

# OAK RIDGES MORaine CONSERVATION PLAN

## Technical Paper Series

### 6 - Identification of Significant Portions of Habitat for Endangered Rare and Threatened Species

#### 1 Purpose

The purpose of this paper is to provide technical assistance to municipalities and others in the identification of significant portions of habitat of endangered, rare and threatened species for the purposes of the Oak Ridges Moraine Conservation Plan (ORMCP).

The Ministry of Natural Resources (MNR) is responsible for approving the significant habitat of species. Provincial habitat mapping guidelines will be developed for species at risk in Ontario. In the interim, significant portions of habitats will be delineated based on the process that is contained in this paper.

#### 2 Related Considerations

It is suggested that the reader also review the associated topic areas as discussed in the ORMCP, shown highlighted in Figure 1 below.

#### 3 Background

Section 22 of the ORMCP identifies "significant portions of habitat of endangered, rare and threatened species" as one of eight categories of key natural heritage features that must be protected from development or site alteration.

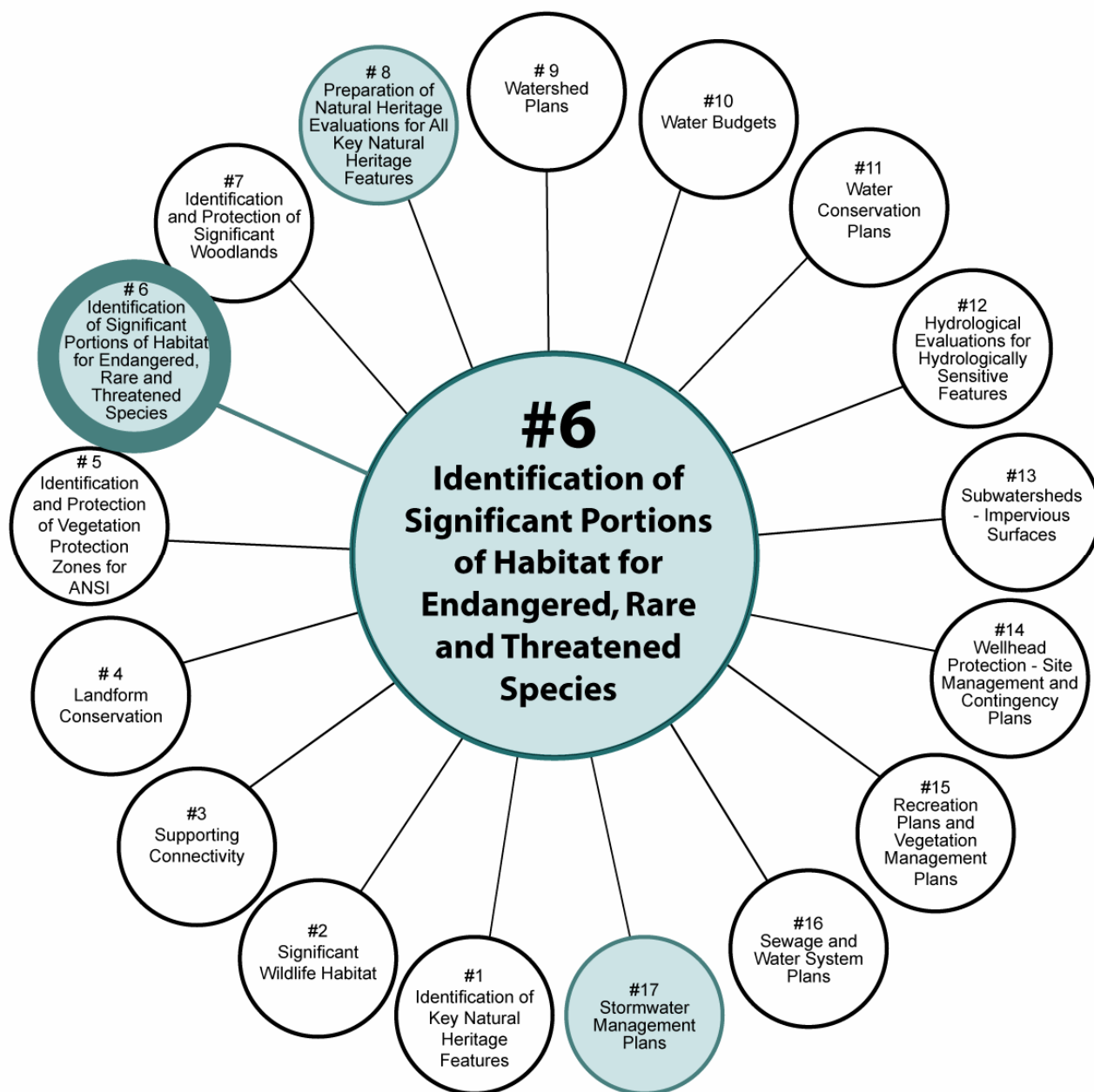
More specifically, subsection 22(2) of the ORMCP requires that:

*"All development and site alteration with respect to land within a key natural heritage feature including the associated vegetation protection zone, is prohibited, except for the following:*

- 1. Forest, fish, and wildlife management.*
- 2. Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest after all alternatives have been considered.*
- 3. Transportation, infrastructure, and utilities as described in section 41, but only if the need for the project has been demonstrated and there is no reasonable alternative.*
- 4. Low-intensity recreational uses as described in section 37."*

The ORMCP specifies that an additional vegetation protection zone next to significant portions of habitat of endangered, rare and threatened species will also be established as determined by a natural heritage evaluation carried out under Section 23. The ORMCP further requires that a natural heritage evaluation needs to be carried out where a development or site alteration is proposed within 120 metres of the feature.

**Figure 1 ORMCP Topic Areas and Linkages with Technical Paper 6 - Identification of Significant Portions of Habitat for Endangered, Rare and Threatened Species**



ORMCP Technical Paper 8 describes methods for natural heritage evaluations on the Oak Ridges Moraine.

Municipalities must take a proactive approach to endangered, rare and threatened species protection by identifying known occurrences within their jurisdiction. This information would be used to identify areas of the municipality both on and off the ORM that may not be suitable for development or for which conditions to develop would be more stringent.

In addition, obligations exist for the protection of habitat of threatened and endangered species under the Provincial Policy Statement pursuant to the provincial *Planning Act*.

These obligations would be met for the ORM area by satisfying the requirements of the ORMCP.

Other legislation pertaining to species at risk (SAR) includes the *Ontario Endangered Species Act, 1971* that prohibits any harm to 'regulated' endangered species and their habitat in Ontario, and the Federal *Species at Risk Act* (SARA) that may also apply to certain species found in the ORMCP Area. On private lands, SARA applies to aquatic species or migratory birds that are threatened, endangered or extirpated species listed in Schedule 1 of the Act.

According to the ORMCP, "habitat of endangered, rare and threatened species":

- (a) *is an area where individuals of an endangered species, a rare species or a threatened species live or have the potential to live and find adequate amounts of food, water, shelter and space to sustain their population, including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species, and*
- (b) *has been further identified, by the Ministry of Natural Resources or by any other person, according to evaluation procedures established by the Ministry of Natural Resources as amended from time to time.*

"Significant", as defined in the ORMCP, means "identified as significant by the Ministry of Natural Resources, using evaluation procedures established by that Ministry, as amended from time to time".

Significant portions of habitat are those natural areas that are required for reproduction, foraging, nesting, shelter, migration, hibernation and other essential life processes.

The intent of this technical paper is to ensure the protection of habitat that is needed for the sustained viability and recovery of endangered, rare and threatened species, not just their short-term survival.

It is recognized that this technical paper may need to be revised upon proclamation of the *Endangered Species Act, 2007*.

## 4 Identification of Endangered, Rare and Threatened Species

Endangered, rare and threatened species as described in the ORMCP will include those species identified in either of the following two (2) categories:

- provincially rare;
  - Special Concern, Threatened or Endangered as defined on the MNR Species at Risk in Ontario (SARO) list;
- I. Provincially rare species are those designated as S1 to S3 by the Natural Heritage Information Centre (NHIC) using criteria that are common to the network of conservation data centres in the Western Hemisphere. The categories S1 to S3 refer to species for which there are 100 or fewer occurrences known in Ontario. All globally and nationally rare species will by definition also be provincially rare. Species with less precise designation, such as “S3?” or S3/S4, will be considered as S3.

The NHIC web site ([nhic.mnr.gov.on.ca/nhic.cfm](http://nhic.mnr.gov.on.ca/nhic.cfm)) provides the species name and generalized locations for most SAR species. For certain sensitive species, the occurrence is flagged as ‘data sensitive’ (eg. American ginseng) and the user must seek more detailed information from the local MNR district office. Direct access to exact location of species occurrence information is available from the NHIC database upon request to the NHIC or the local MNR district office on a need-to-know principle. Some conservation authorities and municipalities may also have access to exact location data for rare species in the NHIC database, but not to those flagged as ‘data sensitive’. For the purposes of this process, therefore, access should be obtained directly through the NHIC or the local MNR district office. Additional species at risk occurrence information may also be available from local MNR offices or conservation authorities.

Provincially rare vegetation communities, such as tallgrass prairie, savannah, and sand barrens also receive protection under the ORMCP and are discussed in the ORMCP Technical Paper 2 for Identifying Significant Wildlife Habitat. Many endangered, rare and threatened species are found in those rare vegetation communities.

- II. Special Concern, Threatened, and Endangered Species are those species designated by MNR as endangered, threatened or special concern. They can be found on the SARO list that MNR maintains and updates periodically. In general, these are species at various degrees of risk of extinction or extirpation. Below are the SARO definitions for endangered, threatened and special concern species:

### **Endangered regulated**

A species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario’s *Endangered Species Act, 1971*

### **Endangered not regulated**

- A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario’s *Endangered Species Act, 1971*.

### **Threatened**

- A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed

### **Special Concern**

- A species with characteristics that make it sensitive to human activities or natural events

MNR's SARO list can be obtained by contacting your local MNR office or via the MNR website ([www.ontarioparks.com/saro-list.pdf](http://www.ontarioparks.com/saro-list.pdf)).

## **5 Moraine Rare Species**

Consideration of habitat for species rare on the ORM, but not provincially rare, is not required in the identification of "significant portions of habitat of endangered, rare and threatened" species on the ORM.

However, an inventory of moraine rare species (i.e. those known to occur at 20 or fewer sites on the moraine), will be maintained by MNR and shared with other approval and planning authorities in order to:

- monitor their general abundance and health to assess their ongoing condition and status on the ORM;
- serve as baseline data in order to assess overall trends in biodiversity on the ORM;
- provide information for assessing the relative value and diversity of other key natural heritage features on the ORM; and
- provide information to be used in the development of natural heritage evaluations under Section 23(1) of the ORMCP.

A list of species identified as moraine rare and/or provincially or nationally rare is attached as Appendix A. These lists change frequently and therefore readers should consult the MNR websites or MNR staff for the most up-to-date list. These lists will be evaluated and updated periodically.

## **6 Process for Identifying, Mapping and Determining Significant Portions of Habitat of Endangered, Rare and Threatened Species**

### ***Step 1 – Identify occurrences of endangered, rare and threatened species***

The first step is to identify whether there are occurrences of endangered, rare and threatened species within or adjacent to the study area. Comprehensive mapping of significant portions of habitat for many SAR species is not available. Thus, the recommended process is to 'screen' an application by checking for any occurrences within or adjacent to the subject lands. A species occurrence is simply a location where an endangered, rare or threatened species is known to occur. It does not necessarily identify the complete habitat that is used and required by that species.

The location of occurrences of endangered, rare and threatened species can be derived from:

- Mapping and information provided by MNR and the NHIC website. Species occurrence records are known as ‘Element Occurrences’ (EOs) on the NHIC website and on any mapping provided by MNR for the ORM Conservation Plan area. EO records on the NHIC website are generalized and indicate where a particular species has been observed but do not indicate the exact location of the species nor the extent of its habitat.
- Other sources of information such as local MNR offices, conservation authority offices, etc.
- A search of the area for known species occurrences extending at least one kilometre beyond the property for species occurrences in case the significant portions of habitat falls within the 120 metre area of the proposed planning application area.
- A directed survey in the appropriate habitat and at the appropriate time(s) of year as part of a natural heritage evaluation, especially when there are little or no data on endangered, rare and threatened species.
- Species occurrences identified through a natural heritage evaluation carried out in accordance with Section 23(1) of the ORMCP. Any information collected as part of a natural heritage evaluation should be shared with the MNR.

Where endangered, rare, special concern or threatened species occurrences are found, this information should be submitted to the NHIC office in Peterborough and to the local MNR District office.

Where an SAR occurrence (identified by MNR or another source and accepted by MNR as a valid occurrence) falls within 1 kilometre of the proposed application area, proceed to Step 2.

### ***Step 2 – Consultation with the MNR District office or delegated authority***

Where a record of an endangered, rare and threatened species exists within or adjacent to the subject lands (following Step 1 above), the approval authority and/or applicant should contact the local MNR district office to determine:

- If the resulting occurrence(s) are, in fact, within or adjacent to the subject lands. If not, then no further work is necessary; and
- if detailed habitat mapping already exists for the occurrence(s). If not, proceed to Step 3. If so, then proceed to Step 4.

### ***Step 3 – Determine and map significant portions of habitat of endangered, rare and threatened species***

The approval authority or applicant will contact MNR to:

- determine whether more detailed information is needed on the species occurrence located on or adjacent to the subject lands;
- determine whether additional studies are required to confirm population status of the identified species; and,
- determine, map and approve the extent of its significant portions of habitat.

Step 3 will result in the mapping of significant habitat and a determination of where the proposed development or site alteration is located in relation to the significant portions of habitat of endangered, rare and threatened species. If significant portions of habitat are identified within the proposed development or site alteration, then the proposed development or site alteration is not permitted. If it is located within 120 metres of significant portions of habitat, proceed to Step 4.

**Step 4 – Determine the appropriate vegetation protection zone**

The applicant will undertake a natural heritage evaluation that:

- considers whether the nature and type of the proposal is such that it could adversely affect the population status of the species and its significant portions of habitat; and,
- includes a detailed mitigation plan to ensure no adverse effects occur on the identified species or its significant portions of habitat.

The natural heritage evaluation will result in a recommendation for a vegetation protection zone that will be reviewed and approved by the approval authority.

No development or site alteration is permitted in the significant portions of habitat of endangered, rare and threatened species except as provided for in subsection 22(2) of the ORMCP.

*Note: In many instances, protected key natural heritage features and their associated vegetation protection zones may already afford adequate protection of the endangered, rare and threatened species habitat in question. In other cases, the endangered, rare and threatened species habitat will require a larger vegetation protective zone. In some cases, MNR may request that there be further studies on a particular species or its habitat requirements before recommending protective measures for an endangered, rare and threatened species.*

## 7 References

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Natural heritage features of the Oak Ridges Moraine. Draft Report. Ontario Ministry of Natural Resources, Aurora District, Aurora, Ont. 161p.
- Riley, J., and P. Mohr. 1994.  
The natural heritage of southern Ontario's settled landscapes. Ontario Ministry of Natural Resources, Southern Region, Aurora, Ont. 78p.
- Varga, S., D. Leadbeater, J. Webber, J. Kaiser, B. Crins, J. Kamstra, D. Banville, E. Ashley, G. Miller, C. Kingsley, C. Jacobsen, K. Mewa, L. Tebby, E. Mosley and E. Zajc. 2000.  
Distribution and status of the vascular plants of the Greater Toronto Area. Draft Report. Ontario Ministry of Natural Resources, Aurora District, Aurora, Ont. 103p.
- Wilson, E.O. 1992.  
The diversity of life. Belknap Press of Harvard University Press. 424p.



## Appendix A

Note: These lists change frequently and therefore readers should consult the MNR websites or MNR staff for the most up-to-date list. These lists will be evaluated and updated periodically

### Appendix A.1

#### List of Rare Vascular Plants on the Oak Ridges Moraine, Excluding Provincially Rare species

Vascular Plants - Moraine Rare Species (388 Species)

| CODE     | Scientific Name                          | Common Name             |
|----------|--|-------------------------|
| ACE PENS | <i>Acer pensylvanicum</i>                | Striped Maple           |
| ACE NIGR | <i>Acer saccharum</i> ssp. <i>nigrum</i> | Black Maple             |
| ACO AMER | <i>Acorus americanus</i>                 | Sweetflag               |
| AGA TENU | <i>Agalinis tenuifolia</i>               | Slender-leaved Agalinis |
| AGA PAUP | <i>Agalinis paupercula</i>               | Small-flowered Agalinis |
| AGO PERE | <i>Agrostis perennans</i>                | Autumn Bent Grass       |
| AGR PUBE | <i>Agrimonia pubescens</i>               | Downy Agrimony          |
| ALO AEQU | <i>Alopecurus aequalis</i>               | Short-awned Foxtail     |
| AME ALNI | <i>Amelanchier alnifolia</i>             | Saskatoon Berry         |
| ARE BULB | <i>Arethusa bulbosa</i>                  | Dragon's Mouth          |
| AND GERA | <i>Andropogon gerardii</i>               | Big Bluestem            |
| AND POLI | <i>Andromeda polifolia</i>               | Bog Rosemary            |
| AND SEPT | <i>Androsace septentrionalis</i>         | Northern Androsace      |
| ANE AMER | <i>Anemone americana</i>                 | Round-lobed Hepatica    |
| ANE QUIN | <i>Anemone quinquefolia</i>              | Wood Anemone            |
| ANG ATRO | <i>Angelica atropurpurea</i>             | Great Angelica          |
| API AMER | <i>Apios americana</i>                   | Groundnut               |
| ARA CANA | <i>Arabis canadensis</i>                 | Sticklepod              |
| ARA DIVA | <i>Arabis divaricarpa</i>                | Divaricate Rock-cress   |
| ARA GLAB | <i>Arabis glabra</i>                     | Tower Rock-cress        |
| ARA HIRS | <i>Arabis hirsuta</i>                    | Hairy Rock-cress        |
| ARC PUSI | <i>Arceuthobium pusillum</i>             | Dwarf Mistletoe         |
| ARC UVAU | <i>Arctostaphylos uva-ursi</i>           | Common Bearberry        |
| ARO MELA | <i>Aronia melanocarpa</i>                | Black Chokeberry        |
| ART CAMP | <i>Artemisia campestris</i>              | Tall Wormwood           |
| ASC EXAL | <i>Asclepias exaltata</i>                | Poke Milkweed           |
| ASC TUBE | <i>Asclepias tuberosa</i>                | Butterfly-weed          |
| ASP PLAT | <i>Asplenium platyneuron</i>             | Ebony Spleenwort        |
| AST BORE | <i>Aster borealis</i>                    | Rush Aster              |
| AST CANA | <i>Astragalus canadensis</i>             | Canada Milkvetch        |
| AST CILI | <i>Aster ciliolatus</i>                  | Lindley's Aster         |
| AST LAEV | <i>Aster laevis</i>                      | Smooth Aster            |
| AST ONTA | <i>Aster ontarionis</i>                  | Lake Ontario Aster      |
| AST PILO | <i>Aster pilosus</i>                     | Hairy Aster             |
| AST UMBE | <i>Aster umbellatus</i>                  | Flat-topped Aster       |
| BET PUMI | <i>Betula pumila</i>                     | Swamp Birch             |
| BID DISC | <i>Bidens discoideus</i>                 | Small Beggar-ticks      |
| BID VULG | <i>Bidens vulgatus</i>                   | Tall Beggar-ticks       |
| BOT DISS | <i>Botrychium dissectum</i>              | Cut-leaved Grape Fern   |
| BOT MATR | <i>Botrychium matricariifolium</i>       | Matricary Grape Fern    |

|          |   |                          |
|----------|---|--------------------------|
| BOT MULT | <i>Botrychium multifidum</i>              | Leathery Grape Fern      |
| BOT SIMP | <i>Botrychium simplex</i>                 | Least Moonwort           |
| BRA EREC | <i>Brachyelytrum erectum</i>              | Bearded Short-husk       |
| BRA SCHR | <i>Brasenia schreberi</i>                 | Water-shield             |
| BRO KALM | <i>Bromus kalmii</i>                      | Kalm's Brome             |
| BRO LATI | <i>Bromus latiglumis</i>                  | Broad-glumed Brome       |
| BRO PUBE | <i>Bromus pubescens</i>                   | Hairy Brome              |
| CAL SPIT | <i>Calystegia spithamea</i>               | Low Bindweed             |
| CAL STRI | <i>Calamagrostis stricta</i>              | Narrow Reed Grass        |
| CAL TUBE | <i>Calopogon tuberosus</i>                | Grass Pink               |
| CAM APAR | <i>Campanula aparinoides</i>              | Marsh Bellflower         |
| CAM ROTU | <i>Campanula rotundifolia</i>             | Harebell                 |
| CAR ALOP | <i>Carex alopecoidea</i>                  | Foxtail Sedge            |
| CAR AQUA | <i>Carex aquatilis</i>                    | Aquatic Sedge            |
| CAR ATHE | <i>Carex atherodes</i>                    | Awned Sedge              |
| CAR BACK | <i>Carex backii</i>                       | Back's Sedge             |
| CAR BREV | <i>Carex brevior</i>                      | Plains Oval Sedge        |
| CAR BROM | <i>Carex bromoides</i>                    | Bromelike Sedge          |
| CAR BRUN | <i>Carex brunnescens</i>                  | Brownish Sedge           |
| CAR CANE | <i>Carex canescens</i>                    | Silvery Sedge            |
| CAR CAPI | <i>Carex capillaris</i>                   | Hair-like Sedge          |
| CAR CAST | <i>Carex castanea</i>                     | Tufted Sedge             |
| CAR CEP1 | <i>Carex cephaloidea</i>                  | Thin-leaved Sedge        |
| CAR CEP2 | <i>Carex cephalophora</i>                 | Oval-headed Sedge        |
| CAR CHOR | <i>Carex chordorrhiza</i>                 | Creeping Sedge           |
| CAR CONC | <i>Cardamine concatenata</i>              | Cut-leaved Toothwort     |
| CAR CRAW | <i>Carex crawfordii</i>                   | Crawford's Sedge         |
| CAR CRYP | <i>Carex cryptolepis</i>                  | Small Yellow Sedge       |
| CAR DEBI | <i>Carex debilis</i>                      | White Edged Sedge        |
| CAR DIGI | <i>Carex digitalis</i>                    | Narrow-leaved Wood Sedge |
| CAR DOUG | <i>Cardamine douglassii</i>               | Purple Cress             |
| CAR ECHI | <i>Carex echinata</i>                     | Little Prickly Sedge     |
| CAR HIRT | <i>Carex hirtifolia</i>                   | Pubescent Sedge          |
| CAR LASI | <i>Carex lasiocarpa</i>                   | Slender Sedge            |
| CAR LAXI | <i>Carex laxiculmis</i>                   | Spreading Sedge          |
| CAR LIMO | <i>Carex limosa</i>                       | Mud Sedge                |
| CAR LURI | <i>Carex lurida</i>                       | Bottle-brush Sedge       |
| CAR MAGE | <i>Carex magellanica</i>                  | Stunted Sedge            |
| CAR MERR | <i>Carex merritt-fernaldii</i>            | Merritt Fernald's Sedge  |
| CAR MOLE | <i>Carex molesta</i>                      | Troublesome Sedge        |
| CAR MUHL | <i>Carex muhlenbergii</i>                 | Muhlenberg's Sedge       |
| CAR OVAT | <i>Carya ovata</i>                        | Shagbark Hickery         |
| CAR PALL | <i>Carex pallescens</i>                   | Pale Sedge               |
| CAR PELL | <i>Carex pellita</i>                      | Woolly Sedge             |
| CAR PRAI | <i>Carex prairea</i>                      | Prairie Sedge            |
| CAR PRAT | <i>Cardamine pratensis</i>                | Cuckoo-flower            |
| CAR RICH | <i>Carex richardsonii</i>                 | Richardson's Sedge       |
| CAR SCOP | <i>Carex scoparia</i>                     | Broom Sedge              |
| CAR SICC | <i>Carex siccata</i>                      | Hay Sedge                |
| CAR SPRE | <i>Carex spengelii</i>                    | Spengel's Sedge          |
| CAR SYCH | <i>Carex sychnocephala</i>                | Long-beaked Sedge        |
| CAR TENU | <i>Carex tenuiflora</i>                   | Sparse-flowered Sedge    |
| CAR TON1 | <i>Carex tonsa</i> var. <i>rugosperma</i> | Red-seeded Sedge         |
| CAR TON2 | <i>Carex tonsa</i> var. <i>tonsa</i>      | Dark Green Sedge         |
| CAR TRIB | <i>Carex tribuloides</i>                  | Blunt Broom Sedge        |

|          |                                  |                              |
|----------|----------------------------------|------------------------------|
| CAR VESI | <i>Carex vesicaria</i>           | Inflated Sedge               |
| CAR WOOD | <i>Carex woodii</i>              | Wood's Sedge                 |
| CAS COCC | <i>Castilleja coccinea</i>       | Indian Paintbrush            |
| CEA AMER | <i>Ceanothus americanus</i>      | New Jersey Tea               |
| CEA HERB | <i>Ceanothus herbaceus</i>       | Narrow-leaved New Jersey Tea |
| CEP OCCI | <i>Cephalanthus occidentalis</i> | Eastern Buttonbush           |
| CER ARVE | <i>Cerastium arvense</i>         | Field Chickweed              |
| CER DEME | <i>Ceratophyllum demersum</i>    | Common Coontail              |
| CHA CALY | <i>Chamaedaphne calyculata</i>   | Leatherleaf                  |
| CHE CAPI | <i>Chenopodium capitatum</i>     | Strawberry-blite             |
| CIN ARUN | <i>Cinna arundinacea</i>         | Wood Reed Grass              |
| CIR DISC | <i>Cirsium discolor</i>          | Field Thistle                |
| CIR MUTI | <i>Cirsium muticum</i>           | Swamp Thistle                |
| CLA VIRG | <i>Claytonia virginica</i>       | Virginia Spring Beauty       |
| COL CANA | <i>Collinsonia canadensis</i>    | Horsebalm                    |
| COM PERE | <i>Comptonia peregrina</i>       | Sweet-fern                   |
| COM UMBE | <i>Comandra umbellata</i>        | Bastard Toad-flax            |
| CON AMER | <i>Conopholis americana</i>      | Squawroot                    |
| COR AMER | <i>Corylus americana</i>         | American Hazel               |
| COR AMOM | <i>Cornus amomum</i>             | Silky Dogwood                |
| COR AURE | <i>Corydalis aurea</i>           | Golden Corydalis             |
| COR MACU | <i>Corallorhiza maculata</i>     | Spotted Coral-root           |
| COR TRIF | <i>Corallorhiza trifida</i>      | Early Coral-root             |
| CRA FLAB | <i>Crataegus flabellata</i>      | Fan-leaved Hawthorn          |
| CAR SCHU | <i>Crataegus schuettei</i>       | Schuetze's Hawthorn          |
| CRA SUBM | <i>Crataegus submollis</i>       | Emerson's Hawthorn           |
| CUS GRON | <i>Cuscuta gronovii</i>          | Swamp Dodder                 |
| CYN BORE | <i>Cynoglossum boreale</i>       | Northern Wild Comfrey        |
| CYP ACAU | <i>Cypripedium acaule</i>        | Moccasin Flower              |
| CYP BIPA | <i>Cyperus bipartitus</i>        | River Cyperus                |
| CYP CALC | <i>Cypripedium calceolus</i>     | Small Yellow Lady's Slipper  |
| CYP ENGE | <i>Cyperus engelmannii</i>       | Fragrant Umbrella Sedge      |
| CYP LUPU | <i>Cyperus lupulinus</i>         | Slender Cyperus              |
| CYP REGI | <i>Cypripedium reginae</i>       | Showy Lady's Slipper         |
| DAL REPE | <i>Dalibarda repens</i>          | Dewdrop                      |
| DEC VERT | <i>Decodon verticillatus</i>     | Water-willow                 |
| DEN PUNC | <i>Dennstaedtia punctilobula</i> | Hay-scented Fern             |
| DES FLEX | <i>Deschampsia flexuosa</i>      | Common Hairgrass             |
| DES NUDI | <i>Desmodium nudiflorum</i>      | Naked-flowered Tick-trefoil  |
| DES PANI | <i>Desmodium paniculatum</i>     | Panicled Tick-trefoil        |
| DIC CUCU | <i>Dicentra cucullaria</i>       | Dutchman's-breeches          |
| DIP PYCN | <i>Diplazium pycnocarpon</i>     | Glade Fern                   |
| DIP TRIS | <i>Diphasiastrum tristachyum</i> | Blue Ground-cedar            |
| DRO ROTU | <i>Drosera rotundifolia</i>      | Round-leaved Sundew          |
| DRY FILI | <i>Dryopteris filix-mas</i>      | Male Fern                    |
| DRY GOLD | <i>Dryopteris goldiana</i>       | Goldie's Fern                |
| DUL ARUN | <i>Dulichium arundinaceum</i>    | Three-way Sedge              |
| ECH WIEG | <i>Echinochloa wiegandii</i>     | Western Barnyard Grass       |
| ELE ACIC | <i>Eleocharis acicularis</i>     | Needle Spike-rush            |
| ELE INTE | <i>Eleocharis intermedia</i>     | Intermediate Spike-rush      |
| ELO CANA | <i>Elodea canadensis</i>         | Canada Waterweed             |
| ELY RIPA | <i>Elymus riparius</i>           | River-bank Wild Rye          |
| ELY TRAC | <i>Elymus trachycaulus</i>       | Slender Wheat Grass          |
| EPI COLO | <i>Epilobium coloratum</i>       | Purple-leaved Willow-herb    |

|          |                                    |                                 |
|----------|------------------------------------|---------------------------------|
| EPI REPE | <i>Epigaea repens</i>              | Trailing Arbutus                |
| EPI STRI | <i>Epilobium strictum</i>          | Downy Willow-herb               |
| EQU PALU | <i>Equisetum palustre</i>          | Marsh Horsetail                 |
| EQU PRAT | <i>Equisetum pratense</i>          | Meadow Horsetail                |
| EQU SYLV | <i>Equisetum sylvaticum</i>        | Woodland Horsetail              |
| EQU VARI | <i>Equisetum variegatum</i>        | Variiegated Scouring-rush       |
| ERA HYPN | <i>Eragrostis hypnoides</i>        | Tall Love Grass                 |
| ERI GRAC | <i>Eriophorum gracile</i>          | Slender Cotton-grass            |
| ERI PULC | <i>Erigeron pulchellus</i>         | Robin's-plantain                |
| ERI TENE | <i>Eriophorum tenellum</i>         | Rough Cotton-grass              |
| ERI VAGI | <i>Eriophorum vaginatum</i>        | Dense Cotton-grass              |
| ERI VIRG | <i>Eriophorum virginicum</i>       | Tawny Cotton-grass              |
| ERI VIRI | <i>Eriophorum viridi-carinatum</i> | Thin-leaved Cotton-grass        |
| EUO OBOV | <i>Euonymus obovata</i>            | Running Strawberry-bush         |
| GAL BORE | <i>Galium boreale</i>              | Northern Bedstraw               |
| GAL CIRC | <i>Galium circaezans</i>           | White Wild Licorice             |
| GAL LABR | <i>Galium labradoricum</i>         | Labrador Marsh Bedstraw         |
| GAL OBTU | <i>Galium obtusum</i>              | Blunt-leaved Bedstraw           |
| GAL SPEC | <i>Galearis spectabilis</i>        | Showy Orchis                    |
| GAU HISP | <i>Gaultheria hispidula</i>        | Creeping Snowberry              |
| GAY BACC | <i>Gaylussacia baccata</i>         | Black Huckleberry               |
| GEN ANDR | <i>Gentiana andrewsii</i>          | Closed Gentian                  |
| GEN CRIN | <i>Gentianopsis crinita</i>        | Fringed Gentian                 |
| GER MACU | <i>Geranium maculatum</i>          | Wild Geranium                   |
| GEU LACI | <i>Geum laciniatum</i>             | Rough Avens                     |
| GEU TRIF | <i>Geum triflorum</i>              | Prairie Smoke                   |
| GLY CANA | <i>Glyceria canadensis</i>         | Rattlesnake Manna Grass         |
| GLY SEPT | <i>Glyceria septentrionalis</i>    | Floating Manna Grass            |
| GNA MACO | <i>Gnaphalium macounii</i>         | Viscid Cudweed                  |
| GNA OBTU | <i>Gnaphalium obtusifolium</i>     | Fragrant Cudweed                |
| GOO PUBE | <i>Goodyera pubescens</i>          | Downy Rattlesnake-plantain      |
| GOO TESS | <i>Goodyera tessellata</i>         | Checkered Rattlesnake-plantain  |
| GRA NEGL | <i>Gratiola neglecta</i>           | Clammy Hedge-hyssop             |
| HAC DEFL | <i>Hackelia deflexa</i>            | Spurred Stickseed               |
| HAM VIRG | <i>Hamamelis virginiana</i>        | Witch-hazel                     |
| HED HISP | <i>Hedeoma hispidum</i>            | Rough Pennyroyal                |
| HED LONG | <i>Hedyotis longifolia</i>         | Long-leaved Bluets              |
| HEL BICK | <i>Helianthemum bicknellii</i>     | Bicknell's Frostweed            |
| HEL CANA | <i>Helianthemum canadense</i>      | Long-branched Frostweed         |
| HEL DIVA | <i>Helianthus divaricatus</i>      | Woodland Sunflower              |
| HEL HELI | <i>Heliopsis helianthoides</i>     | Fake Sunflower                  |
| HEL STRU | <i>Helianthus strumosus</i>        | Pale-leaved Sunflower           |
| HET DUBI | <i>Heteranthera dubia</i>          | Water Star-grass                |
| HIE KALM | <i>Hieracium kalmii</i>            | Canada Hawkweed                 |
| HYP ASCY | <i>Hypericum ascyron</i>           | Great St. John's-wort           |
| HYP MAJU | <i>Hypericum majus</i>             | Larger Canadian St. John's-wort |
| HYP PUNC | <i>Hypericum punctatum</i>         | Spotted St. John's-wort         |
| IMP PALL | <i>Impatiens pallida</i>           | Pale Jewelweed                  |
| JUG NIGR | <i>Juglans nigra</i>               | Black Walnut                    |
| JUN ALPI | <i>Juncus alpinoarticulatus</i>    | Richardson's Rush               |
| JUN BRAC | <i>Juncus brachycephalus</i>       | Small-headed Rush               |
| JUN BREV | <i>Juncus brevicaudatus</i>        | Short-tailed Rush               |
| JUN COMM | <i>Juniperus communis</i>          | Common Juniper                  |
| JUN VIRG | <i>Juniperus virginiana</i>        | Eastern Red Cedar               |

|          |                               |                             |
|----------|-------------------------------|-----------------------------|
| KAL POLI | <i>Kalmia polifolia</i>       | Bog Laurel                  |
| LAT PALU | <i>Lathyrus palustris</i>     | Marsh Vetchling             |
| LEC INTE | <i>Lechea intermedia</i>      | Intermediate Pinweed        |
| LED GROE | <i>Ledum groenlandicum</i>    | Labrador-tea                |
| LEE VIRG | <i>Leersia virginica</i>      | White Cut Grass             |
| LES CAPI | <i>Lespedeza capitata</i>     | Round-headed Bush-clover    |
| LIL MICH | <i>Lilium michiganense</i>    | Michigan Lily               |
| LIL PHIL | <i>Lilium philadelphicum</i>  | Wood Lily                   |
| LIN BENZ | <i>Lindera benzoin</i>        | Spicebush                   |
| LIP LOES | <i>Liparis loeselii</i>       | Loesel's Twayblade          |
| LIS CORD | <i>Listera cordata</i>        | Heartleaf Twayblade         |
| LOB CARD | <i>Lobelia cardinalis</i>     | Cardinal-flower             |
| LOB KALM | <i>Lobelia kalmii</i>         | Kalm's Lobelia              |
| LOB SPIC | <i>Lobelia spicata</i>        | Pale-spiked Lobelia         |
| LON HIRS | <i>Lonicera hirsuta</i>       | Hairy Honeysuckle           |
| LON OBLO | <i>Lonicera oblongifolia</i>  | Swamp Fly Honeysuckle       |
| LUD PALU | <i>Ludwigia palustris</i>     | Marsh Purslane              |
| LUZ ACUM | <i>Luzula acuminata</i>       | Hairy Woodrush              |
| LYC ANNO | <i>Lycopodium annotinum</i>   | Stiff Club-moss             |
| LYC CLAV | <i>Lycopodium clavatum</i>    | Running Club-moss           |
| LYC HICK | <i>Lycopodium hickeyi</i>     | Hickey's Ground-pine        |
| LYC OBSC | <i>Lycopodium obscurum</i>    | Ground-pine                 |
| LYS QUAD | <i>Lysimachia quadrifolia</i> | Whorled Loosestrife         |
| LYS TERR | <i>Lysimachia terrestris</i>  | Swamp Loosestrife           |
| MAL MONO | <i>Malaxis monophyllos</i>    | White Adder's-mouth         |
| MAL UNIF | <i>Malaxis unifolia</i>       | Green Adder's-mouth         |
| MEG BECK | <i>Megalodonta beckii</i>     | Water-marigold              |
| MEL LINE | <i>Melampyrum lineare</i>     | Cow-wheat                   |
| MEL SMIT | <i>Melica smithii</i>         | Smith's Melic Grass         |
| MEN CANA | <i>Menispermum canadense</i>  | Moonseed                    |
| MEN TRIF | <i>Menyanthes trifoliata</i>  | Bog Buckbean                |
| MIL EFFU | <i>Milium effusum</i>         | Wood Millet                 |
| MON UNIF | <i>Moneses uniflora</i>       | One-flowered Pyrola         |
| MUH FRON | <i>Muhlenbergia frondosa</i>  | Leafy Satin Grass           |
| MUH GLOM | <i>Muhlenbergia glomerata</i> | Wild Timothy                |
| MYR GALE | <i>Myrica gale</i>            | Sweet Gale                  |
| MYR SIBI | <i>Myriophyllum sibiricum</i> | Pale Water-milfoil          |
| NEM MUCR | <i>Nemopanthus mucronatus</i> | Mountain-holly              |
| NUP VARI | <i>Nuphar variegata</i>       | Bullhead Pond Lily          |
| NYM ODOR | <i>Nymphaea odorata</i>       | White Water-lily            |
| OEN PERE | <i>Oenothera perennis</i>     | Small Sundrops              |
| ORO UNIF | <i>Orobanche uniflora</i>     | One-flowered Cancerroot     |
| ORY PUNG | <i>Oryzopsis pungens</i>      | Slender Mountain-rice       |
| ORY RACE | <i>Oryzopsis racemosa</i>     | Black-fruited Mountain-rice |
| OSM CLAY | <i>Osmunda claytoniana</i>    | Interrupted Fern            |
| OSM LONG | <i>Osmorhiza longistylis</i>  | Anise-root                  |
| OXA ACET | <i>Oxalis acetosella</i>      | Common Wood Sorrel          |
| PAN COLU | <i>Panicum columbianum</i>    | Columbian Panic Grass       |
| PAN DEPA | <i>Panicum depauperatum</i>   | Starved Panic Grass         |
| PAN LATI | <i>Panicum latifolium</i>     | Broad-leaved Panic Grass    |
| PAN LINE | <i>Panicum linearifolium</i>  | Narrow-leaved Panic Grass   |
| PAN OLIG | <i>Panicum oligosanthos</i>   | Few-flowered Panic Grass    |
| PAN TRIF | <i>Panax trifolius</i>        | Dwarf Ginseng               |
| PAN VIRG | <i>Panicum virgatum</i>       | Switch Grass                |

|          |                                  |  |
|----------|----------------------------------|--|
| PAN XANT | <i>Panicum xanthophysum</i>      | Yellow Panic Grass                     |
| PAR GLAU | <i>Parnassia glauca</i>          | American Grass-of-Parnassus            |
| PAR PARV | <i>Parnassia parviflora</i>      | Small-flowered Grass-of-Parnassus      |
| PED CANA | <i>Pedicularis canadensis</i>    | Canada Wood-betony                     |
| PEN DIGI | <i>Penstemon digitalis</i>       | Foxglove Beard-tongue                  |
| PEN HIRS | <i>Penstemon hirsutus</i>        | Hairy Beard-tongue                     |
| PET FRIG | <i>Petasites frigidus</i>        | Palmate-leaved Sweet-coltsfoot         |
| PHE CONN | <i>Phegopteris connectilis</i>   | Northern Beech Fern                    |
| PHL DIVA | <i>Phlox divaricata</i>          | Wild Blue Phlox                        |
| PHY AMER | <i>Phytolacca americana</i>      | Pokeweed                               |
| PHY OPUL | <i>Physocarpus opulifolius</i>   | Ninebark                               |
| PHY VIRG | <i>Physalis virginiana</i>       | Virginia Ground-cherry                 |
| PIC MARI | <i>Picea mariana</i>             | Black Spruce (native populations only) |
| PIL FONT | <i>Pilea fontana</i>             | Spring Clearweed                       |
| PIN RESI | <i>Pinus resinosa</i>            | Red Pine (native populations only)     |
| PLA HOOK | <i>Platanthera hookeri</i>       | Hooker's Orchid                        |
| PLA LACE | <i>Platanthera lacera</i>        | Ragged Fringed Orchid                  |
| PLA OBTU | <i>Platanthera obtusata</i>      | Small Northern Bog Orchid              |
| PLA PSYC | <i>Platanthera psycodes</i>      | Smaller Purple-finged Orchid           |
| POA SALT | <i>Poa saltuensis</i>            | Two-rayed Poa                          |
| POG OPHI | <i>Pogonia ophioglossoides</i>   | Rose Pogonia                           |
| POL CILI | <i>Polygonum cilinode</i>        | Fringed Bindweed                       |
| POL DOUG | <i>Polygonum douglassii</i>      | Douglas' Knotweed                      |
| POL HYDR | <i>Polygonum hydropiperoides</i> | Mild Water-pepper                      |
| POL LONC | <i>Polystichum lonchitis</i>     | Holly Fern                             |
| POL PENS | <i>Polygonum pensylvanicum</i>   | Pink Knotweed                          |
| POL POLY | <i>Polygala polygama</i>         | Racemed Milkwort                       |
| POL PUNC | <i>Polygonum punctatum</i>       | White Water-pepper                     |
| POL SENE | <i>Polygala senega</i>           | Seneca-snakeroot                       |
| POL VERT | <i>Polygala verticillata</i>     | Whorled Milkwort                       |
| PON CORD | <i>Pontederia cordata</i>        | Pickerelweed                           |
| POT AMPL | <i>Potamogeton amplifolius</i>   | Large-leaved Pondweed                  |
| POT ARGU | <i>Potentilla arguta</i>         | Tall Cinquefoil                        |
| POT BERC | <i>Potamogeton berchtoldii</i>   | Berchtold's Pondweed                   |
| POT EPIH | <i>Potamogeton epihydrus</i>     | Ribbonleaf Pondweed                    |
| POT GRAM | <i>Potamogeton gramineus</i>     | Variable-leaved Pondweed               |
| POT ILLI | <i>Potamogeton illinoensis</i>   | Illinois Pondweed                      |
| POT NODO | <i>Potamogeton nodosus</i>       | Knotty Pondweed                        |
| POT PALU | <i>Potentilla palustris</i>      | Marsh Cinquefoil                       |
| POT RICH | <i>Potamogeton richardsonii</i>  | Richardson's Pondweed                  |
| POT SIMP | <i>Potentilla simplex</i>        | Old-field Cinquefoil                   |
| POT ZOST | <i>Potamogeton zosteriformis</i> | Flat-stemmed Pondweed                  |
| PRU PUMI | <i>Prunus pumila</i>             | Susquehanna Sand Cherry                |
| PYC VIRG | <i>Pycnanthemum virginianum</i>  | Virginia Mountain-mint                 |
| PYR AMER | <i>Pyrola americana</i>          | Round-leaved Pyrola                    |
| PYR CHLO | <i>Pyrola chlorantha</i>         | Greenish Pyrola                        |
| QUE VELU | <i>Quercus velutina</i>          | Black Oak                              |
| RAN AQUA | <i>Ranunculus aquatilis</i>      | White Water Crowfoot                   |
| RAN FASC | <i>Ranunculus fascicularis</i>   | Early Buttercup                        |
| RAN FLAB | <i>Ranunculus flabellaris</i>    | Yellow Water Crowfoot                  |
| RAN PENS | <i>Ranunculus pensylvanicus</i>  | Bristly Buttercup                      |
| RHU AROM | <i>Rhus aromatica</i>            | Fragrant Sumac                         |
| RHU GLAB | <i>Rhus glabra</i>               | Smooth Sumac                           |
| RHU RADI | <i>Rhus radicans</i>             | Climbing Poison-ivy                    |

|          |                                   |                             |
|----------|-----------------------------------|-----------------------------|
| RIB GLAN | <i>Ribes glandulosum</i>          | Skunk Currant               |
| RIB HIRT | <i>Ribes hirtellum</i>            | Smooth Gooseberry           |
| RIB HUDS | <i>Ribes hudsonianum</i>          | Northern Wild Black Current |
| RIB LACU | <i>Ribes lacustre</i>             | Swamp Black Currant         |
| ROS ACIC | <i>Rosa acicularis</i>            | Prickly Rose                |
| ROS CARO | <i>Rosa carolina</i>              | Pasture Rose                |
| ROS PALU | <i>Rosa palustris</i>             | Marsh Rose                  |
| RUB CANA | <i>Rubus canadensis</i>           | Smooth Blackberry           |
| RUB FLAG | <i>Rubus flagellaris</i>          | Northern Dewberry           |
| RUD LACI | <i>Rudbeckia laciniata</i>        | Cut-leaf Coneflower         |
| SAG CUNE | <i>Sagittaria cuneata</i>         | Wedgeleaf Arrowhead         |
| SAL CAND | <i>Salix candida</i>              | Hoary Willow                |
| SAL HUMI | <i>Salix humilis</i>              | Upland Willow               |
| SAL NIGR | <i>Salix nigra</i>                | Black Willow                |
| SAL PEDI | <i>Salix pedicellaris</i>         | Bog Willow                  |
| SAL PYRI | <i>Salix pyrifolia</i>            | Balsam Willow               |
| SAL SERI | <i>Salix serissima</i>            | Autumn Willow               |
| SAN ODOR | <i>Sanicula odorata</i>           | Clustered Sanicle           |
| SAR PURP | <i>Sarracenia purpurea</i>        | Pitcher-plant               |
| SAX VIRG | <i>Saxifraga virginensis</i>      | Early Saxifrage             |
| SCH PALU | <i>Scheuchzeria palustris</i>     | Marsh Scheuchzeria          |
| SCH SCOP | <i>Schizachyrium scoparium</i>    | Little Bluestem             |
| SCI ACUT | <i>Scirpus acutus</i>             | Hard-stemmed Bulrush        |
| SCI FLUV | <i>Scirpus fluviatilis</i>        | River Bulrush               |
| SCI PEND | <i>Scirpus pendulus</i>           | Lined Bulrush               |
| SCR LANC | <i>Scrophularia lanceolata</i>    | Lance-leaved Figwort        |
| SEL RUPE | <i>Selaginella rupestris</i>      | Rock Spike-moss             |
| SEN AURE | <i>Senecio aureus</i>             | Golden Ragwort              |
| SIC ANGU | <i>Sicyos angulatus</i>           | One-seeded Bur-cucumber     |
| SIL ANTI | <i>Silene antirrhina</i>          | Sleepy Catchfly             |
| SOL BICO | <i>Solidago bicolor</i>           | Silver-rod                  |
| SOL HISP | <i>Solidago hispida</i>           | Hairy Goldenrod             |
| SOL PATU | <i>Solidago patula</i>            | Rough-leaved Goldenrod      |
| SOL SQUA | <i>Solidago squarrosa</i>         | Stout Goldenrod             |
| SOL ULIG | <i>Solidago uliginosa</i>         | Bog Goldenrod               |
| SOR AMER | <i>Sorbus americana</i>           | American Mountain-ash       |
| SOR NUTA | <i>Sorghastrum nutans</i>         | Indian Grass                |
| SPA EURY | <i>Sparganium eurycarpum</i>      | Giant Bur-reed              |
| SPA PECT | <i>Spartina pectinata</i>         | Tall Cord Grass             |
| SPA NATA | <i>Sparganium natans</i>          | Small Bur-reed              |
| SPI CASE | <i>Spiranthes casei</i>           | Case's Ladies' Tresses      |
| SPI CERN | <i>Spiranthes cernua</i>          | Nodding Ladies' Tresses     |
| SPI LACE | <i>Spiranthes lacera</i>          | Southern Ladies' Tresses    |
| SPI ROMA | <i>Spiranthes romanzoffiana</i>   | Hooded Ladies' Tresses      |
| SPI TOME | <i>Spiraea tomentosa</i>          | Hardhack                    |
| STA PALU | <i>Stachys palustris</i>          | Marsh Hedge-nettle          |
| STA TRIF | <i>Staphylea trifolia</i>         | Bladder-nut                 |
| STE LONG | <i>Stellaria longifolia</i>       | Long-leaved Stichwort       |
| SYM FOET | <i>Symplocarpus foetidus</i>      | Skunk-cabbage               |
| TAE INTE | <i>Taenidia integerrima</i>       | Yellow Pimpernel            |
| TEU CANA | <i>Teucrium canadense</i>         | Wood Germander              |
| THE NOVE | <i>Thelypteris noveboracensis</i> | New York Fern               |
| TRI AURA | <i>Triosteum aurantiacum</i>      | Wild Coffee                 |
| TRI BRAC | <i>Trichostema brachiatum</i>     | False Pennyroyal            |

|          |                                |                         |
|----------|--------------------------------|-------------------------|
| TRI CERN | <i>Trillium cernuum</i>        | Nodding Trillium        |
| TRI UNDU | <i>Trillium undulatum</i>      | Painted Trillium        |
| ULM THOM | <i>Ulmus thomasii</i>          | Rock Elm                |
| UTR INTE | <i>Utricularia intermedia</i>  | Flat-leaved Bladderwort |
| UTR MINO | <i>Utricularia minor</i>       | Small Bladderwort       |
| UTR VULG | <i>Utricularia vulgaris</i>    | Common Bladderwort      |
| VAC ANGU | <i>Vaccinium angustifolium</i> | Lowbush Blueberry       |
| VAC MACR | <i>Vaccinium macrocarpon</i>   | Large Cranberry         |
| VAC MYRT | <i>Vaccinium myrtilloides</i>  | Velvet-leaf Blueberry   |
| VAC OXYC | <i>Vaccinium oxycoccos</i>     | Small Cranberry         |
| VAL AMER | <i>Vallisneria americana</i>   | Tape-grass              |
| VER SCUT | <i>Veronica scutellata</i>     | Marsh Speedwell         |
| VIB CASS | <i>Viburnum cassinoides</i>    | Northern Wild-raisin    |
| VIB LANT | <i>Viburnum lantanoides</i>    | Hobblebush              |
| VIB RAFI | <i>Viburnum rafinesquianum</i> | Downy Arrow-wood        |
| VIO ADUN | <i>Viola adunca</i>            | Hooked-spur Violet      |
| VIO SAGI | <i>Viola sagittata</i>         | Arrow-leaved Violet     |
| WOL BORE | <i>Wolffia borealis</i>        | Northern Water-meal     |
| WOL COLU | <i>Wolffia columbiana</i>      | Columbia Water-meal     |
| ZAN AMER | <i>Zanthoxylum americanum</i>  | Prickly-ash             |
| ZAN PALU | <i>Zannichellia palustris</i>  | Horned Pondweed         |
| ZIG ELEG | <i>Zigadenus elegans</i>       | White Camass            |
| ZIZ AURE | <i>Zizia aurea</i>             | Golden Alexanders       |
| ZIZ PALU | <i>Zizania palustris</i>       | Northern Wild-rice      |



## Appendix A.2

### Provincially Rare Vascular Plants on the Oak Ridges Moraine (26 Species)

| CODE     | Scientific Name                                    | Common Name                 | Status                 |
|----------|--|-----------------------------|------------------------|
| AME AMAB | <i>Amelanchier amabilis</i>                        | Large-flowered<br>Juneberry | Provincially Rare      |
| AZO CARO | <i>Azolla caroliniana</i>                          | Eastern Mosquito Fern       | Provincially Rare      |
| BOT RUGU | <i>Botrychium rugulosum</i>                        | Rugulose Grape Fern         | Provincially Rare      |
| CAR FORM | <i>Carex formosa</i>                               | Handsome Sedge              | Provincially Rare      |
| CAR GRAC | <i>Carex gracilescens</i>                          | Slender Wood Sedge          | Provincially Rare      |
| CAR SCHW | <i>Carex schweinitzii</i>                          | Schweinitz's Sedge          | Provincially Rare      |
| COR ODON | <i>Corallorhiza odontorhiza</i>                    | Autumn Coral-root           | Provincially Rare      |
| CRA CORU | <i>Crataegus corusca</i>                           | Gleaming Hawthorn           | Provincially Rare      |
| EUO ATRO | <i>Euonymus atropurpurea</i>                       | Burning Bush                | Provincially Rare      |
| GEN QUIN | <i>Gentianella quinquefolia</i>                    | Stiff Gentian               | Provincially Rare      |
| HED CAER | <i>Hedyotis caerulea</i>                           | Bluets                      | Provincially Rare      |
| LIA CYLI | <i>Liatris cylindracea</i>                         | Cylindric Blazing Star      | Provincially Rare      |
| LIN SULC | <i>Linum sulcatum</i>                              | Grooved Yellow Flax         | Provincially Rare      |
| LIP LILI | <i>Liparis liliifolia</i>                          | Purple Twayblade            | SARO-listed Endangered |
| LUP PERE | <i>Lupinus perennis</i>                            | Wild Lupine                 | Provincially Rare      |
| MON DIDY | <i>Monarda didyma</i>                              | Oswego-tea                  | Provincially Rare      |
| PAN QUIN | <i>Panax quinquefolius</i>                         | American Ginseng            | SARO-listed Endangered |
| PAN PERL | <i>Panicum perlongum</i>                           | Prolonged Panic Grass       | Provincially Rare      |
| PAN VILL | <i>Panicum villosissimum</i>                       | Hairy Panic Grass           | Provincially Rare      |
| PEL VIRG | <i>Peltandra virginica</i>                         | Green Arrow Arum            | Provincially Rare      |
| PLA BLEP | <i>Platanthera blephariglottis</i>                 | White Fringed Orchid        | Provincially Rare      |
| RAN HISP | <i>Ranunculus hispidus</i> var.<br><i>hispidus</i> | Hispid Buttercup            | Provincially Rare      |
| RAN RHOM | <i>Ranunculus rhomboideus</i>                      | Prairie Buttercup           | Provincially Rare      |
| SOL ARGU | <i>Solidago arguta</i>                             | Sharp-leaved<br>Goldenrod   | Provincially Rare      |
| THA THAL | <i>Thalictrum thalictroides</i>                    | Tall Meadow-rue             | Provincially Rare      |
| VAL SITC | <i>Valeriana sitchensis</i>                        | Swamp Valerian              | Provincially Rare      |

### **Appendix A.3 Rare Breeding Birds on the Oak Ridges Moraine**

Ten breeding bird species on the Oak Ridges Moraine are SARO-listed species at risk, being special concern (SC) or endangered (E) .

Another 51 breeding bird species are considered rare on the Oak Ridges Moraine, being known from 20 or fewer stations.

Common Loon  
Pied-billed Grebe  
Least Bittern (SC)  
American Bittern  
Yellow-crowned Night Heron  
Green-winged Teal  
American Black Duck  
Northern Pintail  
Gadwall  
Hooded Merganser  
Osprey  
Sharp-shinned Hawk  
Cooper's Hawk  
Northern Goshawk  
Red-shouldered Hawk (SC)  
Broad-winged Hawk  
Common Moorhen  
American Coot  
Upland Sandpiper  
Black Tern (SC)  
Barred Owl  
Long-eared Owl  
Short-eared Owl (SC)  
Northern Saw-whet Owl  
Red-headed Woodpecker (SC)  
Yellow-bellied Sapsucker  
Olive-sided Flycatcher  
Yellow-bellied Flycatcher  
Common Raven  
Sedge Wren  
Marsh Wren  
Golden-crowned Kinglet  
Ruby-crowned Kinglet  
Blue-gray Gnatcatcher  
Swainson's Thrush  
Hermit Thrush  
Northern Mockingbird  
Loggerhead Shrike (E)  
Blue-headed Vireo  
Yellow-throated Vireo  
Blue-winged Warbler

Golden-winged Warbler  
Northern Parula  
Magnolia Warbler  
Cape May Warbler  
Black-throated Blue Warbler  
Yellow-rumped Warbler  
Black-throated Green Warbler  
Blackburnian Warbler  
Prairie Warbler  
Cerulean Warbler (SC)  
Prothonotary Warbler (E)  
Louisiana Waterthrush (SC)  
Hooded Warbler  
Canada Warbler  
Dicksissel  
Clay-colored Sparrow  
Henslow's Sparrow (E)  
Dark-eyed Junco  
Western Meadowlark  
Orchard Oriole  
Red Crossbill  
White-winged Crossbill  
Pine Siskin  
Evening Grosbeak

#### **Appendix A.4**

##### **Rare Fish on the Oak Ridges Moraine**

Three fish species on the Oak Ridges Moraine are considered provincially rare (P) with 100 or fewer occurrences in the Province; two of these are SARO-listed species at risk, being special concern (SC) or threatened (T).

American Brook Lamprey (P)  
Northern Brook Lamprey (SC)  
Redside Dace (T)

## **Appendix A.5**

### **Rare Reptiles and Amphibians on the Oak Ridges Moraine**

Seven reptile and amphibian species on the Oak Ridges Moraine are considered SARO-listed species at risk being special concern (SC) or threatened (T). These seven species and another 10 species are also considered rare on the Oak Ridges Moraine, being known from 20 or fewer stations in Site District 6E7, an area centered on the Moraine and an adjacent portion of the Niagara Escarpment.

Mink Frog  
Pickerel Frog  
Bullfrog  
Common Mudpuppy  
Blue-spotted Salamander  
Jefferson Salamander (T)  
Common Map Turtle (SC)  
Smooth Green Snake  
Blanding's Turtle (T)  
Northern Ribbon Snake  
Northern Ringneck Snake  
Eastern Hognose Snake (T)  
Northern Water Snake  
Massasauga (T)  
Northern Redbelly Snake  
Eastern Milk Snake (SC)  
Five-lined Skink (SC)

## **Appendix A.6**

### **Rare Mammals on the Oak Ridges Moraine**

Three mammal species on the Oak Ridges Moraine are considered SARO-listed species at risk, being special concern (SC), threatened (T) or endangered (E).

Another 16 species are considered rare on the Oak Ridges Moraine, being known from 20 or fewer stations.

Southern Bog Lemming  
Pygmy Shrew  
Smoky Shrew  
Water Shrew  
Hairy-tailed Mole  
Northern Long-eared Bat  
Hoary Bat  
Eastern Red Bat  
Southern Flying Squirrel (SC)  
Northern Flying Squirrel  
Woodland Jumping Mouse  
Snowshoe Hare  
Moose  
Fisher  
River Otter

Gray Fox (T)  
American Badger (E)  
Lynx  
Black Bear

## Appendix A.7

### Rare Insects on the Oak Ridges Moraine

#### Butterflies - Provincial or National Species at Risk

##### Provincially Rare

| Common Name         | Scientific Name             |
|---------------------|-----------------------------|
| Sleepy Duskywing    | <i>Erynnis brizo</i>        |
| Olympia Marble      | <i>Euchloe olympia</i>      |
| Hickory Hairstreak  | <i>Satyrium caryaevorum</i> |
| Edward's Hairstreak | <i>Satyrium edwardsii</i>   |

##### Provincially Vulnerable

|                     |                            |
|---------------------|----------------------------|
| West Virginia White | <i>Pieris virginiensis</i> |
|---------------------|----------------------------|

##### Provincially Endangered - Historical Record

|             |                                   |
|-------------|-----------------------------------|
| Karner Blue | <i>Lycaeides melissa samuelis</i> |
|-------------|-----------------------------------|

#### Dragonflies and Damselflies - Provincial Species at Risk

##### Provincially Rare

| Common Name             | Scientific Name                 |
|-------------------------|---------------------------------|
| Eastern Red Damsel      | <i>Amphiagrion saucium</i>      |
| Lilypad Clubtail        | <i>Arigomphus furcifer</i>      |
| Ocellated Darner        | <i>Boyeria grafiana</i>         |
| Delta-spotted Spiketail | <i>Cordulegaster diastotops</i> |
| Twin-spotted Spiketail  | <i>Cordulegaster maculata</i>   |
| Azure Bluet             | <i>Enallagma asperum</i>        |
| Clamp-tipped Emerald    | <i>Somatochlora tenebrosa</i>   |
| Brush-tipped Emerald    | <i>Somatochlora walshii</i>     |
| Williamson's Emerald    | <i>Somatochlora williamsoni</i> |
| Zebra Clubtail          | <i>Sylyrus scuderi</i>          |
| Black Meadowhawk        | <i>Sympetrum danae</i>          |

**Appendix A.8**  
**Provincially Rare Mosses on the Oak Ridges Moraine**

*Aulacomnium heterostichum*  
*Climacium americanum*  
*Cryo-hypnum pygmaeum*  
*Dichelyma capillaceum*  
*Drepanocladus capillofolius*  
*Ephemerum cohaerens*  
*Ephemerum spinulosum*  
*Homomallium adnatum*  
*Hypnum curvifolium*  
*Leskea obscura*  
*Meesia longiseta*  
*Orhtotrichum sordidum*  
*Phascum cuspidatum*  
*Platydictya confervoides*  
*Pottia davalliana*  
*Thelia hirtella*  
*Tortula papillosa*