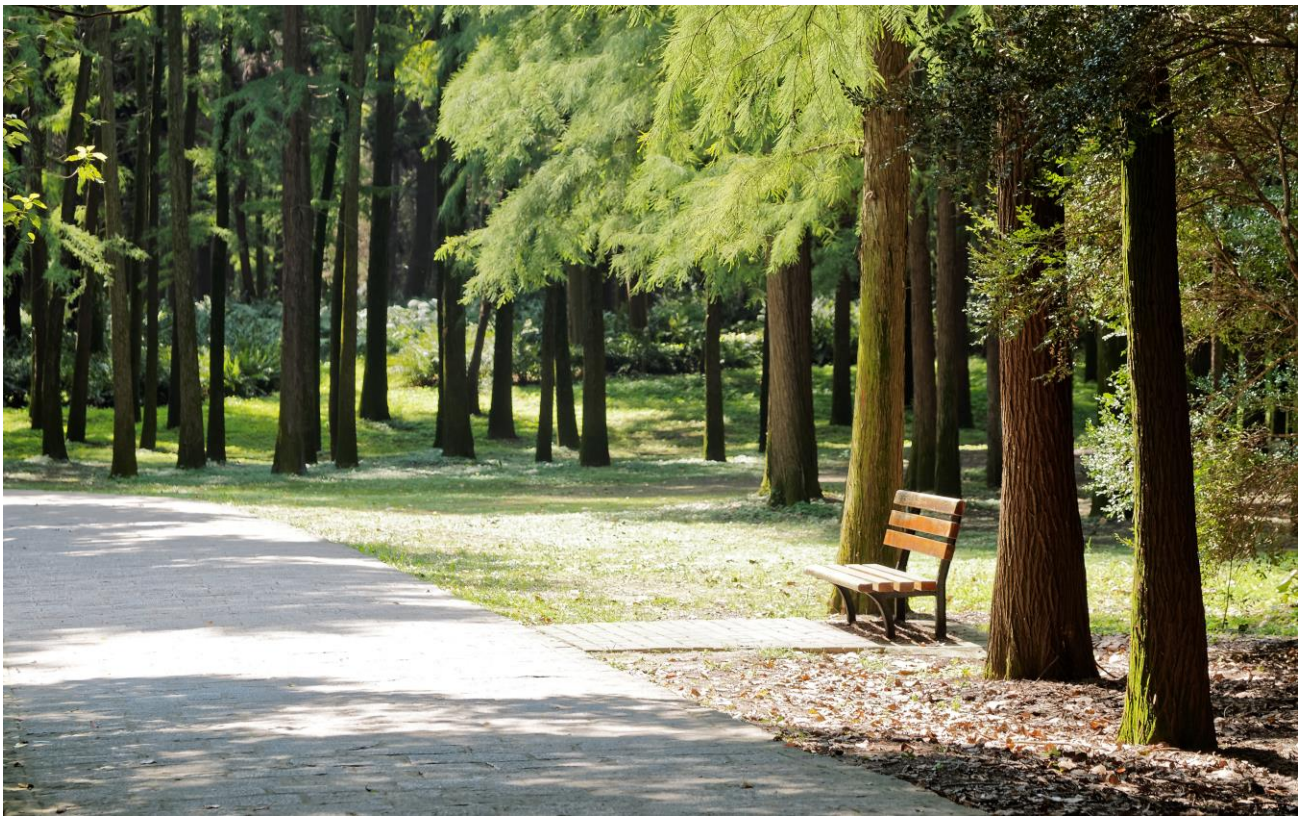
APPENDIX C: TECHNICAL SUPPORTING DOCUMENTS

APPENDIX C-3: ECOLOGY REPORT

PART 4/4



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Hamilton Harbour Fisheries Management Plan.

Appendix A

Agency Consultation

Ko, Winnie

From: Brooks, Angela
Sent: June 1, 2016 3:32 PM
To: 'Lesley.McDonell@conservationhamilton.ca'
Cc: Harris, James (James.Harris@snclavalin.com)
Subject: Hamilton LRT - Natural heritage information request
Attachments: 20160601150804634_20160601_15314185345.pdf

Hi Lesley,

We are starting work on the Environmental Assessment Addendum of the B-Line for the City of Hamilton LRT Project. We have been tasked with updating the 2011 existing conditions, impact assessment and mitigation for surface water, aquatic ecosystems, vegetation, wildlife, hydrogeology and contamination as previously documented for input into the 2016 EPR Addendum.

The study area extends from west of Chedoke Creek to east of the Red Hill Creek Expressway. There is also a small spur line that will run up James Street North to the GO Station. I have attached a figure showing the extent of the LRT B-Line.

We are formally requesting relevant natural features data from within the study area that might assist us with the EA Addendum (ie. Species at Risk, fisheries, ELC, ESAs, regionally or locally rare and significant species etc).

The corridor is a very developed urban corridor and the only remaining "natural" areas include the Chedoke Creek crossing, Gage Park and the Red Hill Creek crossing. According to our initial background data search there are no ESAs or ANSIs in the immediate vicinity of the B-Line. We are aware of the Peregrine Falcon that nests annually in Hamilton and that Chimney Swift are common to the downtown core.

If I can provide additional information to assist with your review please let me know.

Thanks
Ange

Ange Brooks, *M.Sc.*
Senior Ecologist
Environment & Water
Infrastructure

Tel.: +1(416)252-5311 x 56258
Cell.: 416-346-0111
Fax: 416-231-5356

SNC-Lavalin
195 The West Mall
Toronto | Ontario | Canada | M9C 5K1

Ko, Winnie

From: ESA Guelph (MNRF) <ESAGUELPH@ontario.ca>
Sent: July 6, 2016 4:37 PM
To: Brooks, Angela
Subject: RE: formal information inquiry
Attachments: Hamilton SAR List July 6 2016.pdf

Hi Ange

The Ministry of Natural Resources and Forestry (MNRF), Guelph District Office, has reviewed the natural heritage information available for the study area associated with the City of Hamilton LRT Project.

We kindly ask that you direct all further natural heritage information requests to esa.guelph@ontario.ca

Wetlands

We note that Van Wagner`s Marsh Provincially Significant Wetland (PSW) Complex is located north of the proposed LRT.

Fisheries

The portion of Redhill Creek within the study area is a warmwater system that includes white sucker, pumpkinseed, bluntnose minnow, longnose dace, creek chub, eastern blacknose dace, common shiner and fathead minnow.

Species at Risk

There are records in the area for the following species at risk (SAR): Chimney Swift (threatened), Blanding`s Turtle (threatened), Spiny Softshell (threatened), Snapping Turtle (special concern), Northern Map Turtle (special concern) and Peregrine Falcon (special concern). The turtle species in this area are associated with Cootes Paradise/Hamilton Harbour. There is also potential for Barn Swallow (threatened) to nest within culverts or under bridges in the study area. A list of SAR known to occur in the City of Hamilton is attached for your reference.

I hope this information is of assistance.

Best regards,

Anne Marie Laurence
Management Biologist
Ministry of Natural Resources & Forestry
Guelph District
(519) 826-4132

From: Brooks, Angela [mailto:Angela.Brooks@snclavalin.com]
Sent: June 1, 2016 3:55 PM
To: Marriott, David (MNRF)

Cc: Harris, James
Subject: formal information inquiry

Good afternoon Dave,

We are starting work on the Environmental Assessment Addendum of the B-Line for the City of Hamilton LRT Project. We have been tasked with updating the 2011 existing conditions, impact assessment and mitigation for surface water, aquatic ecosystems, vegetation, wildlife, hydrogeology and contamination as previously documented for input into the 2016 EPR Addendum.

The study area extends from west of Chedoke Creek to east of the Red Hill Creek Expressway. There is also a small spur line that will run up James Street North to the GO Station. I have attached a figure showing the extent of the LRT B-Line.

We are formally requesting relevant natural features data from within the study area that might assist us with the EA Addendum (ie. Species at Risk, fisheries, ELC, ESAs, regionally or locally rare and significant species etc).

The attached letter and figure forms our formal request for information from the Ministry of Natural Resources and Forestry. We have also made a similar information request to Hamilton Conservation Authority.

Many thanks in advance,
Ange

Ange Brooks, *M.Sc.*
Senior Ecologist
Environment & Water
Infrastructure

Tel.: +1(416)252-5311 x 56258
Cell.: 416-346-0111
Fax: 416-231-5356

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Appendix B

Species Lists

Appendix B.1

Vascular Plant List

Appendix B.1
Vascular Plant List

Family	Genus	Species	Scientific Name	Common Names	Coefficient Conservation	Coefficient Wetness	GlobalRank	COSEWIC	COSSARO	SRank	Track	Introduced
ACERACEAE												
	Acer	negundo	*Acer negundo*	Manitoba Maple	0	-2	G5			S5		
	Acer	saccharum	*Acer saccharum ssp. saccharum*	Sugar Maple	4	3	G5			S5		
ANACARDIACEAE												
	Rhus	typhina	*Rhus typhina*	Staghorn Sumac	1	5	G5			S5		
	Toxicodendron	radicans	*Toxicodendron radicans*	Poison Ivy	2	0	G5			S5		
APIACEAE												
	Daucus	carota	*Daucus carota*	Wild Carrot	0	5	G?			SE5		I
ASCLEPIADACEAE												
	Asclepias	syriaca	*Asclepias syriaca*	Common Milkweed	0	5	G5			S5		
ASTERACEAE												
	Achillea	millefolium	*Achillea millefolium ssp. millefolium*	Common Yarrow	0	3	G5			SE5		I
	Ambrosia	artemisiifolia	*Ambrosia artemisiifolia*	Common Ragweed	0	3	G5			S5		
	Aster	novae-angliae	*Aster novae-angliae*	New England Aster	2	-3	G5			S5		
	Cichorium	intybus	*Cichorium intybus*	Chicory	0	5	G?			SE5		I
	Cirsium	arvense	*Cirsium arvense*	Canada Thistle	0	3	G?			SE5		I
	Hieracium	caespitosum	*Hieracium caespitosum*	Field Hawkweed	0	5	G?			SE5		I
	Solidago	altissima	*Solidago altissima var. altissima*	Tall Goldenrod	1	3	G?			S5		
	Solidago	caesia	*Solidago caesia*	Blue-stem Goldenrod	5	3	G5			S5		
	Solidago	gigantea	*Solidago gigantea*	Giant Goldenrod	4	-3	G5			S5		
	Solidago	rugosa	*Solidago rugosa ssp. rugosa*	Rough Goldenrod	4	-1	G5			S5		
	Sonchus	asper	*Sonchus asper ssp. asper*	Spiny-leaved Sow-thistle	0	0	G?			SE5		I
	Taraxacum	officinale	*Taraxacum officinale*	Common Dandelion	0	3	G5			SE5		I
	Tussilago	farfara	*Tussilago farfara*	Coltsfoot	0	3	G?			SE5		I
BETULACEAE												
	Carpinus	caroliniana	*Carpinus caroliniana*	Blue Beech	6	0	G5			S5		
	Ostrya	virginiana	*Ostrya virginiana*	Hop Hornbeam	4	4	G5			S5		
BORAGINACEAE												
	Echium	vulgare	*Echium vulgare*	Viper's Bugloss	0	5	G?			SE5		I
BRASSICACEAE												
	Alliaria	petiolata	*Alliaria petiolata*	Garlic Mustard	0	0	G?			SE5		I
CAPRIFOLIACEAE												
	Lonicera	tatarica	*Lonicera tatarica*	Tartarian Honeysuckle	0	3	G?			SE5		I
CORNACEAE												
	Cornus	alternifolia	*Cornus alternifolia*	Alternate-leaved Dogwood	6	5	G5			S5		
	Cornus	foemina	*Cornus foemina ssp. racemosa*	Grey Dogwood	2	-2	G5			S5		
DIPSACACEAE												
	Dipsacus	fullonum	*Dipsacus fullonum ssp. sylvestris*	Common Teasel	0	5	G?			SE5		I
FABACEAE												
	Coronilla	varia	*Coronilla varia*	Trailing Crown-vetch	0	5	G?			SE5		I
	Lotus	corniculatus	*Lotus corniculatus*	Bird's-foot Trefoil	0	1	G?					I
	Melilotus	alba	*Melilotus alba*	White Sweet-clover	0	3	G5			SE5		I
	Robinia	pseudo-acacia	*Robinia pseudo-acacia*	Black Locust	0	4	G5			SE5		I
	Trifolium	pratense	*Trifolium pratense*	Red Clover	0	2	G?			SE5		I
	Vicia	cracca	*Vicia cracca*	Cow Vetch	0	5	G?			SE5		I
FAGACEAE												
	Fagus	grandifolia	*Fagus grandifolia*	American Beech	6	3	G5			S5		
	Quercus	rubra	*Quercus rubra*	Red Oak	6	3	G5			S5		
GROSSULARIACEAE												
	Ribes	rubrum	*Ribes rubrum*	Garden Red Current	0	5	G4G5			SE5		I
HAMAMELIDACEAE												
	Hamamelis	virginiana	*Hamaemelis virginiana*	Witch Hazel	6	3	G5			S5		
JUGLANDACEAE												
	Carya	ovata	*Carya ovata*	Shagbark Hickory	6	3	G5			S5		
	Juglans	cinerea	*Juglans cinerea*	Butternut	6	2	G4	END	END	S4		
	Juglans	nigra	*Juglans nigra*	Black Walnut	5	3	G5			S4		
LILIACEAE												
	racemosum	racemosum	*Maianthemum racemosum ssp racemosum*	False Solomon's Seal	4	3	G5			S5		
OLEACEAE												
	Fraxinus	americana	*Fraxinus americana*	White Ash	4	3	G5			S5		
	Fraxinus	pennsylvanica	*Fraxinus pennsylvanica*	Red Ash	3	-3	G5			S5		

Appendix B.1
Vascular Plant List

Family	Genus	Species	Scientific Name	Common Names	Coefficient Conservation	Coefficient Wetness	GlobalRank	COSEWIC	COSSARO	SRank	Track	Introduced
PLANTAGINACEAE												
	Plantago	major	*Plantago major*	Common Plantain	0	-1	G5			SE5		I
POACEAE												
	Agrostis	gigantea	*Agrostis gigantea*	Redtop Grass	0	0	G4G5			SE5		I
	Bromus	inermis	*Bromus inermis ssp. inermis*	Smooth Brome	0	5	G4G5			SE5		I
	Dactylis	glomerata	*Dactylis glomerata*	Orchard Grass	0	3	G?			SE5		I
	Phleum	pratense	*Phleum pratense*	Timothy	0	3	G?			SE5		I
	Phragmites	australis	*Phragmites australis*	Common Reed	0	-4	G5			S5		
	Poa	pratensis	*Poa pratensis ssp. pratensis*	Kentucky Blue Grass	0	1	G?			S5		
POLYGONACEAE												
	Rumex	crispus	*Rumex crispus*	Curly Dock	0	-1	G?			SE5		I
RANUNCULACEAE												
	Thalictrum	dioicum	*Thalictrum dioicum*	Early Meadow-rue	5	2	G5			S5		
RHAMNACEAE												
	Rhamnus	cathartica	*Rhamnus cathartica*	Common Buckthorn	0	3	G?			SE5		I
ROSACEAE												
	Crataegus	sp	*Crataegus sp*	Hawthorn Species								
	Geum	laciniatum	*Geum laciniatum*	Rough Avens	4	-3	G5			S4		
	Prunus	avium	*Prunus avium*	Sweet Cherry	0	5	G?			SE4		I
	Prunus	serotina	*Prunus serotina*	Black Cherry	3	3	G5			S5		
	Prunus	virginiana	*Prunus virginiana ssp. virginiana*	Choke Cherry	2	1	G5			S5		
	Rubus	idaeus	*Rubus idaeus ssp. melanolasius*	Wild Red Raspberry	0	-2	G5			S5		
	Rubus	odoratus	*Rubus odoratus*	Purple Flowering Raspberry	3	5	G5			S5		
	Rubus	occidentalis	*Rubus occidentalis*	Black Raspberry	2	5	G5			S5		
SALICACEAE												
	Populus	balsamifera	*Populus balsamifera ssp. balsamifera*	Balsam Poplar	4	-3	G5			S5		
	Populus	deltoides	*Populus deltoides ssp. deltoides*	Eastern Cottonwood	4	-1	G5			S5		I
	Salix	nigra	*Salix nigra*	Black Willow	6	-5	G5			S4?		I
	Salix	petiolaris	*Salix petiolaris*	Slender Willow	3	-4	G5			S5		
SCROPHULARIACEAE												
	Verbascum	thapsus	*Verbascum thapsus*	Common Mullein	0	5	G?			SE5		I
SIMAROUBACEAE												
	Ailanthus	altissima	*Ailanthus altissima*	Tree of Heaven	0	5	G?			SE5		I
TILIACEAE												
	Tilia	americana	*Tilia americana*	Basswood	4	3	G5			S5		
ULMACEAE												
	Ulmus	americana	*Ulmus americana*	White Elm	3	-2	G5?			S5		
	Ulmus	pumila	*Ulmus pumila*	Siberian Elm	0	5	G?			SE3		I
URTICACEAE												
	Boehmeria c	cylindrica	*Boehmeria cylindrica*	False Nettle	4	-5	G5			S5		I
VITACEAE												
	Parthenocissus	quinquefolia	*Parthenocissus quinquefolia*	Virginia Creeper	6	1	G5			S4?		
	Vitis	riparia	*Vitis riparia*	Riverbank Grape	0	-2	G5			S5		

Appendix B.2

Breeding Birds in the Study Area

Appendix B.2: Breeding Birds at the OMSF

Family	Scientific Name	Common Name	G-Rank[1]	S-Rank[1]	Breeding Evidence	COSEWIC Status	COSSARO Status
Phalacrocroacidae	*Phalacrocorax auritus*	Double-crested Cormorant	G5	S5	NONE	No status	No status
Cathartidae	*Cathartes aura*	Turkey Vulture	G5	S5	NONE	No status	No status
Accipitridae	*Buteo jamaicensis*	Red-tailed Hawk	G5	S5	POSS	No status	No status
Charadriidea	*Charadrius vociferus*	Killdeer	G5	S5	CONF	No status	No status
Laridae	*Larus delawarensis*	Ring-billed Gull	G5	S5	NONE	No status	No status
	Larus argentatus	Herring Gull	G5	S5	NONE	No status	No status
Columbidae	*Columba livia*	Rock Dove	G5	SE	POSS	No status	No status
	Zenaida macroura	Mourning Dove	G5	S5	POSS	No status	No status
Apodidae	*Chaetura pelagica*	Chimney Swift	G5	S4	NONE	THR	THR
Picidae	*Picoides pubescens*	Downy Woodpecker	G5	S5	POSS	No status	No status
	Picoides tridactylus	Hairy Woodpecker	G5	S5	POSS	No status	No status
	Colaptes auratus	Northern Flicker	G5	S5	POSS	No status	No status
Tyrannidae	*Tyrannus tyrannus*	Eastern Kingbird	G5	S5	CONF	No status	No status
	Myiarchus crinitus	Great Crested Flycatcher	G5	S5	NONE	No status	No status
Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	G5	S5	CONF	No status	No status
Corvidae	*Cyanocitta cristata*	Blue Jay	G5	S5	CONF	No status	No status
	Corvus	American Crow	G5	S5	POSS	No status	No status

Family	Scientific Name	Common Name	G-Rank[1]	S-Rank[1]	Breeding Evidence	COSEWIC Status	COSSARO Status
	bracgyrhynchos						
Hirundinidae	*Hirundo rustica*	Barn Swallow	G5	S5	CONF	THR	THR
Paridae	*Poecile atricapilla*	Black-capped Chickadee	G5	S5	CONF	No status	No status
Turdidae	*Turdus migratorius*	American Robin	G5	S5	CONF	No status	No status
Mimidae	*Dumetella carolinensis*	Gray Catbird	G5	S5	CONF	No status	No status
	Mimus polyglottos	Northern Mockingbird	G5	S5	PROB	No status	No status
Sturnidae	*Sturnus vulgaris*	European Starling	G5	SE	CONF	No status	No status
Bombycillidae	*Bombycilla cedrorum*	Cedar Waxwing	G5	S5	PROB	No status	No status
Parulidae	*Dendroica petechia*	Yellow Warbler	G5	S5	CONF	No status	No status
	Geothlypis trichas	Common Yellowthroat	G5	S5	PROB	No status	No status
Thraupidae	*Piranga olivacea*	Scarlet Tanager	G5	S5	PROB	No status	No status
Emberizidae	*Pipilo erythrophthalmus*	Eastern Towhee	G5	S5	PROB	No status	No status
	Spizella passerina	Chipping Sparrow	G5	S5	PROB	No status	No status
	Spizella pusilla	Field Sparrow	G5	S5	CONF	No status	No status
	Passerculus sandwichensis	Savannah Sparrow	G5	S5	CONF	No status	No status
	Melospiza melodia	Song Sparrow	G5	S5	CONF	No status	No status
Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	G5	S5	CONF	No status	No status

Family	Scientific Name	Common Name	G-Rank[1]	S-Rank[1]	Breeding Evidence	COSEWIC Status	COSSARO Status
Icteridae	*Agelaius phoeniceus*	Red-Winged Blackbird	G5	S5	CONF	No status	No status
	Quiscalus quiscula	Common Grackle	G5	S5	PROB	No status	No status
	Molothrus ater	Brown-Headed Cowbird	G5	S5	PROB	No status	No status
Fringillidae	*Carduelis tristis*	American Goldfinch	G5	S5	PROB	No status	No status
Passeridae	*Passer domesticus*	House Sparrow	G5	SE	PROB	No status	No status

[1] Nature Conservancy conservation concern rankings (NHIC, 2010): G - Global Level, S - Sub-national Rank (Ontario), B - Breeding, N – Non-breeding, 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure.
Protection status: [2]COSEWIC - Committee on the Status of Endangered Wildlife in Canada; [3]SARO - Species at Risk in Ontario; END – Endangered, THR – Threatened, SC – Special concern, "-" – Not listed. [4]Ontario Breeding Bird Atlas breeding evidence (Bird Studies Canada, 2006): CONF – Confirmed, PROB – Probable, POSS – Possible

Appendix B.3

Fish Species in the Spencer Creek Watershed

Appendix B.3: Fish Community of the Spencer Creek Watershed

Family	Scientific Name	Common Name
Petromyzontidae	*Lampetra appendix*	American brook lamprey
	Petromyzon marinus	Sea lamprey
Salmonidae	*Oncorhynchus mykiss*	Rainbow trout
	Salmo trutta	Brown trout
	Salvelinus fontinalis	Brook trout
Umbridae	*Umbra limi*	Central mudminnow
Esodidae	*Esox lucius*	Northern pike
Cyprinidae	*Chrosomus eos*	Northern redbelly dace
	C. neogaeus	Finescale dace
	Clinostomus elongates	Redside dace
	Carassius auratus	Goldfish
	Cyprinus carpio	Carp
	Notropis atherinoides	Emerald shiner
	Hybognathus hankinsoni	Brassy minnow
	Nocomis biguttatus	Hornyhead chub
	N. micropogon	River chub
	Luxilus cornutus	Common shiner
	Notemigonus crysoleucas	Golden shiner
	Notropis heterolepis	Blacknose shiner
	N. hudsonius	Spottail shiner
	N. rubellus	Rosyface shiner
	N. ludibundus	Sand shiner
	Cyprinella spiloptera	Spotfin shiner
	Notropis volucellus	Mimic shiner
	Pimephales notatus	Bluntnose minnow
	P. promelas	Fathead minnow
	Rhinichthys atratulus	Blacknose dace
	R. cataractae	Longnose dace
	Semotilus atromaculatus	Creek chub
	Luxilus chrysocephalus	Striped shiner
	Semotilus margarita	Pearl dace
Catostomidae	*Hypentelium nigricans*	Northern hog sucker
	Castostomus commersoni	Common white sucker
Ictaluridae	*Ameiurus nebulosus*	Brown bullhead
Gasterosteidae	*Culaea inconstans*	Brook stickleback
Centrarchidae	*Lepomis gibbosus*	Pumpkinseed
	Micropterus salmoides	Largemouth bass
	Ambloplites rupestris	Rock bass
	Lepomis cyanellus	Green sunfish
	L. macrochirus	Bluegill
	Pomoxis nigromaculatus	Black crappie
Percidae	*Perca flavescens*	Yellow perch
	Etheostoma caeruleum	Rainbow darter
	E. flabellare	Fantail darter

Appendix B.4

Significant Wildlife Habitat Reference Tables

Appendix B.4: Significant Wildlife Evaluation

Evaluation Summary for Seasonal Concentration Areas

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (yes/no)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Waterfowl Stopover and Staging Areas (Terrestrial)	CUM1	Yes	Fields with sheet water during Spring. Verified presence of an annual concentration of any listed species. Mixed species aggregations of 100 or more individuals.	None of the indicator bird species for significant wildlife were detected in the Study Area Birds are not present in numbers that would suggest the meadow area is used for stopover purposes.	No
	CUT1	Yes			
Waterfowl Stopover and Staging Areas (Aquatic)	MAS1	No	Ponds, marshes, lakes, bays, coastal inlets, watercourses. Annual use of habitat is documented from information sources or field studies. Aggregations of 100 or more of listed species for 7days.	Indicated ELC units were not identified within the Project Area. Habitat was not identified in Project Area. Waterfowl were not documented in the study area in numbers that would suggest the Study Area includes a migratory route.	No
	MAS2	No			
	MAS3	No			
	SAS1	No			
	SAF1	No			
	SAM1	No			
	SWD1	No			
	SWD2	No			
	SWD3	No			
	SWD4	No			
	SWD5	No			
	SWD6	No			
	SWD7	No			
Shorebird Migratory Stopover Area	BBO1	No	Shorelines of lakes, rivers, and wetlands. Annual use of habitat is documented from information sources or field studies. Presence of 3 or more of listed species and > 1000 Shorebird Use Days during spring or fall migration period. Any site with >100 Whimbrel stop briefly (<24h) during spring	Indicated ELC units were not identified within the Project Area. Habitat was not identified in Project Area. Shorebirds were not documented in the study area in numbers that would suggest the study area includes a migratory route.	No
	BBO2	No			
	BBS1	No			
	BBS2	No			
	BBT1	No			
	BBT2	No			
	SDO1	No			
	SDS2	No			
	SDT1	No			
	MAM1	No			
	MAM2	No			
	MAM3	No			
	MAM4	No			
	MAM5	No			

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (yes/no)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			migration, any site with >100 Whimbrel used for 3 years or more would be considered significant.		
Raptor Wintering	CUM	Yes	Raptor Wintering sites need to be > 20ha with a combination of forest and upland.	Project Area is approximately 8.66 ha. No raptor wintering habitat was identified, nor was there any indication of such habitat or associated species documented in any of the background studies reviewed.	No
	CUS1	No			
	CUT	Yes			
	CUW	Yes			
	FOC	No			
	FOD	Yes			
	FOM	No			
Bat Hibernacula	CCR1	No	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts.	Indicated ELC units were not identified within the Project Area. Bat monitoring studies were not completed. No evidence of bat concentrations or known areas of bat concentration reported for the project area. No suitable habitat found within the study area.	No
	CCR2	No			
	CCA1	No			
	CCA2	No			
Bat Maternity Colonies	FOD	Yes	Maternal colonies can be found in tree cavities, vegetation and often buildings. Maternity colonies in listed forested stands with >10/ha large diameter (>25cm DBH) wildlife trees.	Bat monitoring studies were not completed. The Disturbance Area is outside of FOD unit with minimal tree removals. Project Area is approximately 8.66ha. No significant bat	No
	FOM	No			
	SWD	No			

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (yes/no)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
	SWM	No	Maternity Colonies with confirmed use by: • >10 Big Brown Bats • >5 Adult Female Silver-haired Bats	habitat was identified in available background studies or were identified by MNRF.	
Turtle Wintering	SW	No	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen.	There is no suitable habitat available in the Study Area and no turtles were observed in the Study Area.	No
	MA	No			
	OA	No			
	SA	No			
	FEO	No			
	BOO	No			
Snake Hibernacula	Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH.	Yes	Observation of congregations (5+) of snakes on sunny warm days in the spring or fall.	Rock piles were observed within the Study Area. No congregations of snakes or hibernacula were identified in field visits to the area. No hibernacula were identified by landowners, MNRF District staff, or in any of the background reports reviewed for the Study Area.	No

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (yes/no)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Colonial Nesting Bird Breeding Habitat (Bank/Cliff)	BLS1	No	Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns. Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not licensed/permitted aggregate area. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.	Only Barn Swallows were identified during field surveys. Cliff swallows were not documented in background material reviewed, nor were they observed during breeding bird surveys conducted in the Study Area.	No
	BLT1	No			
	CLO1	No			
	CLS1	No			
	CLT1	No			
	CUM1	Yes			
	CUS1	No			
	CUT1	No			
Colonial Nesting Bird Breeding Habitat (tree/shrub)	SWM2	No	Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Presence of 2 or more active nests of any of the listed species.	No habitat for arboreal-nesting colonial birds was identified, nor was there any indication of such habitat or associated species documented in any of the background studies reviewed.	No
	SWM3	No			
	SWM5	No			
	SWM6	No			
	SWD1	No			
	SWD2	No			
	SWD3	No			
	SWD4	No			
	SWD5	No			
	SWD6	No			
	SWD7	No			
	FET1	No			
Colonial Nesting Bird Breeding Habitat (Ground)	MAM1-6	No	Any (rocky) island or peninsula (natural or artificial) within a lake or large river. Close proximity to watercourses in open fields or pastures	There is no open water located within the Study Area or adjacent to the Study Area. Wildlife species indicated under the	No
	MAS1-3	No			
	CUM	Yes			
	CUT	Yes			
	CUS	No			

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (yes/no)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			with scattered trees or shrubs.	criteria were not documented in background material reviewed, nor were they observed during breeding bird surveys conducted in the Study Area.	
Butterfly Migratory	CUM	Yes	Woodlots >10 ha in size and within 5 km of Lake Ontario. Habitat is typically a combination of field and forest. Monarch Use Days of >5000 (or >3000 with presence of Painted Ladies or Red Admirals) is to be considered	The Study Area is located within 5 km of Lake Ontario. The Study Area is not >10 ha.	No
	CUP	No			
	CUS	No			
	CUT	Yes			
	FOC	No			
	FOD	Yes			
	FOM	No			
Landbird Migratory Stopover Area	FOM	No	Woodlots >5 ha in size and within 5 km of Lake Erie and Ontario. Sites have a variety of habitats; forest, grassland, and wetland complexes. Use of habitat by >200 birds/day and with >35 bird species recorded on at least five different survey dates.	The Study Area is located within 5 km of Lake Ontario or Lake Erie. The Study Area is >5 ha. There were less than 35 bird species observed during each of the 3 breeding bird surveys.	No
	FOC	No			
	FOD	Yes			
	SWC	No			
	SWM	No			
	SWD	No			
Deer Winter Congregation Areas	FOC	No	Woodlots will typically be >100 ha in size. Woodlots <100 ha may be considered as significant based on MNRF studies or assessment.	No woodlots >100 ha within the Study Area. No deer wintering areas were identified in the Study Area. No evidence of deer congregation areas were noted by SNC-Lavalin Inc.	No
	FOM	No			
	FOD	Yes			
	SWC	No			
	SWM	No			
	SWD	No			

1. Criteria are summarized from Ministry of Natural Resources and Forestry (MNRF) (2015) Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E.

Summary of Evaluation of Specialized Habitat for Wildlife

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Waterfowl Nesting Habitat	MAS1	No	Upland habitats adjacent to the indicated wetland ELC Ecosites are candidate Significant Wildlife Habitat. A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each other where waterfowl nesting is known to occur. Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. Presence of three or more nesting pairs for listed species (except Mallard), or 10 or more nesting pairs for listed species including Mallard. Any active nest of American Black Duck is considered significant.	Potential habitat within the Study Area is not available.	No
	MAS2	No			
	MAS3	No			
	SAS1	No			
	SAM1	No			
	SAF1	No			
	MAM1	No			
	MAM2	No			
	MAM3	No			
	MAM4	No			
	MAM5	N			
	MAM6	No			
	SWT1	No			
	SWT2	No			
	SWD1	No			
	SWD2	No			
	SWD3	No			
	SWD4	No			
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	FOD	Yes	The indicated ELC Ecosites directly adjacent to riparian areas – rivers, lakes, ponds, and wetlands. Presence of one or more active Osprey or Bald Eagle nests. Survey all forested land adjacent to a lake, pond, wetland 10 ha or greater in size, and all islands. Nests located on man-made objects are not to be included as SWH.	No evidence of Osprey or Bald Eagle nesting in Study Area. There is an active Bald Eagle nest in Cootes Paradise on the Royal Botanical Gardens lands and this is outside of the study area. Lake Ontario is nearby (<5km) but the habitat in the study area is not ideal for these	No
	FOM	No			
	FOC	No			
	SWD	No			
	SWM	No			
	SWC	No			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			Nest sites in Ecoregion 7E are fairly uncommon and are used annually by these species.	species.	
Woodland Raptor Nesting Habitat	FOM	No	All natural or conifer plantation forest stands >30 ha in size with > 10 ha of interior habitat (200 m buffer from edge). Presence of one or more active nests from species list.	The Study Area forest stand is not >30 ha. Of the listed species none were observed during breeding bird surveys conducted in the area by SNC-Lavalin Inc. in 2015.	No
	FOC	No			
	FOD	Yes			
	SWC	No			
	SWM	No			
	SWD	No			
	CUP3	No			
Turtle Nesting Areas	FEO1	No	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers that provide sand and/or gravel that turtles are able to dig in. Presence of one or more Northern Map Turtle or Snapping Turtle nesting, or five or more nesting Midland Painted Turtles.	No turtles were documented by SNC–Lavalin during the 2016 field investigations. No turtle nesting sites were documented within the Study Area.	No
	BOO1	No			
	MAM1	No			
	MAM2	No			
	MAM3	No			
	MAM4	No			
	MAM5	No			
	MAM6	No			
	SAS1	No			
	SAF1	No			
	SAM1	No			
Seeps and Springs	Seeps/springs are areas where ground water comes to the surface. Any forested Ecosite within the headwater	No	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. Presence of a site with >2 seeps/springs confirmed by studies should be considered Significant Wildlife Habitat. The seeps/springs will be present even during dry	Study Area is not within the headwaters. Whereas groundwater does appear to contribute to the tributary adjacent to the Study Area, no areas of seeps or springs were documented in the Study Area	No

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
	areas of a stream could have seeps/springs.		summers.		
Amphibian Breeding Habitat (woodland)	FOC	No	Presence of a wetland, pond, or woodland pool (including vernal pools) >500m^2 within or adjacent to a woodland (no minimum size). Woodlands with permanent ponds are more likely to be used as breeding habitat. Presence of breeding population of one or more of the listed species with at least 20 individuals (adults, juveniles, eggs/larval masses).	No anuran call surveys were completed by SNC-Lavalin. There is no suitable habitat for amphibians within the Study Area.	No
	FOD	Yes			
	FOM	No			
	SWC	No			
	SWM	No			
	SWD	No			
Amphibian Breeding Habitat (wetland)	SW	No	Wetlands >500 m^2, supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape, and concealment from predators. Presence of breeding population of one or more of the listed salamander species, or two or more of the listed frog or toad species and	No anuran call surveys were completed by SNC-Lavalin. There is no suitable habitat for amphibians within the Study Area.	No
	MA	No			
	FE	No			
	BO	No			
	OA	No			
	SA	No			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			with at least 20 breeding individuals (adults, juveniles, eggs/larval masses) or; two or more of the listed frog/toad species with Call Level Codes of 3, or; any wetland with confirmed breeding by American Bullfrogs.		
Woodland Area – Sensitive Bird Breeding Habitat	FOC	No	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. Interior forest habitat is at least 200 m from forest edge habitat. Presence of nesting or breeding pairs of three or more of the listed wildlife species. Any site with breeding Cerulean Warblers or Canada Warblers is considered to be Significant Wildlife Habitat.	None of the listed species were observed during SNC-Lavalin breeding bird surveys in 2016. Forested ecosites in the project area do not have interior habitat that meets the definition provided. The Study Area is not >30 ha.	No
	FOM	No			
	FOD	Yes			
	SWC	No			
	SWM	No			
	SWD	No			

1. Criteria are summarized from Ministry of Natural Resources and Forestry (MNRF) (2015) Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E.

Summary of Evaluation of Habitat of Species of Conservation Concern

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC Present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (Yes/No)
Marsh Bird Breeding Habitat	MAM1	No	All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. Presence of five or more nesting pairs of Sedge Wren or Marsh Wren **or** one pair of Sandhill Cranes; **or** breeding by any combination of four or more of the listed species. Note: any wetland with breeding of one or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH	No criteria species identified. No wetlands present within the Study Area.	No
	MAM2	No			
	MAM3	No			
	MAM4	No			
	MAM5	No			
	MAM6	No			
	SAS1	No			
	SAM1	No			
	SAF1	No			
	FEO1	No			
	BOO1	No			
	SW	No			
	MA	No			
	CUM1	Yes			
Open Country Bird Breeding Habitat	CUM1	Yes	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years).	Grassland birds were observed during breeding bird surveys by SNC-Lavalin. No grassland habitat of the indicated size is present in the Study Area.	No

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC Present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (Yes/No)
	CUM 2	No	Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. Presence of nesting or breeding of two or more of the listed species; field with one or more breeding Short-eared Owls is to be considered Significant Wildlife Habitat.		
Shrub/ Early Succession Bird Breeding Habitat/ Declining Guild Shrubland Birds	CUT1	Yes	Large field areas succeeding to shrub and thicket habitats>10 ha in size. Shrub land or early successional fields, not Class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. Presence of nesting or breeding by one of the indicator species or at least two of the common species. A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat.	Field Sparrow (Common Species) were documented in Study Area. ELC Ecosite not present within the Study Area. Study Area is not >10 ha.	No
	CUT2	No			
	CUS1	No			
	CUS2	No			
	CUW1	No			
	CUW2	No			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC Present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (Yes/No)
Terrestrial Crayfish	MAM1	No	Chimney or Digger Crayfish and Devil or Meadow Crayfish. Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. Constructs burrows in marshes, mudflats, meadows, and the ground can't be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Presence of one or more individuals of species listed or their chimneys in suitable meadow, marsh, swamp, or moist terrestrial sites.	CUM1 is present within the Study Area however it does not contain any inclusions of marsh ecosites that would be used by terrestrial crayfish as indicated in the criteria. No crayfish chimneys were observed within the Study Area during field investigations.	No
	MAM3	No			
	MAM5	No			
	MAS1	No			
	MAS3	No			
	SWT	No			
	MAM2	No			
	MAM4	No			
	MAM6	No			
	MAS2	No			
	SWD	No			
	SWM	No			
	CUM1	Yes			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC Present in Study Area (Yes/No)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (Yes/No)
Special Concern and Rare Wildlife Species	N/A	N/A	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. All plant and animal element occurrences within a 1 km or 10km grid. Linking candidate habitat on the site needs to be completed to ELC Ecosites.	Butternut (*Juglans cinerea*) was found in the Chedoke Creek valley however this area is outside of the area to be disturbed for the OMSF development. No Special Concern or Provincially Rare plant or animal species were documented in the Study Area.	Yes however the Butternut is in the Chedoke Creek valley and is located outside of the zone of disturbance.

1. Criteria are summarized from Ministry of Natural Resources and Forestry (MNRF) (2015) Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E.

Appendix B.5

Species at Risk in the Hamilton Area

Appendix B.5: Species at Risk in the Hamilton Area

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
BIRDS						
Acadian Flycatcher	*Empidonax virescens*	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in wooded swamps and ravines	No	S2, S3B	END	END
Bald Eagle	*Haliaeetus leucocephalus*	Prefers deciduous and mixed deciduous forest; and habitat close to water bodies such as lakes and rivers; They roost in super canopy trees such as pine	No	S2N, S4B	NAR	SC
Barn Owl	*Tyto alba*	Open areas such as fields, agricultural lands with scattered woodlots, buildings and/or orchards; grasslands, sedge meadows, marshes; nests in hollow trees and live trees >46 cm dbh; also nests in barns, abandoned buildings.	No	S1	END	END
Barn Swallow	*Hirundo rustica*	Prefer open habitat for foraging: grassy fields, pastures, ROWs, agriculture crops, and wetlands. Post-European settlement - Nest in artificial structures, including barns, garages, houses, bridges, and culverts.	Yes	S4B	THR	No Status
Bobolink	*Dolichonyx oryzivorus*	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No	S4B	THR	No Status
Canada Warbler	*Wilsonia canadensis*	Wide range of coniferous and deciduous forests with well-developed shrub layer and structurally complex forest floor.	No	S4B	SC	THR
Cerulean Warbler	*Dendroica cerulea*	Mature deciduous forests that feature large, tall trees and an open understory.	No	S3B	END	SC
Chimney Swift	*Chaetura pelagica*	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys.	Yes	S4B, S4N	THR	THR
Common Nighthawk	*Chordeiles minor*	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open	Yes	S4B	SC	SC

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
		woodlands; flat gravel roofs				
Eastern Meadowlark	*Sturnella magna*	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands	No	S4B	THR	No Status
Golden-winged Warbler	*Vermivora chrysoptera*	Early successional habitat; shrubby, grassy abandoned fields with small deciduous trees bordered by low woodland and wooded swamps; alder bogs; deciduous, damp woods; shrubbery clearings in deciduous woods with saplings and grasses; brier-woodland edges; requires >10 ha of habitat.	No	S4B	THR	SC
Henslow's Sparrow	*Ammodramus henslowii*	Old fields, pastures, and wet meadows that have not been extensively invaded by shrubs.	No	SHB	END	END
Hooded Warbler	*Wilsonia citrina*	Favours mature, deciduous forest (Carolinian), particularly along stream bottoms, ravine edges and where saplings and shrubbery grow; nests above ground in small shrubs; feeds on or near ground.	No	S3B	THR	SC
King Rail	*Rallus elegans*	King Rails are found in a variety of freshwater marshes and marsh-shrub swamp habitats. The species occurs in areas where wild rice grows but also in sedge and cattail marshes. Most importantly, the species requires large marshes with open shallow water that merges with shrubby areas.	No	S2B	END	END
Least Bittern	*Ixobrychus exilis*	The Least Bittern breeds strictly in marshes dominated by emergent vegetation surrounded by areas of open water. Most breeding grounds in Canada are dominated by cattails, but breeding also occurs in areas with other robust emergent plants and in shrubby swamps.	No	S4B	THR	THR
Loggerhead Shrike	*Lanius ludovicianus*	Prefers a combination of pasture or other grassland with scattered low trees and shrubs.	No	S2B	END	END
Louisiana Waterthrush	*Seiurus motacilla*	Prefers wooded ravines with running streams; also woodlands swamps; large tracts of mature deciduous or mixed forests;	No	S3B	SC	SC

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
		canopy cover is essential; has strong affinity to nest sites; nests on ground.				
Northern Bobwhite	*Colinus virginianus*	Edge and grassland-type habitats, non-intensively farmed agricultural lands.	No	S1	END	END
Olive-sided Flycatcher	*Contopus cooperi*	Open areas containing tall live trees or snags.	No	S4B	THR	SC
Peregrine Falcon	*Falco peregrinus anatum/tundrius*	Rock cliffs, crags, especially situated near water; tall buildings in urban centre.	Yes	S3B	SC	THR
Piping Plover	*Charadrius melodus*	Nests on beaches	No	S1B	END	END
Prothonotary Warbler	*Protonotaria citrea*	Generally found in the dead trees of flooded woodlands or deciduous swamp forests; Carolinian zone	No	S1B	END	END
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees.	No	S4B	THR	SC
Short Eared Owl	*Asio flammeus*	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	No	S2N, S4B	SC	SC
Yellow-breasted Chat	*Icteria virens*	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc.	No	S2B	SC (ssp. *virens)*	SC
HERPETOFAUNA						
Blanding's Turtle (*Great Lakes/St Lawrence population*)	*Emydoidea blandingii*	Shallow water, prefers marshes, bogs, secluded bays, shallow parts of lakes and creeks with soft substrates and dense aquatic vegetation.	No	S3	THR	THR
Eastern Musk Turtle	*Sternotherus odoratus*	Stinkpot Turtles require shallow water with little or no current, and soft earth to bury into when they hibernate. Nesting habitat is variable, but it must be close to the water and exposed to	No	S3	THR	THR

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
		direct sunlight.				
Gray Ratsnake	*Pantherophis spiloides*	Forests and wooded areas, sometimes summers in open areas (old fields, meadows).	No	S3	END	END
Jefferson/Blue-spotted Salamander Polyploids	*Ambystoma jeffersonianum-laterale polyploids*	Damp shady deciduous forest, swamps, moist pasture, lakeshores; temporary woodland pools for breeding.	No	S2	THR	THR
Milksnake	*Lampropeltis t. triangulum*	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods.	No	S3	SC	SC
Northern Map Turtle	*Graptemys geographica*	The Northern Map Turtle inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	No	S3	SC	SC
Northern Ribbonsnake	*Thamnophis sauritus septentrionalis*	Wetlands, shorelines of lakes and rivers – generally near forests.	No	S3	SC	SC
Snapping Turtle	*Chelydra serpentina serpentina*	The preferred habitat of the species is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Established populations are most often located in ponds, sloughs, shallow bays or river edges, and slow streams, or areas combining several of these wetland habitats.	No	S5	SC	SC
Spiny Softshell	*Apalone spinifera spinifera*	large river systems, shallow lakes and ponds with muddy bottoms and aquatic vegetation; basks on sandbars, mud flats, grassy beaches, logs or rocks; eggs are laid near water on sandy beaches or gravel banks in areas with sun	No	S3	THR	THR
MAMMALS						
Grey Fox	*Urocyon cinereoargente*	Deciduous forests and marshes.	No	S1	THR	THR
Woodland Vole	*Microtus pinetorum*	Generally associated with deciduous forests in the areas of soft, friable, often sandy soil beneath deep humus, where it can burrow easily	No	S3	SC	SC

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
ARTHROPODS						
Monarch Butterfly	*Danaus plexippus*	Exist primarily wherever milkweed (*Asclepius*) and wildflowers (such as Goldenrod, asters, and Purple Loosestrife) exist. This includes abandoned farmland, along roadsides, and other open spaces where these plants grow	No	S2N, S4B	SC	SC
West Virginia White	*Pieris virginiensis*	Lives in moist, deciduous woodlands. Larvae feed exclusively on toothwort (*Dentaria diphylla*; *Dentaria X maxima*).	No	S3	SC	No Status
VEGETATION						
American Chestnut	*Castanea dentata*	Found in deciduous forest communities; this tree prefers arid forests with acidic and sandy soils	No	S2	END	END
American Columbo	*Frasera caroliniensis*	Most commonly found associated with deciduous forested slopes, thickets and clearings; grows in a variety of relatively stable habitats as well as on a wide variety of soils	No	S2	END	END
American Ginseng	*Panax quinquefolius*	Moist to wet-mesic hardwood woodlands.	No	S2	END	END
Broad Beech Fern	*Phegopteris hexagonoptera*	Generally inhabits shady areas of beech and maple forests where the soils are moist or wet	No	S3	SC	SC
Butternut	*Juglans cinerea*	Wooded floodplains, mesic slopes and wet-mesic forests on clay.	Possibly planted	S3	END	END
Eastern Flowering Dogwood	*Cornus florida*	Grows in the understory or on the edges of mid-age to mature, deciduous or mixed forests.	No	S2	END	END
Few-flowered Club-rush	*Tricophorum planifolium*	Generally found in Dry Fresh Oak deciduous forests and Dry Fresh Oak- Maple- Hickory deciduous forests (only found on RBG property)	No	S1	END	END
Forked Three-awned Grass	*Aristida basiramea*	Sandy soils, sand barrens.	No	S2	END	END

Common Name	Systematic Name	Preferred Habitat[1]	Habitat within study area?	S-Rank[2]	ESA[3]	SARA[4]
Green Dragon	*Arisaema dracontium*	Generally grows in damp deciduous forests and along streams.	No	S3	SC	SC
Hoary Mountain Mint	*Pycnanthemum incanum*	Dry sand and clay soils in partly shaded openings.	No	S1	END	END
Red Mulberry	*Morus rubra*	Generally grows in moist forest habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and bottom lands; Can grow in open areas such as hydro corridors	No	S2	END	END
Spotted Wintergreen	*Chimaphiliamaculata*	Generally grows in sandy habitats in dry- mesic oak-pine woods. In Canada, they grow very near the Great Lakes	No	S1	END	END
White Wood Aster	*Eurbia divaricata*	Generally grows in open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance, as it often grows along trails	No	S2	THR	THR

[1]OMNR 2010; [2]COSEWIC 2009; [3]OMNR 2009; [4]OMNR 2000.
S1- Critically Imperiled, S2- Imperiled, S3- Vulnerable, S4- Apparently Secure, (N- Non-breeding, B- Breeding)
NAR- Not at Risk, THR- Threatened, SC- Special Concern, E- Endangered

Appendix C

Technical Supporting Information

Appendix C.1

Ontario Breeding Bird Atlas List

Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate view button. You can use those pages to find out where the atlas regions and atlas squares are located.

What years do you want to display : : all years combined ▼ Which version of the atlas Second (2001-2005) ▼

How do you want to view the results: Tabular results ▼

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics:: Province ▼ View
2. View summary statistics: By Square ▼ within region 1. Essex ▼ View
3. View list of completed Point Counts in square :: 17NH98 View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for : : Region 15: Hamilton ▼ View
5. View species list for square or block no. : : 17NH98 View

Show me the list of regions or squares reporting a species

6. View list of Regions ▼ reporting ▼ View

A total of 26 point counts have been completed in square 17NH98. The following pre-defined point counts have been completed:: 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 26, 28, 33, 36, 41, 42

In addition 0 point count(s) have been completed elsewhere.

Target number of point counts in this square: 25 road side, 0 off road

Species list for square 17NH98 (number of entries returned: 89)

Region	Square	Species	Breeding Evidence				Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq
15	17NH98	Canada Goose	FY	CONF	1	Bob Curry	1	3.85	0.0385	1
15	17NH98	Wood Duck	P	PROB	1					
15	17NH98	Mallard	FY	CONF	1	Karl R. Konze				
15	17NH98	Ring-necked Pheasant	T	PROB	1					
15	17NH98	Wild Turkey	FY	CONF	1	Bob Curry				
15	17NH98	Green Heron	FY	CONF	1	Karl R. Konze				
15	17NH98	Turkey Vulture	FY	CONF	1		1	3.85	0.0769	1
15	17NH98	Sharp-shinned Hawk	NB	CONF	1					
15	17NH98	Cooper's Hawk	FY	CONF	1	Bob Curry				
15	17NH98	Northern Goshawk	FY	CONF	1					
15	17NH98	Red-tailed Hawk	FY	CONF	1					
15	17NH98	American Kestrel	FY	CONF	1	H. Michael Street				
15	17NH98	Peregrine Falcon	NY	CONF	1	Ted Armstrong				
15	17NH98	Killdeer	FY	CONF	1		2	7.69	0.0769	1
15	17NH98	Rock Pigeon	NY	CONF	1	Fergus I Nicoll	9	34.62	1.9615	1
15	17NH98	Spotted Sandpiper	AE	CONF	1					
15	17NH98	American Woodcock	T	PROB	1					
15	17NH98	Mourning Dove	FY	CONF	1		13	50.0	1.0	1
15	17NH98	Yellow-billed Cuckoo	S	POSS	1					
15	17NH98	Black-billed Cuckoo	CF	CONF	1	Karl R. Konze				
15	17NH98	Eastern Screech-Owl	T	PROB	1					
15	17NH98	Great Horned Owl	T	PROB	1					
15	17NH98	Long-eared Owl	T	PROB	1					
15	17NH98	Common Nighthawk	FY	CONF	1	Ken Mr. Ken Williams Williams				
15	17NH98	Chimney Swift	AE	CONF	1	Bob Curry	5	19.23	0.3077	1
15	17NH98	Ruby-throated Hummingbird	H	POSS	1	Bob Curry	1	3.85	0.0385	1
15	17NH98	Belted Kingfisher	T	PROB	1					
15	17NH98	Red-bellied Woodpecker	H	POSS	1	Ken Mr. Ken Williams Williams	1	3.85	0.0385	1
15	17NH98	Downy Woodpecker	FY	CONF	1		1	3.85	0.0385	1
15	17NH98	Hairy Woodpecker	A	PROB	1					
15	17NH98	Northern Flicker	FY	CONF	1		1	3.85	0.0385	1

15	17NH98 Eastern Wood-Pewee	T	PROB 1					
15	17NH98 Willow Flycatcher	T	PROB 1	Bob Curry				
15	17NH98 Least Flycatcher	T	PROB 1					
15	17NH98 Eastern Phoebe	CF	CONF 1					
15	17NH98 Great Crested Flycatcher	T	PROB 1					
15	17NH98 Eastern Kingbird	CF	CONF 1	Karl R. Konze	2	7.69	0.0769	1
15	17NH98 Warbling Vireo	T	PROB 1					
15	17NH98 Red-eyed Vireo	T	PROB 1		1	3.85	0.0385	1
15	17NH98 Blue Jay	FY	CONF 1	Alan Wormington	2	7.69	0.1154	1
15	17NH98 American Crow	FY	CONF 1	Geoff Carpentier	7	26.92	0.3846	1
15	17NH98 Horned Lark	P	PROB 1					
15	17NH98 Purple Martin	H	POSS 1					
15	17NH98 Tree Swallow	FY	CONF 1					
15	17NH98 Northern Rough-winged Swallow	AE	CONF 1	2 atlassers				
15	17NH98 Barn Swallow	FY	CONF 1	H. Michael Street	1	3.85	0.1154	1
15	17NH98 Black-capped Chickadee	FY	CONF 1	2 atlassers				
15	17NH98 Tufted Titmouse	S	POSS 1					
15	17NH98 Red-breasted Nuthatch	P	PROB 1		1	3.85	0.0385	1
15	17NH98 White-breasted Nuthatch	AE	CONF 1					
15	17NH98 Carolina Wren	T	PROB 1					
15	17NH98 House Wren	FY	CONF 1	Karl R. Konze				
15	17NH98 Sedge Wren	A	PROB 1					
15	17NH98 Blue-gray Gnatcatcher	H	POSS 1					
15	17NH98 Veery	T	PROB 1					
15	17NH98 Wood Thrush	CF	CONF 1					
15	17NH98 American Robin	FY	CONF 1	2 atlassers	19	73.08	2.6923	1
15	17NH98 Gray Catbird	CF	CONF 1	Bob Curry				
15	17NH98 Northern Mockingbird	CF	CONF 1		3	11.54	0.1923	1
15	17NH98 Brown Thrasher	T	PROB 1	Bob Curry				
15	17NH98 European Starling	CF	CONF 1	Karl R. Konze	22	84.62	6.5385	1
15	17NH98 Cedar Waxwing	NY	CONF 1	Karl R. Konze	2	7.69	0.1154	1
15	17NH98 Blue-winged Warbler	S	POSS 1					
15	17NH98 Yellow Warbler	FY	CONF 1					
15	17NH98 Chestnut-sided Warbler	H	POSS 1					
15	17NH98 American Redstart	S	POSS 1	William J Crins				
15	17NH98 Ovenbird	S	POSS 1					
15	17NH98 Common Yellowthroat	FY	CONF 1		1	3.85	0.0385	1
15	17NH98 Eastern Towhee	P	PROB 1					
15	17NH98 Chipping Sparrow	AE	CONF 1		8	30.77	0.3077	1
15	17NH98 Field Sparrow	CF	CONF 1	Bob Curry				
15	17NH98 Vesper Sparrow	S	POSS 1	2 atlassers				
15	17NH98 Savannah Sparrow	CF	CONF 1	Karl R. Konze				
15	17NH98 Song Sparrow	CF	CONF 1	Karl R. Konze	8	30.77	0.6538	1
15	17NH98 Swamp Sparrow	CF	CONF 1	Bob Curry				
15	17NH98 Scarlet Tanager	P	PROB 1					
15	17NH98 Northern Cardinal	CF	CONF 1	Karl R. Konze	8	30.77	0.4231	1
15	17NH98 Rose-breasted Grosbeak	A	PROB 1	Alan Wormington				
15	17NH98 Indigo Bunting	FY	CONF 1					
15	17NH98 Bobolink	A	PROB 1					
15	17NH98 Red-winged Blackbird	NE	CONF 1	Bob Curry	6	23.08	0.9615	1
15	17NH98 Eastern Meadowlark	A	PROB 1					
15	17NH98 Common Grackle	FY	CONF 1	Alan Wormington	16	61.54	1.9231	1
15	17NH98 Brown-headed Cowbird	FY	CONF 1	Karl R. Konze				
15	17NH98 Orchard Oriole	D	PROB 1					
15	17NH98 Baltimore Oriole	NY	CONF 1	Bob Curry				
15	17NH98 House Finch	CF	CONF 1	Karl R. Konze	4	15.38	0.5769	1
15	17NH98 American Goldfinch	FY	CONF 1		9	34.62	0.6538	1
15	17NH98 House Sparrow	NE	CONF 1	Fergus I Nicoll	22	84.62	5.4615	1

New data summary | Download results

Disclaimer: If you wish to use the data in a publication, research or for any purpose, or would like information concerning the accuracy and appropriate uses of these data, read the data use policy and request form. These data are current as of 16 Sep 2016 .

LEGEND	
Breeding Evidence Max BE: Highest Breeding Evidence recorded Categ: Highest Breeding Category recorded (OBS=observed, POSS=possible, PROB=probable, CONF=confirmed) #Sq: Number of squares with species (Breeding Evidence) Atlasser name: Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one	Point Counts #PC: Number of Point Counts with species %PC: Percent of Point Counts with species Abun: Average number of birds per Point Count

Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate view button. You can use those pages to find out where the atlas regions and atlas squares are located.

What years do you want to display : : all years combined ▼ Which version of the atlas Second (2001-2005) ▼

How do you want to view the results: Tabular results ▼

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics:: Province ▼ View
2. View summary statistics: By Square ▼ within region 1. Essex ▼ View
3. View list of completed Point Counts in square :: 17NH98 View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for : : Region 15: Hamilton ▼ View
5. View species list for square or block no. : : 17NH88 View

Show me the list of regions or squares reporting a species

6. View list of Regions ▼ reporting ▼ View

A total of 26 point counts have been completed in square 17NH98. The following pre-defined point counts have been completed:: 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 26, 28, 33, 36, 41, 42

In addition 0 point count(s) have been completed elsewhere.

Target number of point counts in this square: 25 road side, 0 off road

Species list for square 17NH88 (number of entries returned: 114)

Region	Square	Species	Breeding Evidence				Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq
15	17NH88	Canada Goose	FY	CONF	1	James E. Heslop				
15	17NH88	Mute Swan	FY	CONF	1	James E. Heslop				
15	17NH88	Wood Duck	P	PROB	1	James E. Heslop				
15	17NH88	Mallard	FY	CONF	1	2 atlassers	2	7.69	0.1154	1
15	17NH88	Ring-necked Pheasant	T	PROB	1	James E. Heslop	1	3.85	0.0385	1
15	17NH88	Ruffed Grouse	NE	CONF	1	James E. Heslop				
15	17NH88	Green Heron	T	PROB	1	James E. Heslop				
15	17NH88	Turkey Vulture	FY	CONF	1	William J Crins				
15	17NH88	Northern Harrier	V	PROB	1	James E. Heslop				
15	17NH88	Sharp-shinned Hawk	CF	CONF	1	James E. Heslop				
15	17NH88	Cooper's Hawk	CF	CONF	1	Alan Wormington				
15	17NH88	Broad-winged Hawk	NY	CONF	1	James E. Heslop				
15	17NH88	Red-tailed Hawk	FY	CONF	1	2 atlassers	1	3.85	0.0385	1
15	17NH88	Virginia Rail	T	PROB	1	James E. Heslop				
15	17NH88	Sora	S	POSS	1	James E. Heslop				
15	17NH88	Killdeer	A	PROB	1	James E. Heslop	4	15.38	0.1538	1
15	17NH88	Rock Pigeon	AE	CONF	1	James E. Heslop	3	11.54	0.6154	1
15	17NH88	Spotted Sandpiper	P	PROB	1	James E. Heslop	1	3.85	0.0385	1
15	17NH88	Upland Sandpiper	T	PROB	1	James E. Heslop				
15	17NH88	American Woodcock	D	PROB	1	James E. Heslop				
15	17NH88	Mourning Dove	AE	CONF	1	James E. Heslop	17	65.38	1.4231	1
15	17NH88	Yellow-billed Cuckoo	T	PROB	1	James E. Heslop				
15	17NH88	Black/Yellow-billed Cuckoo	S	POSS	1	2 atlassers				
15	17NH88	Black-billed Cuckoo	T	PROB	1	2 atlassers	1	3.85	0.0385	1
15	17NH88	Barn Owl	T	PROB	1	Rob Dobos				
15	17NH88	Eastern Screech-Owl	S	POSS	1	2 atlassers				
15	17NH88	Great Horned Owl	S	POSS	1	2 atlassers				
15	17NH88	Chimney Swift	V	PROB	1	Karl R. Konze				
15	17NH88	Ruby-throated Hummingbird	FY	CONF	1	James E. Heslop				
15	17NH88	Belted Kingfisher	CF	CONF	1	H. Michael Street				
15	17NH88	Red-bellied Woodpecker	T	PROB	1	2 atlassers				

15	17NH88	Downy Woodpecker	NY	CONF	1	William J Crins	2	7.69	0.0769 1
15	17NH88	Hairy Woodpecker	NY	CONF	1	James E. Heslop			
15	17NH88	Northern Flicker	FY	CONF	1	James E. Heslop	2	7.69	0.0769 1
15	17NH88	Pileated Woodpecker	N	PROB	1	James E. Heslop			
15	17NH88	Eastern Wood-Pewee	A	PROB	1	Alan Wormington	2	7.69	0.1154 1
15	17NH88	Alder Flycatcher	T	PROB	1	James E. Heslop			
15	17NH88	Willow Flycatcher	NY	CONF	1	James E. Heslop	2	7.69	0.0769 1
15	17NH88	Least Flycatcher	T	PROB	1	James E. Heslop			
15	17NH88	Eastern Phoebe	NY	CONF	1	James E. Heslop	1	3.85	0.0385 1
15	17NH88	Great Crested Flycatcher	T	PROB	1	2 atlassers	2	7.69	0.0769 1
15	17NH88	Eastern Kingbird	FY	CONF	1	James E. Heslop			
15	17NH88	Yellow-throated Vireo	S	POSS	1	Rob Dobos			
15	17NH88	Warbling Vireo	T	PROB	1	2 atlassers	2	7.69	0.0769 1
15	17NH88	Red-eyed Vireo	CF	CONF	1	James E. Heslop	5	19.23	0.3077 1
15	17NH88	Blue Jay	AE	CONF	1	James E. Heslop	13	50.0	0.6923 1
15	17NH88	American Crow	FY	CONF	1	3 atlassers	14	53.85	1.4231 1
15	17NH88	Horned Lark	P	PROB	1	James E. Heslop			
15	17NH88	Tree Swallow	AE	CONF	1	James E. Heslop	2	7.69	0.0769 1
15	17NH88	Northern Rough-winged Swallow	FY	CONF	1	James E. Heslop			
15	17NH88	Bank Swallow	AE	CONF	1	James E. Heslop			
15	17NH88	Barn Swallow	AE	CONF	1	2 atlassers	7	26.92	0.6154 1
15	17NH88	Black-capped Chickadee	AE	CONF	1	James E. Heslop	6	23.08	0.2692 1
15	17NH88	Tufted Titmouse	FY	CONF	1	2 atlassers			
15	17NH88	Red-breasted Nuthatch	CF	CONF	1	James E. Heslop	1	3.85	0.0385 1
15	17NH88	White-breasted Nuthatch	CF	CONF	1	Karl R. Konze	1	3.85	0.0385 1
15	17NH88	Brown Creeper	FY	CONF	1	James E. Heslop			
15	17NH88	Carolina Wren	FY	CONF	1	2 atlassers			
15	17NH88	House Wren	NY	CONF	1	James E. Heslop	4	15.38	0.1538 1
15	17NH88	Winter Wren	T	PROB	1	James E. Heslop			
15	17NH88	Sedge Wren	T	PROB	1	James E. Heslop			
15	17NH88	Marsh Wren	N	PROB	1	James E. Heslop			
15	17NH88	Blue-gray Gnatcatcher	CF	CONF	1	James E. Heslop			
15	17NH88	Eastern Bluebird	AE	CONF	1	James E. Heslop			
15	17NH88	Veery	CF	CONF	1	James E. Heslop			
15	17NH88	Wood Thrush	AE	CONF	1	James E. Heslop			
15	17NH88	American Robin	CF	CONF	1		21	80.77	2.3846 1
15	17NH88	Gray Catbird	NE	CONF	1	James E. Heslop	1	3.85	0.0385 1
15	17NH88	Northern Mockingbird	NE	CONF	1	James E. Heslop	1	3.85	0.0385 1
15	17NH88	Brown Thrasher	NB	CONF	1	James E. Heslop			
15	17NH88	European Starling	NY	CONF	1	James E. Heslop	16	61.54	6.6154 1
15	17NH88	Cedar Waxwing	CF	CONF	1	James E. Heslop	5	19.23	1.0769 1
15	17NH88	Blue-winged Warbler	CF	CONF	1	2 atlassers	1	3.85	0.0769 1
15	17NH88	Golden-winged Warbler	T	PROB	1	James E. Heslop			
15	17NH88	Lawrence's Warbler (hybrid)	A	PROB	1	Rob Dobos			
15	17NH88	Brewster's Warbler (hybrid)	A	PROB	1	Rob Dobos			
15	17NH88	Yellow Warbler	NE	CONF	1	Bob Curry	7	26.92	0.3077 1
15	17NH88	Chestnut-sided Warbler	CF	CONF	1	James E. Heslop			
15	17NH88	Magnolia Warbler	S	POSS	1	James E. Heslop			
15	17NH88	Black-throated Blue Warbler	S	POSS	1	James E. Heslop			
15	17NH88	Black-throated Green Warbler	NB	CONF	1	Rob Dobos			
15	17NH88	Pine Warbler	T	PROB	1	3 atlassers			
15	17NH88	Black-and-white Warbler	S	POSS	1	James E. Heslop			
15	17NH88	American Redstart	CF	CONF	1	James E. Heslop			
15	17NH88	Ovenbird	A	PROB	1	James E. Heslop			
15	17NH88	Louisiana Waterthrush	A	PROB	1	James E. Heslop			
15	17NH88	Mourning Warbler	T	PROB	1	James E. Heslop			
15	17NH88	Common Yellowthroat	CF	CONF	1	James E. Heslop			
15	17NH88	Hooded Warbler	A	PROB	1	2 atlassers			
15	17NH88	Yellow-breasted Chat	S	POSS	1	James E. Heslop			
15	17NH88	Eastern Towhee	T	PROB	1	2 atlassers			
15	17NH88	Chipping Sparrow	AE	CONF	1	Bob Curry	5	19.23	0.3077 1
15	17NH88	Clay-colored Sparrow	T	PROB	1	James E. Heslop			
15	17NH88	Field Sparrow	A	PROB	1	James E. Heslop			
15	17NH88	Vesper Sparrow	D	PROB	1	James E. Heslop	1	3.85	0.0385 1
15	17NH88	Savannah Sparrow	CF	CONF	1	James E. Heslop	1	3.85	0.0769 1
15	17NH88	Grasshopper Sparrow	T	PROB	1	James E. Heslop			
15	17NH88	Song Sparrow	NE	CONF	1	Bob Curry	16	61.54	0.7308 1
15	17NH88	Swamp Sparrow	CF	CONF	1	James E. Heslop			
15	17NH88	White-throated Sparrow	H	POSS	1	Alan Wormington			
15	17NH88	Scarlet Tanager	D	PROB	1	James E. Heslop			
15	17NH88	Northern Cardinal	CF	CONF	1	Bob Curry	15	57.69	1.0 1
15	17NH88	Rose-breasted Grosbeak	AE	CONF	1	James E. Heslop			
15	17NH88	Indigo Bunting	CF	CONF	1	James E. Heslop	2	7.69	0.0769 1

15	17NH88 Bobolink	D	PROB 1	James E. Heslop				
15	17NH88 Red-winged Blackbird	NY	CONF 1	Bob Curry	12	46.15	1.4615	1
15	17NH88 Eastern Meadowlark	T	PROB 1	James E. Heslop				
15	17NH88 Common Grackle	CF	CONF 1	2 atlassers	18	69.23	1.8846	1
15	17NH88 Brown-headed Cowbird	FY	CONF 1	2 atlassers	10	38.46	0.5	1
15	17NH88 Orchard Oriole	NB	CONF 1					
15	17NH88 Baltimore Oriole	NY	CONF 1	Bob Curry	3	11.54	0.1538	1
15	17NH88 House Finch	FY	CONF 1	James E. Heslop	6	23.08	0.2308	1
15	17NH88 American Goldfinch	NE	CONF 1	James E. Heslop	18	69.23	1.6923	1
15	17NH88 House Sparrow	CF	CONF 1	James E. Heslop	16	61.54	6.8846	1

New data summary | Download results

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LEGEND	
Breeding Evidence Max BE: Highest Breeding Evidence recorded Categ: Highest Breeding Category recorded (OBS=observed, POSS=possible, PROB=probable, CONF=confirmed) #Sq: Number of squares with species (Breeding Evidence) Atlasser name: Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one person provided the same breeding evidence code, then only the number of atlassers is listed.	Point Counts #PC: Number of Point Counts with species %PC: Percent of Point Counts with species Abun: Average number of birds per Point Count #Sq: Number of squares with species (Point Counts)

Site hosted by **Bird Studies Canada**

Appendix C.2

MNRF Species at Risk List from the Hamilton Area

Hamilton

Date Generated: June-24-16

Amphibian	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Jefferson Salamander *Ambystoma jeffersonianum*	END	Species Protection and Habitat Regulation	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	Active: March – October Hibernates: October – March Breeding: Late March - Mid April	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

Bird	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Acadian Flycatcher *Empidonax virescens*	END	Species Protection and General Habitat Protection	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines.	Migrate South before Winter	Follow Breeding Bird Survey Protocol
Bald Eagle *Haliaeetus leucocephalus*	SC	N/A	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers. They roost in super canopy trees such as Pine.	Breed and Nest - April or May Some Migrate South when waterbodies freeze over	Follow Breeding Bird Survey Protocol
Bank Swallow *Riparia riparia*	THR	Species Protection and General Habitat Protection	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers.	Migrate South before Winter	Follow Breeding Bird Survey Protocol. Colony and Roost information should be recorded and submitted using Bird Studies Canada's Ontario Bank Swallow Project data forms (2010).
Barn Owl *Tyto alba*	END	Species Protection and Habitat Regulation	Generally prefer low-elevation, open country; often associated with agricultural lands, especially pasture. Nests are located in buildings, hollow trees and cavities in cliffs.	Active Year Round Some leave for the Winter	Follow Breeding Bird Survey Protocol Night surveys may be helpful as they are very vocal
Barn Swallow *Hirundo rustica*	THR	Species Protection and General Habitat Protection	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	Migrate South before Winter	Follow Breeding Bird Survey Protocol

Black Tern *Chlidonias niger*	SC	N/A	Generally prefer freshwater marshes and wetlands; nest either on floating material in a marsh or on the ground very close to water	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Bobolink *Dolichonyx oryzivorus*	THR	Species Protection and General Habitat Protection	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Canada Warbler *Cardellina canadensis*	SC	N/A	Generally prefers wet coniferous, decidiuous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	Arrive in Early May Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Cerulean Warbler *Setophaga cerulea*	THR	Species Protection and General Habitat Protection	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Chimney Swift *Chaetura pelagica*	THR	Species Protection and General Habitat Protection	Historically found in deciduous and coniferous, usually wet forest types, all with a well developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys	Nesting - Late April to Mid-May Migrate South in September or Early October	Chimney Swift Monitoring Protocol. Bird Studies Canada, March 2009
Common Nighthawk *Chordeiles minor*	SC	N/A	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops).	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol

Eastern Meadowlark *Sturnella magna*	THR	Species Protection and General Habitat Protection	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Eastern Whip-poor-will *Caprimlugus vociferus*	THR	Species Protection and General Habitat Protection	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	Nesting: May - July	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Eastern Wood-Pewee *Contopus virens*	SC	N/A	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	Migrate South for the Winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Golden-winged Warbler *Vermivora chrysoptera*	SC	N/A	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Henslow's Sparrow *Ammodramus henslowii*	END	Species Protection and General Habitat Protection	Generally found in old fields, pastures and wet meadows. They prefer areas with dense, tall grasses, and thatch, or decaying plant material	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
King Rail *Rallus elegans*	END	Species Protection and General Habitat Protection	Generally this species requires large marshes with open shallow water that merges with shrubby areas	Breed from Late April to mid-May Migrate South for the Winter	Follow Marsh Monitoring Protocol.
Least Bittern *Ixobrychus exilis*	THR	Species Protection and General Habitat Protection	Generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants	Migrate South for the Winter	Follow Marsh Monitoring Protocol; 10 day window of male calling (variable timing). Does not respond well to playback. Very difficult to detect.

Louisiana Waterthrush *Seiurus motacilla*	SC	N/A	Generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Peregrine Falcon *Falco peregrinus*	SC	N/A	Generally nest on tall, steep cliff ledges adjacent to large waterbodies; some birds adapt to urban environments and nest on ledges of tall buildings, even in densely populated downtown areas.	Active Year Round - Lay Eggs around Easter Hatching occurs around Mother's Day Young fledge around Father's	Visit ideal habitat locations and listen/look for individuals in the vicinity.
Prothonotary Warbler *Protonotaria citrea*	END	Species Protection and General Habitat Protection	Generally found in the dead trees of flooded woodlands or deciduous swamp forests; Carolinia Zone	Migrate South for the Winter Eggs are laid from Late May - Early July	Follow Breeding Bird Survey Protocol
Red-Headed Woodpecker *Melanerpes erythrocephalus*	SC	N/A	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks	Active from May to September	Follow Breeding Bird Survey Protocol
Short-eared Owl *Asio flammeus*	SC	N/A	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	Active Year Round	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Wood Thrush *Hylocichla mustelina*	SC	N/A	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	Migrate South for the Winter Arrive in Ontario in mid to late spring	Follow Breeding Bird Survey Protocol
Yellow-breasted Chat *Icteria virens*	END	Species Protection and General Habitat Protection	Generally prefer dense thickets around wood edges, riparian areas, and in overgrown clearings	Migrate South for the Winter Arrive in Ontario Early May	Follow Breeding Bird Survey Protocol

Fish	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
American Eel *Anguilla rostrata*	END	Species Protection and General Habitat Protection	All fresh water, estuaries and coastal marine waters that are accessible to the Atlantic Ocean; 12-mile Creek watershed and Lake Ontario	Active Year Round	Electrofishing For information please contact your local MNRF office, CA or DFO
Grass Pickerel *Esox americanus vermiculatus*	SC	N/A	Generally occur in wetlands with warm, shallow water and an abundance of aquatic plants; occur in the St. Lawrence River, Lake Ontario, Lake Erie, and Lake Huron	Spawn from late March to early May	For information please contact your local MNRF office, CA and/or DFO
Redside Dace *Clinostomus elongatus*	END	Species Protection and Habitat Regulation	Generally found in pools and slow-moving areas of small headwater streams with a moderate to high gradient	Spawning occurs in May	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Silver Shiner *Notropis photogenis*	THR	Species Protection and General Habitat Protection	Generally prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients	Spawning occurs in May and June	For information please contact your local MNRF office, CA and/or DFO
Insect	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
Monarch Butterfly *Danaus plexippus*	SC	N/A	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces	Usually migrate south in late September and October	Watch for adults along roadsides and in open fields. Caterpillars feed on milkweeds: Common milkweed grows in open disturbed habitats (fields, roadsides, etc) and swamp milkweed grows in wet habitats (along streams, lakes, marshes) Adults can be spotted from a distance; caterpillars must be looked for carefully on the host plant.
Mottled Duskywing *Erynnis martialis*	END	Species Protection and General Habitat Protection	Generally inhabits a range of grassland, shrubland, and savanna habitats that contain well drained soils and the presence of its host plants Prairie Redroot (Ceanothus herbaceus) or New Jersey Tea (Ceanothus americanus).	Adult butterfly emerges from pupa in late March and early April	Watch for adults near host plants or search for caterpillars on the host plant Adults can be spotted from a distance; caterpillars must be looked for carefully on the host plant.

West Virginia White *Pieris virginiensis*	SC	N/A	Generally prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort (Cardamine diphylla), which is a small, spring-blooming plant of the forest floor.	Adult butterfly emerges from pupa in late March; flies only in April and May	Watch for adults within moist, deciduous woodlands Caterpillars feed on the two-leaved toothwort: Toothwort grows in damp, open, rich hardwood woodlands and blooms from April to June. Adults can be spotted from a distance; caterpillars must be searched for carefully by checking host plant
Mammal	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
American Badger *Taxidea taxus*	END	Species Protection and Habitat Regulation	Generally prefers open habitats, whether natural (grasslands) or man-made (agricultural fields, road right-of-ways, golf courses).	Breed: Late Summer Semi-dormant over Winter	Determine if soils are suitable (sandy or loamy) Dens and Woodchuck burrows should be surveyed for use
Eastern Small-footed Myotis *Myotis leibii*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsuis Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark.	Hibernates in caves and mines during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Little Brown Myotis *Myotis lucifugus*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh).	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Northern Myotis *Myotis septentrionalis*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Often asssociated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

Tri-coloured Bat *Perimyotis subflavus*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Can be in trees or dead clusters of leaves or arboreal lichens on trees. May also use barns or similar structures.	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Woodland Vole *Microtus pinetorum*	SC	N/A	Generally associated with deciduous forests in areas of soft, friable, often sandy soil beneath deep humus, where it can burrow easily.	Active Year Round	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Mollusc	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
Eastern Pondmussel *Ligumia nasuta*	END	Species Protection and General Habitat Protection	Generally inhabit sheltered areas of lakes or slow streams in substrates of fine sand and mud	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008).
Lilliput *Taxolasma parvum*	END	Species Protection and General Habitat Protection	Found in a variety of habitats including small to large rivers, wetlands, shallows of lakes, ponds and reservoirs. They are common in soft substrates with over 50% of the substrate type comprised of sand and a mud/muck/silt combination. Typically occur with or near Green Sunfish, Bluegill, White Crappie, and Johnny Darter	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008): Print.
Rainbow Mussel *Villosa iris*	THR	Species Protection and General Habitat Protection	Most abundant in shallow, well-oxygenated reaches of small- to medium-sized rivers and sometimes lakes, on substrates of cobble, gravel, sand and occasionally mud	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008): Print.
Plant	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**

American Chestnut *Castanea dentata*	END	Species Protection and General Habitat Protection	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils.	Flowers occur in Late Spring and Early Summer	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Perform detailed floristic inventory Look for distinictive fruits on the ground
American Columbo *Frasera caroliniensis*	END	Species Protection and General Habitat Protection	Most commonly associated with open deciduous forested slopes, thickets and clearings; grows in a variety of relatively stable habitats as well as on a wide variety of soils.	Germination and development of the rosette begin in early spring Flowers open in May Fruit production continues	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Look for spikes from last years flowers
American Ginseng *Panax quinquefolius*	END	Species Protection and General Habitat Protection	Grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock).	Flowering begins in June and continues until August The fruit develop from July to August and ripen in August and September	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Broad Beech Fern *Phegopteris hexagonoptera*	SC	N/A	Generally inhabits shady areas of beech and maple forests where the soil is moist or wet	The frond of the Broad Beech Fern appears towards the end of May	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Butternut *Juglans cinerea*	END	Species Protection and General Habitat Protection	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows	Flowers from April to June. Fruits reach maturity during the month of September or October	Walk slowly and systematically in grid fashion through suitable habitat pausing every 30 meters for a detailed scan of trees within sight. Areas with dense foliage or many saplings will require a more intensive survey to detect sapling butternut. Use Butternut Health Assessment Protocol if planning on removing trees.
Eastern Flowering Dogwood *Cornus florida*	END	Species Protection and Habitat Regulation	Generally grows in deciduous and mixed forests, in the drier areas of its habitat, although it is occasionally found in slightly moist environments; Also grows around edges and hedgerows	Flowering occurs in mid-May, just as the leaves begin to develop. Fruit turns red at the end of summer.	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Easiest to detect during Spring when in flower Also look for distinctive bark

Few-flowered Club-rush *Trichophorum planifolium*	END	Species Protection and Habitat Regulation	Generally found in Dry Fresh Oak deciduous forests and Dry Fresh Oak-Maple-Hickory deciduous forests (only found on RBG property).	Plants flower early before the forest canopy	Seaches for this species should only be done in March or April, when the species is most visible Walk slowly and systematically in grid fashion, pausing to scan for plants every 1 meters Distinguishing this species from similar species is difficult
Green Dragon *Arisaema dracontium*	SC	N/A	Generally grows in damp deciduous forests and along streams.	Flowering occurs in May and June	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Hoary Mountain-mint *Pycnanthemum incanum*	END	Species Protection and General Habitat Protection	Oak savannas and prairies, dry sites.	Flowering occurs in July	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Red Mulberry *Morus rubra*	END	Species Protection and General Habitat Protection	Generally grows in moist forest habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and bottom lands; Can grow in open areas such as hydro corridors	Flowering occurs when leaves emerge in late spring. Fruit emerges in Mid-July.	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from the similar White Mulberry Distinguishing Red Mulberry and the hybrid Red and White Mulberry will require the collection of leaves for generic testing, which requires a 17(2)(b) permit
Spotted Wintergreen *Chimaphila maculata*	END	Species Protection and General Habitat Protection	Generally grow in sandy habitats in dry-mesic oak-pine woods.	Flowering occurs in late July to early August	Watch for the distinct evergreen leaves in suitable habitat May be easiest to search in fall and spring
White Wood Aster *Eurybia divaricata*	THR	Species Protection and General Habitat Protection	Generally grows in open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance, as it often grows along trails.	Flowering occurs in early September, and sets fruit later in the month	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Reptile	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**

Blanding's Turtle *Emydoidea blandingii*	THR	Species Protection and General Habitat Protection	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	Eggs are laid in June, with hatchlings emerging in late September and early October.	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Eastern Hog-nosed Snake *Heterodon platirhinos*	THR	Species Protection and General Habitat Protection	Generally prefer habitats with sandy, well-drained soil and open vegetative cover, such as open woods, brushland, fields, forest edges and disturbed sites. The species is often found near water.	Mating occurs in spring and in August and early September. Eggs are laid in June. Hatching occurs in late August or early September	In early spring, look for individuals near ideal hibernation sites During egg-laying period (June), look for nesting females in sandy areas in early morning and late evening. Rest of the season, survey intensively and systematically by flipping rocks
Eastern Ribbonsnake *Thamnophis sauritus*	SC	N/A	Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	Hibernate: October - April Mating: Early Spring Hatching: Early Fall (September)	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Northern Map Turtle *Graptemys geographica*	SC	N/A	Generally inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	Active: At night Hibernate: October - April Hatching: Late August - Early September	Scan shoreline in spring and partially submerged logs/rocks in summer for basking turtles Be aware that map turtles do not allow as close of approach as other turtles before leaving a basking site Snorkel in desired aquatic habitat

Snapping Turtle *Chelydra serpentina*	SC	N/A	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.	Nesting: Late May and June Hibernate: October - April	Scan offshore rocks and logs for basking turtles (10am-2pm) Snorkel in desired aquatic habitat Nesting Season: Search known or preferred nesting habitat areas for females
Spiny Softshell *Apalone spinifera*	THR	Species Protection and General Habitat Protection	Generally prefer marshy creeks, swift-flowing rivers, lakes, impoundments, bays, marshy lagoons, ditches and ponds near rivers	Lay eggs in June or July Hibernate over winter	Best time to survey is during nesting season when females are active laying eggs Visual searches should be conducted in appropriate habitat

Appendix C.3

Natural Heritage Information Centre Element Occurrences

SCI_NAME	COMMNAME	S_RANK	COSEWIC	MNR_STATUS	LAST_OBS	EXTIRPAT	SQUARE1KM	COMMENT
Eurybia divaricata	White Wood Aster	S2	THR	THR	1955-07-20	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Chimaphila maculata	Spotted Wintergreen	S1	END	END	1886-07-01	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Castanea dentata	American Chestnut	S2	END	END	1993-08-09		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Colinus virginianus	Northern Bobwhite	S1	END	END	1904	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Castanea dentata	American Chestnut	S2	END	END	1976-PRE		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Microtus pinetorum	Woodland Vole	S3?	SC	SC	1951		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Carya glabra	Pignut Hickory	S3			1957-09-19		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Nuphar advena	Large Yellow Pond-lily	S3			1952-07-27		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Polygonum erectum	Erect Knotweed	SH			1897-10	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Aureolaria virginica	Downy Yellow False Fo	S1			1957-07-26	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Uvularia perfoliata	Perfoliate Bellwort	S1			1962-05-14		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Aplectrum hyemale	Puttyroot	S2			1889-04-19	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Trichophorum clintonii	Clinton's Club-rush	S2S3			1954-05-24		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Dichanthelium praecocius	White-haired Panicgras	S3			1956-07-12		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Uvularia perfoliata	Perfoliate Bellwort	S1			2001-05-11		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Dichanthelium dichotomum	Forked Panicgrass	S2			1954-07-03		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Sphenopholis nitida	Shiny Wedge Grass	S1			1988		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Sphenopholis nitida	Shiny Wedge Grass	S1			1957-06-17		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Crataegus brainerdii	Brainerd's Hawthorn	S2			1981-09-07		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Crataegus pruinosa var. dissona	Northern Hawthorn	S3			1974-06-02		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Crataegus pruinosa var. dissona	Northern Hawthorn	S3			1981-09-05		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Asclepias variegata	White Milkweed	SX			1870	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Mertensia virginica	Virginia Bluebells	S3			1999-05-20		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Euonymus atropurpureus	Eastern Burning Bush	S3			1973-06-30		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Euonymus atropurpureus	Eastern Burning Bush	S3			1894-06-25		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Hypoxis hirsuta	Yellow Stargrass	S3			1898-06-10	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Gillenia trifoliata	Bowman's-root	SX					17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Aureolaria pedicularia	Fern-leaved Yellow Fal	S2?			1888-09-19		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Pterospora andromedea	Woodland Pinedrops	S2			1902-07-01		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Sabatia angularis	Square-stemmed Rose	SX					17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Lithospermum parviflorum	Soft-hairy False Gromv	S2					17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Monarda didyma	Scarlet Beebalm	S3			1950-07		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Carex albicans var. albicans	White-tinged Sedge	S3			1980-05-17		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Hieracium paniculatum	Panicled Hawkweed	S2?			1956-08-08		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Crotalus horridus	Timber Rattlesnake	SX	EXP	EXP	1950	Y	17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca
Cordulegaster obliqua	Arrowhead Spiketail	S2			1931		17NH8989	To requests details, contact CAMBRIDGE MNR District or nhicrequests@ontario.ca

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