

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.

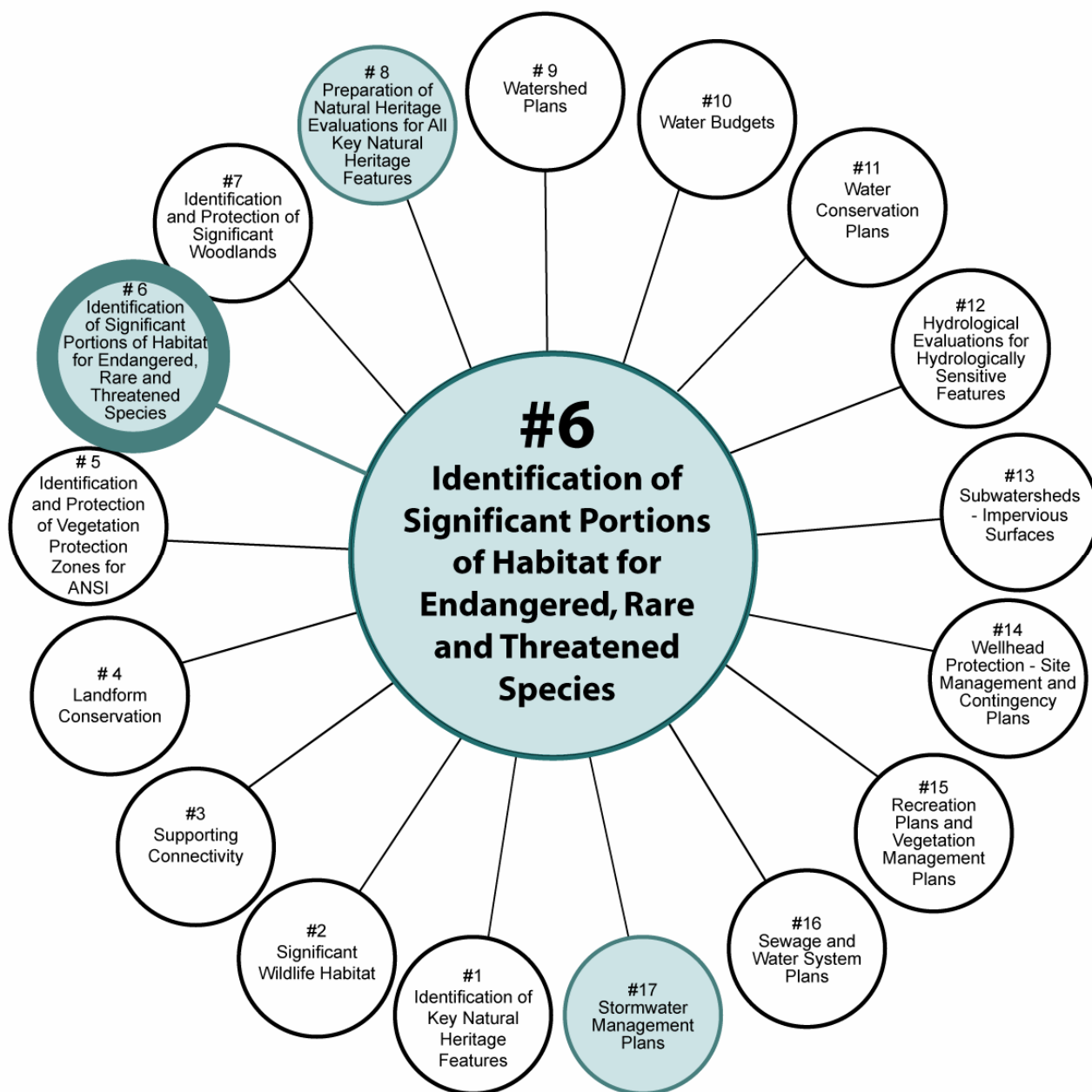
More specifically, subsection 22(2) of the ORMCP requires that:

"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) 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).

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

- MNR. 2001.
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.
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- 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>	Awed 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>	Schuette'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-coltfoot
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 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. <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 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 virginensis</i>
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Provincially Endangered - Historical Record

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