Lambton Park

Terrestrial Biological Inventory and Assessment

February, 2016

Toronto and Region Conservation for The Living City®

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This report may be referenced as:

Toronto and Region Conservation Authority (TRCA). 2016. Lambton Park Terrestrial Biological Inventory and Assessment.

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1.0 Introduction

In 2015 the Toronto Region Conservation Authority (TRCA) conducted fauna and flora inventories of Lambton Park, part of the Humber Plains woodland and prairie complex. This inventory was undertaken primarily to provide comprehensive documentation of the flora and fauna for this important tallgrass savannah and woodland remnant. There is information going back about 100 years, but it is sporadic and not nearly as well-organized or comprehensive as for other sites and does not include mapping of vegetation communities. The City of Toronto has been consulting for several years with TRCA and other partners such as the Ministry of Natural Resources and Forestry and Tallgrass Ontario on annual reviews of its prescribed burn sites in the Humber Plains. Through this process Lambton Park was identified as needing more complete information.

This inventory also helps fulfill the TRCA's commitment to maintaining up-to-date data on vegetation communities, flora and fauna species across its jurisdiction. Hence, the information can be used for both local and regional natural heritage assessment and planning. In the case of Lambton Park in particular, the inventory will provide an understanding of the condition of the tallgrass and other communities, and how the populations of flora and fauna species are currently faring; which will direct how to proceed with ongoing restoration efforts.

At the larger scale, the purpose of the work conducted by the TRCA during the 2015 field season was to *characterize the terrestrial natural heritage features* of the Lambton Park property. Once characterized, the site features can then be understood within the larger watershed and the regional context of the Terrestrial Natural Heritage Program, enabling a better understanding of biodiversity across the jurisdiction. Results can be used to improve the Terrestrial Natural Heritage System Strategy (TNHSS) targets. The question that the inventory addresses is "*How does the area surveyed at the Lambton Park fit within the regional and watershed natural system, and how should its contribution to this system be protected and maximized?"* The important underlying message offered by this question is that the health of the natural system is measured at the regional scale and specific sites must be considered together for their benefits at all scales, from the site to the larger system.

1.1 TRCA's Terrestrial Natural Heritage Program

Rapid urban expansion in the TRCA jurisdiction has led to continuous and incremental loss of natural cover and species. In a landscape that probably supported 95% forest cover prior to European settlement, current mapping shows that only 17.8% forest and wetland cover remains. Agricultural and natural lands are increasingly being urbanized while species continue to disappear from a landscape that is less able to support them. This represents a substantial loss of ecological integrity and ecosystem function that will be exacerbated in the future according to current urbanization trends. With the loss of natural cover, diminishing proportions of various natural vegetation communities and reduced populations of native species remain. Unforeseen stresses are then exerted on the remaining flora and fauna in the natural heritage system. They

become even rarer and may eventually be lost. This trend lowers the ability of the land to support biodiversity and to maintain or enhance human society (e.g. through increased pollution and decreased space for recreation). **The important issue is the *cumulative* loss of natural cover in the TRCA region that has resulted from innumerable site-specific decisions.**

In the late 1990s the TRCA initiated the Terrestrial Natural Heritage Program to address the loss of terrestrial biodiversity within the jurisdiction's nine watersheds. This work is based on two landscape-level indicators: the quality distribution of natural cover and the quantity of natural cover. The aim of the program is to create a conservation strategy that both protects elements of the natural system (vegetation communities, flora and fauna species) *before* they become rare and promotes greater ecological function of the natural system as a whole. This preventive approach is needed because by the time a community or species has become rare, irreversible damage has often already occurred. A healthy natural system capable of supporting regional biodiversity in the long term is the goal of the Terrestrial Natural Heritage Systems Strategy, achieved by setting targets – both short- and long-term (100 years) – for the two landscape indicators in order to provide direction in planning at all scales (TRCA 2007a, TRCA 2007b).

A target system that identifies a land base where natural cover should be restored is a key component of the Strategy. Although the objectives of the Strategy are based on making positive changes at all scales, the evaluation models were developed at the landscape scale using a combination of digital land cover mapping and field-collected data. Field-collected data also provides ground-level information in the application of the landscape models at the site scale. The two indicators and the targets that have been set for them are explained in Section 3.1. It is important to understand that habitat quality and distribution are interdependent. For example, neither well-distributed poor-quality natural cover nor poorly-distributed good-quality natural cover achieves the desired condition of sustainable biodiversity and social benefits across the watershed.

The natural habitat associated with the Lambton Park acts as an important link along the Humber Valley, helping to create a continuous corridor of natural cover from the rural upper reaches of the Humber watershed through urban Brampton, Vaughan and Toronto to the Lake Ontario shoreline. The persistence of natural cover at sites such as this is extremely important in maintaining effective migration and dispersal routes across the rapidly expanding urban landscape.

2.0 Study Area Description

The Lambton Park study area in 2015 includes Lambton Park plus some hydro corridor, bound to the south and west by the Humber River and Dundas Street West, to the north by Lambton Golf and Country Club and the CP railway line; and to the east by Howland Avenue (Maps 1 and 2).

The site comprises the natural cover encompassing Lambton Park proper, managed by the City of Toronto; as well as the hydro corridor to the north between the park proper and the Canadian Pacific (CP) railway. Lambton Park property lies within the City of Toronto, covering a total of 18.8 ha. It is located in the lower reaches of the Lower Humber subwatershed. It is part of a larger

riparian network stretching upstream and downstream on the main branch of the Humber River. The site is embedded in an established urban landscape (residential and industrial/commercial); urbanization occurred mostly in the first half of the 20th century, with some market gardens and greenhouses in the Humber floodplain persisting until the 1950s. The Lambton Golf Club lies to the north beyond the CP railway.

Lambton Park is also part of the Humber Plains, a complex section of the glacial Lake Iroquois Plain. It is in fact at the west end of an old sand spit that partially enclosed the proto-Humber Bay of Lake Iroquois (Chapman and Putnam 1984, Sharpe 1980). The soils are classified as Fox Sandy Loam, which prevails on large areas of the Lake Iroquois plain (Hoffmann and Richards 1955). Soil samples taken during the 2015 vegetation surveys corroborated this picture, with fine sands prevailing and in some cases medium beach sands in the lower less-weathered horizons. The Humber Plains' sandy soils led to their being one of the major locations for prairie and savannah in Ontario (Varga 2008). Lambton Park is one of three main areas of intact tallgrass community remaining in the Humber Plains (the other two are High Park and the South Humber slopes adjacent to the Humber Marshes).

Lambton Park's history of fire, extending from First Nations land use (the Humber Valley was a major trade route called the Carrying Place) through to railway corridor fires in early industrial times and on to current prescribed burns for ecological restoration, has also helped to maintain the area's character.

The Humber Plains have been known for their botanical interest since the 19th century when John Goldie passed through the Toronto area in 1819 and remarked on the oak and pine barrens (Bakowsky and Riley 1992). There are numerous plant records dating from the 1890s to present, although locations especially from earlier decades are often no more specific than "Humber Valley, sandy hills" (Varga 2008). While High Park has been named a provincial Area of Natural and Scientific Interest (ANSI), Lambton Park has not been included as part of this ANSI since it is separated from High Park by extensive urban lands. Lambton Park is, however, now being included as a designated Environmentally Significant Area by the City of Toronto (North South Environmental 2012).

3.0 Inventory Methodology

A biological inventory of Lambton Park was conducted at the levels of habitat patch (landscape analysis), vegetation community, and species (flora and fauna) according to the TRCA methodologies for landscape evaluation (TRCA 2007c) and field data collection (TRCA 2007d). Habitat patch mapping was taken from the regional 2013 mapping of broadly-defined patch categories (forest, wetland, meadow and coastal) and digitized using ArcMap 10.2.1 GIS software.

A key component of the field data collection is the scoring and ranking of vegetation communities and flora and fauna species to generate local "L" ranks. Native species are assigned a rank (L1 to L5); exotic species are assigned a rank of L+, and extirpated species (i.e. locally extinct) a rank of

LX. This process was undertaken in 1996-2000 and ranks are reviewed regularly (TRCA 2010a). Vegetation community scores and ranks are based on two criteria: *local occurrence* and the number of *geophysical requirements* or factors on which they depend. Flora species are scored using four criteria: *local occurrence*, *population trend*, *habitat dependence*, and *sensitivity to* impacts associated with *development.* Fauna species are scored based on seven criteria: *local occurrence*, *local population trend*, *continent-wide population trend*, *habitat dependence*, *sensitivity to development*, *area-sensitivity*, and *patch isolation sensitivity*. With the use of this ranking system, communities or species of *regional concern*, ranked L1 to L3, now replace the idea of *rare* communities or species. Rarity (*local occurrence*) is still considered as one of many criteria that make up the L-ranks, making it possible to recognize communities or species of regional concern before they have become rare.

In addition to the L1 to L3 ranked species, a large number of currently common or secure species at the regional level are considered of concern in the urban context. These are the species identified with an L-rank of L4. Although L4 species are widespread and frequently occur in relatively intact urban sites, they are vulnerable to long-term declines.

3.1 Landscape Analysis

The quality, distribution and quantity of natural cover in a region are important determinants of the species distribution, vegetation community health and the provision of "ecosystem services" (e.g. air and water quality, recreation, aesthetics) in that region.

Base Mapping

The first step in evaluating a natural system or an individual *habitat patch* is to interpret and map land cover using aerial photographs. The basic unit for the evaluation at all scales is the habitat patch in the region, which are then combined and evaluated as a system at any scale. A *habitat patch* is a continuous piece of habitat, as determined from aerial photo interpretation. The TRCA maps habitat according to four broad categories: *forest, wetland, meadow*, and *coastal* (beach, dune, or bluff). At the regional level, the TRCA jurisdiction is made up of thousands of habitat patches. This mapping of habitat patches in broad categories is conducted through remote–sensing and is used in the evaluation of quality, distribution and quantity of natural cover. It should not be confused with the more detailed mapping of vegetation communities obtained through field surveys and that is used to ground-truth the evaluation (see Section 3.2).

Quality Distribution of Natural Cover

The quality of each habitat patch is evaluated according to three criteria: *size* (the number of ha occupied by the patch), *shape* (edge-to-area ratio), and *matrix influence* (measure of the positive and negative impacts from surrounding land use) (TRCA 2007c). A total score for each patch is obtained through a weighted average of the scores for the three criteria. This total score is used as a measure of the 'quality' of a habitat patch and is translated into a local rank (L-rank) ranging

from L1 to L5 based on the range of possible total scores from 3 to 15 points. Of these L-ranks, L1 represents the highest quality habitat and L5 the poorest.

Species presence or absence correlates to habitat patch quality (size, shape and matrix influence) (Kilgour 2003). The quality target is based on attaining a quality of habitat patch throughout the natural system that would support in the very long term a broad range of biodiversity, specifically a quality that would support the region's fauna Species of Conservation Concern (Table 1).

Table 1: Habitat patch quality, rank and species response

Size, Shape and Matrix Influence	Patch Rank	Fauna Species of Conservation Concern
Excellent	L1	Generally found
Good	L2	Generally found
Fair	L3	Generally found
Poor	L4	Generally not found
Very Poor	L5	Generally not found

Quantity

The amount of natural cover needed in the landscape is based on the quantity required to accommodate and achieve the quality distribution targets described above. The two targets are therefore linked to each other: it will be impossible to achieve the required distribution of natural heritage quality without the appropriate quantity of natural cover. The proportion of the region that needs to be maintained as natural cover in order to achieve the desired quality has been identified as 30%.

3.2 Vegetation Communities, Flora and Fauna Species

Vegetation community and flora and fauna species data were collected through field surveys. These surveys were done during the appropriate times of year to capture breeding status in the case of amphibians and birds, and during the optimal growing period of the various plant species and communities. Vegetation communities and flora species were surveyed concurrently.

Botanical field-work was conducted in 2015 between the months of May through September (Table 2). Botanical data also includes additional records obtained from incidental observations, including old historic records and City of Toronto prescribed burn review visits in more recent years.

Vegetation community designations were based on the Ecological Land Classification (ELC) and determined to the level of vegetation type (Lee *et al.* 1998). Community boundaries were outlined onto printouts of 2013 digital ortho-rectified photographs (ortho-photos) to a scale of 1:2000 and then digitized in ArcMap 10.2.1. Flora regional species of concern (species ranked L1 to L3) along

with flora species of urban concern (ranked L4) were mapped as point data with approximate number of individuals seen. A list of all other species observed was documented for the site.

In 2015 the first complete fauna survey was conducted by the TRCA of Lambton Park; previous to this were incidental records from 1996, 1997 and 1999. In 2015 fauna surveys were conducted on dates in June and early July. Typically a spring visit is conducted in April to search primarily for early breeding frog species of regional concern, however analysis of ortho-photos showed no wetlands present and therefore no spring visit required. Surveys in June and July were concerned primarily with the mapping of breeding bird species of regional concern. As per the TRCA data collection protocol, breeding bird surveys were carried out by visiting the site at least twice during the breeding season (last week of May to mid-July) to determine the breeding status of each mapped point. The methodology for identifying confirmed and possible breeding birds follows Cadman *et al*. (2007). All initial visits were completed by the end of the third week of June. The field-season is to be organized so that by late June only repeat visits are being conducted. It is imperative that any visit made in the first half of June is subsequently validated by a second visit later in the season. Fauna species of regional and urban concern (species ranked L1 to L4) were mapped as point data with each point representing a possible breeding territory.

In addition to the 2015 data, this inventory considers all incidental fauna observations mapped over the previous 10 years. The fauna data management protocol imposes a 10 year threshold on use of historical data, and therefore observations made prior to 2005 are not included in the current fauna inventory. This excludes the incidental records from the late 1990s.

Table 2. Schedule of TRCA biological surveys at Lambton Park

Survey Item	Survey Dates	Survey Effort (hours)
Patch / Landscape	2013: ortho-photos	21 hours
Vegetation Communities and Flora Species	2015: May 5th, 6th; July 8th, 30th; Aug 26th and Sep 17th	35 hours
Breeding Songbirds	2015: June 17th; July 3rd	4.5 hours

4.0 Results and Discussion

Information pertaining to Lambton Park was collected through both remote-sensing and ground-truthing surveys. This information contains three levels of detail: habitat patch, vegetation community, and species (flora and fauna). This section provides the information collected and its analysis in the context of the TNHS Strategy.

4.1 Regional Context

Based on 2013 ortho-photography, 26% of the land area in the TRCA jurisdiction consists of natural cover but this figure includes meadow. Although historically, the region would have consisted of up to 95% forest cover, currently (i.e. 2013) only about 17.8% is covered by forest (includes successional) and wetland. Of the non-natural cover (i.e. the remaining 74%), 48% is urban and 27% is rural / agricultural.

The regional level analysis of habitat patches shows that the present average patch quality across the TRCA jurisdiction is "fair" (L3); forest and wetland cover is contained largely in the northern half of the TRCA jurisdiction, especially on the Oak Ridges Moraine; and the quantity is 16.7% of the surface area of the jurisdiction (Map 3). In addition, meadow cover stands at 7.7% of the region. Thus the existing natural system stands below the quantity target that has been set for the region (30%) and also has an unbalanced distribution. The distribution of fauna species of concern is also largely restricted to the northern part of the jurisdiction; fauna species of regional concern are generally absent from the urban matrix (Map 4). The regional picture, being the result of a long history of land use changes, confirms that **all** site-based decisions contribute to the condition of a region. The natural cover at the Lambton Park property provides continuity in an important migration and dispersal route between the more rural areas to the north (the upper reaches of the West Humber subwatershed) and significant migrant staging areas lower down the Humber, closer the Lake Ontario shoreline.

4.2 Habitat Patch Findings for Lambton Park

The following details the site according to the two natural system indicators used in designing the Terrestrial Natural Heritage System Strategy: the *quality distribution* and *quantity* of natural cover. Analysis was based on 2013 ortho-photos.

4.2.1 Quantity of Natural Cover

The Humber watershed covers a total area of 91,078 ha. Natural cover in the watershed covers 30,270 ha (33%), including 20,100 ha as forest/successional, 8,334 ha as meadow and 1,836 ha as wetland. Lambton Park is 18.8 ha in size and contains 14.4 ha of natural habitat based on ground-truthed ELC data (Table 3; Appendix 1), which amounts to 0.05% of the total natural cover in the Humber watershed. Although this is not a large total area of natural cover, the location; lying in the Humber Plains surrounded by urban development, represents important connectivity between the rural landscape to the north and riparian habitat in the lower reaches of the watershed. The natural cover includes 3.6 ha of forest, 7.6 ha of successional (plus tallgrass, savannah and woodland), 0.5 ha of meadow, 1.1 ha of beach and bluff (riparian) and 1.6 ha of aquatic (Humber River).

4.2.2 Quality Distribution of Natural Cover

The results for quality distribution are reported below under the headings of habitat patch size and shape, matrix influence and total score.

Habitat Patch Size and Shape

The study area consists of the natural cover within the entirety of Lambton Park between the Humber River and CP rail line, and also including the Humber Valley forested slope south and adjacent to the Humber. The more extensive forest/successional cover in the main body of the park scores relatively high (L3 or "fair") for both size and shape, while the forested slope scores "fair" for shape but because of the restricted size (caught between the river and urban development), scores low for habitat patch size – L4 or "poor" (Map 5). Accordingly, there is no habitat interior feature within the study area; this would require at least a 100 m distance in any one direction to the closest habitat edge.

Habitat Patch Matrix Influence

Analysis based on the 2013 ortho-photos shows that the matrix influence score for habitat in Lambton Park is L5 or "very poor" (Maps 6 and 7). This score is as expected given that the park is almost completely enveloped by development: residential and commercial zones to the east, south and west; and Lambton Golf Club to the north. The TRCA measures matrix influence at the landscape level by assigning set values; positive, neutral and negative, to the type of landscape use occurring within 2 km of the subject site. This largely urban landscape exerts a negative matrix influence on the site.

Habitat Patch Total Score

The combination of "very poor" matrix influence on the site, and the mix of "fair" to "poor" habitat patch size with "fair" patch shape, results in an overall "poor" habitat patch quality (Map 8). Landscape scores are intended to be applied at the broader landscape level and therefore caution needs to be exercised when referring to such measures at the more refined site level. However, in this particular case, it appears that the landscape scores are in keeping with the ground-truthed fauna representation, with only two L3 species (one bird, one reptile) reported from the larger habitat patch north of the Humber River. As is often the case, the same observation cannot be made for flora, but this is typical in an urban setting where sensitive flora populations persist longer than sensitive bird populations – plant populations do not have the opportunity to vacate a deteriorating habitat in the same way that bird species do. For the same reason, less mobile fauna taxa such as herpetofauna lag behind highly mobile birds in the exodus of sensitive fauna that occurs as urbanization encroaches.

4.3 Vegetation Community Findings for Lambton Park

4.3.1 Vegetation Community Representation

Lambton Park has a total of 23 different vegetation communities, 2 are found solely as complexes within a larger community. Of the vegetation communities, dynamic (tallgrass and related communities; and a couple of riparian communities) are the most diverse (10 types) and cover 4.9 ha (Table 3). There are also 3.6 ha of forest, the majority of it with a strong oak component but also a couple of invasive-dominated disturbed forest types (Appendix 1). Wetlands are represented only by groundwater seeps, forming a complex within a moist forest community, while some wetland species occur on riparian bars along the Humber River, which is the only aquatic community. There is one meadow polygon.

Table 3. Summary of vegetation communities observed in 2015, Lambton Park

Class	Number of Types	Area (hectares)
Forest	5	3.6
Successional	5	3.8
Meadow	1	0.5
Wetland	1	n/a
Aquatic	1	1.6
Dynamic (all)	10	4.9
Tallgrass communities	4	3.1
Other woodlands & barrens	3	0.7
Riparian dynamic communities	3	1.1
Total	*23*	*14.4*

The tallgrass communities (prairie, savannah and woodland) are the most outstanding feature at Lambton Park. These are characterised by the presence of prairie grasses such as big bluestem (*Andropogon gerardii*) and wildflowers such as round-headed bush clover (*Lespedeza capitata*), often associated with an overstorey of black oak (*Quercus velutina*) and at Lambton Park, white and red pine (*Pinus strobus* and *P. resinosa*). At Lambton Park, these vegetation types include Black Oak – Pine Tallgrass Savannah (TPS1-2), Black Oak – White Oak Tallgrass Woodland (TPW1-1), Mixed Oak – Pine Tallgrass Woodland (TPW1-A), and a small patch of more open Dry Tallgrass Prairie (TPO1-1). Closely affiliated with the tallgrass savannah communities are oak woodlands that have the same group of canopy trees and soils but currently lack tallgrass indicator species in the understorey: Red Oak Non-tallgrass Woodland (CUW1-2) and Black Oak Non-tallgrass Woodland (CUW1-2A). Restoration work is gradually converting these back to full tallgrass woodland. Tallgrass and other oak woodland communities occur on the tableland and upper slopes of the park.

The 3.6 ha of forest covers approximately 19% of Lambton Park. Closed canopy forest is restricted to the Humber Valley slopes both east and west. A total of 5 forest type vegetation communities

were documented; three of which are oak-dominated and hence grade into the woodland and savannah ecosystems (Appendix 1). These include Dry-Fresh Mixed Oak Deciduous Forest (FOD1-4), Dry-Fresh Oak – Hardwood Deciduous Forest (FOD2-4), and Fresh-Moist Oak – Lowland Maple Deciduous Forest (FOD9-2).

There are five successional communities: thicket (2), hedgerow (1) and woodland (2). These have a similar semi-open structure as the tallgrass communities but tend to be dominated more by exotic species and weedy natives with relict native species often present but definitely in the minority. They occur more on the edges of the park and along the Humber floodplain. The meadow, a European Cool-Season Grass Meadow (CUM1-b), is close to Dundas Street and looks as though it has a history of soil disturbance.

The banks of the Humber River have a couple of riparian bar communities: Open Riparian Sand / Gravel Bar (BBO1-A) and Willow Shrub Riparian Bar (BBS1-2B). A cliff exposing shale bedrock takes up much of the west bank of the river: Sugar Maple – White Ash Treed Cliff (CLT1-2).

4.3.2 Vegetation Communities of Concern

The vegetation communities that occur in the TRCA jurisdiction are scored and given a local rank from L1 to L5 based on the two criteria mentioned in Section 3.0. Vegetation communities with a rank of L1 to L3 are considered of concern across the entire jurisdiction while L4 communities are considered of concern in the urban portion of the jurisdiction. Lambton Park lies within the urban landscape and so L4 communities are considered along with L1 to L3 communities as being of conservation concern. In addition, community ranks do not take into account the intactness or quality of individual examples of communities; thus, a common type of vegetation community may be of conservation concern at a particular site because of its age, intact native ground layer, or other considerations aside from rank. For example, an old-growth forest may belong to a relatively common and adaptable vegetation type but should still be considered of high conservation concern.

The prominence of Lambton Park's tallgrass communities means that this small site has a very large proportion of L1 and L2 communities: 35% of the natural cover area at Lambton Park is composed of L1 and L2 communities (Figure 1; Map 9). If one includes the small area of L3 and the substantial proportion of L4 communities, then over half the natural cover at Lambton Park is composed of high-quality natural habitats that are of conservation concern.

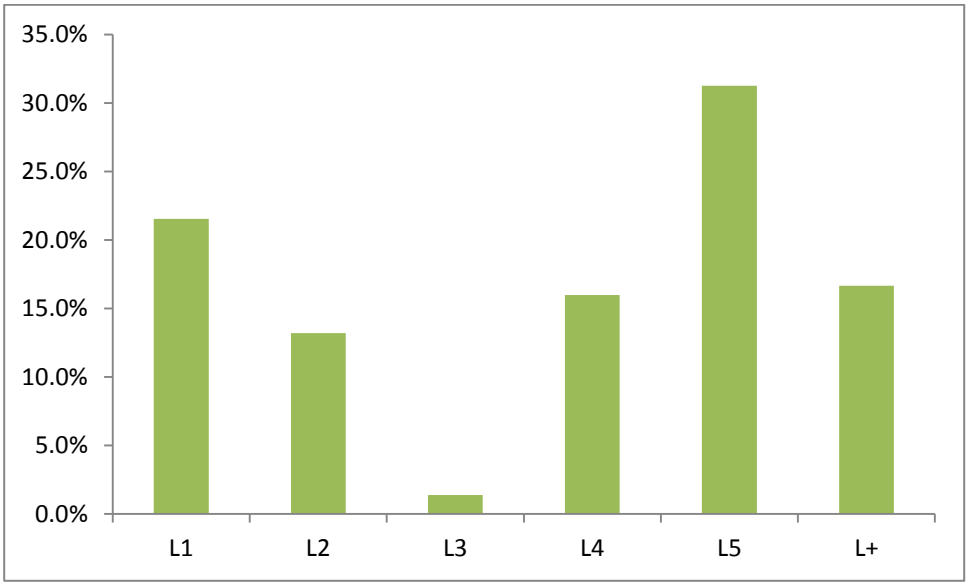

Figure 1. Proportion of total area of natural cover assigned by vegetation community L-rank at Lambton Park in 2015.

The four tallgrass communities at Lambton Park are all ranked L1. The Dry Black Oak – Pine Tallgrass Savannah (TPS1-2) is likely the only representative of its type within the TRCA jurisdiction (Figure 2). The other tallgrass communities are scattered elsewhere in the Humber Plains (High Park and South Humber), with tiny patches in the southern part of Rouge National Urban Park (TRCA 2015a) and on the Oak Ridges Moraine in the East Duffins Headwaters (TRCA 2010b). All the tallgrass communities are considered provincially-significant and globally-rare, with only about 3% of the original area remaining in Ontario (Farrell *et al*. 2004).

Figure 2. Black Oak – Pine Tallgrass Savannah (TPS1-2) at Lambton Park with naturally occurring red pine (*Pinus resinosa*). (Photo: TRCA, Oct 2009)

Tallgrass communities are not the only communities of conservation concern at Lambton Park. The Red Oak Woodland (CUW1-2) and Black Oak Woodland (CUW1-2A) lack the full complement of indicator species but are still part of the oak savannah / woodland spectrum and have a rank of L3 and L2 respectively. The Dry-Fresh Mixed Oak Deciduous Forest (FOD1-4) and Fresh-Moist Oak – Lowland Maple Deciduous Forest (FOD9-2) are ranked L2 and L4 and contain numerous wildflower species of concern. The cliff exposure on the west bank of the Humber River (Sugar Maple – White Ash Treed Cliff: CLT1-2) is an unusual community in the TRCA jurisdiction and has a rank of L2.

A complete list of all vegetation communities with their associated ranked are provided in Appendix 1; their location and boundaries are shown on Map 9.

4.4 Flora Findings for Lambton Park

4.4.1 Flora Species Representation

Biodiversity at this site is high in spite of the study area's small size and lack of wetland. Floristic surveys conducted by TRCA in 2015 identified a total of 306 species of vascular plants (Table 4; Appendix 2). Of these, 294 species were naturally occurring; the remaining 12 were associated with restoration plantings. Of the non-planted species recorded, 168 are native (57%). This is a relatively high proportion of native species for a thoroughly urban site and attests to the persistence of natural communities in the face of some significant negative urban influences. Urban sites often have over 50% exotic species (e.g. Beechwood Wetland - TRCA 2010c and Indian Line - TRCA 2015b).

Table 4. Summary of Flora Species, Lambton Park

Total # of species	306
Naturally-occurring species	294
Planted species	12
Native (naturally-occurring) species	168
Number of L1 to L3 species (excludes planted)	43
Number of L4 species (excludes planted)	31
Exotic species (established)	126

4.4.2 Flora Species of Concern

Given the tallgrass and woodland communities, there is a strong presence of vascular plant species of regional conservation concern (rank L1 to L3) in Lambton Park. The ranks are based on sensitivity to human disturbance associated with development; and habitat dependence, as well as on rarity (TRCA 2010a). Forty-two such species were identified in 2015 (with an additional 2012 observation included to make a total of 43); another 31 plants are ranked L4 (Appendix 2; Map 10). These L4 species of intermediate sensitivity are considered of concern in an urban environment.

As might be expected, there is a large representation of tallgrass and other woodland habitat specialists among the species of conservation concern (Map 11: habitat dependence scores of flora). Thirty of the forty-three L1 to L3 plants at Lambton Park are characteristic of these communities (grading in some cases to sand barren or dry upland forest). Of these, 5 are known only from the Humber Plains tallgrass sites (i.e. High Park, South Humber, Lambton Park): Bicknell's frostweed (*Helianthemum bicknellii*), prairie willow (*Salix humilis*), early saxifrage (*Micranthes virginiense*), red pine, and Indian grass (*Sorghastrum nutans*). Red pine and Indian grass have been planted extensively in numerous places across the TRCA jurisdiction. Natural populations, however, are restricted to the Humber Plains area (Figure 2). Early saxifrage – now found only at Lambton Park, was observed by a High Park volunteer in 2012 (Read, personal

communication) (Figure 3). Although not observed in 2015, it is a very small, cryptic, and early-flowering plant observed along one steep trail which could easily have been missed in the first spring visit.

There are another eight prairie plants found only at one or two other TRCA jurisdiction sites, usually the lower Rouge Park or East Duffins Headwaters. For example, upland blueberry (*Vaccinium pallidum*) occurs in the lower Rouge as well as at High Park and Lambton Park (TRCA 2015a), while pinweed (*Lechea intermedia*) and round-headed bush-clover (*Lespedeza capitata*) have been found at the East Duffins Headwaters (TRCA 2010b).

Figure 3. Early saxifrage (*Micranthes virginiensis*) observed in recent years at Lambton Park (photo Linda Read, April 2012)

There are also five species of concern characteristic of moist forest, six species of floodplain or wetland environments, and two that are more generalist but trend toward successional habitats.

White trout-lily (*Erythronium albidum*) is a Carolinian forest wildflower that is known only from the southwest part of the TRCA jurisdiction. Populations occur sporadically from Lambton Park upstream to the West Humber and Mayfield (Figure 4). Wild crabapple (*Malus coronaria*) is a small

tree of both successional and tallgrass savannah areas but has a similar restricted distribution within the TRCA jurisdiction: scattered occurrences along the Humber Valley.

Figure 4. White trout-lily (*Erythronium albidum*), a Carolinian spring flower (photo: TRCA, May 2015)

Gray's sedge (*Carex grayi*) was found in the floodplain on the west bank of the river, and hairy-fruited sedge (*Carex trichocarpa*) is on a seepage slope.

Sensitivity to development is the other factor affecting flora species of concern (along with rarity / population trend and habitat dependence). This includes such urban matrix impacts as trampling, fire suppression, invasive species, soil chemistry changes from aerial deposition and storm water runoff, hydrology, and wild edibles collecting (Map 6). Species of tallgrass habitats such as Lambton Park are sensitive to several of these impacts: the severe trampling problem associated with BMX and mountain biking as well as off-leash dogs is probably the most urgent issue. Illegal bike stunts (often freshly constructed) and numerous dogs were encountered during every site visit. Destructive trail proliferation appears to be concentrated in the most vulnerable habitats

which, being attractive, are a magnet for such activities (Figure 5). Slow-growing low shrubs such as hillside blueberry and New Jersey tea (*Ceanothus americanus*) are particularly endangered by excessive trampling and trail proliferation. On the other hand, a modicum of trail use may actually be beneficial in keeping openings and gaps in the savannah to allow such less-competitive species to keep growing. It is quite possible that trail edges have helped to maintain microhabitat for early saxifrage and pinweed.

Figure 5. Newly-constructed bike stunts in Black Oak – White Oak Tallgrass Woodland (TPW1-1) at Lambton Park (photo: TRCA, Aug 2015)

The tallgrass communities and associated species are fire-dependent. In the absence of fire, generalist woody plants move in and convert these communities to lower-grade forests, often dominated by invasive species (Packard and Mutel 1997). Fortunately, the City of Toronto has been conducting prescribed burns and invasive species removal at Lambton Park since around 2000, though less consistently than at High Park.

Competition from invasive species obviously affects most tallgrass species, with small slow-growing species such as hillside blueberry and frostweed (*Helianthemum* spp) most vulnerable. The status and impacts of particular invasive species are discussed in Section 4.4.4 below.

Soil chemistry changes are a subtle but region-wide phenomenon. Atmospheric nitrate deposition from air pollution is pervasive; this can affect the hardiness and survivability of native plants which are adapted to natural conditions of relatively low nitrogen availability (Sauer 1998; Brys *et al*. 2005). Many plants found in oak woodland and tallgrass communities, such as hillside blueberry and the sweet-fern (*Comptonia peregrina*) (last seen nearby in 1999) require acidic, low-nutrient soils (i.e. well-leached fine sands). Soil disturbance is associated with increased alkalinity and carbonates closer to the surface. This is natural in floodplain situations but not in upland woodland communities. Carbonates were found in the upper horizons of one of the soil samples; this may have been due to excavation and disturbance for some municipal infrastructure in past decades. In general, the increased fertility caused by deposition from air pollution and storm water runoff favours rapidly-growing invasive exotics and weedy native species at the expense of conservative or sensitive species.

Hydrology is a limiting factor for the upland tallgrass species, which like it dry; and for a few species in seepage areas such as hairy-fruited sedge and turtlehead (*Chelone glabra*), which like it wet, preferably from ground water. Development around Lambton Park was completed a long time ago, and land use is relatively stable at present, so hydrology is also stable.

4.4.3 Historic Flora and Trends

Lambton Park has enough of a historic record that some assessment of the trends in sensitive flora can be provided. Many species have vanished from the Humber Plains since the late 19th century, but it is not always easy to tell if these were actually present at Lambton Park or somewhere else along the Humber River. Records that state they were found in Lambton Park or "Lambton Mills" have been included in this analysis (based on herbarium and other research by Varga 2008). All the past and present L1 to L3 flora that are associated with Lambton Park add up to a total of 56 species (Appendix 2). Of these, 13 seem to be no longer present, so there is ***a loss of 23% over the past 110-120 years, about 2% per decade*** (Table 5). This is a similar trend as has been documented for other parts of the TRCA jurisdiction including the Rouge National Urban Park (TRCA 2015a) and elsewhere in eastern North America, e.g. Boston area (Primack *et al*. 2009). If anything, the losses at Lambton Park are less severe than at the much larger and seemingly more intact Rouge Park. This may be due to the fact that more focused restoration efforts have targeted the tallgrass and oak woodland communities at Lambton Park, whereas much of the restoration work at the Rouge National Urban Park has been focused on planting former agricultural fields and constructing wetlands rather than on preserving existing remnant

habitats. Many of the missing species are fortunately still present at High Park, which is much larger and receives more intense attention. For example, the wild lupine (*Lupinus perennis*) populations there are healthy.

Table 5. Flora species known only historically from Lambton Park (after Varga 2008 and observations by TRCA biologists and Charles Kinsley)

Scientific Name	Common Name	L-rank	Last seen	Comments
Taenidia integerrima	yellow pimpernel	L2	1997	
Erigeron pulchellus	Robin's plantain	L2	1956	
Eurybia schreberi	Schreber's aster	LX*	1937	Nearest extant population probably around Burlington
Liatris cylindracea	cylindric blazing-star	L1	1980	
Boechera canadensis	sicklepod	L2	1900	
Campanula rotundifolia	harebell	L1	1997	Individuals observed in 2015 seem to be planted: originals gone
Helianthemum canadense	frostweed	L1	1996	
Vaccinium angustifolium	lowbush blueberry	L2	1998	Observed also north of CPR tracks in 1998, may still be present there (inaccessible)
Lupinus perennis	wild lupine	L2	2009	One or two plants observed in 2009 during prescribed burn review walk, not observed in 2015 so probably gone. May still be present north of CPR tracks
Comptonia peregrina	sweet-fern	L1	1980	A more recent observation (1999) north of CPR tracks may still be present
Botrychium oneidense	blunt-lobed grape fern	LX*	1943	
Gillenia trifoliata	Indian physic	LX*	1902	No longer present anywhere in Ontario (Varga 2008, Vascan 2015)
Viola sagittata var. *ovata*	arrow-leaved violet	L1	1980	

A rank of LX indicates "extirpated", i.e. locally-extinct within the entire TRCA jurisdiction

Similarly, there are numerous species still present at Lambton Park, but only barely hanging on in precarious situations. Bicknell's frostweed is in one small area, with perhaps a dozen plants, while

there are only a couple of clumps of New Jersey tea and hillside blueberry, though the plants seem healthy. Running serviceberry (*Amelanchier spicata*) is found along the railway fenceline, where it has to cope with herbicide drift and invasion by buckthorn (*Rhamnus cathartica*). The early saxifrage along the steep trail is the only example of this species in the TRCA jurisdiction. These situations are not sustainable, and intervention will be needed to prevent these unique populations from disappearing from the park, and from the Toronto area.

On the other hand, the prairie grasses such as Indian grass and little bluestem (*Schizachyrium scoparium*) respond quickly to burning and augmented plantings and are thriving. Pinweed is present in just one population, but its numbers seem to be stable or increasing.

4.4.4 Plantings

Numerous plantings have occurred in Lambton Park, and these have for the most part been carefully selected tallgrass woodland species. Fortunately, the City of Toronto has provided information as to which species records are probably planted (including in many cases the seed source) versus which are original natural populations (Jennifer Gibb, personal communication). Plantings and other restoration work tend to be focused on the south-facing slope of the park near Dundas Street where there was little original ground vegetation in the mowed land under the oaks in the late 20th century. (See Map 10 which includes locations of planted as well as naturally-occurring species of concern). Original populations tend to be clustered northward and westward near the hydro corridor, CPR line, and crest of the Humber Valley slope. Information on source of plantings is valuable in that it can help us to conserve local genotypes in situ and via seed collection and propagation. For example, it looks as though the harebell (*Campanula rotundifolia*) at Lambton Park may now be all planted, with the original population gone (Table 5). Further investigation is warranted. Many of the plantings at Lambton Park are from seed collected at High Park, with some from other southern Ontario oak savannahs. Butterfly milkweed (*Asclepias tuberosa*) was eliminated from the Humber Plains by the 1940s, but reintroductions at Lambton Park from populations originating at Rice Lake seem to be healthy.

There also appear to be a few inappropriate plantings at Lambton Park: these include botanical oddities such as eastern prickly-pear cactus (*Opuntia humifusa*), native to Point Pelee but not the Toronto area (White 1998). Similarly side-oats grama grass (*Bouteloua curtipendula*) occurs in a few southern Ontario prairies but not in the Toronto area. Switch grass (*Panicum virgatum*) is a native prairie grass, but historically has occurred only at Toronto Island and East Point Park in the Toronto area. It is becoming increasingly common with numerous plantings across the jurisdiction.

4.4.5 Invasive Species

Lambton Park supports 130 non-native species (including 4 planted species). Depending on the habitat, the majority of exotic species found are weedy perennial herbaceous plants that exhibit only mild to moderate degrees of aggressiveness. However, a select few are highly invasive in nature, possessing the ability to displace their native counterparts if conditions prove favourable.

There are certain species at Lambton Park that are a threat to the tallgrass and woodland communities.

Dog-strangling vine (*Cynanchum rossicum*) is currently concentrated in the successional riparian habitats along the Humber River, but is a major threat to the oak woodlands over the medium-to-long term (TRCA 2008, TRCA 2015a). It has been the subject of laborious but largely-successful control efforts at High Park involving spot application of herbicide.

Garlic mustard (*Alliaria petiolata*) is in the riparian woodlands as well as the more shaded and overgrown oak woodlands. It could become a threat to spring wildflowers such as white trout-lily. Control of trampling disturbance and maintenance of a fire regime appear to be the best measures for limiting it.

Leafy spurge (*Euphorbia esula*) is a serious problem in prairie ecosystems west of Ontario and had been reported in Lambton Park. In 2015, the euphorbia was found to be the related Russian leafy spurge (*Euphorbia virgata*), a more slender species. The population was not extensive, but this plant must still be seen as at least a potential threat to the tallgrass prairie community in which it was found.

Invasive shrubs like buckthorn, honeysuckles (*Lonicera* x *bella* and relatives), and European spindle-tree (*Euonymus europaeus*) are likely the major threats to oak savannah understorey vegetation like hillside blueberry and running serviceberry. They grow faster and taller than the low native shrubs, and perhaps can take greater advantage of the artificially elevated levels of nitrogen that are likely present in urban soils. The area of overgrown oak woodland southeast of the Lambton Arena near Dundas Street has had a lot of European spindle-tree, but numerous dead stems observed there in 2015 attest to control efforts by the City of Toronto.

Oriental bittersweet (*Celastrus orbiculatus*) is a major problem in High Park. Unfortunately, one population was noted at Lambton Park at the crest of the valley slope.

Norway maple (*Acer platanoides*), Manitoba maple (*A. negundo*), and Siberian elm (*Ulmus pumila*) are invasive trees that dominate the floodplain and western slope of the Humber Valley, and also moving into the tallgrass savannah and woodland communities at a slower rate. The City of Toronto has been removing them from restoration sites.

4.5 Fauna Species Findings for Lambton Park

4.5.1 Fauna Species Representation

The TRCA fauna surveys at Lambton Park in 2015 documented a total of 34 bird species, 3 mammals, and 4 herpetofauna (amphibians and reptiles) species, bringing the total number of possible breeding vertebrate fauna species identified by the TRCA to 41.

This total is a somewhat higher than those from other study areas in similar urban zones. For example, the fauna list for Gerrard Prairie (28.7 ha) in Scarborough has a list of 27 vertebrate fauna species. Refer to Appendix 3 for a list of the fauna species and their corresponding L-ranks.

4.5.2 Fauna Species of Concern

Fauna species, like vegetation communities and flora species are considered of regional conservation concern if they rank L1 to L3 based on their scores for the seven criteria mentioned in Section 3.0. Since the subject site is situated in the urban zone this report also considers those species ranked as L4, i.e. those species that are of concern in urban landscapes. As with flora, this is a proactive, preventive approach, identifying where conservation efforts need to be made before a species becomes rare.

Fauna surveys at Lambton Park in 2015 reported one snake and one bird species of regional concern (L1 to L3): smooth greensnake, *Opheodrys vernalis* (Figure 6) and American redstart, *Setophaga ruticilla*. One large adult and 2 smaller individuals of smooth greensnake were observed suggesting a local breeding population is still present. In addition, 16 species of urban concern (L4) were reported: 12 bird, 3 herpetofauna and one mammal species. The total number of L1 to L4 ranked species is 18 (Table 6). Locations of these breeding fauna are depicted on Map 12.

Table 6. Summary of fauna species of regional and urban concern at Lambton Park, 2015.

Fauna	Number of Species	Number of Species of Regional and Urban Concern (L1 to L4 rank)
birds	34	13
herps	4	4
mammals	3	1
TOTALS	41	18

Figure 6: Smooth greensnake at Lambton Park in 2015 (photo: TRCA, July 2015).

Local occurrence is one of seven scoring criteria for fauna species and is based on TRCA data and information from the Natural Heritage Information Centre (NHIC) of the Ontario Ministry of Natural Resources (OMNR) (NHIC 2008). Using local occurrence as a measure of regional rarity, any species that is reported as a probable or confirmed breeder in fewer than 10 of the forty-four 10x10 km UTM grid squares in the TRCA jurisdiction is considered regionally rare (i.e. scores three to five points for this criterion) (TRCA, 2010a).

Fauna surveys at the study area documented just one fauna species considered regionally rare: smooth greensnake. The presence of this species at Lambton Park is extremely significant. While there are known records across the jurisdiction, such as at nearby Smythe Park (1987), Jefferson Side Road and Yonge Street (2012), and near the Toronto Zoo (2006), the population at Lambton Park appears healthy due to repeated sightings in the mid to late 1990s followed by three individuals recorded in 2015. Of the other sites mentioned, only the single record near the Toronto Zoo contained more than one individual (six individuals). The persistence of smooth greensnake within the City of Toronto suggests a stable population that has endured despite urban pressures. However, the genetic health of this population is uncertain due to the isolated nature of the sightings, with the nearby Smythe Park record being almost three decades old.

Sensitivity to development is another criterion used to determine the L-rank of fauna species. A large number of impacts that result from local land use, both urban and agricultural, can affect the local fauna. These impacts – considered separately from the issue of actual habitat loss – can be divided into two distinct categories. The first category involves changes that arise from local urbanization that directly affect the breeding habitat of the species in question. These changes alter the composition and structure of the vegetation communities; for example, the clearing and manicuring of the habitat (e.g. by removal of dead wood and clearance of shrub understorey). The second category of impacts involves changes that directly affect individuals of the species in question. Examples include collecting (especially herp species); increased predation from an increase in the local population of predator species that thrive alongside human developments (e.g. blue jays, *Cyanocitta cristata;* American crows, *Corvus brachyrhynchos;* squirrels, *Sciuridae*; raccoons, *Procyon lotor*; and house cats, *Felis catus*); parasitism (from facilitating the access of brown-headed cowbirds, *Molothrus ater*, a species which prefers more open, edge-type habitat); competition (for nest-cavities with bird species such as house sparrows, *Passer domesticus*; and European starlings, *Sturnus vulgaris*); flushing (causing disturbance and abandonment of nest) and, sensitivity to pesticides.

Fauna species are considered to have a high sensitivity to development if they score 3 or more points (out of a possible 5) for this criterion. At the study area many of the species that are ranked L1 to L4 receive this score (12 of the 17 species) and are therefore considered sensitive to one or more of the impacts associated with development (Map 7).

The surrounding landscape is almost entirely urban and thus many of the negative impacts associated with an urban or suburban matrix should be present. Lambton Park is part of the lower Humber riparian network, forming a natural habitat corridor that possibly mitigates against some of these impacts. The physical barrier of the Humber River and Dundas Street West to the south may restrict some impacts associated with urban and commercial developments, whilst the CP railway line and hydro corridor to the north may facilitate movement and connectivity for herpetofauna and mammal species.

It is important to understand that negative matrix influences are not solely associated with the proximity of urban and suburban developments. Extensive public use of a natural habitat can have substantial negative impact through the cumulative effects of hiking, dog-walking and biking on the site. Various studies have shown that many bird species react negatively to human intrusion (i.e. the mere presence of people) to the extent that nest-abandonment and decreased nest-attentiveness lead to reduced reproduction and survival. One recent study reported that dog-walking in natural habitats caused a 35% reduction in bird diversity and a 41% reduction in abundance, with even higher impacts on ground-nesting species (Banks and Bryant 2007). Only one of the sensitive species found in 2015 nests on or near the ground; indigo bunting (*Passerina cyanea*), and hence are susceptible to the ground level disturbances mentioned above. The only territory of this species was found in the oak forest at the top-of-slope; an area less accessible to dog-walkers and bikes. Although further negative urban impacts such as predation by cats and collisions with buildings and vehicles impact both breeding and migrating birds, the negative impacts are not quite as significant for migrating species particularly in situations where

individuals have the opportunity to move on to less disturbed areas. However, in the urban landscape such opportunities as at Lambton Park are considerably restricted and in recent years the importance of stop-over habitats in the life-cycles of migrant birds has become recognised as a significant issue.

American redstart, the only L3 ranked bird species present, are forest edge mid-level nesters in deciduous saplings and shrubs. Once thought to be associated with rural forests, this species appears to be successfully breeding in more urban riparian corridors recently. These increased recordings in urban areas signify that redstarts are on the cusp of L4 rank designation. Nevertheless, confirmed breeding within the City of Toronto would be an interesting record; unfortunately one second year male was recorded on the first visit but not relocated on the second, therefore its breeding success was unconfirmed.

The most locally abundant sensitive species, grey catbird (*Dumetella carolinensis*) is distributed across seven territories in the forest/successional habitats flanking the Humber River and along the CP railway on the northern border of the site. Catbirds are mid-level nesters in either dense or sparse shrub habitats and as long as the shrub habitat is not removed, and as long as nests are not repeatedly and frequently disturbed by trail use these species are quite capable of maintaining small populations in remnant natural patches in otherwise urban landscapes. It should be noted that the TRCA fauna inventory assesses the presence of species, i.e. the number of territories of each species at the site, but does not try to determine the success of nesting attempts. However, the fact that there are multiple territories of this species on site suggests that some of the local breeders are successfully returning and recruiting to maintain a viable local population.

The most significant of the fauna species which are considered sensitive to development are the four herpetofauna species, three snakes: smooth greensnake, Dekay's brownsnake (*Storeria dekayi*) and eastern gartersnake (*Thamnophis sirtalis sirtalis*) and one frog species: American toad (*Anaxyrus americanus*), that are possibly breeding in the riparian areas in Lambton Park or in golf course ponds to the north. The presence of smooth greensnake in such an established urban landscape goes against expectations considering it scores maximum points in this criterion. With the only other recent (within 10 years) records in the jurisdiction being in rural/urbanizing areas (Richmond Hill, and near Toronto Zoo), local mitigating factors must be at play in preserving the population at Lambton Park. The presence of the provincially-significant tallgrass/prairie communities provides ideal hunting and breeding habitat which may negate pressures such as subsidized predators, dog-walkers and bikers. The hydro corridor and CP railway to the north and east may also provide hunting grounds and a movement corridor for these snakes. Further studies in the park and surrounding areas are needed to determine the stability of this population, genetically and physically. No doubt, excessive disturbance of the tallgrass habitat would compromise these herp species' life cycles and potentially lead to the loss of the species from the site inventory.

Area sensitivity is a scoring criterion that can be closely related to the issue of a species' need for isolation. Fauna species are scored for area sensitivity based on their requirement for a certain minimum size of preferred habitat. Species that require large tracts of habitat (>100 ha in total)

score the maximum five points, while species that either show no minimum habitat requirement, or require <1 ha in total, score one point. Species scoring three points or more (require ≥5 ha in total) are deemed area sensitive species. Researchers have shown that for some species of birds, area sensitivity is a rather fluid factor, dependent and varying inversely with the overall percentage forest cover within the landscape surrounding the site where those species are found (Rosenburg *et al.* 1999).

Six of the species of regional and urban concern that were identified at the study area are considered area sensitive, requiring at least 5 ha of habitat. Four were forest species; blue-grey gnatcatcher (*Polioptila* caerulea), great-crested flycatcher (*Myiarchus crinitus*), hairy woodpecker (*Picoides villosus*), and white-breasted nuthatch (*Sitta carolinensis*); and two were forest-edge species; American redstart and rose-breasted grosbeak (*Pheucticus ludovicianus*). As forest cover is quite limited within the study area there really is very little opportunity for area sensitive forest species to establish themselves on site. Nevertheless, three out of the four forest species were confirmed breeders. Alternatively, the availability of successional habitat (including tallgrass, savannah and woodland) provides opportunities for forest-edge species such as American redstart and rose-breasted grosbeak to establish and maintain a small population compared to forest species.

Species' patch-size constraints are due to a variety of factors including foraging requirements and the need for isolation within a habitat block during nesting. In the latter case, regardless of the provision of a habitat patch of sufficient size, if that block is seriously and frequently disturbed by human intrusion, such species will be liable to abandon the site. Such a variety of habitat needs are more likely satisfied within a larger extent of natural cover.

Patch isolation sensitivity in fauna measures the overall response of fauna species to fragmentation and isolation of habitat patches. One of the two main aspects of this scoring criterion is the physical ability or the predisposition of a species to move about within the landscape and is related to the connectivity of habitat within a landscape. The second main aspect is the potential impact that roads have on fauna species that are known to be mobile. Thus most bird species score fairly low for this criterion (although they prefer to forage and move along connecting corridors) whereas many herpetofauna score very high (since their life cycle requires them to move between different habitat types which may increase likelihood of road-kill). One example of how this criterion affects species populations is the need for adult birds to forage for food during the nestling and fledgling stage of the breeding season. By maintaining and improving the connectivity of natural cover within the landscape (e.g. by reforestation of intervening lands) we are able to positively influence the populations of such species, improving their foraging and dispersal potential.

All four herpetofauna species and one mammal species of regional or urban concern; eastern chipmunk (*Tamias striatus*) are considered sensitive to patch isolation. Typically, birds are considerably less affected by this criterion. The main obstruction to movement across the landscape into and out of Lambton Park is the location within an established urban landscape which creates a major barrier to any movement for terrestrial species such as mammals, frogs and

snakes. However, the presence of the Humber Valley corridor and golf course present an opportunity for significant movement to the north (connection to Humber lower reaches) and to the south (connection to Humber Marshes and Lake Ontario). Similarly the hydro corridor and rail line facilitate east-west movement.

All four herpetofauna species are very likely able to disperse into and out of the site via the river valley corridor and rail line/hydro corridor. The presence of smooth greensnake at the site should be further investigated to establish whether there are in fact any opportunities for this species to move into and out of the site. The record at Smythe Park, albeit in 1987, suggests a possible connection through the golf course or hydro corridor (Smythe Park was also surveyed in 2015, with no smooth greensnake being found). Further snake-specific monitoring is required in the area surrounding Lambton Park to determine the isolation and movement connectivity opportunities for this species.

Patch isolation at Lambton Park is potentially more significant regarding migrating songbirds. If foraging and sheltering migrants are repeatedly disturbed then they will need to re-locate to less-disturbed habitats – maintenance and replenishing of energy levels is absolutely crucial for migrating individuals. If there is no viable connection between habitat patches then considerable stress is placed on birds as they struggle to find opportunities to move to other areas on their migration path. In this way, the maintenance of a series of natural refuges throughout the City's ravine system and along the lakeshore becomes of considerable importance.

Fauna species that score greater than three points under the ***habitat dependence*** criterion are considered habitat specialists (Map 13). These species exhibit a combination of very specific habitat requirements that range from the microhabitat (e.g. decaying logs, aquatic vegetation) and requirements for particular moisture conditions, vegetation structure or spatial landscape structures, to preferences for certain community series and macro-habitat types. None of the fauna species that occur in the study area are considered habitat specialists. Smooth greensnake may not be habitat dependent but if the habitat structure is changed, for example if the tallgrass and prairie communities are altered, the population of this locally rare species may be affected. Over all, the general lack of habitat dependent species reflects the rather low quality of the forest and successional habitats on site.

A site's species list presents only the species' richness, i.e. it indicates only the presence of species at a site but does not indicate the breeding success or the population stability of each species at the site. A healthy functioning system will accommodate a whole suite of species that are adapted to the habitat types at the site, and will allow those particular species to thrive and breed successfully. As the quality of the habitat patch improves so will the representation of flora and fauna species associated with that habitat. In this way, representation biodiversity is an excellent measure of the health of a natural system. Thus it certainly seems that the Lambton Park site is functioning at a rather low level.

5.0 Summary and Recommendations

The recommendations for Lambton Park are given in relation to the regional targets for natural heritage in the TRCA jurisdiction. To reach the regional targets for quality distribution and quantity of natural cover, every site will require its own individualized plan of action. Following is a short summary of the study area within the regional context, followed by specific recommendations.

5.1 Site Summary

1. The site is located in the lower reaches of the Humber River, north of Dundas Street. Its' natural cover fills an important function in helping to maintain a viable connection across the urban landscape along the river and important staging areas for migrating songbirds located in the lower reaches of the Humber River and the Lake Ontario shoreline. It is a remnant of the once much-larger Humber Plains complex of tallgrass prairie, savannah, and woodland that extended from Lake Ontario north to around Lawrence Avenue.

2. As a City of Toronto park, the site is secure from urban development. However, it is subject to negative urban matrix influences due to heavy and uncontrolled recreational use such as stunt biking and off-leash dogs.

3. Twenty-three vegetation types were observed, most notably 4 tallgrass and 3 related communities. The site also includes 1 aquatic, 3 riparian dynamic, 5 forest, 1 wetland, 5 successional, and 1 meadow vegetation community type. The overall number of community types is low due to the site's small size and lack of wetlands, but some of the communities are of high significance.

4. The four tallgrass communities (tallgrass prairie, oak-pine savannah, oak woodland, and oak-pine woodland) *have a rank of L1 and are provincially- and globally-rare*. Other communities of conservation concern are a couple of oak woodlands that lack some of the tallgrass species as well as three oak forest types and a treed cliff.

5. A total of 294 naturally occurring flora species were observed. Amongst them were 43 species of regional concern (ranked L1 to L3) and 31 species of urban concern (ranked L4). Species of concern were mostly associated with tallgrass prairie, savannah and woodland habitats. Total species richness is moderately high for the size of the site but includes a high concentration of species of concern.

6. Five flora species are only found in the Humber Plains within the TRCA jurisdiction (at least as natural populations): red pine, Indian grass, Bicknell's frostweed, prairie willow, and early saxifrage. Lambton Park is the only location for early saxifrage, which was seen in 2012. Eight other flora species are found only in one to three other sites outside the Humber Plains.

7. Thirteen flora species with historic records at Lambton Park seem to be no longer there, including Indian physic (no longer occurring anywhere in Ontario) and wild lupine (seen as recently as 2009). This attests to the pressures of habitat fragmentation and urban matrix influences.

8. The presence in 2015 of smooth greensnake, a locally rare L2 species of concern, is very significant, considering the urban matrix surrounding the study area. This species is only recently known to be at two other sites in the TRCA jurisdiction.

9. The 41 species of vertebrate fauna observed is above expected for small forest/successional patches embedded in the urban landscape in the Toronto region.

5.2 Site Recommendations

The recommendations primarily address objectives of protecting regional biodiversity in the TRCA jurisdiction. In order to at least maintain and preferably enhance the current level of biodiversity at the Lambton Park, the overall integrity of the natural heritage system that includes the site must be protected. Therefore, at the landscape scale, in keeping with the TNHSS, connections to other natural habitat patches in the landscape need to be enhanced and maintained. Furthermore, the recommendations highlight the issues that may occur with any increased public use of Lambton Park with any potential intensification and infill development in the neighbourhood. Management should address this potential increase in negative matrix influence to ensure that effective mitigation is included as part of any future management plans. This includes strategic placement of any interpretive signage, managing public use, allowing healthy dynamic natural processes to proceed, and controlling invasive species.

The following recommendations address the above natural heritage concerns, with an emphasis upon bolstering the existing natural features on site. Thus, we recommend overall that 1) existing habitats and features be protected and enhanced; 2) that public use be managed; and 3) that invasive species be controlled.

1. Protect and Enhance Existing Features

   The first priority should be to focus on ***maintaining conditions that allow existing communities or species of conservation concern to thrive***. This is especially true for the habitat requirements of the small populations of numerous tallgrass prairie plant species and smooth greensnake.

   a. Investigate and regularly monitor the status of tallgrass prairie plants, especially those with critically low populations such as hillside blueberry, running serviceberry, prairie willow, New Jersey tea, Bicknell's frostweed and early saxifrage. Consideration should be given to restricting public access to their locations until they show demonstrable recovery.

b. Continue the successful prescribed burn programme to maintain and restore tallgrass habitat. Lambton Park should get the same attention in this regard as High Park. In order to minimize impacts on the smooth greensnake and other terrestrial fauna including insects, burns should happen as early as possible in the spring and / or cover small areas each year to ensure refugia. For example, instead of burning one large patch every five years, a fifth of the patch should be done each year.

c. Adjacent areas that contain or potentially contain tallgrass or woodland elements should be identified and inventoried: for example, the natural cover within Lambton Golf and Country Club (where sweet fern was seen in 1999); the CPR and hydro corridors (including west of the Humber River); and Runnymede Park, which lies about a kilometre to the east of Lambton Park and retains a natural black oak canopy within a manicured area.

d. Lambton Park, along with the South Humber and potentially other areas such as Runnymede Park should be included in an expanded provincial Area of Natural and Scientific Interest (ANSI). Currently High Park Woodlands is the only part of the Humber Plains included as an ANSI. The expanded ANSI should be called High Park and Humber Plains. This would help policy makers and restorationists recognize the whole complex as a unit, however fragmented it may be.

e. The existing propagation programme at High Park Nursery (City of Toronto) has been working with prairie and woodland plants, with much seed collection from High Park. This programme could be expanded to explicitly include populations of plants from Lambton Park and other areas, including the Rouge National Urban Park where a few prairie and woodland plants also occur. Collaboration with other interested parties such as TRCA, Parks Canada, and the Toronto Botanical Garden could be considered in order to possibly enhance this already successful program. For example, a seed orchard could include plants derived from the Rouge, High Park, and Lambton Park which would allow for both conservation of particular populations and outbreeding them to improve their resilience. Such a joint programme could provide larger numbers of locally-sourced plants for extensive restoration projects in the TRCA jurisdiction such as prairie plantings in Bob Hunter Memorial Park (part of Rouge National Urban Park).

f. Ensure that all elements of the species habitat requirements for smooth greensnake are maintained and enhanced as much as possible. The existing prescribed burn regime if done optimally should help do this, but maintaining natural debris such as logs and rocks for breeding habitat will also need to be considered.

g. If there are situations where mowing is the only viable option to maintain tallgrass communities, ensure steps are taken to enable herps and mammals to escape: if possible avoid mowing from April to November, if this is unavoidable, mow when temperatures reach at least 21°c when snakes are more mobile; walk through the area before mowing and mow slowly in a prescribed manner; consider incremental mowing or leaving portions of habitat un-mowed (Tallgrass Ontario 2013).

h. Targeted monitoring should be conducted to assess the status of the population of smooth greensnake across the TRCA jurisdiction: more comprehensive snake-specific research, such as installing snake boards and DNA sampling, may present a clearer picture of the population size, genetic health and connectivity issues of smooth greensnake at Lambton Park amongst other locations.

i. Interpretive signage regarding the unique habitat requirements and sensitivity of tallgrass flora and smooth greensnake may promote local stewardship. Caution should be exercised, however, to prevent snake (and plant) collecting which could jeopardize the populations.

j. Pursue opportunities to maintain natural cover across the site and any nearby areas that have relics of woodland such as Runnymede Park. This will benefit migrating songbirds that require a network of stopover habitats that offer shelter and food.

k. Areas selected for restoration should have soil and moisture assessments conducted in order to help determine suitable lists of species for planting. For example, the presence of free carbonates at the surface precludes planting acid-loving species where they occur.

2. Manage Public Use

Visitor pressure (off-road biking and off-leash dog walking) is already at unsustainable levels, and may even increase in the future with infill residential development. It is important that this use does not impact sensitive habitat features such as the tallgrass communities that support the most significant flora and fauna.

a. Some areas should be left without public access as pure refuges for flora such as nodes of the tallgrass communities where flora species of concern such as hillside blueberry are concentrated; and the Humber Valley forest where American redstart were observed.

b. Hiking and dog-walkers are firmly established on the site. It is important to implement very definite rules on the presence of dogs. Wherever dog-walkers have

access, it follows that there will be an expectation that animals will be allowed to roam off-leash – despite local by-laws to the contrary. If such a use is allowed to embed itself at the site, there is a considerable risk that the more terrestrial herpetofauna populations will suffer. It should be possible to provide plentiful leash-free zones in non-sensitive areas of nearby parks, including the Humber Valley (e.g. manicured floodplain zones).

c. Informal bike trail and stunt creation is incompatible with a municipal ESA and provincially-significant ecosystem. Trails and stunts should be removed carefully and the areas affected allowed to recover with restoration efforts to ensure native species return. Efforts should be made to ensure biking is limited to the managed trail system.

d. Involving the local community in any restoration efforts will enhance feelings of good stewardship, which in turn will result in more ecologically positive behaviour, e.g. provision of adequate natural cover buffers and corridors along water courses; proper disposal of yard waste; diminished use of salt on paved surfaces in close proximity to the site; responsible dog-ownership.

e. Tallgrass and woodland communities are known for their diversity of butterflies and other insects. These have not been investigated during this report, but there are anecdotal records, including hairstreaks (type of butterfly), some of which have apparently disappeared (High Park Nature 2015, Charles Kinsley, personal communication). Therefore an inventory to assess the insect life at Lambton Park would help guide further restoration efforts.

3. Control Invasive Species

Several invasive plant species are threats to the native biodiversity in Lambton Park. ***It is essential that well-planned and realistic measures be undertaken to control invasive species***. Management for invasive species will need to be tailored to the individual species in question, depending on how wide-spread and established they are.

a. A proactive management approach to invasive species control should be taken. Pre-assess areas targeted for restoration plantings or trail installation and remove existing exotic populations. This approach has already been initiated: for example, in the more degraded area of oak woodland southeast of the Lambton Arena. It involves local removal of garlic mustard, dog-strangling vine, buckthorn, European spindletree, honeysuckle, and other species that are found throughout the site.

b. Since most of the invasive species at the site have large and/or diffuse populations, the best approach is to control disturbance that would aid their further spread rather than eradication efforts. For example, decommissioning bike trails or

encroachment through unauthorized plantings, would reduce the disturbance that encourages exotics such as garlic mustard and dog-strangling vine to spread.

c. Oriental bittersweet may be a good candidate for eradication efforts as this species is currently present in one discrete population but has a high potential for spread. Its removal would thus be both feasible and have a highly protective effect on biodiversity.

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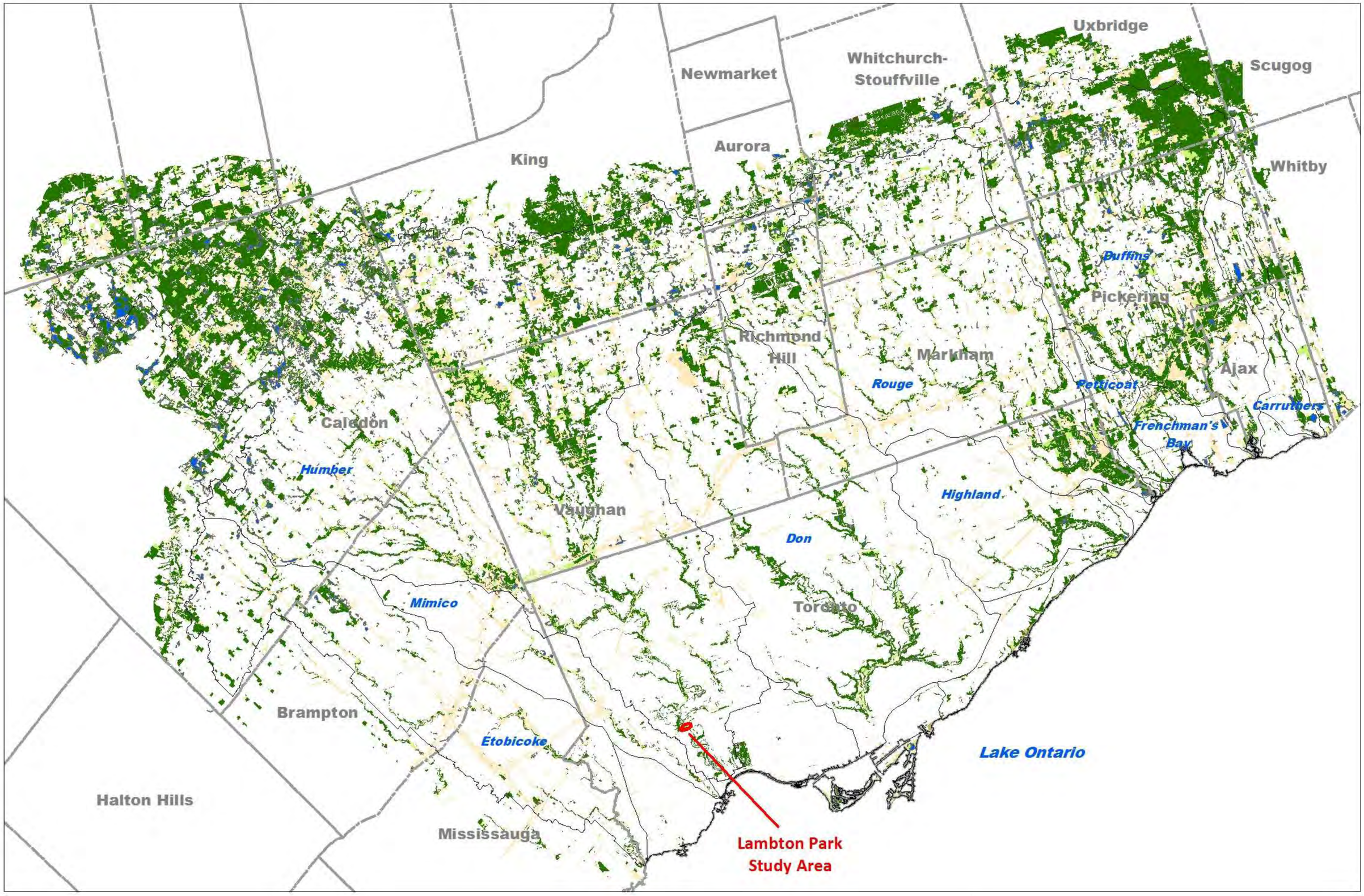


Toronto and Region Conservation for The Living City

N

0 2.5 5 10 15 20 Kilometers

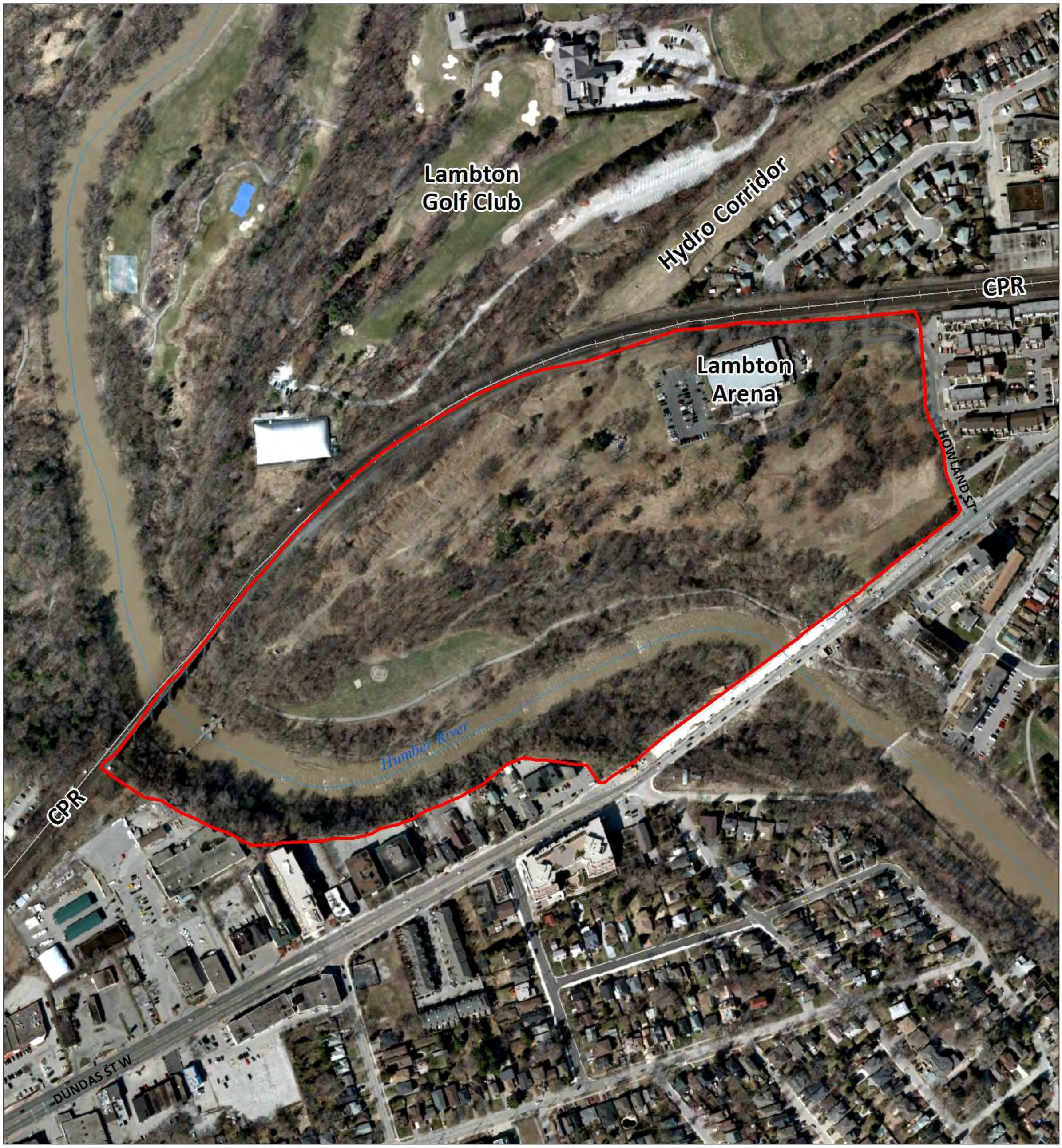
Date: January 2016

* Natural Cover based on 2013 Orthophotography

Map 1:
Lambton Park Study Area in the Context of Regional Natural Cover

Natural Cover *
- Forest
- Successional
- Meadow
- Wetland
- Beach/Bluff

Legend
- Study Area Boundary
- TRCA Jurisdiction
- Watershed
- Municipal Boundary



Toronto and Region Conservation for The Living City

N W E S

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions

Map 2:
Lambton Park Study Area

Legend

Lambton Park Area Boundary

Lambton Park
Study Area

Toronto and Region Conservation for The Living City

N

0 2.5 5 10 15 20 Kilometers

Date: January 2016
* Landscape analysis based on 2013 Orthophotography

Map 3:
Regional Natural System
Habitat Patch Quality

Legend

Habitat Patch Quality *
- L1 - Excellent
- L2 - Good
- L3 - Fair
- L4 - Poor
- L5 - Very Poor

- Lambton Park Study Area Boundary
- TRCA Jurisdiction
- Watershed

Toronto and Region Conservation for The Living City

N W E S

0 2.5 5 10 15 20 Kilometers

Date: January 2016

Map 4:
Distribution of Fauna
Regional Species of Concern

Legend

- Fauna Species of Concern (L1 - L3)
- Lambton Park Study Area Boundary
- TRCA Jurisdiction
- Watershed
- Agricultural & Rural Area
- Built-up Area
- Designated Greenfield Area
- Greenbelt Area

Fauna Area Sensitivity Scores

- 5 - >100ha
- 4 - >20ha
- 3 - > 5ha
- 2 - > 1ha
- 1 - < 1ha

- Fauna Species
- Frog Species
- Lambton Park Study Area Boundary

Habitat Patch Size Scores *

- 5 - Excellent
- 4 - Good
- 3 - Fair
- 2 - Poor
- 1 - Very Poor

Toronto and Region Conservation for The Living City

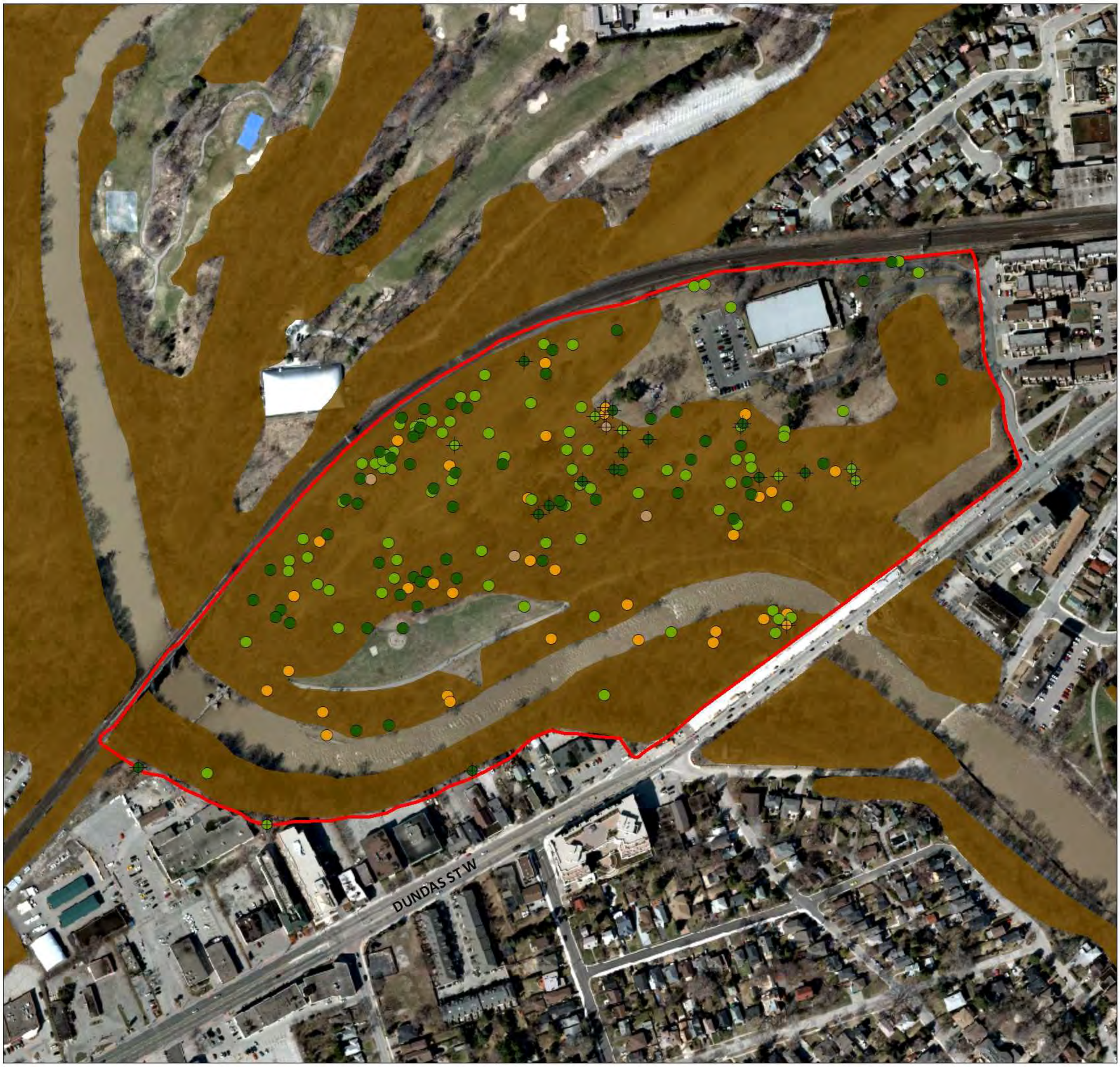
N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 5: Habitat Patch Size Scores with Fauna Area Sensitivity Scores

NOTE: All fauna species with their associated scores for area sensitivity can be found in Appendix #3.



Flora Sensitivity to Development Scores

- 5 - Species receives severe negative impact from development-related disturbances
- 4 - Species receives moderately severe negative impact from development-related disturbances
- 3 - Species receives significant negative impact from development-related disturbances
- 2 - Species receives slight negative impact from development-related disturbances
- 1 - Species experiences no overall benefit or detriment from development-related disturbances (neutral)
- 0 - Species benefits significantly from development-related disturbances

Habitat Matrix Influence Scores *

- 5 - Excellent
- 4 - Good
- 3 - Fair
- 2 - Poor
- 1 - Very Poor

- Flora Species
- Planted Flora Species
- Lambton Park Study Area Boundary

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 6: Scores for Matrix Influence and Flora Sensitivity to Development

NOTE: All flora species with their associated scores for sensitivity to development can be found in Appendix #2.

Fauna Sensitivity to Development Scores

- 5 - Species receives severe negative impact from development-related disturbances
- 4 - Species receives moderately severe negative impact from development-related disturbances
- 3 - Species receives significant negative impact from development-related disturbances
- 2 - Species receives slight negative impact from development-related disturbances
- 1 - Species experiences no overall benefit or detriment from development-related disturbances (neutral)
- 0 - Species benefits significantly from development-related disturbances

Habitat Matrix Influence Scores *

- 5 - Excellent
- 4 - Good
- 3 - Fair
- 2 - Poor
- 1 - Very Poor

- Fauna Species
- Frog Species
- Lambton Park Study Area Boundary

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 7: Scores for Matrix Influence and Fauna Sensitivity to Development

NOTE: All fauna species with their associated scores for sensitivity to development can be found in Appendix #3.

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 8: Habitat Patch Quality

Legend

Habitat Patch Quality *

- L1 - Excellent
- L2 - Good
- L3 - Fair
- L4 - Poor
- L5 - Very Poor

Lambton Park Study Area Boundary

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016

Orthophoto: Spring 2014, First Base Solutions

Map 9: Vegetation Communities with their Associated Local Ranks

Legend

Vegetation Community Ranks

- L1
- L2
- L3
- L4
- L5
- L+

Lambton Park Study Area Boundary

NOTE: All vegetation communities with their associated scores and ranks can be found in Appendix #1.

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions

Map 10: Location of Flora Species of Concern

Legend

Flora Species of Concern (L1-L4)
- L1
- L2
- LX
- L3
- L4

Planted Flora Species of Concern (L1-L4)
- L1
- L2
- LX
- L3
- L4

Lambton Park Study Area Boundary

Flora Habitat Dependence Scores

- 5 - Extreme habitat specialist
- 4 - Strong habitat specialist
- 3 - Moderate habitat specialist
- 2 - Moderate habitat generalist
- 1 - Strong habitat generalist
- 0 - Extreme habitat generalist

- Flora Species
- Planted Flora Species
- Lambton Park Study Area Boundary

Toronto and Region Conservation for The Living City

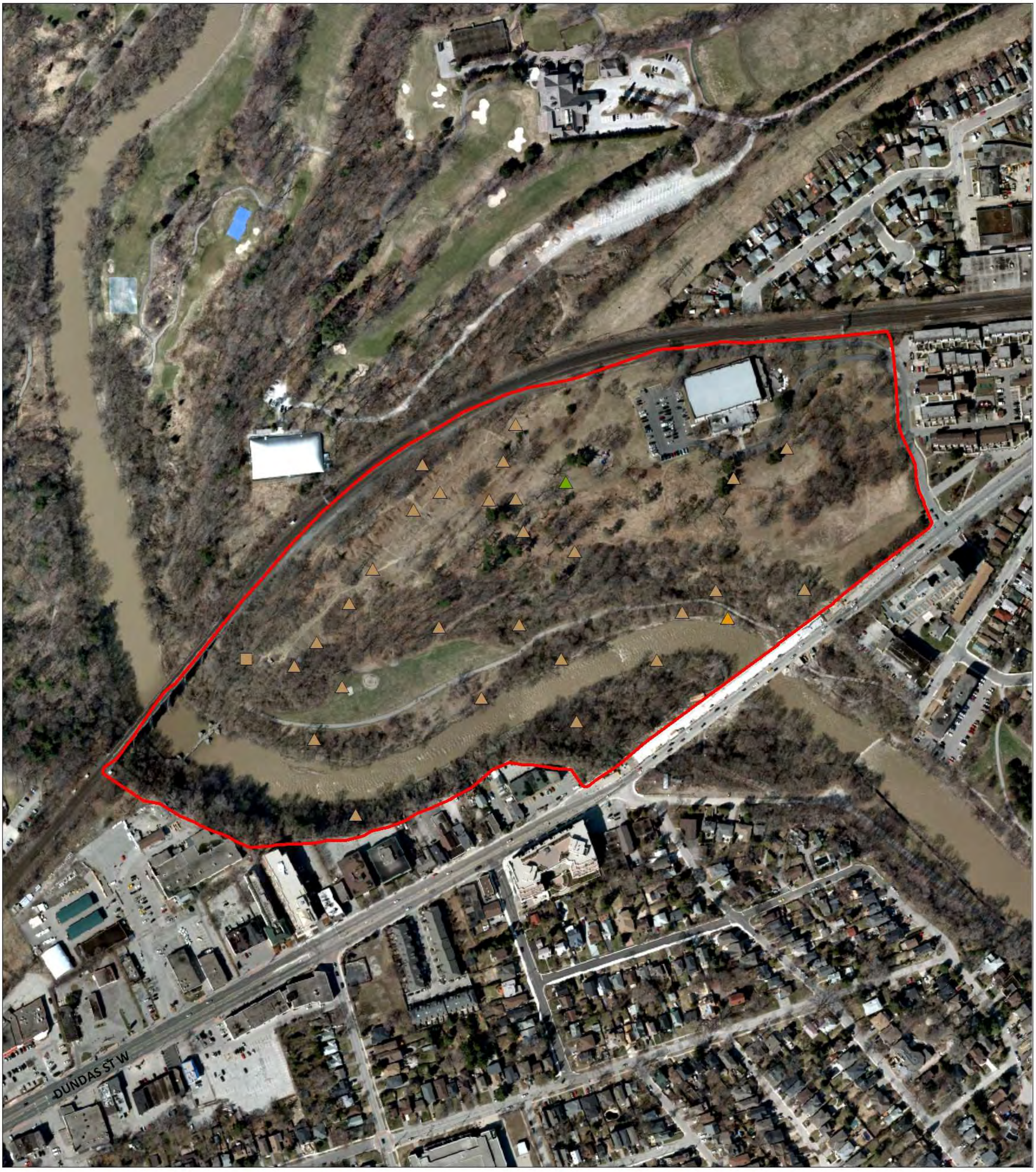
N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions

Map 11: Flora Species Habitat Dependence Scores

NOTE: All flora species with their associated scores for habitat dependence can be found in Appendix #2.



Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions

Map 12: Locations of Fauna Species of Concern

Legend

Fauna Species of Concern				Frog Species of Concern			
▲	L1	▲	L3	■	L1	■	L3
▲	L2	▲	L4	■	L2	■	L4
▲	LX			■	LX		

Lambton Park Study Area Boundary

Fauna Habitat Dependence Scores

- 5 - Extreme habitat specialist
- 4 - Strong habitat specialist
- 3 - Moderate habitat specialist
- 2 - Moderate habitat generalist
- 1 - Strong habitat generalist
- 0 - Extreme habitat generalist

- Fauna Species
- Frog Species
- Lambton Park Study Area Boundary

Toronto and Region Conservation for The Living City

N

0 25 50 100 150 200 Meters

Date: January 2016
Orthophoto: Spring 2014, First Base Solutions

Map 13: Fauna Species Habitat Dependence Scores

NOTE: All fauna species with their associated scores for habitat dependence can be found in Appendix #3.

Appendix 1: Lambton Park Vegetation Communities (2015)						
ELC Code	Vegetation Type (* indicates present as complex only)	Tot. area # ha	Scores			Local Rank Nov-14
			Local Occur.	Geophy. Requir.	Total Score	
	Forest					
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest	0.8	3.5	4.0	7.5	L2
FOD2-4	Dry-Fresh Oak - Hardwood Deciduous Forest	0.2	2.5	2.0	4.5	L4
FOD4-d	Dry-Fresh Norway Maple Deciduous Forest	0.5	3.5	0.0	3.5	L+
FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	0.3	1.5	0.0	1.5	L5
FOD9-2	Fresh-Moist Oak - Lowland Maple Deciduous Forest	1.8	3.5	1.0	4.5	L4
	Successional					
CUT1-1	Sumac Deciduous Thicket	0.9	2.0	0.0	2.0	L5
CUT1-c	Exotic Deciduous Thicket	0.2	2.0	0.0	2.0	L+
CUH1-c	Buckthorn Hedgerow	0.1	2.5	0.0	2.5	L+
CUW1-A3	Native Deciduous Successional Woodland	1.5	1.0	0.0	1.0	L5
CUW1-b	Exotic Successional Woodland	1.0	1.0	0.0	1.0	L+
	Wetland					
*SWD3-4	*Manitoba Maple Mineral Deciduous Swamp		3.0	1.0	4.0	L4
	Aquatic					
OAO1	Open Aquatic (deep or riverine unvegetated)	1.6	2.0	0.0	2.0	L5
	Dynamic (Beach, Bluff, Barren, Prairie, Savannah)		4.9			
BBO1-A	Open Riparian Sand / Gravel Bar	0.2	4.0	2.0	6.0	L5
BBS1-2B	Willow Shrub Riparian Bar	0.3	3.0	1.0	4.0	L4
CLT1-2	Sugar Maple - White Ash Treed Carbonate Cliff	0.6	5.0	3.0	8.0	L2
*SBO1-c	*Hard Fescue Sand Barren		5.0	3.0	8.0	L+
TPO1-1	Dry Tallgrass Prairie	0.2	4.5	5.0	9.5	L1
TPS1-2	Dry Black Oak - Pine Tallgrass Savannah	1.1	0.0	5.0	5.0	L1
TPW1-1	Dry Black Oak - White Oak Tallgrass Woodland	0.5	5.0	5.0	10.0	L1
TPW1-A	Mixed Oak - Pine Tallgrass Woodland	1.4	5.0	5.0	10.0	L1?
CUW1-2	Red Oak Non-tallgrass Woodland	0.2	3.5	2.0	5.5	L3
CUW1-2A	Black Oak Non-tallgrass Woodland	0.5	4.5	3.0	7.5	L2
	Meadow					
CUM1-b	Exotic Cool-season Grass Graminoid Meadow	0.5	1.0	0.0	1.0	L+

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Ceanothus americanus	New Jersey tea	5	5	4	5	19	L1	x	x
Comptonia peregrina	sweet-fern	5	5	5	5	20	(L1)		x
Helianthemum bicknellii	Bicknell's frostweed	5	5	4	5	19	L1	x	
Helianthemum canadense	frostweed	5	5	5	5	20	(L1)		x
Lechea intermedia	pinweed	5	5	5	4	19	L1	x	x
Liatris cylindracea	cylindric blazing-star	5	5	5	5	20	(L1)		x
Micranthes virginiensis	early saxifrage	5	5	5	5	20	L1?	x	x
Vaccinium pallidum	hillside blueberry	5	4	5	5	19	L1	x	x
Viola sagittata var. *ovata*	arrow-leaved violet	5	5	4	5	19	(L1)		x
Amelanchier spicata	running serviceberry	5	4	4	5	18	L2	x	x
Anemone americana	round-lobed hepatica	3	5	5	5	18	L2	x	x
Boechera canadensis	sicklepod	5	4	4	4	17	(L2)		x
Erigeron pulchellus	Robin's plantain	4	5	4	5	18	(L2)		x
Lupinus perennis	wild lupine	5	3	5	5	18	(L2)		x
Pinus resinosa	red pine	2	5	5	5	17	L2	x	x
Quercus velutina	black oak	4	4	4	5	17	L2	x	x
Quercus x *hawkinsiae*	red-black hybrid oak	5	4	4	4	17	L2	x	x
Salix humilis	prairie willow	5	4	5	4	18	L2	x	x
Schizachyrium scoparium	little bluestem	4	4	5	5	18	L2	x	x
Sorghastrum nutans	Indian grass	5	4	5	4	18	L2	x	x
Taenidia integerrima	yellow pimpernel	4	4	4	5	17	(L2)		x
Vaccinium angustifolium	lowbush blueberry	5	4	4	5	18	(L2)		x
Andropogon gerardii	big bluestem	3	3	4	4	14	L3	x	x
Anemone quinquefolia var. *quinquefolia*	wood-anemone	2	4	3	5	14	L3	x	x
Antennaria parlinii ssp. *fallax*	plantain-leaved pussytoes	3	4	3	4	14	L3	x	x
Carex grayi	Gray's sedge	3	5	4	4	16	L3	x	
Carex lacustris x *trichocarpa*	hybrid Paludosae sedge	5	3	5	3	16	L3	x	
Carex siccata	hay sedge	3	3	4	4	14	L3	x	x
Carex trichocarpa	hairy-fruited sedge	3	3	5	4	15	L3	x	x
Celastrus scandens	American bittersweet	2	4	3	5	14	L3	x	x
Chelone glabra	turtlehead	2	3	4	5	14	L3	x	
Claytonia virginica	narrow-leaved spring beauty	2	4	4	5	15	L3	x	
Comandra umbellata	comandra	4	2	5	5	16	L3	x	x
Cyperus lupulinus	slender umbrella-sedge	4	3	5	4	16	L3	x	x
Desmodium glutinosum	pointed-leaved tick-trefoil	2	4	4	5	15	L3	x	
Erythronium albidum	white trout-lily	4	3	4	4	15	L3	x	x
Galium boreale	northern bedstraw	3	4	4	3	14	L3	x	
Hamamelis virginiana	witch-hazel	2	4	4	4	14	L3	x	

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Helianthus divaricatus	woodland sunflower	4	3	4	4	15	L3	x	x
Lespedeza capitata	round-headed bush-clover	5	2	4	5	16	L3	x	x
Malus coronaria	wild crab-apple	4	4	4	4	16	L3	x	x
Menispermum canadense	moonseed	2	4	4	4	14	L3	x	
Oenothera parviflora	smaller evening-primrose	4	3	4	3	14	L3	x	
Potentilla simplex	old-field cinquefoil	3	3	4	4	14	L3	x	x
Prunus nigra	Canada plum	2	4	4	4	14	L3	x	
Quercus alba	white oak	2	5	4	5	16	L3	x	
Rubus flagellaris	northern dewberry	3	3	4	4	14	L3	x	x
Sanicula odorata	clustered sanicle	4	3	4	3	14	L3	x	
Sporobolus cryptandrus	sand dropseed	3	3	5	3	14	L3	x	x
Symphoricarpos albus var. *albus*	eastern snowberry	3	4	4	5	16	L3	x	
Teucrium canadense ssp. *canadense*	wood-sage	3	3	4	4	14	L3	x	
Zizia aurea	golden Alexanders	4	4	4	3	15	L3	x	x
Acer saccharum ssp. *nigrum*	black maple	2	3	4	2	11	L4	x	
Amelanchier interior	hybrid serviceberry complex	3	3	3	3	12	L4	x	
Amelanchier laevis	smooth serviceberry	2	2	4	3	11	L4	x	
Apios americana	ground-nut	3	4	3	3	13	L4	x	
Asclepias incarnata ssp. *incarnata*	swamp milkweed	1	3	4	4	12	L4	x	
Betula papyrifera	paper birch	1	4	2	4	11	L4	x	
Bidens vulgata	tall beggar's-ticks	2	2	3	4	11	L4	x	
Bromus latiglumis	eared brome	3	2	4	3	12	L4	x	
Cardamine maxima	hybrid toothwort	2	3	3	3	11	L4	x	
Carex grisea	grey sedge	4	2	4	3	13	L4	x	
Carex pensylvanica	Pennsylvania sedge	1	4	3	4	12	L4	x	x
Cornus rugosa	round-leaved dogwood	2	4	4	3	13	L4	x	
Corylus cornuta	beaked hazel	2	4	3	4	13	L4	x	
Crataegus submollis	Emerson's hawthorn	2	3	4	3	12	L4	xcf	
Danthonia spicata	poverty oat grass	2	3	3	4	12	L4	x	
Elymus canadensis	Canada wild rye	3	2	5	3	13	(L4)		x
Elymus riparius	riverbank wild rye	2	2	4	4	12	L4	x	
Eupatorium perfoliatum	boneset	1	3	4	3	11	L4	x	
Geranium maculatum	wild geranium	2	3	4	3	12	L4	x	
Juniperus virginiana	red cedar	2	2	4	3	11	L4	x	
Maianthemum canadense	Canada May-flower	1	4	1	5	11	L4	x	
Muhlenbergia frondosa	wire-stemmed muhly grass	4	2	4	2	12	L4	x	
Osmorhiza claytonii	woolly sweet cicely	2	3	4	3	12	L4	xcf	
Persicaria pensylvanica	Pennsylvania smartweed	2	2	4	3	11	L4	x	

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Pinus strobus	white pine	1	4	3	4	12	L4	x	x
Polygonatum pubescens	downy Solomon's seal	1	4	2	5	12	L4	x	
Populus grandidentata	large-toothed aspen	1	3	4	3	11	L4	x	
Pteridium aquilinum var. *latiusculum*	eastern bracken	1	4	2	4	11	L4	x	
Quercus rubra	red oak	1	4	2	4	11	L4	x	
Rosa blanda	smooth wild rose	2	3	3	4	12	L4	x	x
Solidago juncea	early goldenrod	2	3	4	2	11	L4	x	
Symphyotrichum oolentangiense	sky-blue aster	2	1	4	4	11	L4	x	x
Acer saccharum ssp. *saccharum*	sugar maple	1	3	0	2	6	L5	x	
Ageratina altissima var. *altissima*	white snakeroot	1	2	2	1	6	L5	x	
Ambrosia artemisiifolia	common ragweed	1	1	3	0	5	L5	x	
Ambrosia trifida	giant ragweed	3	1	4	0	8	L5	x	
Amphicarpaea bracteata	hog-peanut	2	2	2	2	8	L5	x	
Anemone canadensis	Canada anemone	1	2	2	2	7	L5	x	
Anemone virginiana	common thimbleweed	1	3	0	3	7	L5	x	
Apocynum cannabinum var. *cannabinum*	hemp dogbane	3	2	2	2	9	L5	x	
Aralia nudicaulis	wild sarsaparilla	1	3	1	4	9	L5	x	
Arisaema triphyllum	Jack-in-the-pulpit	1	3	2	3	9	L5	x	
Asclepias syriaca	common milkweed	1	2	0	2	5	L5	x	
Bidens cernua	nodding bur-marigold	1	2	3	3	9	L5	x	
Bidens frondosa	common beggar's-ticks	1	1	4	0	6	L5	x	
Bidens tripartita	three-parted beggar's-ticks	2	2	4	2	10	L5	x	
Carex blanda	common wood sedge	1	2	1	2	6	L5	x	
Circaea canadensis ssp. *canadensis*	enchanter's nightshade	1	1	1	1	4	L5	x	
Clematis virginiana	virgin's bower	1	2	2	3	8	L5	x	
Cornus alternifolia	alternate-leaved dogwood	1	2	1	2	6	L5	x	
Cornus foemina ssp. *racemosa*	grey dogwood	2	2	3	2	9	L5	x	
Cryptotaenia canadensis	honewort	2	2	4	1	9	L5	x	
Desmodium canadense	showy tick-trefoil	2	2	3	3	10	L5	x	
Diervilla lonicera	bush honeysuckle	1	3	2	4	10	L5	x	
Echinochloa muricata var. *microstachya*	small-spiked barnyard grass	3	2	4	0	9	L5	x	
Echinocystis lobata	wild cucumber	1	2	3	1	7	L5	x	
Elymus virginicus var. *virginicus*	Virginia wild rye	2	2	3	2	9	L5	x	
Equisetum arvense	field horsetail	1	2	1	1	5	L5	x	
Equisetum hyemale ssp. *affine*	scouring-rush	2	2	2	2	8	L5	x	
Erythronium americanum ssp. *americanum*	yellow trout-lily	1	3	3	2	9	L5	x	
Eurybia macrophylla	big-leaved aster	1	3	2	4	10	L5	x	
Euthamia graminifolia	grass-leaved goldenrod	1	1	4	1	7	L5	x	

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Eutrochium maculatum var. *maculatum*	spotted Joe-Pye weed	1	2	3	3	9	L5	x	
Galium aparine	cleavers	2	1	3	2	8	L5	x	
Geum canadense	white avens	1	2	1	2	6	L5	x	
Glyceria striata	fowl manna grass	1	2	1	2	6	L5	x	
Hackelia virginiana	Virginia stickseed	1	2	0	2	5	L5	x	
Helianthus tuberosus	Jerusalem artichoke	2	1	2	0	5	L5	x	
Heracleum maximum	cow-parsnip	2	2	3	2	9	L5	x	
Hydrophyllum virginianum	Virginia waterleaf	1	2	1	2	6	L5	x	
Impatiens capensis	orange touch-me-not	1	2	0	2	5	L5	x	
Juglans nigra	black walnut	1	1	2	1	5	L5	x	
Laportea canadensis	wood nettle	1	3	2	2	8	L5	x	
Maianthemum racemosum ssp. *racemosum*	false Solomon's seal	1	3	2	3	9	L5	x	
Maianthemum stellatum	starry false Solomon's seal	1	2	1	3	7	L5	x	
Matteuccia struthiopteris var. *pensylvanica*	ostrich fern	1	2	2	2	7	L5	x	
Muhlenbergia mexicana var. *mexicana*	common muhly grass	2	2	0	1	5	L5	x	
Nabalus altissimus	tall wood lettuce	1	3	2	2	8	L5	x	
Oenothera biennis	common evening-primrose	1	1	1	1	4	L5	x	
Oxalis dillenii	deflexed yellow wood-sorrel	3	1	0	1	5	L5	x	
Oxalis stricta	common yellow wood-sorrel	1	1	1	1	4	L5	x	
Parthenocissus inserta	thicket creeper	1	2	0	1	4	L5	x	
Persicaria lapathifolia	pale smartweed	2	1	4	0	7	L5	x	
Physalis heterophylla	clammy ground-cherry	2	2	3	3	10	L5	x	
Plantago rugelii	red-stemmed plantain	1	2	0	1	4	L5	x	
Podophyllum peltatum	May-apple	1	3	3	2	9	L5	x	
Populus balsamifera	balsam poplar	1	2	3	2	8	L5	x	
Populus deltoides	cottonwood	1	1	4	1	7	L5	x	
Populus tremuloides	trembling aspen	1	3	1	3	8	L5	x	
Populus x *jackii*	Jack's poplar	3	2	4	1	10	L5	x	
Prunus serotina	black cherry	1	2	0	2	5	L5	x	
Prunus virginiana var. *virginiana*	choke cherry	1	2	0	1	4	L5	x	
Ranunculus abortivus	kidney-leaved buttercup	1	3	1	2	7	L5	x	
Ranunculus sceleratus	cursed crowfoot	2	2	3	2	9	L5	x	
Rhus typhina	staghorn sumach	1	1	2	2	6	L5	x	
Ribes cynosbati	prickly gooseberry	1	3	2	2	8	L5	x	
Rorippa palustris ssp. *palustris*	Fernald's marsh cress	2	2	4	2	10	L5	x	
Rubus allegheniensis	common blackberry	1	3	0	1	5	L5	x	
Rubus idaeus ssp. *strigosus*	wild red raspberry	1	1	0	1	3	L5	x	
Rubus occidentalis	wild black raspberry	1	1	0	1	3	L5	x	
Rubus odoratus	purple-flowering raspberry	2	2	2	2	8	L5	x	

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Salix eriocephala	narrow heart-leaved willow	1	1	3	1	6	L5	x	
Salix interior	sandbar willow	1	1	5	2	9	L5	x	
Sambucus canadensis	common elderberry	1	3	2	2	8	L5	x	
Sanguinaria canadensis	bloodroot	1	3	0	3	7	L5	x	
Silphium perfoliatum	cup-plant	4	1	3	2	10	L5	x	
Smilax herbacea	carrion-flower	2	3	2	2	9	L5	x	
Solidago altissima	tall goldenrod	1	2	0	0	3	L5	x	
Solidago caesia	blue-stemmed goldenrod	1	2	4	2	9	L5	x	
Solidago canadensis var. *canadensis*	Canada goldenrod	1	2	0	1	4	L5	x	
Solidago flexicaulis	zig-zag goldenrod	1	1	3	2	7	L5	x	
Solidago gigantea	late goldenrod	1	1	1	1	4	L5	x	
Symphyotrichum cordifolium	heart-leaved aster	1	1	0	2	4	L5	x	
Symphyotrichum ericoides var. *ericoides*	heath aster	1	1	2	1	5	L5	x	
Symphyotrichum lanceolatum var. *lanceolatum*	panicled aster	1	2	3	1	7	L5	x	
Symphyotrichum lateriflorum var. *lateriflorum*	calico aster	1	2	3	2	8	L5	x	
Symphyotrichum novae-angliae	New England aster	1	2	2	1	6	L5	x	
Thalictrum dioicum	early meadow rue	1	3	3	2	9	L5	x	
Thalictrum pubescens	tall meadow rue	1	3	2	2	8	L5	x	
Toxicodendron radicans var. *rydbergii*	poison ivy (shrub form)	1	2	0	2	5	L5	x	
Ulmus americana	white elm	1	4	0	2	7	L5	x	
Verbena urticifolia	white vervain	1	2	2	2	7	L5	x	
Viola pubescens var. *scabriuscula*	smooth yellow violet	3	4	1	2	10	L5	x	
Viola sororia var. *sororia*	common blue violet	1	2	0	2	5	L5	x	
Vitis riparia	riverbank grape	1	1	0	0	2	L5	x	
Xanthium strumarium	clotbur	2	1	4	0	7	L5	x	
Botrychium oneidense	blunt-lobed grape fern	5	ns	ns	ns	5	(LX)		x
Eurybia schreberi	Schreber's aster	5	ns	5	ns	10	(LX)		x
Gillenia trifoliata	Indian physic	5	5	4	4	18	(LX)		x
Acer platanoides	Norway maple	1	ns	ns	ns	1	L+	x	
Aesculus hippocastanum	horse-chestnut	2	ns	ns	ns	2	L+	x	
Agropyron cristatum	crested wheat-grass	5	ns	ns	ns	5	L+	x	
Agrostis gigantea	redtop	1	ns	ns	ns	1	L+	x	
Ailanthus altissima	tree-of-heaven	3	ns	ns	ns	3	L+	x	
Alliaria petiolata	garlic mustard	1	ns	ns	ns	1	L+	x	
Arctium minus	common burdock	1	ns	ns	ns	1	L+	x	
Artemisia biennis	biennial wormwood	3	ns	ns	ns	3	L+	x	
Artemisia vulgaris	common mugwort	3	ns	ns	ns	3	L+	x	
Berberis thunbergii	Japanese barberry	2	ns	ns	ns	2	L+	x	
Berberis vulgaris	common barberry	3	ns	ns	ns	3	L+	x	
Betula pendula	European white birch	2	ns	ns	ns	2	L+	x	

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		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Bromus inermis	smooth brome grass	1	ns	ns	ns	1	L+	x	
Campanula rapunculoides	creeping bellflower	2	ns	ns	ns	2	L+	x	
Cardamine impatiens	balsam bitter cress	3	ns	ns	ns	3	L+	x	
Celastrus orbiculatus	oriental bittersweet	2	ns	ns	ns	2	L+	x	
Cenchrus longispinus	sand-bur	5	ns	ns	ns	5	L+	x	
Chelidonium majus	celandine	2	ns	ns	ns	2	L+	x	
Chenopodium album	lamb's quarters	1	ns	ns	ns	1	L+	x	
Chenopodium glaucum	oak-leaved goosefoot	3	ns	ns	ns	3	L+	x	
Cichorium intybus	chicory	1	ns	ns	ns	1	L+	x	
Convallaria majalis	lily-of-the-valley	1	ns	ns	ns	1	L+	x	
Convolvulus arvensis	field bindweed	2	ns	ns	ns	2	L+	x	
Cynanchum rossicum	dog-strangling vine	1	ns	ns	ns	1	L+	x	
Dactylis glomerata	orchard grass	1	ns	ns	ns	1	L+	x	
Daucus carota	Queen Anne's lace	1	ns	ns	ns	1	L+	x	
Digitaria ischaemum	smooth crab grass	3	ns	ns	ns	3	L+	x	
Echinochloa crus-galli	barnyard grass	2	ns	ns	ns	2	L+	x	
Echium vulgare	viper's bugloss	2	ns	ns	ns	2	L+	x	
Elymus repens	quack grass	1	ns	ns	ns	1	L+	x	
Eragrostis minor	little love grass	3	ns	ns	ns	3	L+	x	
Erucastrum gallicum	dog mustard	3	ns	ns	ns	3	L+	x	
Euonymus alatus	winged spindle-tree	3	ns	ns	ns	3	L+	x	
Euonymus europaeus	European spindle-tree	2	ns	ns	ns	2	L+	x	
Euphorbia cyparissias	cypress spurge	3	ns	ns	ns	3	L+	x	
Euphorbia hirta	asthma spurge	5	ns	ns	ns	5	L+	x	
Euphorbia virgata	Russian leafy spurge	5	ns	ns	ns	5	L+	x	
Fallopia japonica var. *japonica*	Japanese knotweed	2	ns	ns	ns	2	L+	x	
Festuca filiformis	hair fescue	4	ns	ns	ns	4	L+	x	
Festuca rubra ssp. *rubra*	red fescue	1	ns	ns	ns	1	L+	x	
Festuca trachyphylla	hard fescue	3	ns	ns	ns	3	L+	x	
Ficaria verna	lesser celandine	4	ns	ns	ns	4	L+	x	
Forsythia viridissima	forsythia	3	ns	ns	ns	3	L+	x	
Galinsoga quadriradiata	hairy galinsoga	4	ns	ns	ns	4	L+	x	
Geum urbanum	urban avens	1	ns	ns	ns	1	L+	x	
Glechoma hederacea	creeping Charlie	1	ns	ns	ns	1	L+	x	
Hypericum perforatum	common St. John's-wort	1	ns	ns	ns	1	L+	x	
Iris pseudacorus	yellow flag	2	ns	ns	ns	2	L+	x	
Juglans ailantifolia	Japanese walnut	4	ns	ns	ns	4	L+	x	
Juniperus x *pfitzeriana*	pfitzer juniper	3	ns	ns	ns	3	L+	x	
Lactuca serriola	prickly lettuce	1	ns	ns	ns	1	L+	x	

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		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Leonurus cardiaca ssp. *cardiaca*	motherwort	1	ns	ns	ns	1	L+	x	
Ligustrum vulgare	privet	2	ns	ns	ns	2	L+	x	
Linaria vulgaris	butter-and-eggs	2	ns	ns	ns	2	L+	x	
Linum usitatissimum	common flax	5	ns	ns	ns	5	L+	x	
Lonicera morrowii	Morrow's honeysuckle	1	ns	ns	ns	1	L+	x	
Lonicera tatarica	Tartarian honeysuckle	1	ns	ns	ns	1	L+	x	
Lonicera x *bella*	shrub honeysuckle	1	ns	ns	ns	1	L+	x	
Lycopus europaeus	European water-horehound	2	ns	ns	ns	2	L+	x	
Lysimachia nummularia	moneywort	2	ns	ns	ns	2	L+	x	
Lythrum salicaria	purple loosestrife	1	ns	ns	ns	1	L+	x	
Malus baccata	Siberian crab-apple	4	ns	ns	ns	4	L+	x	
Malva neglecta	common mallow	2	ns	ns	ns	2	L+	x	
Matricaria discoidea	pineappleweed	2	ns	ns	ns	2	L+	x	
Medicago lupulina	black medick	1	ns	ns	ns	1	L+	x	
Medicago sativa ssp. *sativa*	alfalfa	2	ns	ns	ns	2	L+	x	
Melilotus albus	white sweet clover	1	ns	ns	ns	1	L+	x	
Morus alba	white mulberry	2	ns	ns	ns	2	L+	x	
Muscari botryoides	grape hyacinth	4	ns	ns	ns	4	L+	x	
Myosotis scorpioides	true forget-me-not	1	ns	ns	ns	1	L+	x	
Narcissus pseudonarcissus	daffodil	3	ns	ns	ns	3	L+	x	
Pastinaca sativa	wild parsnip	2	ns	ns	ns	2	L+	x	
Pilosella x *floribunda*	smoothish hawkweed	3	ns	ns	ns	3	L+	x	
Plantago lanceolata	English plantain	1	ns	ns	ns	1	L+	x	
Plantago major	common plantain	1	ns	ns	ns	1	L+	x	
Poa compressa	flat-stemmed blue grass	1	ns	ns	ns	1	L+	x	
Poa nemoralis	woodland spear grass	2	ns	ns	ns	2	L+	x	
Poa pratensis ssp. *pratensis*	Kentucky blue grass	1	ns	ns	ns	1	L+	x	
Polygonum achoreum	striate knotweed	3	ns	ns	ns	3	L+	x	
Populus x *canadensis*	Carolina poplar	2	ns	ns	ns	2	L+	x	
Potentilla inclinata	lintermediate cinquefoil	3	ns	ns	ns	3	L+	x	
Potentilla recta	sulphur cinquefoil	1	ns	ns	ns	1	L+	x	
Prunus avium	mazzard cherry	2	ns	ns	ns	2	L+	x	
Prunus tomentosa	Manchu cherry	3	ns	ns	ns	3	L+	x	
Ranunculus repens	creeping buttercup	2	ns	ns	ns	2	L+	x	
Rhamnus cathartica	common buckthorn	1	ns	ns	ns	1	L+	x	
Rumex acetosella	sheep sorrel	3	2	5	4	14	L+	x	
Rumex obtusifolius	bitter dock	2	ns	ns	ns	2	L+	x	
Salix x *fragilis*	crack willow	1	ns	ns	ns	1	L+	x	
Saponaria officinalis	bouncing Bet	2	ns	ns	ns	2	L+	x	

Appendix 2: Lambton Park Flora Species									
		Local Occur.	Popn. Trend	Hab. Dep.	Sens. Dev.	Total Score	Rank TRCA	Present at site	
Scientific Name	Common Name	1-5	1-5	0-5	0-5	2-20	(Apr 2015)	2015	historic
Schedonorus arundinaceus	tall fescue	2	ns	ns	ns	2	L+	x	
Schedonorus pratensis	meadow fescue	1	ns	ns	ns	1	L+	x	
Scilla siberica	Siberian squill	3	ns	ns	ns	3	L+	x	
Scrophularia nodosa	European figwort	4	ns	ns	ns	4	L+	x	
Securigera varia	crown vetch	1	ns	ns	ns	1	L+	x	
Setaria faberi	giant foxtail	3	ns	ns	ns	3	L+	x	
Setaria pumila ssp. *pumila*	yellow foxtail	2	ns	ns	ns	2	L+	x	
Setaria viridis	green foxtail	2	ns	ns	ns	2	L+	x	
Silene latifolia	evening lychnis	2	ns	ns	ns	2	L+	x	
Silene vulgaris	bladder campion	2	ns	ns	ns	2	L+	x	
Solanum dulcamara	bittersweet nightshade	1	ns	ns	ns	1	L+	x	
Solanum lycopersicum	tomato (incl. cherry tomato)	4	ns	ns	ns	4	L+	x	
Sonchus arvensis ssp. *arvensis*	glandular perennial sow-thistle	1	ns	ns	ns	1	L+	x	
Sorbus aucuparia	European mountain-ash	1	ns	ns	ns	1	L+	x	
Syringa vulgaris	common lilac	1	ns	ns	ns	1	L+	x	
Taraxacum officinale	dandelion	1	ns	ns	ns	1	L+	x	
Tilia cordata	little-leaf linden	2	ns	ns	ns	2	L+	x	
Torilis japonica	hedge-parsley	2	ns	ns	ns	2	L+	x	
Tragopogon pratensis	meadow goat's beard	2	ns	ns	ns	2	L+	x	
Trifolium aureum	hop-clover	4	ns	ns	ns	4	L+	x	
Trifolium pratense	red clover	1	ns	ns	ns	1	L+	x	
Trifolium repens	white clover	1	ns	ns	ns	1	L+	x	
Tripleurospermum inodorum	scentless chamomile	2	ns	ns	ns	2	L+	x	
Tulipa x *hybrida*	garden tulip	4	ns	ns	ns	4	L+	x	
Tussilago farfara	coltsfoot	1	ns	ns	ns	1	L+	x	
Ulmus pumila	Siberian elm	2	ns	ns	ns	2	L+	x	
Verbascum thapsus	common mullein	1	ns	ns	ns	1	L+	x	
Verbena bracteata	creeping vervain	5	ns	ns	ns	5	L+	x	x
Viburnum opulus ssp. *opulus*	European highbush cranberry	1	ns	ns	ns	1	L+	x	
Vicia cracca	cow vetch	1	ns	ns	ns	1	L+	x	
Acer negundo	Manitoba maple	1	ns	ns	2	3	L+?	x	
Agrostis stolonifera	creeping bent grass	1	ns	ns	ns	1	L+?	x	
Eragrostis frankii	Frank's love grass	5	2	5	3	15	L+?	x	
Lepidium densiflorum	common pepper-grass	3	ns	ns	ns	3	L+?	x	
Persicaria hydropiper	water-pepper	2	ns	ns	ns	2	L+?	x	
Phalaris arundinacea	reed canary grass	1	ns	ns	ns	1	L+?	x	

Appendix 2: Lambton Park Flora Species

Scientific Name	Common Name	Local Occur. 1-5	Popn. Trend 1-5	Hab. Dep. 0-5	Sens. Dev. 0-5	Total Score 2-20	Rank TRCA (Apr 2015)	Present at site 2015	Present at site historic
Campanula rotundifolia	harebell	5	5	4	5	19	pL1	xpr	x
Hypericum prolificum	shrubby St. John's-wort	5	5	5	4	19	pL1	xp	
Panicum virgatum	switch grass	3	2	5	5	15	pL3	xpr	
Penstemon hirsutus	hairy beard-tongue	4	4	4	3	15	pL3	xp	
Verbena stricta	hoary vervain	3	5	4	4	16	pL3	xpr	
Acer saccharinum	silver maple	1	2	5	3	11	pL4	xp	
Tsuga canadensis	eastern hemlock	1	4	3	5	13	pL4	xp	
Asclepias tuberosa	butterfly milkweed	5	2	5	5	17	pLX	xp	
Acer tataricum ssp. *ginnala*	Amur maple	3	ns	ns	2	5	pL+	xpr	
Bouteloua curtipendula	side-oats grama	5	ns	ns	ns	5	pL+	xp	
Opuntia humifusa var. *humifusa*	eastern prickly-pear	5	ns	ns	ns	5	pL+	xp	
Rhus aromatica	fragrant sumach	4	ns	ns	ns	4	pL+	xp	

LEGEND:

L1-L3: of regional conservation concern	L+: exotic	pr: regenerating / established, but from planted population (not original)
L4: of conservation concern in urban areas	L+?: uknown origin but probably exotic	
L5: generally secure	(L.): present only historically at site	ns: criterion not scored for this species
LX: extirpated (locally extinct)	p: present only as planted specimens	cf: identification not confirmed

Common Name	Scientific Name	Code	1996	1997	1999	2015	LO	PTn	PTt	AS	PIS	StD	HD	+	TS	L-Rank
Survey Species: species for which the TRCA protocol effectively surveys.																
Birds																
American redstart	*Setophaga ruticilla*	AMRE				1	0	3	2	3	1	4	2	0	15	**L3**
belted kingfisher	*Ceryle alcyon*	BEKI				1	0	3	2	2	1	2	2	0	12	**L4**
blue-grey gnatcatcher	*Polioptila caerulea*	BGGN				2	0	1	1	3	1	3	1	0	10	**L4**
eastern kingbird	*Tyrannus tyrannus*	EAKI				3	0	4	2	2	1	3	1	0	13	**L4**
great-crested flycatcher	*Myiarchus crinitus*	GCFL				1	0	2	2	3	1	2	2	0	12	**L4**
great-horned owl	*Bubo virginianus*	GHOW				1	0	2	2	2	2	2	1	0	11	**L4**
grey catbird	*Dumetella carolinensis*	GRCA				7	0	3	2	1	1	3	1	0	11	**L4**
hairy woodpecker	*Picoides villosus*	HAWO				2	0	2	2	3	1	2	2	0	12	**L4**
indigo bunting	*Passerina cyanea*	INBU				1	0	3	2	1	1	4	2	0	13	**L4**
northern flicker	*Colaptes auratus*	NOFL				1	0	4	2	1	1	3	2	0	13	**L4**
red-eyed vireo	*Vireo olivaceus*	REVI				1	0	1	2	2	1	3	1	0	10	**L4**
rose-breasted grosbeak	*Pheucticus ludovicianus*	RBGR				1	0	3	2	3	1	3	2	0	14	**L4**
white-breasted nuthatch	*Sitta carolinensis*	WBNU				1	0	2	2	3	1	2	2	0	12	**L4**
American goldfinch	*Carduelis tristis*	AMGO				x	0	3	2	1	1	1	0	0	8	**L5**
American robin	*Turdus migratorius*	AMRO				x	0	1	2	1	1	1	0	0	6	**L5**
Baltimore oriole	*Icterus galbula*	BAOR				x	0	4	2	1	1	1	0	0	9	**L5**
black-capped chickadee	*Parus atricapillus*	BCCH				x	0	1	2	1	1	1	0	0	6	**L5**
blue jay	*Cyanocitta cristata*	BLJA				x	0	3	2	1	1	1	0	0	8	**L5**
brown-headed cowbird	*Molothrus ater*	BHCO				x	0	3	2	1	1	1	0	0	8	**L5**
cedar waxwing	*Bombycilla cedrorum*	CEDW				x	0	1	2	1	1	1	0	0	6	**L5**
chipping sparrow	*Spizella passerina*	CHSP				x	0	3	2	1	1	2	0	0	9	**L5**
common grackle	*Quiscalus quiscula*	COGR				x	0	4	2	1	1	1	0	0	9	**L5**
downy woodpecker	*Picoides pubescens*	DOWO				x	0	1	2	1	1	1	1	0	7	**L5**
mallard	*Anas platyrhynchos*	MALL				x	0	1	2	1	2	1	0	0	7	**L5**
mourning dove	*Zenaida macroura*	MODO				x	0	2	2	1	1	0	0	0	6	**L5**
northern cardinal	*Cardinalis cardinalis*	NOCA				x	0	1	2	1	1	2	1	0	8	**L5**
northern mockingbird	*Mimus polyglottos*	NOMO				1	0	2	0	1	1	1	1	0	6	**L5**
orchard oriole	*Icterus spurius*	OROR				1	0	3	1	1	1	1	0	0	7	**L5**
red-winged blackbird	*Agelaius phoeniceus*	RWBL				x	0	3	2	1	1	2	0	0	9	**L5**
song sparrow	*Melospiza melodia*	SOSP				x	0	3	2	1	1	2	0	0	9	**L5**
warbling vireo	*Vireo gilvus*	WAVI				x	0	1	2	1	1	2	1	0	8	**L5**
yellow warbler	*Setophaga petechia*	YWAR				x	0	3	2	1	1	2	0	0	9	**L5**
European starling	*Sturnus vulgaris*	EUST				x	0	4								**L+**
house sparrow	*Passer domesticus*	HOSP				x	1	4								**L+**
Herpetofauna																
American toad	*Anaxyrus americanus*	AMTO				1	0	3	2	1	4	4	0	0	14	**L4**

Common Name	Scientific Name	Code	1996	1997	1999	2015	LO	PTn	PTt	AS	PIS	StD	HD	+	TS	L-Rank
Incidental Species: species that are reported on as incidental to the TRCA protocol.																
Mammals																
eastern chipmunk	*Tamias striatus*	EACH				1	0	2	2	2	3	3	1	0	13	**L4**
grey squirrel	*Sciurus carolinensis*	GRSQ				x	0	2	2	1	3	0	0	0	8	**L5**
raccoon	*Procyon lotor*	RACC				x	0	2	2	1	3	0	1	0	9	**L5**
Herpetofauna																
smooth greensnake	*Opheodrys vernalis*	SGSN	(1)	(1)	(2)	1	4	2	2	1	4	5	2	1	21	**L2**
Dekay's brownsnake	*Storeria dekayi*	BRSN				2	1	2	2	1	3	4	0	0	13	**L4**
eastern gartersnake	*Thamnophis sirtalis sirtalis*	EAGA				2	0	2	2	1	3	3	0	0	11	**L4**

LEGEND

LO = local occurrence	PIS = Patch Isolation Sensitivity
PTn = Continental population trend	STD = sensitivity to development
PTt = TRCA population trend	+ = additional points
HD = habitat dependence	TS = total score
AS = area sensitivity	L-rank = TRCA Rank, October, 2014