APPENDIX

J ENVIRONMENTAL INFORMATION

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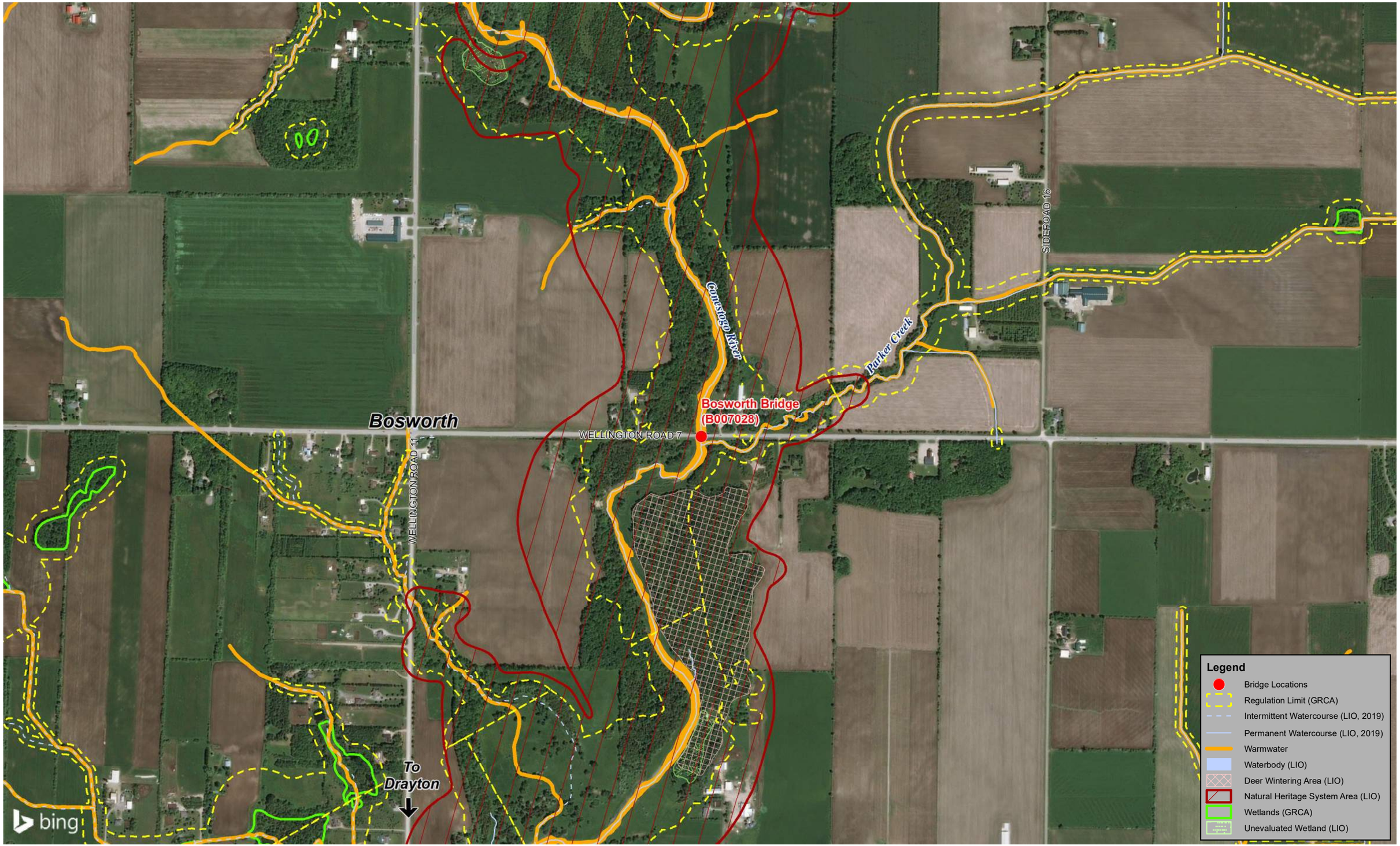
Representative Site Photographs



COUNTY OF WELLINGTON
BOSWORTH BRIDGE (B007028)
Bridge Location and Natural Heritage Features

0 100 200
Meters
1:10,000

N

Date: June 2021
Project No: 19M-00716-00
Figure No: J-1

28 Jun 2021

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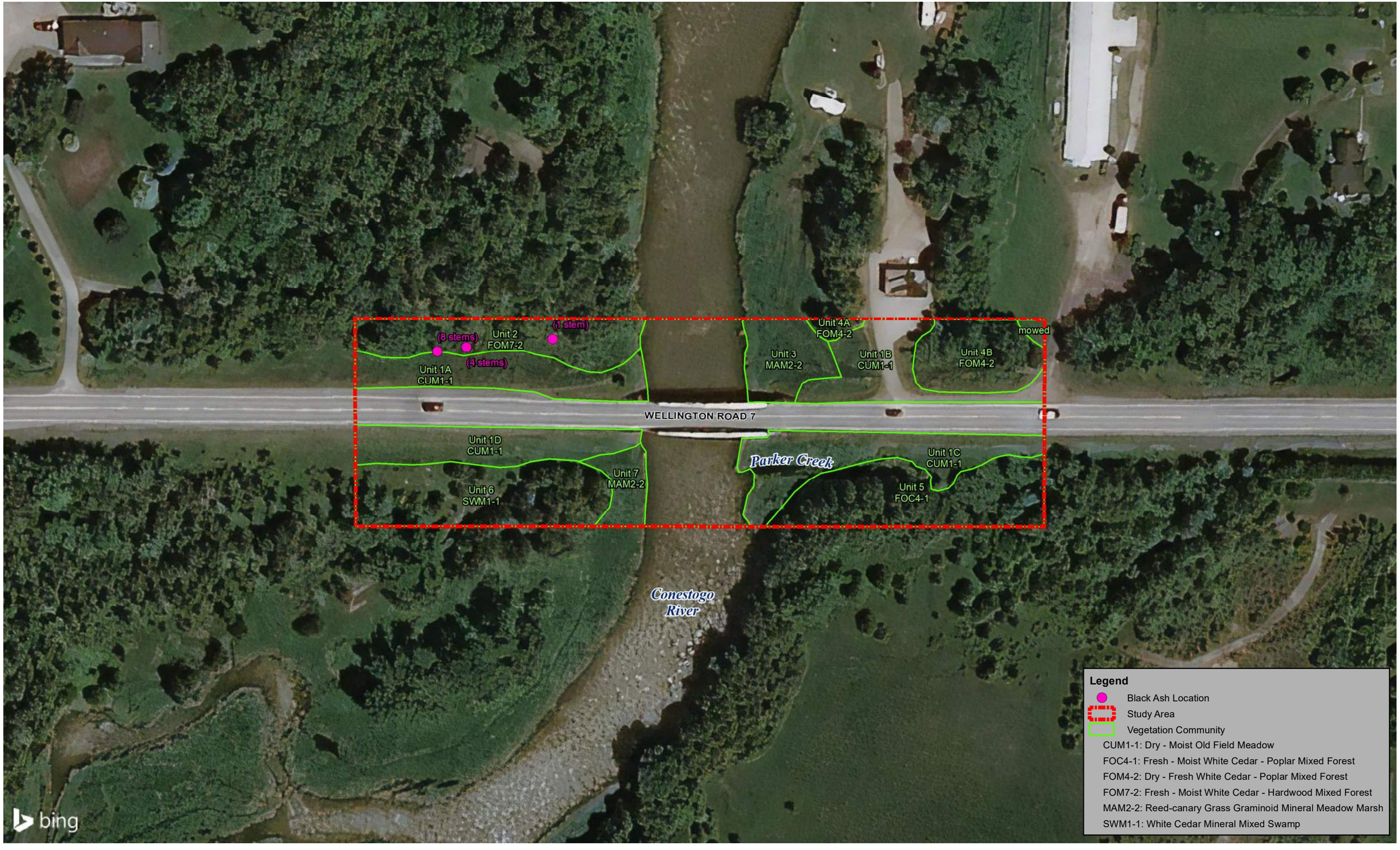

COUNTY OF WELLINGTON
BOSWORTH BRIDGE (B007028)
ELC Vegetation Communities

0 10 20
Meters
1:1,000

N

Date: June 2021
Project No: 19M-00716-00
Figure No: J-2

28 Jun 2021
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Table J-1: Bosworth Bridge - Vascular Plant List

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	NATIVE STATUS[8]	WELLINGTON COUNTY (Frank & Anderson 2009)[9]	WELLINGTON-DUFFERIN (Riley et al. 1989)[9]	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Abies balsamea	Balsam Fir	5	-3	S5				N		X						X	
Acer negundo	Manitoba Maple	0	0	S5				N		X		X					
Acer spicatum	Mountain Maple	6	3	S5				N		X		X					
Achillea ptarmica	Sneezeweed Yarrow		0	SNA				I		X	X		X				
Actaea rubra	Red Baneberry	6	3	S5				N		X							
Ageratina altissima	White Snakeroot	5	3	S5				N		X		X					
Agrimonia gryposepala	Hooked Agrimony	2	3	S5				N		X						X	
Agrostis gigantea	Redtop		-3	SNA				I		X	X					X	
Alliaria petiolata	Garlic Mustard		0	SNA				I				X	X				
Ambrosia artemisiifolia	Common Ragweed	0	3	S5				N		X	X						
Ambrosia trifida	Great Ragweed	0	0	S5				N					X				
Anemone quinquefolia	Wood Anemone	7	0	S5				N		X							
Arctium minus	Common Burdock		3	SNA				I		X		X					
Arisaema triphyllum	Jack-in-the-pulpit	5	-3	S5				N		X		X					
Asclepias syriaca	Common Milkweed	0	5	S5				N		X	X		X	X			
Betula alleghaniensis	Yellow Birch	6	0	S5				N		X		X				X	
Bidens sp.	Beggarticks sp.															X	
Bromus inermis	Smooth Brome		5	SNA				I		X	X			X			
Calystegia sepium ssp. angulata	Angled False Bindweed	2	0	SU				N		X			X				
Carex flava	Yellow Sedge	5	-5	S5				N		X						X	
Carex formosa	Handsome Sedge	6	0	S4				N									
Carex gracillima	Graceful Sedge	4	3	S5				N		X							
Carex granularis	Limestone Meadow Sedge	3	-3	S5				N		X	X						
Carex hystericina	Porcupine Sedge	5	-5	S5				N		X						X	
Carex scabrata	Eastern Rough Sedge	8	-5	S5				N		X		X					
Carex spicata	Spiked Sedge		3	SNA				I								X	
Carex vulpinoidea	Fox Sedge	3	-5	S5				N		X						X	X
Chaenorhinum minus	Dwarf Snapdragon		5	SNA				I		X	X						
Cicuta maculata var. maculata	Spotted Water-hemlock	6	-5	S5				N		X		X				X	
Cirsium arvense	Canada Thistle		3	SNA				I		X	X		X		X		
Clematis virginiana	Virginia Clematis	3	0	S5				N		X		X					
Cornus alternifolia	Alternate-leaved Dogwood	6	3	S5				N		X				X			
Cornus sericea	Red-osier Dogwood	2	-3	S5				N		X	X	X	X	X		X	
Crataegus monogyna	English Hawthorn		3	SNA				I		X	X				X	X	
Cystopteris bulbifera	Bulblet Bladder Fern	5	-3	S5				N		X		X					
Dactylis glomerata	Orchard Grass		3	SNA				I		X	X						
Daucus carota	Wild Carrot		5	SNA				I		X				X			
Dipsacus fullonum	Common Teasel		3	SNA				I		X		X					
Echinocystis lobata	Wild Cucumber	3	-3	S5				N		X		X			X		
Elymus repens	Quackgrass		3	SNA				I		X	X						
Epipactis helleborine	Broad-leaved Helleborine		3	SNA				I		X		X					
Equisetum arvense	Field Horsetail	0	0	S5				N		X							
Equisetum fluviatile	Water Horsetail	7	-5	S5				N		X						X	
Erigeron annuus	Annual Fleabane	0	3	S5				N		X	X						
Euthamia graminifolia	Grass-leaved Goldenrod	2	0	S5				N		X						X	
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	3	-5	S5				N		X	X					X	X
Festuca rubra	Red Fescue		3	S5				N			X						
Fraxinus americana	White Ash	4	3	S4				N		X		X					
Fraxinus nigra	Black Ash	7	-3	S3	THR			N		X		X					
Fraxinus pennsylvanica	Red Ash	3	-3	S4				N			X	X					
Galium mollugo	Smooth Bedstraw		5	SNA				I		X	X						
Galium palustre	Common Marsh Bedstraw	5	-5	S5				N		X	X					X	
Geranium robertianum	Herb-Robert	2	3	S5				I		X		X		X	X	X	
Geum laciniatum	Rough Avens	4	-3	S4				N	R1	X		X				X	
Glechoma hederacea	Ground-ivy		3	SNA				I		X		X					
Glyceria striata	Fowl Mannagrass	3	-5	S5				N		X		X					
Hesperis matronalis	Dame's Rocket		3	SNA				I		X		X					
Hypericum perforatum	Common St. John's-wort		5	SNA				I		X	X		X				
Impatiens capensis	Spotted Jewelweed	4	-3	S5				N		X	X	X			X	X	
Inula helenium	Elecampane		3	SNA				I		X			X				
Iris versicolor	Harlequin Blue Flag	5	-5	S5				N		X						X	
Juncus effusus ssp. solutus	Soft Rush	4	-5	S5?				N		X						X	
Juncus sp.	Rush sp.															X	
Laportea canadensis	Canada Wood Nettle	6	-3	S5				N		X		X					
Lapsana communis	Common Nipplewort		3	SNA				I		X		X					
Larix laricina	Tamarack	7	-3	S5				N		X						X	
Lotus corniculatus	Garden Bird's-foot Trefoil		3	SNA				I		X	X						
Maianthemum racemosum	Large False Solomon's Seal	4	3	S5				N		X							
Matteuccia struthiopteris	Ostrich Fern	5	0	S5				N		X	X					X	
Melilotus albus	White Sweet-clover		3	SNA				I		X	X						
Mentha canadensis	Canada Mint	3	-3	S5				N							X		
Mentha spicata	Spearmint		-3	SNA				I		SR						X	
Morus alba	White Mulberry		0	SNA				I		X				X			
Myosotis laxa	Small Forget-me-not	6	-5	S5				N		X						X	
Oenothera biennis	Common Evening-primrose	0	3	S5				N		X	X						
Onoclea sensibilis	Sensitive Fern	4	-3	S5				N		X						X	
Oxalis stricta	Upright Yellow Wood-sorrel		3	S5				I		X							
Parthenocissus vitacea	Thicket Creeper	4	3	S5				N		X	X	X		X		X	
Phalaris arundinacea var. arundinacea	Reed Canarygrass	0	-3	S5				N		X	X		X	X		X	X
Phleum pratense	Common Timothy		3	SNA				I		X	X						
Picea abies	Norway Spruce		5	SNA				I		X		X					
Picea glauca	White Spruce	6	3	S5				N		X		X					
Picea mariana	Black Spruce	8	-3	S5				N		X						X	
Picea pungens	Blue Spruce		3	SNA				I				X					
Poa palustris	Fowl Bluegrass	5	-3	S5				N		X					X		
Poa pratensis ssp. pratensis	Kentucky Bluegrass		3	SNA				I		X	X						
Populus balsamifera	Balsam Poplar	4	-3	S5				N		X					X		
Populus tremuloides	Trembling Aspen	2	0	S5				N		X	X			X			
Prunella vulgaris ssp. lanceolata	Lance-leaved Self-heal		0	S5				N								X	
Prunus serotina	Black Cherry	3	3	S5				N		X		X					
Prunus virginiana	Chokecherry	2	3	S5				N		X		X					
Pteridium aquilinum	Bracken Fern	2	3	S5				N		X							
Ranunculus repens	Creeping Buttercup		0	SNA				I		X						X	
Rhamnus cathartica	European Buckthorn		0	SNA				I		X		X					
Rhus typhina	Staghorn Sumac	1	3	S5				N		X		X					
Ribes rubrum	European Red Currant		5	SNA				I		X		X					
Rubus idaeus ssp. strigosus	North American Red Raspberry	2	3	S5				N		X	X	X		X			
Rudbeckia laciniata	Cut-leaved Coneflower	7	-3	S5				N		X	X	X					
Rumex crispus	Curled Dock		0	SNA				I		X						X	
Salix discolor	Pussy Willow	3	-3	S5				N		X		X		X			
Salix interior	Sandbar Willow	1	-3	S5				N			X	X					
Salix purpurea	Purple Willow		-3	SNA				I		X					X		
Salix x fragilis	Hybrid White Willow		0	SNA				I		X						X	
Scirpus atrovirens	Dark-green Bulrush	3	-5	S5				N		X	X					X	X
Solanum dulcamara	Bittersweet Nightshade		0	SNA				I		X		X				X	
Solidago altissima var. altissima	Eastern Tall Goldenrod	1	3	S5				N		X		X		X	X		
Solidago gigantea	Giant Goldenrod	4	-3	S5				N		X						X	
Stachys palustris	Marsh Hedge-nettle		-5	SNA				I		X	X						
Symphyotrichum lanceolatum ssp. lanceolatum	Eastern Panicled Aster	3	-3	S5				N		X	X	X				X	X
Symphyotrichum puniceum	Purple-stemmed Aster	6	-5	S5				N		X	X					X	
Tanacetum vulgare	Common Tansy		5	SNA				I		X	X						
Thalictrum pubescens	Tall Meadow-rue	5	-3	S5				N		X		X			X		

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	NATIVE STATUS[8]	WELLINGTON COUNTY (Frank & Anderson 2009)[9]	WELLINGTON-DUFFERIN (Riley et al. 1989)[9]	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Thuja occidentalis	Eastern White Cedar	4	-3	S5				N		X	X	X		X	X	X	
Toxicodendron radicans var. rydbergii	Western Poison Ivy	2	0	S5				N		X						X	
Tsuga canadensis	Eastern Hemlock	7	3	S5				N		X							
Tussilago farfara	Coltsfoot		3	SNA				I		X		X				X	
Typha angustifolia	Narrow-leaved Cattail		-5	SNA				I		X		X					
Typha latifolia	Broad-leaved Cattail	1	-5	S5				N		X						X	
Ulmus americana	White Elm	3	-3	S5				N		X		X					
Verbena hastata	Blue Vervain	4	-3	S5				N		X	X		X			X	
Vicia cracca	Tufted Vetch		5	SNA				I		X	X		X			X	

PLANT LIST LEGEND

Scientific Name, Common Name and Family

Based on Vascan and NHIC (February 28, 2020)

Vascan: http://data.canadensys.net/vascan/search
NHIC: https://www.sdc.gov.on.ca/sites/MNRF-PublicDocs/EN/ProvincialServices/ONTARIO_SPECIES_LISTS.zip

[1] Coefficient of Conservatism, Coefficient of Wetness, Weediness, and Physiology/Habit

Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

CC and CW values reflect updates by NHIC, current as of February 28, 2020).

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.

CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories. *NOTE*: NHIC has simplified the values, and includes only -5, -3, 0, 3 and 5.

Weediness: Weediness Score, assigned to all non-native species and range from -1 (low impact of the species on natural areas) to -3 (high impact of the species on natural areas).

Habit: Physiology/Habit. The growth form of the species (e.g. forb, shrub, tree).

[4] S-Ranks (Provincial)

Provincial Status from the NHIC (February 28, 2020)

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

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.

S1:	Critically Imperiled – At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
S2:	Imperiled – At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3:	Vulnerable – At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4:	Apparently Secure – At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5:	Secure – At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
S#S#:	Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX:	Presumed Extirpated – Species or ecosystem is believed to be extirpated from the jurisdiction (province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. [equivalent to "Regionally Extinct" in IUCN Red List terminology]
SH:	Possibly Extirpated (Historical) – Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
SNR:	Unranked – subnational conservation status not yet assessed.
SU:	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA:	Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species.
?:	Inexact or Uncertain - Denotes inexact or uncertain numeric rank.
T#:	Infraspecific Taxon (trinomial) - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same

principles outlined above. For example, the subnational rank of a critically imperiled subspecies of an otherwise widespread and common species would be S5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species, for example, a S1T2 subrank should not occur. A vertebrate animal population may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

[5] COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
The federal review process is implemented by COSEWIC (Status as of February 28, 2020)
The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.
https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

EXT:	Extinct – A species that no longer exists.
EXP:	Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.
END:	Endangered – A species facing imminent extirpation or extinction.
THR:	Threatened – A species likely to become endangered if limiting factors are not reversed.
SC:	Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR:	Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD:	Data Deficient – Available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

[6] SARA (Species at Risk Act) Status and Schedule
Federal status from the Government of Canada's Species at Risk Public Registry (Status as of February 28, 2020)
http://www.registrelep-sararegistry.gc.ca/
The Act establishes Schedule 1, as the official list of species at risk in Canada. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented. 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.

EXT:	Extinct – A species that no longer exists.

EXP:	Extirpated – A species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END:	Endangered – A species that is facing imminent extirpation or extinction.
THR:	Threatened – A species likely to become endangered if limiting factors are not reversed.
SC:	Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

[7] SARO (Species At Risk in Ontario)

Provincial status from MNRF (Status as of February 28, 2020)
https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Natural Resources and Forestry that assesses the status of species at risk of extinction.

EXP:	Extirpated – Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
END:	Endangered – Lives in the wild in Ontario but is facing imminent extinction or extirpation.
THR:	Threatened – Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
SC:	Special Concern – Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.

[8] Regional Status

Simcoe, Hamilton-Brant-Wentworth-Oxford, Wellington-Dufferin, Durham (Pickering-Uxbridge-Brock-Oshawa-Whitby-Ajax-Scugog-Clarington), Peterborough-Durham-Victoria-Northumberland.

Riley, J. e.t al. 1989. The Distribution and Status of the Vascular Plants of Central Region. Ontario Ministry of Natural Resources, Central Region, Richmond Hill, ON.

Codes are defined as follows:

E:	Endangered - "For the purposes of this checklist, an endangered species is considered to be one regulated under Ontario's Endangered Species Act. The only species so regulated is the Cucumber Tree (*Magnolia acuminata*)."
N:	Nationally Rare – rare in every province in which it occurs. A rare species is one that because of biological characteristics, occurs at edge of range, exists in low numbers, or in very restricted areas in the region under consideration.

P:	Provincially Rare – a species S-ranked (S1-SX) from the National Museum's "Atlas of Rare Vascular Plants of Ontario" (Argus et.al. 1982-88).
R:	Regionally Rare – Native species are considered regionally rare if the species in considered rare wherever it occurs in Central Region especially in areas where recent local determinations of rarity have been made and/or if it is considered provincially rare in the portions in which species' status is insufficiently documented. Only naturally occurring populations are considered.
X:	Occurs within the region.
+ or I:	Introduced species.

Wellington County (includes City of Guelph)

Frank, R and A. Anderson. 2009. The Flora of Wellington County. Wellington County Historical Society.

Codes are defined as follows:

R1:	Most rare or growing on only 1-3 sites.
R2:	Rare and growing on 4-6 sites.
R3:	Uncommon and growing on 7-10 sites.

[9]Native Status

Based on Vascan and NHIC (February 28, 2020)

Vascan:	http://data.canadensys.net/vascan/search
NHIC:	https://www.sdc.gov.on.ca/sites/MNRF-PublicDocs/EN/ProvincialServices/ONTARIO_SPECIES_LISTS.zip

Codes are defined as follows:

N =
Native
I = Introduced

Table J-2: Bosworth Bridge -- Breeding Bird and Wildlife List

Common Name	Scientific Name	G-Rank [1]	S-Rank [2]	SARO (ESA) Status [3]	COSEWIC Status [4]	SARA Status [5]	SARA Schedule [5]	Wellington County [6]	MNR Area Sensitive [7]	Area Sensitive Birds - Ecoregion 6E [7]	Habitat Use [8]	NHIC Tracked	Protected Under MBCA	Highest Abundance	Highest Breeding Code [9]	Highest Breeding Evidence [9]	Comments
Birds																	
American Crow	*Corvus brachyrhynchos*	G5	S5B								E	N		1	H	Possible	
American Goldfinch	*Spinus tristis*	G5	S5B					3			E	N	✓	2	S, H	Possible	
American Robin	*Turdus migratorius*	G5	S5B								E	N	✓	2	NU	Confirmed	at least 1 old nest under bridge in April 2014; 6 old nests under bridge in June 2016; 5 old nests under bridge in April 2020; 2 new nests under bridge in June 2020.
Baltimore Oriole	*Icterus galbula*	G5	S4B								E	N	✓	1	S, H	Possible	
Bank Swallow	*Riparia riparia*	G5	S4B	THR	THR	THR	1	1++				N	✓	1	S, H	Possible	Observed foraging over river in June 2020; suitable nesting habitat may occur beyond ROW reaches.
Barn Swallow	*Hirundo rustica*	G5	S4B	THR	THR	THR	1	3++				N	✓	0	NU	Confirmed	16 old nests under bridge in April 2014; 4 old nests under bridge in June 2016; 12 old nests under bridge in April 2020; 5 new/old nests under bridge in June 2020
Belted Kingfisher	*Megaceryle alcyon*	G5	S4B									N		1	T	Probable	
Black-capped Chickadee	*Poecile atricapillus*	G5	S5					4			I/E	N	✓	6	H	Possible	
Blue Jay	*Cyanocitta cristata*	G5	S5								I/E	N		3	S, H	Possible	
Brown-headed Cowbird	*Molothrus ater*	G5	S4B								E	N		2	T	Probable	
Canada Goose	*Branta canadensis*	G5	S5								M/F	N	✓	2	P	Probable	
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B								E	N	✓	5	T	Probable	
Chipping Sparrow	*Spizella passerina*	G5	S5B								E	N	✓	1	S, H	Possible	
Cliff Swallow	*Petrochelidon pyrrhonota*	G5	S4B					3				N	✓	>50	NY	Confirmed	>20 old nests under bridge in April 2014; large active colony under bridge in 2016 (at least 45 active nests and 17 old nests in June 2016); 31 new/active nests in 2020
Common Grackle	*Quiscalus quiscula*	G5	S5B								E	N		5	S, H	Possible	
Eastern Phoebe	*Sayornis phoebe*	G5	S5B					3			I/E	N	✓	1	T	Probable	at least 4 old nests under bridge in April 2014; 4 old nests under bridge in June 2016; 1 old nest under bridge in June 2020.
Eastern Wood-pewee	*Contopus virens*	G5	S4B	SC	SC	SC	1				I/E	N	✓	1	S, H	Possible	
Killdeer	*Charadrius vociferus*	G5	S5B,S5N									N	✓	1	S, H	Possible	
Least Flycatcher	*Empidonax minimus*	G5	S4B					3	X		E	N	✓	1	S, H	Possible	
Mourning Dove	*Zenaida macroura*	G5	S5								E	N	✓	1	T	Probable	
Mourning Warbler	*Geothlypis philadelphia*	G5	S4B					2			E	Y	✓	1	S, H	Possible	
Northern Cardinal	*Cardinalis cardinalis*	G5	S5								I/E	N	✓	2	T	Probable	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	G5	S4B					2			M/F	N	✓	2	P	Probable	
Red-breasted Nuthatch	*Sitta canadensis*	G5	S5					3	X	X	I	N	✓	1	S, H	Possible	
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B								I/E	N	✓	1	S, H	Possible	
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4								E	Y		4	T	Probable	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	G5	S4B								I/E	N	✓	1	S, H	Possible	
Song Sparrow	*Melospiza melodia*	G5	S5B								E	N	✓	3	T	Probable	
Turkey Vulture	*Cathartes aura*	G5	S5B					3				N		3	X	Observed	Flying overhead study area in April 2020.
Warbling Vireo	*Vireo gilvus*	G5	S5B								E	N	✓	1	S, H	Possible	
Wood Duck	*Aix sponsa*	G5	S5					4	X		M/F	N	✓	2	P	Probable	
Yellow Warbler	*Setophaga petechia*	G5	S5B								E	N	✓	1	S, H	Possible	
Insects																	
Monarch	*Danaus plexippus*	G5	S2N,S4B	SC	END	SC	1					Y		1	n/a	n/a	1 adult observed foraging in cultural meadow habitat adjacent to bridge (within Unit 1) in 2020
Mammals																	
America Mink	*Mustela vison*	G5	S4									N		3	n/a	n/a	1 live in 2016; 1 roadkill in April 2020; 1 roadkill in June 2020
Raccoon	*Procyon lotor*	G5	S5									N		2	n/a	n/a	1 roadkill in 2016; 1 roadkill in 2020
Striped Skunk	*Mephitis mephitis*	G5	S5									N		1	n/a	n/a	1 recorded in 2020 (odour evidence)

WILDLIFE LIST LEGEND

[1]G-Rank (global)
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

G1 Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to Extinction.
G2 Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to Extinction.
G3 Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4 Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
G5 Very common - demonstrably secure under present conditions.

[2]S-Rank (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.

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.
S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure - Common, widespread, and abundant in the nation or state/province.
S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SAN Non-breeding accidental.
SE Exotic - not believed to be a native component of Ontario's fauna.
SZN Non-breeding migrants/vagrants.
SZB Breeding migrants/vagrants.

[3]SARO (Species at Risk in Ontario) Status
Provincial status from MECP (Status as of Jan 2021)
https://www.ontario.ca/page/species-risk-ontario

The provincial review process is implemented by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Environment, Conservation and Parks (MECP) that assesses the status of species at risk of extinction.

MECP Conservation Status Ranks
EXT Extinct - A species that no longer exists anywhere in the world.

EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END Endangered - A species that is facing imminent Extinction or extirpation.
THR Threatened - A species that is likely to become Endangered if steps are not taken to address factors threatening to lead to its Extinction or extirpation.
SC Special Concern – A species that may become Threatened or Endangered because of a combination of biological characteristics and identified threats.

[4]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
The federal review process is implemented by COSEWIC (Status as of Jan 2021)

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.
https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

COSEWIC Conservation Status Ranks
EXT Extinct - A species that no longer exists.
EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END Endangered - A species facing imminent extirpation or Extinction.
THR Threatened - A species likely to become Endangered if limiting factors are not reversed.
SC Special Concern (formerly vulnerable) - A species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of Extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of Extinction.

[5]SARA (Species at Risk Act) Status and Schedule
Federal status from the Government of Canada's Species at Risk Public Registry (Status as of Jan 2021)
https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

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.

Schedule 1: is the official list of species that are classified as Extirpated, Endangered, Threatened and 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 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.

[6] Regional Status

Wellington County
Conservation rankings for birds of the Grand River basin: a tool for conservation and management. June 2000. Bird Studies Canada and the Grand River Conservation Authority.

Document: http://www.bsc-eoc.org/download/gcra_mainreport.pdf
Technical Appendix: http://www.bsc-eoc.org/download/gcra_appendices.pdf

Levels 1-4 are a relative ranking within each habitat grouping based on a scoring system, which took into account: Jurisdictional Responsibility (JR, a scale-dependent measure related to breeding distribution within a given spatial unit); Preservation Responsibility (PR, a scale-independent measure based on the biological characteristics of the species); and, Area Sensitivity (AS, a scale-independent measure related to the habitat-area requirements of the species).

There are 3 habitat groups: Forest, Open Country/Grassland and Marsh. There is no difference in importance among species within a given category (Level 1 to 4), regardless of habitat group.

Level 1 is the highest priority (highest scoring in habitat group) and Level 4 is the lowest priority (lowest scoring in habitat group, but still considered a “priority species”).

++ denotes ‘Endangered’ or ‘Threatened’ status at the provincial or federal level
* denotes ‘vulnerable’ status at the provincial or federal level

[7] MNR Area Sensitive Species
Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers

From: Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.

From: Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E. January, 2015. Regional Operations Division, Southern Region Resources Section. 39pp.

[8] Habitat Use
I=interior species, I/E=interior edge species, E=edge species (Freemark and Collins, 1989); M/F=Marsh/Fen, S/B=Treed Swamp/Bog. Interior bird species require habitat which is often found 100m from the forest edge while Interior/Edge species are found within both interior and edge habitat. Often Interior and Interior/Edge are more sensitive to urban encroachment as they require these large, relatively undisturbed forest habitats to support viable populations. The increasing urbanization of rural areas often results in increased parasitism and predation as well as

disturbance from human recreational activities (e.g. illegal bike trails, dumping and pets.) (Freemark, K. and Collins, B. 1989*. Landscape ecology of birds breeding in temperate forest fragments*. – In: Hagan III, J. M. and Johnston, D. W. (eds), Ecology and conservation of neotropical migrant landbirds. Smithsonian Inst. Press, pp. 443–454)

[9] Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.

S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.

T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.

D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.

V Visiting probable nest site

A Agitated behaviour or anxiety calls of an adult.

B Brood Patch on adult female or cloacal protuberance on adult male.

N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.

NU Used nest or egg shells found (occupied or laid within the period of the survey).

FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.

AE Adult leaving or entering nest sites in circumstances indicating occupied nest.

FS Adult carrying fecal sac.

CF Adult carrying food for young.

NE Nest containing eggs.

NY Nest with young seen or heard.

County of Wellington

Date Generated: July-17-17

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
Unisexual Ambystoma - Jefferson-dominated *Ambystoma laterale - jeffersonianum*	END	Species Protection and General Habitat Protection	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	Follow Breeding Bird Survey 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

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.
Loggerhead Shrike *Lanius ludovicianus*	END	Species Protection and General Habitat Protection	Generally prefer a combination of pasture or other grassland with scattered low trees and shrubs. They build their nests in small trees or shrubs.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Louisiana Waterthrush *Seiurus motacilla*	THR	Species Protection and General Habitat Protection	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 or Marsh Monitoring Protocol
Northern Bobwhite *Colinus virginianus*	END	Species Protection and General Habitat Protection	Generally inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands.	Acitve Year Round	Follow Breeding Bird Survey Protocol
Olive-sided Flycatcher *Contopus cooperi*	SC	N/A	Generally prefers natural forest edges and openings adjacent to rivers or wetlands. Commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir.	Migrate South for the Winter	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
Black Redhorse *Moxostoma duquesnei*	THR	Species Protection and General Habitat Protection	Generally lives in moderately sized rivers and streams, with generally moderate to fast currents	Active Year Round	For information please contact your local MNRF office, CA 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 Timing Window is Coldwater - June 1 - September 15	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.

Rusty-patched Bumble Bee *Bombus affinis*	END	Species Protection and General Habitat Protection	Generally inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows	Active from early Spring to late Fall	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
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**
Eastern Small-footed Myotis *Myotis leibii*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius 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
Gray Fox *Urocyon cinereoargenteus*	THR	Species Protection and General Habitat Protection	Generally prefers deciduous forests, marshes, swampy areas, and urban areas	Active Year Round	Opportunistically or by examining tracks in winter and summer
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-colored 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
Mollusc	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
Rainbow Mussel *Villosa iris*	SC	N/A	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.
Wavy-rayed Lampmussel *Lampsilis fasciola*	THR	Species Protection and Habitat Regulation	Generally inhabit clear rivers and streams of a variety of sizes, where the water flow is steady and the substrate is stable	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 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

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.
Hill's Pondweed *Potamogeton hillii*	SC	N/A	Generally grows in clear, cold ponds and slow- moving streams where the water is alkaline	Flowers in Summer	Survey in appropriate aquatic habitat 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
Butler's Gartersnake *Thamnophis butleri*	END	Species Protection and General Habitat Protection	Generally prefers open habitats, such as dense grasslands and old fields, where there are small marshes and seasonal wet areas	Active: early April - mid-September Mating: early spring (April) Hatching: June and July	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol

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
Massassauga Rattlesnake *Sistrurus catenatus*	THR	Species Protection and General Habitat Protection	Generally occur in habitats ranging from tall grass prairie to cedar bogs to shorelines. All habitats require canopies that are not too open, but they also require access to spots where they can get warm enough to effectively digest their food and reproduce. Sufficient moisuture is also required for them to survive the winter, so they are often associated with wetlands or small, wet depressions in the terrain.	Active: Late April - October	Survey for gestating females in appropriate gestation sites Comprehensive survey of habitat for individuals at least 3 days during the active season Survey suitable hibernation sites in late Fall or early Spring during emergence
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

Spotted Turtle *Clemmys guttata*	END	Species Protection and General Habitat Protection	Generally prefers the shallow, slow-moving and unpolluted water of ponds, bogs, marshes, ditches, vernal pools and sedge meadows. It can also be found in woodland streams and near the sheltered shores of shallow bays	Hibernate: September - April Breed: May - Early June Nesting: Mid - Late June	Stalk silently along shorelines and from vantage points scan emergent clumps of vegetation, logs, rocks and shorelines for basking turtles and watch for turtles in shallow ponds/pools Wade very slowly through wetland edges being extremely quiet and careful to ensure you see the turtle before it sees you Nesting season: search nesting habitat areas for females Wetlands can be scanned from a greater distance using a spotting scope High quality 10 power binoculars are essential Surveys should be done by looking for basking turtles in early Spring as they come out of hibernation Minimum of 2 days of surveys in appropriate weather (warm sunny spring days) at suitable sites

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Photo 1: Conestogo River, looking downstream (south) of bridge.

Photo 2: SE quadrant of bridge (looking east), showing outlet of Parker Creek to Conestogo River.

Photo 3: Conestogo River, looking upstream (north) of bridge.

Photo 4: Bosworth Bridge, south side.

Photo 5: location of east bridge abutment (well back from river bank).

Photo 6: location of west abutment bridge abutment (looking from south side).

Photo 7: Unit 2 Cedar-Hardwood Mixed Forest (FOM7-2), downstream of bridge, beyond the ROW.

Photo 8: Unit 4 Cedar-Poplar Mixed Forest (FOM4-2), downstream of bridge, beyond the ROW.

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Photo 9: Unit 1 Cultural Meadow (CUM1-1) within and beyond the ROW, upstream and downstream of bridge.

Photo 10: Unit 3 Reed-canary Grass Mineral Meadow Marsh (MAM2-2), within and beyond the ROW, downstream of bridge.

Photo 11: Unit 5 White Cedar Coniferous Forest (FOC4-1), upstream of bridge, beyond the ROW.

Photo 12: Unit 6 White Cedar Mineral Mixed Swamp (FOM1-1).

Photo 13: The Conestoga River riparian zone provides a wildlife movement corridor, as evidenced by tracks observed beneath Bosworth Bridge, east side.

Photo 14: A few American Robin nests (1-7 annually) and Eastern Phoebe nests (1-4 annually) were observed on the underside of the Bosworth Bridge in 2014, 2016 and 2020. In this photo, 2 American Robin nests are shown next to eachother.

Photo 15: A large Cliff Swallow nesting colony was documented on the underside of the Bosworth Bridge in 2014 (>20 nests), 2016 (>60 nests) and 2020 (>30 nests). In this photo, a cluster of 3 nests is shown.

Photo 16: Several Barn Swallow nests were observed on the underside of the Bosworth Bridge in 2014 (at least 16 nests), 2016 (at least 4 nests) and 2020 (at least 12 nests). In this photo, a triple-layered nest is shown.

wsp	COUNTY OF WELLINGTON Bosworth Bridge (B007028) Replacement—Municipal Class EA Representative Photographs	Date: June 2021 Project No: 20M-01326-00-460 Appendix J