poaceae	CALSTR	native	10	-3	grass	perennial	narrow-leaved reedgrass	C
<i>Carex exilis</i>	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	LC
<i>Carex flava</i>	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge	C-CD
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	U
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C-LCD
<i>Carex michauxiana</i>	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	U
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	U
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-CD
<i>Dasiphora fruticosa</i> ; <i>potentilla f.</i>	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	C-D
<i>Doellingeria umbellata</i> ; <i>aster u.</i>	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	O
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C
<i>Galium labradoricum</i>	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw	U
<i>Gentiana rubricaulis</i>	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	U
<i>Glyceria canadensis</i>	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	LC
<i>Glyceria striata</i>	Poaceae	GLYSTR	native	4	-5	grass	perennial	fowl manna grass	O
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	LC-U
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	U
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	O
<i>Lonicera villosa</i>	Caprifoliaceae	LONVIL	native	8	-3	shrub	perennial	mountain fly honeysuckle	O-C
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	C-CD
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	O
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	U
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	U
<i>Rhamnus alnifolia</i>	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn	O
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	LC
<i>Rubus acaulis</i>	Rosaceae	RUBACA	native	10	-3	shrub	perennial	dwarf raspberry	U
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	O
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	LC
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	C
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	O

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
Symphotrichum lanceolatum; aster l.	Asteraceae	SYMLAN	native	2	-3	forb	perennial	panicled aster	U-O
Symphotrichum puniceum; aster p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	U
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C
Trichophorum cespitosum; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	O
Triglochin maritima	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	U
Valeriana uliginosa	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian	C-LA
Viola nephrophylla	Violaceae	VIONEP	native	8	-3	forb	perennial	northern bog violet	C

**Site:** McDonald Lake S  
**Community Type:** Bog  
**EOID:** 20370  
**County:** Delta  
**Central TRS:** T42N R20W S15  
**Size:** 12.4 acres  
**EO Rank:** B

### Setting

A small open sphagnum bog with large areas of pools and wet sphagnum lawns, low hummocks with dwarf shrubs, and higher hummocks with dwarfed conifers and larger shrubs. The bog is surrounded by muskeg and poor conifer swamp with a relatively open canopy.

### Soils

The bog is situated on deep (>36") extremely acid to very strongly acid (pH= 4.5-5.0) sphagnum peats.

### Natural Processes

This bog presumably resulted from sphagnum encroachment and peat accumulation in a small pond that is surrounded by more mature, grounded sphagnum muskeg and poor conifer swamp. Bog pools are separated by often string-like, curvilinear hummocks, especially in the western portion of the bog. Similar patterning has been observed in very few other bogs in Michigan, and may be created a gently sloped peat surface, although this was not discerned or measured in the field.

### Anthropogenic Disturbances and Threats

No anthropogenic disturbances were noted within the bog.

### Vegetation

The sphagnum-sedge lawn supports low, rounded hummocks and shallow depressions characterized primarily by *Rhynchospora alba* (white beak-rush) and *Carex billingsii* (Billings' sedge), with *Xyris montana* (yellow-eyed grass), *Drosera intermedia* (spatulate-leaved sundew), and *Utricularia cornuta* (horned bladderwort) in wet areas and *Carex oligosperma* (few-seeded sedge), *C. limosa* (bog sedge), and *Nuphar advena* (yellow pond-lily) in shallow water. Sphagnum hummocks support dwarfed *Picea mariana* (black spruce) and *Larix laricina* (tamarack) and ericaceous shrubs, especially *Chamaedaphne calyculata* (leatherleaf), *Andromeda glaucophylla* (bog rosemary), *Kalmia polifolia* (bog laurel), and *Vaccinium oxycoccos* (small cranberry). *Eriophorum vaginatum* (cotton-grass) and *E. virginicum* (tawny cotton-grass) are also common in hummocky areas. Other common species include *Carex pauciflora* (fewflower sedge), *Sarracenia purpurea* (pitcher-plant), *Drosera rotundifolia* (round-leaved sundew), and *Melampyrum lineare* (cow-wheat).

**McDonald Lake South**

08/25/2015

Hiawatha NF West Unit

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:

Brad Slaughter, Dave Cuthrell

Latitude:

46.032845

Longitude:

-86.797398

Weather Notes:

Duration Notes:

Community Type Notes:

Bog

Other Notes:

Conservatism-Based Metrics:

Total Mean C: 8.2

Native Mean C: 8.2

Total FQI: 40.2

Native FQI: 40.2

Adjusted FQI: 82

% C value 0: 0

% C value 1-3: 0

% C value 4-6: 25

% C value 7-10: 75

Native Tree Mean C: 5.3

Native Shrub Mean C: 8.7

Native Herbaceous Mean C: 8.6

Species Richness:

Total Species:	24	
Native Species:	24	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-4.1
Native Mean Wetness:	-4.1

Physiognomy Metrics:

Tree:	3	12.50%
Shrub:	6	25%
Vine:	0	0%
Forb:	7	29.20%
Grass:	0	0%
Sedge:	8	33.30%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	1	4.20%
Perennial:	23	95.80%
Biennial:	0	0%
Native Annual:	1	4.20%
Native Perennial:	23	95.80%
Native Biennial:	0	0%

**Species:**

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Carex billingsii; c. trisperma	Cyperaceae	CXBILL	native	10	-5	sedge	perennial	sedge	C-LA
Carex limosa	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	LC

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Carex oligosperma	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	O-LC
Carex pauciflora	Cyperaceae	CXPAUC	native	10	-5	sedge	perennial	sedge	C
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C
Drosera intermedia	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	LA
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	C
Dulichium arundinaceum	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	U
Eriophorum vaginatum; e. spissum	Cyperaceae	ERIVAG	native	10	-5	sedge	perennial	cotton-grass	O
Eriophorum virginicum	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	C
Gaultheria hispidula	Ericaceae	GAUHIS	native	8	-3	shrub	perennial	creeping-snowberry	LO
Kalmia polifolia	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	C
Larix laricina	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
Melampyrum lineare	Orobanchaceae	MELLIN	native	6	3	forb	annual	cow-wheat	C
Nuphar variegata	Nymphaeaceae	NUPVAR	native	7	-5	forb	perennial	yellow pond-lily	LC
Picea mariana	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
Pinus banksiana	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	O
Rhododendron groenlandicum; ledum g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	O
Rhynchospora alba	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	D
Sarracenia purpurea	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
Utricularia cornuta	Lentibulariaceae	UTRCOR	native	10	-5	forb	perennial	horned bladderwort	LC-A
Vaccinium oxycoccos	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C-A
Xyris montana	Xyridaceae	XYRMON	native	10	-5	forb	perennial	yellow-eyed-grass	A

**Site:** Upper Eighteenmile Lake cRNA  
**Community Type:** Northern Fen  
**EOID:** 19458  
**County:** Delta  
**Central TRS:** T43N R20W S17  
**Size:** 5.9 acres  
**EO Rank:** BC

### Setting

The occurrence consists of several northern fen openings within a matrix of rich conifer swamp on a terraced slope above the Whitefish River in the glacial Au Train - Whitefish Channel, surrounded by a matrix of rich conifer swamp dominated in places by northern white-cedar and elsewhere by black spruce.

### Soils

The fen is situated on deep fibric to hemic peats, mostly of sedge origin. Peat soils are primarily mildly to strongly alkaline (pH= 7.5-8.5), with very strongly acid (pH= 4.5-5.0) conditions localized to the upper layers of sphagnum-covered hummocks.

### Natural Processes

The fen community is maintained by groundwater seepage and saturation.

### Anthropogenic Disturbances and Threats

Hunting activity, including cutting of larger trees to provide sight lines, creates favorable conditions for the establishment of a dense infestation of marsh thistle within most of the openings.

### Vegetation

The northern fen openings are generally dominated by sedges, primarily *Carex lasiocarpa* (wiregrass sedge), associated with *Trichophorum cespitosum* (tufted bulrush), *Carex sterilis* (sterile sedge), and *C. flava* (yellow sedge). *Rhynchospora alba* (white beak-rush) is locally common in the wettest depressions. Other characteristic species of the saturated fen flats include *Parnassia glauca* (grass-of-Parnassus), *Lobelia kalmii* (Kalm's lobelia), *Drosera rotundifolia* (round-leaved sundew), *Valeriana uliginosa* (bog valerian), *Triantha glutinosa* (false asphodel), and *Menyanthes trifoliata* (buckbean). Within the matrix of sedge flats, several large sphagnum-covered "islands" of stunted conifers and shrubs support *Picea mariana* (black spruce), *Thuja occidentalis* (northern white-cedar), *Larix laricina* (tamarack), *Rhododendron groenlandicum* (Labrador-tea), *Betula pumila* (bog birch), *Lonicera villosa* (mountain fly honeysuckle), *Rhamnus alnifolia* (alder-leaved buckthorn), and *Andromeda glaucophylla* (bog rosemary). Forbs and dwarf shrubs in these areas and generally on hummocks include wiregrass sedge, yellow sedge, *Carex stricta* (tussock sedge), *Sarracenia purpurea* (pitcher-plant), *Solidago rugosa* (rough-leaved goldenrod), *Eriophorum angustifolium* (narrow-leaved cotton-grass), round-leaved sundew, *Gaultheria*

*hispidula* (creeping snowberry), *Linnaea borealis* (twinflower), and *Vaccinium oxycoccos* (small cranberry).



This small northern fen is situated in a broad outwash channel supporting swamp forest of northern white-cedar and black spruce.



Scientific Name	Common Name	Abundance	Family Name	C	ST	W	WET	PHYS
Acer rubrum	RED MAPLE	U	Sapindaceae	1	0	FAC	Nt Tree	
Agrostis scabra	TICKLEGRASS	O	Poaceae	4	0	FAC	Nt P-Grass	
Andromeda glaucophylla	BOG-ROSEMARY	C	Ericaceae	10	-5	OBL	Nt Shrub	
Arethusa bulbosa	ARETHUSA, DRAGON'S MOUTH	U	Orchidaceae	10	-5	OBL	Nt P-Forb	
Betula papyrifera	PAPER BIRCH, WHITE BIRCH, CANOE BIRCH	U	Betulaceae	2	3	FACU	Nt Tree	
Betula pumila	BOG BIRCH, DWARF BIRCH	C	Betulaceae	8	-5	OBL	Nt Shrub	
Bromus ciliatus	FRINGED BROME	C	Poaceae	6	-3	FACW	Nt P-Grass	
Calopogon tuberosus	GRASS-PINK	O	Orchidaceae	9	-5	OBL	Nt P-Forb	
Carex flava	SEDGE	C	Cyperaceae	4	-5	OBL	Nt P-Sedge	
Carex lasiocarpa	SEDGE	D	Cyperaceae	8	-5	OBL	Nt P-Sedge	
Carex prairea	SEDGE	U-O	Cyperaceae	10	-3	FACW	Nt P-Sedge	
Carex sterilis	SEDGE	CD	Cyperaceae	10	-5	OBL	Nt P-Sedge	
Carex stricta	SEDGE	LC	Cyperaceae	4	-5	OBL	Nt P-Sedge	
Chamaedaphne calyculata	LEATHERLEAF	LC-U	Ericaceae	8	-5	OBL	Nt Shrub	
Cirsium palustre	MARSH THISTLE, EUROPEAN SWAMP THISTLE	C-A	Asteraceae	*	-3	FACW	Ad B-Forb	
Coptis trifolia	GOLDTHREAD	C	Ranunculaceae	5	-3	FACW	Nt P-Forb	
Cypripedium reginae	SHOWY LADY-SLIPPER, QUEEN'S LADY-SLIPPER	O	Orchidaceae	9	-3	FACW	Nt P-Forb	
Dasiphora fruticosa	SHRUBBY CINQUEFOIL	U	Rosaceae	8	-3	FACW	Nt Shrub	
Doellingeria umbellata	FLAT-TOPPED WHITE ASTER	U-O	Asteraceae	5	-3	FACW	Nt P-Forb	
Drosera rotundifolia	ROUND-LEAVED SUNDEW	C	Droseraceae	6	-5	OBL	Nt P-Forb	
Eleocharis elliptica	GOLDEN-SEEDED SPIKE RUSH	C	Cyperaceae	6	-5	OBL	Nt P-Sedge	
Elymus trachycaulus	SLENDER WHEATGRASS	O	Poaceae	8	3	FACU	Nt P-Grass	
Equisetum fluviatile	WATER HORSETAIL	C	Equisetaceae	7	-5	OBL	Nt Fern Al	
Eriophorum angustifolium	NARROW-LEAVED COTTON-GRASS	C	Cyperaceae	10	-5	OBL	Nt P-Sedge	
Eutrochium maculatum	JOE-PYE-WEED	O	Asteraceae	4	-5	OBL	Nt P-Forb	
Fragaria virginiana	WILD STRAWBERRY	C	Rosaceae	2	3	FACU	Nt P-Forb	
Galium labradoricum	BOG BEDSTRAW	O	Rubiaceae	8	-5	OBL	Nt P-Forb	
Gaultheria hispidula	CREEPING-SNOWBERRY	C	Ericaceae	8	-3	FACW	Nt Shrub	
Gentiana rubricaulis	RED-STEMMED GENTIAN, GREAT LAKES GENTIAN	O	Gentianaceae	7	-5	OBL	Nt P-Forb	
Geum rivale	PURPLE AVENS	U	Rosaceae	7	-5	OBL	Nt P-Forb	
Halenia deflexa	SPURRED GENTIAN	O	Gentianaceae	7	0	FAC	Nt A-Forb	
Juncus brevicaudatus	RUSH	U	Juncaceae	8	-5	OBL	Nt P-Forb	
Juncus pelocarpus	BROWN-FRUITED RUSH	O	Juncaceae	8	-5	OBL	Nt P-Forb	
Larix laricina	LARCH, TAMARACK	C	Pinaceae	5	-3	FACW	Nt Tree	
Linnaea borealis	TWINFLOWER	C	Linnaeaceae	6	0	FAC	Nt P-Forb	
Lobelia kalmii	KALM'S LOBELIA, BROOK LOBELIA, BOG LOBELIA	C	Campanulaceae	10	-5	OBL	Nt P-Forb	
Lonicera villosa	MOUNTAIN FLY HONEYSUCKLE	C	Caprifoliaceae	8	-3	FACW	Nt Shrub	
Maianthemum canadense	WILD LILY-OF-THE-VALLEY, CANADA MAYFLOWER, FALSE SOLOMON-SEAL, FALSE LILY-OF-THE-VALLEY	O	Convallariaceae	4	3	FACU	Nt P-Forb	
Maianthemum trifolium	FALSE MAYFLOWER	LC	Convallariaceae	10	-5	OBL	Nt P-Forb	
Menyanthes trifoliata	BUCKBEAN, BOGBEAN	A	Menyanthaceae	8	-5	OBL	Nt P-Forb	
Muhlenbergia glomerata	MARSH WILD-TIMOTHY	C	Poaceae	10	-5	OBL	Nt P-Grass	
Packera aurea	GOLDEN RAGWORT	O-LC	Asteraceae	5	-3	FACW	Nt P-Forb	
Parnassia glauca	GRASS-OF-PARNASSUS	C-A	Parnassiaceae	8	-5	OBL	Nt P-Forb	
Picea mariana	BLACK SPRUCE	C	Pinaceae	6	-3	FACW	Nt Tree	
Platanthera aquilonis	NORTHERN GREEN ORCHID	U	Orchidaceae	5	-3	FACW	Nt P-Forb	
Platanthera clavellata	CLUB-SPUR ORCHID, SMALL GREEN WOOD ORCHID	O-U	Orchidaceae	6	-3	FACW	Nt P-Forb	
Pogonia ophioglossoides	ROSE POGONIA	U	Orchidaceae	10	-5	OBL	Nt P-Forb	
Prunella vulgaris	SELF-HEAL, HEAL-ALL	U	Lamiaceae	0	0	FAC	Nt P-Forb	

Scientific Name	Common Name	Abundance	Family Name	C	ST	W	WET	PHYS
Rhamnus alnifolia	ALDER-LEAVED BUCKTHORN	C	Rhamnaceae	8	-5	OBL	Nt Shrub	
Rhododendron groenlandicum	LABRADOR-TEA	C	Ericaceae	8	-5	OBL	Nt Shrub	
Rhynchospora alba	BEAK-RUSH	C	Cyperaceae	6	-5	OBL	Nt P-Sedge	
Rubus pubescens	DWARF RASPBERRY	C	Rosaceae	4	-3	FACW	Nt P-Forb	
Sarracenia purpurea	PITCHER-PLANT	C	Sarraceniaceae	10	-5	OBL	Nt P-Forb	
Solidago rugosa	ROUGH-LEAVED GOLDENROD	C	Asteraceae	3	0	FAC	Nt P-Forb	
Solidago uliginosa	BOG GOLDENROD	O	Asteraceae	4	-5	OBL	Nt P-Forb	
Symphotrichum lanceolatum	PANICLED ASTER	U	Asteraceae	2	-3	FACW	Nt P-Forb	
Thuja occidentalis	ARBOR VITAE, WHITE-CEDAR, CEDAR	C	Cupressaceae	4	-3	FACW	Nt Tree	
Triantha glutinosa	FALSE ASPHODEL	C	Melanthiaceae	10	-5	OBL	Nt P-Forb	
Trichophorum cespitosum	BULRUSH	C	Cyperaceae	10	-5	OBL	Nt P-Sedge	
Trientalis borealis	STAR-FLOWER	O	Myrsinaceae	5	0	FAC	Nt P-Forb	
Utricularia sp.		LC	Lentibulariaceae				Nt P-Forb	
Vaccinium myrtilloides	VELVETLEAF BLUEBERRY, CANADA BLUEBERRY	O	Ericaceae	4	-3	FACW	Nt Shrub	
Vaccinium oxycoccos	SMALL CRANBERRY	C	Ericaceae	8	-5	OBL	Nt Shrub	
Valeriana uliginosa	SWAMP VALERIAN	U	Valerianaceae	10	-5	OBL	Nt P-Forb	
Viola nephrophylla	NORTHERN BOG VIOLET	O	Violaceae	8	-3	FACW	Nt P-Forb	

**Site:** Shingleton Fen cRNA  
**Community Type:** Northern Fen  
**EOID:** 20543  
**County:** Schoolcraft  
**Central TRS:** T45N R17W S6  
**Size:** 155.7 acres  
**EO Rank:** B

### Setting

A large northern fen complex consisting of several rich fen openings in areas of groundwater discharge within a larger peatland supporting black spruce and cedar swamp. The peatland occurs on poorly drained glacial outwash and lakeplain in a largely forested landscape with extensive wetlands and uplands impacted by timber management activities.

### Soils

The fen occurs on deep (>36"), saturated, hemic, neutral to mildly alkaline (pH= 7.0-7.5) sedge and mixed sedge-wood peats which are locally buoyant in inundated areas. Sphagnum hummocks and lawns create locally acidic conditions (pH= 4.5-5.0) within the fen.

### Natural Processes

The primary natural processes shaping fen structure and composition are groundwater discharge and flow, peat saturation, colonization and expansion of sphagnum hummocks, and small-scale windthrow and conifer die-offs which create openings in more forested areas of the peatland.

### Anthropogenic Disturbances and Threats

The primary disturbance is the Haywire Grade ORV/Snowmobile Trail which passes through the largest open fen in the complex. This road appears to have altered hydrology by restricting flow across the peatland, causing ponding on the NW side of the grade and drying on the SE side. ORV users occasionally drive off the grade and create ruts in the peatland. On the east side of the road, botanists and photographers have damaged the peat surface by creating numerous trails and areas of compaction. The smaller fen openings west of the main area are better-buffered and less impacted. Marsh thistle was the only invasive plant documented and likely has insignificant impacts. Native broad-leaved cat-tail is common in the wet open fen and should be monitored for any potential increases in cover.

### Vegetation

The largest open peatland in the complex supports primarily open, wet sedge-dominated rich fen characterized in the wettest areas by *Carex lasiocarpa* (wiregrass sedge), *Rhynchospora alba* (white beak-rush), *Typha latifolia* (broad-leaved cat-tail), *Menyanthes trifoliata* (buckbean), *Sarracenia purpurea* (pitcher-plant), *Utricularia cornuta* (horned bladderwort), *Scheuchzeria palustris* (arrow-grass),

and *Drosera anglica* (English sundew), and in slightly drier areas by white beak-rush, *Carex livida* (livid sedge), *C. limosa* (bog sedge), *C. exilis* (coastal sedge), *Eleocharis elliptica* (golden-seeded spike-rush), and *Lobelia kalmii* (Kalm's lobelia). *Trichophorum cespitosum* (tufted bulrush) locally dominates low hummocks. Sphagnum hummocks, well-developed over much of the fen, support stunted conifers (*Thuja occidentalis* [northern white-cedar], *Larix laricina* [tamarack], and *Picea mariana* [black spruce]) and a variety of shrubs, especially *Betula pumila* (bog birch), *Aronia prunifolia* (chokeberry), and *Dasiphora fruticosa* (shrubby cinquefoil), commonly occurring with *Rhododendron groenlandicum* (Labrador-tea), *Andromeda glaucophylla* (bog rosemary), *Myrica gale* (sweet gale), *Lonicera villosa* (mountain fly honeysuckle), *Rhamnus alnifolia* (alder-leaved buckthorn), *Chamaedaphne calyculata* (leatherleaf), *Gaultheria hispidula* (creeping snowberry), *Rubus pubescens* (dwarf raspberry), and *Vaccinium oxycoccos* (small cranberry). Characteristic herbaceous species on hummocks include *Symphyotrichum boreale* (northern bog aster), pitcher-plant, buckbean, *Solidago uliginosa* (bog goldenrod), *Carex flava* (yellow sedge), wiregrass sedge, *Fragaria virginiana* (wild strawberry), *Triantha glutinosa* (false asphodel), *Linnaea borealis* (twinflower), *Cypripedium reginae* (showy lady-slipper), and *Osmunda regalis* (royal fern). The fen complex also includes an area of sphagnum-dominated poor fen transitioning to muskeg, with scattered tamarack and black spruce over leatherleaf, Labrador-tea, and other primarily bog species. Black spruce dominates inclusions of richer sphagnum lawns supporting primarily species typical of minerotrophic conditions. The smaller northern fen openings west of the main fen were not included within this particular survey, but support sedge- and shrub-dominated fen, in places rather muskeg-like with high sphagnum hummocks and abundant dwarfed conifers and shrubs.



The margins of the northern fen support tussocks of tufted bulrush and coastal sedge.

**Shingleton Fen (Hiawatha NF)**

08/26/2013

Shingleton Fen  
Shingleton  
Schoolcraft  
MI  
USA

FQA DB Region: Michigan

FQA DB Publication Year: 2014

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>

FQA DB Description:

Practitioner: Brad Slaughter, Dave Cuthrell

Latitude: 46.3238

Longitude: -86.4601

Weather Notes:

Duration Notes:

Community Type Notes: Northern fen, patterned fen

Other Notes:

Conservatism-Based Metrics:

Total Mean C: 6.8

Native Mean C: 6.8

Total FQI: 63.8

Native FQI: 63.4

Adjusted FQI: 67.6

% C value 0: 1.1

% C value 1-3: 10.2

% C value 4-6: 34.1

% C value 7-10: 54.5

Native Tree Mean C: 3.6

Native Shrub Mean C: 7.2

Native Herbaceous Mean C: 7

Species Richness:

Total Species: 88  
 Native Species: 87 98.90%  
 Non-native Species: 1 1.10%

Species Wetness:  
 Mean Wetness: -3.7  
 Native Mean Wetness: -3.7

**Physiognomy Metrics:**

Tree: 5 5.70%  
 Shrub: 23 26.10%  
 Vine: 0 0%  
 Forb: 40 45.50%  
 Grass: 3 3.40%  
 Sedge: 15 17%  
 Rush: 0 0%  
 Fern: 2 2.30%  
 Bryophyte: 0 0%

**Duration Metrics:**

Annual: 0 0%  
 Perennial: 86 97.70%  
 Biennial: 2 2.30%  
 Native Annual: 0 0%  
 Native Perennial: 86 97.70%  
 Native Biennial: 1 1.10%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	O
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	C
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Anemone quinquefolia	Ranunculaceae	ANEQUI	native	5	3	forb	perennial	wood anemone	C
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C-CD
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	LC-LD

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Bromus ciliatus</i>	Poaceae	BROCIL	native	6	-3	grass	perennial	fringed brome	O
<i>Calopogon tuberosus</i>	Orchidaceae	CALTUB	native	9	-5	forb	perennial	grass-pink	C
<i>Carex exilis</i>	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	C
<i>Carex flava</i>	Cyperaceae	CXFLAV	native	4	-5	sedge	perennial	sedge	O-C
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	C
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	LD
<i>Carex limosa</i>	Cyperaceae	CXLIMO	native	10	-5	sedge	perennial	bog sedge	C-CD
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
<i>Carex pauciflora</i>	Cyperaceae	CXPAUC	native	10	-5	sedge	perennial	sedge	U-LC
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	O
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C
<i>Chelone glabra</i>	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	C
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	U-LC
<i>Cirsium muticum</i>	Asteraceae	CIRMUT	native	6	-5	forb	biennial	swamp thistle	O
<i>Cirsium palustre</i>	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial	marsh thistle	O-LC
<i>Comarum palustre</i> ; <i>potentilla</i> p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	O
<i>Cornus canadensis</i>	Cornaceae	CORCAA	native	6	0	shrub	perennial	bunchberry	O
<i>Cypripedium parviflorum</i> ; c. <i>calceolus</i>	Orchidaceae	CYPPAR	native	5	0	forb	perennial	yellow lady-slipper	O
<i>Cypripedium reginae</i>	Orchidaceae	CYPREG	native	9	-3	forb	perennial	showy or queens lady-slipper	C
<i>Dasiphora fruticosa</i> ; <i>potentilla</i> f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	D-CD
<i>Doellingeria umbellata</i> ; <i>aster</i> u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	O
<i>Drosera anglica</i>	Droseraceae	DROANG	native	10	-5	forb	perennial	english sundew	LC
<i>Drosera rotundifolia</i>	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	O
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C-CD
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	C
<i>Eriophorum angustifolium</i>	Cyperaceae	ERIANG	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	C
<i>Eriophorum virginicum</i>	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	U-LA
<i>Eutrochium maculatum</i> ; <i>eupatorium</i> m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	U
<i>Fragaria virginiana</i>	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry	C
<i>Galium labradoricum</i>	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw	U
<i>Gaultheria hispidula</i>	Ericaceae	GAUHIS	native	8	-3	shrub	perennial	creeping-snowberry	C
<i>Gaultheria procumbens</i>	Ericaceae	GAUPRO	native	5	3	shrub	perennial	wintergreen	C
<i>Gentiana rubricaulis</i>	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	C
<i>Geum rivale</i>	Rosaceae	GEURIV	native	7	-5	forb	perennial	purple avens	U
<i>Ilex mucronata</i> ; <i>nemopanthus</i> m.	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	O

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	U-O
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	C
<i>Juncus effusus</i>	Juncaceae	JUNEFF	native	3	-5	forb	perennial	soft-stemmed rush	U
<i>Juniperus horizontalis</i>	Cupressaceae	JUNHOR	native	10	3	shrub	perennial	creeping juniper	O
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
<i>Linnaea borealis</i>	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinflower	C
<i>Lobelia kalmii</i>	Campanulaceae	LOBKAL	native	10	-5	forb	perennial	bog lobelia	C
<i>Lonicera oblongifolia</i>	Caprifoliaceae	LONOBL	native	8	-5	shrub	perennial	swamp fly honeysuckle	U
<i>Lonicera villosa</i>	Caprifoliaceae	LONVIL	native	8	-3	shrub	perennial	mountain fly honeysuckle	C
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U
<i>Maianthemum trifolium; smilacina t.</i>	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	LC
<i>Menyanthes trifoliata</i>	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	C
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	C
<i>Osmunda regalis</i>	Osmundaceae	OSMREG	native	5	-5	fern	perennial	royal fern	O
<i>Parnassia glauca</i>	Parnassiaceae	PARGLA	native	8	-5	forb	perennial	grass-of-parnassus	LC-U
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Platanthera dilatata; habenaria d.</i>	Orchidaceae	PLADIL	native	10	-5	forb	perennial	tall white bog orchid	C
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	U-LC
<i>Prenanthes racemosa</i>	Asteraceae	PRERAC	native	8	-3	forb	perennial	glaucous white lettuce	U-O
<i>Rhamnus alnifolia</i>	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn	C
<i>Rhododendron groenlandicum; ledum g.</i>	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	C
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-CD
<i>Rubus acaulis</i>	Rosaceae	RUBACA	native	10	-3	shrub	perennial	dwarf raspberry	U-LC
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	C
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	U
<i>Salix candida</i>	Salicaceae	SALCAN	native	9	-5	shrub	perennial	hoary willow	U
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	O
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Scheuchzeria palustris</i>	Scheuchzeriaceae	SCHPAL	native	10	-5	forb	perennial	arrow-grass	C-LA
<i>Scirpus cyperinus</i>	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass	U
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	O
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiranthes cernua</i>	Orchidaceae	SPICER	native	4	-3	forb	perennial	nodding ladies-tresses	U
<i>Symphotrichum boreale; aster b.</i>	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C



Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Symphyotrichum puniceum</i> ; aster p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	C
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C
<i>Triantha glutinosa</i> ; tofieldia g.	Melanthiaceae	TRIGLU	native	10	-5	forb	perennial	false asphodel	C
<i>Trichophorum alpinum</i> ; scirpus hudsonianus	Cyperaceae	TRIALP	native	10	-5	sedge	perennial	bulrush	C
<i>Trichophorum cespitosum</i> ; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C-CD
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	C
<i>Utricularia cornuta</i>	Lentibulariaceae	UTRCOR	native	10	-5	forb	perennial	horned bladderwort	C
<i>Vaccinium myrtilloides</i>	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	O
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
<i>Valeriana uliginosa</i>	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian	U-LO
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	C

**Site:** Old Plank Road  
**Community Type:** Poor Fen  
**E OID:** 19459  
**County:** Alger  
**Central TRS:** T44N R19W S20  
**Size:** 305.4 acres  
**EO Rank:** B

### Setting

A heterogeneous, moderately disturbed sedge- and shrub-dominated poor fen situated in a heavily forested landscape with extensive wetlands and numerous lakes on poorly drained glacial outwash.

### Soils

Shallow to deep, very strongly acid to slightly acid (pH= 5.0-6.5) hemic sedge peats over hydric sand (with more acidic conditions on sphagnum hummocks).

### Natural Processes

Flow of surface water and groundwater is from northwest to southeast across the peatland water tracks, with ponds and floating peat mats where old dune ridges impede drainage downslope. Peat depth is variable, with areas of shallower peat experiencing significant fluctuations of the water table seasonally and interannually. Sphagnum mosses are prevalent to locally dominant and provide habitat for species that are not competitive in more minerotrophic conditions.

### Anthropogenic Disturbances and Threats

The primary disturbance is the old rail bed that was constructed across the peatland. The rail bed has been converted to a gravel road (Old Plank Road) with ditches. The road bed is a partial barrier to the flow of water across the peatland. The wetland NW of the road has largely shrubbed over, possibly due to artificial drainage via the ditch. On the SE side of the road, no significant impediments to flow were noted away from the vicinity of the road. Other disturbances include logging of cedars adjacent to the water tracks (resulting in shrub dominance in former rich conifer swamp) and use of private tracts for hunting, with wood and plastic crate trails, vehicle tracks, and a deer blind noted.

### Vegetation

The water tracks support sedge- and shrub-dominated poor fen, with sphagnum hummocks and lawns and scattered, stunted conifers throughout the site. Depressions and open sedge lawns are dominated by several sedges, including *Carex lasiocarpa* (wiregrass sedge), *C. oligosperma* (few-seeded sedge), *C. exilis* (coastal sedge), *C. livida* (livid sedge), and *Rhynchospora alba* (white beak-rush). Other characteristic species of this zone include *Iris versicolor* (wild blue flag), *Sarracenia purpurea* (pitcher-plant), *Oclemena nemoralis* (bog aster), *Maianthemum trifolium* (false mayflower), *Calamagrostis canadensis* (blue-joint), *Eleocharis elliptica* (golden-seeded sedge), *Lysimachia terrestris* (swamp-

candles), *Solidago uliginosa* (bog goldenrod), and *Equisetum fluviatile* (water horsetail). On sphagnum hummocks and lawns, shrubs dominate the fen. Common tall shrubs include *Alnus incana* (tag alder), *Betula pumila* (bog birch), *Aronia prunifolia* (chokeberry), and, locally, *Viburnum cassinoides* (wild-raisin) and *Ilex verticillata* (Michigan holly). Among low shrubs, *Chamaedaphne calyculata* (leatherleaf), *Andromeda glaucophylla* (bog rosemary), and *Vaccinium oxycoccos* (small cranberry) are especially prevalent, often associated with *Kalmia polifolia* (bog laurel), *Salix pedicellaris* (bog willow), and *Rubus* spp. (blackberries), and less commonly with *Dasiphora fruticosa* (shrubby cinquefoil) and *Myrica gale* (sweet gale; co-dominant with leatherleaf on floating mats along the ponds at the eastern margin of the water tracks). Graminoid-dominated sphagnum lawns support *Carex pauciflora* (fewflower sedge) and *Eriophorum virginicum* (tawny cotton-grass) in addition to the aforementioned spp. Among the scattered conifers, *Larix laricina* (tamarack), *Picea mariana* (black spruce), and *Pinus strobus* (white pine) are most prevalent, with *Pinus banksiana* (jack pine) locally common and *Thuja occidentalis* (northern white-cedar) uncommon. *Acer rubrum* (red maple) is also occasional.



Sedges, shrubs, and stunted conifers characterize the poor fen at Old Plank Road.

**Old Plank Road Poor Fen (Hiawatha NF)**

08/29/2013

Old Plank Road

Alger

MI

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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>

FQA DB Description:

Practitioner:

Brad Slaughter, Dave Cuthrell

Latitude:

46.1955

Longitude:

-86.7043

Weather Notes:

mostly sunny, ~85F

Duration Notes:

Community Type Notes:

poor fen (EOID 19459)

Other Notes:

Also noted: *Platanthera* sp., *Potamogeton* sp.

Conservatism-Based Metrics:

Total Mean C:

6.4

Native Mean C:

6.4

Total FQI:

54.7

Native FQI:

54.7

Adjusted FQI:

64

% C value 0:

0

% C value 1-3:

12.3

% C value 4-6:

42.5

% C value 7-10:

45.2

Native Tree Mean C:

4

Native Shrub Mean C:

6.4

Native Herbaceous Mean C:

6.8

Species Richness:

Total Species:	73	
Native Species:	73	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.5
Native Mean Wetness:	-3.5

Physiognomy Metrics:

Tree:	8	11%
Shrub:	21	28.80%
Vine:	0	0%
Forb:	26	35.60%
Grass:	4	5.50%
Sedge:	13	17.80%
Rush:	0	0%
Fern:	1	1.40%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	73	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	73	100%
Native Biennial:	0	0%

**Species:**

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	O
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	LC-O
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	CD

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Anemone quinquefolia	Ranunculaceae	ANEQUI	native	5	3	forb	perennial	wood anemone	O
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
Betula papyrifera	Betulaceae	BETPAP	native	2	3	tree	perennial	paper birch	U
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	CD
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	C
Campanula aparinoides	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	LC
Carex exilis	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	C-LCD
Carex lacustris	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge	U-LC
Carex lasiocarpa	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	C-CD
Carex livida	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C-LCD
Carex michauxiana	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	O-LC
Carex oligosperma	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	C-CD
Carex pauciflora	Cyperaceae	CXPAUC	native	10	-5	sedge	perennial	sedge	LC
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC
Carex utriculata; c. rostrata	Cyperaceae	CXUTRI	native	5	-5	sedge	perennial	sedge	LC
Chamaedaphne calyculata	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	CD
Chelone glabra	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	O
Cicuta bulbifera	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	LO
Comarum palustre; potentilla p.	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	LC
Coptis trifolia	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	U
Dasiphora fruticosa; potentilla f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	O-U
Doellingeria umbellata; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	LO
Drosera rotundifolia	Droseraceae	DROROT	native	6	-5	forb	perennial	round-leaved sundew	O-C
Dulichium arundinaceum	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	LC
Eleocharis elliptica	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	C
Equisetum fluviatile	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	C
Eriophorum virginicum	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	C
Fragaria virginiana	Rosaceae	FRAVIR	native	2	3	forb	perennial	wild strawberry	U
Glyceria canadensis	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	LC
Hypericum kalmianum	Hypericaceae	HYPKAL	native	10	-3	shrub	perennial	kalms st. johns-wort	U
Ilex verticillata	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	LC
Iris versicolor	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C
Juncus canadensis	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	O

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Kalmia polifolia</i>	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	C
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	U
<i>Lysimachia terrestris</i>	Myrsinaceae	LYSTER	native	6	-5	forb	perennial	swamp-candles	C
<i>Maianthemum canadense</i>	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower	U
<i>Maianthemum trifolium</i> ; <i>smilacina</i> t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	C
<i>Menyanthes trifoliata</i>	Menyanthaceae	MENTRI	native	8	-5	forb	perennial	buckbean	LC
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	U-O
<i>Muhlenbergia uniflora</i>	Poaceae	MUHUNI	native	8	-5	grass	perennial	muhly grass	U
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	O-LCD
<i>Oclemena nemoralis</i> ; <i>aster</i> n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	LC
<i>Pinus resinosa</i>	Pinaceae	PINRES	native	6	3	tree	perennial	red pine	U
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	C
<i>Platanthera clavellata</i> ; <i>habenaria</i> c.	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	U
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	U
<i>Pyrola americana</i> ; <i>p. rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	O
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	O
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	U-LC
<i>Rubus hispidus</i>	Rosaceae	RUBHIS	native	4	-3	shrub	perennial	swamp dewberry	O-C
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	O-C
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	O-LC
<i>Salix petiolaris</i>	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow	U-LC
<i>Salix serissima</i>	Salicaceae	SALSES	native	8	-5	shrub	perennial	autumn willow	U
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	U-LC
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiraea alba</i>	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	O
<i>Spiraea tomentosa</i>	Rosaceae	SPITOM	native	5	-3	shrub	perennial	steeplebush	U
<i>Symphotrichum boreale</i> ; <i>aster</i> b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C
<i>Symphotrichum puniceum</i> ; <i>aster</i> p.	Asteraceae	SYMPUN	native	5	-5	forb	perennial	swamp aster	LU

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	U
Utricularia intermedia	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	O
Vaccinium oxycoccos	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
Viburnum cassinoides	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	LC



**Site:** Hickey Creek Truck Trail South  
**Community Type:** Poor Fen  
**EOID:** 19962  
**County:** Schoolcraft  
**Central TRS:** T45N R17W S10  
**Size:** 71.5 acres  
**EO Rank:** B

### Setting

A poor fen consisting of several short water tracks draining S/SE towards the North Branch of Stutts Creek, separated by bands of taller trees and denser shrubs in a broader landscape of broad, poorly drained glacial lakeplain supporting extensive peatlands surrounding several islands of upland forest on glacial outwash.

### Soils

The fen occurs on primarily hemic sedge peats of shallow or moderate depth (typically <24", but locally greater than 36") of generally medium acid to slightly acid pH (pH= 5.5-6.5), with more acidic conditions in fibric sphagnum layers under hummocks. The peat is underlain by slightly acid (pH= 6.0-6.5) fine- to medium-textured lacustrine sands.

### Natural Processes

The site appears to experience significant fluctuations in the water table, and the vegetation appears to have been impacted by a significant fire in the (perhaps distant) past.

### Anthropogenic Disturbances and Threats

There is little evidence of recent disturbance.

### Vegetation

The poor fen water tracks are characterized by a mix of low shrub and sedge dominance. Important low shrubs include *Viburnum cassinoides* (wild-raisin), *Aronia prunifolia* (chokeberry), *Chamaedaphne calyculata* (leatherleaf), *Kalmia polifolia* (bog laurel), *Andromeda glaucophylla* (bog rosemary), *Rubus setosus* (bristly blackberry), and *Rubus hispida* (swamp dewberry). Characteristic graminoids are *Carex exilis* (coastal sedge), *Trichophorum cespitosum* (tufted bulrush), *Rhynchospora alba* (white beak-rush), *Carex livida* (livid sedge), *C. michauxiana* (Michaux's sedge), *C. folliculata* (northern long sedge), *Muhlenbergia uniflora* (muhly grass), and *Deschampsia cespitosa* (hair grass). Common forbs include *Oclemena nemoralis* (bog aster), *Sarracenia purpurea* (pitcher-plant), and *Solidago uliginosa* (bog goldenrod). Sphagnum mosses are common. Trees are scattered and generally stunted, and are primarily represented by *Larix laricina* (tamarack), *Picea mariana* (black spruce), and, locally, *Thuja occidentalis* (northern white-cedar).

**Hickey Creek Truck Trail South (Hiawatha NF)**

08/26/2013

Hickey Creek TT S

Schoolcraft

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:

Brad Slaughter, Dave Cuthrell

Latitude:

46.3074

Longitude:

-86.4164

Weather Notes:

Duration Notes:

Community Type Notes:

Poor fen (EOID 19962)

Other Notes:

Also noted: *Dichanthelium* sp., *Eriophorum* sp.

Conservatism-Based Metrics:

Total Mean C: 6.5

Native Mean C: 6.5

Total FQI: 46.9

Native FQI: 46.9

Adjusted FQI: 65

% C value 0: 0

% C value 1-3: 9.6

% C value 4-6: 44.2

% C value 7-10: 46.2

Native Tree Mean C: 3.8

Native Shrub Mean C: 6.4

Native Herbaceous Mean C: 7.1

Species Richness:

Total Species:	52	
Native Species:	52	100%
Non-native Species:	0	0%

Species Wetness:

Mean Wetness:	-3.1
Native Mean Wetness:	-3.1

Physiognomy Metrics:

Tree:	5	9.60%
Shrub:	17	32.70%
Vine:	0	0%
Forb:	16	30.80%
Grass:	4	7.70%
Sedge:	10	19.20%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	52	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	52	100%
Native Biennial:	0	0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	U-O
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	O
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	LC-U
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
Anemone quinquefolia	Ranunculaceae	ANEQUI	native	5	3	forb	perennial	wood anemone	LC

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Aronia prunifolia</i>	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C-CD
<i>Betula pumila</i>	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	C-D
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	U
<i>Carex exilis</i>	Cyperaceae	CXEXIL	native	10	-5	sedge	perennial	sedge	C
<i>Carex folliculata</i>	Cyperaceae	CXFOLL	native	10	-5	sedge	perennial	sedge	C-A
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	LC
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	LC
<i>Carex michauxiana</i>	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	C-LCD
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	U
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LC
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C-CD
<i>Coptis trifolia</i>	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	LC
<i>Deschampsia cespitosa</i>	Poaceae	DESCES	native	9	-3	grass	perennial	hair grass	LC-U
<i>Doellingeria umbellata</i> ; aster u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	LO
<i>Drosera intermedia</i>	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	U-O
<i>Eriophorum virginicum</i>	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	U
<i>Ilex mucronata</i> ; <i>nemopanthus</i> m.	Aquifoliaceae	ILEMUC	native	7	-5	shrub	perennial	mountain holly	C
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	LC
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	O
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	O-LC
<i>Juncus canadensis</i>	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	O
<i>Kalmia polifolia</i>	Ericaceae	KALPOL	native	10	-5	shrub	perennial	bog-laurel	C
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	D
<i>Linnaea borealis</i>	Linnaeaceae	LINBOR	native	6	0	forb	perennial	twinflower	U
<i>Maianthemum canadense</i>	Convallariaceae	MAICAN	native	4	3	forb	perennial	canada mayflower	U
<i>Muhlenbergia uniflora</i>	Poaceae	MUHUNI	native	8	-5	grass	perennial	muhly grass	C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LC
<i>Oclemena nemoralis</i> ; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C-A
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	C
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	O
<i>Pogonia ophioglossoides</i>	Orchidaceae	POGOPH	native	10	-5	forb	perennial	rose pogonia	U-LA
<i>Prenanthes racemosa</i>	Asteraceae	PRERAC	native	8	-3	forb	perennial	glaucous white lettuce	U
<i>Prunus pumila</i>	Rosaceae	PRUPUM	native	8	5	shrub	perennial	sand cherry	U
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	U

<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Rhynchospora alba	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-LD
Rubus hispidus	Rosaceae	RUBHIS	native	4	-3	shrub	perennial	swamp dewberry	CD
Rubus setosus	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	CD
Sarracenia purpurea	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
Solidago rugosa	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	U-LC
Solidago uliginosa	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
Thuja occidentalis	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	U-O
Trichophorum cespitosum; scirpus c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	C
Trientalis borealis	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	U
Vaccinium angustifolium	Ericaceae	VACANG	native	4	3	shrub	perennial	low sweet blueberry	LC
Vaccinium myrtilloides	Ericaceae	VACMYR	native	4	-3	shrub	perennial	canada blueberry	U-LO
Vaccinium oxycoccos	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	C
Viburnum cassinoides	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	C

**Site:** Hickey Creek Truck Trail North  
**Community Type:** Poor Fen  
**EOID:** 19963  
**County:** Schoolcraft  
**Central TRS:** T45N R17W S11  
**Size:** 276.3 acres  
**EO Rank:** AB

### Setting

A moderate-sized, open, west-east oriented peatland situated in a broad area of poorly drained glacial lakeplain, surrounded by extensive areas of northern shrub thicket, rich conifer swamp, and mesic northern forest in a largely forested landscape managed primarily for timber.

### Soils

Shallow, strongly acid to mildly alkaline (pH= 5.5-7.5) hemic peats over saturated sand.

### Natural Processes

Open conditions are maintained primarily by a seasonally fluctuating water table, with seasonal inundation and localized areas of more permanent standing water. Groundwater discharge zones are evidenced by localized concentrations of minerotrophic indicators.

### Anthropogenic Disturbances and Threats

The primary disturbances to the fen are landscape-scale fire suppression and historical logging (including stumps noted on islands within the fen).

### Vegetation

The open fen is dominated by sedges, primarily *Carex lasiocarpa* (wiregrass sedge), *C. stricta* (tussock sedge), *C. oligosperma* (few-seeded sedge), and *C. livida* (livid sedge), associated with *Calamagrostis canadensis* (blue-joint), *Rhynchospora alba* (white beak-rush), and *Muhlenbergia glomerata* (marsh wild-timothy). Other common herbaceous species include *Agrostis scabra* (ticklegrass), *Symphotrichum boreale* (northern bog aster), *Lobelia kalmii* (Kalm's lobelia), *Eleocharis elliptica* (golden-seeded spike-rush), *Iris versicolor* (wild blue flag), *Solidago uliginosa* (bog goldenrod), *Lysimachia terrestris* (swamp-candles), *Equisetum fluviatile* (water horsetail), *Sarracenia purpurea* (pitcher-plant), and *Menyanthes trifoliata* (buckbean). Common low shrubs, which occur primarily as circular "islands" within the open sedge flats, include *Betula pumila* (bog birch), *Dasiphora fruticosa* (shrubby cinquefoil), *Myrica gale* (sweet gale), *Andromeda glaucophylla* (bog rosemary), *Chamaedaphne calyculata* (leatherleaf), and *Salix* spp. (willows). Bog birch and *Alnus incana* (tag alder) thickets surround much of the fen. *Larix laricina* (tamarack), *Thuja occidentalis* (northern white-cedar), and *Pinus strobus* (white pine) are scattered. Sphagnum mosses form localized carpets but are largely absent from most of the fen.

**Hickey Creek Truck Trail North (Hiawatha NF)**

08/28/2013

Hickey Creek TT N

Schoolcraft

MI

USA

FQA DB Region: Michigan

FQA DB Publication Year: 2014

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>

FQA DB Description:

Practitioner: Brad Slaughter, Dave Cuthrell

Latitude: 46.3147

Longitude: -86.3997

Weather Notes:

Duration Notes:

Community Type Notes: Poor fen (EOID 19963)

Other Notes: Also noted: Utricularia spp.

Conservatism-Based Metrics:

Total Mean C: 6.2

Native Mean C: 6.2

Total FQI: 51.5

Native FQI: 51.9

Adjusted FQI: 61.6

% C value 0: 1.4

% C value 1-3: 15.7

% C value 4-6: 37.1

% C value 7-10: 45.7

Native Tree Mean C: 4

Native Shrub Mean C: 6

Native Herbaceous Mean C: 6.6

Species Richness:

Total Species: 70  
 Native Species: 69 98.60%  
 Non-native Species: 1 1.40%

Species Wetness:  
 Mean Wetness: -3.9  
 Native Mean Wetness: -3.9

Physiognomy Metrics:

Tree: 6 8.60%  
 Shrub: 17 24.30%  
 Vine: 0 0%  
 Forb: 26 37%  
 Grass: 7 10.00%  
 Sedge: 13 18.60%  
 Rush: 0 0%  
 Fern: 1 1.40%  
 Bryophyte: 0 0%

Duration Metrics:

Annual: 0 0%  
 Perennial: 69 97.20%  
 Biennial: 1 2.80%  
 Native Annual: 0 0%  
 Native Perennial: 69 97.20%  
 Native Biennial: 1 1.40%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Acer rubrum</i>	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	U-O
<i>Agrostis scabra</i> ; a. <i>hyemalis</i>	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	C
<i>Alnus incana</i> ; a. <i>rugosa</i>	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	U-LC
<i>Andromeda glaucophylla</i>	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	C
<i>Aronia prunifolia</i>	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
<i>Betula pumila</i>	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	CD
<i>Bromus ciliatus</i>	Poaceae	BROCIL	native	6	-3	grass	perennial	fringed brome	U



Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Calamagrostis canadensis</i>	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	C
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	O
<i>Carex cryptolepis</i>	Cyperaceae	CXCRYP	native	8	-5	sedge	perennial	sedge	U-LC
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	O
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	D
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	C
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LCD
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	C
<i>Chelone glabra</i>	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	U-O
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	LC
<i>Cirsium palustre</i>	Asteraceae	CIRPAL	non-native	0	-3	forb	biennial	marsh thistle	R
<i>Cladium mariscoides</i>	Cyperaceae	CLAMAR	native	10	-5	sedge	perennial	twig-rush	LC
<i>Dasiphora fruticosa</i> ; <i>potentilla</i> f.	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	LCD
<i>Deschampsia cespitosa</i>	Poaceae	DESCES	native	9	-3	grass	perennial	hair grass	C
<i>Doellingeria umbellata</i> ; <i>aster</i> u.	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	O
<i>Dulichium arundinaceum</i>	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	LA
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	O-C
<i>Eleocharis palustris</i> ; <i>e. smallii</i>	Cyperaceae	ELEPAL	native	5	-5	sedge	perennial	spike-rush	
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	LO-U
<i>Euthamia caroliniana</i> ; <i>e. remota</i>	Asteraceae	EUTCAR	native	10	-3	forb	perennial	lakes flat-topped goldenrod	LA
<i>Euthamia graminifolia</i>	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod	O
<i>Eutrochium maculatum</i> ; <i>eupatorium</i> m.	Asteraceae	EUTMAC	native	4	-5	forb	perennial	joe-pye-weed	U
<i>Galium labradoricum</i>	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw	C
<i>Gentiana rubricaulis</i>	Gentianaceae	GENRUB	native	7	-5	forb	perennial	great lakes gentian	O
<i>Glyceria canadensis</i>	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	LC
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	LC
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	C
<i>Juncus canadensis</i>	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	C
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C-D
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	O
<i>Lysimachia terrestris</i>	Myrsinaceae	LYSTER	native	6	-5	forb	perennial	swamp-candles	C
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	C
<i>Muhlenbergia uniflora</i>	Poaceae	MUHUNI	native	8	-5	grass	perennial	muhly grass	U
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	CD

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Oclemena nemoralis</i> ; aster n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	LC
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	O-C
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	U-LC
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	O
<i>Platanthera dilatata</i> ; <i>habenaria</i> d.	Orchidaceae	PLADIL	native	10	-5	forb	perennial	tall white bog orchid	R-LO
<i>Prenanthes racemosa</i>	Asteraceae	PRERAC	native	8	-3	forb	perennial	glaucous white lettuce	O
<i>Rhamnus alnifolia</i>	Rhamnaceae	RHAALN	native	8	-5	shrub	perennial	alder-leaved buckthorn	U
<i>Rhynchospora fusca</i>	Cyperaceae	RHYFUS	native	7	-5	sedge	perennial	beak-rush	U
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	U-LO
<i>Rubus hispidus</i>	Rosaceae	RUBHIS	native	4	-3	shrub	perennial	swamp dewberry	LC
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	LD
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	LC
<i>Salix petiolaris</i>	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow	O
<i>Salix serissima</i>	Salicaceae	SALSES	native	8	-5	shrub	perennial	autumn willow	LC
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	U
<i>Scirpus cyperinus</i>	Cyperaceae	SCICYP	native	5	-5	sedge	perennial	wool-grass	LC
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	U
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiraea alba</i>	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	U-O
<i>Symphotrichum boreale</i> ; aster b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C
<i>Symphotrichum lanceolatum</i> ; aster l.	Asteraceae	SYMLAN	native	2	-3	forb	perennial	panicked aster	O
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	U-LC
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	LO
<i>Trichophorum cespitosum</i> ; <i>scirpus</i> c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	U
<i>Triglochin maritima</i>	Juncaginaceae	TRIMAR	native	8	-5	forb	perennial	common bog arrow-grass	O-LC
<i>Typha latifolia</i>	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail	LO
<i>Valeriana uliginosa</i>	Valerianaceae	VALULI	native	10	-5	forb	perennial	swamp valerian	LC
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	U

**Site:** Lake Stella NE  
**Community Type:** Poor Fen  
**EOID:** 20369  
**County:** Alger  
**Central TRS:** T44N R20W S23  
**Size:** 315.5 acres  
**EO Rank:** B

### Setting

A moderate-sized poor fen developed in several coalescing water tracks emanating from drainage channels in the adjacent rich conifer swamp, situated on poorly drained sandy glacial outwash in a heavily forested landscape impacted by timber management and localized development.

### Soils

The fen occurs on shallow (9-26"), very strongly acid to slightly acid (pH= 5.0-6.5) hemic sedge peat over hydric sands.

### Natural Processes

Peat surfaces slope gently to the south, with sheet flow across the water tracks eventually draining into Lake Stella. Shifting dominance patterns within the water tracks are associated with peat depth and hydrologic dynamics.

### Anthropogenic Disturbances and Threats

The fen is impacted by excavation of a 0.5-acre pond on private land and ORV incursions that have matted vegetation and created shallow ruts. No invasive plants were noted within the site.

### Vegetation

Fen water tracks are dominated primarily by sedges, with dwarfed conifers, shrubs, and sphagnum mosses on hummocks. *Carex lasiocarpa* (wiregrass sedge) and *C. exilis* (coastal sedge) dominate much of the fen; other common and locally dominant species include *Carex livida* (livid sedge), *C. oligosperma* (few-seeded sedge), *C. interior* (inland sedge), *Rhynchospora alba* (white beak-rush), and *Trichophorum cespitosum* (tufted bulrush). Other characteristic herbaceous species of sedge fen include *Eriophorum virginicum* (tawny cotton-grass), *Oclemena nemoralis* (bog aster), *Iris versicolor* (wild blue flag), *Muhlenbergia glomerata* (marsh wild-timothy), *Sarracenia purpurea* (pitcher-plant), *Symphotrichum boreale* (northern bog aster), and *Vaccinium macrocarpon* (large cranberry). *Dulichium arundinaceum* (three-way sedge) and *Utricularia intermedia* (flat-leaved bladderwort) are locally common in shallowly inundated areas. Hummocks are characterized by *Larix laricina* (tamarack), *Thuja occidentalis* (northern white-cedar), *Alnus incana* (tag alder), *Aronia prunifolia* (chokeberry), *Betula pumila* (bog birch), *Chamaedaphne calyculata* (leatherleaf), *Andromeda glaucophylla* (bog rosemary), *Rubus setosus* (bristly blackberry), *Dasiphora fruticosa* (shrubby cinquefoil), *Vaccinium oxycoccos* (small cranberry), *Carex* spp.

(sedges), pitcher-plant, *Solidago uliginosa* (bog goldenrod), northern bog aster, bog aster, and *Juncus canadensis* (Canadian rush). At the western margin of the fen, a narrow band of northern wet meadow occurs where run-off from adjacent uplands increases nutrient availability. This zone is dominated by *Carex lacustris* (lake sedge) and *Calamagrostis canadensis* (blue-joint), associated with *Persicaria amphibia* (water smartweed) and *Doellingeria umbellata* (flat-topped white aster) and bordered by thickets of tag alder.



The poor fen NE of Lake Stella supports broad water tracks and numerous conifer-dominated sandy “islands”.

**Lake Stella NE**

08/26/2015

Lake Stella Outwash

Alger

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

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>

FQA DB Description:

Practitioner:

Brad Slaughter, Dave Cuthrell

Latitude:

46.1899

Longitude:

-86.7669

Weather Notes:

Mostly cloudy, ~60F

Duration Notes:

Community Type Notes:

Poor fen EO #36 (EOID: 20369)

Other Notes:

Also: Salix sp.

Conservatism-Based Metrics:

Total Mean C: 6.5

Native Mean C: 6.5

Total FQI: 57.8

Native FQI: 57.8

Adjusted FQI: 65

% C value 0: 0

% C value 1-3: 10.1

% C value 4-6: 44.3

% C value 7-10: 45.6

Native Tree Mean C: 4

Native Shrub Mean C: 6.3

Native Herbaceous Mean C: 6.8

Species Richness:

Total Species: 79  
 Native Species: 79 100%  
 Non-native Species: 0 0%

Species Wetness:  
 Mean Wetness: -3.9  
 Native Mean Wetness: -3.9

Physiognomy Metrics:  
 Tree: 6 7.60%  
 Shrub: 18 22.80%  
 Vine: 0 0%  
 Forb: 32 40.50%  
 Grass: 5 6.30%  
 Sedge: 16 20.30%  
 Rush: 0 0%  
 Fern: 2 2.50%  
 Bryophyte: 0 0%

Duration Metrics:  
 Annual: 0 0%  
 Perennial: 79 100%  
 Biennial: 0 0%  
 Native Annual: 0 0%  
 Native Perennial: 79 100%  
 Native Biennial: 0 0%

**Species:**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple	O
Agrostis scabra; a. hyemalis	Poaceae	AGRSCA	native	4	0	grass	perennial	ticklegrass	O
Alnus incana; a. rugosa	Betulaceae	ALNINC	native	5	-3	shrub	perennial	speckled alder	O-LCD
Andromeda glaucophylla	Ericaceae	ANDGLA	native	10	-5	shrub	perennial	bog-rosemary	CD
Aronia prunifolia	Rosaceae	AROPRU	native	5	-3	shrub	perennial	chokeberry	C
Betula pumila	Betulaceae	BETPUM	native	8	-5	shrub	perennial	bog birch	C-LD
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint	LC

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Calamagrostis stricta</i> ; <i>c. inexpansa</i> ; <i>c. lacustris</i>	Poaceae	CALSTR	native	10	-3	grass	perennial	narrow-leaved reedgrass	C
<i>Caltha palustris</i>	Ranunculaceae	CALPAR	native	6	-5	forb	perennial	marsh-marigold	LC
<i>Campanula aparinoides</i>	Campanulaceae	CAMAPA	native	7	-5	forb	perennial	marsh bellflower	O-C
<i>Carex buxbaumii</i>	Cyperaceae	CXBUXB	native	10	-5	sedge	perennial	sedge	O
<i>Carex exilis</i>	Cyperaceae	CSEXIL	native	10	-5	sedge	perennial	sedge	C-CD
<i>Carex interior</i>	Cyperaceae	CXINTE	native	3	-5	sedge	perennial	sedge	C
<i>Carex lacustris</i>	Cyperaceae	CXLACU	native	6	-5	sedge	perennial	sedge	LD
<i>Carex lasiocarpa</i>	Cyperaceae	CXLASI	native	8	-5	sedge	perennial	sedge	CD
<i>Carex livida</i>	Cyperaceae	CXLIVI	native	10	-5	sedge	perennial	sedge	C
<i>Carex michauxiana</i>	Cyperaceae	CXMICH	native	10	-5	sedge	perennial	sedge	LC
<i>Carex oligosperma</i>	Cyperaceae	CXOLIS	native	10	-5	sedge	perennial	sedge	C
<i>Carex stricta</i>	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge	LCD
<i>Chamaedaphne calyculata</i>	Ericaceae	CHACAL	native	8	-5	shrub	perennial	leatherleaf	CD
<i>Chelone glabra</i>	Plantaginaceae	CHEGLB	native	7	-5	forb	perennial	turtlehead	LC
<i>Cicuta bulbifera</i>	Apiaceae	CICBUL	native	5	-5	forb	perennial	water hemlock	LC
<i>Comarum palustre</i> ; <i>potentilla p.</i>	Rosaceae	COMPAL	native	7	-5	forb	perennial	marsh cinquefoil	LC
<i>Coptis trifolia</i>	Ranunculaceae	COPTRI	native	5	-3	forb	perennial	goldthread	U
<i>Dasiphora fruticosa</i> ; <i>potentilla f.</i>	Rosaceae	DASFRU	native	8	-3	shrub	perennial	shrubby cinquefoil	C
<i>Doellingeria umbellata</i> ; <i>aster u.</i>	Asteraceae	DOEUMB	native	5	-3	forb	perennial	flat-topped white aster	LC
<i>Drosera intermedia</i>	Droseraceae	DROINT	native	8	-5	forb	perennial	spatulate-leaved sundew	LO
<i>Dulichium arundinaceum</i>	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge	U-LC
<i>Eleocharis elliptica</i>	Cyperaceae	ELEELL	native	6	-5	sedge	perennial	golden-seeded spike rush	O
<i>Equisetum fluviatile</i>	Equisetaceae	EQUFLU	native	7	-5	fern	perennial	water horsetail	O
<i>Eriophorum angustifolium</i>	Cyperaceae	ERIANG	native	10	-5	sedge	perennial	narrow-leaved cotton-grass	O
<i>Eriophorum virginicum</i>	Cyperaceae	ERIVIG	native	8	-5	sedge	perennial	tawny cotton-grass	LC
<i>Galium labradoricum</i>	Rubiaceae	GALLAB	native	8	-5	forb	perennial	bog bedstraw	C
<i>Gentiana andrewsii</i>	Gentianaceae	GENAND	native	5	-3	forb	perennial	bottle gentian	U
<i>Glyceria canadensis</i>	Poaceae	GLYCAN	native	8	-5	grass	perennial	rattlesnake grass	LC
<i>Ilex verticillata</i>	Aquifoliaceae	ILEVER	native	5	-3	shrub	perennial	michigan holly	C
<i>Iris versicolor</i>	Iridaceae	IRIVER	native	5	-5	forb	perennial	wild blue flag	O-C
<i>Juncus brevicaudatus</i>	Juncaceae	JUNBRE	native	8	-5	forb	perennial	rush	U
<i>Juncus canadensis</i>	Juncaceae	JUNCAN	native	6	-5	forb	perennial	canadian rush	C
<i>Larix laricina</i>	Pinaceae	LARLAR	native	5	-3	tree	perennial	tamarack	C
<i>Lycopus uniflorus</i>	Lamiaceae	LYCUNI	native	2	-5	forb	perennial	northern bugle weed	C
<i>Lysimachia terrestris</i>	Myrsinaceae	LYSTER	native	6	-5	forb	perennial	swamp-candles	LO

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name	Abundance
<i>Maianthemum trifolium</i> ; <i>smilacina</i> t.	Convallariaceae	MAITRI	native	10	-5	forb	perennial	false mayflower	LO
<i>Muhlenbergia glomerata</i>	Poaceae	MUHGLO	native	10	-5	grass	perennial	marsh wild-timothy	O-C
<i>Myrica gale</i>	Myricaceae	MYRGAL	native	6	-5	shrub	perennial	sweet gale	LC
<i>Oclemena nemoralis</i> ; <i>aster</i> n.	Asteraceae	OCLNEM	native	10	-5	forb	perennial	bog aster	C
<i>Persicaria amphibia</i> ; <i>polygonum</i> a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed	LC
<i>Picea mariana</i>	Pinaceae	PICMAR	native	6	-3	tree	perennial	black spruce	U-O
<i>Pinus banksiana</i>	Pinaceae	PINBAN	native	5	3	tree	perennial	jack pine	O
<i>Pinus strobus</i>	Pinaceae	PINSTR	native	3	3	tree	perennial	white pine	O
<i>Platanthera aquilonis</i> ; <i>habenaria hyperborea</i>	Orchidaceae	PLAAQU	native	5	-3	forb	perennial	northern green orchid	U
<i>Platanthera clavellata</i> ; <i>habenaria</i> c.	Orchidaceae	PLACLA	native	6	-3	forb	perennial	small green wood orchid	LC
<i>Pyrola americana</i> ; <i>p. rotundifolia</i>	Ericaceae	PYRAME	native	7	0	forb	perennial	round-leaved pyrola	LC
<i>Rhododendron groenlandicum</i> ; <i>ledum</i> g.	Ericaceae	RHOGRO	native	8	-5	shrub	perennial	labrador-tea	LO
<i>Rhynchospora alba</i>	Cyperaceae	RHYALB	native	6	-5	sedge	perennial	beak-rush	C-LCD
<i>Rhynchospora fusca</i>	Cyperaceae	RHYFUS	native	7	-5	sedge	perennial	beak-rush	LC
<i>Rosa palustris</i>	Rosaceae	ROSPAL	native	5	-5	shrub	perennial	swamp rose	C
<i>Rubus pubescens</i>	Rosaceae	RUBPUB	native	4	-3	shrub	perennial	dwarf raspberry	U
<i>Rubus setosus</i>	Rosaceae	RUBSET	native	3	-3	shrub	perennial	bristly blackberry	C
<i>Rumex orbiculatus</i>	Polygonaceae	RUMORB	native	9	-5	forb	perennial	great water dock	LC
<i>Salix pedicellaris</i>	Salicaceae	SALPED	native	8	-5	shrub	perennial	bog willow	O-C
<i>Sarracenia purpurea</i>	Sarraceniaceae	SARPUR	native	10	-5	forb	perennial	pitcher-plant	C
<i>Scutellaria galericulata</i>	Lamiaceae	SCUGAL	native	5	-5	forb	perennial	marsh skullcap	LO
<i>Solidago rugosa</i>	Asteraceae	SOLRUG	native	3	0	forb	perennial	rough-leaved goldenrod	LC
<i>Solidago uliginosa</i>	Asteraceae	SOLULI	native	4	-5	forb	perennial	bog goldenrod	C
<i>Spiraea alba</i>	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet	LC
<i>Spiraea tomentosa</i>	Rosaceae	SPITOM	native	5	-3	shrub	perennial	steeplebush	U-O
<i>Symphotrichum boreale</i> ; <i>aster</i> b.	Asteraceae	SYMBOR	native	9	-5	forb	perennial	northern bog aster	C
<i>Thelypteris palustris</i>	Thelypteridaceae	THEPAL	native	2	-3	fern	perennial	marsh fern	LC
<i>Thuja occidentalis</i>	Cupressaceae	THUOCC	native	4	-3	tree	perennial	arbor vitae	C
<i>Triadenum fraseri</i>	Hypericaceae	TRIFRA	native	6	-5	forb	perennial	marsh st. johns-wort	O
<i>Trichophorum cespitosum</i> ; <i>scirpus</i> c.	Cyperaceae	TRICES	native	10	-5	sedge	perennial	bulrush	LC
<i>Trientalis borealis</i>	Myrsinaceae	TRIBOR	native	5	0	forb	perennial	star-flower	U-O
<i>Utricularia intermedia</i>	Lentibulariaceae	UTRINT	native	10	-5	forb	perennial	flat-leaved bladderwort	C
<i>Vaccinium macrocarpon</i>	Ericaceae	VACMAC	native	8	-5	shrub	perennial	large cranberry	LC
<i>Vaccinium oxycoccos</i>	Ericaceae	VACOXY	native	8	-5	shrub	perennial	small cranberry	O
<i>Viburnum cassinoides</i>	Adoxaceae	VIBCAS	native	6	3	shrub	perennial	wild-raisin	LC



<b>Scientific Name</b>	<b>Family</b>	<b>Acronym</b>	<b>Native?</b>	<b>C</b>	<b>W</b>	<b>Physiognomy</b>	<b>Duration</b>	<b>Common Name</b>	<b>Abundance</b>
Viola cucullata	Violaceae	VIOCUC	native	5	-5	forb	perennial	marsh violet	LC
Viola macloskeyi	Violaceae	VIOMAC	native	6	-5	forb	perennial	smooth white violet	U-LC