

# Eastern Prairie Fringed Orchid Habitat Modeling Field Verification Report - 2009

September 2009



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*Assistance for this project was provided by the Ministry of Natural Resources.*

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## **Acknowledgements**

This survey could not have been accomplished without the assistance of the following individuals:

Joffre Cote, Stewardship Coordinator, OMNR/OSC  
Lisa Perkins, Stewardship Field Assistant, OSC  
Casey Little, Species at Risk Stewardship Technician, OSC  
Elicia Prystay, Watershed Stewardship Technician Assistant, OMNR  
Crispin Wood, council member, OSC  
Mark Rowsell, council member, OSC  
Shaun Thompson, District Ecologist, OMNR  
Judy Goodwin, Volunteer

Thanks to you all for your efforts and interest in the protection of the natural resources in the city of Ottawa and beyond.

## **Introduction**

The Eastern Prairie Fringed-orchid (*Platanthera leucophaea* (Nuttall) Lindl.) was identified as a species at risk in 2007 under the Ontario Endangered Species Act. The largest global populations of the orchid are found in Ontario; however, the Ontario Ministry of Natural Resources (OMNR) reports that the orchid populations are still declining. Currently, the four largest populations in Ontario are located in Kent County, Bruce Peninsula National Park, Minesing Swamp and Marlborough Forest (City of Ottawa). The Ministry of Natural Resources is currently taking measures to protect the Orchid population and, as such, has joined forces with local environmental groups close to the major Orchid populations.

In 2007, the Eastern Ontario Model Forest (EOMF) funded by the MNR's Species at Risk Stewardship Fund compiled and mapped data focusing on various vegetation community types in the Ottawa area that had ideal growth and/or characteristics for a number of plant and animal species. The sites were modeled based on ecological land classification and relevant criteria for each site was documented. With this data, we were able to locate a number of preferred habitat sites on which to base our study. The data collected will enable the MNR to determine a proper course of action to either mitigate or discourage/prevent any activities negatively impacting the Eastern Prairie Fringed-orchid habitat over the city of Ottawa's geographical area.

## Study Area

As per the modeling site specifications, the following geographical townships were selected for this study: Marlborough, March, Goulbourn, Huntley, Fitzroy and Gloucester. Most of these areas are located on limestone plains, shallow soils over limestone bedrock, often less than 20cm deep, characterized by varying degrees of fissuring. As such, the soil is classified into two general types: (1) Farmington Undifferentiated Loams, which are extremely shallow and susceptible to drying up in the summer, and (2) Organic Muck, formed by depressional areas of permanently poor drainage. These areas generally receive adequate precipitation; however, experience periods of drought every 3 to 5 years.

## Project Purpose

To confirm the presence of Eastern Prairie Fringed-orchid (*Platanthera leucophaea*) plants at the sites identified by the above mentioned modeling and in the Species at Risk Environmental Assessment Report which refers to the Marlborough Forest area. Also, to develop stewardship plans (actions/recommendations) to potentially be implemented at the positive and/or potential sites.

## Background

### Status

The Eastern Prairie Fringed-orchid is recognized as an endangered species both provincially (Ontario) and federally. The orchid is protected in Ontario under the *Endangered Species Act* (ESA) and across Canada under the federal *Species at Risk Act*.

### Description

The Eastern Prairie Fringed-orchid is a perennial, flowering plant that grows 8 to 40 inches tall. Each plant has one single flower spike that produces 5 to 40 white flowers. The flowers have a characteristic three part fringed lip and a one to two inch nectar spur. Flowering begins in late June to early July and lasts for roughly ten days. A large plant may have flowers for a total of three weeks.

### Habitat

It can be found in wetlands: mostly fens, limestone shorelines, old field habitats and wet tall grass prairies. It requires full sun in a grassy area with little or no woody encroachment. Blossoms can often be seen just above the surrounding grasses and sedges.

### Pollination and Reproduction

The Eastern Prairie Fringed-orchid depends on night flying hawkmoths to pollinate its flowers. The plant is extremely sensitive to the changes in the moth population and as a result directly affects the amount of viable seeds it produces for healthy development. The Eastern Prairie Fringed-orchid does not reproduce until it is three to seven years old and can lie dormant for several years in between flowering.



### Threats

A number of factors contribute towards reducing the Eastern Prairie Fringed-orchid population in the region, including habitat loss from agriculture and development, competition with invasive and hybridized species, and recreational activities, including snowmobiling and herbivory. Other reasons for the decline include succession to woody vegetation, and suppression of fire.

The region is often subject to flooding and water pollution from roads and railway beds, as well as pumping of groundwater for residential, industrial and agricultural use. This changes water quality and quantity in the fen-based habitats with unknown impacts.

### Benefits

Species identified as endangered or threatened on the Ontario Species at Risk list are protected, along with their habitat, under the Endangered Species Act 2007 (ESA). This habitat includes, but is not limited to, areas where the species has been sited, as well as areas that may be important to the species' recovery. As such, the ESA also has the potential to reduce/eliminate other obstacles in the region, which may be harming other species as well.

The purpose of the ESA is to (1) prevent plant and animal species from being extirpated or becoming extinct, (2) permit the recovery of extirpated, endangered and threatened species, and (3) manage species to prevent them from being endangered or threatened. The ESA achieves these goals by formulating recovery strategies to reverse the decline of the endangered species and prevent them from becoming extinct. Each strategy sets objectives, identifies the critical habitat areas of the species, and describes the research and management activities that are needed.

## **Method**

### Observation Site Selection

1) Locate the areas where the Eastern Prairie Fringed-orchid's preferred habitat is identified from the modeling. 2) Conduct a title search at the Land Registry Office. 3) Contact the landowners by mail and with follow-up phone call(s) to request permission to survey their property.

### Observation Site Preparation

1) On a habitat polygon map, for permissible properties, plan a surveying protocol (based on size and shape of polygon) to determine the density of the orchid population within the polygon. 2) Draw approximately equal spaced transects through the polygon and estimate an average density from a total count.

### Methods of Data Collection

1) Walk along each transect counting the number of Eastern Prairie-Fringed-orchids and record this number on the map.

To reduce the error propagated in this report, data is collected in July when the Eastern Prairie Fringed-orchid is in full bloom and is easiest to identify. A stewardship plan is filled out for each survey with positive results, or with future potential positive results based on associated key indicator species or physical characteristics of the habitat. Pictures are also taken of the orchids observed in the field.

\*Spotted turtles are also known to inhabit similar environments as the Eastern Prairie Fringed-orchid. The surveyors were instructed to look out for the endangered turtle and record any sightings.

## Results and Analysis

Among the 16 private landowners contacted with property in the targeted habitat areas within the regions, only 3 (19%) made their property available to this study. Due to private landowners' unwillingness to participate in this study, only 50% of the land identified in the modeling could be investigated (accounting for municipal and provincial public/government land, which this study already had access to).



Most private landowners were concerned that the orchid would be identified on their property, which would restrict certain future land uses (primarily development) above and beyond existing restriction imposed by the Provincially Significant Wetland designation. This concern has become even more prevalent in recent years with the considerable increase in property value in the Ottawa region. Many industry landowners had significant trust issues when approached by an Ottawa Stewardship Council staff/volunteer member and would only consider participating in this study if they could speak to a ministry employee (Stewardship Coordinator) to assure that this study was in collaboration with the government.

As such, significant areas of land were not investigated in this study.

The sites available to this study were identified by their lot, concession and pin numbers, so that they could be more easily identified on a map. The sites were surveyed by groups of 2-4 individuals, employees, volunteers or members of the Ottawa Stewardship Council. The surveyors received training from an MNR district ecologist, Shaun Thompson. There were 2 training sessions conducted where the Eastern Prairie Fringed-orchid had been sited in previous years. Thompson trained participants on how to identify the orchid, as well as other indicator species that inhabit similar environments. Thompson also directed the surveyors on how to run proper transects to minimize damage to the fen but maximize surveying potential. He advised participants to avoid surveying the entire site if a number of orchids were found to avoid further damaging the habitat. As such, for the purposes of this report, the number of orchids found at a given site was determined by calculating the density of the orchids in a portion of the site surveyed and extrapolating the density to the entire plot. Given the size of the sites and the scarcity of the orchid, transects were used in all cases. The following two tables summarize the results collected from the sites.

**Table 1: Observations of the orchid populations on visited properties**

<i>Property</i>	<i>Number of orchids</i>	<i>Description/Distribution</i>
A	No orchids were found	N/A
B	No orchids were found	N/A
C	109 orchids were counted in a 59.8 ha area	Sparsely placed, and healthy in appearance.

D	No orchids were found	N/A
E	Orchids were identified during training session but not counted	Sparsely placed, and healthy in appearance.
F	No orchids were found	N/A
G	No orchids were found	N/A
H	No orchids were found	N/A

<b>Table 2: Observations of the habitat at the visited properties</b>					
<i>Property (Lot and Pin Number)</i>	<i>Vegetation</i>		<i>Main sources of water</i>		<i>Soil type</i>
	Habitat	General cover type	Accessibility	Source	
A	mixed swamp	submergent	year-round	creek	muck
B	graminoid fen	submergent	year-round	ground water	peat
C	graminoid fen	submergent	year-round	ground water	peat
D	mixed swamp	submergent	year-round	creek	muck
E	graminoid fen	submergent	year-round	river	muck
F	marsh	emergent	year-round	creek	muck
G	graminoid fen	submergent	year-round	creek	muck
H	mixed swamp	submergent	year-round	creek	peat

### **Summary/Discussion**

The field verification was conducted in the second and third weeks of July 2009 when the orchid was in full bloom and easiest to identify. Although cool, the summer was quite rainy, providing relatively good growing conditions for the orchid and giving the survey crews reasonable expectations to find full grown, blooming plants.

The orchid was only found at two sites (C and E) where it had been previously observed by the MNR (Thompson, Cuddy (no date) and Brownell 1986). The following sites had the conditions

and vegetation required for orchid growth, as well as associated indicator vegetative species present and should be included in future studies that seek to confirm the presence or to potentially re-introduce the orchid to the area; sites B, D and G. As a result of this study the property owners at site F have asked the Ottawa Stewardship Council to consider drafting a management plan for the recently donated land and an Eastern Prairie Fringed-orchid habitat recovery strategy will be one of the councils' main focuses.

Field verification showed that most of the habitats did not have the characteristics required to support the orchid. The low orchid populations may be attributed primarily to the following reasons:

1. **Flooding:** Many of the sites were flooded, causing water levels to be too high to support the orchid (mixed swamp in Table 2). At site D the creek banks had been eroded as a result of beaver damming. Site A was a mixed swamp habitat and was greatly affected by the newly developed highway construction. In contrast, at site C, where the orchid was observed, most of the water had been saturated into the ground, forming a layer of muck.
2. **Competition:** The remaining sites surveyed were mixed swamps or graminoid fens that were either heavily treed or covered with overgrown tall grasses. These conditions are too competitive for the orchid, which needs adequate space and sunlight to grow.



This study's results also suggest reviewing the parameters used in the modeling to predict orchid habitat. In particular, future modeling should better consider the possibility of flooding in the fen from nearby sources of water, as well as the percent of open water in the fen, which negatively impacts the orchid populations. Further investigation into the parameters used to model for the Eastern Prairie Fringed-orchid revealed that they were limited to general habitat type(s) only and as such, other physical habitat characteristics should probably be incorporated.

The study did not provide any positive results for spotted turtles at any of the locations visited in this study. However, this is probably due to their seasonal movement patterns: In June, spotted turtles migrate from the wetland to the uplands for nesting and aestivation. Given that the sites surveyed were visited in July, the scarcity of turtle sightings in this study was to be expected (refer to Appendix 4 for more information on spotted turtles).

## Management Recommendations

Recommendations specific to particular sites in the study include:

- At sites A and D, beaver management and/or water level management (i.e. drainage) projects should be implemented to prevent erosion and subsequent nutrient loading from occurring near creeks and flooding the fen habitat.
- At site C, fences and signage should be implemented to prevent ATVing through the habitat.

The following are general recommendations/comments that pertain to all the sites considered:

- Although suitable habitat is rare and probably limiting in Ontario, this species has a very narrow habitat preference and suitable habitat has likely never been abundant. Additional

habitat could be made available through restoration work, especially for prairie and old field habitat types. The quantity of habitat required for the long-term persistence of orchid is not known.

- It is possible to mitigate the threats to this species that are believed to be the most severe, such as habitat conversion to agriculture, changes to drainage patterns, ATV damage, invasion by non-native species, and even habitat succession. This can be done through policy, management and stewardship activities described in this species' recovery strategy. Although some threats are not easily mitigated (e.g. hybridization, grazing, drought), the severity of these is largely unknown.
- While long-term grazing may inhibit plants from completing their life cycle, it has also been suggested that moderate grazing may encourage flowering while reducing competition.
- Some successful recovery techniques are in use for Eastern Prairie Fringed-orchid and/or other closely-related members of its genus:
  - o Habitat restoration
  - o Prescribed burning
  - o Invasive species control
  - o Seed germination techniques
- Refer to Ontario Recovery Series Strategy for Eastern Prairie Fringed-orchid in Ontario for management recommendations (Appendix 5).



## References

- Eastern Prairie Fringed-orchid Recovery Team. (2009). Draft Recovery Strategy for the Eastern Prairie Fringed-orchid (*Platanthera leucophaea*) in Ontario. *Ontario Recovery Strategy Series*. viii + 27 pp.
- Ministry of Natural Resources. (2009). Backgrounder: Recovery of Species Listed Under the Species at Risk Act. *Species at Risk*. Retrieved June 23, 2009, from [http://www.sararegistry.gc.ca/sar/recovery/backgrounder\\_e.cfm](http://www.sararegistry.gc.ca/sar/recovery/backgrounder_e.cfm)
- Ministry of Natural Resources. (2008). Eastern Prairie Fringed-Orchid (*Platanthera leucophaea* (Nuttall) Lindl.). Ottawa, Ontario: Queen's Printer for Ontario.
- Ministry of Natural Resources of Ontario. (2009). Overview of the Endangered Species Act 2007. *Species at Risk*. Retrieved June 26, 2009, from [http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01\\_131284.html](http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01_131284.html)
- Ministry of Natural Resources. (2008). Taking Action. *Aquatic Invasive Species Program*. Retrieved June 22, 2009, from [http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STEL02\\_167290.html](http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STEL02_167290.html)
- Ontario Ministry of Natural Resources. (1990). Resource Management Plan for the Regional Municipality of Ottawa-Carleton Marlborough Forest. *Carleton Place District*.

**Appendix 1 – Stewardship Plan and Survey Results Reporting Form**

**Stewardship Plan for the  
Eastern Prairie Fringed-orchid (EPFO)**

**Section 1: Property owner information**

1.1 Registered property owner

- Name:
- Address:
- Postal Code:
- Tel. Home:
- Tel. Work:
- Fax:
- E-mail:

1.2 Plan author information

- Name: Joffre Cote
- Address: 3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON
- Postal Code: K4M 1A5
- Tel. Home:
- Tel. Work: 613-692-3571 ex 1119
- Fax:
- E-Mail: joff.cote@ontario.ca

**Section 2: Property location information**

2.1 Property location

<b>P.I.N. Number</b>	<b>Property Description (lot, concession, township)</b>	<b>Area (acres/ha)</b>

2.2 Federal, provincial and local policies and regulations \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## **Section 4: Property aerial photo and the surrounding area**

**Section 5: Detailed property aerial photo with detailed features**

## Section 6: Getting to know your wetland areas

6.1 Compartment number/name \_\_\_\_\_ Area \_\_\_ acres \_\_\_ ha \_\_\_

### 6.2 Compartment characteristics

<b>Soil type</b>	<input type="checkbox"/> muck	<b>Main sources of water</b>		<input type="checkbox"/> groundwater seepage
	<input type="checkbox"/> peat	<input type="checkbox"/> creek	<input type="checkbox"/> spring	<input type="checkbox"/> other
	<input type="checkbox"/> silt	<input type="checkbox"/> runoff	<input type="checkbox"/> tile drain	<b>Accessibility</b>
	<input type="checkbox"/> marl	<input type="checkbox"/> natural pond/lake		<input type="checkbox"/> year-round
	<input type="checkbox"/> sand	<input type="checkbox"/> snow melt		<input type="checkbox"/> seasonal

### 6.3 Compartment history

<input type="checkbox"/> flooded year-round	<input type="checkbox"/> human-made impoundment	<input type="checkbox"/> Wetland has been evaluated by OMNR
<input type="checkbox"/> flooded spring only	<input type="checkbox"/> beaver impoundment	
<input type="checkbox"/> dries mid-summer	<input type="checkbox"/> water at or near ground level	

Wetland name and class \_\_\_\_\_

Additional information \_\_\_\_\_

### 6.4 Inventory

If trees and shrubs cover more than 25% of the compartment area, complete the left side of the form (below). If less than 25% of the compartment area is covered by trees or shrubs, complete the right side of the form (below).

#### Trees or shrubs cover more than 25%

Most trees are dead	<input type="checkbox"/> yes <input type="checkbox"/> no
Mostly shrubs	<input type="checkbox"/> yes <input type="checkbox"/> no
Good diversity of understory plants	<input type="checkbox"/> yes <input type="checkbox"/> no
Signs of grazing or other disturbance	<input type="checkbox"/> yes <input type="checkbox"/> no
Good regeneration of seedlings	<input type="checkbox"/> yes <input type="checkbox"/> no
Trees generally younger	<input type="checkbox"/> yes <input type="checkbox"/> no
Trees generally older growth	<input type="checkbox"/> yes <input type="checkbox"/> no
Trees generally the same size	<input type="checkbox"/> yes <input type="checkbox"/> no
Trees of all sizes and ages	<input type="checkbox"/> yes <input type="checkbox"/> no

Tree species found	Percent
Species _____	_____ %
Species _____	_____ %
Species _____	_____ %
Species _____	_____ %
Species _____	_____ %
Species _____	_____ %
	100%

Estimated height of trees \_\_\_\_\_ ft \_\_\_\_\_ m  
 Average diameter at breast height \_\_\_\_\_ in \_\_\_\_\_ cm  
 Estimated age of majority of trees \_\_\_\_\_ yrs

#### Trees or shrubs cover less than 25%

no open water  some open water

#### Vegetation is

emergent  submergent  floating

#### Composed of

mostly cattails, rushes, reeds, grasses and sedges  
 mostly sedges and mosses  
 covered in sphagnum moss

Other vegetation \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

#### Other features

stream  
 pond  
 other (describe) \_\_\_\_\_

Additional information \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

#### General cover type determination:

<input type="checkbox"/> marsh	<input type="checkbox"/> fen	<input type="checkbox"/> bog	<input type="checkbox"/> dead tree swamp
<input type="checkbox"/> thicket swamp	<input type="checkbox"/> coniferous swamp	<input type="checkbox"/> deciduous swamp	<input type="checkbox"/> mixed swamp

### 6.5 Wildlife

List the species that you have observed or have seen signs of (e.g., white-tailed deer tracks often seen along the edge of the creek). Make sure that you note any vulnerable, threatened, or endangered species.

Species

Observation

Species	Observation

### 6.6 Recommended stewardship activities

Long-term objectives (What should you plan over the next 20 years?)


Short-term activities (What activities should you plan over the next 10 years?)


#### Conservation land designation

Eligible for Conservation Land Tax Incentive Program?       yes     no     don't know

#### Type of conservation land

- Provincially significant wetland       Provincially significant area of natural & scientific interest (ANSI)  
 Habitat of endangered species       Community conservation lands

Other information \_\_\_\_\_





## Appendix 2 – Property Letter and Permission List

<i>Property</i>	<i>Township</i>	<i>Permission granted (Yes/No)</i>	<i>Comments</i>
F	Fitzroy	Yes	Received approval via email July 9.
I	Fitzroy	No	Called over a dozen times with no response. Messages were left on answering machine.
J	Gloucester	No	Declined in July. (please see correspondence)
K	Gloucester	No	Declined in July. (please see correspondence)
A	Goulbourn	N/A	Crown Land
E	Marlborough	N/A	Publicly accessible municipal property
L	Goulbourn	No	Declined on June 16. Not interested.
M	Goulbourn	No	Declined on June 19.
N	Goulbourn	No	Called over a dozen times with no response. No answering machine.
D	Huntley	N/A	Publicly accessible municipal property
O	Huntley	No	Declined on June 17. Not interested.
P	Huntley	No	Declined on June 21.
Q	Huntley	No	Called over a dozen times with no response. No answering machine.

R	Huntley	No	Spoke with the lady of the house who made it clear that the landowners would not be interested in the study.
S	Huntley	No	Called over a dozen times with no response. No answering machine.
G	March	Yes	Received letter of approval on June 17.
T	March	No	Declined.
H	March	Yes	Did a brief survey with landowner on June 24. Nothing was found. The habitat surveyed did not have suitable growing conditions.
U	March	No	Declined.
E	Marlborough	N/A	Publicly accessible municipal property.
C	Marlborough	N/A	Publicly accessible municipal property.
C	Marlborough	N/A	Publicly accessible municipal property.
C	Marlborough	N/A	Publicly accessible municipal property.
C	Marlborough	N/A	Publicly accessible municipal property.
B	Marlborough	N/A	Publicly accessible municipal property.

Appendix 3 – EPFO Survey Package





***Platanthera leucophaea***, the **eastern prairie fringed orchid**, is a rare [orchid](#) native to [North America](#). While it is listed as a threatened species in the [United States](#) on September 28, 1989, the [IUCN](#) does not recognise it as being at risk.

*P. leucophaea* arises from a fleshy [tuber](#). The plant can grow up to three feet (91 cm) tall. The [inflorescence](#) is large and showy and may have up to 40 white flowers. The leaves are long and thin. It is distinguished from [Platanthera praeclara](#), the western prairie fringed orchid, by its smaller flowers (less than one inch (2.5 cm) long), more oval petals, and a shorter nectar spur. The eastern prairie fringed orchid is a long-lived perennial plant. Its tuber rootstalk helps it survive grass [fires](#). Fires and rain stimulate the plant to grow and flower. The plant emerges each year in May and flowering begins by late June. The flowers are pollinated at night by large sphinx moths. Certain night flying insects that are attracted to the orchid's fragrant are able to obtain its nectar with their long proboscis. Others cannot because of the flower's long, narrow, odd positioned nectar spur.

*P. leucophaea* is found in moist to wet tallgrass [prairie](#). In the eastern part of its range, it is found in wet sedge meadows. For optimum growth, little or no woody encroachment should be near the habitat. The major factor in the decline of the eastern prairie fringed orchid has been a loss of habitat due to grazing, fire suppression, and agricultural conversion.

*Orchis leucophaea* Nuttall, Trans. Amer. Philos. Soc., n. s. 5: 161. 1834;  
*Habenaria leucophaea* (Nuttall) A. Gray

Plants 32–112 cm. Leaves several to many, ascending, scattered along stem, imperceptibly reduced to bracts distally; blade lanceolate to ovate-lanceolate, usually to 20 × 4 cm. Spikes lax to moderately dense. Flowers resupinate, showy, corolla white, calyx green to whitish green; lateral sepals porrect; petals obovate to rarely flabellate, apically lacerate; lip descending to horizontally projecting, deeply 3-lobed, without basal thickening, 14–22 × 15–29 mm, distal margins of lobes deeply incised, fringed, lateral lobes flabellate, usually broad, overlapping middle lobe, middle lobe flabellate, sometimes very broadly, emarginate; spur slenderly clavate, 28–47 mm; rostellum lobes nearly parallel, directed downward, short, rounded; pollinaria geniculate; pollinia directed forward (column appearing hooded), remaining enclosed in anther sacs; viscidia orbiculate; ovary slender, mostly 15–30 mm. 2n = 42.

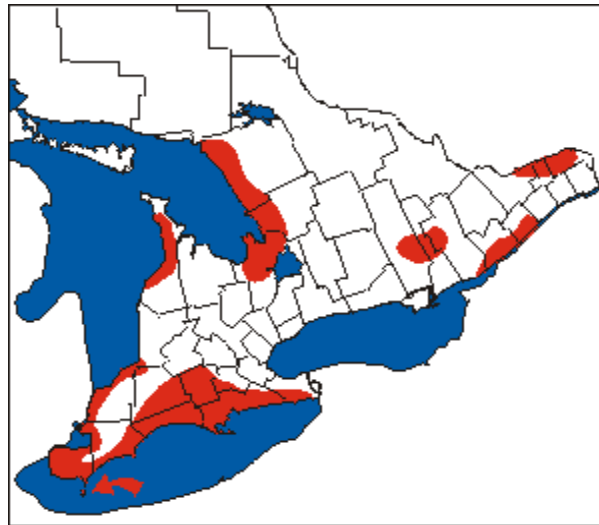
## Appendix 4 - Spotted Turtles (*Clemmys guttata*) Information

### Identification

- Semi-aquatic, small, dark turtle with yellow spots and a smooth, broad carapace
  - o Some carapaces have no spots (most common among old and juvenile turtles)
  - o Most turtles have yellow and orange spots on the neck, head and limbs
- Plastron shape
  - o Males: concave plastron shape, brown eyes, tan chins, vent is located beyond the rim of the carapace
  - o Females: flat/convex plastron, orange eyes, yellow chins, vent is within the rim of the carapace
- Small with adults reaching carapace lengths of 12.5cm

### Distribution and Status

- confined to two main areas: Eastern Seaboard, Great Lakes region/North America from Maine and Ontario south to Florida west to Michigan
  - o populations are becoming smaller and increasingly isolated with declines more extensive in the Midwest where they are viewed as imperilled
- endangered provincially and nationally in Ontario and Canada
- widespread in Ontario, localized in southern Ontario (known in 75 locations in Ontario)



### Habitat

- shallow bodies of water (marshes, bogs, swamps, sedge meadows, forested wetlands, permanent and seasonal pools, small streams, drainage ditches, vernal pools, and ponds)
  - o used for foraging, basking, aestivation, courtship, and hibernation
- wetlands can be seasonal or permanent, and vary in size
  - o turtles travel overland frequently (recorded total overland distances in one season of up to 1680m)
- uplands used for nesting, aestivating, and as travel corridors between wetlands, particularly during drier years

- in June, females migrate from wetlands and nest in upland habitats
- In summer, utilize uplands for aestivation

### Movement Patterns

- Active only during daylight hours, except females who complete their nesting activities after dark
  - In evenings, seek shelter and remain inactive until dawn
  - Remain burrowed into mud at the bottom of waterways, and also within the shelter of muskrat burrows
- Seasonal movement patterns generally include:
  - Overland migration from winter hibernacula to upland wetlands in spring
  - Residence in these wetlands for a period of several months (females leave pools in June for short-term nesting excursions)
  - Dispersal from wetlands later in the summer to upland areas for terrestrial aestivation
  - Migration back to hibernacula wetlands in late summer through mid-fall
- Migratory patterns depend on:
  - Size and density of wetland habitats - Smaller wetlands, scattered through larger patches of upland habitat, force turtles to travel longer distances, whereas wetland complexes in close proximity force turtles to travel shorter.
  - Temperature and sedimentation (like drying and siltation)

### Aestivation

- Aestivate in upland and wetlands
  - In swamp habitats, aestivate on hummocks of tree or shrub roots, and in emergent wetlands
  - In emergent wetlands, aestivate in the sides or on top of tussock sedges within short distances (<1m) from a water channel, or in saturated mud
- Observed in 'forms' under leaf litter, clumps of grass/sedge, and shrubs
- Assists turtles in avoiding heat, desiccation and predation
- Provides an opportunity for turtles to dry

### Hibernation

- Observed to hibernate in a variety of wetland habitats across their range including permanent swamps, permanent and semi-permanent pools, emergent wetlands, forested wetlands, scrub-shrub wetlands, streams, and riparian meadows.
- Occur in structures like dense clumps of cattails, grasses and sedges, submerged cavities created by tree, or shrub, roots, and hummocks created by trees or shrubs, elevated mats of sphagnum at the bases of tree and shrub roots
- Hibernation both solitarily and communally
- Return to the same hibernacula on a yearly basis, or to ones occupied by other turtles during the previous winter

### Reproduction

- Occurs soon after hibernation

- Males travel significant distances in their quest for females
- In June, female turtles travel overland to nest
- Nesting sites are generally located in open, upland habitats and frequently in man-made areas (open fields, gravel roads, lawns and yards)
  - o Nesting is always completed after dark
  - o One clutch per reproductive season, relatively small clutch sizes (3-7 eggs)
- Hatchlings typically emerge in the spring (earlier the warmer the weather)
  - o Experience significant prenatal mortality
  - o egg failure has been attributed to infertility or incomplete development, and predation

#### Diet

- omnivorous
- vegetative matter includes stems of aquatic grasses and filamentous green algae, an assortment of aquatic insect larvae, small crustaceans, snails, and tadpoles
- observed feeding on carrion (fish and duck)
- turtles will only begin feeding once temperatures have warmed above a minimum threshold. Once threshold is reached, turtles feed for the majority of the active season.

#### Threats to Turtles

- habitat alteration, loss and fragmentation, natural habitat succession, road mortality, predation, and collection for the pet trade industry
- habitat alteration, loss and fragmentation are the chief threats
  - o exacerbated as a result of current wetland protection statutes, which are inadequate for protecting sufficient area and diversity of wetland habitats
  - o small wetlands often escape detection or are deemed too small to be eligible for protection
- habitat succession frequently overlooked (ie. Gradual change in habitat type)
  - o invasion of woody herbaceous growth in emergent wetlands results in siltation and eventual drying of the wetland

#### Management Recommendations

- benefit from a landscape ecology approach to wetland conservation that may require land acquisition, easements, and management agreements
- wetlands must be conserved in complexes which include a variety of wetland types, including small seasonal wetlands
- delineation and conservation of upland buffers around wetland complexes must be large enough to encompass all activities
- local management recommendations should be made from information gathered on the species at a local level due to the observed variability in turtle habitat use and movement across their range

#### Protection

- listed as endangered under the provincial Endangered Species Act 2007
  - o prohibits the harming, collecting, possessing, trading or killing of species

- protected under Ontario's Fish and Wildlife Conservation Act
- about one-third of Ontario's Spotted Turtle populations are on public lands, where they are afforded protection (national/provincial parks)

## References

- Indiana-Purdue University. (2009). Spotted Turtle. *Reptile and Amphibian Conservation Management*. Retrieved July 21, 2009, from [http://herpcenter.ipfw.edu/outreach/accounts/reptiles/turtles/Spotted\\_turtle/SpottedTurtleFactSheet.pdf](http://herpcenter.ipfw.edu/outreach/accounts/reptiles/turtles/Spotted_turtle/SpottedTurtleFactSheet.pdf)
- Ontario Ministry of Natural Resources. (2008). Spotted Turtle. *Species at Risk*. Retrieved July 21, 2009, from [http://www.rom.on.ca/ontario/risk.php?doc\\_type=fact&id=96](http://www.rom.on.ca/ontario/risk.php?doc_type=fact&id=96)

## Appendix 5 - Ontario Recovery Strategy Series Management Recommendations

### 2.4 Approaches to Recovery

Table 3. Approaches to recovery for the Eastern Prairie Fringed-orchid

Priority	Obj. No.	Threats addressed	Broad strategy to address threats	Recommended approaches to meet recovery objectives
High	1	Habitat loss	Habitat protection	Identify and secure high priority private sites through conservation easements, stewardship agreements or land acquisition <ul style="list-style-type: none"> <li>• Prioritize sites for urgency</li> <li>• Identify and contact private landowners.</li> <li>• Determine ideal protection strategy (easement, acquisition, stewardship) for each site</li> </ul>
Low	1	Habitat loss	Habitat protection	Work with municipalities and other planning agencies to protect habitats and populations through municipal land use planning processes and the Conservation Land Tax Incentive Program (CLTIP). <ul style="list-style-type: none"> <li>• Update or complete wetland evaluations and prairie community assessments to determine significance and potential for protection under the Provincial Policy Statement (PPS)</li> <li>• Provide habitat mapping and/or wetland and prairie community maps to municipalities, and other planning agencies</li> <li>• Work with municipalities to adopt protection in</li> </ul>

Priority	Obj. No.	Threats addressed	Broad strategy to address threats	Recommended approaches to meet recovery objectives
				Official Plans, other planning documents, and municipal plan review processes. <ul style="list-style-type: none"> <li>• Work with CLTIP and municipalities to identify sites eligible for CLTIP and encourage participation by landowners</li> </ul>
Medium	1	Habitat loss	Habitat protection	Work with municipalities to create awareness of and protect populations on municipal road allowances through changes to maintenance schedules
High	1	Habitat loss	Habitat protection	Legally protect the species and its habitat <ul style="list-style-type: none"> <li>• Regulate species habitat under provincial <i>Endangered Species Act, 2007</i></li> <li>• Develop and apply habitat mapping guidelines to identify, describe, and delineate habitat for protection</li> </ul>
High	3	All threats, especially invasive species, succession, recreational vehicles, trampling, herbivory	Threat clarification  Management	Develop and implement management actions to maintain or increase populations at extant locations <ul style="list-style-type: none"> <li>• Identify and assess known threats at all extant sites</li> <li>• Work with owners/managers to develop site-specific management plans to address threats (e.g. prescribed burns, invasive species control) through management</li> <li>• Monitor sites to assess the effects of actions</li> <li>• Adapt management in response to monitoring results</li> <li>• Report on management actions and outcomes</li> </ul>
Low	1,3	Habitat loss, invasive species, recreational vehicles, trampling	Habitat protection	Ensure that protection and recovery is identified in management plans for all federal, provincial and municipal lands <ul style="list-style-type: none"> <li>• Identify appropriate zoning and activities in national and provincial park management and resource stewardship plans</li> <li>• Incorporate management into National Wildlife Area management plans</li> </ul>
High	1, 5	All threats	Habitat protection	Work together with the Walpole Island Recovery Team to assist in managing and recovering populations on Walpole First Nations lands
High	2,3	All threats	Survey and Monitoring	Develop and implement a monitoring program to assess changes in populations and habitats over time: <ul style="list-style-type: none"> <li>• Adopt monitoring protocol</li> <li>• Complete monitoring at sites and intervals as prescribed by the monitoring protocol</li> <li>• Report monitoring results annually and assess trends in populations, area of occupancy and habitat condition (threats) every 5 years</li> <li>• Submit all data to the Natural Heritage Information Centre (NHIC)</li> </ul>
Medium	2	All threats	Survey and Monitoring	<ul style="list-style-type: none"> <li>• Use current knowledge of habitat to develop GIS model of predicted occurrences in historical range</li> <li>• Conduct comprehensive searches in areas of</li> </ul>

Priority	Obj. No.	Threats addressed	Broad strategy to address threats	Recommended approaches to meet recovery objectives
				<p>potential habitat to document new occurrences (e.g. Saugeen First Nation lands on Bruce Peninsula, eastern Ontario fens)</p> <ul style="list-style-type: none"> <li>• Conduct field surveys in target areas over at least 2 field seasons, to determine if species is present.</li> <li>• Document any new occurrences and submit all data to NHIC</li> <li>• Apply research on habitat requirements to refine model</li> </ul>
High	4	All Threats, especially those that represent knowledge gaps	Applied research	<p>Assess and summarize existing knowledge of species and identify research needs for Ontario populations to inform recovery efforts and support adaptive management approaches</p> <ul style="list-style-type: none"> <li>• Complete literature review</li> <li>• Identify top research priorities</li> <li>• Support funding applications as opportunities arise</li> </ul>
Medium	5	All threats	Restoration	<ul style="list-style-type: none"> <li>• Identify sites with potential for habitat restoration (especially prescribed burns)</li> <li>• Where feasible, conduct restoration, carefully monitor results and share information</li> </ul>
Low	5	All threats	Re-introduction	<p>Investigate feasibility of re-introduction of populations to historic habitats:</p> <ul style="list-style-type: none"> <li>• Assess the need for introductions and identify targets as appropriate (e.g. is the species extant in all eco-districts and habitat types in which it historically occurred?)</li> <li>• Develop site-specific criteria for assessing feasibility of historic sites for re-introductions (e.g. ownership, threats, habitat type and condition, size, costs, etc.)</li> <li>• Prioritize historic sites for re-introductions</li> <li>• Develop site-specific re-introduction strategies, including identification of research needs (e.g. propagation techniques , etc.)</li> <li>• Implement re-introduction strategies at high priority sites</li> </ul>
Low	5	All threats	Communication	<p>Provide information to stakeholders to increase awareness of orchid</p> <ul style="list-style-type: none"> <li>• Identify audiences with most potential for conservation (e.g. landowners) and gauge awareness and information needs</li> <li>• Identify appropriate means of communicating with target audiences (workshop, newsletter, public meeting, etc.)</li> </ul>