

CREDITVIEW WETLAND

Region of Peel	NAI Area # 3522	Credit Valley Conservation Authority
City of Mississauga	Size: 5 hectares	Watershed: Credit River
Con 3 W, Lots 1-2	Ownership: 100% public (City of Mississauga)	Subwatersheds: Carolyn Creek; Credit River: Norval to Port Credit

General Summary

This small natural area is located within a built-up residential area of Mississauga. This area is hydrologically interesting – a perched wetland, sustained primarily by surface runoff and seasonal groundwater influx. Soils in at least part of the wetland are organic. The area also has an interesting history, determined from sediment coring, showing it has in the distant and more recent past supported bog and fen communities. This is an isolated natural area lacking connection to other natural areas. The closest natural area is 0.5km to the west and these two natural areas are separated by a subdivision and Creditview Rd.

This wetland is very diverse, given its size and isolation. It is rich in plant species, bird species and herpetofauna, the major groups surveyed here. Some of the flora has northern affinities, but Carolinian species are also represented here. This area supports rare vegetation communities, Species At Risk and a variety of rare species.

This site has received much public attention since its richness was first appreciated in the 1980's. Because of these events, and its location in an urban area next to a school, this natural area offers opportunities for nature education. There is interpretive signage on a crest overlooking the wetland.

NAI biologists have not inventoried this natural area. Instead the data set has been compiled from a variety of sources. Vegetation communities, plant species and breeding birds were inventoried by consultants for the Mississauga Natural Areas Survey (NAS). The NAS surveys were conducted four times between 1996 and 2009. CVC's Terrestrial Monitoring biologists have frequently and regularly visited a monitoring plot within this site from 2003 to the present. Their species observations from 2003 to 2009 are included in the data set reported on here (the CVC database is annually updated and thus will be the most current source at any point in time) although their data are restricted to the monitoring plot. Additional data that this summary comes from a flora inventory (Kubiw and Johnson, 1996) plus incidental observations from various individuals. No fish inventories were performed.

Natural Feature Classifications and Planning Areas

This natural area is part of:
PSW - Creditview Wetland

Physical Features

This area is in the South Slope physiographic region; characterized by low-lying ground moraines. Soils of this region tend to be clay loams with pore sizes between soil particles so small that flow of groundwater into aquifers is slow.

This is a perched wetland, originating after glacial retreat, about 12,000 years ago. It is maintained primarily by surface water run-off with some seasonal groundwater input (Dougan & Associates, 2004).

Prior to 1996, water drained out of this wetland to the southeast via an intermittent stream, but more recent residential development has channelled outflow into two drains each in a different part of the

wetland. The north part of this area falls into the Carolyn Creek subwatershed and the south part drains directly into the main Credit River (Credit River: Norval to Port Credit subwatershed). The main drain is at the south end (presumably into the Credit River) and a secondary drain occurs adjacent to Willowside Ct. near the north end of the wetland (presumably into Carolyn Creek) (*ibid*, City of Mississauga, 2006).

Water temperature in the wetland is high (23-28°C) during the summer months (City of Mississauga, 2006).

Human History

As settlers moved into this general area in the early 1800's, forests were cleared to make way for agriculture. A 1955 air photo shows the wetland immediately surrounded by cropland, and a scrub field to the east (possibly used by livestock). The photo also shows a "causeway" built of soil, across the southern part of the wetland to facilitate crossing the wetland by foot. In 1988, draft plans for residential development of the wetland and adjacent lands received draft approval from the Region of Peel. Public concerns over the loss of the wetland led to a number of ecological and hydrogeological studies that led to the OMNR designating it as a Provincially Significant Wetland (PSW) in 1989. The draft plan for development was revised to retain the bulk of the wetland but to remove the southern portion below the "causeway". Between 1995-2002 the lands immediately surrounding Creditview Wetland were developed with single detached housing units, a school, playing fields and a park. In 1998 the City of Mississauga acquired Creditview Wetland and erected fencing around it (Dougan & Associates, 2004; Stewart, 1999).

Existing Hawthorn (*Crataegus* sp.) trees are remnants of a former fencerow between agricultural fields (Dougan & Associates, 2004).

Surrounding land use is predominantly single-unit residential on small lots. There are also sports fields of Willowvale Fields (a city park) and two schools to the east and south.

Vegetation Communities

For the most part, the vegetation community mapping generated by the Mississauga NAS coincides with the NAI natural area delineations in Mississauga although there are some small discrepancies. Part of this could be due to real changes in community boundaries between the years that the mapping and area delineation were done. Values for community sizes and proportions making up the natural area are taken from the NAS mapping (Table 1).

The general community types present are shallow marsh (6%), thicket swamp (52%), floating-leaved shallow aquatic (10%) and cultural savannah (22%).

A total of six vegetation communities of four different types were mapped by the Mississauga NAS 2006 for this area. The two communities of the Willow Organic Thicket Swamp (SWT3-2) vegetation type are regionally rare.

Sediment cores and pollen analysis have revealed that this wetland was a bog or fen between 10,000 and 9,000 years ago. With time, the area became drier and the wetland changed to become shrub-dominated. Climatic cooling allowed White Pine to spread over the area. Later when the pines were logged and the surrounding lands cleared for agriculture, groundwater levels rose and peat growth was stimulated again on hummocks. The wetland itself is in a perched basin that receives only seasonal groundwater intake and is largely supported by surface water run-off. This surface water dilutes the acidic nature of the peat and the wetland is not strongly acidic (Dougan & Associates, 2004). This natural area does however, contain a number of species normally found in more northern climates and on acidic soil, and that are quite unexpected within the lower watershed of the Credit River.

The Willow Organic Thicket Swamp community has Buttonbush (*Cephalanthus occidentalis*) as a co-dominant. Buttonbush is a Carolinian species.

Table 1: ELC Vegetation Communities

Map reference *	Vegetation type	Size in hectares	% of natural area
MAS3-8	Bur-reed Organic Shallow Marsh (2 communities)	0.35	6.46
SWT3-2	Willow Organic Thicket Swamp (2 communities)	2.80	52.11
SAF1-3	Duckweed Floating-leaved Shallow Aquatic	0.55	10.17
CUS1-1	Hawthorn Cultural Savannah	1.16	21.50
	TOTAL AREA INVENTORIED	4.86	

* Note: The map reference code refers to the vegetation type shown on mapping for this area and also to the Appendix list of species typically encountered in this vegetation type.

Species Presence

Vascular Plants

A total of 216 vascular plant species are recorded for this area, of which 169 (78%) are native. Plant species biodiversity is relatively high here, considering the small size and isolation of this natural area. Twenty-seven additional plant species are regionally rare (Table 3).

Birds

A total of 91 bird species occur here, of which 88 (97%) are native. These records are a compilation from several sources between 1988-2003, cited by Dougan and Associates (2004), and likely represent breeding birds as well as visitors and migrants. Additional surveys since 2003 by CVC and the NAS have confirmed the continuing presence of some of these species.

Four bird Species At Risk use this site (in some way; Table 2). Bobolink (*Dolichonyx oryzivorus*) is Threatened both nationally and provincially, Short-eared Owl (*Asio flammeus*) is designated Special Concern both nationally and provincially and both Barn Swallow (*Hirundo rustica*) and Eastern Meadowlark (*Sturnella magna*) are Threatened nationally. Short-eared Owl is also provincially rare (S-rank S2N4B, SZN).

This site supports six species of colonial-nesting birds, namely Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*; nest and young, 2003; adult on nest 2006), Bank Swallow (*Riparia riparia*), Barn Swallow, Cliff Swallow (*Petrochelidon pyrrhonota*) and Northern Rough-winged Swallow (*Stelgidopteryx serripennis*). It supports six species of waterfowl, Wood Duck (*Aix sponsa*), American Widgeon (*Anas americana*), American Black Duck (*Anas rubripes*), Blue-winged Teal (*Anas discors*), Green-winged Teal (*Anas crecca*) and Mallard (*Anas platyrhynchos*). Three species of area-sensitive forest interior birds, Hairy Woodpecker (*Picoides villosus*), Black-throated Blue Warbler (*Dendroica caerulescens*), Black-and-white Warbler (*Mniotilta varia*); ten species of grassland birds, Horned Lark (*Eremophila alpestris*), Brown Thrasher (*Toxostoma rufum*), Eastern Kingbird (*Tyrannus tyrannus*), Willow Flycatcher (*Empidonax traillii*), Field Sparrow (*Spizella pusilla*), Vesper Sparrow (*Poocetes gramineus*), Savannah Sparrow (*Passerculus sandwichensis*), Bobolink, American Kestrel (*Falco sparverius*), Eastern Meadowlark; three raptor species, a migrating Osprey (*Pandion haliaetus*), Northern Harrier (*Circus cyaneus*), Short-eared Owl; and three species of wetland-nesting birds, a migrating American Bittern (*Botaurus lentiginosus*), Wilson's Snipe (*Gallinago delicata*), Virginia Rail (*Rallus limicola*); have also been observed at this site using the habitat in various ways, including as a migratory stopover and staging area and for breeding. Generally, data sources did not specify whether a species was breeding on site or a visitor/migrant.

Butterflies and Skippers

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Five species of butterflies/skippers are recorded as incidental observations here, of which three (60%) are native. One of these, Monarch (*Danaus plexippus*), is designated Special Concern both nationally and provincially (Table 2). Monarch is also provincially rare (S-rank S2N, S4B).

Dragonflies and Damselflies

Three species of dragonflies/damselflies are recorded for this area as incidental observations, all of which are native.

Herpetofauna

Twelve herpetofaunal species are recorded here as incidental observations, all of which are native. Two of these are Species At Risk, Western Chorus Frog (*Pseudacris triseriata*) is which Threatened nationally and Eastern Snapping Turtle (*Chelydra serpentina*), which is designated Special Concern both nationally and provincially. Eastern Snapping Turtle is also provincially rare (S-rank S3).

The remaining herpetofaunal species are made up of seven frog/toad species, one of which is Bullfrog (*Rana catesbeiana*), one snake species and one other turtle species. The South Peel Naturalists' Club reports 65 Midland Painted Turtles (*Chrysemys picta marginata*) in the wetland on August 7th, 1988 (Dougan and Associates, 2004). The high number of turtles, and the lack of nearby suitable habitat, strongly suggests that turtles breed on site. Frogs also breed onsite.

Mammals

Ten native, common mammal species were detected at this site as incidental observations, including an unknown bat species.

Table 2: Designated Species At Risk

Scientific name	Common name	COSEWIC	COSSARO	S rank	G rank
BIRDS					
<i>Hirundo rustica</i>	Barn Swallow	THR		S5B	G5
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	THR	S4B	G5
<i>Sturnella magna</i>	Eastern Meadowlark	THR		S5B	G5
<i>Asio flammeus</i>	Short-eared Owl	SC	SC	S2N,S4B	G5
BUTTERFLIES					
<i>Danaus plexippus</i>	Monarch	SC	SC	S2N,S4B	G5
HERPETOFAUNA					
<i>Chelydra serpentina</i>	Eastern Snapping Turtle	SC	SC	S3	G5T5
<i>Pseudacris triseriata</i>	Western Chorus Frog	THR		S4	G5

Table 3: Regionally Rare Vascular Plant Species (Kaiser, 2001)

Scientific name	Common name	S rank	G rank
VASCULAR PLANTS			
<i>Aronia melanocarpa</i>	Black Chokeberry	S5	G5
<i>Bidens discoidea</i>	Swamp Beggar-ticks	S4	G5
<i>Carex bromoides</i>	Brome-like Sedge	S5	G5
<i>Carex brunnescens</i>	Brownish Sedge	S5	G5
<i>Cephalanthus occidentalis</i>	Common Buttonbush	S5	G5
<i>Comandra umbellata</i>	Umbellate Bastard Toad-flax	S5	G5
<i>Eleocharis acicularis</i>	Least Spike-rush	S5	G5
<i>Epilobium coloratum</i>	Purple-leaf Willow-herb	S5	G5
<i>Gaylussacia baccata</i>	Black Huckleberry	S4	G5

<i>Glyceria septentrionalis</i>	Floating Manna-grass	S4	G5
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5	G5
<i>Pilea fontana</i>	Springs Clearweed	S4	G5
<i>Polygonum hydropiperoides</i>	Mild Water-pepper	S5	G5
<i>Potamogeton zosteriformis</i>	Flatstem Pondweed	S5	G5
<i>Ribes hirtellum</i>	Smooth Gooseberry	S5	G5
<i>Rosa palustris</i>	Swamp Rose	S5	G5
<i>Rubus flagellaris</i>	Northern Dewberry	S4	G5
<i>Rubus hispida</i>	Bristly Dewberry	S4S5	G5
<i>Salix nigra</i>	Black Willow	S4?	G5
<i>Salix serissima</i>	Autumn Willow	S4	G4
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	S5	G5
<i>Vaccinium corymbosum</i>	Highbush Blueberry	S4	G5
<i>Vaccinium myrtilloides</i>	Velvetleaf Blueberry	S5	G5
<i>Vaccinium pallidum</i>	Early Lowbush Blueberry	S4	G5
<i>Viola macloskeyi ssp. pallens</i>	Smooth White Violet	S5	G5T5
<i>Wolffia borealis</i>	Dotted Watermeal	S4S5	G5
<i>Woodwardia virginica</i>	Virginia Chainfern	S4	G5

Site Condition and Disturbances

In spite of being small and being surrounded by urban development, this natural area has high plant biodiversity and is in good condition. Because it is mostly sustained by localized surface water run-off it is not impacted by the turbidity and litter associated with urban watercourses, although road salt may affect it.

This natural area is fenced which largely restricts human entry, reducing disturbance from trampling and litter.

The surrounding area was mostly farmland until nearby urbanisation began in the 1990's. Pre-development flora and fauna studies in 1988 and 1989, and subsequent post-development studies, indicate some decline in floral diversity and a greater decline in faunal diversity (Dougan & Associates, 2004). The decline in fauna diversity is attributed to the site's isolation and elimination of connecting species movement corridors. There has been a decline in the relative proportion of native flora species with the arrival of exotic plant species.

Some litter is evident, especially along the fence surrounding the natural area. Softballs from an adjacent ball diamond were found scattered in the natural area.

Non-native species are common, with notable problematic invasive species being Manitoba Maple (*Acer negundo*), Garlic Mustard (*Alliaria petiolata*), Tartarian Honeysuckle (*Lonicera tatarica*), Common Buckthorn (*Rhamnus cathartica*), Purple Loosestrife (*Lythrum salicaria*) and Black Locust (*Robinia pseudo-acacia*).

Ecological Features and Functions

Creditview Wetland is a Provincially Significant Wetland (PSW). It is designated by the City of Mississauga as a Significant Natural Site.

As a wetland over 0.5 ha in size, this natural area has the potential to support and sustain biodiversity, healthy ecosystem functions and to provide long-term resilience for the natural system.

By containing a relatively high number of habitat types, this natural area has the potential for high biodiversity function, particularly for species that require more than one habitat type for their life

needs. This natural area contains a regionally rare vegetation community type and thus has the potential to support additional biodiversity above and beyond that found in common community types.

This area contains 2 communities of a regionally rare vegetation type.

This area supports seven Species At Risk (four bird species, one butterfly species, one turtle species, one frog species). The area also supports three provincially rare species (one butterfly species, one turtle species, one frog species) and 27 regionally rare plant species.

This area supports Bullfrogs. The wetland at this site supports amphibian breeding and likely supports turtle breeding.

This area supports six species of colonial-nesting birds, six waterfowl species and three wetland-nesting bird species (one is a migrant).

Based on the above features, this area should be evaluated to determine if significant wildlife habitat is present in accordance with the Provincial Policy Statement, Region of Peel Official Plan, and area municipal Official Plan.

This wetland has acidic peat hummocks which suggests that this area was likely once a bog that over a long period of time developed into a swamp and marsh with some remnant bog habitat (Dougan & Associates, 2004).

Opportunities

The presence of nearby schools affords educational opportunities for all ages of local residents. School classes might be engaged to help clean up litter around the site in conjunction with being educated as to the importance of this site and the value of wetlands and the environment in general. The fencing around this area protects it from several of the major impacts of most urban natural areas but does not protect the area from encroachment and disturbance from invasive species. Public education signage or activities to raise awareness of invasive species issues and to provide guidance on how to deal with invasives might be considered for this site.

Incidental butterfly and dragonfly/damselfly species occur here. In view of the community types and richness of other species groups, targeted surveys for these groups in this area are likely to be productive.

Bats are present and an inventory could be carried out to determine the species that are present.

Literature Cited

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Creditview Wetland Context Map (NAI Area # 3522)



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Creditview Wetland Vegetation Communities Map (NAI Area # 3522)

