



Technical Memorandum

Date: August 11, 2022 **Project No.:** 300055529.0000

Project Name: Species at Risk (SAR) Preliminary Screening for 6259-6293 Dorchester Road

Client Name: Panoramic Properties

Submitted To: Kevin Jasus, TULLOCH Engineering

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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by Panoramic Properties to complete a Species at Risk (SAR) preliminary screening of the lands located at 6259-6293 Dorchester Road in Niagara Falls, Ontario. The Study Area is shown on Figure 1.1 and is currently occupied by a residential property (the Study Area).

The Study Area includes two detached houses, a paved driveway, and three outbuildings. The surrounding area is occupied by residential properties.

A screening for potential Species at Risk (SAR) and SAR habitat has been conducted to ensure compliance with the Endangered Species Act (ESA) (2007). SAR and supporting habitats for SAR listed as Endangered or Threatened under the ESA are protected from negative impacts as a result of human activities in Ontario.

Figure 1.1: Study Area





Photo 1: Single detached home at 6259 Dorchester Road.



Photo 2: Outbuilding 1, located in close proximity to the single-family residence at 6393 Dorchester Road.



Photo 3: Outbuilding 2, situated in the middle of the Study Area.



Photo 4: Outbuilding 3, located at the back of the Study Area and backing on to a treed area at the rear of the Study Area.

2.0 Species at Risk Screening

2.1 Screening Data Sources

For the purposes of this study, SAR are considered to be those species listed as Endangered (END), Threatened (THR), or Special Concern (SC) under Ontario's Endangered Species Act.

Multiple sources were first reviewed for species records and historical sightings of SAR within the Study Area and surrounding lands. Sources reviewed include:

- Aerial photography;
- MNR Make a Map: Natural Heritage Areas;
- Natural Heritage Information Centre (NHIC) database (Square 17PH5371);
- Ontario Breeding Bird Atlas (Square 17PH57); and
- Ontario Reptile and Amphibian Atlas (Square 17PH57).

Data downloaded from these data sources is provided in Appendix A.

2.2 Screening Results

According to the data sources noted above, a total of 41 SAR have previously been recorded within a 10 x 10 km square around the Study Area. These species, as well as their habitat preferences and probability to be found on the Study Area are summarized on Table 1 of Appendix B.

For most of the species, suitable habitat is not present in the Study Area. These species were likely recorded elsewhere in the 10 x 10 km square.

Based on the SAR Screening Table, suitable habitat to support key life functions may be present on the Study Area for the following SAR species:

- Barn Swallow (*Hirundo rustica*) (THR);
- Chimney Swift (*Chaetura pelagica*) (THR);
- Little Brown Myotis (*Myotis lucifugus*) (END);
- Northern Myotis (*Myotis septentrionalis*) (END);
- Tri-colored Bat (*Perimyotis subflavus*) (END);
- Eastern Small-footed Myotis (*Myotis leibii*) (END);
- American Chestnut (*Castanea dentata*) (END);
- Butternut (*Juglans cinera*) (END); and
- White Wood Aster (*Eurybia divaricate*) (THR).

Field studies were conducted to confirm whether these species may be present, as documented in the following sections.

3.0 Field Methodology

Following the desktop analyses, field surveys were completed to determine whether any SAR inhabit the Study Area. The focus of surveys was on the habitat features that could potentially support SAR. The following surveys were conducted on June 13, 2022:

- Vegetation community characterization using the protocol outlined in Ecological Land Classification for Southern Ontario (Lee et al., 1998). For human influenced communities, more recent draft vegetation community descriptions were used.
- Observations of trees to identify the presence of features and tree types commonly used by SAR bats for maternal roosting (i.e., large, mature trees with peeling bark, small crevices / cavities, knot holes, dead leaf clusters on maple trees)
- Observations of each of the buildings present to look for signs of bat use, including points of entry into the building and evidence that would suggest bat roosting including guano, grease marks, urine splashes, and cobweb-free corners.
- Searches in buildings for Barn Swallow nests.
- Observations of each building for signs of suitable Chimney Swift habitat, including uncapped chimneys of suitable width for Chimney Swift nesting.
- Searches along hedgerows and treed areas for Butternut, American Chestnut and White Wood Aster¹.
- Incidental wildlife observations including visual observations of animals, tracks, or scat.

In addition, bat exit surveys were conducted to confirm whether SAR bats are inhabiting the outbuilding structures within the Study Area.

Exit Surveys were conducted as per the *Use of Buildings by Species at Risk Bats Survey Methodology* (Guelph District MNRF, 2014)² which adapted the methodologies described in the *Bat and Bat Habitat: Guidelines for Window Power Project* (MNRF, 2011)³. Surveys were surveyed for 90 minutes, from one half hour before sunset to an hour after sunset. Surveys were conducted under suitable weather conditions (i.e., during period of low wind and no rain).

Three stations were established to survey the three outbuilding structures (See Figure 1). Surveyors were positioned within viewing distance of potential exit points on structures. If bats were observed exiting a structure, the number of bats were recorded. Each surveyor was equipped with an Echo Meter Touch 2 Pro Bat Call Detector (Heterodynes) to record calls. The purpose of the acoustic surveys were to identify the species of bat present, while the purpose of the visual survey is to identify how the bats are using the subject lands (i.e., roosting or foraging). Survey conditions are summarized in Table 1 below.

¹ Searches were conducted during a time that is not ideal for observing White Wood Aster; however, searches were used to identify whether suitable habitat exists for this species.

² Ministry of Natural Resources and Forestry (Guelph District). 2014. *Use of Buildings and Isolated Trees by Species at Risk Bats: Survey Methodology*. October 2014.

³ Ontario Ministry of Natural Resources (OMNR). 2011. *Bats and Bat Habitats: Guidelines for Wind Power Projects*. Second Edition. July 2011.

Table 1: Exit Survey Weather Conditions

Survey No.	Staff Involved / Outbuilding	Date	Time	Weather		
				Precipitation / Cloud Cover ¹	Temperature (°C)	Wind (Beaufort Wind Scale) ²
1	S. Yoshida, Ecologist (1) J. Bernardi, Aquatic Ecologist (3) J. Stalker, GIS Technician (2)	June 16, 2022	20:35 – 22:05	0 - 2	Start: 24°C End: 22°C	1 - 3
2	M. Rizwan, Environmental Planner (1) M. Vickery, Landscape Architect (2) J. Bernardi, Aquatic Ecologist (3)	June 23, 2022	20:30 – 22:00	0 - 1	Start: 23°C End: 19°C	1 - 2

1 NAAMP / Beaufort Sky Codes 0 = clear (no clouds); 1 = partly cloudy (scattered or broken) or variable; 2 = Cloudy or overcast; 3 = sandstorm, duststorm or blowing snow; 4 = fog, smoke, thick dust or haze; 5 = drizzle or light rain; 6 = rain, 7 = snow or snow / rain mix; 8 = showers; 9 = thunderstorms

2 Beaufort Wind Scale 0 = calm, smoke rises vertically (0-2 km/hr); 1 = light air movement, smoke drifts (3-5); 3 = gentle breeze, wind felt on face; leaves rustle (6-11); 4 = moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = fresh breeze, small trees begin to sway (31-39); 6 = strong breeze, large branches in motion (40-50)

4.0 Results and Discussion

The following table provides a summary of findings:

Table 2: Presence absence of candidate SAR within the Study Area.

Species	Presence within the Study Area
Barn Swallow	Not present. No signs of nests were observed.
Chimney Swift	Not present. No suitable chimney habitats were observed.
Little Brown Myotis	Not present. Acoustic surveys did not record this species.
Northern Myotis	Not present. Acoustic surveys did not record this species.
Tri-colored Bat	Not present. Acoustic surveys did not record this species.
Eastern Small-footed Myotis	Not present. Acoustic surveys did not record this species.
American Chestnut	Not present. Not observed within the Study Area
Butternut	Not present. Not observed within the Study Area
White Wood Aster	Very unlikely to be present.

Detailed findings for each species are provided in the following sections.

4.1 Vegetation Community and SAR Plant Surveys

Vegetation surveys were completed to determine whether any SAR plants (i.e., Butternut, American Chestnut, or White Wood Aster) are present and to characterize treed habitats to determine if roosting habitat for SAR bats may be present. These vegetation communities can be seen on Figure 4.1.

Two vegetation communities were identified during field surveys, as follows:

CVR_1 – Low-density Residential

The CVR_1 community consisted of manicured turfgrass with White Ash (*Fraxinus americana*) regeneration adjacent to the outbuildings, Black Walnut (*Juglans nigra*), and horticultural plantings such Common Lilac (*Syringia vulgaris*) and Eastern White Cedar (*Thuja occidentalis*).

The vegetation in this community, which forms the majority of the Study Area, does not provide habitat for any species at risk.

TAGM5 – Hedgerow

The second vegetation community was a hedgerow community borders the entirety of the Subject Lands. The hedgerow community consisted of planted, young to mid-aged trees along the margins of the subject lands (Photos 5 – 7). Tree species present within the hedgerow include the following:

- Siberian Elm (*Ulmus pumila*);
- White Ash;
- Silver Maple (*Acer saccharinum*);
- White Spruce (*Picea glauca*);
- Norway Spruce (*Picea abies*);
- Back Locust (*Robinia pseudoacacia*);
- Black Walnut;
- Northern Hackberry (*Celtis occidentalis*);
- Norway Maple (*Acer platanoides*);
- White Mulberry (*Morus alba*);
- Manitoba Maple (*Acer negundo*); and
- White Pine (*Pinus strobus*).

The hedgerow did not possess a distinct understory community. Shrub and vine species present include Wild Grape (*Vitis riparia*), European Buckthorn (*Rhamnus cathartica*), Red Elderberry (*Sambucus racemosa*), English Ivy (*Hedera helix*), and Virginia Creeper (*Parthenocissus quinquefolia*). White Ash, Black Walnut and Manitoba Maple regeneration were also occasionally present within the understory.

Groundcover species were present throughout the hedgerow community. Species present were primarily non-native or invasive species including Ground Ivy (*Glechoma hederacea*), Garlic Mustard (*Alaria petiolata*), Periwinkle (*Vinca sp.*), and Greater Celandine (*Chelidonium majus*). Native species were commonly occurring, tolerant species including Fleabane (*Erigeron sp.*) and Goldenrod (*Solidago sp.*).

Burnside noted that clearing of the understory in the rear (west) end of the Study Area had recently been cleared to facilitate property line surveys. It is assumed that the understory and groundcover species present within the cleared areas were comparable to the rest of the hedgerow community.

No Butternut or American Chestnut were observed in the hedgerows on the Study Area. White Wood Aster typically flowers in early to mid-September and therefore could not be easily identified during the survey. However, due to the pervasiveness of invasive species, the relative high level of disturbance and limited forest cover, it is highly unlikely that this species is present.

There are relatively few large, mature trees that would support bat roosting. Most are along the western edge of the Study Area and in the property to the west. It is unlikely that large trees along the Study Area boundary will need to be removed. It is recommended that trees over

10 cm dBH should be maintained, where possible. If they must be removed, they should be cleared outside of the bat roosting season which runs from April 1 to September 30 of any given year. This is consistent with recent direction from the Ministry of Environment, Conservation and Parks and, if followed, no permit under the *Endangered Species Act* is required.

Figure 4.1: Vegetation Communities





Photo 5: Southern hedgerow. This hedgerow was primarily comprised of shrubs.



Photo 6: Western hedgerow. Note where clearing has occurred.

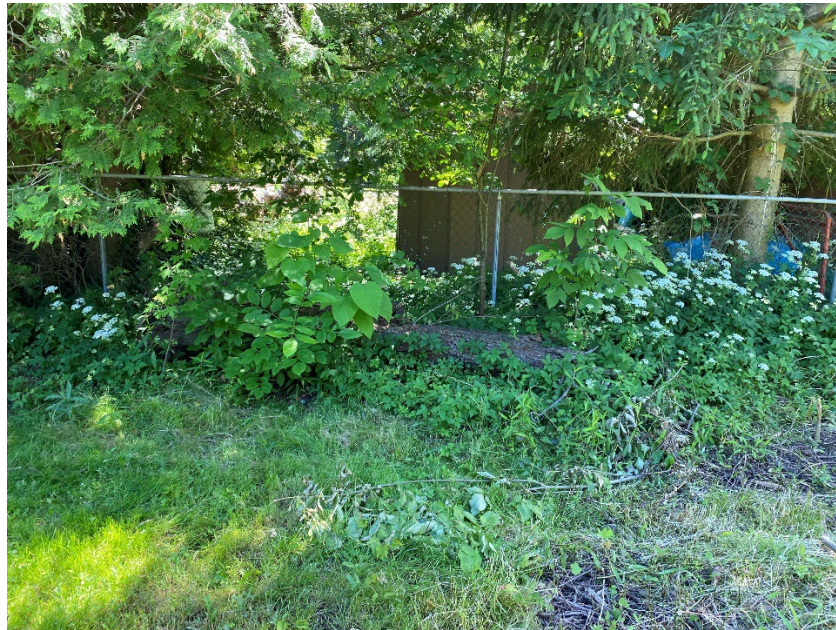


Photo 7: Northern hedgerow.

4.2 Barn Swallow

The interior and exterior of the buildings at 6259-6293 Dorchester Road were searched for evidence of BARS nesting. No intact nests or evidence of nesting / nesting attempts were observed on the exterior of the building despite suitable attachments sites being available. Barn Swallows were not observed foraging within the Study Area during field investigations.

4.3 Chimney Swift

Suitable chimneys were not observed on either of the single-family residences at 6293 or 6259 Dorchester Road.

4.4 SAR Bats – Structure Surveys

During the field investigations, both the interior and exterior of the outbuildings were assessed for potential entry points for SAR bats, or areas that could be used as maternity roost sites or as day roosts. Potential ingress points included holes, large holes in the ceilings, gaps in the soffits, and gaps between wooden siding (Photos 4-9).



Photo 8: Gaps in the soffits of Outbuilding 1.



Photo 9: Open windows and doorways in Outbuilding 2.



Photo 10: Gaps in the ceiling of Outbuilding 2.



Photo 11: Gaps in the soffits of Outbuilding 2.



Photo 12: Gap in the soffit of Outbuilding 3.

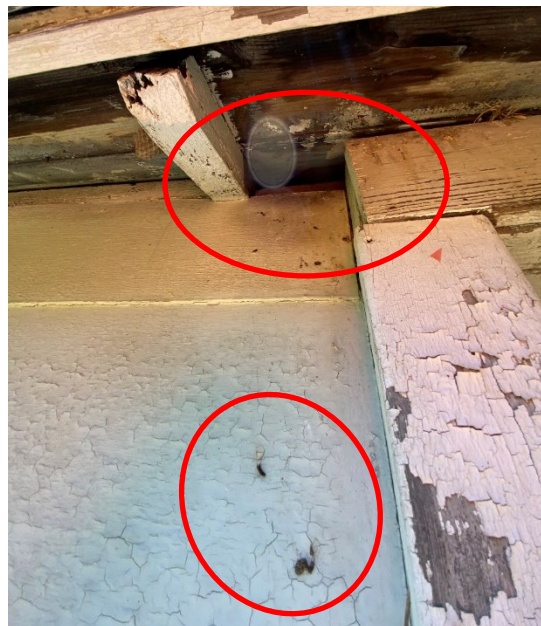


Photo 13: Potential ingress point below the soffit of Outbuilding 1. Grease stains and potential guano are indicated in red. Chitinous debris was visible in the potential guano.

Several ingress points were identified along the three outbuildings. Evidence of guano and grease stains were observed near one potential ingress point on Outbuilding 1 (Photo 13). Subsequent searches of the interior portions of both buildings were conducted also did not yield any evidence suggesting bat occupancy. It should be noted that outbuildings were filled with debris and guano may not have been noticed.

Limited, poor quality, foraging habitat was present within the study area. However, suitable foraging habitat is available within proximity to the site including Hydro Canal located approximately 250 m west of the Subject Lands.

4.5 SAR Bats – Exit Surveys

Acoustic surveys and exit surveys were carried out to confirm that the buildings at 6259-6253 Dorchester Road are used as roosting habitat by SAR bat species. No SAR bat species were identified through acoustic and exit surveys. Observations taken during the time of the surveys are recorded in Table 2.

Table 3: Bat Survey Observations

Date	Outbuilding No.	Visual Observation	Species Identified with the Echo Meter Touch 2 Pro
June 16, 2022	1	No bats were observed existing the structure throughout the entirety of the survey period. Two bats were observed foraging in the first 30 minutes, three bats were observed foraging in the second 30 minutes. Ten bats were observed in the final 30 minutes.	Hoary Bat, Silver-haired Bat, Big Brown Bat, Eastern Red Bat
June 16, 2022	2	No bats were observed existing the structure throughout the entirety of the survey period. Several non-SAR bats were noted as flyovers (foraging)	Hoary Bat, Silver-haired Bat, Big Brown Bat
June 16, 2022	3	No bats were observed existing the structure throughout the entirety of the survey period. One bat was observed exiting the hedgerow during the first thirty minutes. A second bat was observed	Hoary Bat, Silver-haired Bat, Big Brown Bat

Date	Outbuilding No.	Visual Observation	Species Identified with the Echo Meter Touch 2 Pro
		existing the hedgerow during the second thirty-minute interval.	
June 23, 2022	1	No bats were observed existing the structure throughout the entirety of the survey period.	Hoary Bat, Silver-haired Bat, Big Brown Bat
June 23, 2022	2	No bats were observed existing the structure throughout the entirety of the survey period.	No bats recorded on unit
June 23, 2022	3	No bats were observed existing the structure throughout the entirety of the survey period. Several bats were recorded as flyover (foraging).	Hoary Bat, Silver-haired Bat, Big Brown Bat

Table 4: Recorded Bats Calls

Station Information		Number of Recorded Events						
Date	Station	Big Brown Bat	Eastern Red Bat	Hoary Bat	Silver-haired Bat	Eastern Small Footed Myotis	Little Brown Myotis	Tri-colored Bat
16-Jun-22	1	3	1	40	0	0	0	0
	2	5	0	14	0	0	0	0
	3	6	0	2	5	0	0	0
23-Jun-22	1	4	0	14	2	0	0	0
	2	0	0	0	0	0	0	0
	3	42	0	14	2	0	0	0
Total Recorded Events		60	1	84	9	0	0	0
Total verified Events		53	1	82	4	0	0	0
% of Verified Events		88.3%	100%	97.6%	44.4%			

¹Cells shaded in green indicate a high probability of the species being present (p < 0.05)
 Cells shaded in orange have a moderate probability that the species is present (p 0.05 < 0.1)
 Cells shaded in red indicate a high probability of a false positive (p > 0.1)

Four (4) species of bat were detected by the Echo Meter Touch 2 Pro heterodynes: Big Brown Bat, Eastern Red Bat, Hoary Bat, and Silver-haired Bat. No SAR bats were recorded during exit surveys. Recordings were analyzed using Kaleidoscope Pro Software. As discussed in Table 3, bats were not observed exiting any of the three structures present within the Study Area. All species detected during the exit surveys were noted to be flyovers forging within the Study Area. As discussed in table 3 above, two (2) bats were also observed exiting from the northern hedgerow. Due to the small number of calls, the opinion of Burnside biologists that the Study Area has potential to be considered SAR bat habitat due to physical evidence indicating bat occupancy. Although the Study Area has potential to be SAR habitat, the surveys did not indicate any presence of SAR species. As such, it is presumed that SAR bats are not present and further acoustic surveys of structures are not required.

5.0 Summary of Findings, Recommendations, and Conclusions

Burnside has been retained by Panoramic Properties to investigate the Study Area (6259-6293 Dorchester Road) for potential species at risk as a part of the background studies and due-diligence process for the development of. A screening and surveys for potential SAR and SAR habitat has been conducted to ensure compliance with all applicable policies and legislation.


The Study Area is predominantly residential land use, with a wooded hedgerow area at the rear.

In total, nine (9) species at risk including two (2) avian species, four (4) mammalian, and three (3) flora species were identified to be potentially present within the Study Area. No evidence of SAR bats was present within the buildings at 6259-6293 Dorchester Road. No SAR plant species were documented within the Study Area during field studies. No suitable habitat for Barn Swallow or Chimney Swift were identified within the Study Area.

At risk bats were not present in any of the structures in the Study Area. It is recommended that trees over 10 cm dBH should be maintained, where possible. If they must be removed, they should be cleared outside of the bat roosting season which runs from April 1 to September 30 of any given year.

No permits or further studies are required for any of these species.

R.J. Burnside & Associates Limited



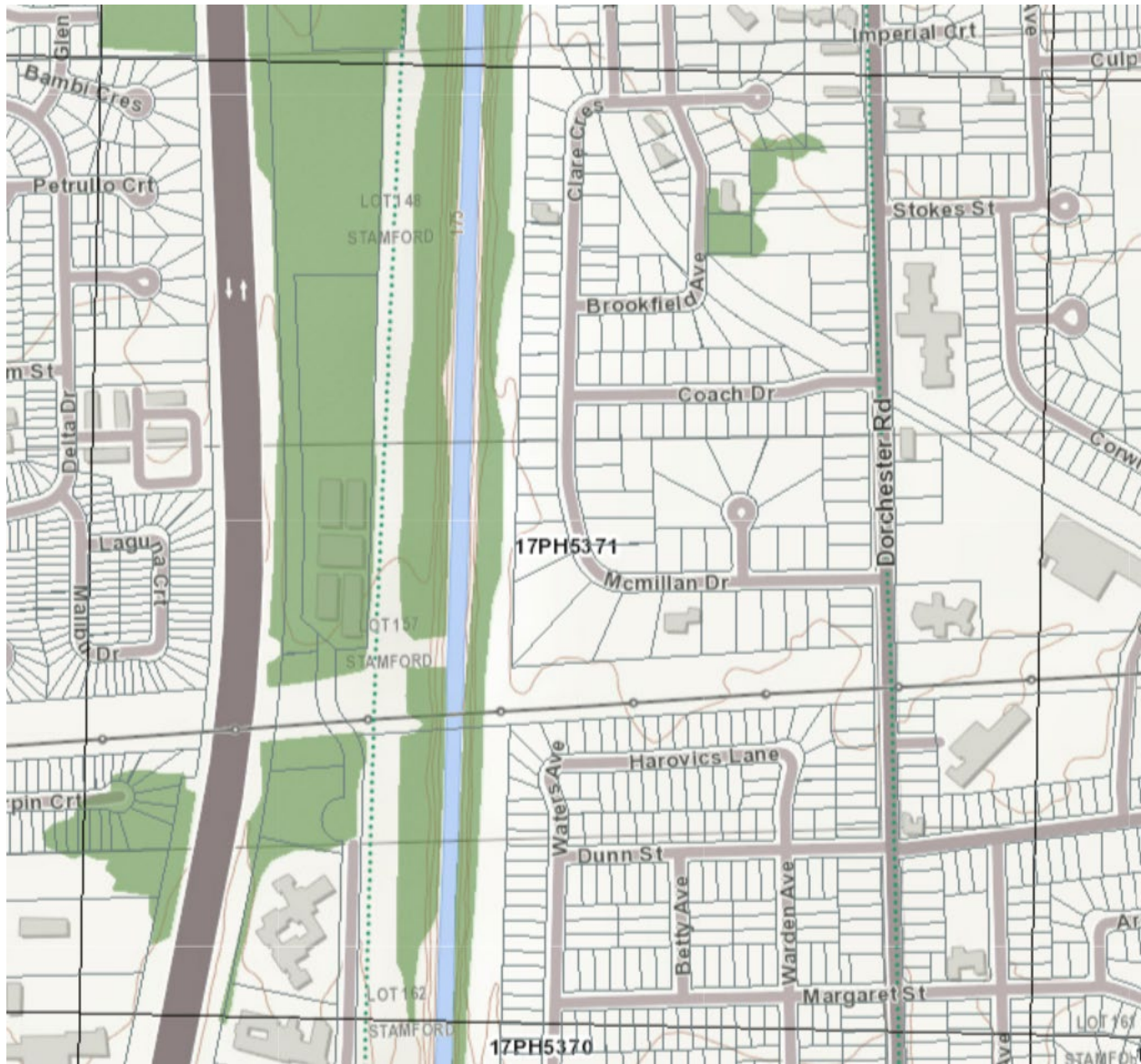
Sarah Yoshida, B.Sc. (Env.) G. Cert. E.R.
Ecologist
SY:js

Enclosure(s) Appendix A – Background Data Review
 Appendix B – SAR Screening Table

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1. NHC

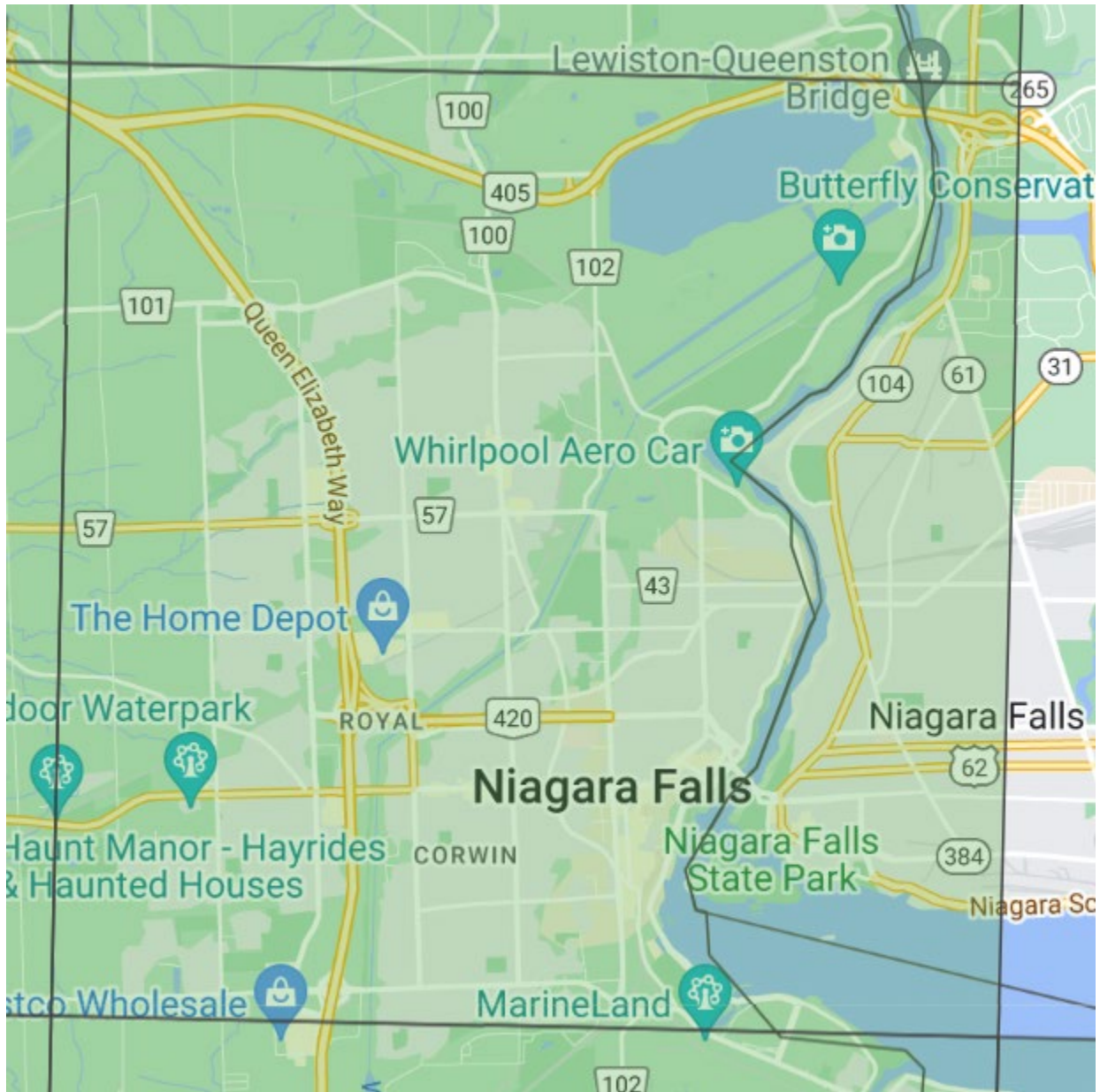


NHC Data

To work further with this data select the content and copy it into your own word or excel documents.

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS	NAD83	IDENT	COMMENTS
1037565	SPECIES	Round Hickorynut	Obovaria subrotunda	END	END		17PH5371			
1037565	SPECIES	Timber Rattlesnake	Crotalus horridus	EXP	EXP		17PH5371			
1037565	SPECIES	Northern Bobwhite	Colinus virginianus	END	END		17PH5371			
1037565	SPECIES	American Water-willow	Justicia americana	THR	THR		17PH5371			
1037565	SPECIES	Deerberry	Vaccinium stamineum	THR	THR		17PH5371			
1037565	SPECIES	Eastern Pondmussel	Ligumia nasuta	END	SC		17PH5371			
1037565	SPECIES	Violet Bush-clover	Lespedeza frutescens				17PH5371			
1037565	SPECIES	Pink Milkwort	Polygala incarnata	END	END		17PH5371			
1037565	SPECIES	Slim-flowered Muhly	Muhlenbergia tenuiflora				17PH5371			
1037565	SPECIES	Appalachian Sedge	Carex appalachica				17PH5371			
1037565	SPECIES	American Chestnut	Castanea dentata	END	END		17PH5371			
1037565	SPECIES	Grass Pickerel	Esox americanus	SC	SC		17PH5371			
1037565	SPECIES	Butternut	Juglans cinerea	END	END		17PH5371			
1037565	SPECIES	White Wood Aster	Eurybia divaricata	THR	THR		17PH5371			
1037565	RESTRICTED SPECIES	Restricted Species	Restricted Species				17PH5371			
1037565	RESTRICTED SPECIES	RESTRICTED SPECIES	RESTRICTED SPECIES	END	END		17PH5371			

2. ORAA



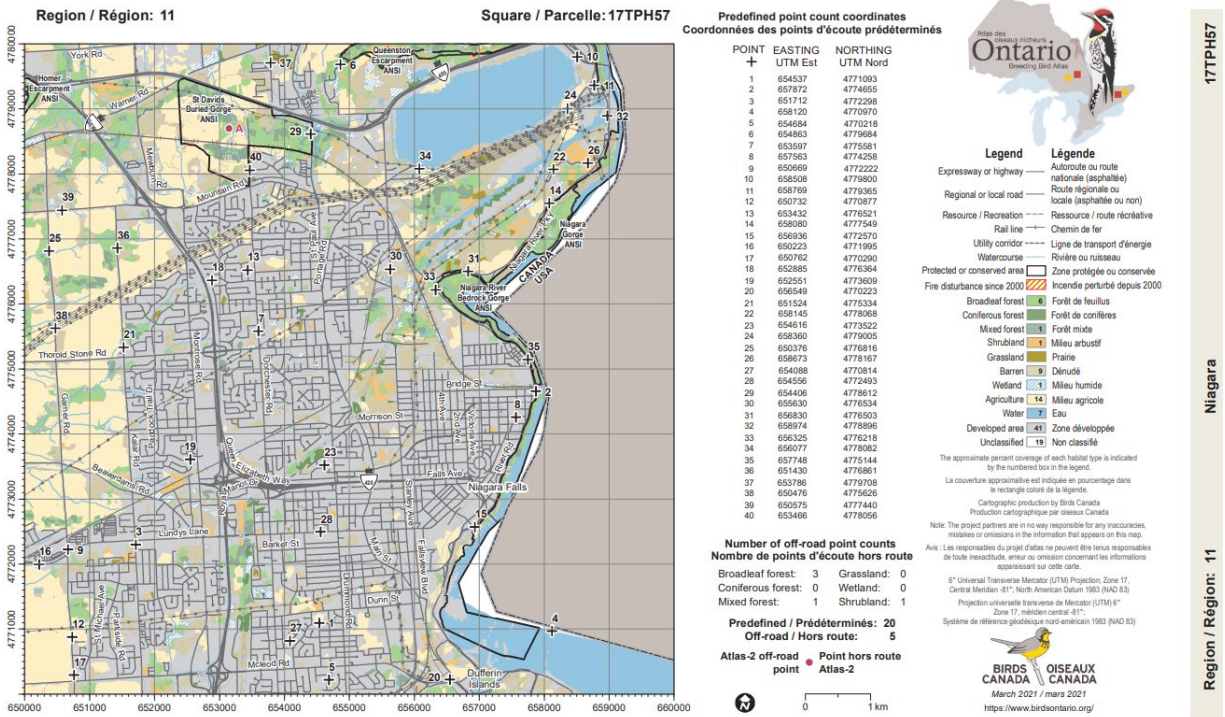
Species list in taxonomic order for square 17PH57

All species

Number of rows of data displayed below: 23.

Species #	Common Name	# of Records	Earliest Yr _____	Latest Yr
3	Midland Painted Turtle	5	1934	2019
5	Red-eared Slider	1	2017	2017
6	Snapping Turtle	2	1967	2015
10	Dekay's Brownsnake	6	1993	2018
12	Eastern Gartersnake	46	1905	2019
18	Milksnake	18	1934	2019
19	Northern Watersnake	9	1989	2018
21	Red-bellied Snake	3	1990	2018
25	American Bullfrog	2	2007	2014
27	Gray Treefrog	1	2017	2017
28	Green Frog	33	1967	2019
30	Northern Leopard Frog	18	1967	2015
32	Spring Peeper	6	1967	2010
33	Western Chorus Frog	65	2004	2019
34	Wood Frog	6	1967	2017
35	American Toad	31	1967	2018
37	Allegheny Mountain Dusky Salamander	27	1989	2018
38	Blue-spotted Salamander	2	2010	2010
40	Red-spotted Newt	4	1967	2015
41	Eastern Red-backed Salamander	126	1968	2019
44	Mudpuppy	3	1967	2017
45	Northern Dusky Salamander	72	1989	2018
48	Spotted Salamander	2	1999	2018

3. OBBA





Square Summary (17TPH57) [\[change\]](#)

	#species				#hours		#pc done	
	poss	prob	conf	total	total	peak	road	offrd
Curr.	20	18	31	69	69.1	26.7	0	1
Prev.	7	20	64	91	137.5	—	25	

Region summary (#11: Niagara, ON)

#squares	#sq with data	#species	#squares (pc) target	compl.
25	25	128	25	0
25	25	161	0	25

Target number of point counts in this square: 25 in total: 20 road side, 5 off road (Broadleaf Forest in 3, Mixed Forest in 1, Shrubland in 1). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Prev.	Code	%	SPECIES	Prev.	Code	%	SPECIES	Prev.	Code	%
Canada Goose	FY	FY	72	American Woodcock	FY	T	36	Red-bellied Woodpecker	CF	FY	60
Mule Swan			16	Wilson's Snipe ‡			4	Downy Woodpecker	FY	D	72
Trumpeter Swan ‡			4	Spotted Sandpiper	NY	FY	52	Hairy Woodpecker	NY	H	40
Wood Duck	P		48	Ring-billed Gull §	NY	NY	28	Pileated Woodpecker ‡			16
Blue-winged Teal ‡			4	Herring Gull §	NY	NY	12	Northern Flicker	FY	T	64
Northern Shoveler ‡			0	Great Black-backed Gull †			0	American Kestrel §	P	H	52
Gadwall ‡			0	Caspian Tern ‡			4	Merlin ‡			8
American Wigeon ‡			0	Common Tern § ‡	NY	FY	16	Peregrine Falcon ‡	NY	FY	8
Mallard	FY	FY	72	Double-crested Cormorant §		NY	28	Eastern Wood-Pewee §	FY	S	60
American Black Duck ‡			0	American Bittern ‡			0	Acadian Flycatcher †	S		0
Northern Pintail ‡			0	Least Bittern †			12	Alder Flycatcher	T		28
Green-winged Teal ‡			0	Great Blue Heron §			32	Willow Flycatcher	T	S	56
Hooded Merganser			16	Great Egret †		NY	16	Least Flycatcher	T		16
Wild Turkey	FY	S	48	Green Heron §		H	28	Eastern Phoebe	P	H	44
Ruffed Grouse ‡			0	Black-crowned Night-Heron †	NY	H	12	Great Crested Flycatcher	T	S	68
Gray Partridge †			0	Black Vulture †			0	Eastern Kingbird	NY	H	64
Ring-necked Pheasant ‡	FY		4	Turkey Vulture	FY	H	56	White-eyed Vireo †			0
Pied-billed Grebe	P		0	Osprey			20	Yellow-throated Vireo ‡			4
Rock Pigeon (Feral Pigeon)	FY		44	Northern Harrier ‡		P	12	Blue-headed Vireo ‡			0
Mourning Dove	AE	D	80	Sharp-shinned Hawk ‡			0	Warbling Vireo	T	T	68
Yellow-billed Cuckoo			28	Cooper's Hawk	FY	NY	44	Red-eyed Vireo	NY	S	72
Black-billed Cuckoo	S	S	28	Bald Eagle ‡			28	Blue Jay	CF	AE	68
Common Nighthawk ‡	T		0	Red-shouldered Hawk ‡			0	American Crow	CF	NB	64
Eastern Whip-poor-will ‡			4	Red-tailed Hawk	NY	T	76	Fish Crow †			8
Chimney Swift §	AE		28	Barn Owl †			0	Common Raven ‡			40
Ruby-throated Hummingbird	P	H	60	Eastern Screech-Owl		T	24	Black-capped Chickadee	FY	CF	76
Virginia Rail			4	Great Horned Owl	AE	T	76	Tufted Titmouse			36
Sora			12	Long-eared Owl ‡			0	Horned Lark §	FY	FY	52
Common Gallinule ‡			4	Short-eared Owl †			4	Northern Rough-winged Swallow	P	H	52
American Coot ‡			4	Northern Saw-whet Owl ‡			0	Purple Martin §	AE		40
Sandhill Crane ‡			12	Belted Kingfisher	H	H	56	Tree Swallow	FY	H	60
Killdeer §	FY	DD	80	Yellow-bellied Sapsucker ‡			0	Bank Swallow §	AE		36
Upland Sandpiper †			0	Red-headed Woodpecker †			20	Barn Swallow §	NY	NY	68

Breeding Bird Atlas - Summary Sheet for Square 17TPH57 (page 2 of 2)

SPECIES	Prev.	Code	%	SPECIES	Prev.	Code	%	SPECIES	Prev.	Code	%
Cliff Swallow §	FY		44	Swamp Sparrow			28	<u>Northern Cardinal</u>	FY	D	80
Golden-crowned Kinglet ‡			0	<u>Eastern Towhee §</u>		S	44	<u>Rose-breasted Grosbeak</u>	NY	T	52
<u>Red-breasted Nuthatch ‡</u>	FY	S	12	Yellow-breasted Chat †			0	<u>Indigo Bunting</u>	NY	T	48
White-breasted Nuthatch	P		40	Bobolink §		NE	32				
Brown Creeper ‡			0	Eastern Meadowlark §		NE	36				
Blue-gray Gnatcatcher			24	Orchard Oriole		T	24				
House Wren	AE	CF	72	Baltimore Oriole	AE	NY	72				
Winter Wren ‡	N		4	Red-winged Blackbird	NY	NY	84				
Sedge Wren ‡			0	Brown-headed Cowbird	P	V	72				
Marsh Wren			20	Common Grackle	NY	CF	64				
Carolina Wren	N	T	80	Ovenbird			12				
European Starling	AE	CF	80	Louisiana Waterthrush †			0				
Gray Catbird	FY	CF	64	Northern Waterthrush ‡			0				
Brown Thrasher	FY	S	40	Golden-winged Warbler †			0				
Northern Mockingbird	NY	S	28	Blue-winged Warbler			24				
Eastern Bluebird	NY	D	52	Black-and-white Warbler ‡			0				
Veery	S		16	Nashville Warbler ‡			0				
Wood Thrush §	FY		44	Mourning Warbler ‡			0				
American Robin	AE	NE	88	Common Yellowthroat	V	FY	60				
Cedar Waxwing	FY	T	52	Hooded Warbler	S		16				
House Sparrow	NY	NY	72	American Redstart	CF		24				
House Finch	NY	T	48	Cerulean Warbler †			0				
Purple Finch ‡			8	Northern Parula ‡			0				
Pine Siskin ‡	H		0	Magnolia Warbler ‡			0				
American Goldfinch	NY	FY	76	Blackburnian Warbler ‡			0				
Grasshopper Sparrow §	FY		4	Yellow Warbler	CF	CF	76				
Chipping Sparrow	FY	CF	72	Chestnut-sided Warbler ‡			4				
Clay-colored Sparrow ‡			0	Black-throated Blue Warbler ‡			0				
Field Sparrow §	FY	CF	48	Pine Warbler ‡			4				
Vesper Sparrow	T		24	Prairie Warbler †			0				
Savannah Sparrow	FY	T	56	Black-throated Green Warbler ‡			0				
Song Sparrow	AE	FY	76	Canada Warbler ‡			0				
Lincoln's Sparrow ‡			0	Scarlet Tanager	CF	P	24				

This list includes all breeding species expected in the region #11 (Niagara). Underlined species are those that you should try to add to this square (17TPH57). They have not yet been reported in this square, but have been reported in more than 50% of the squares in this region so far. "Prev." is the code for the highest breeding evidence for that species in square 17TPH57 in the previous atlas. "Code" is the code for the highest breeding evidence for that species in square 17TPH57 over the last 5 years. The % columns give the percentage of squares in that region where that species was reported (this gives an idea of the expected chance of finding that species in region #11). Rare/Colonial Species Report Forms should be completed for species marked: § (Species of interest), ‡ (regionally rare), † (provincially rare). An up-to-date version of this sheet is available from <https://www.birdscanada.org/naturecounts/atlas/summaryform.jsp?squareID=17TPH57&lang=EN> Data current as of 9/06/2022 22:09.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present in Study Area?	Species Observed?
Birds									
Acadian Flycatcher	<i>Empidonax virescens</i>	S2S3B	END	END	END	1	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines. ⁷	No potential within subject lands. Wooded areas are limited in extent and are highly disturbed due to edge effects and proximity to urbanized areas	No
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2N,S4B	SC	NAR	NAR	No schedule	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. ⁷	No potential within subject lands. FOD/FOM ecosites are also absent from subject lands.	No.
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	THR	1	Prefers open habitats including, farmland, lake/river shorelines, grasslands, and wetlands. Nests in exposed earthen banks along shorelines and in artificial sites such as gravel pits. ⁷	No potential within subject lands. Suitable nesting habitat not present within property limits.	No
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	THR	1	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. Nests inside or on exterior of buildings; under bridges and in road culverts; on rock faces, and in caves, etc. ⁸	Low Potential. Suitable nesting habitat is available. Nearby foraging habitat is limited.	No
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	THR	1	Generally prefers open grasslands and hay fields for nesting, typically featuring relatively tall vegetation. Sometimes uses large fields of winter wheat and rye in southwestern Ontario. Sensitive to vegetation structure and composition. Positively associated with high grass-to-forb ratios; moderate litter depth; tolerate wetter portions of fields compared to Eastern Meadowlark (EAME) and more likely to nest closer to field centres rather than field margins. Lower tolerance to presence of patches of bare ground. Appear to prefer larger fields than EAME. ⁹	No potential. Suitable nesting habitat not present within subject lands.	No
Short-eared Owl	<i>Asio flammeus</i>	S2N,S4B	SC	SC	SC	1	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields. ⁷	No potential. On-site habitats are restricted to hedgerows and manicured turfgrass.	No
Cerulean Warbler	<i>Setophaga cerulea</i>	S3B	THR	END	END	1	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests. ⁷	No potential. Suitable habitat is not present.	No
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4B	SC	THR	THR	1	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas. ⁷	No potential. On-site habitats are restricted to hedgerows and manicured turfgrass	No
Yellow-breasted Chat	<i>Icteria virens</i>	S2B	END	END	END	1	Prefers scrubby, early successional habitats. In Ontario, the Yellow-breasted Chat uses regenerating old fields, forest edges, railway and hydro rights-of-way, young coniferous reforestations and occasionally wet willow-ash-elm thickets bordering wetlands. Tangles of grape and raspberry are also a habitat feature of most breeding sites. ⁷	No potential. Early successional thicket habitats are not present within the Subject Lands.	No
Great Egret	<i>Ardea alba</i>	S2B	No status	No status	No status	No schedule	A colonial breeder, choosing locations on islands with tree or shrubby habitat. In marsh habitat, this species will choose to nest at much lower heights in shrubs or even just above ground or water surface in shrubs or other marsh vegetation. ⁷	No potential. Suitable nesting habitat not present within subject lands.	No
Peregrine Falcon	<i>Falco peregrinus</i>	S3B	SC	NAR	SC	1	Nests on cliffs near water bodies, or at urban sites such as tall buildings, bridges, and smokestacks. ⁷	No potential. Suitable nesting habitat not present within subject lands.	No
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR	THR	1	Generally prefers wet coniferous, deciduous 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. ⁷	No potential. Suitable nesting habitat not present within subject lands.	No

Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	S4B	THR	THR	THR	1	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred. In Ontario, its preferred habitats include rock or sand barrens with scattered trees, savannahs, old burns in a state of early forest succession, and open conifer plantations. ⁷	No potential, no suitable habitat within subject lands. Wooded areas are limited in extent and are highly disturbed due to edge effects and proximity to urbanized areas	No
Chimney Swift	<i>Chaetura pelagica</i>	S4B,S4N	THR	THR	THR	1	Historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys. Proximity to lakes is also a preferred habitat feature as they will forage for flying insects close to water. ⁷	Low potential. No chimneys and few roost trees are not present within the subject lands or immediate vicinity of the site.	No
Common Nighthawk	<i>Chordeiles minor</i>	S4B	SC	SC	THR	1	Nests in open habitats, in forests and in urban areas. It prefers rock outcrops, alvars, sand barrens, bogs, fens, and in forests, openings created by clearcuts and burns. In southern Ontario, grasslands, agricultural fields, gravel pits, prairies, and alvars and at airports. In cities, it nests mostly on flat, graveled roofs but occasionally on railways and footpaths. ⁷	No potential. Suitable nesting sites (i.e. gravel pathways) are not present.	No
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	THR	1	Generally prefers grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins. ⁹	No suitable habitat present within subject lands or surrounding area.	No
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	SC	SC	SC	1	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without. ⁷	No potential. Wooded areas are present but are limited in extent and are highly disturbed and surrounded by development.	No
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4B	SC	THR	THR	1	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas. ⁷	No potential. No shrublands or mid-successional forests present within subject lands or within the site vicinity.	No
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	SC	SC	SC	1	Prefers drier, sparsely vegetated grasslands, particularly rough or unimproved pastures with scattered forb and shrub growth, at least 30 ha in size. It will occasionally also use cultivated hayfields and cereal crops. ⁷	No suitable habitat present within subject lands or surrounding area.	No
Louisiana Waterthrush	<i>Parkesia motacilla</i>	S3B	THR	THR	SC	1	Generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps. ⁷	No suitable habitat within subject lands or surrounding areas. Extent of wooded area and canopy cover is not sufficient to be considered "forest".	No
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	THR	1	Most frequently found in marshes of at least 5 ha, although much smaller marshes, including sites such as cattail stands along creeks and farm ponds partially filled with cattail, may be used occasionally. Breeding sites typically dominated by cattail, but also sometimes bulrush, grasses, horsetail, and willow. Nests usually close to edge of a stand of vegetation or near openings such as muskrat trails, although may be as far as 45 m from open water. ⁷	No suitable habitat within subject lands or surrounding areas.	No
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	END	THR	1	Breeds in open woodland and woodland edges, especially oak savannah and riparian forest. These habitats can occur in parks, golf courses, cemeteries and private woodlands. Existence of large, dead, weathered trees or live trees with large dead branches are an important characteristic of habitat. ⁷	No potential. Wooded areas are present but are limited in extent and are highly disturbed and surrounded by development. No large dead trees or thick understory are present.	No

Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understorey are usually prerequisites for site occupancy. ⁷	No potential. Wooded areas are present but are limited in extent and are highly disturbed and surrounded by development	No.
Fish									
Grass Pickerel	<i>Esox americanus vermiculatus</i>	S3	SC	SC	SC	1	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. ²⁰	No potential. Shallow open water areas or watercourses are not present.	No
Mammals									
Eastern Small-footed Myotis	<i>Myotis leibii</i>	S2S3	END	END	No status	No schedule	Overwintering habitat: Caves and abandoned mines. According to the Recovery Strategy for the Eastern Small-footed Myotis in Ontario, summer / roosting habitats used by the species in Ontario are poorly understood, but elsewhere in its range it primarily roosts in open, sunny rocky habitats, and, occasionally, in buildings. Summer roosts for this species are believed to be located in close proximity to their hibernacula (i.e., less than 100 m). The species' preference for rocky habitats in summer may limit an individual's home range to those rocky areas which also contain hibernacula (i.e., karst areas and Canadian Shield areas containing abandoned mines with adits). ¹⁶	Very low potential. Small outbuildings on-site may provide suitable roosting habitat. However, site is >100 meters from a suitable hibernacula site.	No
Little brown Myotis	<i>Myotis lucifugus</i>	S4	END	END	END	1	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). ¹⁵	Low potential. Small outbuildings on-site may provide suitable roosting habitat.	No
Tri-colored Bat	<i>Perimyotis subflavus</i>	S3?	END	END	END	1	Overwintering habitat: Deepest parts of caves and mines where temperature is the least variable. Maternal Roosts: Less is known about roosts of Tri-colored Bats. Most roost sites found within forested habitats. May roost in clumps of dead foliage and lichens. In more anthropogenically modified landscapes, maternity roosts may be barns or similar human-made structures. ¹⁵	Low potential. Small outbuildings on-site may provide suitable roosting habitat.	No
Northern Myotis	<i>Myotis septentrionalis</i>	S3	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.) ¹⁵	Low potential. Small outbuildings on-site may provide suitable roosting habitat.	No
Molluscs									
Eastern Pondmussel	<i>Ligumia nasuta</i>	S1	END	SC	END	1	Generally inhabit sheltered areas of lakes or slow streams in substrates of fine sand and mud. ¹⁰	No potential. No watercourse present in study area.	No
Round Hickorynut	<i>Obovaria subrotunda</i>	S1	END	END	END	1	Generally found in rivers with clay, sand or gravel bottoms. It also lives in shallow areas of lakes with firm sand. It prefers moderately fast moving water. ¹⁰	No potential. Shallow open water areas or watercourses are not present.	No
Reptiles									
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	NAR	SC	NAR	No schedule	Generally prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. ¹⁴	No potential. Shallow open water areas are not present.	No

Northern Dusky Salamander	Desmognathus fuscus	S1	END	END	END	1	Generally prefer rocky woodland streams, seepages, and springs where water is running or trickling. ²⁰	No potential. Shallow open water areas are not present.	No
Snapping Turtle	Chelydra serpentina	S3	SC	SC	SC	1	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly 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. ¹⁰	No potential. Shallow open water areas are not present.	No
Timber Rattlesnake	Crotalus horridus	SX	EXP	EXP	EXP	0	This species was found along the Niagara Escarpment, primarily in the Niagara area. The most recent confirmed records of this rattlesnake in Ontario are from the Niagara Gorge in the 1940s. This species occurs throughout the eastern and central United States, although it is locally extirpated in many areas.	No.	No
Allegheny Mountain Dusky Salamander							Typically found in or near forested small streams, springs, or seeps (areas where water in the ground oozes to the surface to form a pool). They typically nest in underground cavities close to seeps, or in shallow depressions in moist soil beneath logs, stones, moss, leaf litter or stumps. They are usually absent from larger streams where predatory fish occur. Other predators include watersnakes and birds.	No.	No
Vegetation									
American water-willow	Justicia americana	S2	THR	THR	THR	1	Generally grows along shorelines and sometimes in nearby wetlands, as well as along streams where the bottom is composed of gravel, sand or organic matter. ²⁰	No potential. Shallow open water areas or wetlands are not present.	No
Deerberry	Vaccinium stamineum	S1	THR	THR	THR	1	Generally occurs on sandy and well-drained soil, often in dry open woodlands (Niagara Gorge). ²⁰	No potential. Site is not an open-oak pine woodland and savannah and does not occur in the Niagara Gorge.	No
Pink Milkwort	Polygala incarnata	S1	END	END	END	0	Most commonly found in the central plains and along the southeastern seaboard states. The species is near the northern edge of its range in Ontario where there are potentially four existing populations of Pink Milkwort in southwestern Ontario: three populations occur in Bkejwanong (Walpole Island First Nation) which lies on the delta of the St. Clair River as it opens into Lake St. Clair and one population occurs in Ojibway Prairie Provincial Nature Reserve in Windsor-LaSalle. During surveys completed in 2008, plants could not be located at one population in Bkejwanong (Walpole Island First Nation). In 2008, the remaining three populations contained an estimated 1,800 plants. Additional previously known populations on Squirrel Island, near Niagara Falls and at Leamington are presumed to be extirpated.	No potential. Site is not an open, mesic to dry sand prairie.	No
American Chestnut	Castanea dentata	S1S2	END	END	END	1	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils. ²⁰	Potential.	No
Butternut	Juglans cinerea	S2?	END	END	END	1	Butternut grows best in rich, moist and well-drained soils or limestone gravel sites. They are less commonly found in dry, rocky and sterile soils. They generally grow alone or in small groups in deciduous forests that are commonly comprised of Basswood, Black Cherry, Beed, Black Walnut, Elm, Hemlock, Hickory, Oak, Red Maple, Sugar Maple, Poplar, White Ash and Yellow Birch. ⁶ In Ontario, they can be found throughout the southern Ontario, south of the Canadian Shield. ¹⁰	Potential.	No
White Wood Aster	Eurybia divaricata	S2S3	THR	THR	THR	1	Generally grows in open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance, as it often grows along trails. ²⁰	Potential.	No

⁵S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. (Provincial Status from MNR Biodiversity Explorer September 2012)

- S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

⁶SARO Endangered Species Act, 2007

(provincial status from MNR December 2014)

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO).

EXT Extinct - A species that no longer exists anywhere.

EXP Extirpated - A species that no longer exists in the wild in Ontario but still occurs elsewhere.

END Endangered - A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA) (END-R designations are no longer relevant as species are covered under new ESA April 2009)

THR Threatened - A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special Concern (formerly Vulnerable) - A species with characteristics that make it sensitive to human activities or natural events.
NAR Not at Risk - A species that has been evaluated and found to be not at risk.
DD Data Deficient (formerly Indeterminate) - A species for which there is insufficient information for a provincial status recommendation.

³SARA (Federal Species at Risk Act) Status and Schedule (includes COSEWIC Status)

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.
EXT Extinct - A wildlife species that no longer exists.
EXP Extirpated - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END Endangered - A wildlife species that is facing imminent extirpation or extinction.
THR Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

⁴SARA Schedule

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

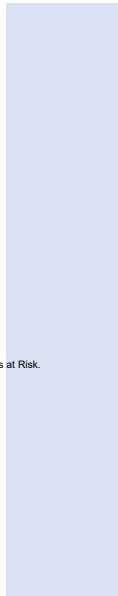
Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

⁵Habitat Present on Site

Determination of suitability of the site to support each species based on 'Key Habitats Used By Species'.
Yes - Specific habitat present and species and / or evidence observed;
Likely - The whole study area or portions of it contain conditions that could support the species;
Unlikely - Few similarities between study area conditions and preferred habitat exist;
No - Specific habitat not present and species and / or evidence not observed

⁶Species Observed

Reported sighting of species during fall field investigations by RJB biologists



Additional Sources:

Sources:

- ⁷ Cadman, M.D., et al. (eds). 2007. *Atlas of the Breeding Birds of Ontario, 2001-2005*. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp
- ⁸ Species at Risk Public Registry <http://www.sararegistry.gc.ca>
- ⁹ McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, viii + 88 pp.
- ¹⁰ MNR SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)
- ¹¹ COSEWIC Species Assessment Report
- ¹² Naughton, Donna. 2012. *The Natural History of Canadian Mammals*. Canadian Museum of Nature and University of Toronto Press, Toronto, + 784 pp
- ¹³ Farrar, John Laird. 2017. *Trees in Canada*. Natural Resources Canada | Canada Forest Services, and, Fitchery & Whiteside Limited, pp.238 - 239
- ¹⁴ Ontario Nature Reptile and Amphibian Atlas (<https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/species/>)
- ¹⁵ Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
- ¹⁶ Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 76 pp.
- ¹⁷ Department of Fisheries and Oceans (DFO) Aquatic Species at Risk found online at: <http://www.dfo-mpo.gc.ca/species-especies/sara-lep/identify-eng.html>.
- ¹⁸ Paulson, D. 2011. *Dragonflies and Damselflies of the East*. Princeton University Press, Princeton, NJ.
- ¹⁹ Harding, J.H., 1997. *Amphibians and Reptiles of the Great Lakes Region*. The University of Michigan Press. Ann Arbor, Michigan
- ²⁰ MNRF. 2016. *City of Niagara Falls Species at Risk Table*. Guelph District.
- ²¹ Michigan Flora found online at <https://michiganflora.net/search.aspx>
- ²² Natural Heritage Information Centre (<https://www.ontario.ca/page/get-natural-heritage-information>)