

## **Standard Operating Procedure**

### **Vegetation Sampling**

**Synopsis:** A standardized method for collecting vegetation data according to Great Lakes Coastal Wetlands Consortium protocols

Last updated June 4, 2018

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## 1.0 EXECUTIVE SUMMARY

Vegetation sampling has been conducted in Great Lakes coastal wetlands for the purposes of classification, identification of important wetlands for protection or acquisition, and characterization of wetlands for management. Sampling has often been conducted along transects with the purpose of identifying physical gradients and corresponding biological gradients or zones. It is recognized that relatively discrete vegetation zones occur at most coastal wetland sites due to differences in water depth and substrate, and that wave energy also effects wetland vegetation diversity. A classification of coastal wetlands, developed by the Great Lakes Wetland Consortium, is present on the Consortium's web page.

This study utilizes an approach to evaluating coastal wetland degradation, focusing on those factors agreed on by the plant ecologists studying Great Lakes coastal wetlands and participating in the Great Lakes Coastal Wetlands Consortium. These factors include 1) the coverage and distribution of invasive plants, 2) the coverage and diversity of submergent and floating plants, and 3) computing and comparing the Floristic Quality Index (FQI) to regional FQI scores.

In the Great Lakes, expansion of invasive plants into wetlands is the result of disturbances that alter the upper, seasonally wet edge of the wetland or disturbances that alter the permanently flooded portion of the wetland. The wet meadow and inner emergent marsh zones are typically degraded by alterations of the hydrology by ditching or physical disturbance of sediments, resulting in introduction of invasives. In contrast, changes to the outer emergent marsh and the submergent marsh zones are the result of disturbances to the flooded portion of the marsh by dredging, addition of nutrients in the form of fertilizer or animal waste, and addition of fine sediment as the result of intensive agriculture. The recommendation is made to monitor these zones separately to identify sources of degradation, and thus allow solutions to be identified for each zone.

Alteration of the wet meadow or upper emergent zone result in drier conditions and bare exposed sediments, allowing small-seeded invasive species to establish and rapidly expand by rhizomes or stolons. Many invasives are tall perennials that shade out native plants. A list of invasive species is provided.

The submergent and flooded emergent marsh zone are degraded by fine sediments and organic nutrients from either agriculture or urban areas, resulting in high turbidity and resultant reduced photosynthesis and regeneration by seed for many submergent plants. Added nutrients and sediments provides habitat for Eurasian carp, large, aggressive bottom feeders which uproot many aquatic plants. Some of the species most tolerant of high nutrient and turbidity levels are invasive species that form dense weed beds of reduced habitat value to fish and other aquatic fauna.

An successful approach to evaluate the intactness of plant communities is computation of a Floristic Quality Index, which utilizes all plants present at a site to estimate the intactness of the

plant community. Conservatism index scores are developed and applied regionally and have upper and lower limits of 10 and zero, respectively. A mean conservatism score evaluates the conservatism of all of the species at a site. We are using the mean conservatism index in monitoring changes to Great Lakes coastal wetland vegetation.

In summary, this monitoring protocol focuses on 1) identifying and quantifying those invasive plants that are considered indicators of degraded habitat, 2) identifying significant changes to the submergent and floating-leaved vegetation of the emergent and submergent marsh zones, and 3) comparing regional Mean Conservatism Indices for Great Lakes coastal wetland types to the local site's Mean Conservatism Indices.

## **2.0 INTRODUCTION**

Extensive vegetation sampling has been conducted in Great Lakes coastal wetlands for the purpose of classification, identification of important wetlands for protection or acquisition, and characterization of wetlands for management. Much of the sampling has been conducted along transects placed perpendicular to the shoreline with the purpose of identifying physical gradients and corresponding biological gradients or zones. In general, it is recognized that relatively discrete zones of shrub, wet meadow, emergent, and sometimes submergent vegetation occur at most coastal wetland sites, and that these zones are related to differences in water depth, as well as associated differences in substrate. Frequency of inundation and wave energy increase with water depth in coastal wetlands directly connected to the Great Lakes. As wave energy increases, the amount of aquatic vegetation decreases and along high energy areas of the shoreline, the only coastal wetlands present are sheltered behind a barrier dune or beach ridge. See the classification of coastal wetlands on the Great Lakes Wetland Consortium web page for further detailed description of coastal wetland types (Albert et al. 2003, Albert et al. 2005).

## **3.0 EVALUATION OF GREAT LAKES COASTAL WETLAND QUALITY AND HEALTH**

One of the greatest sources of variability in Great Lakes wetland plant community composition is that resulting from the extreme water-level fluctuations that characterize the Great Lakes (Wilcox et al. 2002, Albert and Minc 2004, Albert et al. 2006, Hudon et al. 2006). Comparing the health of several wetlands of a single type or lake, is complicated by the fact that each wetland is altered by a complex array of disturbance factors that occur at different spatial scales and in different spatial configurations. For example, winds along Saginaw Bay result in nutrient- rich organic sediments from the Saginaw River to accumulate in a single wetland, contributing to the formation of dense algal mats nearly a meter thick at times. While other wetlands may receive similar organic sediments, they are not regularly concentrated to such a degree by the wind. Prevailing wind direction, shoreline configuration, and wetland size all combine to make direct comparisons of neighboring wetlands non-productive.

To reduce the need for direct comparison of neighboring wetlands for quality, we are utilizing an approach that evaluates coastal wetland degradation, focusing on those factors agreed on

by the plant ecologists studying Great Lakes coastal wetlands and participating in the Great Lakes Coastal Wetlands Consortium. These ecologists agree that the most effective factors or approaches for evaluating wetland degradation were measuring 1) the coverage and distribution of invasive plants, 2) the coverage and diversity of submergent and floating plants, and 3) computing and comparing the Floristic Quality Index (FQI) of an individual wetland to regional FQI scores. A fourth and extremely important approach, determining the amount of wetland already lost or altered by comparing historic and recent aerial photos, is not the focus of the vegetation group.

In the Great Lakes, expansion of invasive plants into wetlands is the result of two distinct types of disturbance: disturbances that alter the upper, seasonally wet edge of the wetland or disturbances that alter the permanently flooded portion of the wetland. The wet meadow and inner emergent marsh zones are only occasionally flooded and they are typically degraded as the result of alterations of the hydrology by ditching or physical disturbance of sediments along the upper edge; major introductions of invasive plants into the wet meadow are often the result of such physical disturbances. In contrast, changes to the outer emergent marsh and the submergent marsh zones are the result of disturbances to the flooded portion of the marsh, either by dredging, addition of nutrients in the form of fertilizer or animal waste, and addition of fine sediment as the result of intensive agriculture within the watershed. For this reason, we have separated the recommended monitoring into tracking these zones separately for the purpose of identifying the sources of the degradation, and thus potentially allowing solutions to be identified for each zone.

Alteration of the wet meadow or upper emergent zone often result in both drier conditions and exposed sediments with no vegetation, a combination that allows small-seeded invasive species to establish in large numbers. Once established, many of the invasive plants in this zone are able to rapidly expand by rhizomes or stolons. Many of these invasives are also tall perennials that rapidly shade out and replace shorter native plants. A list of these invasive species is provided in the footnotes of Table 3 below.

The submergent marsh zone and the flooded portion of the emergent marsh zone are often degraded by the addition of fine sediments and organic nutrients from either agriculture or urban areas, resulting in high turbidity. High turbidity levels reduce the ability of many submergent plants to photosynthesize effectively. In addition, deposition of suspended particulates on submergent plants may affect gas exchange with the environment. The combination of high turbidity and deposition of fine sediments on the bottom also reduces the ability of many submergent and floating plants to reproduce from seed, resulting in reduced plant reproduction. These additions of nutrients and sediments also provides excellent habitat for Eurasian carp (*Cyprinus carpio*), which are large, aggressive bottom feeders. Carp disturb the sediment resulting in the resuspension of sediments and the uprooting of many aquatic plants. While minor levels of nutrient enrichment result in increased growth of many submergent and floating plants, further increases in nutrient enrichment are followed by rapid loss of plant coverage and/or diversity as turbidity increases beyond a critical point. Some of the species most tolerant of high nutrient and turbidity levels are invasive species. These

invasives typically form dense weed beds that are of reduced habitat value to fish and other aquatic fauna and may create localized nocturnal anoxia.

An approach that has been used successfully to evaluate the intactness of plant communities is computation of a Floristic Quality Index using a Floristic Quality Assessment (FQA) program (see Table 1), which utilizes all plants present at a site to estimate the intactness of the plant community and the site. FQAs are used to develop several indices, including the widely used *conservatism index (C)* and the *floristic quality index*. Each species is assigned a conservatism index based upon the specificity of a plant to a specific habitat. Species that can occupy a broad range of habitats are assigned low conservatism index scores, while those that are very restricted in their habitat are assigned high scores. Conservatism index scores are assigned through consensus by groups of plant ecologists with expert knowledge regarding plant species habitat fidelity. Conservatism index scores are developed and applied regionally and have upper and lower limits of 10 and zero, respectively. A mean conservatism score evaluates the conservatism of all of the species at a site. The floristic quality index is based on the square of the number of species times the conservatism index and is therefore influenced more by the number of species collected at a site than is the mean conservatism index. The floristic quality index is more sensitive to sample size than the conservatism index, and it is also more sensitive to changes in species diversity resulting from water-level fluctuation. For that reason we are recommending use of the mean conservatism index in monitoring changes to Great Lakes coastal wetland vegetation. Use of the Michigan Floristic Quality Assessment program (Herman et al. 2001) is recommended for the Great Lakes region, as it was designed for use in Michigan, which encompasses most of the latitudinal gradient encountered in the Great Lakes. The FQA software is available through the Conservation Research Institute (Conservation Design Forum: [cdf@cdfinc.com](mailto:cdf@cdfinc.com)). Table 1 shows the standard output from FQA analyses for Mackinac Bay, a northern Lake Huron protected embayment. Standard indices computed with the software include FQI score, Mean C score, and Wetland Index (W). Each of these are computed for native species and for the total flora at a site, including adventive species. For this study the Mean C for native species and total flora are being used. For Mackinac Bay, there are 44 native species and only one adventive species. As a result, the Mean C for native species (6.1) and total species (6.0) are very similar. For more disturbed sites, the difference between native and total Mean C scores can be much greater, with Mackinac Bay less disturbed than Presque Isle marsh on Lake Erie or Bradleyville marsh in Saginaw Bay (Table 2).

In summary, this monitoring protocol focuses on 1) identifying and quantifying those invasive plants that are considered indicators of degraded habitat, 2) identifying significant changes to the submergent and floating-leaved vegetation of the emergent and submergent marsh zones, and 3) comparing regional Mean Conservatism Indices for Great Lakes coastal wetland types to the local site's Mean Conservatism Indices.

Standard Operating Procedure  
 CWMP Vegetation Sampling, updated 6/4/18

**Table 1. Floristic Quality Assessment output for Mackinac Bay, Lake Huron.**

Site:		Mackinac Bay 1999		By: D. Albert			
FLORISTIC QUALITY DATA		Native	44	97.80%	Adventive	1	2.20%
<b>44</b>	<b>NATIVE SPECIES</b>	Tree	0	0.00%	Tree	0	0.00%
<b>45</b>	<b>Total Species</b>	Shrub	3	6.70%	Shrub	0	0.00%
<b>6.1</b>	<b>NATIVE MEAN C</b>	W-Vine	0	0.00%	W-Vine	0	0.00%
<b>6</b>	<b>W/Adventives</b>	H-Vine	0	0.00%	H-Vine	0	0.00%
<b>40.7</b>	<b>NATIVE FQI</b>	P-Forb	28	62.20%	P-Forb	1	2.20%
<b>40.2</b>	<b>W/Adventives</b>	B-Forb	0	0.00%	B-Forb	0	0.00%
<b>-4.7</b>	<b>NATIVE MEAN W</b>	A-Forb	2	4.40%	A-Forb	0	0.00%
<b>-4.7</b>	<b>W/Adventives</b>	P-Grass	2	4.40%	P-Grass	0	0.00%
AVG:	Obl. Wetland	A-Grass	1	2.20%	A-Grass	0	0.00%
		P-Sedge	7	15.60%	P-Sedge	0	0.00%
		A-Sedge	0	0.00%	A-Sedge	0	0.00%
		Fern	1	2.20%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
AGRHYE	4	Agrostis hyemalis	1	FAC-	Nt P-Grass	TICKLEGRASS
ASTPUN	5	Aster puniceus	-5	OBL	Nt P-Forb	SWAMP ASTER
BIDCER	3	Bidens cernuus	-5	OBL	Nt A-Forb	NODDING BUR MARIGOLD
CALCAN	3	Calamagrostis canadensis	-5	OBL	Nt P-Grass	BLUE JOINT GRASS
CAMAPR	7	Campanula aparinoides	-5	OBL	Nt P-Forb	MARSH BELLFLOWER
CXAQUA	7	Carex aquatilis	-5	OBL	Nt P-Sedge	SEDGE
CXLASI	8	Carex lasiocarpa	-5	OBL	Nt P-Sedge	SEDGE
CXSTRI	4	Carex stricta	-5	OBL	Nt P-Sedge	SEDGE
ELEACI	7	Eleocharis acicularis	-5	OBL	Nt P-Sedge	SPIKE RUSH
ELESMA	5	Eleocharis smallii	-5	OBL	Nt P-Sedge	SPIKE RUSH
EQUFLU	7	Equisetum fluviatile	-5	OBL	Nt Fern Ally	WATER HORSETAIL
GALTRD	6	Galium trifidum	-4	FACW+	Nt P-Forb	SMALL BEDSTRAW
HETDUB	6	Heteranthera dubia	-5	OBL	Nt P-Forb	WATER STAR GRASS
HIPVUL	10	Hippuris vulgaris	-5	OBL	Nt P-Forb	MARE'S TAIL
IRIVER	5	Iris versicolor	-5	OBL	Nt P-Forb	WILD BLUE FLAG
LATPAL	7	Lathyrus palustris	-3	FACW	Nt P-Forb	MARSH PEA
LYCUNI	2	Lycopus uniflorus	-5	OBL	Nt P-Forb	NORTHERN BUGLE WEED
LYSTHY	6	Lysimachia thyrsoflora	-5	OBL	Nt P-Forb	TUFTED LOOSESTRIFE
MYRGAL	6	Myrica gale	-5	OBL	Nt Shrub	SWEET GALE
MYREXA	10	Myriophyllum exalbescens	-5	OBL	Nt P-Forb	SPIKED WATER MILFOIL
MYRHET	6	Myriophyllum heterophyllum	-5	OBL	Nt P-Forb	VARIOUS LEAVED WATER MILFOIL
NAJFLE	5	Najas flexilis	-5	OBL	Nt A-Forb	SLENDER NAIAD
NUPVAR	7	Nuphar variegata	-5	OBL	Nt P-Forb	YELLOW POND LILY
POLAMP	6	Polygonum amphibium	-5	OBL	Nt P-Forb	WATER SMARTWEED
PONCOR	8	Pontederia cordata	-5	OBL	Nt P-Forb	PICKEREL WEED
POTAMP	6	Potamogeton amplifolius	-5	OBL	Nt P-Forb	LARGE LEAVED PONDWEED
POTGRM	5	Potamogeton gramineus	-5	OBL	Nt P-Forb	PONDWEED
POTNAT	5	Potamogeton natans	-5	OBL	Nt P-Forb	PONDWEED
POTPAL	7	Potentilla palustris	-5	OBL	Nt P-Forb	MARSH CINQUEFOIL
SAGLAT	1	Sagittaria latifolia	-5	OBL	Nt P-Forb	COMMON ARROWHEAD
SALCAN	9	Salix candida	-5	OBL	Nt Shrub	HOARY WILLOW
SCHACU	5	Schoenoplectus acutus	-5	OBL	Nt P-Sedge	HARDSTEM BULRUSH

**Table 1. Floristic Quality Assessment output for Mackinac Bay, Lake Huron, Continued.**

SCHSUB	8	Schoenoplectus subterminalis	-5	OBL	Nt P-Sedge	BULRUSH
SCUGAL	5	Scutellaria galericulata	-5	OBL	Nt P-Forb	COMMON SKULLCAP
SIUSUA	5	Sium suave	-5	OBL	Nt P-Forb	WATER PARSNIP
SPAMIN	8	Sparganium minimum	-5	OBL	Nt P-Forb	SMALL BUR REED
SPIALB	4	Spiraea alba	-4	FACW+	Nt Shrub	MEADOWSWEET
TEUCAN	4	Teucrium canadense	-2	FACW-	Nt P-Forb	WOOD SAGE
TRIFRA	6	Triadenum fraseri	-5	OBL	Nt P-Forb	MARSH ST. JOHN'S WORT
TYPANG	0	TYPHA ANGUSTIFOLIA	-5	OBL	Ad P-Forb	NARROW LEAVED CATTAIL
UTRINT	10	Utricularia intermedia	-5	OBL	Nt P-Forb	FLAT LEAVED BLADDERWORT
UTRMIN	10	Utricularia minor	-5	OBL	Nt P-Forb	SMALL BLADDERWORT
UTRVUL	6	Utricularia vulgaris	-5	OBL	Nt P-Forb	GREAT BLADDERWORT
VALAME	7	Vallisneria americana	-5	OBL	Nt P-Forb	EEL GRASS
ZIZAQU	9	Zizania aquatica var. aquatica	-5	OBL	Nt A-Grass	WILD RICE

**Table 2. Comparison of Native Mean C and Total Mean C scores for three Great Lakes Marshes on lakes Huron and Erie.**

Marsh Name	Mean C Score	
	Native	Total (Native + Adventive)
Mackinac Bay, Lake Huron	6.1	6.0
Presque Isle Bay, Lake Erie	4.8	4.4
Bradleyville, Saginaw Bay, Lake Huron	3.9	3.3

## 4.0 MATERIALS AND METHODS

### 4.1 Equipment

Equipment needed for vegetation sampling is listed in Appendix I.

### 4.2 Special Training Requirements

All personnel responsible for sampling macrophytes will be trained and certified before sampling begins each year. Several of the regional team leaders (co-PIs) have permanent technicians and staff who have years of experience conducting aquatic sampling which will help to ensure that rigorous data quality standards are maintained throughout the project.

A multi-level training and certification program will be implemented to ensure accuracy of all data collection. A series of 2-day training workshops led by experts on each respective protocol will be held every spring/early summer before fieldwork begins at several locations across the basin to ensure good attendance by the majority of field crew staff in each area. The workshop agenda will include training on how to meet the data quality objectives for each element of the project, QAPP review, site verification procedures, hands-on training for each sampling protocol, procedures for entering data into the project database, record-keeping and archiving



requirements, data auditing procedures, and certification/re-certification exams for each sampling protocol for all project personnel. All project co-PIs, field crew leaders, and as many summer staff as possible will participate in spring workshops and will be certified/re-certified on sampling protocols. When necessary, co-PIs and field crew chiefs will provide additional training and certification of staff members who are unable to participate in the spring workshop.

To be certified in a given protocol, individuals must pass a practical exam before sampling begins. Exams will be conducted in the field whenever possible and will be supplemented with photographs or audio recordings (e.g., bird and amphibian calls) when necessary. Passing the exams will certify the individual to perform the respective sampling protocol. Since not every individual will be conducting every sampling protocol, participants will be tested on the protocols for which they will be responsible. The majority of testing and certification will take place during the spring training workshops and additional certification will be administered by co-PIs as needed. Personnel who are not certified (e.g., part time technicians, new students, volunteers) will not be allowed to work independently nor to do any identification except under the direct supervision of certified staff members until they can pass the appropriate certification tests. The following paragraphs detail specific items to be covered during the training workshops each year. Preliminary certification criteria (minimum percent correct on certification exams) are also included. For some criteria, demonstrated proficiency during the field training workshops will be considered adequate for certification. Training and certification records for all participants will be collected by regional team leaders and copied to Dr. Don Uzarski at Central Michigan University. A summary of these records will be included in annual reports to EPA.

*Site Selection and GPS Use*—Field crews will be trained to consistently select sample locations within each pre-selected wetland and will be taught strategies to implement when pre-selected locations cannot be sampled due to insufficient water depth, unsuitable weather, inaccessibility, or safety concerns. Field crews will also receive training in proper GPS procedures, including equipment use and data entry. GPS training will include extensive instruction on navigating to waypoints, creating and properly naming waypoints, and determining levels of accuracy available. GPS training will be led by Dr. Terry Brown.

Certification Criteria:

- Identify circumstances in which a site can be rejected as unsampleable (90%)
- Identify vegetation zones for stratified sampling (90%)
- Proper use of a GPS to navigate to a waypoint (demonstrate proficiency)
- Determination of GPS accuracy (demonstrate proficiency)

*Macrophytes*—Macrophyte sampling training will be led by Drs. Albert (OSU) and Wilcox (SUNY Brockport), both of whom have years of experience with aquatic plant identification and coastal wetland sampling. Training will include proper transect establishment, location of random sample plots, aquatic vegetation taxonomy, protocols for dealing with problematic identifications, and when to take samples for QA/QC. The collaborators in this project have done extensive plant sampling in Great Lakes coastal wetlands, so our species lists and field data forms include most plants that will be encountered during the project. The species lists also include all of the major invasive plants known from coastal wetlands. Reference materials at university herbariums are available for comparison. Plant materials that cannot be positively identified in the field will be collected and pressed for later identification in the laboratory. Additionally, at QA sites, plants will be collected for QA checks later. One of the most difficult aspects of plant sampling in quadrats is accurate estimation of the percent coverage for plant species present. We will calibrate the estimation of plant coverage to the nearest percent as a group during training.

Certification Criteria:

- Transect and plot locations (demonstrate proficiency)
- Taxonomy (75% of 20 taxa in the field; 90% of 20 species, using appropriate macrophyte identification books in the lab.)
- Percent coverage of species within quadrats (sampling team estimate of coverage  $\pm 10\%$  of expert's estimate 90% of the time, with evaluation being conducted on total plant coverage estimates within a plot)
- Determining when to collect voucher specimens for identification in the lab (demonstrate proficiency)
- Proper preservation procedure for specimens (demonstrate proficiency)
- Proper completion of field data sheets (demonstrate proficiency)

#### **4.3 Mapping to identify sampling transects or random sampling points**

1. Using aerial photos, map wetland to be sampled, identifying major zones, wet meadow, emergent, and possibly submergent (Figure 1). Flooded portions of the emergent marsh zone typically contain abundant submergent and floating species, and these submergent plants can be analyzed if there is no submergent zone. If a deeper submergent zone is present, it can also be sampled and submergent plant metrics can be based on its plants.
2. Identify three potential sampling transects that will cross typical zones.

## 5.0 FIELD SAMPLING

The primary data collection at the site will be the identification and quantification of all wetland plant species occurring in a specified number of sampling quadrats. Within wetlands, sampling will occur along three transects that run parallel to the gradient of increasing water depth and that therefore span the wetland vegetation zones present (varies depending on each particular wetland). Potential vegetation zones include wet meadow, emergent vegetation, and submergent vegetation. If a substantial submergent zone is present, it will also be sampled. The starting point of each transect will be randomly located along the upland or swamp forest edge, and the distance from this edge will be 1/6<sup>th</sup> the width of the vegetation zone from the wetland edge. Transect sampling can also be begun at the water's edge, using a random starting point. Vegetation will be surveyed in 1-m<sup>2</sup> quadrats at regular intervals along transects, for a total of 15-45 quadrats per wetland (15 quadrats per wetland zone). All survey quadrats will be placed 2 m right of the transect line to avoid trampling effects. The length of transect within a given plant zone will be measured, and if the plant zone is equal or greater than 11 meters wide, the length of the zone will be divided by 6 to determine the distance between sampling points. If the vegetation zone is less than 11 meters wide, a "narrow sampling" protocol will be used. In this protocol, the field crew will locate the midpoint of the narrow zone along the original transect. At this midpoint, an additional transect will be placed in the narrow vegetation zone perpendicular to the original transect. Survey plots along the perpendicular transect in the narrow zone will be located at -7, -3, 2, 7, and 12 meters from the zone midpoint along the original transect. Narrow transects are most likely to be encountered in either the wet meadow or submergent marsh zones.

A list of the most aggressive invasive plants was identified for the Great Lakes Coastal Wetlands Monitoring Plan (GLCWC 2008) and is included at the end of Table 2 of this protocol. An expanded list of most upland and wetland invasive species in the Great Lakes region is found in Michigan's Floristic Quality Assessment program (Herman et al. 2001). A thorough list of plants encountered in coastal wetlands of all of the Great Lakes states is found in Appendix 1 of this protocol, as recorded during inventories conducted with USEPA and USCZM funding from 1987 through 2004 (Albert et al. 1987, 1988, 1989; Minc 1997). Species lists from studies by GLEI, Dr. Douglas Wilcox, and other partners have been added to the species list (Appendix II).

Taxonomic descriptions will be cross-walked with the Flora of North America, which is available on-line ([http://www.efloras.org/flora\\_page.aspx?flora\\_id=1](http://www.efloras.org/flora_page.aspx?flora_id=1)). A new flora, *The Field Manual of Michigan Flora* (Voss and Reznicek 2012) from the University of Michigan Press, incorporates the most recent taxonomic treatments of the Flora of North America. However, local Great Lakes floras (Voss 1972, 1985, 1996), which are compatible with Michigan's FQA (Herman et al. 2001) will be used for field identification to facilitate rapid sampling. Other floras that may prove helpful for identification of difficult wetland plants include *A Manual of Aquatic Plants* (Fassett 1957), *Aquatic and Wetland Plants of Northeastern North America* (Crow et al. 2006), and *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* (Gleason and Cronquist 1991).

Although only vascular macrophytes are used in the Mean Conservatism Indices, surveyors should record all aquatic macrophytes (e.g., *Chara*, *Nitella*, *Riccia*, *Ricciocarpos*). This may allow for further analyses in the future, including potential development of FQI indices for non-vascular plants.

Within each quadrat, all macrophyte species will be identified to lowest possible taxonomic unit (typically species). Plants that cannot be identified in the field will be collected and preserved for identification in the laboratory. Some sterile or immature species, including grasses, sedges, and willows, cannot be identified to species, and while these will be noted as present, they cannot be used in FQI analysis. Herbarium staff are typically not willing to identify sterile specimens, and thus sterile species will typically not be curated. Almost all invasive exotic species can be recognized, even when sterile, and will be included in analysis. Percent coverages will also be estimated for each vegetation type. Water depth and qualitative substrate composition will also be noted for each quadrat. Vegetation sampling data are considered critical for the majority of wetland sites (i.e., those not sampled only for birds and amphibians). At least 90% of the quadrats must be successfully sampled to consider the site effectively complete and to use the data in subsequent analysis. .

Data are recorded on a standardized plant sampling form (Figure 2) or on a short form that contains all of the abiotic sampling information at the top of the form (Figure 2) and a small number of the most commonly occurring species, with blank spaces for adding up to 60 additional species. The short form allows for much more efficient and rapid data collection. This form provides the scientific names of the most commonly occurring aquatic macrophytes, with spaces provided for unknown species or species not listed on the form. For some genera with many species, such as *Carex* or *Potamogeton*, spaces are provided to fill in additional species within the genus. Since there are over 600 species of aquatic macrophyte within Great Lakes coastal wetlands, only the most common are listed on the form. A more complete list of species is provided in Appendix 2. While this is a more complete list, no wetland tree species are included, although they might establish briefly during low-water conditions or they may be present at the edges of the open coastal wetland.

Support facilities for vegetation crews include a laboratory or motel/hotel room with sinks and plant presses for preserving plant specimens. The plant curation site will be equipped with dissecting microscopes that magnify to 30x and at least the plant identification guides by E. G. Voss (1972, 1985, 1996) or by E. G. Voss and A. A. Reznicek (2012) mentioned above.

**Supplemental data collection.** It is also recommended that percent coverage of vegetation detritus or standing dead biomass be recorded for each vegetation quadrat – this is especially important for plots dominated by aggressive invasive plants. It is recommended that supplemental information on depths of organic sediments, water clarity, and underlying mineral soil texture be collected at each vegetation plot. Depths of organic soils (in centimeters) will be measured by forcing a 10 ft (3 m) length of ¾ inch (1.8 cm) aluminum conduit into the substrate until mineral soils are encountered. Water clarity will be simply noted in terms important for vegetation: is the bottom visible or not. In highly turbid waters where the

bottom is not visible, submergent and floating plants are typically absent. Mineral substrate is broken into classes that include 1) silt/clay, 2) sand, 3) gravel/cobble, and 4) bedrock, based solely on rapid field evaluation with the conduit probe used for measuring organic soil depth. Presence of two-storied soils, such as a thin veneer of sand over clay can also be noted in the comment field, and can be significant for understanding sediment dynamics within a wetland.

## **6.0 SAMPLING HANDLING AND CUSTODY**

A numbered label will be attached to each unidentified plant and noted on the field form. Each sample will be coded by site location, transect and plot number, and date to facilitate future entering of plant identities on the sample forms and in digital data files. These plants will be placed in Ziploc bags for either identification in the laboratory or by herbarium staff. Plants requiring identification by herbarium staff will be placed in a plant press for drying and storage. There are few difficult-to-identify rare plants in Great Lakes coastal wetlands, so unknown plants can be collected without jeopardizing rare or endangered species.

Collected plants will be placed in a cooler or refrigerator upon return from the wetland, in preparation for pressing within 24 hours. Pressed plants will be dried either with heat or with a fan whenever possible. Plant samples will be destroyed following identification, except for those of interest for the herbarium's collections, or samples kept as short-term identification aids to assist in training new personnel or as vouchers. A long term voucher collection will not be made as part of this project.

### **6.1 Analytical Methods Requirements**

Performance criteria: Most specimens collected in the field will be identified to the species level during the evening of collection using identification keys and a magnifying glass. Specimens not identifiable to species because of lack of characteristic features (flowers, fruits, etc.) will be identified to the lowest taxonomic levels possible. Specimens of questionable identity will be pressed and returned to the laboratory. If fertile, unknown and unusual specimens will be sent to appropriate taxonomic experts for confirmation or refinement of taxonomic identity. Sterile or immature plants will be identified when possible. Target turnaround time for plant identifications is 3 months after the end of sampling.

Macrophyte data will include a) identifying and quantifying invasive plants that are considered indicators of degraded habitat (Albert and Minc 2004), b) quantifying baseline coverages of submergent and floating-leaved vegetation, and c) comparing local site mean Conservatism (mean C) values to regional mean C values (Herman et al. 2001).

One of the most difficult aspects of plant sampling in quadrats is accurate estimation of the percent coverage for plant species present. Thus, during indicator calculations, we will use a protocol that is not strongly dependent on accurate plant coverage estimates, but instead during the final stage of analysis converts percent cover to broad coverage classes of 0-25%, 25-50%, 50-75%, or greater than 75% for development of metrics. For both aggressive invasive

species and submergent and floating plants that tolerate or respond to nutrient enrichment or sediment loading, these coarse cover classes are adequate for monitoring wetland quality changes.

The beginning and end quadrats of each transect will be marked using GPS, as will the middle quadrat point for vegetation zones less than 11 meters long. In case of GPS equipment failure, the vegetation crew will borrow a GPS from the fish and invert crew to finish the site when possible, and will return to their regional laboratory for a replacement GPS unit when possible. In cases where no GPS unit is available for replacement of failed equipment, start and end points will be marked with flagging, and these points will be returned to at a later time for exact GPS location of transects. Crew leaders will explain all equipment failures and the implications of this for the data on the data sheets and transfer this information, along with appropriate error codes, to the database during data input.

In many coastal wetlands along the southern Great Lakes, invasive *Phragmites australis* has formed a dense monoculture more than 200 m wide. With increased water levels in Lakes Huron and Michigan beginning in 2014, sampling across this entire zone has greatly increased crew effort, reduced efficiency, and increased the likelihood of crew injury. To mitigate these issues without reducing data quality, sampling will be conducted as needed within this zone at 5, 10, 15, 20, and 25 m from the *Phragmites* bed edge (either shoreward or lakeward edge, depending on accessibility), rather than spacing sampling points across the entire width of the zone. The actual width of the zone will be calculated from the most recent year's Google photos. Correlations between Google image interpretation and field surveys are high, and difficulty maintaining a straight transect line in *Phragmites* typically results in reduced accuracy from the field transects. Prior experience and data analysis show virtually no variability in vegetation composition within the *Phragmites* zone, indicating that there will be minimal loss of information by spatially restricting *Phragmites* sampling. When this modified protocol is used, it will be referenced in the comment box and recorded in the database. The direction of entry into the *Phragmites* beds, either from the upland shoreline or from the water, will also be noted.

Several worksheets developed as part of the Great Lakes Coastal Wetlands Monitoring Plan will be used to calculate macrophyte IBIs. These include 1) a table of wetland quality based on aquatic macrophyte sampling, 2) a flow chart for determining quality rating of submergent marsh zone or submergent component of an emergent marsh zone, 3) a table of species tolerant of nutrient enrichment, sedimentation, or increased turbidity, and 4) a combined standardized score based on 1-3 above.

Software for the calculation of Conservatism coefficients and associated metrics are contained within the FQI software for Michigan (Herman et al. 2001). The Michigan FQI software has been used in prior Great-Lakes-wide coastal wetland plant sampling projects, and has been found to contain almost all wetland plants growing in the Great Lakes. One of the advantages to the use of FQI and mean Conservatism scores is that they are based on the entire flora, not just a few

indicator species. For this reason, the lack of a Conservatism score for one or two species at a site does not greatly alter the FQI or mean Conservatism scores.

## **7.0 QUALITY CONTROL REQUIREMENTS**

Precision: For vegetation samples, each regional team will collect duplicate quadrat information at 2 sites per year. All taxa encountered in the resampling of quadrats will be identified in the field but then preserved and returned to the lab for identification by an expert as a second QC check.

Accuracy: The systematic difference from a reference standard or an expert. This will be assessed during the mid-year QC check (see below, this section).

Bias: Systematic bias by a crew or method. Bias will be assessed during the mid-year QC check by observing transect and quadrat placement and percent cover estimates, and by cross-validating difficult-to-ID taxa that are preserved. The quadrat method of sampling makes detection of uncommon taxa less likely than some other methods, and may result in lower taxa counts than other methods that cover more of the site (see sensitivity). This is a deliberate trade-off made to sample more sites rather than fewer sites more intensely.

Completeness: Calculated as % complete = (# useable sample pts)/(# planned pts) x 100. Sampling completeness will be calculated for all sites.

Representativeness: How well sites were sampled will be determined by plotting all sample points for each site on aerial photographs of the site and by checking the field sheets and database for problems, notes, and flags. This will be done for all sites.

Comparability: Data comparability among crews within the project and to other non-project data will be achieved by using standard, accepted methods; creating metadata explaining the methods; and having strict training and QA/QC for all crews and personnel.

Sensitivity: In this case sensitivity refers both to the lowest taxonomic levels achievable, and to the ability to detect uncommon taxa. Identification will depend on the life-stage of the plants and the condition of the plants, which is primarily controlled by the time of year of sampling. Our sampling is timed so that the most species will be most identifiable when field crews are sampling. Uncommon taxa will not be particularly detectable because of the small percentage of each site that can be sampled even with 30-45 quadrats. Again, this is a deliberate trade-off made to sample more sites rather than fewer sites more intensely.

QA/QC specifics: Members of the project team responsible for vegetation sampling will receive rigorous taxonomic training prior to field sampling. Accurate plant identification is the most important component of vegetation monitoring. During the sampling season, representative specimens that cannot be identified in the field will be returned to the laboratory for identification, with assistance from botanical experts when necessary. A collection of difficult-

to-identify species will be maintained to assist with future identifications. This can be especially useful for commonly encountered plants that are often found in non-flowering condition. The project team will maintain an ongoing dialogue to ensure accurate and consistent identifications.

Field teams will ‘calibrate’ their percent cover estimates with each other during the yearly field training. Field teams will concur with each other on percent coverage estimates for each quadrat. Plant metrics are designed to be robust, so that small errors in percent-coverage estimates will not result in wetland quality ranking errors. Re-measurement of quadrats at a site will be conducted during training to calibrate individual sampler estimates of vegetation cover. The important test for this re-measurement is not the specific coverage value estimates, but the final conversion of the coverage values into the site metrics. The metrics are designed to be robust enough that slight differences in individual plant coverage values will not alter the metrics or the overall site quality ranking. Field team members will correspond with each other on percent coverage estimates for each quadrat; discrepancies in cover estimates exceeding 10% between individuals in a field team will trigger a re-sampling of the quadrats in that vegetation zone.

Individuals Responsible For Vegetation QA/QC:

Western Great Lakes	Nick Danz
Central Great Lakes (US side)	Dennis Albert
Central Great Lakes (CA side)	Jan Ciborowski/Joseph Gathman
Eastern Great Lakes (US side)	Doug Wilcox
Eastern Great Lakes (CA side)	Jan Ciborowski/Greg Grabas

Mid-Year QA/QC Checks:

*Coverage estimates*—Training and testing/certification for macrophyte coverage estimation will be conducted during the early summer training workshop. Additional mid-year QA/QC checks will also be implemented to ensure data quality. The project macrophyte experts (Dennis Albert, Oregon State University; Nick Danz, University of Wisconsin-Superior; Doug Wilcox, SUNY Brockport) or other individuals whom they designate will estimate coverages in 5% of each participant’s plots. Deviations in coverage estimates exceeding 10% will trigger re-sampling of the plot and additional corrective action.

*Species Identification*—The project macrophyte experts (Dennis Albert, Oregon State University; Nick Danz, University of Wisconsin-Superior; Doug Wilcox, SUNY Brockport) or other individuals whom they designate will verify the identity of 90% of species (not samples or plots) identified by each participant who is working independently. The performance criteria for this QA/QC step will be 90% accuracy of fertile plants or plants that can typically be identified in sterile condition. This QA/QC step will be based on a combination of field and laboratory identification. Preserved specimens or digital photographs are standardly used as part of the identification process.. This QA/QC evaluation will occur once per year during the sampling period. After verification, the macrophyte experts will record the species identified correctly or incorrectly by each participant, which will serve as a performance record for each participating individual. The macrophyte experts will also distribute a list of particularly difficult taxa that



require preservation and lab verification when they are encountered. Corrections will be made to the macrophyte database when identification errors are found.

The project QA manager and assistant manager will provide guidance during the checks, provide oversight on the checks, and receive the QC reports from the macrophyte experts.

### **7.1 Instrument/Equipment Testing, Inspection, and Maintenance Requirements**

Dissecting scopes, used for plant identification, will be cleaned and inspected annually. Boat motors will also be tuned up as necessary for safe operation. Crews will carry at least one spare quadrat. Boat repairs are also often necessary. Most towns around the Great Lakes have boat repair shops, which will be used by field crews as necessary. Appropriate spare parts will be carried by crews for boats and trailers.. Spare batteries will be carried for the GPS units and cameras. No other equipment used by the vegetation sampling crews requires equipment testing.

### **7.2 Instrument Calibration and Frequency**

Recreational GPS accuracy is sufficient for these data. GPS receivers will be tested prior to and after the field season by taking repeated readings at known localities, i.e., benchmarks. During the field season, field crews will be uploading GPS readings nearly daily. At least once per week, GIS personnel will plot GPS points onto aerial photographs of a sampled site and send the image to the field crew to verify that points appear to be reasonably accurate. Accuracy during the field season will also be checked *a posteriori* by comparing latitude/longitude at easily recognized localities (e.g., road stream crossings) with GPS readings. All tests and results will be logged and the logs kept with the appropriate GPS units.

## **8.0 WORKSHEETS**

The worksheets utilized for the plant protocols include **Table 3:** Wetland Quality based on aquatic macrophyte sampling, **Table 5:** Flow chart for determining quality rating of submergent marsh zone or submergent component of an emergent marsh zone, **Table 6:** Species tolerant of nutrient enrichment, sedimentation, or increased turbidity, and **Table 7:** Combined standardized score from Table 3A-I. Tables 1, 2, 4, and 8 provide additional examples and information, but are not required for computer marsh quality scores. **Figure 2:** Great Lakes Marsh Sampling Form, is utilized for collecting plant data in the wetland.

### **8.1 Checklists.**

Two checklists are included, **Appendix I**, a list of equipment needed for sampling, and **Appendix II**, a list of the most common wetland plants encountered in Great Lakes coastal wetlands.

## 9.0 SITE SELECTION/NUMBER OF SITES/STRATIFICATION

Project-wide site selection, number of sites, and stratification is based on recommendations in the Statistical Design section of the report by Otieno, Uzarski, and the Landscape Committee. Overall statistical analysis selects and stratifies sites on the basis of Ecoregions and lake. For individual administrative units (state or province), it is recommended that hydrogeomorphic type (Albert and Simonson 2004) be noted, as the hydrogeomorphic types are important for understanding floristic differences.

As noted above, 15 sampling points are located in each zone of the wetlands chosen for sampling. Species areas curves leveled off after 12 to 15 sampling points in each marsh zone for most of the US and Canadian wetlands studied, demonstrating that overall plant diversity was adequately sampled.

### 9.1 Analysis of quadrat data (use Table 3):

1. Compute overall INVASIVE COVER for the **entire site** by summing the coverage values for all invasive plants and dividing by the number of quadrats. This is the INVASIVE COVER score for the entire site and can be used to estimate the site quality; see Table 3-A for quality classes (High, Medium, Low, Very Low) and the equivalent numeric scores (5, 3, 1, 0).
2. Compute overall INVASIVE FREQUENCY for the **entire site** by dividing the number of quadrats containing invasive species and dividing by the total number of quadrats. See Table 3-B for quality classes based on INVASIVE FREQUENCY.
3. Compute the MEAN CONSERVATISM INDEX for the **entire site** by totaling the Conservatism score for each species and dividing by the number of species. This can be rapidly computed using the Michigan FQA software (Herman et al. 2001). The Mean Conservatism Index for all species (total) is divided by the Mean Conservatism Index for native species (native) and the ratio is compared (See Table 3-C for quality scores). Low scores (0.79 or lower) reflect large numbers of exotic species and degraded conditions. Table 4 provides average regional Mean Conservatism Index scores for each of the Great Lakes and for each of the hydrogeomorphic types. The scores in Table 4 are not used in computing the quality of the wetland, but provide a regional perspective to wetland quality in different lakes and hydrogeomorphic types.
4. Compute overall INVASIVE COVER for the **wet meadow and dry emergent zone** by summing the coverage values for all INVASIVE plants in these zones and dividing by the number of quadrats in these zones. This is the INVASIVE COVER score for the wet meadow and dry emergent zone and can be used to estimate the zone quality; see Table 3-D for quality classes.
5. Compute overall INVASIVE FREQUENCY for the **wet meadow and dry emergent zone** by dividing the number of quadrats (in these zones) containing INVASIVE species and dividing by the total number of quadrats in the wet meadow and dry emergent zones. See Table 3-E

for quality classes of the wet meadow and dry emergent zone based on INVASIVE FREQUENCY.

6. Compute the MEAN CONSERVATISM INDEX for the **wet meadow and dry emergent zone** by totaling the Conservatism score for each species in these zones and dividing by the number of species. This can be rapidly computed using the Michigan FQA software (Herman et al. 2001). The Mean Conservatism Index for all species (total) in the **wet meadow and dry emergent zone** is divided by the Mean Conservatism Index for native species (native) and the ratio is compared (See Table 3-F for quality scores). Table 4 provides average regional Mean Conservatism Index scores **by zone** for most of the Great Lakes and hydrogeomorphic types.
7. Compute overall INVASIVE COVER for the **flooded emergent and submergent zone** by summing the coverage values for all invasive plants in these zones and dividing by the number of quadrats in these zones. This is the INVASIVE COVER score for the **flooded emergent and submergent zone** and can be used to estimate the zone quality; see Table 3-G for quality classes.
8. Compute overall INVASIVE FREQUENCY for the **flooded emergent and submergent zone** by dividing the number of quadrats (in these zones) containing invasive species and dividing by the total number of quadrats in the **flooded emergent and submergent zone**. See Table 3-H for quality classes of the wet meadow and dry emergent zone based on INVASIVE FREQUENCY.
9. Compute the MEAN CONSERVATISM INDEX for the **flooded emergent and submergent zone** by totaling the Conservatism score for each species in these zones and dividing by the number of species. This can be rapidly computed using the Michigan FQA software (Herman et al. 2001). The Mean Conservatism Index for all species (total) in the **flooded emergent and submergent zone** is divided by the conservatism index for native species (native) and the ratio is compared (See Table 3-I for quality scores). Table 4 provides average regional Mean Conservatism Index scores by zone for most of the Great Lakes and hydro-geomorphic types.

**TABLE 3. Wetland Quality based on aquatic macrophyte sampling.**

VARIABLE	QUALITY			
	HIGH (5)	MEDIUM (3)	LOW (1)	VERY LOW (0)
A: INVASIVE COVER (entire site) <sup>1</sup>	Absent	<25 percent	25-50%	>50%
B: INVASIVE FREQ. (entire site)	Absent	<25 percent	25-50%	>50%
C: Mean Conservatism of entire site (Native/Total)	>0.95	0.8 -0.94	0.6-0.79	< 0.6
D: INVASIVE COVER (wet meadow and dry emergent zones) <sup>2</sup>	Absent	<25 percent	25-50%	>50%
E: INVASIVE FREQ. (wet meadow and dry emergent zones)	Absent	<25 percent	25-50%	>50%
F: Mean Conservatism score of wet meadow and dry portion of emergent zones (Native/Total)	>0.95	0.8 -0.94	0.6-0.79	< 0.6
G: INVASIVE COVER (flooded emergent and submergent zone) <sup>3</sup>	Absent	<25 percent	25-50%	>50%
H: INVASIVE FREQUENCY (flooded emergent and submergent zone)	Absent	<25 percent	25-50%	>50%
I: Mean Conservatism of flooded emergent and submergent zones (Native/Total)	>0.95	0.8 -0.94	0.6-0.79	< 0.6

<sup>1</sup>Invasive species of entire site to include in analysis: *Butomus umbellatus* (flowering rush), *Cirsium arvense* (Canadian thistle), *Cirsium palustre* (marsh thistle), *Cirsium vulgare* (bull thistle), *Glyceria maxima* (tall manna grass), *Hydrocharis morsus-ranae* (European frog's-bit), *Impatiens glandulifera* (touch-me-not), *Iris pseudacorus* (yellow flag), *Lythrum salicaria* (purple loosestrife), *Myriophyllum spicatum* (Eurasian water milfoil), *Phalaris arundinacea* (reed canary grass), *Phragmites australis* (tall reed), *Polygonum lapathifolium* (nodding smartweed), *Potamogeton crispus* (curly pondweed), *Rorippa amphibia* (yellow cress), *Rumex crispus* (curly dock), *Typha angustifolia* (narrow-leaved cattail), *Typha X glauca* (hybrid cattail).

<sup>2</sup>Invasive species of wet meadow and dry emergent marsh: *Cirsium arvense*, *Cirsium palustre*, *Cirsium vulgare*, *Impatiens glandulifera*, *Iris pseudoacorus*, *Lythrum salicaria*, *Phalaris arundinacea*, *Phragmites australis*, *Polygonum lapathifolium*, *Rorippa amphibian*, *Rumex crispus*, *Typha angustifolia*, *Typha X glauca*.

<sup>3</sup>Invasive species of flooded emergent and submergent zone to include in analysis: *Butomus umbellatus*, *Hydrocharis morsus-ranae*, *Lythrum salicaria*, *Myriophyllum spicatum*, *Phalaris arundinacea*, *Phragmites australis*, *Potamogeton crispus*, *Typha angustifolia*, *Typha X glauca*.

## **10.0 REFERENCE CONDITIONS FOR REGIONAL WETLAND TYPES**

Several regional wetland types were identified through cluster analysis and Twinspan ordinations (Hill 1973, 1979) of vegetation data collected across the Great Lakes, including the connecting rivers (Minc 1997). Mean conservatism indices were computed for each of the regional wetland types (Table 2). For most of the wetland types, the indices were computed from the list of species that were present in more than one percent of the sampling points during inventories conducted in 1987, 1988, 1989, 1994, and 1995 (Albert et al. 1987, 1988, 1989; Minc 1997). For Georgian Bay protected embayments and Lake Erie sandspit embayments, the indices were computed from unpublished data collected in 2003 and 2004 (D. Albert). For the Lake Huron, Lake Michigan, and Lake Superior swale complexes (barrier enclosed), scores were summarized from studies of swale complexes in Michigan (Comer et al. 1991, 1993). The Lake Ontario protected embayment and drowned river mouth sites are summarized from data collected by the Canadian Wildlife Service of Environment Canada in 2002 and 2003.

<b>Table 4. Mean Conservatism Scores for each regional marsh type.</b>			
LAKE or REGIONAL MARSH TYPE	MEAN CONSERVATISM SCORE BY ZONE		
	MEADOW ZONE	EMERGENT ZONE	TOTAL MARSH
Lake Erie Open Embayments**	3.1 (4.6)	3.8 (5.3)	3.7 (5.3)
Lake Erie Sand-spit Embayments	4.3 (4.5)	4.4 (6.1)	4.5 (4.8)
Georgian Bay Protected Embayments *	5.1 (6.5)	6.4 (7.2)	5.8 (6.8)
Lake Huron (northern) protected Embayments	5.1	5.6	5.6
Lake Huron (northern) Open Embayments (Rich Fens)	5.5	4.5	5.1
Lake Huron's Saginaw Bay Open Embayment	3.2	4.5	3.9
Lake Huron Swale Complex (Barrier Enclosed)	-	-	4.9 (6.4)
Lake Michigan Drowned River Mouths	4.0	4.9	4.5
Lakes Michigan (northern) Open Embayments (Rich Fens)	5.5	4.5	5.1
Lake Michigan (northern) Protected Embayments	5.1	5.6	5.6
Lake Michigan Swale Complex (Barrier Enclosed)	-	-	5.3 (6.3)
Lake Ontario Barrier Beach Lagoons	5.0	5.7	5.3
Lake Ontario Drowned River Mouths	4.2	4.3	4.2
Lake Ontario Protected Embayments*	4.7 (6.4)	3.9 (5.8)	4.5 (6.3)
Lake St. Clair Open Embayments**	3.1	3.8	3.7
Lake Superior Barrier Beach Lagoons & Riverine Wetlands	6.3	6.7	6.4
Lake Superior Swale Complex (Barrier Enclosed)	-	-	5.9 (6.9)
St. Clair River Delta	4.2	5.5	4.7
St. Lawrence River Drowned River Mouths	4.4	5.5	5.0
St. Marys River Connecting Channel	5.1	5.6	5.6

\* For Lake Ontario and Georgian Bay protected wetlands the mean scores for each zone are based on the scores of several wetlands rather than on a mean coverage value for all of the marshes studies. The maximum score of a single wetland for each zone is shown in parenthesis when the data is available ( ).

\*\* For Lake Erie, mean C scores from historic data collected in high quality wetland at Perry's Victory Monument (Stuckey 1975) is shown in parenthesis ( ).

### 10.1 Evaluating wetland quality using submergent and floating plant species

Evaluating the quality of the portion of a wetland dominated by submergent or floating plants requires a multi-step process (Table 5), as several factors can influence the presence and density of these plants. Table 5 summarizes the ranks proposed for submergent or emergent zones using submergent and floating plants. It is common for submergent plants to cover only a portion of the bottom substrate in a marsh, so sparse submergent or floating vegetation does not necessarily indicate degraded conditions. High coverage (>75%) of submergent or floating vegetation, with a predominance (>50%) of nutrient-enrichment or sediment-and-increased-turbidity tolerant species (Table 6) typically indicates that either agriculture or urban development has resulted in increased nutrient, sediment, or turbidity in the lake waters (Index score = 1), but not to a level that would result in complete elimination of submergent or floating vegetation (Index score = 0). Under such conditions, other submergent and floating plants can be more common, in which case the wetland is considered less degraded (Index score = 3). Submergent and floating vegetation cover ranging from 25-75% is the typical condition for most emergent and submergent wetlands, and Index scores of 3 or 5 indicate this increased quality. Coverage values of less than 25% indicate degraded conditions if **only** nutrient-enrichment or sediment-and-increased-turbidity tolerant species are present, but are typical for other submergent or floating plant coverage values in many marshes (Index score = 5).

If submergent or floating plants are completely absent, it can indicate several conditions. In lower stream reaches (drowned river mouths, connecting rivers, or deltas), it can indicate that the stream velocity is too high for these plants to persist. Emergent plants may, however, be able to persist in these higher velocity regions of a stream. However, in protected bays or in slow-flowing lower reaches of streams, lack of submergent and floating vegetation typically indicates that sedimentation or turbidity is preventing plant establishment or persistence. When conditions are windy or when turbidity is the result of fine mineral or organic sediments, turbidity is often evident and can be directly linked to lack of wetland vegetation. However, when conditions are calm, surface waters can be clear, but thick, loose sediments will often be evident and easily stirred up during plant sampling. Another complication can be that strong winds may stir up sediment even though conditions are adequate for submergent and floating plants to occupy the wetland. In this case, the wetland would be judged on the basis of the vegetation present, **not** on the basis of the short-term turbidity.

**Combined standardized score.** A combined standardized score can be calculated by adding the wetland quality scores from Table 3 (A through I) and Table 5. Each of these ten numeric scores ranges from zero to five, with a maximum total score of 50 and a minimum score of zero. The Combined numeric quality scores and their equivalent descriptive quality scores are shown in Table 7. Table 8 provides example scores for six riverine wetlands resulting from totaling the metrics in Table 3 and 5.

<b>Table 5. Flow chart for determining quality rating of submergent marsh zone or submergent component of an emergent marsh zone.</b>			
	<b>Plant Coverage</b>	<b>Type of submergent plants present</b>	<b>Index Score</b>
Submergent or Floating Vascular Plant Species Present	>75%	>50% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	1 LOW
		<50% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	3 MODERATE
	25-75%	>50% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	3 MODERATE
		<50% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	5 HIGH
	<25%	>75% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	1 LOW
		<75% nutrient-enrichment tolerant species or sediment-and-increased-turbidity tolerant species	5 HIGH
Submergent or Floating Plant Species Absent	0%	Clear water in rapidly flowing streams or where bottom consists of cobbles or rock	? REQUIRES FURTHER ANALYSIS
		Highly turbid at time of survey, loose bottom sediments	0 VERY LOW
		Clear water, but thick, loose bottom sediments	0 VERY LOW
Only Algae Present			0 VERY LOW



<b>Table 6. Species tolerant of nutrient enrichment, sedimentation, or increased turbidity.</b>	
<b>Stress</b>	<b>Species</b>
<b>Nutrient Enrichment</b>	<i>Ceratophyllum demersum</i>
	<i>Elodea canadensis</i>
	<i>Lemna minor</i>
	<i>Myriophyllum spicatum</i>
	<i>Potamogeton crispus</i>
	<i>Potamogeton pectinatus</i>
	Algae
<b>Sedimentation and Increased Turbidity</b>	<i>Butomus umbellatus</i>
	<i>Ceratophyllum demersum</i>
	<i>Elodea Canadensis</i>
	<i>Heteranthera dubia</i>
	<i>Myriophyllum spicatum</i>
	<i>Potamogeton crispus</i>
	<i>P. foliosus</i>
	<i>P. pectinatus</i>
	<i>P. pusillus</i>
<i>Ranunculus longirostris</i>	

<b>Table 7. Combined standardized score from Table 3A-I and Table 5.</b>	
<b>Combined Numeric Score</b>	<b>Combined Descriptive Scores</b>
0-5	VERY LOW
6-20	LOW
21-40	MEDIUM
41-50	HIGH

**Table 8. Examples of Combined Standardized Scores for five riverine wetlands**

METRICS	SITES				
	Au Train, MI	Kalamazoo, MI	Kewaunee, WI	Fox, WI	Lineville, WI
Table 3A	5	3	3	0	1
Table 3B	5	0	3	0	0
Table 3C	5	3	3	0	3
Table 3D	5	3	3	0	0
Table 3E	5	3	1	0	0
Table 3F	5	3	3	0	3
Table 3G	5	5	3	0	1
Table 3H	5	3	3	0	0
Table 3I	5	3	3	0	3
Table 5	5	1	0	0	1
TOTAL SCORE	50 HIGH	27 MODERATE	25 MODERATE	0 VERY LOW	12 LOW

### 11.0 INTERPRETATION OF RESULTS

In the vegetation section, an attempt was made to incorporate interpretations of the results into discussion of the protocols. For example, Table 4 (Mean Conservatism Scores for each regional marsh type) provides the scores derived from previous sampling of coastal wetlands that will allow state and provincial wetland monitors to compare their wetlands to the conditions encountered in each lake and hydrogeomorphic wetland type. Similarly, Table 8 (Examples of Combined Standardized Scores for five riverine wetlands), shows the range of quality scores found for a given wetland type, in this case riverine wetlands along lakes Michigan and Superior. It is common for riverine wetlands in the northern portions of the Great Lakes to be of higher quality than those in the southern portion of the lakes, but it can be seen that even northern riverine wetlands (Kewaunee, Fox, and small stream at Lineville near the town of Green Bay) can be degraded by urban and agricultural land use.

The effectiveness of vegetation data to detect wetland degradation has been discussed in the introduction. Probably the greatest challenge to evaluation of wetland degradation is presented by the response of wetland plant composition to water-level fluctuations. The use of a simplified set of metrics and indices was an acknowledgement that the number of effective plant metrics is greatly limited by natural plant response to water level fluctuation.

### 12.0 DATA HANDLING AND STORAGE

A data handling protocol is being developed by the Great Lakes Commission, who will maintain long-term storage of the data collected for this project. The plant analyses have been simplified

to utilize only the metrics (invasive species and species tolerant of nutrient enrichment and turbidity) and indices (Mean Conservatism, part of Floristic Quality Assessment) agreed upon by the group of wetland plant ecologists meeting in Duluth during the spring of 2007. As a result, the statistical analysis of the vegetation data is not complex. However, the data collected provides an opportunity to conduct future analyses as the long-term database develops. These future analyses may well provide us with adequate data to further test metrics and indices developed for wetlands in other parts of the Great Lakes region, and to develop a more robust set of Great-Lakes based plant metrics and indices.

### **Acknowledgements**

We would like to thank Greg Grabas, Carol Johnston, John Mack, and Doug Wilcox for participating in the Duluth workshop during which we identified the most robust plant metrics. I would also like to thank both Greg and Carol for sharing data from research by their vegetation teams within Environment Canada and GLEI, respectively.

### **13.0 LITERATURE CITED**

Albert, D.A., Minc, L.D., 2004. Plants as Regional Indicators of Great Lakes Coastal Wetland Health. *Aquatic Ecosystem Health and Management* 7(2): 233-247

Albert, D.A., Reese, G., Crispin, S., Wilsmann, L.A., Ouwinga, S.J., 1987. A survey of Great Lakes marshes in Michigan's Upper Peninsula. Michigan Natural Features Inventory, Lansing, MI.

Albert, D.A., Reese, G., Crispin, S., Penskar, M.R., Wilsmann, L.A., Ouwinga, S.J., 1988. A survey of Great Lakes marshes in the southern half of Michigan's Lower Peninsula. Michigan Natural Features Inventory, Lansing, MI.

Albert, D.A., Reese, G., Penskar, M.R., Wilsmann, L.A., Ouwinga, S.J., 1989. A survey of Great Lakes marshes in the northern half of Michigan's Lower Peninsula and throughout Michigan's Upper Peninsula. Michigan Natural Features Inventory, Lansing, MI.

Albert, D. A., and L. Simonson. (2004) *Coastal wetland inventory of the Great Lakes region* (GIS coverage of entire U.S. Great Lakes: [www.glc.org/wtlands/inventory.html](http://www.glc.org/wtlands/inventory.html)), Great Lakes Consortium, Great Lakes Commission, Ann Arbor, MI.

Albert, D. A., Tepley, A. J., and L. D. Minc. 2006. *Plants as indicators for Lake Michigan's Great Lakes coastal drowned river wetland health*. Pages 238-258 in Thomas P. Simon and Paul M. Stewart (Eds.), *Coastal Wetlands of the Laurentian Great Lakes: Heath, Habitat, and Indicators*, Authorhouse Press, Bloomington, IN.

Albert, D. A., J. W. Ingram, T. A. Thompson, and D. A. Wilcox. 2003. Hydrogeomorphic classification for Great Lakes coastal wetlands (Great Lakes Consortium web site).

Standard Operating Procedure  
CWMP Vegetation Sampling, updated 6/4/18

Albert, Dennis A., Douglas A. Wilcox, Joel W. Ingram, and Todd A. Thompson. 2005. Hydrogeomorphic classification for Great Lakes coastal wetlands. *Journal of Great Lakes Research* 31(Supplement 1): 129-146.

Bourdagns, M., C. A. Johnston, and R. R. Regal. 2006. Properties and performance of the floristic quality index in Great Lakes coastal wetlands. *Wetlands* 26 (3): 718-735.

Comer, P.J. and D.A. Albert. 1993. *A Survey of Wooded Dune and Swale Complexes in Michigan*. MNFI report to Michigan Department of Natural Resources, Land and Water Management Division, Coastal Zone Management Program. 159 pp.

Comer, P.J. and D.A. Albert. 1991. *A Survey of Wooded Dune and Swale Complexes in The Northern Lower and Eastern Upper Peninsulas of Michigan*. MNFI report to the Michigan DNR, Coastal Zone Management Program. 99 pp.

Crow, G. E., C. B. Helquist, and N.C. Fassett. 2006. *Aquatic and Wetland Plants of Northeastern North America*. University of Wisconsin Press, Madison, WI.

Environment Canada. 2004. *Durham Region Coastal Wetland Monitoring Project: Year 2 Technical Report*. Environment Canada, Ontario.

Fassett, N. C. 1957. *A Manual of Aquatic Plants*. University of Wisconsin Press, Madison, WI.

GLCWLC 2008. *Great Lakes Coastal Wetlands Monitoring Plan*. Great Lakes Coastal Wetlands Consortium, March 2008. [www.glc.org/wetlands/final-report.html](http://www.glc.org/wetlands/final-report.html).

Gleason, H. A., and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. New York Botanical Gardens, NY, NY.

Herman, K. D., L. A. Masters, M. R. Penskar, A. A. Reznicek, G. S. Wilhelm, W. W. Brodovich, and K. P. Gardiner. 2001. *Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan*.

Hill, M. O. 1973. Reciprocal averaging: an eigenvector method of ordination. *Journal of Ecology* 61: 237-249.

Hill, M. O. 1979. *TWINSPAN: A FORTRAN Program for Arranging Multivariate Data in an Ordered Two-Way Table by Classification of the Individuals and Attributes*. Cornell Ecology Program 41. Section of Ecology and Systematics, Cornell University, Ithaca, NY. 90 pp.

Hudon, C., D. Wilcox, and J. Ingram. 2006. Modeling wetland plant community response to assess water-level regulation scenarios in the Lake Ontario-St. Lawrence River basin. *Environmental Monitoring and Assessment* 113(1-3): 303-328.

Mack, J. J., N. H. Avdis, E. C. Braig IV, and D. L. Johnson. Accepted. Application of a Vegetation-based Index of Biotic Integrity for Lake Erie coastal marshes in Ohio. *Journal of Aquatic Ecosystem Health and Management*.

Simon, P.T., and P. E. Rothrock. 2006. Plant Index of Biotic Integrity for Drowned River Mouth Coastal Wetlands of Lake Michigan. Pages 228-237 in Thomas P. Simon and Paul M. Stewart (Eds.), *Coastal Wetlands of the Laurentian Great Lakes: Heath, Habitat, and Indicators*, Authorhouse Press, Bloomington, IN.

Stewart, P.M., Butcher, J.T., Simon, T.P., 2003. Response Signatures of Four Biological Indicators to an Iron and Steel Industrial Landfill. In: T.P. Simon (E.) *Biological Response Signatures*, pp. 419-444. CRC Press, New York, NY.

Stewart, P.M., Scribailo, R.W., Simon, T.P., 1999. The use of aquatic macrophytes in monitoring and in assessment of biological integrity. In: A. Gerhardt (Ed.). *Biomonitoring of Polluted Water*, pp. 275-302. Environmental Research Forum vol. 9. Trans Tech Publications, Zurich, Switzerland.

Stuckey, R. L. 1975. A floristic analysis of the vascular plants of a marsh at Perry's Victory Monument, Lake Erie. *Michigan Botanist* 14: 144-166.

Swink, F., and G. Wilhelm. 1994. *Plants of the Chicago Region*. Fourth Edition. Indiana Academy of Science, Indianapolis, IN. 921 pp.

Voss, E. G. 1972. Michigan Flora. Part I Gymnosperms and Monocots. *Cranbrook Inst. Sci. Bull.* 55 & *Univ. Mich Herb.* 488 pp.

Voss, E. G. 1985. Michigan Flora. Part II Dicots (Saururaceae-Cornaceae). *Cranbrook Inst. Sci. Bull.* 59 & *Univ. Mich Herb.* 724 pp.

Voss, E. G. 1996. Michigan Flora. Part III Dicots (Pyrolaceae-Compositae). *Cranbrook Inst. Sci. Bull.* 61 & *Univ. Mich Herb.* 622 pp.

Voss, E. G., and A. A. Reznicek. 2012. *Field Manual of Michigan Flora*. University of Michigan Press.

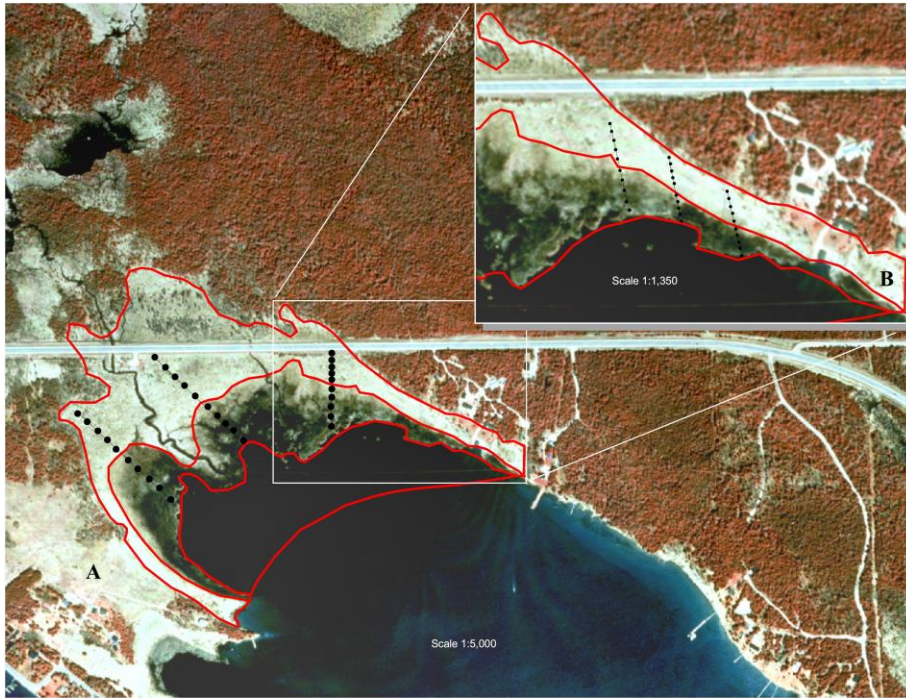
Wilcox, D. A. 2005. Lake Michigan wetlands: classification, concerns, and management opportunities. Pages 421-437 in Edsall, T. and M. Munawar, eds. *State of Lake Michigan: Ecology, Health, and Management*. *Ecovision World Monograph Series*. Aquatic Ecosystem Health and Management Society, New Delhi.

Wilcox, D. A. 2004. Implications of hydrologic variability on the succession of plants in Great Lakes wetlands. *Aquatic Ecosystem Health & Management* 7(2): 223-231.

Standard Operating Procedure  
CWMP Vegetation Sampling, updated 6/4/18

Wilcox, D. A., J. E. Meeker, P. L. Hudson, B. J. Armitage, M. G. Black, and D. G. Uzarski. 2002. Hydrologic variability and the application of Index of Biotic Integrity metrics to wetlands: a Great Lakes evaluation. *Wetlands* 22(3): 588-615.

Wilhelm, G., and L. A. Masters. 1995. Floristic quality assessment in the Chicago Region and application computer programs. Morton Arboretum, Lisle, IL. 17 pp.



**Figure 1.** This aerial photo view of a wetland along northern Lake Huron shows the location of three transects, each beginning at the upland edge of the wetland and continuing south across the meadow zone (white) and the emergent/submergent zone (dark). The transects end at the edge of the emergent zone, even though there may be continued vegetation in a more open submergent zone. This open vegetation cannot typically be seen easily on aerial photos. **Photo A** shows 15 sampling points in each of the two zones. **Photo insert B** shows that if a narrow portion of this wetland, or a wetland that was narrow along its entire length, were being sampled, that the transects would need to be configured at an angle to the wetland's slope to allow for all 30 points to be placed. Locating the points along transects allows for more rapid sampling than the random sampling shown in Figure 2.

GREAT LAKES WETLAND SAMPLING FORM								Date:											
Site ID:				Location:				Wetland name:											
Transect number:				Crew chief name:				Bearing:											
Lake:				Hydrogeomorphic Type:				Water clarity: Bottom Visible or Not Visible											
<b>Substrate classes:</b> Sand = S, Clay/Silt = C, Pebble/Cobble = P, Bedrock = B, Wood = W, Organic = O, Clay over Bedrock = CB																			
Clay over sand =CS, Organic over Clay = OC, Organic over Pebble/Cobble = OPC, Organic over sand = OS, Organic over silt = OSi																			
Transect length (m)				Meadow length				Emergent length				Submergent length							
Start Waypoint								End Waypoint											
<b>PT1</b> 4	.	.	.	.	.	.	.	<b>PT9</b> 4	.	.	.	.	.	.	.				
<b>PT2</b> 4	.	.	.	.	.	.	.	<b>PT10</b> 4	.	.	.	.	.	.	.				
<b>PT3</b> 4	.	.	.	.	.	.	.	<b>PT11</b> 4	.	.	.	.	.	.	.				
<b>PT4</b> 4	.	.	.	.	.	.	.	<b>PT12</b> 4	.	.	.	.	.	.	.				
<b>PT5</b> 4	.	.	.	.	.	.	.	<b>PT13</b> 4	.	.	.	.	.	.	.				
<b>PT6</b> 4	.	.	.	.	.	.	.	<b>PT14</b> 4	.	.	.	.	.	.	.				
<b>PT7</b> 4	.	.	.	.	.	.	.	<b>PT15</b> 4	.	.	.	.	.	.	.				
<b>PT8</b> 4	.	.	.	.	.	.	.												
								Meadow				Emergent				Submergent			
SUBSTRATE TYPE																			
ORGANIC DEPTH (CM)																			
UNVEGETATED (%)																			
TOTAL VEGETATION COVER (%)																			
STANDING DEAD BIOMASS (%)																			
DETRITUS (%)																			
WATER DEPTH (CM)																			
WATER CLARITY: V or NV																			
GPS waypoint number																			
SAMPLING POINT (PT)																			
SPECIES																			
Algae sp.																			
Calamagrostis canadensis																			
Carex stricta																			
Chara spp.																			
Moss spp																			
Nitella spp.																			
Phragmites australis (INVASIVE)																			
Phragmites australis (NATIVE)																			
BEFORE LEAVING FIELD CHECK:								GPS POINTS TAKEN				ALL UNKNOWNNS HAVE NUMBER							
								NO BLANK BOXES				PHOTOS OF TRANSECTS/ POINTS							





**APPENDIX I. Equipment needed for vegetation sampling (one set per team).**

Canoe (not needed for all sites) including:

- Paddles (3 per boat)
- Life preservers (one per person in canoe)
- Motor (only for flat-backed canoe)
- Fire extinguisher (when using motor)
- Gas can (when using motor) with mix of gasoline and oil
- Rope
- Anchor
- Tie downs or rope for tie-down of canoe
- Flash light for night travel

Laptop with necessary software for data download

Cell Phone

GPS unit

Compass (magnetic)

Sampling quadrats (2 PVC – 1m X 1m)

Ten foot conduit marked in 5 cm intervals (2 per team)

Open reel fiberglass tape (50m)

Clip Board

Plant sampling forms (rite in rain paper)

Plastic one-gallon or two-gallon zip-lock plant sampling bags (50)

Aluminum or cloth plant labels

Magic markers (waterproof pens)

Pencils

Plant press, blotters, and cardboards, newspapers

Fan (for plant drying)

Plant identification manuals (Voss I-III) + others

Michigan Floristic Quality Assessment software and manual

Dissecting microscope

Camera

Dry bags

First aid kit

Sun glasses

Waders or boots

Rubbing alcohol

Suntan lotion (water resistant)

Hat (optional)

Extra sweaters/fleeces in plastic sealed bag

**APPENDIX II. Great Lakes Coastal Wetland Monitoring Program Plant List: 4.1.2021: Naturally-occurring vascular plants in Great Lakes coastal wetlands (plus some mosses, liverworts, and charophytes). Taxonomy refers to Michigan Flora Online (A. A. Reznicek, E. G. Voss, & B. S. Walters. 2011. University of Michigan. Web. March 29, 2021. <https://michiganflora.net>) and Michigan Ferns and Lycophytes: A guide to species of the Great Lakes Region (D. D. Palmer. 2018. University of Michigan Press).**

<b>Scientific name</b>	<b>Common name</b>	<b>Family</b>
<i>Abies balsamea</i>	balsam fir	Pinaceae
<i>Abutilon theophrasti</i>	velvet-leaf	Malvaceae
<i>Acalypha rhomboidea</i>	three-seeded mercury	Euphorbiaceae
<i>Acer negundo</i>	box-elder	Sapindaceae
<i>Acer nigrum</i> ( <i>A. saccharum</i> ssp. <i>nigrum</i> )	black maple	Sapindaceae
<i>Acer rubrum</i>	red maple	Sapindaceae
<i>Acer saccharinum</i>	silver maple	Sapindaceae
<i>Acer saccharum</i>	sugar maple	Sapindaceae
<i>Acer</i> sp.	maples	Sapindaceae
<i>Acer spicatum</i>	mountain maple	Sapindaceae
<i>Achillea millefolium</i>	yarrow	Asteraceae
<i>Acorus americanus</i>	sweetflag	Acoraceae
<i>Acorus calamus</i>	calamus	Acoraceae
<i>Acorus</i> sp.	sweetflag	Acoraceae
<i>Actaea rubra</i>	red baneberry	Ranunculaceae
<i>Adenocaulon bicolor</i>	trail-plant	Asteraceae
<i>Agalinis purpurea</i>	purple false-foxglove	Orobanchaceae
<i>Agalinis</i> sp.	false-foxglove	Orobanchaceae
<i>Agalinis tenuifolia</i>	false-foxglove	Orobanchaceae
<i>Ageratina altissima</i>	white snakeroot	Asteraceae
<i>Agrimonia gryposepala</i>	agrimony	Rosaceae
<i>Agrimonia parviflora</i>	small-flowered agrimony	Rosaceae
<i>Agrimonia</i> sp.	agrimony	Rosaceae
<i>Agrimonia striata</i>	striated agrimony	Rosaceae
<i>Agrostis canina</i>	velvet bent-grass	Poaceae
<i>Agrostis gigantea</i>	redtop	Poaceae
<i>Agrostis perennans</i>	autumn bentgrass	Poaceae
<i>Agrostis scabra</i>	rough bentgrass	Poaceae
<i>Agrostis</i> sp.	bentgrass	Poaceae
<i>Agrostis stolonifera</i>	creeping bentgrass	Poaceae
<i>Aletris farinosa</i>	colic-root	Melanthiaceae
<i>Alisma gramineum</i>	narrowleaf water plantain	Alismataceae
<i>Alisma</i> sp.	water plantain	Alismataceae
<i>Alisma subcordatum</i>	southern water-plantain	Alismataceae
<i>Alisma triviale</i>	northern water-plantain	Alismataceae
<i>Alliaria petiolata</i>	garlic-mustard	Brassicaceae
<i>Allium canadense</i>	wild garlic	Alliaceae
<i>Allium cernuum</i>	nodding onion	Alliaceae
<i>Allium</i> sp.	wild onion	Alliaceae
<i>Alnus crispa</i> ( <i>A. viridis</i> ssp. <i>crispa</i> )	green alder	Betulaceae
<i>Alnus glutinosa</i>	black alder	Betulaceae

Scientific name	Common name	Family
<i>Alnus incana</i>	mountain alder	Betulaceae
<i>Alnus sp.</i>	alder	Betulaceae
<i>Alnus viridis</i>	green alder	Betulaceae
<i>Alopecurus aequalis</i>	foxtail	Poaceae
<i>Alopecurus geniculatus</i>	bent foxtail-grass	Poaceae
<i>Alopecurus pratensis</i>	meadow foxtail	Poaceae
<i>Alopecurus sp.</i>	foxtail	Poaceae
<i>Althaea officinalis</i>	marsh-mallow	Malvaceae
<i>Amaranthus albus</i>	white amaranth	Amaranthaceae
<i>Amaranthus blitoides</i>	amaranth	Amaranthaceae
<i>Amaranthus hybridus</i>	hybrid amaranth	Amaranthaceae
<i>Amaranthus retroflexus</i>	amaranth	Amaranthaceae
<i>Amaranthus sp.</i>	amaranth	Amaranthaceae
<i>Amaranthus tuberculatus</i>	amaranth	Amaranthaceae
<i>Ambrosia artemisiifolia</i>	common ragweed	Asteraceae
<i>Ambrosia sp.</i>	ragweed	Asteraceae
<i>Ambrosia trifida</i>	great ragweed	Asteraceae
<i>Amelanchier arborea</i>	serviceberry	Rosaceae
<i>Amelanchier bartramiana</i>	Bartram's serviceberry	Rosaceae
<i>Amelanchier interior</i>	interior serviceberry	Rosaceae
<i>Amelanchier laevis</i>	smooth serviceberry	Rosaceae
<i>Amelanchier sanguinea</i>	red serviceberry	Rosaceae
<i>Amelanchier sp.</i>	service berry	Rosaceae
<i>Amerorchis rotundifolia</i>	round-leaved orchis	Orchidaceae
<i>Ammannia robusta</i>	amma	Lythraceae
<i>Ammophila breviligulata</i>	beach grass	Poaceae
<i>Amorpha fruticosa</i>	false indigo-bush	Fabaceae
<i>Amphicarpaea bracteata</i>	hog-peanut	Fabaceae
<i>Anaphalis margaritacea</i>	pearly everlasting	Asteraceae
<i>Andromeda glaucophylla</i>	bog-rosemary	Ericaceae
<i>Andropogon gerardii</i>	big bluestem	Poaceae
<i>Andropogon sp.</i>	bluestem	Poaceae
<i>Andropogon virginicus</i>	broom-sedge	Poaceae
<i>Anemone canadensis</i>	Canada anemone	Ranunculaceae
<i>Anemone cylindrica</i>	prairie thimbleweed	Ranunculaceae
<i>Anemone multifida</i>	multifid anemone	Ranunculaceae
<i>Anemone quinquefolia</i>	wood anemone	Ranunculaceae
<i>Anemone sp.</i>	anemone	Ranunculaceae
<i>Anemone virginiana</i>	Virginia thimbleweed	Ranunculaceae
<i>Angelica atropurpurea</i>	purple-stem angelica	Apiaceae
<i>Angelica sp.</i>	wild celery	Apiaceae
<i>Antennaria howellii</i>	Howell's antennaria	Asteraceae
<i>Anthemis arvensis</i>	field chamomile	Asteraceae
<i>Anthemis cotula</i>	dog-fennel	Asteraceae
<i>Anthemis sp.</i>	chamomile	Asteraceae
<i>Anthoxanthum hirtum</i>	sweet vernal grass	Poaceae

Scientific name	Common name	Family
<i>Anthoxanthum odoratum</i>	sweet vernal grass	Poaceae
<i>Anthoxanthum sp.</i>	vernal grass	Poaceae
<i>Anticlea elegans</i>	mountain deathcamas	Melanthiaceae
<i>Apios americana</i>	groundnut	Fabaceae
<i>Apocynum androsaemifolium</i>	spreading dogbane	Apocynaceae
<i>Apocynum cannabinum</i>	Indianhemp	Apocynaceae
<i>Apocynum sp.</i>	dogbane	Apocynaceae
<i>Aquilegia canadensis</i>	columbine	Ranunculaceae
<i>Aquilegia sp.</i>	columbine	Ranunculaceae
<i>Aquilegia vulgaris</i>	common columbine	Ranunculaceae
<i>Arabidopsis lyrata</i>	lyrate rockcress	Brassicaceae
<i>Arabis pycnocarpa</i>	creamflower rockcress	Brassicaceae
<i>Arabis sp.</i>	rockcress	Brassicaceae
<i>Aralia nudicaulis</i>	wild sarsaparilla	Araliaceae
<i>Arctium minus</i>	bur-dock	Asteraceae
<i>Arctostaphylos uva-ursi</i>	bearberry	Ericaceae
<i>Arenaria serpyllifolia</i>	thyme-leaved arenaria	Caryophyllaceae
<i>Arethusa bulbosa</i>	arethusa	Orchidaceae
<i>Arisaema triphyllum</i>	jack-in-the-pulpit	Araceae
<i>Arnoglossum plantagineum</i>	groovestem Indian plantain	Asteraceae
<i>Aronia prunifolia</i>	chokeberry	Rosaceae
<i>Arrhenatherum elatius</i>	arrhenatherum grass	Poaceae
<i>Artemisia biennis</i>	biennial artemisia	Asteraceae
<i>Artemisia campestris</i>	beach wormwood	Asteraceae
<i>Artemisia ludoviciana</i>	western mugwort	Asteraceae
<i>Artemisia sp.</i>	sagebrush	Asteraceae
<i>Artemisia vulgaris</i>	common mugwort	Asteraceae
<i>Asclepias hirtella (Acerates h.)</i>	prairie milkweed	Apocynaceae
<i>Asclepias incarnata</i>	marsh milkweed	Apocynaceae
<i>Asclepias purpurascens</i>	purplish milkweed	Apocynaceae
<i>Asclepias sp.</i>	milkweed	Apocynaceae
<i>Asclepias speciosa</i>	showy milkweed	Apocynaceae
<i>Asclepias sullivantii</i>	Sullivant's milkweed	Apocynaceae
<i>Asclepias syriaca</i>	common milkweed	Apocynaceae
<i>Aster sp.</i>	aster	Asteraceae
<i>Astragalus canadensis</i>	Canadian milk-vetch	Fabaceae
<i>Astragalus neglectus</i>	Cooper's milk-vetch	Fabaceae
<i>Astragalus sp.</i>	milk vetch	Fabaceae
<i>Athyrium filix-femina</i>	lady fern	Athyriaceae
<i>Athyrium sp.</i>	lady ferns	Athyriaceae
<i>Atropa belladonna</i>	deadly nightshade	Solanaceae
<i>Avena sativa</i>	oats	Poaceae
<i>Avena sp.</i>	oat	Poaceae
<i>Azolla caroliniana</i>	mosquito fern	Salviniaceae
<i>Barbarea sp.</i>	yellowrocket	Brassicaceae
<i>Barbarea vulgaris</i>	wintercress	Brassicaceae

Scientific name	Common name	Family
<i>Bartonia paniculata</i>	paniculate bartonia	Gentianaceae
<i>Bartonia sp.</i>	screwstem	Gentianaceae
<i>Bartonia virginica</i>	screwstem	Gentianaceae
<i>Beckmannia syzigachne</i>	slough grass	Poaceae
<i>Berberis sp.</i>	barberry	Berberidaceae
<i>Berberis vulgaris</i>	common barberry	Berberidaceae
<i>Berteroa incana</i>	hoary alyssum	Brassicaceae
<i>Berula erecta (B. pusilla)</i>	berula	Apiaceae
<i>Betula alleghaniensis</i>	yellow birch	Betulaceae
<i>Betula papyrifera</i>	paper birch	Betulaceae
<i>Betula pendula</i>	European white birch	Betulaceae
<i>Betula populifolia</i>	gray birch	Betulaceae
<i>Betula pumila</i>	bog birch	Betulaceae
<i>Betula sp.</i>	birch	Betulaceae
<i>Bidens beckii</i>	Beck's water-marigold	Asteraceae
<i>Bidens cernua</i>	nodding beggar-ticks	Asteraceae
<i>Bidens comosa</i>	swamp tickseed	Asteraceae
<i>Bidens connata</i>	purplestem beggarticks	Asteraceae
<i>Bidens discoidea</i>	discoïd beggar-ticks	Asteraceae
<i>Bidens frondosa</i>	frondose beggar-ticks	Asteraceae
<i>Bidens sp.</i>	tickseed	Asteraceae
<i>Bidens trichosperma</i>	crowned beggarticks	Asteraceae
<i>Bidens vulgata</i>	common beggar-ticks	Asteraceae
<i>Bistorta vivipara</i>	alpine bistort	Polygonaceae
<i>Boechera grahamii</i>	spreading pod rockcress	Brassicaceae
<i>Boehmeria cylindrica</i>	false nettle	Urticaceae
<i>Bolboschoenus fluviatilis</i>	river bulrush	Cyperaceae
<i>Bolboschoenus maritimus</i>	cosmopolitan bulrush	Cyperaceae
<i>Boltonia asteroides</i>	boltonia	Asteraceae
<i>Botrychium sp.</i>	grape fern	Ophioglossaceae
<i>Brasenia schreberi</i>	watershield	Cabombaceae
<i>Brassica juncea</i>	Chinese mustard	Brassicaceae
<i>Brassica napus</i>	rutabaga	Brassicaceae
<i>Brassica nigra</i>	black mustard	Brassicaceae
<i>Brassica rapa</i>	turnip	Brassicaceae
<i>Brassica sp.</i>	mustard	Brassicaceae
<i>Bromus ciliatus</i>	fringed brome	Poaceae
<i>Bromus erectus</i>	erect brome	Poaceae
<i>Bromus inermis</i>	smooth brome	Poaceae
<i>Bromus japonicus</i>	Japanese brome	Poaceae
<i>Bromus kalmii</i>	Kalm's brome	Poaceae
<i>Bromus latiglumis</i>	broad-bracted brome	Poaceae
<i>Bromus pubescens (B. purgans)</i>	hairy brome	Poaceae
<i>Bromus pumpellianus</i>	Pumpelly's brome	Poaceae
<i>Bromus secalinus</i>	rye brome	Poaceae
<i>Bromus sp.</i>	brome	Poaceae

Scientific name	Common name	Family
<i>Butomus umbellatus</i>	flowering-rush	Butomaceae
<i>Cabomba caroliniana</i>	fanwort	Cabombaceae
<i>Cakile edentula</i>	sea-rocket	Brassicaceae
<i>Calamagrostis canadensis</i>	blue-joint	Poaceae
<i>Calamagrostis epigeios</i>	calamagrostis	Poaceae
<i>Calamagrostis sp.</i>	reed grass	Poaceae
<i>Calamagrostis stricta</i>	narrow-leaved reedgrass	Poaceae
<i>Calamovilfa longifolia</i>	dune reed	Poaceae
<i>Calla palustris</i>	wild calla	Araceae
<i>Callitriche hermaphroditica</i>	hermaphrodite water-starwort	Plantaginaceae
<i>Callitriche palustris</i>	vernal water-starwort	Plantaginaceae
<i>Callitriche sp.</i>	water starwort	Plantaginaceae
<i>Calopogon tuberosus</i>	grass-pink	Orchidaceae
<i>Caltha natans</i>	floating marsh marigold	Ranunculaceae
<i>Caltha palustris</i>	marsh-marigold	Ranunculaceae
<i>Caltha sp.</i>	marsh marigold	Ranunculaceae
<i>Calypso bulbosa</i>	calypso	Orchidaceae
<i>Calystegia sepium</i>	hedge bindweed	Convolvulaceae
<i>Calystegia silvatica</i>	shortstalk false bindweed	Convolvulaceae
<i>Calystegia sp.</i>	false bindweed	Convolvulaceae
<i>Calystegia spithamea</i>	low false bindweed	Convolvulaceae
<i>Calystegia spithamea</i>	erect bindweed	Convolvulaceae
<i>Campanula aparinooides</i>	marsh bellflower	Campanulaceae
<i>Campanula rotundifolia</i>	bellflower	Campanulaceae
<i>Campanula sp.</i>	campanula	Campanulaceae
<i>Campanulastrum americanum</i>	American bellflower	Campanulaceae
<i>Campsis radicans</i>	trumpet-creeper	Bignoniaceae
<i>Canadanthus modestus</i>	giant mountain aster	Asteraceae
<i>Cannabis sativa</i>	hemp	Cannabaceae
<i>Capnoides sempervirens</i>	pink corydalis	Papaveraceae
<i>Capsella bursa-pastoris</i>	shepherd's-purse	Brassicaceae
<i>Cardamine bulbosa</i>	bulbous bittercress	Brassicaceae
<i>Cardamine diphylla</i>	crinkleroot	Brassicaceae
<i>Cardamine parviflora</i>	dryland bitter cress	Brassicaceae
<i>Cardamine pennsylvanica</i>	Pennsylvania bittercress	Brassicaceae
<i>Cardamine pratensis</i>	cuckoo-flower	Brassicaceae
<i>Cardamine sp.</i>	bittercress	Brassicaceae
<i>Cardiospermum halicacabum</i>	balloon-vine	Sapindaceae
<i>Carex acutiformis</i>	lesser pond sedge	Cyperaceae
<i>Carex adusta</i>	lesser brown sedge	Cyperaceae
<i>Carex alata</i>	winged sedge	Cyperaceae
<i>Carex alopecoidea</i>	foxtail sedge	Cyperaceae
<i>Carex amphibola (C. grisea)</i>	eastern narrowleaf sedge	Cyperaceae
<i>Carex aquatilis</i>	aquatic sedge	Cyperaceae
<i>Carex arcta</i>	arctic sedge	Cyperaceae
<i>Carex atherodes</i>	wheat sedge	Cyperaceae

Scientific name	Common name	Family
<i>Carex atlantica</i>	prickly bog sedge	Cyperaceae
<i>Carex aurea</i>	golden sedge	Cyperaceae
<i>Carex bebbii</i>	Bebb's sedge	Cyperaceae
<i>Carex billingsii</i>	Billings' sedge	Cyperaceae
<i>Carex bromoides</i>	brome sedge	Cyperaceae
<i>Carex brunnescens</i>	brownish sedge	Cyperaceae
<i>Carex buxbaumii</i>	Buxbaum's sedge	Cyperaceae
<i>Carex canescens</i>	hoary sedge	Cyperaceae
<i>Carex capillaris</i>	capillary sedge	Cyperaceae
<i>Carex careyana</i>	Carey's sedge	Cyperaceae
<i>Carex castanea</i>	chestnut sedge	Cyperaceae
<i>Carex cephaloidea</i>	cephaloid sedge	Cyperaceae
<i>Carex chordorrhiza</i>	cord-root sedge	Cyperaceae
<i>Carex comosa</i>	longhair sedge	Cyperaceae
<i>Carex concinna</i>	pretty sedge	Cyperaceae
<i>Carex conoidea</i>	conical sedge	Cyperaceae
<i>Carex crawei</i>	Crawe's sedge	Cyperaceae
<i>Carex crawfordii</i>	Crawford's sedge	Cyperaceae
<i>Carex crinita</i>	maned sedge	Cyperaceae
<i>Carex cristatella</i>	crested sedge	Cyperaceae
<i>Carex crus-corvi</i>	crow sedge	Cyperaceae
<i>Carex cryptolepis</i>	hidden-scale sedge	Cyperaceae
<i>Carex diandra</i>	two-male sedge	Cyperaceae
<i>Carex disperma</i>	two-seed sedge	Cyperaceae
<i>Carex eburnea</i>	ivory sedge	Cyperaceae
<i>Carex echinata</i>	star sedge	Cyperaceae
<i>Carex emoryi</i>	Emory's sedge	Cyperaceae
<i>Carex exilis</i>	exile sedge	Cyperaceae
<i>Carex festucacea</i>	fescue sedge	Cyperaceae
<i>Carex flacca</i>	European sedge	Cyperaceae
<i>Carex flava</i>	yellow sedge	Cyperaceae
<i>Carex folliculata</i>	folliculate sedge	Cyperaceae
<i>Carex garberi</i>	Garber's sedge	Cyperaceae
<i>Carex gracilescens</i>	slender sedge	Cyperaceae
<i>Carex gracillima</i>	graceful sedge	Cyperaceae
<i>Carex granularis</i>	granular sedge	Cyperaceae
<i>Carex grisea</i>	inflated narrow-leaf sedge	Cyperaceae
<i>Carex gynandra</i>	gynadrous sedge	Cyperaceae
<i>Carex gynocrates</i>	gynocratic sedge	Cyperaceae
<i>Carex hirsutella</i>	hirsute sedge	Cyperaceae
<i>Carex houghtoniana</i>	Houghton's sedge	Cyperaceae
<i>Carex hyalinolepis</i>	hyaline-scale sedge	Cyperaceae
<i>Carex hystericina</i>	hedgehog sedge	Cyperaceae
<i>Carex interior</i>	interior sedge	Cyperaceae
<i>Carex intumescens</i>	tumid sedge	Cyperaceae
<i>Carex lacustris</i>	lake sedge	Cyperaceae



Scientific name	Common name	Family
<i>Carex laevivaginata</i>	smooth-sheath sedge	Cyperaceae
<i>Carex lasiocarpa</i>	woolly-fruit sedge	Cyperaceae
<i>Carex lenticularis</i>	lenticular sedge	Cyperaceae
<i>Carex leptalea</i>	bristlystalked sedge	Cyperaceae
<i>Carex limosa</i>	mud sedge	Cyperaceae
<i>Carex livida</i>	livid sedge	Cyperaceae
<i>Carex longii</i>	Long's sedge	Cyperaceae
<i>Carex lupuliformis</i>	lupuliform sedge	Cyperaceae
<i>Carex lupulina</i>	hop sedge	Cyperaceae
<i>Carex lurida</i>	lurid sedge	Cyperaceae
<i>Carex magellanica</i>	boreal bog sedge	Cyperaceae
<i>Carex michauxiana</i>	Michaux's sedge	Cyperaceae
<i>Carex molesta (hybrid)</i>	molesta sedge	Cyperaceae
<i>Carex nigra</i>	black sedge	Cyperaceae
<i>Carex oligosperma</i>	few-seeded sedge	Cyperaceae
<i>Carex ovales-type</i>	eggbract sedge	Cyperaceae
<i>Carex pallescens</i>	pallescent sedge	Cyperaceae
<i>Carex pauciflora</i>	few-flowered sedge	Cyperaceae
<i>Carex pellita</i>	woolly sedge	Cyperaceae
<i>Carex pensylvanica</i>	Pennsylvania sedge	Cyperaceae
<i>Carex praegracilis</i>	saltmarsh sedge	Cyperaceae
<i>Carex prairea</i>	prairie sedge	Cyperaceae
<i>Carex projecta</i>	projected sedge	Cyperaceae
<i>Carex pseudocyperus</i>	cypress-like sedge	Cyperaceae
<i>Carex retrorsa</i>	retorse sedge	Cyperaceae
<i>Carex richardsonii</i>	Richardson's sedge	Cyperaceae
<i>Carex rosea</i>	rosy sedge	Cyperaceae
<i>Carex rosea (C. convoluta)</i>	convolute sedge	Cyperaceae
<i>Carex rostrata</i>	beaked sedge	Cyperaceae
<i>Carex sartwellii</i>	Sartwell's sedge	Cyperaceae
<i>Carex scabrata</i>	scabrous sedge	Cyperaceae
<i>Carex schweinitzii</i>	Schweinitz's sedge	Cyperaceae
<i>Carex scirpoidea</i>	scirpoid sedge	Cyperaceae
<i>Carex scoparia</i>	broom sedge	Cyperaceae
<i>Carex sp.</i>	sedge	Cyperaceae
<i>Carex spicata</i>	prickly sedge	Cyperaceae
<i>Carex sprengelii</i>	Sprengel's sedge	Cyperaceae
<i>Carex squarrosa</i>	squarrose sedge	Cyperaceae
<i>Carex stenophylla (C. eleocharis)</i>	stenophylla sedge	Cyperaceae
<i>Carex sterilis</i>	sterile sedge	Cyperaceae
<i>Carex stipitata</i>	stipitate sedge	Cyperaceae
<i>Carex stricta</i>	strict sedge	Cyperaceae
<i>Carex suberecta</i>	erect sedge	Cyperaceae
<i>Carex sychnocephala</i>	sychnocephala sedge	Cyperaceae
<i>Carex tenera</i>	slender sedge	Cyperaceae
<i>Carex tenuiflora</i>	tenuiflora sedge	Cyperaceae

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<i>Carex tetanica</i>	rigid sedge	Cyperaceae
<i>Carex tribuloides</i>	tribulus sedge	Cyperaceae
<i>Carex trichocarpa</i>	trichocarpa sedge	Cyperaceae
<i>Carex trisperma</i>	three-seeded sedge	Cyperaceae
<i>Carex tuckermanii</i>	Tuckerman's sedge	Cyperaceae
<i>Carex typhina</i>	cattail sedge	Cyperaceae
<i>Carex umbellata</i>	umbellata sedge	Cyperaceae
<i>Carex utriculata (C. rostrata)</i>	rostrate sedge	Cyperaceae
<i>Carex vaginata</i>	sheathed sedge	Cyperaceae
<i>Carex vesicaria</i>	blister sedge	Cyperaceae
<i>Carex viridula</i>	greenish sedge	Cyperaceae
<i>Carex vulpinoidea</i>	fox sedge	Cyperaceae
<i>Carex wiegandii</i>	Wiegand's sedge	Cyperaceae
<i>Carpinus caroliniana</i>	American hornbeam	Betulaceae
<i>Carum carvi</i>	caraway	Apiaceae
<i>Castilleja coccinea</i>	Indian paintbrush	Orobanchaceae
<i>Catalpa speciosa</i>	northern catalpa	Bignoniaceae
<i>Ceanothus americanus</i>	new jersey-tea	Rhamnaceae
<i>Celastrus scandens</i>	American bittersweet	Celastraceae
<i>Cenchrus longispinus</i>	sandbur	Poaceae
<i>Cenchrus sp.</i>	sandbur	Poaceae
<i>Centaurea cyanus</i>	cyanus centaurea	Asteraceae
<i>Centaurea jacea</i>	brown knapweed	Asteraceae
<i>Centaurea sp.</i>	knapweed	Asteraceae
<i>Centaurea stoebe</i>	spotted knapweed	Asteraceae
<i>Centaurium erythraea (C. umbellatum)</i>	forking centaury	Gentianaceae
<i>Centaurium pulchellum</i>	common centaury	Gentianaceae
<i>Centaurium sp.</i>	centaurium	Gentianaceae
<i>Cephalanthus occidentalis</i>	buttonbush	Rubiaceae
<i>Cerastium arvense</i>	field chickweed	Caryophyllaceae
<i>Cerastium brachypodum</i>	bractpod chickweed	Caryophyllaceae
<i>Cerastium fontanum (C. vulgare)</i>	mouse-ear chickweed	Caryophyllaceae
<i>Cerastium sp.</i>	chickweed	Caryophyllaceae
<i>Ceratophyllum demersum</i>	coontail	Ceratophyllaceae
<i>Ceratophyllum echinatum</i>	coontail	Ceratophyllaceae
<i>Ceratophyllum sp.</i>	hornwort	Ceratophyllaceae
<i>Chaenorhinum minus</i>	railroad snapdragon	Plantaginaceae
<i>Chamaedaphne calyculata</i>	leatherleaf	Ericaceae
<i>Chamaenerion angustifolium</i>	fireweed	Onagraceae
<i>Chara sp.</i>	stonewort	Characeae
<i>Chelone glabra</i>	white turtlehead	Plantaginaceae
<i>Chenopodium album</i>	lamb's-quarters	Amaranthaceae
<i>Chenopodium capitatum</i>	strawberry blite	Amaranthaceae
<i>Chenopodium glaucum</i>	glaucous goosefoot	Amaranthaceae
<i>Chenopodium rubrum</i>	red goosefoot	Amaranthaceae
<i>Chenopodium simplex</i>	giant-seed goosefoot	Amaranthaceae

Scientific name	Common name	Family
<i>Chenopodium sp.</i>	goosefoot	Amaranthaceae
<i>Chimaphila umbellata</i>	umbellate wintergreen	Ericaceae
<i>Chrysosplenium americanum</i>	golden saxifrage	Saxifragaceae
<i>Cichorium intybus</i>	chicory	Asteraceae
<i>Cicuta bulbifera</i>	bulbiferous water-hemlock	Apiaceae
<i>Cicuta maculata</i>	spotted water-hemlock	Apiaceae
<i>Cicuta sp.</i>	water hemlock	Apiaceae
<i>Cinna arundinacea</i>	common woodreed	Poaceae
<i>Cinna latifolia</i>	wood reedgrass	Poaceae
<i>Cinna sp.</i>	woodreed	Poaceae
<i>Circaea alpina</i>	alpine enchanter's-nights	Onagraceae
<i>Circaea canadensis</i>	broadleaf enchanter's nightshade	Onagraceae
<i>Circaea lutetiana</i>	enchanter's-nightshade	Onagraceae
<i>Circaea sp.</i>	enchanter's nightshade	Onagraceae
<i>Cirsium altissimum</i>	tall thistle	Asteraceae
<i>Cirsium arvense</i>	field thistle	Asteraceae
<i>Cirsium hillii</i>	Hill's thistle	Asteraceae
<i>Cirsium muticum</i>	swamp thistle	Asteraceae
<i>Cirsium palustre</i>	European swamp thistle	Asteraceae
<i>Cirsium pitcheri</i>	dune thistle	Asteraceae
<i>Cirsium sp.</i>	thistle	Asteraceae
<i>Cirsium vulgare</i>	bull thistle	Asteraceae
<i>Cladium mariscoides</i>	twig-rush	Cyperaceae
<i>Clematis virginiana</i>	virgin's-bower	Ranunculaceae
<i>Clinopodium acinos</i>	basil-thyme	Lamiaceae
<i>Clinopodium arkansanum</i>	limestone calamint	Lamiaceae
<i>Clinopodium sp.</i>	clinopodium	Lamiaceae
<i>Clinopodium vulgare (Satureja v.)</i>	wild basil	Lamiaceae
<i>Clintonia borealis</i>	blue beadlily	Convallariaceae
<i>Coeloglossum viride</i>	bracted orchid	Orchidaceae
<i>Collomia linearis</i>	slender gilia	Polemoniaceae
<i>Comandra umbellata</i>	bastard toadflax	Santalaceae
<i>Comarum palustre</i>	purple marshlocks	Rosaceae
<i>Conioselinum chinense</i>	hemlock-parsley	Apiaceae
<i>Conium maculatum</i>	poison-hemlock	Apiaceae
<i>Convolvulus arvensis</i>	field bindweed	Convolvulaceae
<i>Convolvulus sp.</i>	bindweed	Convolvulaceae
<i>Conyza canadensis</i>	horseweed	Asteraceae
<i>Corallorhiza maculata</i>	summer coralroot	Orchidaceae
<i>Corallorhiza sp.</i>	coralroot	Orchidaceae
<i>Corallorhiza striata</i>	hooded coralroot	Orchidaceae
<i>Corallorhiza trifida</i>	yellow coralroot	Orchidaceae
<i>Coreopsis lanceolata</i>	lanceolate coreopsis	Asteraceae
<i>Coreopsis sp.</i>	tickseed	Asteraceae
<i>Coreopsis tripteris</i>	tall coreopsis	Asteraceae
<i>Corispermum americanum</i>	American bugseed	Amaranthaceae

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<i>Corispermum hyssopifolium</i>	common bugseed	Amaranthaceae
<i>Corispermum pallasii</i>	Siberian bugseed	Amaranthaceae
<i>Corispermum sp.</i>	bugseed	Amaranthaceae
<i>Corispermum villosum</i>	hairy bugseed	Amaranthaceae
<i>Cornus alternifolia</i>	alternate-leaved dogwood	Cornaceae
<i>Cornus amomum</i>	silky dogwood	Cornaceae
<i>Cornus canadensis</i>	bunchberry; dwarf cornel	Cornaceae
<i>Cornus drummondii</i>	Drummond's dogwood	Cornaceae
<i>Cornus foemina ssp. racemosa</i>	gray dogwood	Cornaceae
<i>Cornus rugosa</i>	round-leaf dogwood	Cornaceae
<i>Cornus seedling</i>	dogwoods	Cornaceae
<i>Cornus sericea</i>	redosier dogwood	Cornaceae
<i>Cornus sp.</i>	dogwoods	Cornaceae
<i>Corylus americana</i>	American hazelnut	Betulaceae
<i>Corylus cornuta</i>	beaked hazelnut	Betulaceae
<i>Corylus sp.</i>	hazelnut	Betulaceae
<i>Cosmos bipinnatus</i>	common cosmos	Asteraceae
<i>Cosmos sp.</i>	cosmos	Asteraceae
<i>Cota tinctoria</i>	golden chamomile	Asteraceae
<i>Crataegus chrysoarpa</i>	chrysoarpa hawthorn	Rosaceae
<i>Crataegus crus-galli</i>	cockspur hawthorn	Rosaceae
<i>Crataegus douglasii</i>	Douglas's hawthorn	Rosaceae
<i>Crataegus irrasa</i>	irrasa hawthorn	Rosaceae
<i>Crataegus sp.</i>	hawthorn	Rosaceae
<i>Crataegus succulenta</i>	succulenta hawthorn	Rosaceae
<i>Crepis sp.</i>	hawksbeard	Asteraceae
<i>Crepis tectorum</i>	roof hawk's-beard	Asteraceae
<i>Cucumis sativus</i>	cucumber	Cucurbitaceae
<i>Cuscuta campestris</i>	campestris dodder	Convolvulaceae
<i>Cuscuta cephalanthi</i>	cephalanthi dodder	Convolvulaceae
<i>Cuscuta coryli</i>	coryli dodder	Convolvulaceae
<i>Cuscuta epilinum</i>	epilinum dodder	Convolvulaceae
<i>Cuscuta gronovii</i>	common dodder	Convolvulaceae
<i>Cuscuta polygonorum</i>	polygonorum dodder	Convolvulaceae
<i>Cuscuta sp.</i>	dodder	Convolvulaceae
<i>Cymbalaria muralis</i>	kenilworth ivy	Plantaginaceae
<i>Cynoglossum boreale</i>	northern comfrey	Boraginaceae
<i>Cynoglossum officinale</i>	hound's-tongue	Boraginaceae
<i>Cynoglossum sp.</i>	hound's tongue	Boraginaceae
<i>Cyperus bipartitus</i>	slender flatsedge	Cyperaceae
<i>Cyperus diandrus</i>	diandrus cyperus	Cyperaceae
<i>Cyperus engelmannii</i>	Engelmann's cyperus	Cyperaceae
<i>Cyperus erythrorhizos</i>	red-root cyperus	Cyperaceae
<i>Cyperus esculentus</i>	chufa	Cyperaceae
<i>Cyperus flavescens</i>	yellowish cyperus	Cyperaceae
<i>Cyperus fuscus</i>	brown flatsedge	Cyperaceae

Scientific name	Common name	Family
<i>Cyperus houghtonii</i>	Houghton's cyperus	Cyperaceae
<i>Cyperus lupulinus</i>	Great Plains flatsedge	Cyperaceae
<i>Cyperus odoratus</i> var. <i>squarrosus</i>	fragrant cyperus	Cyperaceae
<i>Cyperus</i> sp.	flatsedge	Cyperaceae
<i>Cyperus squarrosus</i> ( <i>C. aristatus</i> )	squarrose cyperus	Cyperaceae
<i>Cyperus strigosus</i>	strigose cyperus	Cyperaceae
<i>Cypripedium acaule</i>	pink lady-slipper	Orchidaceae
<i>Cypripedium arietinum</i>	ram's-head lady's-slipper	Orchidaceae
<i>Cypripedium calceolus</i> var. <i>parviflorum</i>	small yellow lady's-slipper	Orchidaceae
<i>Cypripedium calceolus</i> var. <i>pubescens</i>	large yellow lady-slipper	Orchidaceae
<i>Cypripedium candidum</i>	white lady-slipper	Orchidaceae
<i>Cypripedium parviflorum</i>	lesser yellow lady's slipper	Orchidaceae
<i>Cypripedium reginae</i>	showy lady-slipper	Orchidaceae
<i>Cypripedium</i> sp.	lady's slipper	Orchidaceae
<i>Cystopteris bulbifera</i>	bulblet fern	Cystopteridaceae
<i>Cystopteris fragilis</i>	fragile fern	Cystopteridaceae
<i>Cystopteris</i> sp.	bladder fern	Cystopteridaceae
<i>Dactylis glomerata</i>	orchard grass	Poaceae
<i>Danthonia</i> sp.	danthonia	Poaceae
<i>Danthonia spicata</i>	poverty grass	Poaceae
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	Rosaceae
<i>Daucus carota</i>	wild carrot	Apiaceae
<i>Decodon verticillatus</i>	swamp loosestrife	Lythraceae
<i>Deschampsia cespitosa</i>	tufted hairgrass	Poaceae
<i>Deschampsia flexuosa</i>	flexuosa hair-grass	Poaceae
<i>Deschampsia</i> sp.	hairgrass	Poaceae
<i>Descurainia pinnata</i>	tansy mustard	Brassicaceae
<i>Descurainia</i> sp.	tansymustard	Brassicaceae
<i>Desmodium canadense</i>	tick-trefoil	Fabaceae
<i>Desmodium canescens</i>	canescent tick-trefoil	Fabaceae
<i>Desmodium</i> sp.	tick-trefoil	Fabaceae
<i>Dianthus armeria</i>	deptford pink	Caryophyllaceae
<i>Dianthus</i> sp.	pink	Caryophyllaceae
<i>Dichanthelium boreale</i>	northern panicgrass	Poaceae
<i>Dichanthelium clandestinum</i>	deertongue	Poaceae
<i>Dichanthelium columbianum</i>	hemlock rosette grass	Poaceae
<i>Dichanthelium depauperatum</i>	starved panicgrass	Poaceae
<i>Dichanthelium implicatum</i>	panic grass	Poaceae
<i>Dichanthelium leibergii</i>	Leiberg's panicum	Poaceae
<i>Dichanthelium lindheimeri</i>	Lindheimer panicgrass	Poaceae
<i>Dichanthelium linearifolium</i>	slim-leaf rosette grass	Poaceae
<i>Dichanthelium meridionale</i>	matting rosette grass	Poaceae
<i>Dichanthelium polyanthes</i>	roundseed panicgrass	Poaceae
<i>Dichanthelium</i> sp.	panicgrass	Poaceae
<i>Dichanthelium spretum</i>	Eaton's rosette grass	Poaceae
<i>Diervilla lonicera</i>	bush-honeysuckle	Diervillaceae

Scientific name	Common name	Family
<i>Digitalis sp.</i>	foxglove	Plantaginaceae
<i>Digitaria ischaemum</i>	crabgrass	Poaceae
<i>Digitaria sanguinalis</i>	hairy crabgrass	Poaceae
<i>Digitaria sp.</i>	crabgrass	Poaceae
<i>Diodia teres</i>	buttonweed	Rubiaceae
<i>Dioscorea sp.</i>	yam	Dioscoreaceae
<i>Dioscorea villosa</i>	wild yam	Dioscoreaceae
<i>Diplotaxis muralis</i>	wall rocket	Brassicaceae
<i>Diplotaxis sp.</i>	wallrocket	Brassicaceae
<i>Diplotaxis tenuifolia</i>	sand rocket	Brassicaceae
<i>Dipsacus fullonum (D. sylvestris)</i>	common teasel	Dipsacaceae
<i>Dipsacus laciniatus</i>	cut-leaved teasel	Dipsacaceae
<i>Dipsacus sp.</i>	teasel	Dipsacaceae
<i>Doellingeria umbellata</i>	parasol whitetop	Asteraceae
<i>Drosera anglica</i>	English sundew	Droseraceae
<i>Drosera intermedia</i>	intermediate sundew	Droseraceae
<i>Drosera linearis</i>	linear-leaved sundew	Droseraceae
<i>Drosera rotundifolia</i>	round-leaved sundew	Droseraceae
<i>Drosera sp.</i>	sundew	Droseraceae
<i>Drymocallis arguta</i>	tall cinquefoil	Rosaceae
<i>Dryopteris carthusiana</i>	spinulose woodfern	Dryopteridaceae
<i>Dryopteris carthusiana (D. spinulosa)</i>	spinulose woodfern	Dryopteridaceae
<i>Dryopteris clintoniana</i>	Clinton's woodfern	Dryopteridaceae
<i>Dryopteris cristata</i>	crested woodfern	Dryopteridaceae
<i>Dryopteris goldiana</i>	Goldie's woodfern	Dryopteridaceae
<i>Dryopteris sp.</i>	shield fern	Dryopteridaceae
<i>Dulichium arundinaceum</i>	three-way sedge	Cyperaceae
<i>Dysphania aristata</i>	wormseed	Amaranthaceae
<i>Echinochloa crusgalli</i>	barnyard-grass	Poaceae
<i>Echinochloa esculenta</i>	japanese millet	Poaceae
<i>Echinochloa muricata</i>	muricate barnyard-grass	Poaceae
<i>Echinochloa sp.</i>	cockspur	Poaceae
<i>Echinochloa walteri</i>	Walter's barnyard grass	Poaceae
<i>Echinocystis lobata</i>	wild cucumber	Cucurbitaceae
<i>Eclipta prostrata (E. alba)</i>	yerba de tajo	Asteraceae
<i>Elaeagnus sp.</i>	silverberry	Elaeagnaceae
<i>Elaeagnus umbellata</i>	autumn olive	Elaeagnaceae
<i>Elatine minima (E. americana)</i>	waterwort	Elatinaceae
<i>Elatine sp.</i>	waterwort	Elatinaceae
<i>Eleocharis acicularis</i>	needle spikerush	Cyperaceae
<i>Eleocharis compressa</i>	compressed spikerush	Cyperaceae
<i>Eleocharis elliptica</i>	elliptic spikerush	Cyperaceae
<i>Eleocharis equisetoides</i>	horsetail spike-rush	Cyperaceae
<i>Eleocharis erythropoda</i>	red-foot spikerush	Cyperaceae
<i>Eleocharis flavescens</i>	yellow spikerush	Cyperaceae
<i>Eleocharis intermedia</i>	intermediate spikerush	Cyperaceae

Scientific name	Common name	Family
<i>Eleocharis microcarpa</i>	small-fruited spikerush	Cyperaceae
<i>Eleocharis obtusa</i>	obtuse spikerush	Cyperaceae
<i>Eleocharis ovata</i>	ovoid spike-rush	Cyperaceae
<i>Eleocharis palustris</i>	common spikerush	Cyperaceae
<i>Eleocharis quadrangulata</i>	quadrangular spike-rush	Cyperaceae
<i>Eleocharis quinqueflora</i> ( <i>E. pauciflora</i> )	few-flowered spikerush	Cyperaceae
<i>Eleocharis robbinsii</i>	Robbins' spikerush	Cyperaceae
<i>Eleocharis rostellata</i>	beaked spikerush	Cyperaceae
<i>Eleocharis</i> sp.	spikerush	Cyperaceae
<i>Elodea canadensis</i>	Canada elodea	Hydrocharitaceae
<i>Elodea nuttallii</i>	Nuttall's elodea	Hydrocharitaceae
<i>Elodea</i> sp.	water weed	Hydrocharitaceae
<i>Elymus canadensis</i>	Canada wild-rye	Poaceae
<i>Elymus hystrix</i>	eastern bottlebrush grass	Poaceae
<i>Elymus lanceolatus</i>	streambank wheatgrass	Poaceae
<i>Elymus repens</i>	quackgrass	Poaceae
<i>Elymus riparius</i>	riverbank wild-rye	Poaceae
<i>Elymus</i> sp.	wildrye	Poaceae
<i>Elymus trachycaulus</i>	slender wheatgrass	Poaceae
<i>Elymus virginicus</i>	Virginia wild-rye	Poaceae
<i>Elymus wiegandii</i> ( <i>E. canadensis</i> var. <i>wiegandii</i> )	Wiegand's wild-rye	Poaceae
<i>Empetrum nigrum</i>	black crowberry	Ericaceae
<i>Epigaea repens</i>	trailing arbutus	Ericaceae
<i>Epilobium ciliatum</i>	ciliate willow-herb	Onagraceae
<i>Epilobium coloratum</i>	colored willow-herb	Onagraceae
<i>Epilobium hirsutum</i>	great hairy willow-herb	Onagraceae
<i>Epilobium leptophyllum</i>	narrow-leaf willow-herb	Onagraceae
<i>Epilobium palustre</i>	marsh willow-herb	Onagraceae
<i>Epilobium parviflorum</i>	small-flowered willow-herb	Onagraceae
<i>Epilobium</i> sp.	willow weed	Onagraceae
<i>Epilobium strictum</i>	strict willow-herb	Onagraceae
<i>Epipactis helleborine</i>	helleborine orchid	Orchidaceae
<i>Equisetum arvense</i>	field horsetail	Equisetaceae
<i>Equisetum fluviatile</i>	water horsetail	Equisetaceae
<i>Equisetum hyemale</i>	rough horsetail	Equisetaceae
<i>Equisetum laevigatum</i>	smooth horsetail	Equisetaceae
<i>Equisetum palustre</i>	swamp horsetail	Equisetaceae
<i>Equisetum pratense</i>	meadow horsetail	Equisetaceae
<i>Equisetum scirpoides</i>	dwarf horsetail	Equisetaceae
<i>Equisetum</i> sp.	horsetail	Equisetaceae
<i>Equisetum sylvaticum</i>	woodland horsetail	Equisetaceae
<i>Equisetum variegatum</i>	variegated horsetail	Equisetaceae
<i>Eragrostis hypnoides</i>	hypnoides love-grass	Poaceae
<i>Eragrostis</i> sp.	lovegrass	Poaceae
<i>Erechtites hieraciifolius</i>	fireweed	Asteraceae
<i>Erigeron annuus</i>	annual fleabane	Asteraceae

Scientific name	Common name	Family
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	Asteraceae
<i>Erigeron pulchellus</i>	pretty fleabane	Asteraceae
<i>Erigeron sp.</i>	fleabane	Asteraceae
<i>Erigeron strigosus</i>	strigose fleabane	Asteraceae
<i>Eriocaulon aquaticum</i>	sevenangle pipewort	Eriocaulaceae
<i>Eriophorum angustifolium</i>	narrow-leaf bog-cotton	Cyperaceae
<i>Eriophorum gracile</i>	slender bog-cotton	Cyperaceae
<i>Eriophorum sp.</i>	cottongrass	Cyperaceae
<i>Eriophorum tenellum</i>	bog-cotton	Cyperaceae
<i>Eriophorum vaginatum</i>	tussock cottongrass	Cyperaceae
<i>Eriophorum virginicum</i>	tawny cotton-grass	Cyperaceae
<i>Eriophorum viridicarinatum</i>	green-keeled bog-cotton	Cyperaceae
<i>Erucastrum gallicum</i>	dog mustard	Brassicaceae
<i>Erysimum cheiranthoides</i>	wormseed mustard	Brassicaceae
<i>Erysimum sp.</i>	wallflower	Brassicaceae
<i>Eupatorium perfoliatum</i>	boneset	Asteraceae
<i>Eupatorium sp.</i>	thoroughwort	Asteraceae
<i>Euphorbia davidii</i>	David's spurge	Euphorbiaceae
<i>Euphorbia helioscopia</i>	helioscopia spurge	Euphorbiaceae
<i>Euphorbia maculata</i>	spurge	Euphorbiaceae
<i>Euphorbia nutans</i>	nodding spurge	Euphorbiaceae
<i>Euphorbia platyphylla</i>	platyphylla spurge	Euphorbiaceae
<i>Euphorbia polygonifolia</i>	polygonifolia spurge	Euphorbiaceae
<i>Euphorbia sp.</i>	spurge	Euphorbiaceae
<i>Euphorbia spathulata</i>	roughpod spurge	Euphorbiaceae
<i>Euphorbia vermiculata</i>	vermiculata spurge	Euphorbiaceae
<i>Euphrasia stricta (E. officinalis)</i>	strict eyebright	Orobanchaceae
<i>Eurybia macrophylla</i>	bigleaf aster	Asteraceae
<i>Euthamia graminifolia (Solidago g.)</i>	grass-leaved goldenrod	Asteraceae
<i>Eutrochium maculatum</i>	spotted joepyeweed	Asteraceae
<i>Eutrochium purpureum</i>	sweet joepyeweed	Asteraceae
<i>Fagus grandifolia</i>	beech	Fagaceae
<i>Fallopia cilinodis</i>	fringed black bindweed	Polygonaceae
<i>Fallopia convolvulus</i>	black bindweed	Polygonaceae
<i>Fallopia japonica</i>	japanese knotweed	Polygonaceae
<i>Fallopia scandens</i>	climbing false buckwheat	Polygonaceae
<i>Fatoua villosa</i>	hairy crabweed	Moraceae
<i>Festuca myuros</i>	mouse-tail fescue	Poaceae
<i>Festuca occidentalis</i>	western fescue	Poaceae
<i>Festuca octoflora (Vulpia o.)</i>	eight-flowered fescue	Poaceae
<i>Festuca rubra</i>	red fescue	Poaceae
<i>Festuca saximontana</i>	rocky mountain fescue	Poaceae
<i>Festuca sp.</i>	fescue	Poaceae
<i>Filipendula rubra</i>	queen-of-the-prairie	Rosaceae
<i>Fimbristylis autumnalis</i>	fimbristylis	Cyperaceae
<i>Floerkea proserpinacoides</i>	false mermaid	Limnanthaceae



Scientific name	Common name	Family
<i>Fragaria sp.</i>	strawberry	Rosaceae
<i>Fragaria vesca</i>	woodland strawberry	Rosaceae
<i>Fragaria virginiana</i>	wild strawberry	Rosaceae
<i>Frangula alnus</i>	glossy buckthorn	Rhamnaceae
<i>Fraxinus americana</i>	white ash	Oleaceae
<i>Fraxinus nigra</i>	black ash	Oleaceae
<i>Fraxinus pennsylvanica</i>	red ash	Oleaceae
<i>Fraxinus sp.</i>	ash	Oleaceae
<i>Fuirena pumila</i>	dwarf umbrellasedge	Cyperaceae
<i>Galega officinalis</i>	professor-weed	Fabaceae
<i>Galeopsis ladanum</i>	red hemp-nettle	Lamiaceae
<i>Galeopsis sp.</i>	hempnettle	Lamiaceae
<i>Galeopsis tetrahit</i>	common hemp-nettle	Lamiaceae
<i>Galinsoga parviflora</i>	small-flowered galinsoga	Asteraceae
<i>Galinsoga quadriradiata</i>	quickweed	Asteraceae
<i>Galinsoga sp.</i>	gallant soldier	Asteraceae
<i>Galium aparine</i>	annual bedstraw	Rubiaceae
<i>Galium asprellum</i>	rough bedstraw	Rubiaceae
<i>Galium boreale</i>	northern bedstraw	Rubiaceae
<i>Galium brevipes</i>	short-stalked bedstraw	Rubiaceae
<i>Galium concinnum</i>	shining bedstraw	Rubiaceae
<i>Galium labradoricum</i>	bog bedstraw	Rubiaceae
<i>Galium obtusum</i>	wild madder	Rubiaceae
<i>Galium palustre</i>	marsh bedstraw	Rubiaceae
<i>Galium sp.</i>	small bedstraw	Rubiaceae
<i>Galium tinctorium</i>	stiff bedstraw	Rubiaceae
<i>Galium trifidum</i>	small bedstraw	Rubiaceae
<i>Galium triflorum</i>	fragrant bedstraw	Rubiaceae
<i>Gamochaeta purpurea</i>	spoonleaf purple everlasting	Asteraceae
<i>Gaultheria hispidula</i>	snowberry	Ericaceae
<i>Gaultheria procumbens</i>	wintergreen	Ericaceae
<i>Gaultheria sp.</i>	snowberry	Ericaceae
<i>Gaylussacia baccata</i>	huckleberry	Ericaceae
<i>Gentiana andrewsii</i>	Andrew's gentian	Gentianaceae
<i>Gentiana rubricaulis</i>	red-stem gentian	Gentianaceae
<i>Gentiana sp.</i>	gentian	Gentianaceae
<i>Gentianella quinquefolia</i>	stiff gentian	Gentianaceae
<i>Gentianopsis crinita</i>	fringed gentian	Gentianaceae
<i>Gentianopsis sp.</i>	fringed gentian	Gentianaceae
<i>Gentianopsis virgata</i>	lesser fringed gentian	Gentianaceae
<i>Geocaulon lividum</i>	livid toadflax	Santalaceae
<i>Geranium bicknellii</i>	Bicknell's geranium	Geraniaceae
<i>Geranium carolinianum</i>	Carolina geranium	Geraniaceae
<i>Geranium robertianum</i>	herb-robert	Geraniaceae
<i>Geranium sp.</i>	geranium	Geraniaceae
<i>Geum aleppicum</i>	yellow avens	Rosaceae

Scientific name	Common name	Family
<i>Geum canadense</i>	Canada avens	Rosaceae
<i>Geum fragarioides</i>	barren-strawberry	Rosaceae
<i>Geum laciniatum</i>	avens	Rosaceae
<i>Geum macrophyllum</i>	big-leaved avens	Rosaceae
<i>Geum rivale</i>	fen avens	Rosaceae
<i>Geum sp.</i>	avens	Rosaceae
<i>Geum verum</i>	spring avens	Rosaceae
<i>Geum virginianum</i>	Virginia avens	Rosaceae
<i>Glechoma hederacea</i>	ground ivy	Lamiaceae
<i>Gleditsia triacanthos</i>	honey locust	Fabaceae
<i>Glyceria acutiflora</i>	acute-flowered manna grass	Poaceae
<i>Glyceria borealis</i>	boreal manna grass	Poaceae
<i>Glyceria canadensis</i>	Canada manna grass	Poaceae
<i>Glyceria grandis</i>	grand manna-grass	Poaceae
<i>Glyceria maxima</i>	reed mannagrass	Poaceae
<i>Glyceria septentrionalis</i>	septentrional manna grass	Poaceae
<i>Glyceria sp.</i>	glyceria grass	Poaceae
<i>Glyceria striata</i>	fowl manna grass	Poaceae
<i>Glycine max</i>	soybean	Fabaceae
<i>Gnaphalium uliginosum</i>	uliginosum cud-weed	Asteraceae
<i>Graphephorum melicoides</i>	purple false oat	Poaceae
<i>Gratiola aurea</i>	golden gratiola	Plantaginaceae
<i>Gratiola neglecta</i>	hedge-hyssop	Plantaginaceae
<i>Gratiola sp.</i>	hedge hyssop	Plantaginaceae
<i>Gratiola virginiana</i>	Virginia gratiola	Plantaginaceae
<i>Gypsophila paniculata</i>	paniculate baby's-breath	Caryophyllaceae
<i>Gypsophila scorzonifolia</i>	scorzonera baby's-breath	Caryophyllaceae
<i>Gypsophila sp.</i>	baby's breath	Caryophyllaceae
<i>Hackelia deflexa</i>	nodding stickseed	Boraginaceae
<i>Hackelia sp.</i>	stickseed	Boraginaceae
<i>Hackelia virginiana</i>	stickseed	Boraginaceae
<i>Halenia deflexa</i>	spurred-gentian	Gentianaceae
<i>Helenium autumnale</i>	sneezeweed	Asteraceae
<i>Helenium flexuosum</i>	sneezeweed	Asteraceae
<i>Helenium sp.</i>	sneezeweed	Asteraceae
<i>Helianthus annuus</i>	sunflower	Asteraceae
<i>Helianthus giganteus</i>	giant sunflower	Asteraceae
<i>Helianthus sp.</i>	sunflower	Asteraceae
<i>Heracleum mantegazzianum</i>	giant hogweed	Apiaceae
<i>Heracleum maximum</i>	cow-parsnip	Apiaceae
<i>Heracleum sp.</i>	cowparsnip	Apiaceae
<i>Hesperis matronalis</i>	dame's-rocket	Brassicaceae
<i>Heteranthera dubia</i>	water star-grass	Pontederiaceae
<i>Hibiscus laevis</i>	smooth rose-mallow	Malvaceae
<i>Hibiscus moscheutos</i>	swamp or rose mallow	Malvaceae
<i>Hibiscus sp.</i>	hibiscus	Malvaceae

Scientific name	Common name	Family
<i>Hieracium aurantiacum</i>	orange hawkweed	Asteraceae
<i>Hieracium caespitosum</i> ( <i>H. pratense</i> )	common yellow hawkweed	Asteraceae
<i>Hieracium gronovii</i>	Gronovius' hawkweed	Asteraceae
<i>Hieracium kalmii</i>	kalm's hawkweed	Asteraceae
<i>Hieracium longipilum</i>	long-haired hawkweed	Asteraceae
<i>Hieracium murorum</i>	wall hawkweed	Asteraceae
<i>Hieracium pilosella</i>	mouse-ear hawkweed	Asteraceae
<i>Hieracium piloselloides</i> ( <i>H. florentinum</i> )	glaucous hawkweed	Asteraceae
<i>Hieracium scabrum</i>	rough hawkweed	Asteraceae
<i>Hieracium</i> sp.	hawkweed	Asteraceae
<i>Hieracium umbellatum</i>	umbellate hawkweed	Asteraceae
<i>Hieracium venosum</i>	veiny hawkweed	Asteraceae
<i>Hippuris vulgaris</i>	mare's-tail	Plantaginaceae
<i>Hordeum jubatum</i>	foxtail barley	Poaceae
<i>Houstonia canadensis</i>	Canada bluets	Rubiaceae
<i>Houstonia longifolia</i>	long-leaved bluets	Rubiaceae
<i>Houstonia</i> sp.	houstonia	Rubiaceae
<i>Hudsonia tomentosa</i>	beach-heath	Cistaceae
<i>Huperzia selago</i> ( <i>Lycopodium</i> s.)	fir clubmoss	Lycopodiaceae
<i>Huperzia</i> sp.	clubmoss	Lycopodiaceae
<i>Hydrocharis morsus-ranae</i>	common frogbit	Hydrocharitaceae
<i>Hydrocotyle americana</i>	American pennywort	Araliaceae
<i>Hydrocotyle</i> sp.	hydrocotyle	Araliaceae
<i>Hydrocotyle umbellata</i>	pennywort	Araliaceae
<i>Hydrophyllum</i> sp.	waterleaf	Boraginaceae
<i>Hydrophyllum virginianum</i>	Virginia waterleaf	Boraginaceae
<i>Hylotelephium telephium</i>	vit-toujours	Crassulaceae
<i>Hypericum ascyron</i> ( <i>H. pyramidatum</i> )	giant St. John's-wort	Hypericaceae
<i>Hypericum boreale</i>	northern St. John's-wort	Hypericaceae
<i>Hypericum canadense</i>	Canada St. John's-wort	Hypericaceae
<i>Hypericum ellipticum</i>	elliptic St. John's-wort	Hypericaceae
<i>Hypericum kalmianum</i>	Kalm's St. John's-wort	Hypericaceae
<i>Hypericum majus</i>	larger St. John's-wort	Hypericaceae
<i>Hypericum mutilum</i>	mutilated St. John's-wort	Hypericaceae
<i>Hypericum perforatum</i>	common St. John's-wort	Hypericaceae
<i>Hypericum punctatum</i>	punctate St. John's-wort	Hypericaceae
<i>Hypericum</i> sp.	St. John's-wort	Hypericaceae
<i>Hypoxis hirsuta</i>	star-grass	Hypoxidaceae
<i>Iberis</i> sp.	candytuft	Brassicaceae
<i>Iberis umbellata</i>	globe candytuft	Brassicaceae
<i>Ilex mucronata</i>	catberry	Aquifoliaceae
<i>Ilex</i> sp.	hollies	Aquifoliaceae
<i>Ilex verticillata</i>	winterberry holly	Aquifoliaceae
<i>Impatiens capensis</i>	orange touch-me-not	Balsaminaceae
<i>Impatiens glandulifera</i>	glandular impatiens	Balsaminaceae
<i>Impatiens pallida</i>	yellow touch-me-not	Balsaminaceae

Scientific name	Common name	Family
<i>Impatiens sp.</i>	touch-me-not	Balsaminaceae
<i>Ipomoea purpurea</i>	purple morning-glory	Convolvulaceae
<i>Ipomoea sp.</i>	morning glory	Convolvulaceae
<i>Ipomopsis rubra</i>	ipomopsis	Polemoniaceae
<i>Iris lacustris</i>	dwarf lake iris	Iridaceae
<i>Iris pseudacorus</i>	yellow iris	Iridaceae
<i>Iris sp.</i>	iris	Iridaceae
<i>Iris versicolor</i>	varicolored iris	Iridaceae
<i>Iris virginica</i>	Virginia iris	Iridaceae
<i>Isoetes echinospora</i>	prickly-spore quillwort	Isoetaceae
<i>Isoetes lacustris</i>	lake quillwort	Isoetaceae
<i>Isoetes sp.</i>	quillwort	Isoetaceae
<i>Juglans cinerea</i>	butternut	Juglandaceae
<i>Juncus acuminatus</i>	acuminate rush	Juncaceae
<i>Juncus alpinoarticulatus</i>	northern green rush	Juncaceae
<i>Juncus articulatus</i>	articulate rush	Juncaceae
<i>Juncus balticus</i>	rush	Juncaceae
<i>Juncus brachycarpus</i>	short-fruited rush	Juncaceae
<i>Juncus brachycephalus</i>	broad-headed rush	Juncaceae
<i>Juncus brevicaudatus</i>	short-tailed rush	Juncaceae
<i>Juncus bufonius</i>	toad rush	Juncaceae
<i>Juncus canadensis</i>	Canada rush	Juncaceae
<i>Juncus dudleyi</i>	dudley's rush	Juncaceae
<i>Juncus effusus</i>	soft rush	Juncaceae
<i>Juncus filiformis</i>	filiform rush	Juncaceae
<i>Juncus greenei</i>	greene's rush	Juncaceae
<i>Juncus marginatus</i>	marginate rush	Juncaceae
<i>Juncus militaris</i>	bayonet rush	Juncaceae
<i>Juncus nodosus</i>	node rush	Juncaceae
<i>Juncus pelocarpus</i>	brown-fruited rush	Juncaceae
<i>Juncus sp.</i>	rush	Juncaceae
<i>Juncus stygius</i>	stygian rush	Juncaceae
<i>Juncus tenuis</i>	path rush	Juncaceae
<i>Juncus torreyi</i>	torrey's rush	Juncaceae
<i>Juniperus communis</i>	common juniper	Cupressaceae
<i>Juniperus horizontalis</i>	horizontal juniper	Cupressaceae
<i>Juniperus sp.</i>	juniper	Cupressaceae
<i>Justicia americana</i>	water-willow	Acanthaceae
<i>Kalmia angustifolia</i>	sheep-laurel	Ericaceae
<i>Kalmia polifolia</i>	swamp-laurel	Ericaceae
<i>Kalmia sp.</i>	kalmias	Ericaceae
<i>Koeleria macrantha (K. cristata)</i>	june grass	Poaceae
<i>Lactuca biennis</i>	biennial lettuce	Asteraceae
<i>Lactuca canadensis</i>	Canada lettuce	Asteraceae
<i>Lactuca serriola</i>	prickly lettuce	Asteraceae
<i>Lactuca sp.</i>	lettuce	Asteraceae

Scientific name	Common name	Family
<i>Lamium purpureum</i>	dead-nettle	Lamiaceae
<i>Laportea canadensis</i>	wood nettle	Urticaceae
<i>Lappula squarrosa</i>	squarrose stickseed	Boraginaceae
<i>Larix laricina</i>	tamarack	Pinaceae
<i>Lathyrus japonicus (L. maritimus)</i>	beach pea	Fabaceae
<i>Lathyrus latifolius</i>	everlasting pea	Fabaceae
<i>Lathyrus palustris</i>	marsh pea	Fabaceae
<i>Lathyrus pratensis</i>	meadow sweet-pea	Fabaceae
<i>Lathyrus sp.</i>	peavine	Fabaceae
<i>Lathyrus sylvestris</i>	sylvan sweetpea	Fabaceae
<i>Lathyrus venosus</i>	forest pea	Fabaceae
<i>Lechea intermedia</i>	intermediate pinweed	Cistaceae
<i>Lechea minor</i>	minor pinweed	Cistaceae
<i>Lechea mucronata</i>	hairy pinweed	Cistaceae
<i>Lechea pulchella (L. leggettii)</i>	Leggett's pinweed	Cistaceae
<i>Lechea sp.</i>	pinweed	Cistaceae
<i>Leersia oryzoides</i>	rice cut-grass	Poaceae
<i>Leersia sp.</i>	cutgrass	Poaceae
<i>Leersia virginica</i>	white grass	Poaceae
<i>Lemna minor</i>	duckweed	Araceae
<i>Lemna sp.</i>	duckweed	Araceae
<i>Lemna trisulca</i>	star duckweed	Araceae
<i>Lemna turionifera</i>	turion duckweed	Araceae
<i>Leonurus cardiaca</i>	motherwort	Lamiaceae
<i>Lepidium campestre</i>	field cress	Brassicaceae
<i>Lepidium densiflorum</i>	dense-flowered peppergrass	Brassicaceae
<i>Lepidium sp.</i>	peppergrass	Brassicaceae
<i>Lepidium virginicum</i>	Virginia peppergrass	Brassicaceae
<i>Lespedeza sp.</i>	bush-clover	Fabaceae
<i>Lespedeza virginica</i>	Virginia bush-clover	Fabaceae
<i>Leucanthemum vulgare</i>	oxeye daisy	Asteraceae
<i>Levisticum officinale</i>	lovage	Apiaceae
<i>Leymus arenarius</i>	sand ryegrass	Poaceae
<i>Leymus mollis</i>	American ryegrass	Poaceae
<i>Leymus racemosus</i>	volga wildrye	Poaceae
<i>Leymus sp.</i>	ryegrass	Poaceae
<i>Liatris scariosa (L. novae-angliae)</i>	blazing-star	Asteraceae
<i>Liatris sp.</i>	blazing star	Asteraceae
<i>Liatris spicata</i>	spicate blazing-star	Asteraceae
<i>Ligustrum obtusifolium</i>	blunt-leaved privet	Oleaceae
<i>Ligustrum sp.</i>	privet	Oleaceae
<i>Ligustrum vulgare</i>	common privet	Oleaceae
<i>Lilium michiganense</i>	Michigan lily	Liliaceae
<i>Lilium philadelphicum</i>	wood lily	Liliaceae
<i>Lilium sp.</i>	lily	Liliaceae
<i>Linaria sp.</i>	toadflax	Plantaginaceae

Scientific name	Common name	Family
<i>Linaria vulgaris</i>	butter-and-eggs	Plantaginaceae
<i>Lindera benzoin</i>	spicebush	Lauraceae
<i>Lindernia dubia</i> (incl. <i>L. anagallidea</i> )	false pimpernel	Linderniaceae
<i>Linnaea borealis</i>	twinflower	Linnaeaceae
<i>Linum catharticum</i>	cathartic flax	Linaceae
<i>Linum medium</i> var. <i>medium</i>	stiff yellow flax	Linaceae
<i>Linum medium</i> var. <i>texanum</i>	yellow flax	Linaceae
<i>Linum</i> sp.	flax	Linaceae
<i>Linum striatum</i>	striate flax	Linaceae
<i>Linum usitatissimum</i>	flax	Linaceae
<i>Linum virginianum</i>	Virginia flax	Linaceae
<i>Liparis loeselii</i>	Loesel's twayblade	Orchidaceae
<i>Lipocarpa micrantha</i>	smallflower halfchaff sedge	Cyperaceae
<i>Lithospermum caroliniense</i>	Carolina gromwell	Boraginaceae
<i>Lithospermum officinale</i>	gromwell	Boraginaceae
<i>Lithospermum</i> sp.	stoneseed	Boraginaceae
<i>Littorella uniflora</i>	shoreweed	Plantaginaceae
<i>Lobelia cardinalis</i>	cardinal flower	Campanulaceae
<i>Lobelia dortmanna</i>	Dortmann's lobelia	Campanulaceae
<i>Lobelia inflata</i>	Indian-tobacco	Campanulaceae
<i>Lobelia kalmii</i>	Kalm's lobelia	Campanulaceae
<i>Lobelia siphilitica</i>	great blue lobelia	Campanulaceae
<i>Lobelia</i> sp.	lobelia	Campanulaceae
<i>Lobelia spicata</i>	spicate lobelia	Campanulaceae
<i>Logfia arvensis</i>	field cottonrose	Asteraceae
<i>Lolium arundinaceum</i>	tall fescue	Poaceae
<i>Lolium perenne</i>	perennial ryegrass	Poaceae
<i>Lolium pratense</i>	meadow fescue	Poaceae
<i>Lolium</i> sp.	ryegrass	Poaceae
<i>Lonicera bella</i> (hybrid)	bella honeysuckle	Caprifoliaceae
<i>Lonicera canadensis</i>	Canada honeysuckle	Caprifoliaceae
<i>Lonicera dioica</i>	dioecious honeysuckle	Caprifoliaceae
<i>Lonicera maackii</i>	Maack's honeysuckle	Caprifoliaceae
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Caprifoliaceae
<i>Lonicera oblongifolia</i>	oblong-leaved honeysuckle	Caprifoliaceae
<i>Lonicera</i> sp.	shrub honeysuckle	Caprifoliaceae
<i>Lonicera tatarica</i>	tartar honeysuckle	Caprifoliaceae
<i>Lonicera villosa</i>	villous honeysuckle	Caprifoliaceae
<i>Lotus corniculatus</i>	bird's-foot trefoil	Fabaceae
<i>Lotus</i> sp.	deer vetch	Fabaceae
<i>Ludwigia alternifolia</i>	alternate-leaved seedbox	Onagraceae
<i>Ludwigia palustris</i>	marsh seedbox	Onagraceae
<i>Ludwigia peploides</i>	creeping water-primrose	Onagraceae
<i>Ludwigia polycarpa</i>	many-fruit seedbox	Onagraceae
<i>Ludwigia</i> sp.	seedbox	Onagraceae
<i>Luzula acuminata</i>	acuminate woodrush	Juncaceae

Scientific name	Common name	Family
<i>Luzula multiflora</i>	common woodrush	Juncaceae
<i>Luzula parviflora</i>	small-flowered woodrush	Juncaceae
<i>Luzula sp.</i>	wood rush	Juncaceae
<i>Lycopodiella inundata</i>	inundated clubmoss	Lycopodiaceae
<i>Lycopodiella margueritae</i>	Marguerite's club-moss	Lycopodiaceae
<i>Lycopodiella sp.</i>	lycopodiella	Lycopodiaceae
<i>Lycopodiella subappressa</i>	subappressed club-moss	Lycopodiaceae
<i>Lycopodium clavatum</i>	common clubmoss	Lycopodiaceae
<i>Lycopodium sp.</i>	club mosses	Lycopodiaceae
<i>Lycopus americanus</i>	American water-horehound	Lamiaceae
<i>Lycopus asper</i>	rough water-horehound	Lamiaceae
<i>Lycopus europaeus</i>	European water-horehound	Lamiaceae
<i>Lycopus sp.</i>	water horehound	Lamiaceae
<i>Lycopus uniflorus</i>	water-horehound	Lamiaceae
<i>Lycopus virginicus</i>	Virginia water-horehound	Lamiaceae
<i>Lysimachia ciliata</i>	fringed loosestrife	Myrsinaceae
<i>Lysimachia lanceolata</i>	lanceolate loosestrife	Myrsinaceae
<i>Lysimachia nummularia</i>	pennywort	Myrsinaceae
<i>Lysimachia quadriflora</i>	fen loosestrife	Myrsinaceae
<i>Lysimachia quadrifolia</i>	four-leaf loosestrife	Myrsinaceae
<i>Lysimachia sp.</i>	loosestrife	Myrsinaceae
<i>Lysimachia terrestris</i>	terrestrial loosestrife	Myrsinaceae
<i>Lysimachia thyrsoiflora</i>	thyrses loosestrife	Myrsinaceae
<i>Lysimachia vulgaris</i>	garden loosestrife	Myrsinaceae
<i>Lythrum alatum</i>	winged loosestrife	Lythraceae
<i>Lythrum salicaria</i>	purple loosestrife	Lythraceae
<i>Lythrum sp.</i>	lythrum	Lythraceae
<i>Maianthemum canadense</i>	Canada mayflower	Convallariaceae
<i>Maianthemum racemosum</i>	feathery false lily of the valley	Convallariaceae
<i>Maianthemum sp.</i>	mayflower	Convallariaceae
<i>Maianthemum stellatum</i>	starry false lily of the valley	Convallariaceae
<i>Maianthemum trifolium</i>	threeleaf false lily of the valley	Convallariaceae
<i>Malaxis monophyllos</i>	white adders-mouth	Orchidaceae
<i>Malaxis sp.</i>	addersmouth orchid	Orchidaceae
<i>Malaxis unifolia</i>	one-leaf adder's-mouth	Orchidaceae
<i>Malus sp.</i>	ornamental crabapple	Rosaceae
<i>Malva neglecta</i>	common mallow	Malvaceae
<i>Marchantia polymorpha</i>	common liverwort	Marchantiaceae
<i>Marsilea quadrifolia</i>	European water-clover	Marsileaceae
<i>Matteuccia struthiopteris</i>	ostrich fern	Onocleaceae
<i>Medeola virginiana</i>	Indian cucumber-root	Convallariaceae
<i>Medicago lupulina</i>	black medick	Fabaceae
<i>Medicago sativa</i>	alfalfa	Fabaceae
<i>Medicago sp.</i>	alfalfa	Fabaceae
<i>Melampyrum lineare</i>	cow-wheat	Orobanchaceae
<i>Melilotus albus</i>	bokhara-clover	Fabaceae

Scientific name	Common name	Family
<i>Melilotus officinalis</i>	yellow sweetclover	Fabaceae
<i>Melilotus sp.</i>	sweet-clover	Fabaceae
<i>Menispermum canadense</i>	Canada moonseed	Menispermaceae
<i>Mentha aquatica</i>	water mint	Lamiaceae
<i>Mentha canadensis</i>	Canadian mint	Lamiaceae
<i>Mentha sp.</i>	mint	Lamiaceae
<i>Mentha spicata</i>	spearmint	Lamiaceae
<i>Mentha villosa (hybrid)</i>	villous mint	Lamiaceae
<i>Mentha x piperita</i>	peppermint	Lamiaceae
<i>Menyanthes trifoliata</i>	buckbean	Menyanthaceae
<i>Micranthes virginiensis</i>	Virginia saxifrage	Saxifragaceae
<i>Mikania scandens</i>	climbing hempweed	Asteraceae
<i>Milium effusum</i>	milium-grass	Poaceae
<i>Mimulus alatus</i>	winged monkey-flower	Phrymaceae
<i>Mimulus glabratus var. jamesii (v. fremontii)</i>	monkey-flower	Phrymaceae
<i>Mimulus michiganensis</i>	michigan monkeyflower	Phrymaceae
<i>Mimulus ringens</i>	monkey-flower	Phrymaceae
<i>Mimulus sp.</i>	monkeyflower	Phrymaceae
<i>Mirabilis nyctaginea</i>	wild four-o'clock	Nyctaginaceae
<i>Mitchella repens</i>	partridge-berry	Rubiaceae
<i>Mitella diphylla</i>	two-leaf mitrewort	Saxifragaceae
<i>Mitella nuda</i>	naked-stemmed mitrewort	Saxifragaceae
<i>Mitella sp.</i>	miterwort	Saxifragaceae
<i>Moehringia lateriflora</i>	bluntleaf sandwort	Caryophyllaceae
<i>Mollugo verticillata</i>	carpet-weed	Molluginaceae
<i>Monarda fistulosa</i>	wild bergamot	Lamiaceae
<i>Monarda punctata</i>	punctate bee-balm	Lamiaceae
<i>Monarda sp.</i>	bee-balm	Lamiaceae
<i>Moneses uniflora (Pyrola u.)</i>	one-flowered wintergreen	Ericaceae
<i>Monotropa uniflora</i>	Indian pipe	Ericaceae
<i>Morus alba</i>	white mulberry	Moraceae
<i>Morus rubra</i>	red mulberry	Moraceae
<i>Morus sp.</i>	mulberry	Moraceae
<i>Muhlenbergia frondosa</i>	leafy muhly	Poaceae
<i>Muhlenbergia glomerata</i>	marsh timothy	Poaceae
<i>Muhlenbergia mexicana</i>	Mexican muhly	Poaceae
<i>Muhlenbergia richardsonis</i>	Richardson's muhly	Poaceae
<i>Muhlenbergia sp.</i>	muhly	Poaceae
<i>Muhlenbergia uniflora</i>	one-flower muhly	Poaceae
<i>Mycelis muralis</i>	wall-lettuce	Asteraceae
<i>Myosotis arvensis</i>	field scorpion-grass	Boraginaceae
<i>Myosotis laxa</i>	scorpion-grass	Boraginaceae
<i>Myosotis scorpioides</i>	forget-me-not	Boraginaceae
<i>Myosotis sp.</i>	forget-me-not	Boraginaceae
<i>Myosotis sylvatica</i>	garden forget-me-not	Boraginaceae
<i>Myosotis verna</i>	forget-me-not	Boraginaceae



Scientific name	Common name	Family
<i>Myosoton aquaticum</i>	giant chickweed	Caryophyllaceae
<i>Myrica gale</i>	sweet gale	Myricaceae
<i>Myrica pensylvanica</i>	bayberry	Myricaceae
<i>Myrica sp.</i>	sweetgale	Myricaceae
<i>Myriophyllum alterniflorum</i>	alternate-flowered water-milfoil	Haloragaceae
<i>Myriophyllum farwellii</i>	farwell's water-milfoil	Haloragaceae
<i>Myriophyllum heterophyllum</i>	water-milfoil	Haloragaceae
<i>Myriophyllum sibiricum</i>	watermilfoil	Haloragaceae
<i>Myriophyllum sp.</i>	water milfoil	Haloragaceae
<i>Myriophyllum spicatum</i>	eurasian water-milfoil	Haloragaceae
<i>Myriophyllum tenellum</i>	small water-milfoil	Haloragaceae
<i>Myriophyllum verticillatum</i>	water-milfoil	Haloragaceae
<i>Najas flexilis</i>	naiad	Hydrocharitaceae
<i>Najas gracillima</i>	naiad	Hydrocharitaceae
<i>Najas guadalupensis</i>	naiad	Hydrocharitaceae
<i>Najas marina</i>	marine naiad	Hydrocharitaceae
<i>Najas minor</i>	lesser naiad	Hydrocharitaceae
<i>Najas sp.</i>	water nymph	Hydrocharitaceae
<i>Nasturtium microphyllum</i>	onerow yellowcress	Brassicaceae
<i>Nasturtium officinale (Rorippa nasturtium-aquaticum)</i>	watercress	Brassicaceae
<i>Nasturtium sp.</i>	nasturtium	Brassicaceae
<i>Nelumbo lutea</i>	American lotus	Nelumbonaceae
<i>Neottia auriculata</i>	auricled twayblade	Orchidaceae
<i>Nepeta cataria</i>	catnip	Lamiaceae
<i>Nitella</i>	stonewort	Characeae
<i>Nitellopsis obtusa</i>	starry stonewort	Characeae
<i>Nuphar advena</i>	yellow pond-lily	Nymphaeaceae
<i>Nuphar microphylla</i>	yellow pond-lily	Nymphaeaceae
<i>Nuphar sp.</i>	pond-lily	Nymphaeaceae
<i>Nuphar variegata</i>	yellow pond-lily	Nymphaeaceae
<i>Nymphaea leibergii</i>	Leiberg's waterlily	Nymphaeaceae
<i>Nymphaea odorata</i>	sweet-scented waterlily	Nymphaeaceae
<i>Nymphaea sp.</i>	water lily	Nymphaeaceae
<i>Nymphoides cordata</i>	little floatingheart	Menyanthaceae
<i>Nyssa sylvatica</i>	black gum	Nyssaceae
<i>Oclemena nemoralis</i>	bog aster	Asteraceae
<i>Oenothera biennis</i>	common evening-primrose	Onagraceae
<i>Oenothera fruticosa</i>	sundrops	Onagraceae
<i>Oenothera oakesiana</i>	Oakes' evening-primrose	Onagraceae
<i>Oenothera parviflora</i>	small-flowered evening-primrose	Onagraceae
<i>Oenothera perennis</i>	sundrops	Onagraceae
<i>Oenothera pilosella</i>	pilose sundrops	Onagraceae
<i>Oenothera sp.</i>	evening primrose	Onagraceae
<i>Oenothera villosa</i>	villous evening-primrose	Onagraceae
<i>Onoclea sensibilis</i>	sensitive fern	Onocleaceae
<i>Ophioglossum pusillum (O. vulgatum var. pseudopodium)</i> , northern adder's-tongue fern		Ophioglossaceae

Scientific name	Common name	Family
<i>Ophioglossum sp.</i>	adderstongue	Ophioglossaceae
<i>Orobanche fasciculata</i>	fascicled broomrape	Orobanchaceae
<i>Orobanche sp.</i>	broomrape	Orobanchaceae
<i>Orobanche uniflora</i>	one-flower broomrape	Orobanchaceae
<i>Orthilia secunda (Pyrola s.)</i>	one-sided wintergreen	Ericaceae
<i>Oryzopsis asperifolia</i>	rough-leaved ricegrass	Poaceae
<i>Osmorhiza berteroi</i>	sweet cicely	Apiaceae
<i>Osmorhiza longistylis</i>	long-styled sweet-cicely	Apiaceae
<i>Osmorhiza sp.</i>	sweetroot	Apiaceae
<i>Osmunda claytoniana</i>	interrupted fern	Osmundaceae
<i>Osmunda regalis</i>	royal fern	Osmundaceae
<i>Osmunda sp.</i>	osmunda	Osmundaceae
<i>Osmundastrum cinnamomeum</i>	cinnamon fern	Osmundaceae
<i>Ostrya virginiana</i>	hop-hornbeam	Betulaceae
<i>Oxalis acetosella</i>	northern wood-sorrel	Oxalidaceae
<i>Oxalis dillenii</i>	Dillen's oxalis	Oxalidaceae
<i>Oxalis sp.</i>	woodsorrel	Oxalidaceae
<i>Oxalis stricta</i>	common yellow oxalis	Oxalidaceae
<i>Oxypolis rigidior</i>	cowbane	Apiaceae
<i>Packera aurea</i>	golden ragwort	Asteraceae
<i>Packera paupercula</i>	balsam groundsel	Asteraceae
<i>Packera sp.</i>	ragworts	Asteraceae
<i>Panicum capillare</i>	witch grass	Poaceae
<i>Panicum dichotomiflorum</i>	fork-flowered panicum-grass	Poaceae
<i>Panicum flexile</i>	flexible panicum-grass	Poaceae
<i>Panicum gattingeri</i>	Gattinger's panicum-grass	Poaceae
<i>Panicum philadelphicum</i>	Philadelphia panicum-grass	Poaceae
<i>Panicum sp.</i>	panicum	Poaceae
<i>Panicum tuckermanii</i>	Tuckerman's panicum-grass	Poaceae
<i>Panicum virgatum</i>	switch-grass	Poaceae
<i>Parietaria pensylvanica</i>	pellitory	Urticaceae
<i>Parietaria sp.</i>	pellitory	Urticaceae
<i>Parnassia glauca</i>	grass-of-parnassus	Parnassiaceae
<i>Parnassia palustris</i>	northern grass-of-parnassus	Parnassiaceae
<i>Parnassia parviflora</i>	small-flowered grass-of-parnassus	Parnassiaceae
<i>Parnassia sp.</i>	parnassia	Parnassiaceae
<i>Parthenocissus inserta</i>	thicket creeper	Vitaceae
<i>Parthenocissus quinquefolia</i>	Virginia creeper	Vitaceae
<i>Parthenocissus sp.</i>	creeper	Vitaceae
<i>Pascopyrum smithii</i>	Smith's wheatgrass	Poaceae
<i>Pastinaca sativa</i>	parsnip	Apiaceae
<i>Pedicularis canadensis</i>	Canada lousewort	Orobanchaceae
<i>Pedicularis lanceolata</i>	swamp lousewort	Orobanchaceae
<i>Pedicularis sp.</i>	lousewort	Orobanchaceae
<i>Pellaea atropurpurea</i>	purple cliff-brake	Pteridaceae
<i>Pellaea glabella</i>	smooth cliff-brake	Pteridaceae

Scientific name	Common name	Family
<i>Pellaea sp.</i>	cliff-brake	Pteridaceae
<i>Peltandra virginica</i>	tuckahoe	Araceae
<i>Penthorum sedoides</i>	ditch stonecrop	Penthoraceae
<i>Persicaria amphibia</i>	water knotweed	Polygonaceae
<i>Persicaria arifolia</i>	halberdleaf tearthumb	Polygonaceae
<i>Persicaria careyi</i>	Carey's smartweed	Polygonaceae
<i>Persicaria hydropiper</i>	marshpepper knotweed	Polygonaceae
<i>Persicaria hydropiperoides</i>	swamp smartweed	Polygonaceae
<i>Persicaria lapathifolia</i>	curlytop knotweed	Polygonaceae
<i>Persicaria maculosa</i>	spotted ladysthumb	Polygonaceae
<i>Persicaria pensylvanica</i>	Pennsylvania smartweed	Polygonaceae
<i>Persicaria punctata</i>	dotted smartweed	Polygonaceae
<i>Persicaria sagittata</i>	arrowleaf tearthumb	Polygonaceae
<i>Persicaria sp.</i>	smartweed	Polygonaceae
<i>Persicaria virginiana</i>	jumpseed	Polygonaceae
<i>Petasites frigidus</i>	arctic sweet coltsfoot	Asteraceae
<i>Petasites sp.</i>	butterbur	Asteraceae
<i>Petrorhagia prolifera</i>	childing pink	Caryophyllaceae
<i>Petrorhagia saxifraga</i>	pink	Caryophyllaceae
<i>Petrorhagia sp.</i>	pink	Caryophyllaceae
<i>Phacelia purshii</i>	Pursh's phacelia	Boraginaceae
<i>Phacelia sp.</i>	scorpion-weed	Boraginaceae
<i>Phalaris arundinacea</i>	reed canary grass	Poaceae
<i>Phedimus spurius</i>	caucasian stonecrop	Crassulaceae
<i>Phegopteris connectilis</i>	narrow beech fern	Thelypteridaceae
<i>Phleum alpinum</i>	alpine timothy	Poaceae
<i>Phleum pratense</i>	timothy	Poaceae
<i>Phleum sp.</i>	timothy	Poaceae
<i>Phragmites australis (invasive)</i>	common reed (invasive)	Poaceae
<i>Phragmites australis (native)</i>	common reed (native)	Poaceae
<i>Phyla lanceolata</i>	fogfruit	Verbenaceae
<i>Physalis heterophylla</i>	clammy ground-cherry	Solanaceae
<i>Physalis longifolia</i>	long-leaved ground-cherry	Solanaceae
<i>Physalis sp.</i>	ground-cherry	Solanaceae
<i>Physocarpus opulifolius</i>	ninebark	Rosaceae
<i>Physostegia virginiana</i>	false dragon-head	Lamiaceae
<i>Phytolacca americana</i>	pokeweed	Phytolaccaceae
<i>Picea abies</i>	norway spruce	Pinaceae
<i>Picea glauca</i>	white spruce	Pinaceae
<i>Picea mariana</i>	black spruce	Pinaceae
<i>Picea sp.</i>	spruce	Pinaceae
<i>Pilea fontana</i>	springs clearweed	Urticaceae
<i>Pilea pumila</i>	dwarf clearweed	Urticaceae
<i>Pilea sp.</i>	clearweed	Urticaceae
<i>Pinguicula vulgaris</i>	butterwort	Lentibulariaceae
<i>Pinus banksiana</i>	jack pine	Pinaceae

Scientific name	Common name	Family
<i>Pinus resinosa</i>	red pine	Pinaceae
<i>Pinus sp.</i>	pine	Pinaceae
<i>Pinus strobus</i>	white pine	Pinaceae
<i>Pinus sylvestris</i>	scotch pine	Pinaceae
<i>Piptochaetium avenaceum</i>	blackseed speargrass	Poaceae
<i>Plantago arenaria (P. psyllium)</i>	leafy-stemmed plantain	Plantaginaceae
<i>Plantago lanceolata</i>	english plantain	Plantaginaceae
<i>Plantago major</i>	common plantain	Plantaginaceae
<i>Plantago media</i>	hoary plantain	Plantaginaceae
<i>Plantago rugelii</i>	Rugel's plantain	Plantaginaceae
<i>Plantago sp.</i>	Indianwheat	Plantaginaceae
<i>Platanthera aquilonis</i>	northern green orchid	Orchidaceae
<i>Platanthera blephariglottis</i>	white fringed orchid	Orchidaceae
<i>Platanthera ciliaris</i>	orange fringed orchid	Orchidaceae
<i>Platanthera clavellata</i>	club-spur orchid	Orchidaceae
<i>Platanthera dilatata</i>	tall white bog orchid	Orchidaceae
<i>Platanthera flava var. herbiola</i>	tubercled orchid	Orchidaceae
<i>Platanthera huronensis</i>	huron green orchid	Orchidaceae
<i>Platanthera hyperborea</i>	tall northern bog orchid	Orchidaceae
<i>Platanthera lacera</i>	ragged fringed orchid	Orchidaceae
<i>Platanthera leucophaea</i>	prairie fringed orchid	Orchidaceae
<i>Platanthera obtusata</i>	blunt-leaf orchid	Orchidaceae
<i>Platanthera psycodes</i>	lesser purple fringed orchid	Orchidaceae
<i>Platanthera sp.</i>	platanthera orchid	Orchidaceae
<i>Platanthera unalascensis</i>	Alaska orchid	Orchidaceae
<i>Pluchea odorata</i>	saltmarsh fleabane	Asteraceae
<i>Poa annua</i>	annual bluegrass	Poaceae
<i>Poa compressa</i>	Canada bluegrass	Poaceae
<i>Poa glauca</i>	glaucous bluegrass	Poaceae
<i>Poa interior</i>	inland bluegrass	Poaceae
<i>Poa languida</i>	languid bluegrass	Poaceae
<i>Poa nemoralis</i>	bluegrass	Poaceae
<i>Poa paludigena</i>	bog bluegrass	Poaceae
<i>Poa palustris</i>	fowl meadow grass	Poaceae
<i>Poa pratensis</i>	kentucky bluegrass	Poaceae
<i>Poa sp.</i>	bluegrass	Poaceae
<i>Pogonia ophioglossoides</i>	rose pogonia	Orchidaceae
<i>Polanisia dodecandra</i>	clammy-weed	Cleomaceae
<i>Polygala paucifolia</i>	gay-wings	Polygalaceae
<i>Polygala sanguinea</i>	red milkwort	Polygalaceae
<i>Polygala senega</i>	seneca snakeroot	Polygalaceae
<i>Polygala sp.</i>	milkwort	Polygalaceae
<i>Polygala verticillata</i>	whorled milkwort	Polygalaceae
<i>Polygonatum biflorum</i>	Solomon's-seal	Convallariaceae
<i>Polygonatum pubescens</i>	downy Solomon's-seal	Convallariaceae
<i>Polygonatum sp.</i>	Solomon's seal	Convallariaceae

Scientific name	Common name	Family
<i>Polygonum achoreum</i>	knotweed	Polygonaceae
<i>Polygonum aviculare</i>	knotweed	Polygonaceae
<i>Polygonum ramosissimum</i>	bushy knotweed	Polygonaceae
<i>Polygonum sp.</i>	smartweed	Polygonaceae
<i>Pontederia cordata</i>	pickerel-weed	Pontederiaceae
<i>Populus balsamifera</i>	balsam poplar	Salicaceae
<i>Populus deltoides</i>	cottonwood	Salicaceae
<i>Populus heterophylla</i>	swamp cottonwood	Salicaceae
<i>Populus nigra</i>	lombardy poplar	Salicaceae
<i>Populus seedling</i>	cottonwood	Salicaceae
<i>Populus sp.</i>	cottonwood	Salicaceae
<i>Populus tremuloides</i>	quaking aspen	Salicaceae
<i>Potamogeton alpinus</i>	alpine pondweed	Potamogetonaceae
<i>Potamogeton amplifolius</i>	large-leaf pondweed	Potamogetonaceae
<i>Potamogeton berchtoldii</i>	Berchtold's pondweed	Potamogetonaceae
<i>Potamogeton confervoides</i>	pondweed	Potamogetonaceae
<i>Potamogeton crispus</i>	curly pondweed	Potamogetonaceae
<i>Potamogeton diversifolius</i>	pondweed	Potamogetonaceae
<i>Potamogeton epihydrus</i>	pondweed	Potamogetonaceae
<i>Potamogeton foliosus</i>	leafy pondweed	Potamogetonaceae
<i>Potamogeton friesii</i>	Fries' pondweed	Potamogetonaceae
<i>Potamogeton gramineus</i>	grassy pondweed	Potamogetonaceae
<i>Potamogeton hillii</i>	hill's pondweed	Potamogetonaceae
<i>Potamogeton illinoensis</i>	illinois pondweed	Potamogetonaceae
<i>Potamogeton natans</i>	floating pondweed	Potamogetonaceae
<i>Potamogeton nodosus</i>	node pondweed	Potamogetonaceae
<i>Potamogeton oakesianus</i>	Oakes' pondweed	Potamogetonaceae
<i>Potamogeton obtusifolius</i>	obtuse-leaf pondweed	Potamogetonaceae
<i>Potamogeton perfoliatus</i>	perfoliate pondweed	Potamogetonaceae
<i>Potamogeton praelongus</i>	pondweed	Potamogetonaceae
<i>Potamogeton pulcher</i>	spotted pondweed	Potamogetonaceae
<i>Potamogeton pusillus</i>	small pondweed	Potamogetonaceae
<i>Potamogeton richardsonii</i>	Richardson's pondweed	Potamogetonaceae
<i>Potamogeton robbinsii</i>	Robbins' pondweed	Potamogetonaceae
<i>Potamogeton sp.</i>	pondweed	Potamogetonaceae
<i>Potamogeton spirillus</i>	spiral pondweed	Potamogetonaceae
<i>Potamogeton strictifolius</i>	straight-leaved pondweed	Potamogetonaceae
<i>Potamogeton vaseyi</i>	Vasey's pondweed	Potamogetonaceae
<i>Potamogeton zosteriformis</i>	flat-stem pondweed	Potamogetonaceae
<i>Potentilla anserina</i>	silverweed cinquefoil	Rosaceae
<i>Potentilla argentea</i>	silver cinquefoil	Rosaceae
<i>Potentilla inclinata</i>	inclined cinquefoil	Rosaceae
<i>Potentilla norvegica</i>	Norwegian cinquefoil	Rosaceae
<i>Potentilla recta</i>	sulphur cinquefoil	Rosaceae
<i>Potentilla simplex</i>	old field cinquefoil	Rosaceae
<i>Potentilla sp.</i>	cinquefoil	Rosaceae

Scientific name	Common name	Family
<i>Potentilla supina</i>	spreading cinquefoil	Rosaceae
<i>Prenanthes racemosa</i>	racemose snakeroot	Asteraceae
<i>Prenanthes sp.</i>	white-lettuce	Asteraceae
<i>Primula mistassinica</i>	mistassini primrose	Primulaceae
<i>Proserpinaca palustris</i>	mermaid-weed	Haloragaceae
<i>Proserpinaca pectinata</i>	pectinate mermaid-weed	Haloragaceae
<i>Proserpinaca sp.</i>	mermaidweed	Haloragaceae
<i>Prunella vulgaris</i>	self-heal	Lamiaceae
<i>Prunus americana</i>	American plum	Rosaceae
<i>Prunus pensylvanica</i>	bird cherry	Rosaceae
<i>Prunus pumila</i>	sand cherry	Rosaceae
<i>Prunus serotina</i>	black cherry	Rosaceae
<i>Prunus sp.</i>	chokecherry	Rosaceae
<i>Prunus virginiana</i>	choke cherry	Rosaceae
<i>Ptelea trifoliata</i>	wafer-ash	Rutaceae
<i>Pteridium aquilinum</i>	bracken fern	Dennstaedtiaceae
<i>Pycnanthemum sp.</i>	mountain-mint	Lamiaceae
<i>Pycnanthemum verticillatum</i>	whorled mountain-mint	Lamiaceae
<i>Pycnanthemum virginianum</i>	Virginia mountain-mint	Lamiaceae
<i>Pyrola americana</i>	American wintergreen	Ericaceae
<i>Pyrola asarifolia</i>	asarum-leaved pyrola	Ericaceae
<i>Pyrola elliptica</i>	elliptic wintergreen	Ericaceae
<i>Pyrola minor</i>	lesser pyrola	Ericaceae
<i>Pyrola sp.</i>	pyrola	Ericaceae
<i>Quercus alba</i>	white oak	Fagaceae
<i>Quercus bicolor</i>	swamp white oak	Fagaceae
<i>Quercus macrocarpa</i>	bur oak	Fagaceae
<i>Quercus palustris</i>	pin oak	Fagaceae
<i>Quercus rubra</i>	red oak	Fagaceae
<i>Quercus sp.</i>	oaks	Fagaceae
<i>Ranunculus abortivus</i>	abortive buttercup	Ranunculaceae
<i>Ranunculus acris</i>	tall buttercup	Ranunculaceae
<i>Ranunculus flabellaris</i>	yellow water-buttercup	Ranunculaceae
<i>Ranunculus gmelinii</i>	Gmelin's buttercup	Ranunculaceae
<i>Ranunculus hispidus (R. septentrionalis)</i>	common buttercup	Ranunculaceae
<i>Ranunculus longirostris (R. aquatilis misapplied)</i>	white water-buttercup	Ranunculaceae
<i>Ranunculus macounii</i>	macoun's buttercup	Ranunculaceae
<i>Ranunculus pensylvanicus</i>	Pennsylvania buttercup	Ranunculaceae
<i>Ranunculus recurvatus</i>	recurved buttercup	Ranunculaceae
<i>Ranunculus repens</i>	creeping buttercup	Ranunculaceae
<i>Ranunculus reptans</i>	crawling buttercup	Ranunculaceae
<i>Ranunculus sceleratus</i>	cursed crowfoot	Ranunculaceae
<i>Ranunculus sp.</i>	buttercup	Ranunculaceae
<i>Ranunculus trichophyllus</i>	white water crowfoot	Ranunculaceae
<i>Raphanus sativus</i>	radish	Brassicaceae
<i>Raphanus sp.</i>	radish	Brassicaceae

Scientific name	Common name	Family
<i>Rhamnus alnifolia</i>	alder-leaf buckthorn	Rhamnaceae
<i>Rhamnus cathartica</i>	common buckthorn	Rhamnaceae
<i>Rhamnus sp.</i>	buckthorn	Rhamnaceae
<i>Rheum xhybridum</i>	rhubarb (hybrid)	Polygonaceae
<i>Rhexia virginica</i>	Virginia meadow-beauty	Melastomataceae
<i>Rhododendron groenlandicum</i>	bog Labrador tea	Ericaceae
<i>Rhus aromatica</i>	fragrant sumac	Anacardiaceae
<i>Rhus sp.</i>	sumac	Anacardiaceae
<i>Rhus typhina</i>	staghorn sumac	Anacardiaceae
<i>Rhynchospora alba</i>	white beak-rush	Cyperaceae
<i>Rhynchospora capillacea</i>	capillary beak-rush	Cyperaceae
<i>Rhynchospora capitellata</i>	beak-rush	Cyperaceae
<i>Rhynchospora fusca</i>	brown beak-rush	Cyperaceae
<i>Rhynchospora macrostachya</i>	tall beak-rush	Cyperaceae
<i>Rhynchospora scirpoides</i>	longbeak beaksedge	Cyperaceae
<i>Rhynchospora sp.</i>	beaksedge	Cyperaceae
<i>Ribes americanum</i>	wild black currant	Grossulariaceae
<i>Ribes cynosbati</i>	dogberry	Grossulariaceae
<i>Ribes glandulosum</i>	skunk currant	Grossulariaceae
<i>Ribes hirtellum</i>	hairy gooseberry	Grossulariaceae
<i>Ribes hudsonianum</i>	Hudson Bay currant	Grossulariaceae
<i>Ribes lacustre</i>	bristly black currant	Grossulariaceae
<i>Ribes sp.</i>	currant	Grossulariaceae
<i>Ribes triste</i>	sad currant	Grossulariaceae
<i>Riccia fluitans</i>	slender riccia	Ricciaceae
<i>Ricciocarpos natans</i>	fringed heartwort	Ricciaceae
<i>Robinia pseudoacacia</i>	black locust	Fabaceae
<i>Rorippa aquatica</i>	lakecress	Brassicaceae
<i>Rorippa palustris</i>	yellow-cress	Brassicaceae
<i>Rorippa sp.</i>	yellowcress	Brassicaceae
<i>Rorippa sylvestris</i>	creeping yellow-cress	Brassicaceae
<i>Rosa acicularis</i>	northern rose	Rosaceae
<i>Rosa arkansana</i>	Arkansas rose	Rosaceae
<i>Rosa blanda</i>	unarmed rose	Rosaceae
<i>Rosa multiflora</i>	multiflora rose	Rosaceae
<i>Rosa palustris</i>	swamp rose	Rosaceae
<i>Rosa rubiginosa</i>	sweetbriar rose	Rosaceae
<i>Rosa rugosa</i>	rugosa rose	Rosaceae
<i>Rosa sp.</i>	rose	Rosaceae
<i>Rotala ramosior</i>	tooth-cup	Lythraceae
<i>Rubus allegheniensis</i>	Allegheny blackberry	Rosaceae
<i>Rubus bifrons</i>	Himalayan berry	Rosaceae
<i>Rubus canadensis</i>	smooth blackberry	Rosaceae
<i>Rubus flagellaris</i>	upland dewberry	Rosaceae
<i>Rubus hispidus</i>	swamp dewberry	Rosaceae
<i>Rubus laciniatus</i>	cut-leaved blackberry	Rosaceae

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<i>Rubus occidentalis</i>	black raspberry	Rosaceae
<i>Rubus pubescens</i>	dwarf raspberry	Rosaceae
<i>Rubus setosus</i>	setose blackberry	Rosaceae
<i>Rubus sp.</i>	bramble	Rosaceae
<i>Rubus strigosus</i>	American red raspberry	Rosaceae
<i>Rudbeckia fulgida</i>	black-eyed susan	Asteraceae
<i>Rudbeckia hirta</i>	black-eyed susan	Asteraceae
<i>Rudbeckia laciniata</i>	cut-leaf coneflower	Asteraceae
<i>Rudbeckia sp.</i>	coneflower	Asteraceae
<i>Rudbeckia triloba</i>	tri-lobe coneflower	Asteraceae
<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae
<i>Rumex altissimus</i>	pale dock	Polygonaceae
<i>Rumex crispus</i>	curly dock	Polygonaceae
<i>Rumex fueginus</i>	golden dock	Polygonaceae
<i>Rumex longifolius</i>	long-leaved dock	Polygonaceae
<i>Rumex obtusifolius</i>	blunt-leaved dock	Polygonaceae
<i>Rumex orbiculatus</i>	great water dock	Polygonaceae
<i>Rumex patientia</i>	patience dock	Polygonaceae
<i>Rumex sp.</i>	dock	Polygonaceae
<i>Rumex triangulivalvis</i>	triangular-valve dock	Polygonaceae
<i>Rumex verticillatus</i>	whorled dock	Polygonaceae
<i>Sabatia angularis</i>	common marsh-pink	Gentianaceae
<i>Sagina procumbens</i>	procumbent pearlwort	Caryophyllaceae
<i>Sagittaria brevirostra</i>	short-beaked arrowhead	Alismataceae
<i>Sagittaria cristata</i>	crested arrowhead	Alismataceae
<i>Sagittaria cuneata</i>	cuneate arrowhead	Alismataceae
<i>Sagittaria graminea</i>	grass-leaf arrowhead	Alismataceae
<i>Sagittaria latifolia</i>	broad-leaved arrowhead	Alismataceae
<i>Sagittaria montevidensis</i>	arrowhead	Alismataceae
<i>Sagittaria rigida</i>	stiff arrowhead	Alismataceae
<i>Sagittaria sp.</i>	arrowhead	Alismataceae
<i>Salix alba</i>	white willow	Salicaceae
<i>Salix amygdaloides</i>	peach-leaf willow	Salicaceae
<i>Salix babylonica (S. babylonica x S. fragilis)</i>	weeping willow	Salicaceae
<i>Salix bebbiana</i>	Bebb's willow	Salicaceae
<i>Salix candida</i>	hoary willow	Salicaceae
<i>Salix cordata (S. syrticola)</i>	sand-dune willow	Salicaceae
<i>Salix discolor</i>	pussy willow	Salicaceae
<i>Salix eriocephala</i>	willow	Salicaceae
<i>Salix euxina</i>	crack willow	Salicaceae
<i>Salix exigua</i>	sandbar willow	Salicaceae
<i>Salix lucida</i>	shining willow	Salicaceae
<i>Salix myricoides</i>	blueleaf willow	Salicaceae
<i>Salix nigra</i>	black willow	Salicaceae
<i>Salix pedicellaris</i>	bog willow	Salicaceae
<i>Salix pellita</i>	satiny willow	Salicaceae



Scientific name	Common name	Family
<i>Salix petiolaris</i>	petioled willow	Salicaceae
<i>Salix planifolia</i>	flat-leaved willow	Salicaceae
<i>Salix purpurea</i>	purple-osier willow	Salicaceae
<i>Salix pyrifolia</i>	balsam willow	Salicaceae
<i>Salix sericea</i>	silky willow	Salicaceae
<i>Salix serissima</i>	autumn willow	Salicaceae
<i>Salix sp.</i>	willow	Salicaceae
<i>Salsola sp.</i>	Russian thistle	Amaranthaceae
<i>Salsola tragus</i>	prickly Russian thistle	Amaranthaceae
<i>Sambucus canadensis</i>	Canada elder	Adoxaceae
<i>Sambucus sp.</i>	elder	Adoxaceae
<i>Sanguinaria canadensis</i>	bloodroot	Papaveraceae
<i>Saponaria officinalis</i>	bouncing-bet	Caryophyllaceae
<i>Sarracenia purpurea</i>	pitcher-plant	Sarraceniaceae
<i>Saururus cernuus</i>	lizard's-tail	Saururaceae
<i>Scheuchzeria palustris</i>	pod-grass	Scheuchzeriaceae
<i>Schizachne purpurascens</i>	false melic	Poaceae
<i>Schizachne sp.</i>	false melic	Poaceae
<i>Schizachyrium scoparium</i>	little bluestem	Poaceae
<i>Schoenoplectiella purshiana</i>	weakstalk bulrush	Cyperaceae
<i>Schoenoplectiella smithii</i>	Smith's bulrush	Cyperaceae
<i>Schoenoplectus acutus</i>	hardstem bulrush	Cyperaceae
<i>Schoenoplectus americanus</i>	chairmaker's bulrush	Cyperaceae
<i>Schoenoplectus heterochaetus</i>	slender bulrush	Cyperaceae
<i>Schoenoplectus pungens</i>	common threesquare	Cyperaceae
<i>Schoenoplectus sp.</i>	bulrush	Cyperaceae
<i>Schoenoplectus subterminalis</i>	swaying bulrush	Cyperaceae
<i>Schoenoplectus tabernaemontani</i>	softstem bulrush	Cyperaceae
<i>Schoenoplectus torreyi</i>	Torrey's bulrush	Cyperaceae
<i>Scirpus atrocinctus</i>	blackgirdle bulrush	Cyperaceae
<i>Scirpus atrovirens</i>	dark-green bulrush	Cyperaceae
<i>Scirpus cyperinus</i>	wool-grass	Cyperaceae
<i>Scirpus georgianus</i>	Georgia bulrush	Cyperaceae
<i>Scirpus hattorianus</i>	mosquito bulrush	Cyperaceae
<i>Scirpus microcarpus</i>	small-fruit bulrush	Cyperaceae
<i>Scirpus pedicellatus</i>	stalked bulrush	Cyperaceae
<i>Scirpus pendulus</i>	pendulous bulrush	Cyperaceae
<i>Scirpus sp.</i>	bulrushes (also Schoenoplectus)	Cyperaceae
<i>Scleria sp.</i>	nutrush	Cyperaceae
<i>Scleria triglomerata</i>	tall nut-rush	Cyperaceae
<i>Scleria verticillata</i>	whorled nut-rush	Cyperaceae
<i>Scrophularia lanceolata</i>	lance-leaf figwort	Scrophulariaceae
<i>Scrophularia marilandica</i>	maryland figwort	Scrophulariaceae
<i>Scrophularia sp.</i>	figwort	Scrophulariaceae
<i>Scutellaria galericulata</i>	skullcap	Lamiaceae
<i>Scutellaria lateriflora</i>	side-flower skullcap	Lamiaceae

Scientific name	Common name	Family
<i>Scutellaria parvula</i>	small skullcap	Lamiaceae
<i>Scutellaria sp.</i>	skullcap	Lamiaceae
<i>Secale cereale</i>	rye	Poaceae
<i>Secale sp.</i>	rye	Poaceae
<i>Securigera varia</i>	crownvetch	Fabaceae
<i>Sedum acre</i>	mossy stonecrop	Crassulaceae
<i>Sedum album</i>	stonecrop	Crassulaceae
<i>Sedum sp.</i>	stonecrop	Crassulaceae
<i>Selaginella eclipses (S. apoda)</i>	meadow spikemoss	Selaginellaceae
<i>Selaginella selaginoides</i>	northern spikemoss	Selaginellaceae
<i>Selaginella sp.</i>	lesser clubmoss	Selaginellaceae
<i>Senecio sp.</i>	ragwort	Asteraceae
<i>Senna hebecarpa</i>	American senna	Fabaceae
<i>Setaria sp.</i>	bristlegrass	Poaceae
<i>Setaria viridis</i>	green foxtail-grass	Poaceae
<i>Shepherdia canadensis</i>	soapberry	Elaeagnaceae
<i>Sibbaldiopsis tridentata</i>	shrubby fivefingers	Rosaceae
<i>Sicyos angulatus</i>	bur-cucumber	Cucurbitaceae
<i>Silene latifolia</i>	bladder campion	Caryophyllaceae
<i>Silene sp.</i>	catchfly	Caryophyllaceae
<i>Silene vulgaris (S. cucuballus)</i>	bladder-campion	Caryophyllaceae
<i>Silphium integrifolium</i>	prairie rosin-weed	Asteraceae
<i>Silphium terebinthinaceum</i>	prairie-dock	Asteraceae
<i>Sinapis arvensis</i>	charlock	Brassicaceae
<i>Sisymbrium altissimum</i>	tumble-mustard	Brassicaceae
<i>Sisymbrium sp.</i>	hedgemustard	Brassicaceae
<i>Sisyrinchium angustifolium</i>	narrow-leaf blue-eyed gra	Iridaceae
<i>Sisyrinchium montanum</i>	mountain blue-eyed grass	Iridaceae
<i>Sisyrinchium mucronatum</i>	mucronate blue-eyed-grass	Iridaceae
<i>Sisyrinchium sp.</i>	blue-eyed grass	Iridaceae
<i>Sium suave</i>	water-parsnip	Apiaceae
<i>Solanum dulcamara</i>	bittersweet nightshade	Solanaceae
<i>Solanum lycopersicum</i>	garden tomato	Solanaceae
<i>Solanum ptychanthum (S. nigrum)</i>	black nightshade	Solanaceae
<i>Solanum sp.</i>	nightshade	Solanaceae
<i>Solidago altissima</i>	tall goldenrod	Asteraceae
<i>Solidago caesia</i>	blue-stem goldenrod	Asteraceae
<i>Solidago canadensis</i>	Canada goldenrod	Asteraceae
<i>Solidago gigantea</i>	giant goldenrod	Asteraceae
<i>Solidago hispida</i>	hispid goldenrod	Asteraceae
<i>Solidago houghtonii</i>	Houghton's goldenrod	Asteraceae
<i>Solidago juncea</i>	early goldenrod	Asteraceae
<i>Solidago nemoralis</i>	gray goldenrod	Asteraceae
<i>Solidago ohioensis</i>	Ohio goldenrod	Asteraceae
<i>Solidago patula</i>	rough-leaved goldenrod	Asteraceae
<i>Solidago ptarmicoides</i>	upland white goldenrod	Asteraceae

Scientific name	Common name	Family
<i>Solidago riddellii</i>	Riddell's goldenrod	Asteraceae
<i>Solidago rigida</i>	stiff goldenrod	Asteraceae
<i>Solidago rugosa</i>	wrinkled goldenrod	Asteraceae
<i>Solidago simplex (S. spathulata)</i>	Gillman's goldenrod	Asteraceae
<i>Solidago sp.</i>	goldenrod	Asteraceae
<i>Solidago speciosa</i>	showy goldenrod	Asteraceae
<i>Solidago uliginosa</i>	bog goldenrod	Asteraceae
<i>Solidago ulmifolia</i>	elm-leaved goldenrod	Asteraceae
<i>Sonchus arvensis</i>	perennial sow-thistle	Asteraceae
<i>Sonchus oleraceus</i>	sow-thistle	Asteraceae
<i>Sonchus sp.</i>	sowthistle	Asteraceae
<i>Sorbus americana</i>	American mountain-ash	Rosaceae
<i>Sorbus decora</i>	showy mountain-ash	Rosaceae
<i>Sorbus sp.</i>	mountain ash	Rosaceae
<i>Sorghastrum nutans</i>	Indian grass	Poaceae
<i>Sorghum halepense</i>	johnson grass	Poaceae
<i>Sorghum sp.</i>	sorghum	Poaceae
<i>Sparganium americanum</i>	American bur-reed	Typhaceae
<i>Sparganium androcladum</i>	branching bur-reed	Typhaceae
<i>Sparganium angustifolium</i>	narrow-leaf bur-reed	Typhaceae
<i>Sparganium chlorocarpum</i>	green-fruit bur-reed	Typhaceae
<i>Sparganium emersum</i>	European bur-reed	Typhaceae
<i>Sparganium eurycarpum</i>	broad-fruit bur-reed	Typhaceae
<i>Sparganium fluctuans</i>	floating bur-reed	Typhaceae
<i>Sparganium minimum</i>	small bur-reed	Typhaceae
<i>Sparganium natans</i>	small bur-reed	Typhaceae
<i>Sparganium sp.</i>	burreed	Typhaceae
<i>Spartina pectinata</i>	prairie cordgrass	Poaceae
<i>Spartina sp.</i>	cordgrass	Poaceae
<i>Sphagnum sp.</i>	peat moss	Sphagnaceae
<i>Sphenopholis intermedia</i>	intermediate wedgegrass	Poaceae
<i>Sphenopholis obtusata</i>	prairie wedgegrass	Poaceae
<i>Sphenopholis sp.</i>	wedge grass	Poaceae
<i>Spiraea alba</i>	white meadow-sweet	Rosaceae
<i>Spiraea sp.</i>	spirea	Rosaceae
<i>Spiraea tomentosa</i>	steeple-bush	Rosaceae
<i>Spiranthes cernua</i>	nodding ladies'-tresses	Orchidaceae
<i>Spiranthes lacera</i>	ladies'-tresses	Orchidaceae
<i>Spiranthes lucida</i>	shining ladies'-tresses	Orchidaceae
<i>Spiranthes magnicamporum</i>	great plains ladies'-tresses	Orchidaceae
<i>Spiranthes romanzoffiana</i>	hooded ladies'-tresses	Orchidaceae
<i>Spiranthes sp.</i>	ladies tresses	Orchidaceae
<i>Spirodela polyrhiza</i>	giant duckweed	Araceae
<i>Sporobolus cryptandrus</i>	sand dropseed	Poaceae
<i>Sporobolus heterolepis</i>	prairie dropseed	Poaceae
<i>Sporobolus neglectus</i>	neglected dropseed	Poaceae

Scientific name	Common name	Family
<i>Sporobolus sp.</i>	dropseed	Poaceae
<i>Stachys arenicola</i>	hedgenettle	Lamiaceae
<i>Stachys aspera</i>	hyssopleaf hedgenettle	Lamiaceae
<i>Stachys hispida</i>	hispid hedgenettle	Lamiaceae
<i>Stachys hyssopifolia</i>	hyssop-leaf hedge-nettle	Lamiaceae
<i>Stachys palustris</i>	hedge-nettle	Lamiaceae
<i>Stachys pilosa</i>	hairy hedgenettle	Lamiaceae
<i>Stachys sp.</i>	hedgenettle	Lamiaceae
<i>Stachys tenuifolia (incl. S. hispida)</i>	hedge-nettle	Lamiaceae
<i>Staphylea trifolia</i>	bladder-nut	Staphyleaceae
<i>Stellaria borealis</i>	boreal stellaria	Caryophyllaceae
<i>Stellaria crassifolia</i>	thick-leaved stellaria	Caryophyllaceae
<i>Stellaria graminea</i>	grass-leaved stellaria	Caryophyllaceae
<i>Stellaria longifolia</i>	long-leaved stellaria	Caryophyllaceae
<i>Stellaria longipes</i>	long-stalked stellaria	Caryophyllaceae
<i>Stellaria media</i>	common chickweed	Caryophyllaceae
<i>Stellaria sp.</i>	starwort	Caryophyllaceae
<i>Strophostyles helvula</i>	trailing wild bean	Fabaceae
<i>Stuckenia filiformis</i>	fineleaf pondweed	Potamogetonaceae
<i>Stuckenia pectinata</i>	broadleaf pondweed	Potamogetonaceae
<i>Stuckenia sp.</i>	pondweed	Potamogetonaceae
<i>Subularia aquatica</i>	awlwort	Brassicaceae
<i>Symphoricarpos albus</i>	snowberry	Caprifoliaceae
<i>Symphoricarpos occidentalis</i>	wolfberry	Caprifoliaceae
<i>Symphoricarpos sp.</i>	snowberry	Caprifoliaceae
<i>Symphyotrichum boreale</i>	northern bog aster	Asteraceae
<i>Symphyotrichum ciliatum</i>	rayless alkali aster	Asteraceae
<i>Symphyotrichum cordifolium</i>	common blue wood aster	Asteraceae
<i>Symphyotrichum dumosum</i>	rice button aster	Asteraceae
<i>Symphyotrichum ericoides</i>	white heath aster	Asteraceae
<i>Symphyotrichum firmum</i>	glossy-leaved aster	Asteraceae
<i>Symphyotrichum laeve</i>	smooth blue aster	Asteraceae
<i>Symphyotrichum lanceolatum</i>	white panicle aster	Asteraceae
<i>Symphyotrichum lateriflorum</i>	calico aster	Asteraceae
<i>Symphyotrichum novae-angliae</i>	new england aster	Asteraceae
<i>Symphyotrichum ontarionis</i>	bottomland aster	Asteraceae
<i>Symphyotrichum pilosum</i>	hairy white oldfield aster	Asteraceae
<i>Symphyotrichum puniceum</i>	purplestem aster	Asteraceae
<i>Symphyotrichum robynianum</i>	longleaf aster	Asteraceae
<i>Symphyotrichum sp.</i>	aster	Asteraceae
<i>Symphyotrichum urophyllum</i>	white arrowleaf aster	Asteraceae
<i>Symphytum officinale</i>	comfrey	Boraginaceae
<i>Symplocarpus foetidus</i>	skunk-cabbage	Araceae
<i>Tanacetum bipinnatum</i>	lake huron tansy	Asteraceae
<i>Tanacetum parthenium</i>	feverfew	Asteraceae
<i>Tanacetum sp.</i>	tansy	Asteraceae

Scientific name	Common name	Family
<i>Tanacetum vulgare</i>	common tansy	Asteraceae
<i>Taraxacum erythrospermum</i>	red-seeded dandelion	Asteraceae
<i>Taraxacum officinale</i>	common dandelion	Asteraceae
<i>Taraxacum sp.</i>	dandelion	Asteraceae
<i>Teucrium canadense</i>	American germander	Lamiaceae
<i>Thalictrum dasycarpum</i>	hairy-fruit meadow-rue	Ranunculaceae
<i>Thalictrum dioicum</i>	early meadow-rue	Ranunculaceae
<i>Thalictrum pubescens</i>	king of the meadow	Ranunculaceae
<i>Thalictrum revolutum</i>	prairie meadow-rue	Ranunculaceae
<i>Thalictrum sp.</i>	meadow-rue	Ranunculaceae
<i>Thalictrum venulosum</i>	northern meadow-rue	Ranunculaceae
<i>Thelypteris palustris</i>	marsh fern	Thelypteridaceae
<i>Thuja occidentalis</i>	white cedar	Cupressaceae
<i>Tiarella cordifolia</i>	foamflower	Saxifragaceae
<i>Tilia americana</i>	basswood	Malvaceae
<i>Torreyochloa fernaldii</i>	Fernald's false mannagrass	Poaceae
<i>Torreyochloa pallida</i>	pale false mannagrass	Poaceae
<i>Torreyochloa sp.</i>	mannagrass	Poaceae
<i>Toxicodendron radicans</i>	poison-ivy	Anacardiaceae
<i>Toxicodendron rydbergii</i>	rydberg's poison-ivy	Anacardiaceae
<i>Toxicodendron sp.</i>	poison oak (ivy)	Anacardiaceae
<i>Toxicodendron vernix</i>	poison sumac	Anacardiaceae
<i>Tragopogon dubius (T. major)</i>	larger goat's-beard	Asteraceae
<i>Tragopogon pratensis</i>	smaller goat's-beard	Asteraceae
<i>Tragopogon sp.</i>	goatsbeard	Asteraceae
<i>Trapa natans</i>	water chestnut	Trapaceae
<i>Triadenum fraseri</i>	fraser's St. John's-wort	Hypericaceae
<i>Triadenum sp.</i>	marsh st. johnswort	Hypericaceae
<i>Triadenum virginicum</i>	Virginia St. John's-wort	Hypericaceae
<i>Triantha glutinosa</i>	sticky tofieldia	Melanthiaceae
<i>Trichophorum alpinum</i>	alpine bulrush	Cyperaceae
<i>Trichophorum cespitosum</i>	tufted bulrush	Cyperaceae
<i>Trichophorum sp.</i>	bulrush	Cyperaceae
<i>Trichostema brachiatum (Isanthus b.)</i>	false pennyroyal	Lamiaceae
<i>Trientalis borealis</i>	starflower	Myrsinaceae
<i>Trifolium arvense</i>	rabbitfoot clover	Fabaceae
<i>Trifolium aureum (T. agrarium)</i>	hop-clover	Fabaceae
<i>Trifolium campestre</i>	field clover	Fabaceae
<i>Trifolium dubium</i>	little hop clover	Fabaceae
<i>Trifolium hybridum</i>	alsike clover	Fabaceae
<i>Trifolium pratense</i>	red clover	Fabaceae
<i>Trifolium repens</i>	white clover	Fabaceae
<i>Trifolium sp.</i>	clover	Fabaceae
<i>Triglochin maritima</i>	troscart maritime	Juncaginaceae
<i>Triglochin palustris</i>	troscart des marais	Juncaginaceae
<i>Triglochin sp.</i>	arrow-grass	Juncaginaceae

Scientific name	Common name	Family
<i>Trillium cernuum</i>	nodding trillium	Trilliaceae
<i>Trillium grandiflorum</i>	large-flowered trillium	Trilliaceae
<i>Trillium sp.</i>	trillium	Trilliaceae
<i>Trisetum spicatum</i>	spicate trisetum-grass	Poaceae
<i>Triticum aestivum</i>	wheat	Poaceae
<i>Tsuga canadensis</i>	hemlock	Pinaceae
<i>Turritis glabra</i>	tower rockcress	Brassicaceae
<i>Tussilago farfara</i>	coltsfoot	Asteraceae
<i>Typha angustifolia</i>	narrow-leaf cattail	Typhaceae
<i>Typha glauca</i>	hybrid cattail	Typhaceae
<i>Typha latifolia</i>	broad-leaved cattail	Typhaceae
<i>Typha sp.</i>	cattail	Typhaceae
<i>Ulmus americana</i>	American elm	Ulmaceae
<i>Ulmus pumila</i>	Siberian elm	Ulmaceae
<i>Ulmus rubra</i>	slippery elm	Ulmaceae
<i>Ulmus sp.</i>	elm	Ulmaceae
<i>Urtica dioica</i>	stinging nettle	Urticaceae
<i>Utricularia cornuta</i>	horned bladderwort	Lentibulariaceae
<i>Utricularia geminiscapa</i>	twin-scape bladderwort	Lentibulariaceae
<i>Utricularia gibba</i>	humped bladderwort	Lentibulariaceae
<i>Utricularia inflata (U. radiata)</i>	inflated bladderwort	Lentibulariaceae
<i>Utricularia intermedia</i>	intermediate bladderwort	Lentibulariaceae
<i>Utricularia minor</i>	lesser bladderwort	Lentibulariaceae
<i>Utricularia purpurea</i>	purple bladderwort	Lentibulariaceae
<i>Utricularia radiata</i>	floating bladderwort	Lentibulariaceae
<i>Utricularia resupinata</i>	lavender bladderwort	Lentibulariaceae
<i>Utricularia sp.</i>	bladderwort	Lentibulariaceae
<i>Utricularia subulata</i>	awl bladderwort	Lentibulariaceae
<i>Utricularia vulgaris</i>	common bladderwort	Lentibulariaceae
<i>Vaccaria hispanica</i>	vaccaria	Caryophyllaceae
<i>Vaccinium angustifolium</i>	low sweet blueberry	Ericaceae
<i>Vaccinium corymbosum</i>	highbush blueberry	Ericaceae
<i>Vaccinium macrocarpon</i>	large cranberry	Ericaceae
<i>Vaccinium myrtilloides</i>	velvetleaf blueberry	Ericaceae
<i>Vaccinium oxycoccos</i>	small cranberry	Ericaceae
<i>Vaccinium sp.</i>	blueberry	Ericaceae
<i>Valeriana edulis var. ciliata (V. ciliata)</i>	edible valerian	Valerianaceae
<i>Valeriana officinalis</i>	valerian	Valerianaceae
<i>Valeriana sp.</i>	valerian	Valerianaceae
<i>Valeriana uliginosa</i>	swamp valerian	Valerianaceae
<i>Vallisneria americana</i>	wild-celery	Hydrocharitaceae
<i>Verbascum blattaria</i>	moth mullein	Scrophulariaceae
<i>Verbascum sp.</i>	mullein	Scrophulariaceae
<i>Verbascum thapsus</i>	great mullein	Scrophulariaceae
<i>Verbena hastata</i>	blue vervain	Verbenaceae
<i>Verbena simplex</i>	prairie verbena	Verbenaceae

Scientific name	Common name	Family
<i>Verbena sp.</i>	vervain	Verbenaceae
<i>Verbena urticifolia</i>	nettle-leaved vervain	Verbenaceae
<i>Vernonia gigantea</i>	tall ironweed	Asteraceae
<i>Vernonia missurica</i>	missouri ironweed	Asteraceae
<i>Vernonia sp.</i>	ironweed	Asteraceae
<i>Veronica anagallis-aquatica</i>	water speedwell	Plantaginaceae
<i>Veronica arvensis</i>	field speedwell	Plantaginaceae
<i>Veronica beccabunga</i>	brooklime	Plantaginaceae
<i>Veronica officinalis</i>	common speedwell	Plantaginaceae
<i>Veronica peregrina</i>	peregrine speedwell	Plantaginaceae
<i>Veronica scutellata</i>	marsh speedwell	Plantaginaceae
<i>Veronica sp.</i>	speedwell	Plantaginaceae
<i>Veronicastrum virginicum</i>	Culver's-root	Plantaginaceae
<i>Viburnum acerifolium</i>	maple-leaf viburnum	Adoxaceae
<i>Viburnum cassinoides</i>	withe-rod	Adoxaceae
<i>Viburnum dentatum</i>	arrow-wood	Adoxaceae
<i>Viburnum edule</i>	squashberry	Adoxaceae
<i>Viburnum lentago</i>	nannyberry	Adoxaceae
<i>Viburnum opulus</i>	European highbush-cranberry	Adoxaceae
<i>Viburnum rafinesquianum</i>	downy arrowwood	Adoxaceae
<i>Viburnum sp.</i>	viburnum	Adoxaceae
<i>Viburnum trilobum</i>	American cranberrybush	Adoxaceae
<i>Vicia americana</i>	American vetch	Fabaceae
<i>Vicia angustifolia</i>	narrow-leaved vetch	Fabaceae
<i>Vicia cracca</i>	bird vetch	Fabaceae
<i>Vicia sativa</i>	common vetch	Fabaceae
<i>Vicia sp.</i>	vetch	Fabaceae
<i>Vicia tetrasperma</i>	four-seeded vetch	Fabaceae
<i>Vicia villosa</i>	hairy vetch	Fabaceae
<i>Vincetoxicum nigrum (Cynanchum n.)</i>	black swallow-wort	Apocynaceae
<i>Vincetoxicum rossicum (C. medium)</i>	white swallow-wort	Apocynaceae
<i>Vincetoxicum sp.</i>	swallowwort	Apocynaceae
<i>Viola affinis</i>	Leconte's violet	Violaceae
<i>Viola canadensis</i>	Canada violet	Violaceae
<i>Viola cucullata</i>	tall marsh violet	Violaceae
<i>Viola labradorica</i>	alpine violet	Violaceae
<i>Viola lanceolata</i>	lance-leaved violet	Violaceae
<i>Viola macloskeyi</i>	smooth white violet	Violaceae
<i>Viola nephrophylla</i>	kidney-leaved fen violet	Violaceae
<i>Viola pedata</i>	bird's-foot violet	Violaceae
<i>Viola primulifolia</i>	primrose-leaved violet	Violaceae
<i>Viola renifolia</i>	white kidney-leaf violet	Violaceae
<i>Viola sagittata (incl. V. fimbriatula)</i>	arrow-leaf violet	Violaceae
<i>Viola sororia</i>	common blue violet	Violaceae
<i>Viola sp.</i>	violet	Violaceae
<i>Vitis aestivalis</i>	summer grape	Vitaceae

Scientific name	Common name	Family
<i>Vitis riparia</i>	riverbank grape	Vitaceae
<i>Vitis sp.</i>	grape	Vitaceae
<i>Wolffia borealis</i>	northern watermeal	Araceae
<i>Wolffia brasiliensis</i>	Brazilian watermeal	Araceae
<i>Wolffia columbiana</i>	Columbian water-meal	Araceae
<i>Wolffia sp.</i>	watermeal	Araceae
<i>Xanthium sp.</i>	cocklebur	Asteraceae
<i>Xanthium strumarium</i>	cockle-bur	Asteraceae
<i>Xyris difformis</i>	yellow-eyed grass	Xyridaceae
<i>Xyris montana</i>	mountain yellow-eyed-grass	Xyridaceae
<i>Xyris sp.</i>	yellow-eyed-grass	Xyridaceae
<i>Xyris torta</i>	yellow-eyed grass	Xyridaceae
<i>Zannichellia palustris</i>	horned pondweed	Potamogetonaceae
<i>Zanthoxylum americanum</i>	prickly-ash	Rutaceae
<i>Zea mays</i>	maize	Poaceae
<i>Zizania aquatica</i>	southern wild-rice	Poaceae
<i>Zizania palustris</i>	northern wild-rice	Poaceae
<i>Zizania sp.</i>	wild rice	Poaceae