

CREDITVIEW – OLDE BASE LINE NORTHWEST (CHELTENHAM BADLANDS)

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Region of Peel	NAI Area # 8204	Credit Valley Conservation Authority
Town of Caledon	Size: 75 hectares	Watershed: Credit River
Con 3 WHS, Lots 33-34; Con 4 WHS, Lot 34	Ownership: 51% private, 49% public (Ontario Heritage Trust)	Subwatershed: Credit River – Forks of the Credit to Cheltenham

General Summary

The defining characteristic of this natural area is the erosion caused by its disturbance history of land clearing and grazing. The area consists predominantly of regenerating agricultural land, naturalizing plantations and to a lesser extent, hardwood forest and wetlands. Steep topography and past grazing by cattle have resulted in much erosion and exposure of the underlying shale where little or no vegetation grows. Parts of this natural area abut Creditview Rd. to the west and Olde Base Line Rd. to the north. Good connectivity extends across Olde Base Line Rd. to the extensive natural area along the Niagara Escarpment, and another linkage exists to the south along a stream which links to the Credit River, a regional species movement corridor.

This is an important educational site where geological processes are readily observable in the exposed, eroded Queenston shale and part of this site is popular with tourists. This area supports butterflies with specific habitat requirements of bare ground and scrub vegetation, as well as supporting area-sensitive interior forest breeding birds. The extensive successional communities provide breeding habitat for a variety of area-sensitive open country bird species.

NAI ELC surveyors, botanists and ornithologists inventoried vegetation communities, plants and birds and made incidental observations of other fauna (Table 1), with approximately 44% of the natural area covered (determined by access permission). With respect to the NAI core inventories (vegetation communities, plants, breeding birds), this area is considered to be data-complete.

Table 1: NAI Field Visits

Visit Dates	Inventory Type
02 June 2008	Fauna
05 June 2008	ELC
06 June 2008	ELC
17 June 2008	ELC

24 June 2008	Fauna
08 July 2008	Flora
14 July 2008	Flora
15 Sept. 2008	Flora

Natural Feature Classifications and Planning Areas

Earth Science ANSI – partially within provincially-significant Badland Topography of the Queenston Shales

ESA – partially within Inglewood Slope ESA

Niagara Escarpment Plan

Greenbelt Plan

Physical Features

This natural area is in the Niagara Escarpment physiographic region. The land slopes from the base of the Niagara Escarpment down to the Credit River approximately one kilometre to the southeast. The exposures of red Queenston shale originated from silt deposits in a delta along a coastal plain about 450 million years ago.

The escarpment rises in the forest across Olde Base Line Rd. to the northwest, where rocks of the Whirlpool Sandstone formation are capped by harder, more resistant dolomite. In the early 1900's,

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land clearing for grazing and potentially also cultivation, exposed the Queenston shale and led to it breaking down into red clay (Bruce Trail Conservancy, 2008; Credit Valley Conservation, 2009; Natural Heritage Information Centre, 2010). Erosional forces have shaped it into its current form.

The soils of the area are primarily clay till and clay loam till, plus variable soils deposited by running water which overlay the Queenston bedrock formation.

Two small streams drain the site along ravines and empty directly into the Credit River. The ravines are vegetated between this site and the river and thus form natural corridors linking the Credit River with the Niagara Escarpment.

Human History

The community of Boston Mills is located nearby on the Credit River, at the crossroads of Chinguacousy Rd. and Boston Mills Rd. It was settled by 1860 and early industry included a saw mill and grist mill, suggesting the presence of extensive forests in the area at that time, and a local agricultural focus on grain crops (Caledon Public Library, 2009).

Approximately half of this area is in public ownership and managed by the Bruce Trail Conservancy. The impressive topography of the land draws many visitors, most of whom remain in a small viewing area, however some visitors venture onto the “badlands”, exacerbating further erosion. The Bruce Trail runs along a carefully planned route through the east side of the area. In the past, additional trails existed that created greater disturbance and damage to the fragile vegetation and substrate. These trails are now closed.

This area is surrounded by agricultural land, some rural estates, and fields regenerating from past agricultural use, and is bounded on two sides by roads. The area includes some cultural meadows that connect vegetated valleys of several small streams draining down the slope toward the Credit River a short distance (< 0.5 km) away. The cultural meadow also links some plantations with the naturalizing parts of the area.

Vegetation Communities

The general community types present here are coniferous forest (2%), deciduous forest (17%), mixed forest (1%), marsh (3%), cultural meadow (3%), cultural thicket (22%), cultural savannah (9%), cultural woodland (12%) and plantation (10%). Part of this area is eroded soil and is not vegetated.

The eight vegetation communities that make up this area fall into seven different vegetation types (Table 2). None are provincially rare.

The deciduous forest community in the northwest corner of the area is mid-aged but the other treed communities are younger.

Table 2: ELC Vegetation Communities

Map reference *	Vegetation type	Size in hectares	% of natural area
FOD4-H	Dry – Fresh Hawthorn – Apple Deciduous Forest	1.41	1.87
FOD5-1	Dry – Fresh Sugar Maple Deciduous Forest	2.86	3.81
MAM2-10	Forb Mineral Meadow Marsh (2 communities)	1.80	2.39
MAM2-7	Horsetail Mineral Meadow Marsh	0.74	0.98
THDM2-10	Apple Deciduous Shrub Thicket	18.69	24.86

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CUW1-D	Hawthorn Cultural Woodland	7.15	9.51
CUP3-3	Scotch Pine Coniferous Plantation	0.54	0.72
	TOTAL AREA INVENTORIED	33.19	

* 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 210 species of vascular plants are recorded from this area, of which 137 (65%) are native. One of these, Butternut (*Juglans cinerea*), is Endangered both nationally and provincially and is also provincially rare (S-rank S3?; Table 3). Three Butternut trees were found in this area. The largest was in poor condition, while the smaller two were in good condition. Two additional species are regionally rare (Table 4). American Witch-hazel (*Hamamelis virginiana*), a Carolinian species, occurs here.

Breeding Birds

A total of 47 bird species are recorded for this area, of which 46 (98%) are native. Two of the species observed were migrants and three additional species were visitors foraging at the site. Forty-two of the bird species recorded are believed to be or are likely breeding in or immediately adjacent to the natural area. Two of these breeding bird species are Species At Risk, Bobolink (*Dolichonyx oryzivorus*) is designated as Threatened nationally and provincially and Eastern Meadowlark (*Sturnella magna*) is Threatened nationally (Table 3).

One of the visitor species, the Chimney Swift (*Chaetura pelagica*), is Endangered both nationally and provincially. One individual was observed visiting to forage over the site. Although this natural area does not appear to supply nesting habitat for Chimney Swifts, the area does provide foraging opportunities. The small villages of Cheltenham and Inglewood are within two to three kilometres of this site and these both have older buildings with chimneys that may provide nesting habitat. The historic Cheltenham Brickworks is also within a few kilometres and has six remaining large standing chimneys that may provide nesting habitat for Chimney Swifts.

The large amount of successional and partially open habitat here, along with extensive adjacent meadows and agricultural lands, support five species of grassland birds, namely Bobolink, Brown Thrasher (*Toxostoma rufum*), Eastern Kingbird (*Tyrannus tyrannus*), Eastern Meadowlark and Field Sparrow (*Spizella pusilla*), two of which (Bobolink, Eastern Meadowlark) are area-sensitive. The deciduous forest in the northwest part of the site is sufficiently large enough to support three species of area-sensitive forest interior birds, namely Pileated Woodpecker (*Dryocopus pileatus*), Hairy Woodpecker (*Picoides villosus*) and Scarlet Tanager (*Piranga olivacea*).

Brown Thrashers, Blue-winged Warblers (*Vermivora pinus*) and Eastern Towhees (*Pipilo erythrophthalmus*) were observed here in higher densities than is usually seen in this general area.

Broad-winged Hawk (*Buteo platypterus*) and Belted Kingfisher (*Ceryle alcyon*) were also visitors to the site, and while not believed to be nesting here, they do use the area to forage.

Butterflies and Skippers

A total of 16 species are recorded as incidental observations, with 14 species (87%) being native. None are provincially rare. One of these, Northern Cloudywing (*Thorybes pylades*), has specific habitat requirements (favouring drier habitats with bare ground) as found at this site.

Dragonflies and Damselflies

A total of five native dragonfly/damselfly species are recorded as incidental observations at this site. None are provincially rare. This is one of only two sites during NAI fieldwork (2008, 2009), where Beaverpond Baskettail (*Epitheca canis*) was observed.

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Herpetofauna

Two species of frogs and one snake species occur at this site, all of which are native. None are provincially rare. Although wetlands are limited at this site, they may still support amphibian breeding, and numbers of breeding pairs of frogs should be checked for significance.

Mammals

Four species are recorded here as incidental observations. All are native and common.

Table 3: Designated Species At Risk

Scientific name	Common name	COSEWIC	COSSARO	S rank	G rank
VASCULAR PLANTS					
<i>Juglans cinerea</i>	Butternut	END	END	S3?	G4
BIRDS					
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	THR	S4	G5
<i>Chaetura pelagica</i>	Chimney Swift	THR	THR	S4B	G5
<i>Sturnella magna</i>	Eastern Meadowlark	THR		S5B	G5

Table 4: Regionally Rare Vascular Plant Species (Kaiser, 2001)

Scientific name	Common name	S rank	G rank
VASCULAR PLANTS			
<i>Lysimachia quadrifolia</i>	Whorled Loosestrife	S4	G5
<i>Symphotrichum pilosum</i> var. <i>pilosum</i>	White Heath Aster variety	S5	G5T5

Site Condition and Disturbances

Much of this area is recovering from land clearing in the early 1900's and subsequent cattle grazing. Due to the clay soil, this process is slower than would be encountered in other substrates. Patches of exposed clay are found on some slopes. Apple (*Malus pumila*) and Hawthorn (*Crataegus sp.*) grow in the scrub thickets and are indicative of cattle grazing. Early successional and weedy species dominate much of the property and the invasive Common Buckthorn (*Rhamnus cathartica*) makes up part of this area's tree composition.

A large portion of the area is in public ownership and managed by the Bruce Trail Conservancy. The Bruce Trail passes through this area. The Cheltenham Badlands are a scenic tourist attraction and high public use concentrated in one part of the site is an important contributor to the continuing erosion at that location and the slowing of naturalisation. Public use in the form of foot traffic and off-road vehicles has also led to some litter and unauthorized trails. The volume of human and vehicle traffic may also restrict the area's use by wildlife. The Bruce Trail Conservancy has created a management plan for the site and is working to reroute trails to less sensitive areas, and to construct trails in a manner that protects the surrounding habitat. It has closed unauthorized trails and is conducting public education on the history and environmental issues of the site.

Ecological Features and Functions

Part of this area is included in the provincially significant Badland Topography of the Queenston Shales Earth Science ANSI. Most of this area is also part of the Inglewood Slope ESA.

With forest communities greater than 4 ha and cultural thicket totalling over 10 ha, this natural area has the potential to support and sustain biodiversity, healthy ecosystem functions and to provide long-term resilience for the natural system.

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By containing a high diversity 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 area is broadly linked to an extensive area of adjacent natural habitat with escarpment slope, talus and deciduous forest to the northwest, across Olde Base Line Rd. There is also an adjacent coniferous plantation patch to the southwest, across Creditview Rd., providing habitat continuity for species. To the southeast the area maintains linkage with the Credit River corridor via a narrow but deep eroded valley and stream. Thus, this area acts to link the Niagara Escarpment corridor with the Credit River corridor. The relatively close proximity of other areas of natural habitat creates above-average potential for wildlife movement between natural areas, species dispersal and recovery from disturbance, creating additional resilience for the ecosystem.

The Credit River runs near this area and thus this natural area supports the connectivity function of the Credit River and its tributaries by providing a natural habitat corridor that facilitates the cross-regional movement of wildlife along this corridor between major provincial corridors.

This natural area supports four Species At Risk, including two Threatened breeding bird species, one Threatened visiting bird species and one Endangered plant species. One provincially rare species and two regionally rare species also occur in this area.

Open successional habitat at this site supports five species of grassland birds, including two area-sensitive species. The forest habitat is large enough to support three species of area-sensitive forest interior bird species. The site also provides foraging area for one raptor species.

Wetlands in this area may support amphibian breeding.

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.

Vegetated riparian areas preserve the water quality of the streams which feed into the Credit River. This is especially important due to erosion concerns with exposed clay.

Opportunities

Off-road vehicle use particularly in the eroded gullies and in the adjacent scrub habitat near Olde Baseline Rd. should be curtailed to protect this fragile habitat. As this area is extremely sensitive to the effects of erosion, unauthorized trails should be prevented and existing trails should be fortified to prevent erosion and to allow naturalisation of damaged areas.

The publically-utilized parts of this site should be regularly monitored for invasive species, especially along natural area edges and trails which are often their entry point into a natural area. Invasive species controls could be considered.

Opportunities to increase the width of this area as a linkage between the Niagara Escarpment and the Credit River might be pursued to buffer existing protected habitat, to provide additional protected area and to strengthen connectivity between these important regional and provincial natural corridors.

The health of the Butternut trees present at this site could be assessed by a Butternut Assessor to determine whether any are candidates for inclusion in the Butternut recovery program.

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As Chimney Swifts were observed at this site, a search for suitable roosting locations in the surrounding countryside, possibly in the villages of Inglewood and Cheltenham or in the chimneys of the old Cheltenham Brickworks might be productive.

ELC inventory of the ravines that extend south from this site to the Credit River, and also of the adjacent cultural meadow and cultural savannah, should be conducted (if permission to access was obtained) to better understand the ecology of this area.

Data gaps exist for mammals and for later-season dragonflies/damselflies and butterflies, since records for these groups were collected on an incidental basis. A high number of butterfly species were detected here and there is specialized habitat that also suggests additional surveying would be fruitful. With the escarpment and mature forests across the road, open foraging area at this site and nearby water along the Credit River, bat surveys at this natural area would likely be productive.

A description of the community that does not fit into the current ELC classification system has been forwarded to MNR for either a classification to be determined or for the classification system to be updated to include this type of community.

This natural area has one mature forest community and it could be checked for old-growth forest characteristics.

Literature Cited

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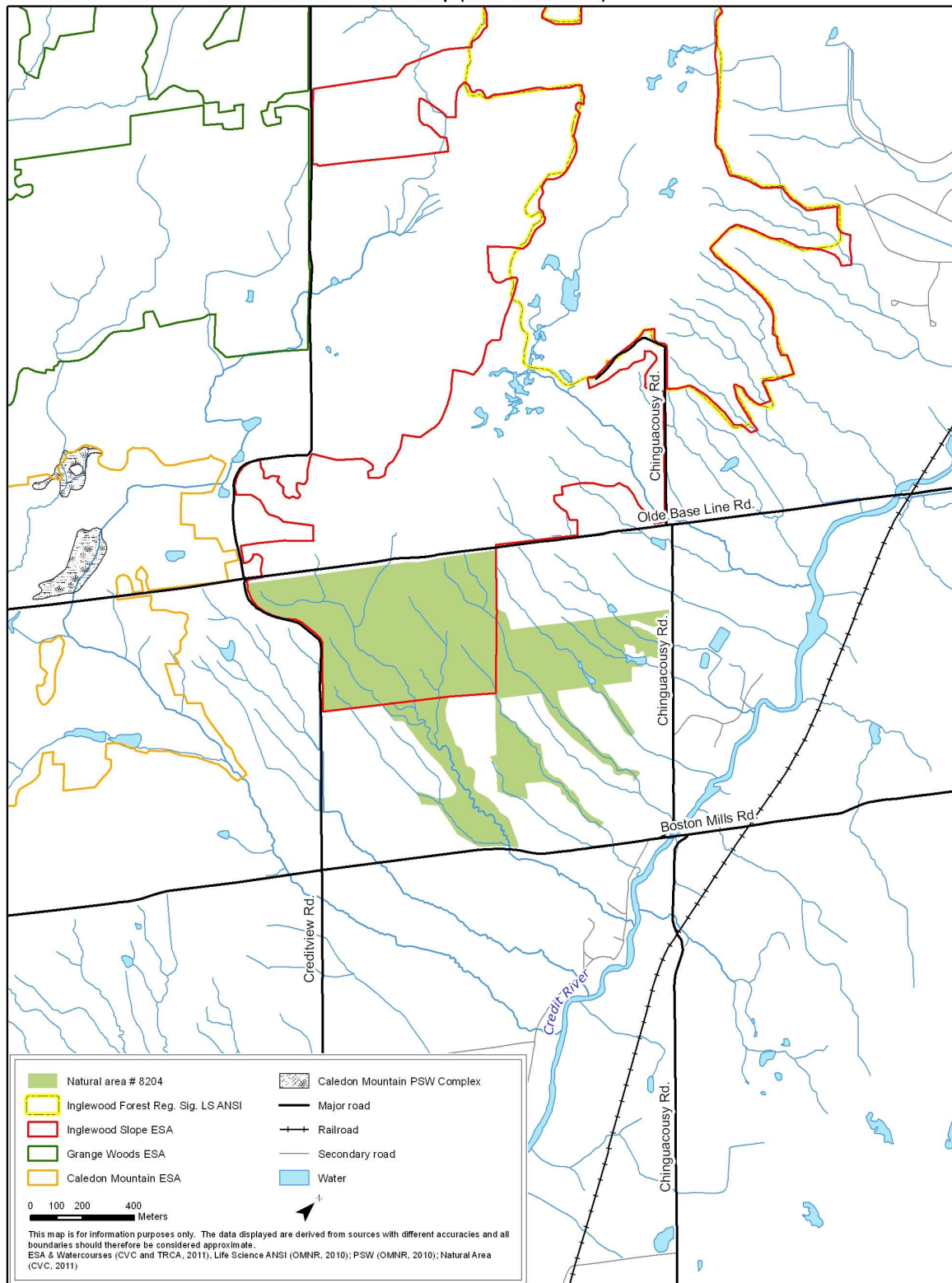
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Creditview - Olde Base Line Northwest Context Map (NAI Area # 8204)



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Creditview - Olde Base Line Northwest Vegetation Communities Map (NAI Area # 8204)

