High Park – Terrestrial Biological Inventory

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1.0 Introduction

In 2018 the Toronto and Region Conservation Authority (TRCA) conducted a biological inventory of High Park at the request of City of Toronto Parks and Forestry. The work was undertaken to update existing natural heritage information for the area, which is extensive (going back more than a century) but sporadic. This work involved partial flora and fauna inventories in 2008 and 2000 respectively by the TRCA. The natural system components assessed in 2018 were vegetation communities, vascular plants (flora), birds, and frogs. Incidental observations of other fauna were also recorded. The information is of value for site management planning: particularly the ongoing prescribed burns and other restoration work; and also for biodiversity assessment at a broader regional level.

This report summarizes the biological inventory findings to:

- Characterize the terrestrial natural heritage features of High Park
- Describe how the natural heritage features of High Park contribute to the regional Terrestrial Natural Heritage System (TNHS), and support regional biodiversity
- Outline the changes observed since the previous biological inventory
- Highlight the status and progress of restoration activities in the provincially-significant oak woodland and savannah communities that have been ongoing since the 1990s
- Assess any other current activities or processes that are beneficial with respect to protecting/ or enhancing the natural system
- Identify current risks to the quality of the habitat on the property and recommend actions to reduce or eliminate them

The primary question that the inventory addresses is:

"How does the area surveyed *at The High Park Study Area fit within the regional natural heritage system, and how should its contribution to this system be protected and maximized?"*

An important underlying message is that the integrity and health of the natural system are measured at the regional scale; individual sites must be considered in this larger system context.

1.1 The TRCA 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, the most recent landscape analysis (2013) shows that only 17.8% forest (including successional) 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 health 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. As additional stresses are exerted on the natural system many species become even rarer until they are lost, or at imminent risk of being lost. Reductions in the natural heritage system reduce biodiversity and the ecosystem services that sustain human society.

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 culminated in the Terrestrial Natural Heritage System Strategy (TNHSS) (TRCA 2007a), which was approved in 2008, and has been under implementation since that time. The aim is to protect elements of the natural system (vegetation communities, flora and fauna species) *before* they become rare, and to promote greater ecological function of the system as a whole. This proactive approach is needed; by the time a community or species has become rare, irreversible damage has already occurred. A healthy natural system capable of supporting regional biodiversity in the long term is the goal. Targets, both short and long-term (100 years), provide direction for planning at all scales (TRCA 2007a, TRCA 2007b).

The systems approach applied in TNHSS development incorporated data from a range of scales. Assessments of the components of biodiversity similarly consider multiple scales, ranging from the region as a whole, through the watersheds and smaller landscape habitat elements, to site level communities and species.

2.0 Study Area Description and History

High Park consists of 161 hectares of public land owned by the City of Toronto located along the Lake Ontario waterfront and partly within the lower reaches of the Humber River watershed in the City of Toronto (Map 1). The western part of the park drains into Wendigo Creek and Grenadier Pond (Map 2), the outflow of which has been diverted to the Humber since the transportation corridor was constructed across the lakeshore to the south (Varga 1989). The larger eastern part of the park is in the small watershed of Spring Creek which drains directly into Lake Ontario. It is bounded by Bloor Street West to the north, Parkside Drive to the east, The Queensway to the south and Ellis Park Road/Ellis Avenue/Grenadier Pond to the west. High Park is isolated from the nearest natural systems, namely the Humber Marshes to the west and some restored areas adjacent to Sunnyside Beach on the Lake Ontario Shoreline, due to it being entirely surrounded by established (>100 years old) urban development and transportation corridors. A partial exception is that there is a tenuous connection to Catfish Pond and its associated natural areas immediately to the west across Ellis Avenue, which has moderate traffic. The distance from Catfish Pond to the Humber Marshes is about 670 m. The vast majority of High Park (146.5 ha) was surveyed in 2018, with the exception of the south and west shores of Grenadier Pond.

The physiography of High Park shows it to be predominantly glaciolacustrine sand plain interrupted by several ravines. High Park is part of the Lake Iroquois sand plain; the specific section of the Lake Iroquois sand plain in West Toronto is very well-distinguished by its soils and vegetation and is known as the Humber Plains. Some of the sand plain grades into beveled till plain, especially in the south and east of the park. The two main ravines

are Wendigo Creek and Grenadier Pond to the west, and Spring Creek to the east. Spring Creek has several small tributary ravines entering it, mostly along the northeast and southwest parts of its course.

Grenadier Pond itself was originally a bay of Lake Ontario, separated from the lake by a narrow baymouth bar similar to the situation at Frenchman's Bay in Pickering (Figure 1). The two smaller ponds at the south end of Spring Creek (Upper and Lower Duck Pond) were also originally part of the lagoon/coastal marsh complex.

Figure 1. Grenadier Pond in its original state with baymouth bar in the background. Artist W.T. Wood, date unknown (private collection: Gavin Miller).

The soils at High Park are mostly sandy loams, with some organic deposits in wetlands particularly at the north end of Grenadier Pond. Because the area has been so long urbanized, original soil survey information is limited. However, other areas of the Iroquois sand plain that have soil survey information are characterized by Fox Sandy Loam, a well-drained, dry fine sandy soil. Soil sampling done during field work confirmed the presence of intact original soils which fit the description of Fox Sandy Loam in most of High Park.

The park lies clearly within the Carolinian zone of southern Ontario, characterized on a broad scale by deciduous forest. Southern elements are prominent in High Park's flora, but a few northern species from the Great Lakes – St. Lawrence mixed forest zone are associated with cool ravine slopes and seepage areas.

The history of High Park is relatively well-documented, and it is a major Toronto landmark.

In pre-European times, the lands that now comprise High Park were most likely oak savannah and woodland on the tablelands, closed-canopy forests in the ravines, and wetlands along the coastal embayment that became Grenadier Pond. Indigenous peoples burned the savannahs and woodlands as part of their land management to provide habitat for both game and edible plants such as berries (High Park Nature 2017). The nearby Humber Valley was a major Indigenous trading route (the Toronto Carrying Place) with settlements as close as Baby Point on the Humber. It has been argued that the original oak savannahs in southern Ontario, including High Park, may date back 5000 years (Riley 2013).

Permanent European settlement began in Toronto in the late 18th century, and High Park was settled by Toronto's first architect and civil engineer, John Howard. In 1837 he built an estate on these lands: Colborne Lodge, which is still on the site and one of Toronto's oldest houses. He intended to set up a sheep farm. A small amount of farming did occur, located on what is now the formal Hillside Gardens area on the east side of Grenadier Pond (High Park Nature 2017). There is not much evidence of historical agricultural disturbance in the natural areas of the park, based on the intact soils and old-growth vegetation.

Howard converted his estate into High Park by donating it to the City of Toronto between the 1870s and 1890s, with some additional land parcels added. Around this time, the rapidly expanding urban area of Toronto began to impinge on the neighbourhood, and the area was thoroughly urban by the 1920s. The lakeshore bar was altered starting in 1853 and quickly became the corridor for first the railway and Lakeshore Boulevard, and then the Queen Elizabeth Way by the 1950s (Gartner-Lee 1995). This separated Grenadier Pond from Lake Ontario and raised its water level.

Meanwhile, the surrounding urban matrix affected the High Park ecosystems. It has been a major recreational destination since the park's inception: for example, the small zoo in the park was inaugurated in 1893 (Friends of High Park Zoo 2018). The urbanization of the park's watershed (i.e. Wendigo and Spring Creeks) resulted in heavy nutrient loading and street runoff including flash flooding and hydrocarbon contaminants which affected Grenadier Pond and the other wetlands in the park (Gartner-Lee 1995).

Some of the park's upland areas, including oak savannah tableland, were manicured, while the remainder were subjected to subtler urban impacts: notably fire suppression which allowed for dense undergrowth (including invasive species) to move into the oak savannahs. Trampling also became severe. A major milestone in the decline of the park's ecosystems was an intensified regime of herbicide and mowing that occurred in 1926 (Riley 2013).

High Park has been recognized for its high ecological quality: especially wildflower diversity, for 200 years (Goldie 1819). John Howard himself stipulated in his will that the park be kept in a natural condition (thus distinguishing it from Frederick Law Olmsted's approach to similar city parks in the United States) (High Park Nature 2017). The more recent awareness of its significance began in the 1970s (in conjunction with the broader environmental movement), resulting in its designation as a provincially-significant Area of Natural and Scientific Interest (ANSI) in 1989 (Varga 1989). It was also designated an Environmentally Significant Area (ESA). In the 1990s, the City of Toronto engaged Steve Apfelbaum to help develop a restoration plan for the park, including the return of ground fires (Apfelbaum 1993). The first prescribed burn took place in the spring of 1997 and the program continues to this day (Riley 2013).

3.0 Inventory Methodology

A biological inventory 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). The scoring and ranking of vegetation communities, flora and fauna to generate local conservation concern L-ranks (L1 to L5) is a key underlying process that supports this field work (Section 3.2; TRCA 2017a).

3.1 Landscape Analysis

TRCA natural system characterization applies a regional landscape analysis approach that scales from the level of the individual habitat patch to the natural system region-wide (TRCA 2007c). Key to this is our understanding that a healthy natural system for the region requires more than a minimum quantity of area: it requires natural connections across the larger landscape; it requires multiple habitat types; it requires quality of habitat; it also requires protection from those external influences (matrix influences) that would degrade the habitat.

Base Mapping

The most recent available landscape analysis used 2013 ortho-rectified aerial photography (Table 5). Regional habitat patches were digitally mapped and characterized into the broadly-defined patch categories of forest, successional, wetland, meadow and dynamic (beach, dune, and bluff) using ArcMap GIS software. These broad classes should not be confused with vegetation communities. The latter incorporate a much finer level of data, collected in the field during botanical surveys (Section 3.3, 4.3).

Quality of Natural Cover

The quality metric used for each habitat patch essentially assesses the potential for the scored habitat patch to support components of biodiversity. Three criteria are used: *size* (ha), *shape* (edge-to-area ratio), and *matrix influence* (measure of the positive and negative impacts from surrounding land use) (TRCA 2007c). A weighted average of the scores for the criteria provides a total score, and total score ranges are used to assign local ranks of conservation concern, or L-ranks, as outlined in Table 1. Ranks are from L1 (highest quality) through L5 (poorest quality).

Both avian species richness (Kilgour 2003) and biodiversity quality (McKenzie *et al*. 2018) have been demonstrated to correlate with patch total score. Specifically, TRCA regional Species of Conservation Concern are more likely to be present in habitat patches of higher patch score/rank, as summarized in 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

Forest Interior

The forest interior metric evaluates the potential for a forest patch to support those species requiring isolation from human activity/influences. Sufficiently large patches of a sufficiently optimal shape provide interior forest. Measurements of the distance from any point in the habitat to the closest edge are used to categorize interior elements, where they exist. The lowest distance from edge category is 100–200m interior forest; increasingly deeper interior components are measured in additional 100m increments.

Quantity and Distribution

Periodic landscape analysis (every 4-6 years), assesses progress towards the regional quantity target of 30% natural cover (TRCA 2007a). This target results from modelling the minimum area that could support species of conservation concern over the long term.

3.2 Vegetation Community, Flora and Fauna Species Scoring and Ranking

Vegetation communities, native vascular plants (flora) and native vertebrate animals (fauna) are scored on a set of ecological sensitivity, habitat requirement and abundance criteria by TRCA biologists in order to assign conservation concern status ranks or L-ranks (local ranks of conservation concern). The process of scoring and ranking is described in detail in TRCA (2017a). Applied since 2001, the method also provides for updates of scores and ranks as additional, or more current, data becomes available for a given community or species.

Vegetation community scores and ranks are based on two criteria: *local occurrence* and the number of *geophysical requirements* or factors on which they depend (Table 2). Flora species are scored using four criteria: *local occurrence*, *population trend*, *habitat dependence*, and *sensitivity to* impacts associated with *development* (Table 3). Fauna species are scored on seven criteria: *local occurrence*, *local population trend*, *continent-wide population trend*, *habitat dependence*, *sensitivity to development*, *area-sensitivity*, and *patch isolation sensitivity* (Table 4). Species ranked from L1 through L3 are region-wide Species of Conservation Concern. Those ranked L4 are also of concern in the urban and urbanizing parts of the region. Species with an L-rank of L5 are currently not considered of concern as they are able to persist alongside urbanization. Some derive benefit from living in close proximity to human society; as a result, they are likely to be more common in urban than in rural areas.

Table 2. L-ranks and total score ranges for vegetation communities.

L-rank	Total Score Range	Conservation Concern Status
L1	8.5 - 10	Of high level of concern in TRCA jurisdiction due to rarity, stringent habitat needs, and/or threat to habitat
L2	6.5 - 8	Of regional concern; typically occurs in less-disturbed natural areas and under highly specific site conditions; at risk of decline/disappearance from the region
L3	5 - 6	Of regional concern; restricted in occurrence and/or requires specific site conditions; generally occurs in natural rather than cultural areas
L4	3 – 4.5	Generally secure in rural matrix; of conservation concern in the urban matrix
L5	1 – 2.5	Generally secure; not of conservation concern unless it contains sensitive species or other features such as old growth; contributes to natural cover
L+	n/a	Community defined by alien species (e.g. Scots pine plantation, buckthorn thicket). Contributes to natural cover

Table 3. L-ranks and total score ranges for flora.

L-rank	Total Score Range	Conservation Concern Status
L1	19 - 20	Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally
L2	17 - 18	Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally
L3	14 - 16	Able to withstand minor disturbance; generally secure in natural matrix; of concern regionally
L4	11 - 13	Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix
L5	2 - 10	Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix; may be of very localized concern in highly degraded areas
LX	n/a	Extirpated from our region with remote chance of rediscovery (i.e. natural populations). May be present in plantings. Presumably highly sensitive.
LH	n/a	Hybrid between two native species; not scored; a hybrid that is highly stable and behaves like a species (e.g. *Equisetum x nelsonii*) is not given this designation, but is scored and ranked
L+	n/a	Exotic; not native to the TRCA jurisdiction; includes hybrids between a native species and an exotic
L+?	n/a	Origin uncertain or disputed, i.e. may or may not be native

Table 4. L-ranks and total score ranges for fauna.

L-rank	Total Score Range	Conservation Concern Status
L1	25+	Of high level of concern in TRCA jurisdiction due to rarity, stringent habitat needs, and/or threat to habitat; greatly at risk of decline/disappearance from the region
L2	20 - 24	Of regional concern; typically occurs in less-disturbed natural areas and specific habitat(s); at risk of decline/disappearance from the region
L3	15 - 19	Of regional concern; restricted in occurrence and/or requires specific habitat(s); generally occurs in natural rather than cultural areas
L4	10 - 14	Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix
L5	2 - 9	Able to withstand disturbance; currently considered secure, including in the urban matrix
LX	n/a	Extirpated from the region
L+	n/a	Exotic; not native to the TRCA jurisdiction; exotic species are not scored

3.3 Vegetation Communities, Flora and Fauna Species Data Collection

Vegetation community, flora species and fauna species data were collected through field surveys. Surveys were carried out at the appropriate times of year to assess 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 2018 between the months of May through September (Table 5). This was the first time the park as a whole had received a detailed mapping of vegetation communities, although it has been botanized periodically for over 100 years (Varga 2008). There was a schematic description of communities in 2002 based on pre-existing data (City of Toronto 2002). A small area (10 ha) in the northeast corner of the park had vegetation mapping done in 2008. That year was also the last time any major mapping of flora species took place (Varga 2008, Kamstra 2009). Locating and identifying ephemeral flora species is a primary focus in the early spring months before the full closure of forest canopy occurs. The bulk of the vegetation community work is completed in the summer and fall months when characteristics of community and non-ephemeral flora species are at their peak. 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 on printouts of 2017 digital ortho-rectified photographs (ortho-photos) at a scale of 1:2000 and then digitized in ArcView.

Flora Species of Regional Concern (ranked L1 to L3) and Urban Concern (L4) were mapped as point data, and the approximate population size recorded for each point. A list of all other species observed was documented for the site. Plant species records available from historical records and compiled by Varga (2008) were added to

the species list. Historical records cited in Varga (2008) that were from the general area (e.g. "Humber Plains") but not specifically documented in High Park were excluded.

Table 5. Survey dates and effort for the 2013 landscape analysis and the 2018 biological inventories.

Survey Item	Survey Dates	Survey Effort
Patch / Landscape	2013: ortho-photos	21 hours
Vegetation Communities and Flora Species	2018: May 7, 8, 25; June 13; July 9, 16, 26; Aug 10, 11, 14, 16, 20, 27, 28, 29; Sept. 4, 5, 11, 13, 14	140 hours
Frogs and Nocturnal Spring Birds	2018: May 2	1.25 hours
Breeding Songbirds	2018: June 13, 14, 28	13.75 hours

The 2018 inventory was the first complete TRCA fauna inventory of High Park Study Area. Surveys were conducted on dates in early May, and June (Table 5). The May evening visit surveyed for breeding frog species of Regional Concern; they also incidentally surveyed for early-spring nocturnal bird species, including owls and American woodcock (*Scolopax minor*). Surveys in June point-mapped breeding bird territories for L1 - L4 Species of Regional and Urban Concern. Other breeding birds (L5 and exotic) were listed, but not mapped.

Breeding bird surveys were conducted at least twice during the breeding season (early and late June) to assess the breeding status of each mapped individual. Categorization of possible, probable or confirmed breeding status for birds followed the method used for Ontario Breeding Bird Atlas data collection (Cadman *et al*. 2007). All initial visits were completed by the end of the third week of June. Bird observations recorded prior to June 16 were validated through a second visit later in the season. A quality assurance process filtered out individuals likely to be migrants in transit, rather than on-site breeders.

In addition to the 2018 data, a few incidental records from 2009-2012 and 2017 have been included, and data from partial biological inventories in 2000 and 2008 have been referenced. Ten years is the threshold for inclusion of data as current under the protocol (TRCA 2007d).

4.0 Results and Discussion

The results of the 2013 landscape analysis and the 2018 biological inventory are the focus of this section, discussed to characterize the natural features of the site and to provide an integrated perspective of the site in the regional system context. Features on adjacent lands are noted where relevant to the discussion of the 2018 results. Note that species are referred to by common name; the scientific name is noted the first time a species is mentioned, and Appendices 1 through 3 list the species found by both common and scientific name.

4.1 Landscape Analysis Regional Context

The 2013 ortho-photography shows that 26% of the land area in the TRCA jurisdiction hosts natural cover, including 8% meadow. Historically, the region would have consisted of up to 95% forest cover with interspersed wetlands and very little meadow coverage; currently just 17.8% forest, successional habitat and wetland remains. Of the 74% non-natural cover 48% is urban and 26% is rural/agricultural.

The regional analysis of habitat patches shows an average patch quality across the TRCA jurisdiction of “fair” (L3) with an unbalanced distribution; forest and wetland cover is contained largely in the northern half of the TRCA jurisdiction, especially on the Oak Ridges Moraine (Map 3). The existing natural system stands below the 30% quantity target set for the region (TRCA 2007a). Fauna Species of Concern are also largely restricted to the northern part of the jurisdiction and generally absent from the urban matrix (Map 4).

4.2 Habitat Patch Findings for High Park

The landscape-scale analysis of High Park's habitat patches, considers it at a coarse level of detail but includes the context of the watershed and the region (Section 3.1).

4.2.1 Quantity of Natural Cover

The High Park Study Area surveyed in 2018 is 146.5 ha in size and contains 96.9 ha of natural habitat (i.e. forests, successional, meadow, wetland and dynamic communities). Thus, about 66% of High Park is currently natural cover. The remaining 34% (i.e. 49.6 ha) is heavily managed, consisting of manicured areas, sports fields, roads, parking lots, and buildings such as Colborne Lodge. These figures are derived from ground-truthed field work. The following landscape analysis is based upon region-wide air photo interpretation. In this analysis “forest” habitat includes any areas that seem to have high tree cover, not restricted necessarily to areas that are designated as forest vegetation types in ELC. At High Park this would include significant portions of oak woodland, some successional areas and wooded swamps that function at a landscape level as forest.

4.2.2 Quality of Natural Cover

Habitat Patch Size and Shape

The habitat patches east of Colborne Lodge Road and north of Centre Road, along with the patch to the west of West Road and down the east side of Grenadier Pond to the Hillside Gardens score “fair” for size (Map 5). The remaining natural cover in the park, fragmented into smaller habitat patches, score “poor” for and “very poor” for size. Patch shape tends to outscore patch size; many of the habitat patches have a compact rectangular shape that minimizes edge-to-area ratio and reduces edge effects. This is true of the patch west of the Forest School that scores “excellent”. Further patches at Hawk Hill, south of Wendigo Pond, south of the Parkside Drive entrance, surrounding the Lower Duck Pond, and between Colborne Lodge and Grenadier Pond score “good” for shape. Patches surrounding the Greenhouses and the lower reaches of Spring Creek score “fair”,

with the rest of the natural cover scoring "poor". The dominant shape score is "fair", constituting over half of the natural cover.

Forest Interior

There are five interior forest elements within the Study Area, all within the lowest interior category (100-200 m from edge). The two largest patches are to the north and south of the Allotment Gardens (Map 6).

Interior forest patches provide valuable ecological potential; they are a prerequisite for habitation by those species requiring isolation from edges and matrix influences. The extent to which that potential is realized will depend in part upon the composition of the forest, with native vegetation communities generally providing higher potential than plantation forests. Achievement of potential also requires protection of these interiors from activity, and maintenance of the size and quality of the buffers that allowed them to achieve the "interior" designation.

Habitat Patch Matrix Influence

High Park is located within an intensely urban matrix, which results in high levels of stress to the ecosystem (e.g. urban land use impacts such as heavy recreational use, soil disturbance, and intrusions of invasive plants and subsidized predators such as cats – see Section 4.5.2.2). Matrix scores are therefore generally "poor" or "very poor", with small patches of "fair" scores surrounding Lower Duck Pond (Maps 7 and 8).

Habitat Patch Total Score

The combination of size, shape and matrix influence yields a total score that provides an objective assessment of patch ecological potential: in particular, the potential to support species of regional conservation concern.

Most of High Park's habitat receives a "poor" total score (L4) (Map 9). The exception to this is an area of around 30 ha along Spring Creek, to the east of Colborne Lodge Road and between Spring Road to the north and Centre Road to the south, which attains a "fair" total score (L3).

4.3 Vegetation Community Findings for High Park

Examination of habitat at the finer level of detail provided by vegetation communities gives greater insight into current habitat patch value. High scoring habitat patches that are made up of native vegetation communities and vegetation communities of concern have the highest potential to support regional biodiversity and species of conservation concern.

4.3.1 Vegetation Community Representation

High Park has 71 different vegetation communities, 4 of which are found solely as an inclusion or complex within a larger community (Maps 10 and 12; Appendix 1). Of the vegetation communities, forests are the most diverse (34 types). However, other types are well-represented: 13 wetlands and 11 dynamic communities,

including the oak woodlands and savannahs. Just over half of the total natural cover (49.5 ha) is forest, while 30 ha (31%) is dynamic: largely oak woodland, savannah, and prairie (Maps 12 and 14). Wetland, aquatic, and meadow communities occupy a relatively small portion of High Park (Table 6).

Table 6. Summary of vegetation communities in High Park, 2018.

Class	Number of Types	Total Area (hectares)	% of Natural Cover	Average L-rank
Forest*	34	49.5	51	L4
Dynamic	11	30.1	31	L3
Successional	9	6.6	7	L5
Meadow	1	0.1	0.1	L5
Wetland	13	4.2	4	L4
Aquatic	3	6.4	7	L4
Developed (manicured, infrastructure)	n/a	49.6	n/a	n/a
Total	*71*	*96.9*	*100*	*L4*

**N.B. 22 of the forests originate from natural regeneration, while 12 are plantations (see below)*

Forests

Within High Park, there are 22 natural forest vegetation types and 12 plantations that together occupy 49.5 ha and account for 51% of the total natural cover (Map 12).

Natural forest stands are concentrated in the ravines of Spring and Wendigo Creeks, as well as on the sloping areas near the south end of the park between Colborne Lodge and the Queensway. These areas are somewhat moister and more sheltered than other parts of the park.

Mature mixed forests occur on the lower ravine slopes where the coolest conditions can be found. They cover 6.5 ha. Dry-Fresh White Pine – Oak Mixed Forest (FOM2-1) occupies a significant section of the Spring Creek ravine, especially the east side between Ridout Pond and Centre Road; there is also a smaller amount present in the north part of the Wendigo Creek ravine close to Bloor St. W. A small patch of Dry-Fresh Hemlock – Hardwood Mixed Forest (FOM3-1) lies adjacent to the allotment gardens west of Spring Creek and is subject to disturbance from them. Fresh-Moist Hemlock – Hardwood Mixed Forest (FOM6-2) is found on lower terraces of the north end of the Spring Creek ravine. Major species include red and white oak (*Quercus rubra* and *Q. alba*); white pine (*Pinus strobus*) with occasional red pine (*P. resinosa*); black cherry (*Prunus serotina*) and red maple (*Acer rubrum*). Hemlock (*Tsuga canadensis*) is co-dominant in the communities where it is named. Paper and yellow birch (*Betula papyrifera* and *B. alleghaniensis*) are occasional. Shrubs include round-leaved and grey dogwood (*Cornus rugosa* and *C. racemosa*), blackberry (*Rubus allegheniensis*), and beaked hazelnut (*Corylus*

cornuta). The invasive Norway maple (*Acer platanoides*) is prominent in the tree regeneration layer in places; as is winged spindletree (*Euonymus alata*). Where the ground vegetation isn't trampled, dominant species include wild sarsaparilla (*Aralia nudicaulis*), false Solomon's seals (*Maianthemum racemosum* and *M. stellatum*), big-leaved aster (*Eurybia macrophylla*) and sedges such as Pennsylvania sedge (*Carex pensylvanica*).

Deciduous forests are largely oak-dominated; they occur on the upper ravine slopes and grade into the oak woodland and savannah communities. At the moist end of this spectrum are Fresh-Moist Oak – Sugar Maple Deciduous Forest (FOD9-1), Fresh-Moist Oak – Lowland Maple Deciduous Forest (FOD9-2), and Fresh-Moist Oak – Birch Deciduous Forest (FOD9-B). These also roughly follow the courses of Spring and Wendigo Creeks. Red oak is dominant, with varying amounts of red, Norway and Manitoba maples. The understorey consists of Norway maple, choke cherry (*Prunus virginiana*), and sometimes witch hazel (*Hamamelis virginiana*). Herbaceous vegetation includes false Solomon's seals, Canada goldenrod (*Solidago canadensis*) in the higher-quality areas, and the invasive lily-of-the-valley (*Convallaria majalis*), garlic mustard (*Alliaria petiolata*), Himalayan balsam (*Impatiens glandulifera*), and hedge-parsley (*Torilis japonica*) in the degraded areas.

Dry to fresh oak forests of various types constitute the largest share of forests at High Park (covering about 25 ha). These include Dry-Fresh Red Oak Deciduous Forest (FOD1-1), Dry-Fresh Mixed Oak Deciduous Forest (FOD1-4), Dry-Fresh Oak – Hardwood Deciduous Forest (FOD2-4) and Dry-Fresh Oak – Sugar Maple Deciduous Forest (FOD5-3). Red oak dominates often in pure stands; or mixed with white and black oaks (*Quercus velutina*), black cherry, white ash, red maple, and occasionally sugar maple *(Acer saccharum* ssp. *saccharum*). Sugar maple is quite rare in High Park and originates at least in part from plantings. The understorey of the drier oak forests includes choke cherry, buckthorn (*Rhamnus cathartica*), poison ivy (*Toxicodendron rydbergii*), round-leaved dogwood, and numerous other shrub species. The ground layer has false Solomon's seals, wild sarsaparilla, and Canada goldenrod. These communities are where High Park's spring flora can be found: early meadow-rue (*Thalictrum dioicum*), white trillium (*Trillium grandiflorum*), wood anemone (*Anemone quinquefolia*), and wild geranium (*Geranium maculatum*). There are a couple of small patches of trout lily (*Erythronium americanum*) and May-apple (*Podophyllum peltatum*) not far from Colborne Lodge. Some of these oak forests are derived from overgrown oak woodland or savannah, especially where the canopy has a high proportion of black or white oak.

Disturbed deciduous forests occupy much of the bottomland of Spring and Wendigo Creeks along with some edge areas around buildings and roads. This is particularly true where ravines have been filled in and there is an embankment of fill instead of original soil: for example, at the northwestern corner of the park where the construction of Bloor Street filled in the Wendigo ravine, and along Parkside Drive to the northeast.. These are generally dominated by exotic species such as Norway maple, Siberian elm *(Ulmus pumila*), with crack willow (*Salix* x *fragilis*) and Manitoba maple on the bottomlands. Herbaceous species include garlic mustard, urban avens, hedge parsley, and Himalayan balsam. Representative vegetation types include Dry-Fresh Exotic Deciduous Forest (FOD4-e), Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3), and Fresh-Moist Norway Maple Deciduous Forest (FOD7-b). Such exotic-dominated forests occupy about 7 ha of High Park.

Plantation is a minor component of the park's vegetation, unlike the conservation lands that occur on the Oak Ridges Moraine. It is largely derived from horticultural landscape plantings that have been naturalized. The 12

plantation types cover about 5 ha, with the largest share going to Norway Maple – Conifer Mixed plantation (2.8 ha). Other than Norway maple, commonly-planted trees include Austrian pine (*Pinus nigra*), Scots pine (*P. sylvestris*), Norway and white spruce *(Picea abies* and *P. glauca*) and black locust (*Robinia pseudoacacia*). These areas tend to be weedy and exotic-dominated, although they show restoration potential given the intact soil horizons that are present. A large amount of planting seems to date from the early-to-mid 20th century; stumps of Austrian and Scots pine that were recently cut down for a restoration project showed an age of about 85 years: thus, roughly dating from the 1930s. This is consistent with the claim that a period of horticultural intensification and removal of natural vegetation occurred in the 1920s (Riley 2013). There are small areas of Restoration Deciduous Plantation (CUP1-A) and Mixed Plantation (CUP2-A) that are more recent.

Dynamic Communities

The "dynamic" communities (so called because they are the result of natural disturbance regimes such as periodic fire or erosion) cover a total of 30.1 ha. They include oak woodland, savannah, tallgrass prairie, and tiny amounts of barren and streambank. There are 8 types of woodland, savannah, and prairie represented at High Park, based on subtle variations in dominant species composition and amount of tree canopy cover. These are concentrated on the upper slopes and tableland in the northern two-thirds of the park (Map 12). Woodland, characterized by a canopy cover under 60% but over 35%, takes up the largest share, with 23.7 ha. Savannah, with a canopy cover of under 35% but over about 25%, covers 5.3 ha. Open tallgrass prairie (TPO1-1) covers just 1.1 ha. A century of fire suppression from the late 19th to late 20th century seems to have resulted in a reduction of the more open communities; photos and art from the early 20th century including paintings by the Group of Seven artist J.E.H. MacDonald seem to show a higher proportion of more open savannah as compared to woodland (Collins 1997).

The oak woodland types represented are Black Oak – White Oak Tallgrass Woodland (TPW1-1), Mixed Oak – Pine Tallgrass Woodland (TPW1-A), Red Oak Non-tallgrass Woodland (CUW1-2), and Black Oak Non-tallgrass Woodland (CUW1-2A). Savannah types include Black Oak Tallgrass Savannah (TPS1-1), Mixed Oak – Pine Tallgrass Savannah (TPS1-2A), and White Oak Non-tallgrass Savannah (CUS1-3A). The tallgrass types have a significant amount of tallgrass prairie grasses such as big bluestem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*) and/or associated forbs such as wild lupine (*Lupinus perennis*), while the non-tallgrass types mostly lack this element and have more generalist species in the herbaceous layer, such as Canada goldenrod.

Shrub and woody regeneration vary in the woodland and savannah communities. Those that have been undergoing restoration work have fewer shrubs and saplings, a higher proportion of which are native; while those that have had little or no restoration often have a thick, exotic-dominated understorey. Native understorey species include sassafras (*Sassafras albidum*), staghorn sumach (*Rhus typhina*), and black cherry. In the most intact communities, oak regeneration was observed (Figure 2) – an improvement over the situation described by Steve Apfelbaum in the 1990s (City of Toronto 2002). Degraded woodlands have abundant winged spindletree, common buckthorn, glossy buckthorn (*Frangula alnus*), honeysuckle (*Lonicera* x *bella*), oriental bittersweet (*Celastrus orbiculatus*) and aggressive native generalists such as riverbank grape (*Vitis riparia*).

Intact woodlands have patches of low shrubs, such as bush honeysuckle (*Diervilla lonicera*), snowberry (*Symphoricarpos albus* var. *albus*) and blueberries (*Vaccinium* spp.)

Figure 2. Oak savannah and woodland with black oak (*Quercus velutina*) regeneration now evident (photo: TRCA, 2018).

There is a very small area of Hard Fescue Sand Barren (SBO1-c) on a trampled part of Hawk Hill, and a couple of armoured portions of the banks of Wendigo and Spring Creeks near the storm water ponds are Rubble Treed Riparian Bank (BBT2-B) and Rubble Open Riparian Bank (BBO2-B).

Successional Communities

Successional areas occupy 6.6 ha, mostly in similar situations as the disturbed forests: edges and bottomlands. There is a total of 9 communities, but one of them – Exotic Successional Woodland CUW1-b) accounts for more than half the total area (3.9 ha) with much of this being in the floodplain of Spring Creek. Successional areas at High Park tend to have a high proportion of exotic species, such as Manitoba and Norway maple, horse chestnut (*Aesculus hippocastanum*), and white mulberry (*Morus alba*). Woody vines such as riverbank grape and thicket creeper (*Parthenocissus vitacea*) are prominent. Ground species include Himalayan balsam, dog-strangling vine (*Cynanchum rossicum*), garlic mustard, and hedge parsley.

Meadows

The only meadow found in High Park is a very small area of Native Forb Meadow (CUM1-A) located on the old toboggan run in the west part of the park. Here, the compacted, heavier soils make the area subtly distinct from the surrounding tallgrass vegetation. It is dominated by Jerusalem artichoke (*Helianthus tuberosus*), tall goldenrod (*Solidago altissima*), Canada goldenrod, panicled aster (*Symphyotrichum lanceolatum*), and New England aster (*S. novae-angliae*).

Wetlands

High Park has 13 wetland communities covering 4.2 ha. These occur in two topographic situations: the shorelines of Grenadier and the Duck Ponds; and seepage zones feeding into Spring and Wendigo Creeks.

The pond edges have areas of marsh with a few patches of Willow Mineral Deciduous Swamp (SWD4-1). Deep organic soils are found in the wetlands at the north end of Grenadier Pond. The marshes were predominantly cattail marshes until fairly recently, but common reed (*Phragmites australis* ssp*. australis*) has made inroads. Steve Varga did not report common reed in the 1980s (Varga 1989) but by 2003, it was moving into the north and southeast ends of Grenadier Pond (Varga 2008). By the time of the current (2018) inventory, reed marshes (Common Reed Organic Marsh (MAS3-9) and Common Reed Mineral Shallow Marsh (MAS2-a) occupied more territory (1.1 ha) than cattail marshes (0.6 ha). The cattail marshes themselves are degraded from the original wetland condition, being dominated by hybrid cattail (*Typha* x *glauca*) and having lost many of their original species due to water quality declines and shoreline alteration (Gartner-Lee 1995). One area of cattail marsh has expanded due to restoration work at the north end of Lower Duck Pond. Secondary species associated with the pond shoreline wetlands include crack and weeping willows (*Salix* x *fragilis* and *S*. x *sepulcralis*), sweet flag (*Acorus americanus*), panicled aster, beggar's-ticks (*Bidens* spp) and purple loosestrife (*Lythrum salicaria*). Where there is standing water, duckweed (*Lemna turionifera*) is abundant.

Seepage zones along the ravines are fed by ground water. The sandy soils of the Humber Plains allow for infiltration into the aquifer, and the ground water emerges where ravines cut into the plain. The ground water quality is higher and the disturbance lower than in the shoreline marshes (Gartner-Lee 1995). A small area of Canada Bluejoint Mineral Meadow Marsh (MAM2-1) persists in the lower part of the Spring Creek ravine east of the greenhouses. A small tributary of Spring Creek near the north end of the park has a linear Forb Mineral Meadow Marsh (MAM2-10). Seepage around Wendigo Creek feeds a Manitoba Maple Mineral Deciduous Swamp (SWD3-4). There are also small areas of Paper Birch – Poplar Mineral Deciduous Swamp (SWD4-3), Willow Organic Deciduous Swamp (SWD7-A), Red-osier Mineral Thicket Swamp (SWT2-5), and Reed Canary Grass Mineral Meadow Marsh (MAM2-2). Two patches of Japanese knotweed (*Reynoutria japonica*) were mapped near Spring Creek; these were designated as Japanese Knotweed Mineral Meadow Marsh (MAM2-h).

Trees and shrubs in the seepage wetlands include crack willow, red osier dogwood, common elderberry (*Sambucus canadensis*), and occasional mountain maple (*Acer spicatum*). Herbaceous plants include common horsetail (*Equisetum arvense*), Canada bluejoint (*Calamagrostis canadensis*), rice cut grass (*Leersia oryzoides*), fowl manna grass (*Glyceria striata*), panicled and swamp asters (*Symphyotrichum puniceum*), late goldenrod

(*Solidago gigantea*), and jewelweed (*Impatiens capensis*). Many of these wetlands are experiencing invasion by Himalayan balsam.

One wetland in the Wendigo Creek Valley, a Manitoba Maple Mineral Deciduous Swamp (SWD3-4), has vernal pooling.

Aquatic Communities

Those aquatic communities that were surveyed cover 6.4 ha. (The western and southern shore of Grenadier Pond was not surveyed in 2018). Vegetated aquatic communities are restricted to the near-shore areas of Grenadier Pond, where there is a Coontail Submerged Shallow Aquatic community (SAS1-A). The cover of aquatic macrophytes is high (roughly 50-65+%) but diversity is low. Coontail (*Ceratophyllum demersum*) dominates with some sago pondweed (*Stuckenia pectinata*) and a small amount of Eurasian water-milfoil (*Myriophyllum spicatum*). There are small areas (total 0.5 ha) of tuberous white water-lily (*Nymphaea odorata* ssp. *tuberosa*) along the shoreline; these are designated Water-lily Mixed Shallow Aquatic community (SAM1-A).

The other, smaller ponds in High Park, along with Spring Creek and Wendigo Creek, do not have significant aquatic macrophyte vegetation. Water quality is poor (High Park Nature 2019). They are turbid and have abundant filamentous algae. These are designated as Turbid Open Aquatic (OAO1-T). Wendigo, Ridout, and Howard Ponds are storm water treatment ponds. On the other hand, the Upper and Lower Duck Ponds have a natural origin as part of the original coastal marsh and lagoon complex that included Grenadier Pond, although they have been altered over the years (Figure 3). Lower Duck Pond receives the flow from Spring Creek. The Duck Ponds do have small populations of leafy pondweed (*Potamogeton foliosus*) and duckweed (*Lemna minor* and *L. turionifera*).

Figure 3. Lower Duck Pond was originally part of High Park's coastal lagoon complex (photo: TRCA, 2018).

The aquatic communities were much more diverse in the past, especially in the distant decades before urbanization and when the ponds were part of an active coastal marsh and lagoon system (Varga 2008). Most of the changes took place in the early 20th century.

4.3.2 Vegetation Communities of Concern

High Park is situated within the urban zone; as such, vegetation communities ranked L4 are considered in addition to those ranked L1 to L3. However, community ranks alone do not necessarily indicate the intactness or quality of individual examples of communities. A common vegetation community may be of conservation concern because of its age, intact native ground layer, or other considerations aside from rank. For example, Dry-Fresh Oak – Hardwood Deciduous Forest which is abundant at High Park is ranked L4 as this vegetation community is commonly encountered on the landscape. However, its significance may be even higher if it has rare species in it or elements of former oak savannah. Where it remains, it should be considered of high conservation concern, regardless of L-rank.

High Park is outstanding for its high-ranking vegetation communities. These are most notably but not exclusively the oak woodland, savannah and prairie communities. Seventeen communities have a rank of L3 or higher. Furthermore, the L1 to L3 communities occupy 47.2 ha, almost half the total natural cover in the park and almost a third of the entire park (Figure 4; Map 10). By way of comparison, the high-quality Albion Hills Conservation Area on the Oak Ridges Moraine is almost three-and-a-half times the size of High Park but has only 29.3 ha of L1-L3 communities, 6% of the area of the conservation area.

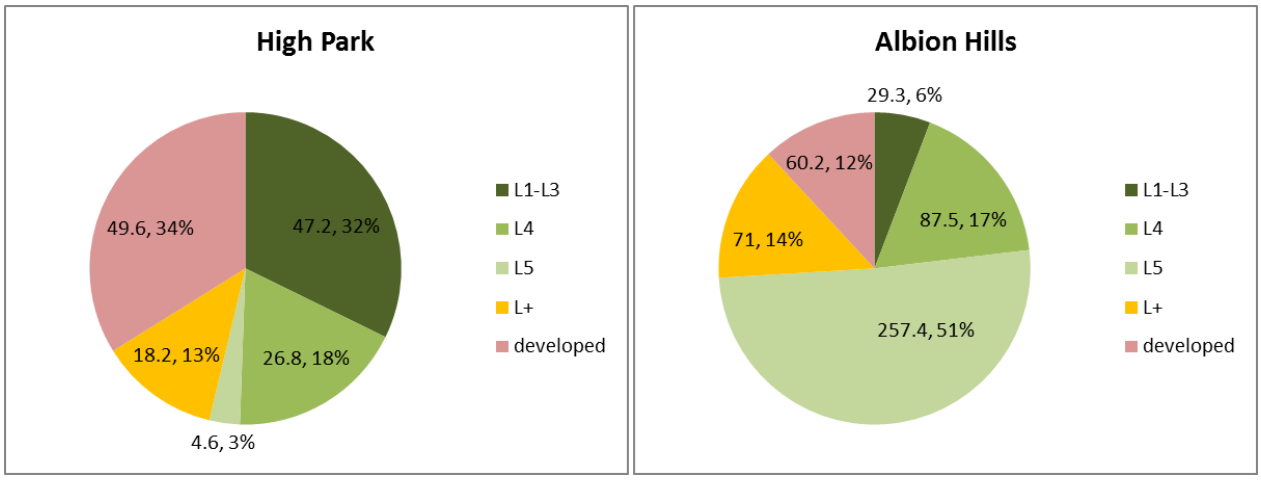

Figure 4. Area (ha) and proportion (%) of High Park and Albion Hills occupied by communities of conservation concern, communities of lower conservation concern, and developed/manicured areas.

High Park has by far the largest area of remaining oak woodland, savannah and prairie communities in the TRCA jurisdiction. Other than High Park, they are scattered elsewhere in the Humber Plains (Lambton Park (TRCA 2016) and South Humber Park), with tiny patches in the southern part of Rouge National Urban Park and on the Oak Ridges Moraine in the East Duffins Headwaters (TRCA 2010). All of these communities are considered provincially-significant and globally-rare, with only about 3% of the original area remaining in Ontario (Farrell *et al*. 2004).

Five communities have a rank of L1: Dry Tallgrass Prairie (TPO1-1), Dry Black Oak Tallgrass Savannah (TPS1-1), Mixed Oak – Pine Tallgrass Savannah (TPS1-2A), Dry Black Oak – White Oak Tallgrass Woodland (TPW1-1), and Mixed Oak – Pine Tallgrass Woodland (TPW1-A). The open prairie is found in the centre of the park by Hawk Hill and has been undergoing restoration work since the 1990s. It is shown as manicured in Varga (1989). Plants there originate from a mix of seed bank and plantings. Hard fescue (*Festuca trachyphylla*) used to be predominant and is still present amid the prairie grasses. A smaller area of open prairie is a restoration project planted by High Park Nature Centre near the Forest School using locally-propagated plants. It is a teaching area.

The mixed oak – pine savannah and woodland communities cover 1.2 ha near the greenhouses, being about evenly divided between savannah and woodland. Interestingly, the coniferous component of the savannah part of the community is largely from old horticultural plantings of Scots and Austrian pines. It would be possible to replace these with native red and white pine. The native pines do occur in the more closed woodland community. This area has a concentration of both natural and planted species of conservation concern.

The black oak tallgrass savannah and woodland communities form the centrepiece of High Park's natural system. These L1 communities cover 19 ha with patches northeast of Grenadier Pond, around and north of Hawk Hill; near Bloor Street extending part way down the west side of the Spring Creek ravine, and on the east side of the park by Parkside Avenue and Howard Park Road. Some of these areas went through a period from roughly 1930 to 1995 when they were manicured with a canopy of relict oaks. The original areas: notably the west side of West Road, contain an extremely high concentration of rare and sensitive plant species and should be considered old-growth ecosystems. The areas that have been manicured have undergone extensive planting and burning with considerable success at re-establishing native flora (see Section 4.4.4 discussion of 'Recovery' for details).

Six communities have a rank of L2. They include two degraded oak woodland and savannah communities: White Oak Non-tallgrass Savannah (CUS1-3A), and Black Oak Non-tallgrass Woodland (CUW1-2A). These areas retain the oak canopy but tend to have more generalist understorey and herbaceous layers. Elements of the original vegetation remain: notably the original oak canopy as well as undisturbed soils. There may be a seed bank and/or suppressed savannah species hidden in the ground flora. Therefore, they have a high potential for restoration and maintain a high conservation rank despite their disturbed character. The other four L2 communities are forests: Dry-Fresh White Pine – Oak Mixed Forest (FOM2-1), Dry-Fresh Red Oak Deciduous Forest (FOD1-1), Dry-Fresh Mixed Oak Deciduous Forest (FOD1-4), and Fresh-Moist Oak – Birch Deciduous Forest (FOD9-B). They occur along the ravine systems and toward the southern third of the park.

There are six L3 communities. One is Red Oak Non-tallgrass Woodland (CUW1-2). Three are mixed forests along the Spring Creek ravine. Two of them are wetlands, also along Spring Creek ravine: Bluejoint Mineral Meadow Marsh (MAM2-1) and Willow Organic Deciduous Swamp (SWD7-A).

The 16 L4 ranked vegetation communities include 6 forests, 3 successional stands, 5 wetlands, and 2 aquatic. Overall, 72.1 of High Park's 96.9 ha of natural cover is occupied by communities of Regional (L1-L3) or Urban Concern (L4).

Current Disturbances to Vegetation Communities

Alterations to the original vegetation communities have included fire suppression in the woodlands and savannahs; the replacement of native species by invasive species (partly through deliberate horticultural activity and partly through spontaneous invasion); nutrient and storm water input; and trampling due to the heavy use of the park by the public. Additional disturbances observed in recent years include pathogen outbreaks and storm damage to the older trees.

Two major disturbances are being addressed with diligence. Prescribed fire over the last twenty years has restored a natural burn regime to the savannah and woodland areas, reinvigorating them. In these areas, burns have been coupled with careful removal of invasive species. Many of the native plants have recovered.

Nutrient input has affected all the ecosystems but especially the wetland and aquatic communities. Improved storm water management has mitigated the problem, but the quality of these communities remains far below

what they would have been in the 19th century. Common reed and a handful of tolerant, eutrophic native species predominate, except in small ground water seeps.

Trampling is heavy through much of High Park. All the communities (even the shorelines) are affected. However, the forests are most vulnerable because of their more delicate ground vegetation. The most affected area is the mixed forest along Spring Creek between Ridout Pond and Centre Road (Figure 5). Several rare and sensitive flora species have disappeared in recent decades from this area. Much of the soil in the northern half of the Spring Creek ravine is bare and eroding. Dog walking is a major contributor, with off-leash dogs spreading from the official fenced areas on Dog Hill and Spring Road into the surrounding vegetation. In areas along the trail from the allotment gardens to Spring Road the fences are too low and dogs easily jump over them out of the designated off leash area.

Figure 5. Trampling is a significant issue in the forest communities of High Park, especially near Spring Creek (photo: TRCA, 2018).

Storm damage was evident in High Park in 2018 (Figure 6). Many old pines in particular blew down in several outbreaks of high wind in the spring of 2018. The ice storm of Christmas 2013 had also done some damage.

Heavy rains in west Toronto in the mid-to-late summer of 2018 resulted in flash flooding, scouring and erosion along Spring Creek.

Periodically, outbreaks of insects damage the oak trees. Gypsy moth and cankerworm (larvae of moths in the Geometridae family) are threats when their populations get high. Even though it is native, cankerworm can cause significant mortality to older oak trees in High Park. There was a serious outbreak of cankerworm in 1998-2000 (City of Toronto 2002), and another in 2017. The foliage in many oak crowns was noticeably thin during the 2018 field work. On the other hand, High Park's isolation has probably helped it to avoid deer browse impacts.

Figure 6. Canopy gaps caused by storms and/or insect damage were strongly evident in 2018 (photo: TRCA, 2018).

Canopy gaps resulting from blow down and tree mortality may invite replacement of the original tree species with invasives such as Norway maple and oriental bittersweet. Outside the woodland burn areas, native tree regeneration is poor in High Park.

4.4 Flora Findings for High Park

4.4.1 Flora Species Representation

If one counts all flora species ever recorded in High Park's natural areas (current, historic, natural, and planted), the total is 828 species (Table 7; Appendix 2). Of these, 620 would count as "current" records: species that were observed in 2018 or the past 15 years. A few species observed within the last 15 years but were not found in 2018 with a targeted search, are presumed to have disappeared and are excluded from the current total. For example, butternut (*Juglans cinerea*) was found in 2008 but was already infected by canker. It was not found in 2018 (therefore, it is almost certainly dead). Of the current records, 549 (89%) are naturally-occurring while 71 (11%) are only in plantings (some of the naturally-occurring species were also planted in places).

Table 7. Current flora species, High Park, 2004-2018.

Summary Category	Count	Percentage
Total number of species	620	100
Naturally-occurring species	549	89
Planted Species	71	11
Native (naturally-occurring) species	309	56*
Number of L1 to L3 species (excludes planted)	75	14*
Number of L4 species (excludes planted)	77	14*
Exotic species (established)	240	44*

***That is, percentage of all 549 naturally-occurring species**

The 2018 surveys uncovered many new species for High Park in spite of the site's long history of botanizing. These include 20 species of Regional and Urban Concern that apparently were not planted. Seven of these were sedges: for example fringed sedge (*Carex crinita*) and necklace sedge (*C. projecta*). The fringed sedge was in a wetland near Spring Creek and introduction cannot be ruled out since it was not far from some planted swamp rose (*Rosa palustris*). Necklace sedge was around a vernal pool near Wendigo Creek. Upland bent grass (*Agrostis perennans*), a species of oak forests and woodlands that is known from Rouge Park, had its first High Park record. A few of the new species were not as cryptic as sedges or grasses: shagbark hickory (*Carya ovata*) and moonseed (*Menispermum canadensis*). Along with new records for the park, there were also numerous species not seen in recent decades. For example thicket horsetail (*Equisetum pratense*) had last been observed in 1939, marsh marigold (*Caltha palustris*) in 1933, and hybrid wood fern (*Dryopteris* x *triploidea*) in 1899.

The floristic richness of High Park is very high given its size (147 ha) and location (in a long-established urban neighbourhood very isolated from rural parts of the natural system). Its total number of current species (620) is comparable to Albion Hills Conservation Area, which is a 500-ha park on a high-quality site on the Oak Ridges Moraine (583 species) (TRCA 2018a). The Meadoway, a very disturbed hydro corridor now being converted into

prairie plantings, also has comparable species richness: 579 flora species recorded (TRCA 2018b). The Meadoway is a 236-ha linear site that extends about 16 km.

A closer examination, however, shows that these three sites have a very different composition (Figure 7). The urban sites: High Park and the Meadoway, have a relatively high proportion of planted species (12-14%) that include both horticultural and restoration plantings. The Meadoway has a high proportion of exotic species (over 50% if one excludes the planted species which are mostly native), while they are much less prominent at Albion Hills. High Park also has a fairly high component of exotic species: 240 which is 39% of the total and 44% of the non-planted species. This lies about half-way between what is typical of urban sites and rural sites in the TRCA jurisdiction. It reflects the dialectic between High Park's long history of urban disturbance on the one hand, and efforts at preservation and restoration on the other.

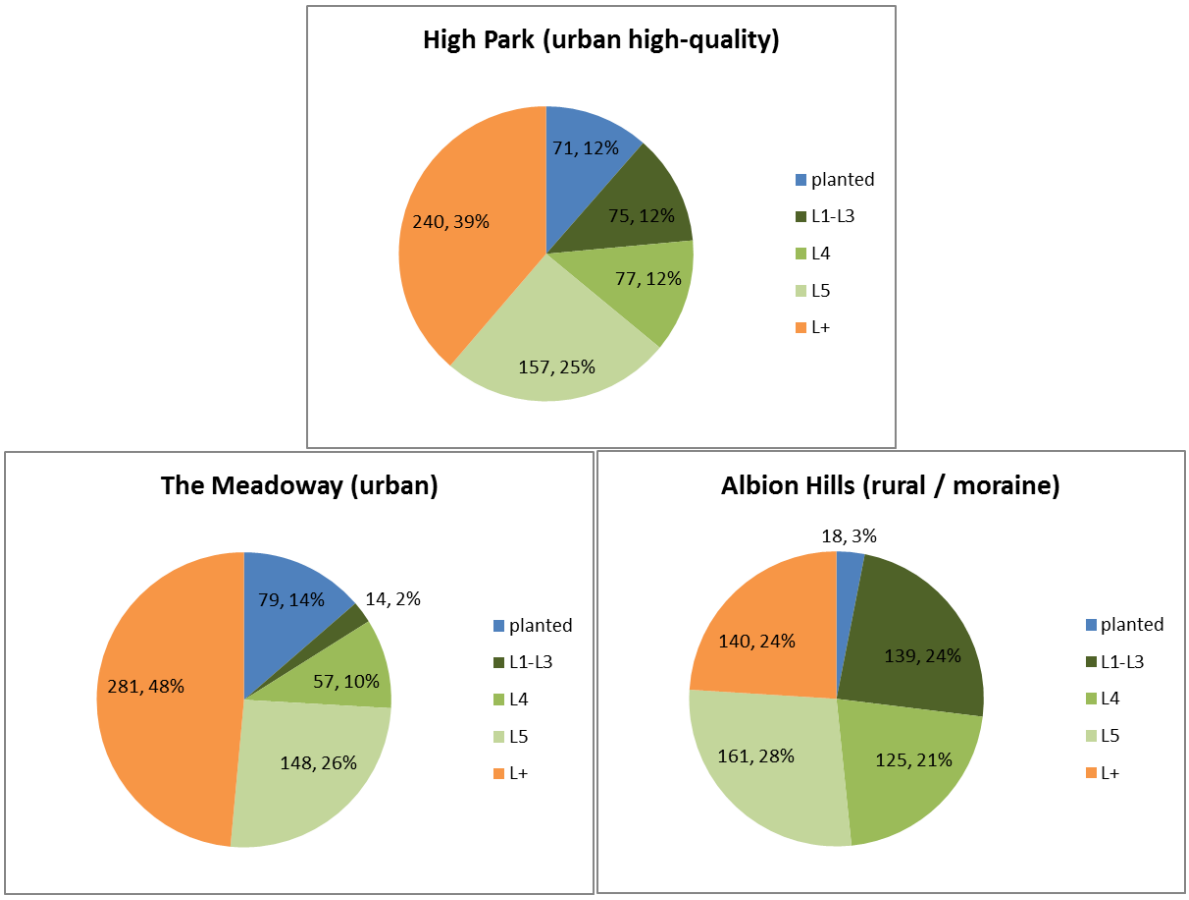

Figure 7. Proportions of flora species at High Park and Albion Hills by planted status and L-rank, showing differences between urban and rural sites with similar species richness.

The average of the total scores for naturally-occurring native flora species found in the last 15 years was 10.6, corresponding to a rank of L4. Maximizing the score over time would require protecting and enhancing overall habitat quality and protecting known occurrences of Species of Concern. Invasive plants are a serious threat to some of the latter (Section 4.4.3), and the invasives have long been favoured by the intense use of the site. Even so, there are enough high-scoring species to raise the average native L-rank to above L5. It is when one looks at the presence of the highest-ranked flora species (L1 and L2) that High Park looks particularly

impressive. High Park has 28 L1-L2 species in its current flora, which exceeds the total for Albion Hills (26 species). High Park's tally isn't far behind the southern part of the Rouge National Urban Park (38 L1-L2 species).

4.4.2 Flora Species of Concern

There are 75 naturally occurring vascular plant species of regional conservation concern (rank L1 to L3) and 77 of urban conservation concern (L4) in High Park (Figure 7; Appendix 2). The density of occurrences is very high in some parts of the park, necessitating separate maps for L1-L3 and L4 species (Maps 11a and 11b). Twenty-three of the L1-L4 plants are also regionally rare (found in 6 or fewer of the forty-four 10x10 km UTM grid squares that cover the TRCA jurisdiction). There are 9 species known only from High Park, and an additional 8 that are known from only one other site in the TRCA jurisdiction (Figure 8; Table 8).

The vast majority of the regionally-rare plants in High Park are associated with the oak woodland and savannah habitats. Fortunately, their populations in some cases are recovering in the burned areas after a steep decline through the 20th century even if they have continued to disappear from other sites. Some examples of plants whose populations seem to be recovering in High Park include wild lupine, Canada hawkweed, and possibly cylindric blazing-star. Other species that had been extirpated appear to have been reintroduced successfully (see Section 4.4.4).

Figure 8. Frostweed (*Crocanthemum canadense*) is one of 17 plants that are found only at High Park or at most at one other site in TRCA (photo: TRCA, 2018).

Table 8. Plants unique to or almost unique to High Park within the TRCA jurisdiction.

Scientific name	Common name	Notes
Agrimonia pubescens	hairy agrimony	Known only from High Park, sporadic in oak woodlands.
Agrostis perennans	upland bent grass	Known from High Park, Rouge Valley; and historically on the Oak Ridges Moraine in the 1990s. Dry oak forests and woodlands.
Avenella flexuosa	common hairgrass	Known only from High Park; 2018 was first natural observation since 1976 (seen planted in 2003). Found in dry mixed woods grading to oak woodland.
Campanula rotundifolia	harebell	Also seen at Lambton Park (planted) in 2015. A classic oak savannah and barren species.
Comptonia peregrina	sweet-fern	Three populations in High Park in 2018; was observed just north of Lambton Park in 1999. Characteristic of dry oak-pine woodlands.
Corylus americana	American hazel	Known from High Park and lower Humber Valley in oak forest understorey.
Crocanthemum bicknellii	Bicknell's frostweed	Recent records from Lambton Park (2015) as well as High Park. A classic oak savannah species.
Crocanthemum canadensis	frostweed	High Park has only recent record; found in Lambton Park in 1990s where it may still exist. A classic oak savannah species (Figure 8).
Hieracium umbellatum	Canada hawkweed	High Park is the only location but has healthy populations in oak woodland. Historic record from Heart Lake (Brampton) in 1889.
Lespedeza hirta	hairy bush-clover	The two populations at High Park are the only remaining ones in the TRCA jurisdiction. Historically it occurred elsewhere in Humber Plains.
Liatris cylindracea	cylindric blazing-star	High Park has only current population; found at Lambton Park until at least 1980.
Lupinus perennis	wild lupine	High Park is the only extant location; however, it is thriving due to the burn regime. Historically present (1990s) at Lambton Park but not seen there in 2015.
Pinus resinosa	red pine	Abundantly planted north of Toronto: natural populations seem to be restricted to Humber Plains (High Park, Lambton; and perhaps near Eglinton / Jane and the Toronto Hunt Club on sandy mixed forest on the west Scarborough Shoreline).
Platanus occidentalis	sycamore	Some trees in High Park appear to be planted, but at least one looks natural. May have some introgression with *P.* x *hispanica*. Also found in Rouge Park. A floodplain species.
Salix humilis	prairie willow	Occurs at South Humber and Lambton Parks as well as High Park (sometimes planted). Found at Jefferson Forest (Richmond Hill) until the 1990s. An oak savannah species.
Solidago hispida	hairy goldenrod	Found at High Park and Rouge Park in dry oak forests.
Viola sagittata var. *ovata*	arrow-leaved violet	Found at High Park and East Duffins Headwaters (Glen Major). The two High Park populations (one found in 2018 and the other incidentally in spring 2019) are small but the other locations within the park may still exist.

The abundance and population trend of some species at High Park are hard to assess. This is particularly true of clonal shrubs such as lowbush blueberry (*Vaccinium angustifolium*). Map data seems to show a decline. Kamstra (2009) recorded 19 locations in the park, while the 2018 survey recorded only 6, but these appeared to be healthy and responding well to burns. It is possible that slightly different mapping methodology was used (for example, whether a slightly discontinuous blueberry patch obtained three location points or just one).

Rarity and population trend are just two of four criteria used to derive L-rank. The other criteria are habitat dependence; and sensitivity to human disturbance associated with development (TRCA 2017a).

Most of the species of regional or urban conservation concern at High Park score high on habitat dependence (there are a few that are more generalist) (Map 12). Oak woodland and savannah claim the most species of concern (52), while deciduous forests and wetlands also have a large share (Table 9).

Table 9. High Park current flora species of concern (L1-L4) by habitat category.

Habitat type	Number of species
Oak woodland, savannah, prairie	52
Deciduous Forest (upland or lowland)	38
Mixed Forest	16
Successional and Meadow	7
Wetland (swamp and marsh)	23
Aquatic	7
Generalist	9

The oak woodland species (in fact all the plants found in High Park up to 2008) are described in detail by Varga (2008). Among the trees (along with black oak) are white oak and red pine – a fire-adapted species that is planted abundantly on sandy soils on the Oak Ridges Moraine but appears to have its only natural populations in the Humber Plains and possibly at the east end of the Iroquois sand plain at the Toronto Hunt Club (TRCA 2017b).

Certain shrubs – especially low-growing clonal shrubs, are oak woodland specialists. These include the Ericaceae family: low-bush, velvet-leaved, and hillside blueberries (*Vaccinium angustifolium*, *V. myrtilloides* and *V. pallidum*); and black huckleberry (*Gaylussacia baccata*) (Figure 9). There are also sweet fern, New Jersey tea (*Ceanothus americanus*), snowberry (*Symphoricarpos albus* var. *albus*) and running serviceberry (*Amelanchier spicata*).

Figure 9. Black huckleberry (*Gaylussacia baccata*), a clonal low-growing ericaceous shrub of oak woodland (photo: TRCA, 2018).

The herbaceous layer has prairie grasses: big and little bluestem (*Schizachyrium scoparium*, and Indian grass. Switch grass (*Panicum virgatum*) is also present in High Park, but it is clearly an introduction to this site (Varga 2008; see also Section 4.4.3). Certain wildflowers are characteristically restricted to oak woodlands; in High Park perhaps the most famous is the wild lupine. But there are many others, such as two species of frostweed (*Crocanthemum bicknellii* and *C. canadensis*); cylindric blazing-star, round-headed and hairy bush-clovers (*Lespedeza capitata* and *L. hirta*), and arrow-leaved violet.

Where the oak woodland grades into deciduous forest, one finds more spring wildflowers among the species of conservation concern. Wood anemone (*Anemone quinquefolia*), wild geranium (*Geranium maculatum*) and in places white trillium (*Trillium grandiflorum*) are abundant. There are a couple of small populations of round-lobed hepatica (*Anemone americana*) in the northeastern sector of the park. Sedges are well-represented, with Pennsylvania sedge (*Carex pensylvanica*) being the most abundant and spreading into the more open woodlands. Some others include bur-reed sedge (*Carex sparganioides*), loose-flowered sedge (*Carex laxiflora*) and Sprengel's sedge (*Carex sprengelii*).

Shrubs and trees of conservation concern in the deciduous forests include American hazel, witch-hazel, maple-leaved viburnum (*Viburnum acerifolium*), beech (*Fagus grandifolia*), shagbark hickory, and sycamore (*Platanus occidentalis*). The origins of the shagbark hickory and sycamore are ambiguous. The hickory had never before been recorded in High Park, even though there is a very large, old tree adjacent to Colborne Lodge. Given the age of Colborne Lodge – built in 1837, it is certainly possible that John Howard planted that tree. High Park is within the part of Toronto where shagbark hickory naturally occurs, however; and if it is planted, the seed source would likely be local. An additional shagbark hickory of younger age was also found growing in deciduous forest between Spring Creek and the off-leash dog area. Sycamore occurs in three places in the park. The row of three trees at the lower end of Spring Creek looks planted, as do more recent restoration plantings. There is one tree further up Spring Creek that has no obvious plantings around it and is likely natural. The third location near the north end of Wendigo Creek seems to be at least in part London plane tree (*Platanus* x *hispanica*), a horticultural hybrid.

A few species are found specific to the cool, mixed forests with a more northern component. These include bluebead lily (*Clintonia borealis*), wintergreen (*Gaultheria procumbens*), rose-twisted stalk (*Streptopus roseus*), shinleaf (*Pyrola elliptica*) and northern short-husk grass (*Brachyelytrum aristosum*).

The small successional and meadow patches in High Park are disturbed and have almost no species of concern; however, Michigan lily (*Lilium michiganense*) and hawthorn (*Crataegus* cf. *holmesiana*) were found here. Virginia peppergrass (*Lepidium virginicum*) grows along trail margins.

Wetland species in High Park are less diverse than they were in historical times, but the marsh areas around Grenadier Pond (and to a lesser extent the duck ponds) still have sweet flag (*Acorus americanus*), arrow-head (*Sagittaria latifolia*), and threesquare bulrush (*Schoenoplectus pungens*). Aquatic species of concern still found include greater duckweed (*Spirodela polyrhiza*), water-meal (*Wolffia borealis* and *W. columbiana*), coontail, leafy and sago pondweeds, and tuberous white water-lily. Yellow bullhead lily (*Nuphar variegata*) was observed as recently as 2005 in the southwest part of Grenadier Pond a short distance outside of the surveyed Study Area; it is likely still present.

The small ground water-fed wetlands along Spring and Wendigo Creeks have another suite of species of conservation concern: for example, woodland horsetail (*Equisetum sylvaticum*), smooth-sheathed sedge (*Carex laevivaginata*), marsh marigold (*Caltha palustris*), and turtlehead (*Chelone glabra*) (Figure 10).

Figure 10. Turtlehead (*Chelone glabra*) grows in a seepage wetland near Spring Creek (photo: TRCA, 2018).

Sensitivity to development refers to the response of flora species to specific land use impacts (Section 3.2; see also TRCA 2017a). Examples of such impacts include changes in hydrology and surficial conditions; trampling, with its associated plant tissue damage and soil compaction; competition from invasive exotic species that readily move into disturbed or fragmented habitats from gardens or trails; picking and collection; herbivory and pollution (i.e. soil, water and/or air). The main impacts affecting High Park are trampling and invasive competition for upland species, and hydrological and pollution issues for wetland species. Most flora species of concern are affected (Map 7).

Trampling is extremely heavy in parts of High Park as discussed in Section 4.3.2. The most affected species would be those of forests that have slower growth and delicate stems, such as trillium, Canada May-flower, star-flower (*Trientalis borealis*), and hairy wood-rush (*Luzula acuminata*). Several species in the highly-trampled Spring Creek ravine have been reduced to very low populations, such as rose twisted-stalk and wintergreen. Trampling is likely implicated in the loss of several forest species historically present in High Park, such as trailing arbutus (*Epigaea repens*), Indian cucumber-root (*Medeola virginiana*), and bunchberry (*Cornus canadensis*).

The wetlands have been affected by hydrological changes and pollution. While natural ground water feeds can still be observed in some places, there has also been contamination of the ponds and lowland areas due to runoff and storm sewer inputs. Most of the historic aquatic species in High Park such as pickerelweed (*Pontederia cordata*) and several species of pondweed, are no longer present. The remaining species are tolerant of eutrophic, disturbed conditions, with none ranked above L4 except tuberous white water-lily. Nutrient and contaminant deposition from runoff or the atmosphere can also affect upland species. Most

native species, especially specialized ones, are adapted to low levels of nitrate (Brys *et al*. 2005, Sauer 1998). Increased nitrate and other nutrients may be a factor in the loss of some historic species such as the hemiparasitic fern-leaved false foxglove (*Aureolaria pedicularia*). White pine is sensitive to air pollution (Hightshoe 1988).

Among the other development factors affecting High Park, collection for food or ornament may affect edible or showy species such as wild leek (*Allium tricoccum*) or trillium. Riley (2013) notes that wood lily (*Lilium philadelphicum*) was collected by the "armful" in the early 20th century. Herbivory – specifically from high populations of grey squirrels (*Sciurus caroliniensis*) eating most of the acorn crop has likely inhibited oak regeneration.

Invasive species are a threat to both upland and lowland species in High Park. They appear in conjunction with the other disturbances, although they can also spontaneously disperse into high-quality areas without other disturbances. One of the populations of sweet fern is becoming crowded out by tall, dense growth that includes both invasive and generalist native species. Most of the shoreline marsh of Grenadier Pond has been taken over by common reed since 2000. A discussion of the major invasive problems at High Park follows.

4.4.3 Invasive Species

High Park has 240 established non-native species, not including others that were planted, some of which are regenerating. Depending on the habitat, the majority of exotic species 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.

In upland areas, Norway maple and several aggressive tall shrubs and woody vines are major contributors to the degradation of oak savannah and woodland. Winged euonymus (*Euonymus alatus*) dominates the understorey in the northwestern part of the park and is shading out native low shrubs and herbaceous species. Common and glossy buckthorns play a similar role in the east and central parts of High Park. Honeysuckle is also an adjunct. Oriental bittersweet is spreading rapidly through the park from its original east-central location; this vine can choke tree canopies as well as carpet the ground. Even the native riverbank grape (*Vitis riparia*) can overwhelm other native species. The City of Toronto has been managing the target burn sites with herbicide treatment and fire, though these species continue to spread elsewhere, especially in the forests.

Dog-strangling vine presents the most serious challenge among herbaceous plants. It is present across most of High Park, which actually has the dubious distinction of hosting two species: the regular pale swallow-wort type (*Cynanchum rossicum*) which is abundant across the TRCA jurisdiction; and the black swallow-wort (*C. louisiae*), found only in High Park adjacent to the greenhouses. On the other hand, City staff have been targeting dog-strangling vine intensively since restoration efforts began in the 1990s, and large portions of restored woodland are now free of it. Meanwhile, garlic mustard, hedge parsley and Himalayan balsam are now abundant in some forests and seepage wetlands where they could crowd out native species such as foamflower (*Tiarella cordifolia*) or northern short-husk.

Common reed is by far the most invasive wetland species at High Park. It has appeared relatively recently within the past 20 years and has now overtaken cattail as the dominant marsh species around Grenadier Pond. The TRCA, in cooperation with the City of Toronto, has now initiated a treatment program for common reed in High Park. Purple loosestrife (*Lythrum salicaria*) was formerly a major invasive species in High Park's wetlands. It is still present, but biological control in the form of introduced beetles, along with the aggressive spread of common reed, has reduced its presence (Varga 2008).

Reed canary grass (*Phalaris arundinacea*) is a moderate threat to a couple of seepage wetlands near Spring Creek: on the west side of the creek north of Centre Road; and on the east side of the creek between Centre Road and Deer Pen Road. It could potentially replace the native Canada bluejoint and other native species.

Invasive ground covers that escaped from adjacent gardens, such as periwinkle (*Vinca minor*), lily-of-the-valley, and goutweed (*Aegopodium podagraria*) occur locally. They threaten the ground layer of forests, especially near Spring Creek.

4.4.4 Historical Changes: Losses, Plantings, and Recovery

Losses

High Park has lost many flora species since urbanization began in the late 19th century. One hundred L1 to L3 species are known only from historic records and probably no longer occur in the park (Appendix 2). It is of course possible that some of these could be rediscovered or successfully reintroduced after decades of no records, as happened with several species in 2018 (see below).

The dates of when species were last observed can give an estimate of the time they disappeared (Figure 11). For example, 15 species were observed for the last time between 1901-1920 and not seen since.

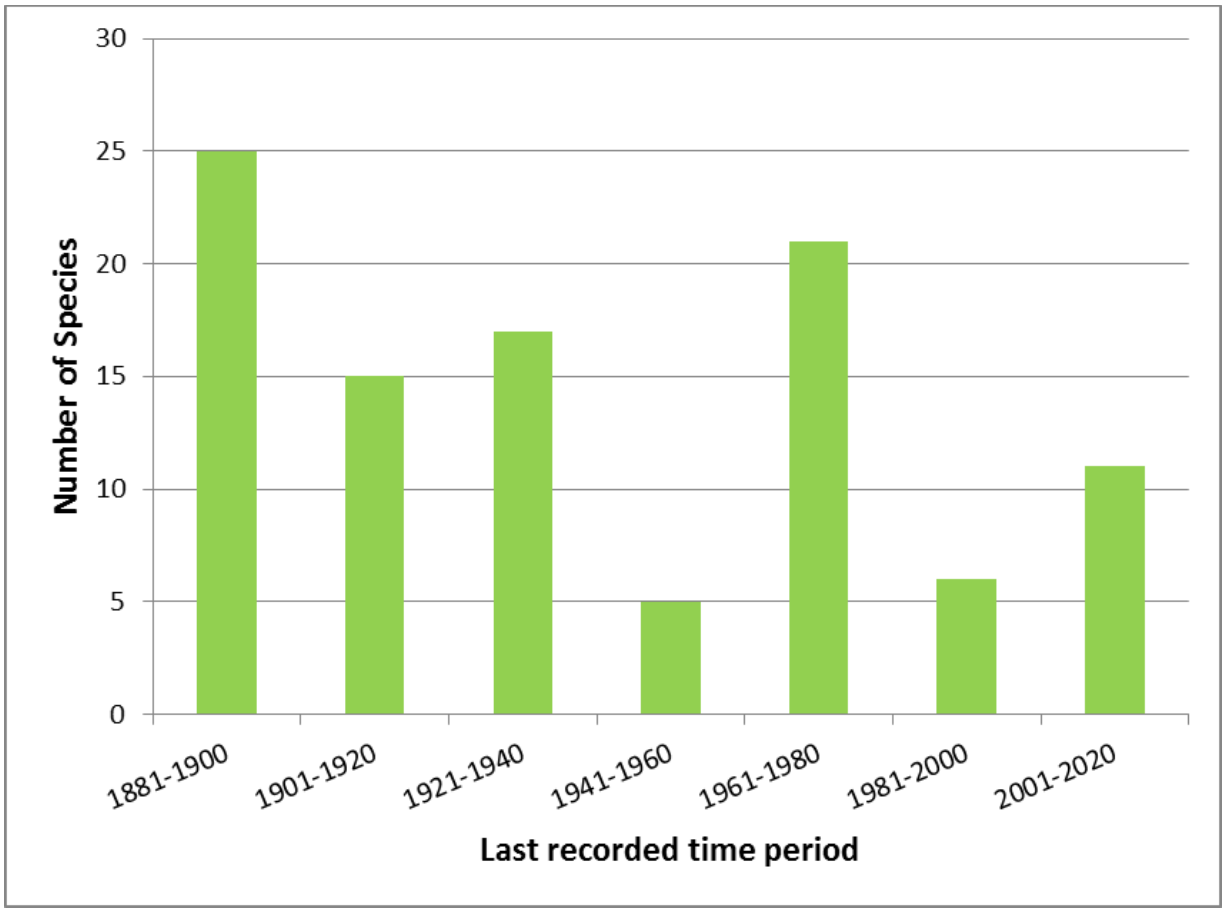

Figure 11. Timeline of L1-L3 species losses from High Park estimated from when last seen.

Losses would be more readily noticed during times of more intense naturalist surveys (1880s – 1920s and 1970 – present). The modern post 1970 period of survey, corresponding with the environmental movement and then ecological restoration efforts, has also been more systematic. Regardless of this unevenness of data collection, it appears that plants have disappeared throughout the period, but losses seem to have been heavier in earlier decades.

The plants that have disappeared include at least 11 species that no longer occur anywhere in the TRCA jurisdiction, assigned a rank of LX (but included in the tally of L1-L3 as being of regional conservation concern). Some examples include Kalm's brome (*Bromus kalmii*), swamp lousewort (*Pedicularis lanceolata*), and the spectacular wildflower Indian paintbrush (*Castilleja coccinea*). Trailing arbutus and wood lily have disappeared within the past 20 years or so. Some of the most poignant recent losses are those that briefly reappeared in very small populations in the 1990s once restoration efforts began, only to disappear again: the trailing arbutus and wood lily; and also racemed and whorled milkworts (*Polygala polygama* and *P. verticillata*). Kamstra (2009) found wild licorice (*Galium lanceolatum*) for the first and only time in High Park in 2008. A search of the locations during 2018 surveys did not find these species. It is likely that by the time restoration began, populations were already too small to be viable.

Wetland species have sustained by far the heaviest losses: 48 L1-L3 wetland and aquatic plants have apparently disappeared. Much of this was due to the alteration of Grenadier Pond's hydrology and inputs decades ago.

Oak woodland and savannah have lost 27 species. Mixed forest has lost 16 species – a proportionately high number given the amount of habitat, while 9 deciduous forest species have disappeared.

Plantings

Numerous plantings have also changed High Park's flora. These would include horticultural escapes such as Sakura cherry (*Prunus serrulata*), invasive garden plants such as lily of the valley, and restoration plantings of native species. With the exception of formal horticultural beds and whatever people plant in their allotment gardens, plantings in High Park are now exclusively native with close attention to restoration. Indeed, some of the earlier horticultural plantings, for example of Austrian pine, are now being removed.

High Park has had such a long history of planting that it is sometimes difficult to tell what has been planted or naturally-occurring. The origin of some species, such as sycamore, cannot be settled with absolute certainty. For the purposes of this report, a best estimate has been done through reviewing the literature and consulting with City of Toronto staff and naturalists familiar with the park. Restoration plantings have included the following categories of plants:

- species historically known from High Park or the Humber Plains (including both extant and extirpated species);
- species native to the TRCA jurisdiction but not historically recorded from High Park or the area;
- species native to prairies and savannahs in other parts of Ontario or the adjacent USA but not from High Park or the TRCA jurisdiction: these are considered exotic (L+) in the TRCA jurisdiction (Appendix 2) even though they are native to somewhere in eastern North America.

Examples of the first category would be big bluestem and Indian grass, and wildflowers such as butterfly milkweed (*Asclepias tuberosa*). The second category includes species such as switch grass, which has native populations on Toronto Island; hoary vervain (*Verbena stricta*) which occurs on the Oak Ridges Moraine and in the eastern watersheds of TRCA; and short-fruited sedge (*Carex brevior*), also found in sand barrens on the Oak Ridges Moraine. The third category includes grey-headed coneflower (*Ratibida pinnata*) and several other showy composites. Varga (2008) considers High Park to be such a significant remnant ecosystem that only species in the first category should be planted. This has in fact been the practice since the early 2000s; however, some of the quasi-native species that were planted in the 1990s such as grey-headed coneflower and switch grass are thriving.

Some plantings did achieve their goal of species and ecosystem recovery. The oak woodland and savannahs at High Park are one of southern Ontario's ecological restoration success stories.

Recovery

Since the return of ground fires to High Park in 1997, many of the prairie, savannah and woodland species have recovered both through spontaneous expansion of their relict populations; and through careful planting. Wild lupine, Canada hawkweed, and the prairie grasses have responded particularly well. The low ericaceous shrubs such as huckleberry and blueberry are suckering vigorously where plots have been cleared of taller invasive shrubs and then burned.

Furthermore, some species that had been lost have been reintroduced to the park through plantings (Table 10). A good example is silver-rod (*Solidago bicolor*). The last natural populations were observed in the 1950s, but plants were grown and planted out starting around 2000. In 2018, it was blooming in burned-over areas of woodland (Figure 12). This was an area that had been manicured in the second half of the 20th century.

Figure 12. Silver-rod (*Solidago bicolor*) has been successfully re-established at High Park (photo: TRCA, 2018).

Table 10. Flora species reintroduced to High Park.

Scientific Name	Common Name	Notes
Asclepias tuberosa	butterfly milkweed	Last occurred naturally in High Park in 1941, now extirpated from TRCA. Plants propagated from Rice Lake and perhaps Turkey Point and planted out starting in 1997. Successfully re-established with 8 populations mapped in 2018.
Elymus canadensis	Canada wild rye	Last natural record in 1932, 6 planted populations mapped in 2018.
Hypericum prolificum	shrubby St. John's-wort	The origins of this plant, found near Colborne Lodge in the 1970s and 80s, are ambiguous. It has been planted out in several places grown from seed from the Colborne Lodge population which was last seen in 1989.
Persicaria amphibia var. *emersa*	swamp smartweed	Last observed in 1976 in a seepage area near Spring Creek. Now found in a large stand along the shores of Grenadier Pond from restoration plantings. The original may have been the other variety (var. *stipulacea*).
Polystichum acrostichoides	Christmas fern	Last observed naturally in 1976 in the southwest part of the park. Seen planted but not established in 2018 in the Wendigo ravine.
Rosa carolina	pasture rose	Last observed in 1976. The ones seen near Grenadier Pond in 2018 are clearly reintroductions, established but not yet spreading. Virginia rose (*Rosa virginiana*) is often mistakenly planted in its place.
Rudbeckia hirta	black-eyed Susan	Not recorded since 1910, but now reestablished from numerous plantings.
Solidago bicolor	silver-rod	Last seen in 1954, but now established in one or two places from plantings. Seed source is Rice Lake (with possibly some from Niagara).
Spiraea alba	wild spiraea	Reintroduced to the shores of Grenadier Pond where it had last been seen in 1896. The current attempt is successful but may be thwarted by common reed.
Symphyotrichum laeve var. *laeve*	smooth aster	Last definite natural observation in 1972; the 2018 observation near the Forest School is probably planted.

The wetland and shoreline restoration efforts at Grenadier Pond have faced more challenges. Storm water inputs have been mitigated but nutrient and contaminant levels are difficult to bring down. In addition, the common reed infestation has sabotaged some of the shoreline restoration work. However, some species such

as tuberous white water-lily, river bulrush (*Bolboschoenus fluviatilis*), and the planted-out swamp smartweed have sizeable populations (Figure 13). Coontail provides macrophyte cover in Grenadier Pond.

Figure 13. Swamp smartweed (*Persicaria amphibia*) has been reintroduced in the shoreline plantings in High Park (photo: TRCA, 2018).

4.5 Fauna Species Findings for High Park

This section reports on the fauna species observed within the Study Area between 2009 and 2018 (Section 3.3), with added discussion of relevant historical records. Observations from the 2018 breeding frog and breeding bird surveys as well as incidental observations of herpetofauna and mammals are discussed in the species representation section. Additional detail is provided in subsequent sections on Species of Regional and Urban Concern (those ranked L1 to L4 during part or all of the period of interest), and on historical Species of Regional and Urban Concern records.

4.5.1 Fauna Species Representation

Table 11 summarizes the fauna species counts for the 2009 to 2018 period. Appendix 3 lists the species observed, along with scientific names and L-ranks. Fauna species richness (number of species) at High Park Study Area stands at 62 species for the entire 147 ha site. Species richness per unit area in natural cover generally increases with increasing patch size, habitat quality, and increasing habitat diversity (e.g. of vegetation communities and of physical structure) (Arrhenius 1921; Rybicki & Hanski 2013).

Table 11. Fauna species and Species of Regional and Urban Concern (SOC) counts for High Park Study Area 2009-2018.

Group	Species Count 2018 Survey	SOC Count 2018 Survey	Species Count 2009-2018	SOC Count 2009-2018
Birds	49	21	53	25
Frogs	2	2	2	2
Other Herpetofauna*	4	4	4	4
Mammals*	7	5	9	7
Total	62	32	68	38

*observations of other herpetofauna and mammals are incidental to the protocols

The average of the total scores for native fauna species observed in 2018 was 10.2, corresponding to an average L-rank of L4 (Table 4). The potential for this average to increase over time is low, due to the high human disturbance of this popular recreation area, and additional disturbances related to an established urban surrounding, such as subsidized predators and invasive non-native species. The average might be maintained for the future if refuges of remnant natural habitat are allowed to persist for sensitive species (McKinney 2002).

4.5.2 Fauna Species of Concern

The 2018 fauna surveys recorded 21 bird species, 6 herpetofauna species and 5 mammal Species of Regional and Urban Concern for a total of 32 (Table 11; Map 13). A further 6 species (4 birds and 2 mammals) can be added from recent years to bring the total to 38 species for the 10-year period (Table 11).

4.5.2.1 Regionally Rare Species

Regionally rare species are those reported as probable or confirmed breeders in fewer than 10 of the forty-four 10x10 km UTM grid squares in the TRCA jurisdiction (TRCA 2017a). The 2018 surveys recorded 2 observations of bats and tentatively identified them as big brown bat (*Eptesicus fuscus*), a regionally rare species that is found in less than 5 UTM grid squares. Bat species are extremely difficult to identify without the aid of a bat detector and ultrasound microphone. The tentative identification of big brown bat was based on the individuals' size (second largest bat in Ontario after hoary bat, *Lasiurus cinereus*) and knowledge of their presence at High Park. A 2015 study determined that along with big brown bats, High Park provided foraging habitat for numbers of silver-haired bat (*Lasionycteris noctivagans*), hoary bat and eastern red bat (*Lasiurus borealis*) (Thorne 2015). Therefore, the positive identification of the bats observed in the 2018 surveys are not conclusive, rather it highlights the importance of High Park as residence for Ontario bat species, even within such a large urban centre such as Toronto.

Carolina wren (*Thryothorus ludovicianus*), a regionally rare species scoring 3 points was recorded as an incidental observation in 2017. This non-migratory species occurs quite readily in urban areas with suitable habitat, especially along the Lake Ontario waterfront. It is vulnerable to severe cold and deep snow (Haggerty and Morton 1995) and therefore the severe cold period experienced late December 2017-early January 2018 (Environment Canada 2019) may have impacted the individuals in High Park.

4.5.2.2 Fauna Sensitive to Development

The scoring of species for sensitivity to development (Section 3.2; TRCA 2017a) considers the large number of impacts related to local land use, both urban and agricultural, that affect the local fauna. Two categories are of importance. The first involves changes that affect the breeding habitat of the species in question. An example would be alteration of the composition and structure of a vegetation community, for example through the removal of dead wood and clearing of shrub understory. The second category relates to changes that directly affect individuals of the species. Examples include:

- Increased predation from an increase in the local population of predators 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 (facilitation of access for the brown-headed cowbird (*Molothrus ater*), a brood parasite, which prefers 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 the nest).
- Sensitivity to pesticides (bio-accumulation).

All 4 of the L1-L3 ranked species found at the Study Area (Appendix 3) score highly on sensitivity to development, as do 14 of the 29 L4 ranked fauna species (Map 8).

The surrounding landscape is entirely urban. But even in rural landscapes many of the negative influences associated with urbanization can be transferred deep within an otherwise intact natural matrix by trail networks used by large numbers of people originating from distant urban and suburban centres. From the perspective of wildlife, humans within their habitat are competitors and/or predators, and to be avoided. A study that tested the effect of people walking through a forest during the period that birds were establishing territories prior to nesting determined that two or three people walking through an area while talking to each other, repeated twice a day, resulted in some birds avoiding that area for territory establishment. The number of territories was reduced by 15% and the species richness was also reduced 15% (Bosch *et al.* 2017). Other research demonstrates that many bird species respond to human presence during nesting by decreased nest-attentiveness or nest-abandonment, leading to reduced reproduction and survival. Where trail-use is low during territory establishment (e.g. April, May), but increases later (e.g. June, July), birds may establish nests but later abandon them when disturbance becomes too high. Abundance was 48% lower for the hermit thrush (a ground-nesting/foraging species) in human-intruded sites than in the control sites (Gutzwiller and Anderson 1999). In another study, 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). Similarly, clearing of forest understory to accommodate trails, and the introduction of invasive species from trails both displace sensitive low-nesting species.

Of the 15 development sensitive bird species recorded in the period 2009-2018, 2 are ground- or low-nesting: spotted sandpiper (*Actitis macularius*), a meadow associated species (Figure 14); and common yellowthroat (*Geothlypis trichas*), a wetland associated species. Both were recorded on single territories in 2018 and 2012 respectively.

The lack of sensitive ground- or low-nesting breeding bird species are a consequence of heavy pressures exerted on such species at a busy urban recreational area such as High Park. Recreational trails coupled with dog-walking and off-leash dog activity, along with other pressures such as urban subsidized predators such as raccoon, domestic/feral cats and unleashed dogs have evidently impacted ground nesting species to an extent to which they are represented by minimal territories in a given year. A fenced off-leash dog area located in the centre of High Park at Dog Hill (Map 2) is designed to concentrate off-leash dog activity into one area and hence reduce pressure on wildlife elsewhere in the park. However, during inventory work, off-leash dog walking was regularly encountered outside the designated zone. If dog activity was effectively restricted to Dog Hill it is possible some ground nesting breeding bird species may return to the Study Area.

Figure 14. Spotted sandpiper - the single sensitive ground-nesting bird species recorded at High Park in 2018 on a solitary territory (photo: TRCA, 2014).

Forest dependent breeding bird species that are sensitive to development are well represented in the Study Area. Nine out of 12 species are forest dependent, representing 40 territories. This includes two Species at Risk (SAR); wood thrush (*Hylocichla mustelina*) and eastern wood-pewee (*Contopus virens*), both designated provincially as Special Concern (MECP 2018). The two territories of wood thrush are of particular note, being the closest multiple territories within a single habitat patch to the Toronto downtown core (a single record observed in the Mud Creek ravine south of Mount Pleasant Cemetery in 2011 being closer). Preferring to nest in woodlots with mature trees and dense understories, incidental observations of wood thrush recorded in 2012 and 2017 suggest birds are potentially returning to previously successful breeding sites within the Study Area. Eastern wood-pewee was well represented at the Study Area; observed on six territories. Additional well-represented forest dependent species include red-eyed vireo (*Vireo olivaceus*; nine territories), white-breasted nuthatch (*Sitta carolinensis*; seven territories) and wood duck (*Aix sponsa*; seven territories). A further four forest-edge dependent breeding bird species were observed in 2018, including black-billed cuckoo (*Coccyzus erythropthalmus* - a species of Regional Conservation Concern); eastern bluebird (*Sialia sialis*); indigo bunting (*Passerina cyanea*) and rose-breasted grosbeak (*Pheucticus ludovicianus*).

All herpetofauna are sensitive to development, and all but the hardiest species have disappeared from the more urbanized landscapes, such as the City of Toronto. High Park appears to be a haven within the local landscape, as common snapping turtle *(Chelydra serpentina serpentina),* a SAR with Special Concern status (MECP 2018), and midland painted turtle *(Chrysemys picta marginata),* were observed in 2018. Multiple observations of American toad (*Anaxyrus americanus*); green frog (*Lithobates clamitans*) and eastern gartersnake (*Thamnophis sirtalis sirtalis*) add credence to this. It is known that locally (High Park) extirpated herpetofauna species including wood frog (*Lithobates sylvatica*), spring peeper (*Pseudacris crucifer*) and northern watersnake (*Nerodia sipedon sipedon*) were released into High Park by a local resident (City of Toronto 2002). All these species have since died out due to the small size and isolation of these introduced populations – the nearest sustainable populations of any of these species are over 16 km away, therefore there is no ability to recruit from the local landscape. This isolation, when combined with developmental related impacts on their wetland breeding habitats and upland foraging and overwintering areas (factors that lead to their initial extirpation), ensured these species had little to no chance of surviving in the Study Area. Incidental reports of a further introduced species, bullfrog (*Lithobates catesbeiana*), appear to indicate a self-sustaining population, though no evidence was observed in 2018.

Development related impacts include the fragmentation of habitat and roads. These effects are discussed under the more specific criterion of patch isolation (Section 4.5.2.4).

4.5.2.3 Area Sensitive Fauna

Fauna species deemed area sensitive require ≥ 5 ha of contiguous habitat; those scoring at the high end for this criterion require >100 ha (TRCA 2017a). Some species of forest birds that require large total habitat area are able to utilize multiple patches across the landscape to meet this need; for this group the overall proportion of forest cover within the larger landscape is the important limiting factor (Rosenburg *et al.* 1999). Area sensitivity for various species relates to a variety of underlying factors. The need for isolation within a habitat block during sensitive periods such as nesting and foraging requirements for sparsely distributed food items are examples.

The current fauna inventory for High Park lists 11 area sensitive species of which 10 are Species of Regional and Urban Concern (Map 5). While 10 of these species fall into the ≥ 5 ha category, one species – Cooper's hawk (*Accipiter cooperii*) – is indicated as requiring at least 20 ha of continuous habitat. The individual of this species observed in 2018 was located at the larger forested section of the site along Spring Creek, to the east of the Allotment Gardens. This is the same area that the wood thrush territories were observed, another area sensitive species. Cooper's hawks are increasingly found nesting in urban and suburban areas within smaller habitat patches. This species is apparently adapting to disturbance effects of cities and towns to take advantage of opportunities presented by such areas (increased abundance of prey). Blue-grey gnatcatcher (*Polioptila caerulea*) was recorded from 18 observations in 2018. Although this species was recorded in the High Park Management Plan (City of Toronto 2002), it is understood that the population of this canopy nester in High Park has increased dramatically in the last few years (Hayes 2019). While an inhabitant throughout the TRCA jurisdiction, the highest concentrations of blue-grey gnatcatcher populations are located along and within a short distance of the shore of Lake Ontario, where its preferred nesting habitat of forested areas close to water and openings (Cadman *et al*. 2007) are in abundance. The high density of territories at High Park correspond

with concentrated populations in nearby Humber Marshes (13 territories) and the mouths of Highland Creek, Rouge River and Duffins Creek. This jurisdiction wide trend also correlates with the blue-grey gnatcatcher's breeding range expanding northward into southern Ontario since the 1940s (Ellison 1992), with more established southerly populations being larger than those to the north.

4.5.2.4 Fauna Sensitive to Patch Isolation

Sensitivity to patch isolation considers the overall response of fauna species to fragmentation and isolation of habitat patches from one another. One underlying consideration is the physical ability, or the predisposition, of a species to move about within the landscape and how this ability is affected by the connectivity of habitat. A second is the potential impact that roads and other habitat breaks have on fauna species that need to be mobile. Bird species generally score lower than herpetofauna for the latter consideration (although they do forage and move along connecting corridors). Most herpetofauna score very highly because their life cycles require them to move between different habitat types; their mobility exposes them to impacts, most often road-kill. At the population level, birds too will be affected if the need for adult birds to forage for food during the nestling and fledgling stage of the breeding season is not provided for. 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 five of the herpetofauna species of concern and five of the seven mammal species of concern score highly for patch isolation sensitivity. Common snapping turtle (Figure 15), midland painted turtle, American toad and eastern gartersnake undergo annual migrations to and from either terrestrial nesting areas with suitable substrate (for both turtles), breeding wetlands (for the toads) or communal hibernacula (for the snakes). As long as traffic on trails within the Study Area is not too high and restricted to foot traffic only (no bikes), these species are less likely to be impacted. However, heavy visitation to the area increases the threat of predation and/or disturbance by off-leash dogs. Trails with bike traffic or off-leash dogs may result in herpetofauna and small mammal fatalities (Burgin and Hardiman 2012; Weston and Stankowich 2014).

Figure 15. Common snapping turtle, a Species at Risk, was observed in Grenadier Pond in 2018 (photo: TRCA, 2018).

Most of the mobility restricted fauna species at the Study Area are relatively small-bodied animals; their life cycle requirements may be satisfied within the confines of High Park. However, for coyote (*Canis latrans*), red fox (*Vulpes vulpes*) and other larger mammals, home ranges may not be contained within the Study Area boundaries, and young mammals also need to disperse from natal areas. As individuals move back and forth across the landscape, they have to contend with the roads surrounding and intersecting the site. In any such urban landscape the habitat within the natural spaces becomes more critical to regional biodiversity. If connectivity between such natural spaces can be maintained or improved the potential for persistence of these species will be enhanced.

4.5.2.5 Fauna Habitat Specialists

Fauna species that score highly under the ***habitat dependence*** criterion (TRCA 2017a) are considered habitat specialists. 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 vegetation community series and macro-habitat types. There were four fauna species of concern – all bird species - that are considered habitat specialists (Map 14). One of these species scores high for this criterion entirely due to their very specific

nest location requirements: northern rough-winged swallow (*Stelgidopteryx serripennis*) requires existing cavities, often duct and pipe openings on man-made structures.

Of the remaining three species, black-billed cuckoo nest in forest edges, thickets and other early successional habitats. Their nesting preferences, however, are more dependent on prey availability (e.g.: forest tent caterpillar, *Malacosoma disstria*; and gypsy moth, *Lymantria dispar dispar*) than habitat structure. Cooper's hawk require mature, fairly dense woodlots. As mentioned earlier, historically this species nested primarily in extensive mature rural forests but increasingly it is adapting to breeding in urban landscapes. The one remaining habitat dependent species is pine warbler (*Setophaga pinus*); this species requires upland mature pine or mixed hardwood-pine forests. A pair were last observed in 2009 in the largest area of mixed forest in the Study Area; along Spring Creek.

A further habitat dependent species of concern needs discussion: eastern screech-owl (*Megascops asio*). A single individual was observed along Spring Creek in the winters of 2019, 2018 and earlier years. This record cannot be classed as a possible breeder as the observation was outside the breeding season, however the Study Area provides ample habitat and nesting opportunity – larger trees with cavities or nest boxes. As a rather cryptic species that is usually detected using playback in early spring, it is possible screech-owl were present during 2018 but remained undetected. The presence of great-horned owl (*Bubo virginianus*) in the Spring Creek area (observed in 2018), a known predator of the smaller eastern screech-owl, is a potential barrier to successful breeding in the Study Area. Low numbers of individual wintering birds may not survive to the breeding season when inhabiting the same area as this apex predator.

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 species to thrive and breed successfully. As the quality of the habitat improves, so will the representation of flora and fauna species associated with it. In this way, representation by self-sustaining populations of diverse species (which varies from species to species) over the long term is an excellent measure of the health of a natural system.

4.5.2.6 Historical Fauna

Historical records show a variety of native species may have become extirpated in the Study Area within the past 50 years. Most of these species have not been recorded by TRCA, either during terrestrial inventories, or as incidental observations. Examples of significant species potentially lost include: purple martin (*Progne Subis* – last recorded by TRCA in 2000), red-headed woodpecker (*Melanerpes erythrocephalus*), sharp-shinned hawk (*Accipiter striatus*), Virginia rail (*Rallus limicola*), southern flying squirrel (*Glaucomys volans* - last reliably recorded in 1976), and eastern red-backed salamander (*Plethodon cinereus*). Although the exact location of breeding bird nests can and may change within a habitat from year to year, it is likely that most of the bird species noted above are no longer breeding in the Study Area. The exception is purple martin, who have the opportunity to nest in man-made structures at High Park in the future as they are still present along the Lake Ontario waterfront. Southern flying squirrel are almost certainly extirpated from the area, whilst eastern red-backed salamander may still be present in deciduous forests with sufficient leaf litter and downed woody debris.

5.0 Summary and Recommendations

The 161 ha High Park is located entirely within the urban landscape and consists of a combination of ravines, tableland, and ponds. Natural cover at this site is dominated by a combination of provincially-significant oak woodland and savannah; several types of forest, and small areas of wetland. As such it is a valuable contributor to the natural heritage system and biodiversity of the region. The site has the potential to maintain healthy populations of many flora and fauna Species of Regional and Urban Concern (minus ground- to low-nesting breeding bird species), and overall regional biodiversity. The extent to which this potential is realized is dependent upon the strategies used to manage public use, protect the integrity of the habitats that exist, and restore degraded or invaded habitats.

5.1 Site Summary

1. Although High Park does not rank highly within a regional context in terms of patch score, total size and matrix influence, it does stand out for the presence of interior forest, especially in such an established urbanized area. The interior forest areas are related to respectable patch shape scores with the majority of the habitat scored as “fair”, with “good” and “excellent” patches also present.

2. A total of 71 vegetation types was observed, largely forest, woodland and savannah; with smaller areas of wetland and successional areas. The site includes 34 forest, 11 dynamic (woodland and savannah; barren, bank), 9 successional, 2 riparian bank, 13 wetland, 3 aquatic, and 1 meadow vegetation community type. The community diversity reflects historical and current land-use practices of the site extending back before the time of European settlement.

3. Vegetation communities of conservation concern were concentrated on the ravine slopes and adjacent tableland. Oak forest, woodland, and savannah with a smaller amount of seepage wetland and aquatic communities are represented.

4. Woodland and savannah communities are concentrated on upper slopes and tableland. Forest is most evident in the ravines. Wetlands occur on seepage zones in the bottom of ravines and along pond shorelines.

5. A total of 549 naturally occurring flora species were observed. Among them were 75 Species of Regional Concern (ranked L1-L3) and 77 species of Urban Concern (ranked L4). Species of Concern were associated with all habitat types but the highest concentrations were in forest and woodland/savannah. However, even the manicured areas had some old oaks that pre-date development. Total native species richness is high despite the urban character of the site and its long history of recreational use and other disturbance. This attests to the effort put into preservation and restoration at High Park.

6. High Park’s history of disturbance has led to the extirpation of 100 L1-L3 flora species since the 1880s. Wetland and aquatic plants were particularly affected, with 48 historical species no longer present. Species of oak woodland and forest, especially mixed forest, have also been among those extirpated. Eleven species once found in High Park can no longer be found anywhere in TRCA.

7. Restoration efforts since the 1990s, especially in the oak woodland and savannah, have arrested and in some places reversed the decline in ecosystem quality and biodiversity. Flora species such as wild lupine and Canada hawkweed have experienced population rebounds; and 10 extirpated species were observed to be reintroduced in the 2018 survey.

8. The main disturbances affecting High Park at present are intensive trampling from park visitors and off-leash dogs in upland habitats, and storm water runoff in the wetlands and riparian areas causing nutrient loading and flash flooding. Other threats include storm damage to forests that are lacking native regeneration, insect outbreaks, and invasive species.

9. The main invasive plants in upland areas at High Park are Norway maple, winged euonymus, buckthorns, oriental bittersweet, Japanese hedge-parsley, and dog-strangling vine. There are also patches of garlic mustard, goutweed, lily-of-the-valley, and periwinkle. In lowland areas and wetlands, common reed has invaded shoreline marshes, while other low-lying areas have Himalayan balsam. Reed canary grass and purple loosestrife have local infestations. The City of Toronto has successfully reduced the occurrence of invasives, including dog-strangling vine, in the managed areas of oak woodland. However, large areas of the park have not been treated.

10. The fauna survey in 2018 reported 21 bird species, 6 herpetofauna, and 5 mammal species of Regional and Urban Concern for a total of 32 Species. Taking into consideration 6 additional records from 2009-2017 brings the 10 year total to 38 Species of Regional and Urban Concern.

11. A single ground- or low-nesting breeding bird species was recorded in 2018: spotted sandpiper. Common yellowthroat was recorded in 2012 to bring the 10-year total for this nesting guild to 2 species, both on single territories. The abundance of dogs-off leash found outside the fenced in dog park at Dog Hill may be contributing to the lack of ground nesting birds.

12. The regionally rare fauna species – Carolina wren and (possibly) big brown bat were recorded for the Study Area.

13. A total of three Species at Risk were recorded: wood thrush, eastern wood-pewee and common snapping turtle (all Special Concern).

14. A high abundance of blue-grey gnatcatcher, a Species of Urban Concern, was recorded on the site, with 18 territories observed. No previous records of this species had been documented at the Study Area.

15. The habitat on site is fragmented, with several access roads breaking it into interrupted patches. In addition, there are numerous trails and public use areas such as community garden plots and sports facilities, with the human footprint distributed throughout all parts of the site.

16. Intensification and infill development of the neighbourhoods around High Park is anticipated. It is a desirable location. This could exacerbate the user pressures on this already heavily visited park, unless there is careful planning. Uncontrolled recreational activities present a risk to the quality of the habitat in High Park. High participation rates increase the negative effects on habitats and species.

5.2 Site Recommendations

The recommendations address the objective of protecting regional biodiversity in the TRCA jurisdiction. In order to at least maintain, and preferably enhance, the current level of biodiversity at High Park, the overall integrity of the natural heritage system that includes this provincially-significant area 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 occur with increasing public use of the site. Managing public use, strategic placement of interpretive signage, allowing healthy dynamic natural processes to proceed, and controlling invasive species will all aid in addressing the negative matrix influences that are occurring on the park.

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 could be to focus on ***maintaining conditions that allow existing communities or species of conservation concern to thrive***. A good goal would be ***to prevent any further extirpations*** of species of conservation concern.

   a. In order to maintain biodiversity at High Park, all aspects of the park need to be addressed in a unified fashion. An overarching program would include an up-to-date management plan addressing the park as a whole with its various uses. Management zones would be updated based on existing ELC and species data.

   b. Highlight the success of existing restoration work in the oak woodland and savannah habitats to secure ongoing support and expansion of the program.

   c. Expand the areas of restoration, including forest and wetland habitats.

   d. Areas selected for restoration should have soil and moisture assessments conducted in order to help determine suitable lists of species for planting. If soil conditions are suitable, consideration should be given to enhancing wetland features.

   e. Special attention should be directed toward protecting and propagating populations of the most locally-at-risk plant species. Examples include those in Table 8 that are only in High Park or one or two other locations.

   f. Continue the policy of planting only species historically known from High Park and the adjacent Humber Plains in park restoration projects, as recommended by Varga (2008). This will help to retain the unique character of High Park's ecosystems within the Toronto area.

g. Seed collection should include acorns from pre-development relict trees in the surrounding neighbourhoods. Original black oaks are numerous in some West Toronto neighbourhoods.

h. The native plant propagation program at the High Park Greenhouses could be enhanced through communication and collaboration with the TRCA nursery, the Toronto Botanical Garden, and possibly the Rouge National Urban Park (which also has areas of woodland habitat).

i. In the longer term, efforts could be made to improve habitat connectivity across High Park, and between High Park and other natural areas. The most obvious linkage is south to the Lake Ontario waterfront, where the transportation infrastructure presents a formidable barrier but also where sizeable patches of natural habitat remain both north and south of the barrier.

j. There is a "stepping stone" connection west across Catfish Pond to the Humber Marshes Provincially Significant Wetland Complex. Consideration should be given to including High Park's wetlands (excluding storm water ponds) within this wetland complex. Several minor to moderate roads lie between Grenadier Pond and the Humber, but the distance between Humber Marshes and Catfish Pond lies within the 750 m threshold accepted for including wetland units within a single complex (OMNRF 2013). This, in addition the uplands being already designated an ANSI, may help gain support for protection and restoration of High Park's ponds and wetlands.

2. Manage Public Use

High Park is nestled in a highly urbanized landscape and is therefore extremely influenced by urban matrix influences. Such influences negatively affect natural systems and the park has lost many of its original flora and fauna species since the 1880s. It seems unlikely that sensitive ground-nesting bird species will be able to thrive at the site. However, it is important to consider the significance of High Park's waterfront location for dispersal and migration. Such urban habitats – especially those as extensive as High Park – feed and shelter significant numbers of migrating songbirds in both spring and fall, even though only very few of these birds stay to attempt nesting. At the Study Area, visitor pressure is currently high and is expected to increase. Strategies for managing human-use are needed if ecological health is to be maintained, or enhanced.

a. Some areas should be left as refuges for flora and fauna with minimal access, especially Species of Concern; they are generally sensitive to human presence. Key habitats needing protection include the mixed and hardwood forests along Spring Creek as well as the oak woodland and savannah communities; these habitats support the more sensitive flora and fauna species (Maps 10, 11a, 13). Restricting the number and width of informal trails should help without affecting public enjoyment due to the high density of trails elsewhere within the park.

b. Hikers and dog-walkers are intensive users of the site. The fenced dogs-off leash area on Dog Hill is well constructed and accommodates and manages many dogs, however many owners walk their dogs off-leash outside this designated area. Leash laws may need be enforced outside designated areas. Where off-leash dog use occurs (regardless of whether it is officially permitted or is not), there is a considerable risk of disturbance to low and ground-nesting birds and herpetofauna such as American toad and gartersnake in upland foraging habitats. Trampling has

also had a severe impact on the Spring Road Ravine, which has sensitive forest plants along the east side between Howard Pond and High Park Blvd (see Map 11a). Such disturbance would result in reduced abundance and possibly eventual extirpation of these species. If resources are limited for enforcement of leash laws, the patrols can be targeted in areas where there are high concentrations of L1-L3 species and communities.

c. Fences should be improved both in terms of security and aesthetics in places where they have deteriorated or been breached: for example, along the east side of Dog Hill and along Spring Road.

d. High Park already has an impressive record of community involvement. Involving the local community in any restoration efforts at High Park will enhance a sense of good stewardship, which in turn will result in more ecologically positive behaviour, e.g. responsible gardening practices including proper disposal of yard waste; planting of native species adjacent to the site; removal of encroachments, and responsible dog-ownership.

3. Control Invasive Species

Several invasive plant species are threats to the native biodiversity at High Park. Some excellent work has already been done to address them in the oak woodlands, and work is starting on common reed at Grenadier Pond. ***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 widespread and established they are.

a. Take a proactive management approach to invasive species control. Pre-assess areas targeted for restoration plantings or trail installation and remove existing exotic populations. This would include local removal of dog-strangling vine, euonymus, Norway maple, common reed, and other species that are found throughout the site.

b. The fragmentation of the site by roads can be used to advantage here. Isolated habitat patches once treated may have a slower rate of recolonization of invasives from adjacent patches.

c. Newly-burned and planted areas will be particularly vulnerable to invasive species. An aggressive management plan will need to be implemented to prevent any planted areas from succumbing. Existing and proposed restoration sites, and their periphery, should be top priorities for removal.

d. Any wetland features created or restored should be monitored for common reed and reed canary grass. Consider removing these and replant area with native wetland plants effective at out-competing their exotic counterparts such as sweet flag, Joe Pye weed (*Eutrochium maculatum*), Canada bluejoint, soft-stemmed bulrush *(Schoenoplectus tabernaemontani),* sedges (*Carex* spp) and soft rush *(Juncus effusus)*.

e. In addition to removal efforts, encourage public to adopt simple practices that would help limit further spread of invasive species. For example, encouraging adjacent landowners to substitute native or at least non-invasive ground covers in their back yards can prevent the spread of exotic species (e.g. periwinkle) while expanding the habitat of High Park, particularly for pollinators. Likewise, allotment gardeners should monitor their plots for any invasives that may show up.

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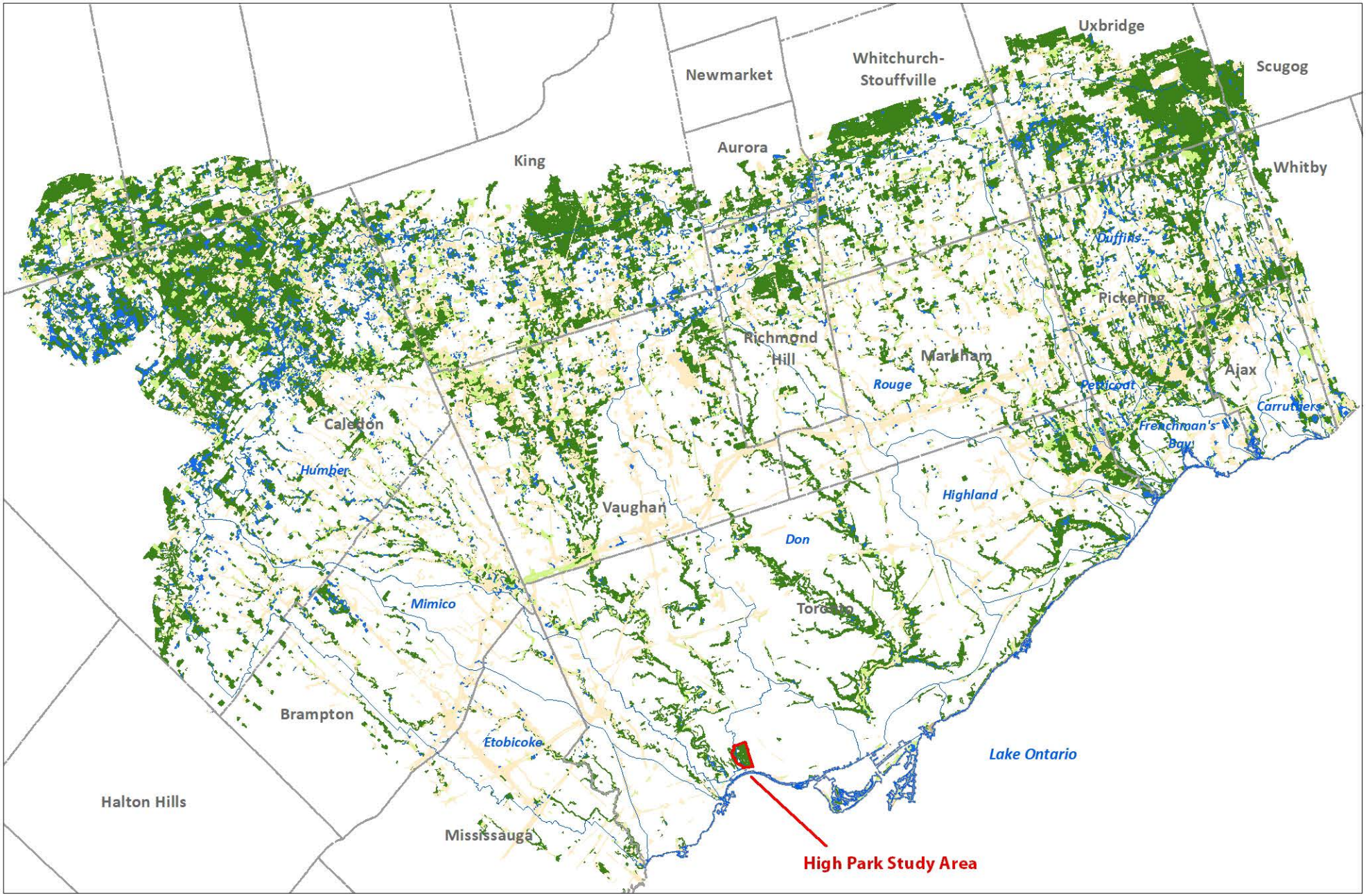


Toronto and Region Conservation Authority

N

0 2.5 5 10 15 20 Kilometers

January 2019
* Landscape analysis based on 2013 Orthophotography

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

Natural Cover *

- Forest
- Successional
- Meadow
- Wetland
- Beach/Bluff
- High Park Study Area
- TRCA Jurisdiction
- Watershed
- Municipal Boundary

Toronto and Region Conservation Authority

N

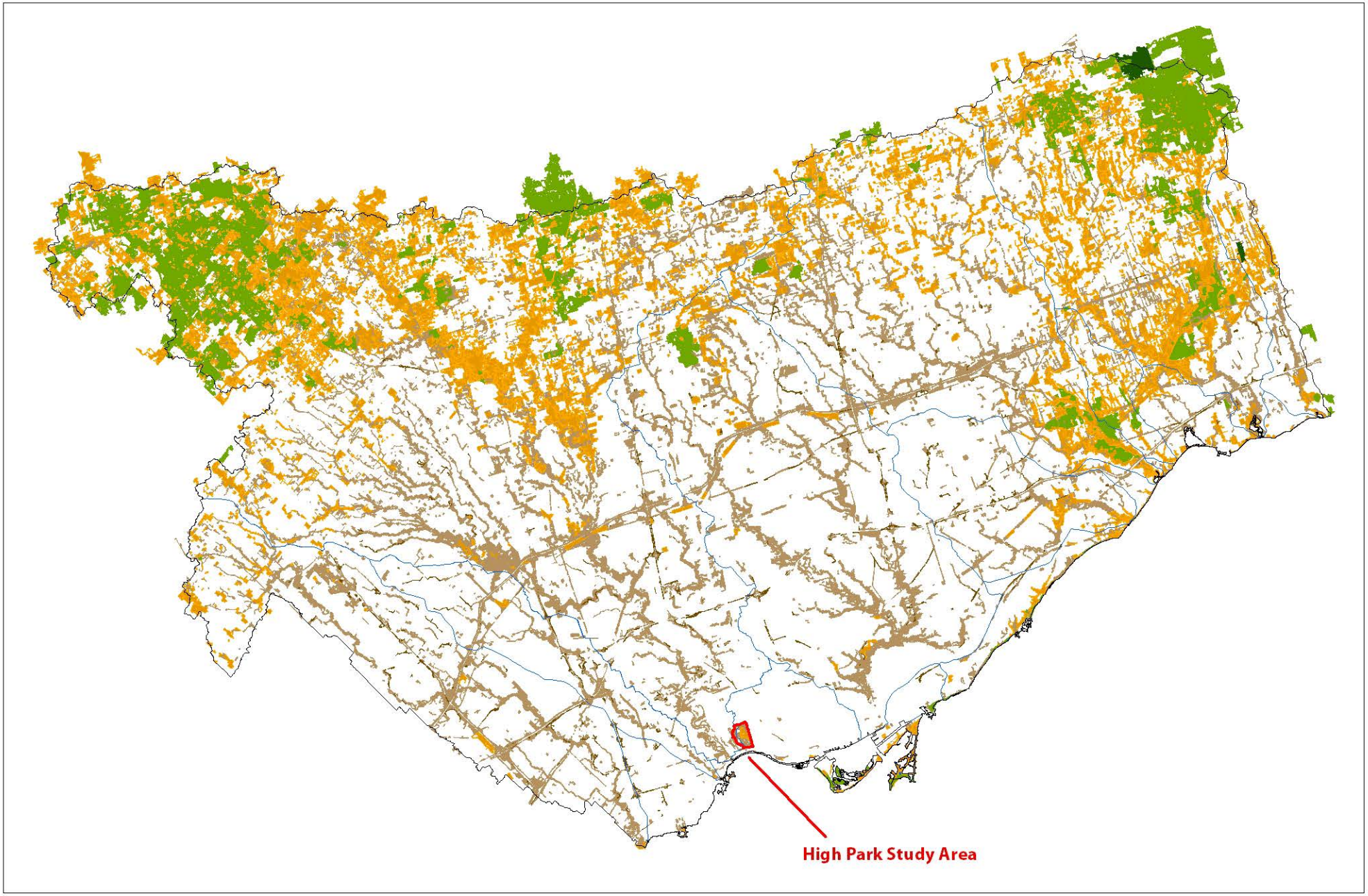
0 100 200 400 Meters

January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 2: High Park Study Area

High Park Study Area

Watercourse



Toronto and Region Conservation Authority

N

0 2.5 5 10 15 20 Kilometers

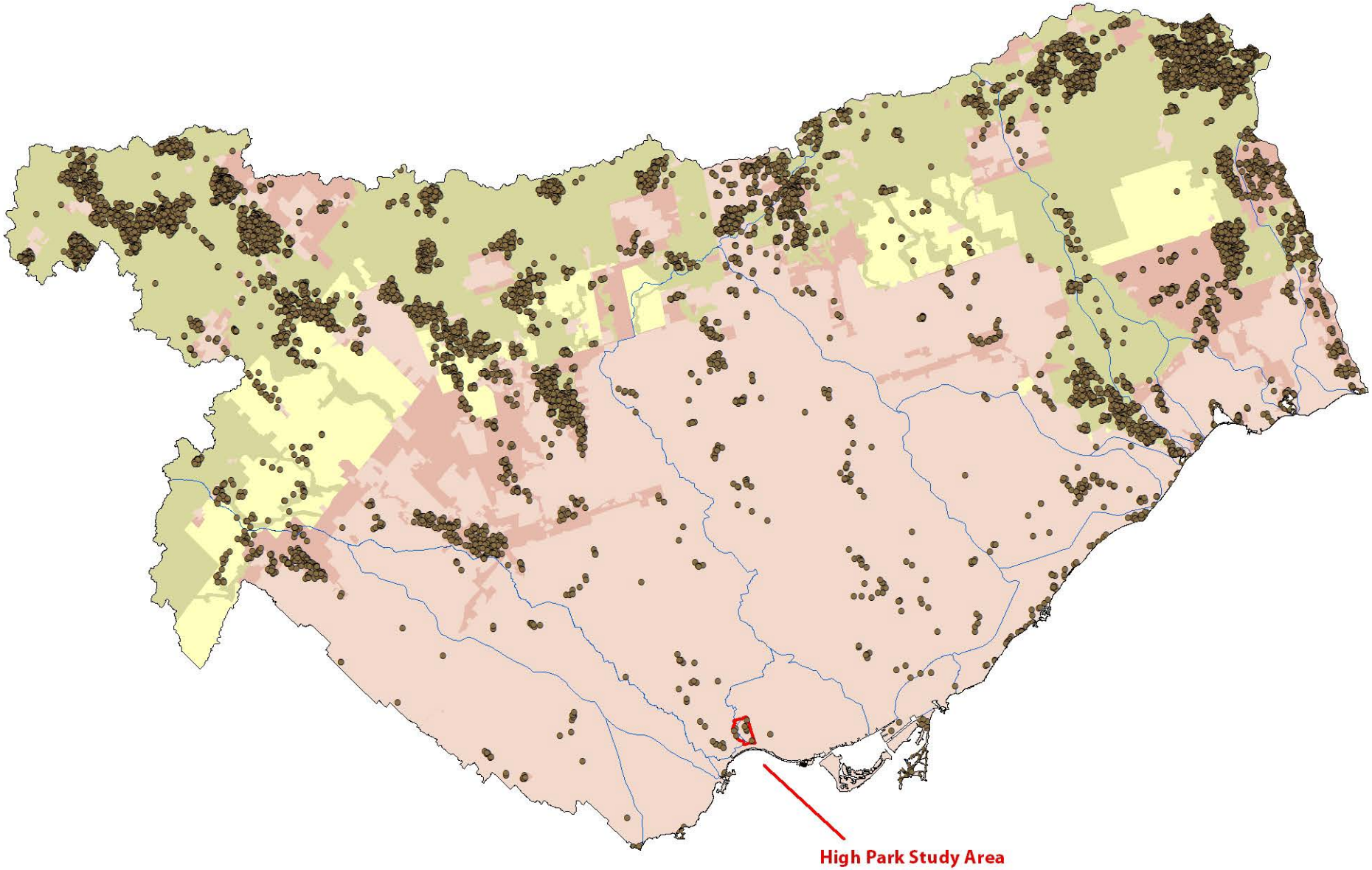
Date: January 2019
* Landscape analysis based on 2013 Orthophotography

Map 3:
Regional Natural System
Habitat Patch Quality

Habitat Patch Quality *

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

- High ParkStudy Area
- TRCA Jurisdiction
- Watershed



Toronto and Region Conservation Authority

N

0 2.5 5 10 15 20 Kilometers

January 2019

Map 4: Distribution of Fauna Regional Species of Concern

- Fauna Species of Concern (L1 - L3)
- High Park Study Area
- 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
- High Park Study Area

Habitat Patch Size Scores *

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

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, 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.

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 6: Interior Forest at High Park Study Area

High Park Study Area

Forest

Forest Interior

100m-200m

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
- High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 7: 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

High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 8: 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 Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions
* Landscape analysis based on 2013 Orthophotography

Map 9: Habitat Patch Quality

Habitat Patch Quality *

- L1 - Excellent
- L2 - Good
- L3 - Fair
- L4 - Poor
- L5 - Very Poor
- High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 10: Vegetation Communities with their Associated Local Ranks

Vegetation Community Ranks

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

High Park Study Area

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

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 11a: Location of Flora Species of Concern L1-L3

Flora Species of Concern (L1-L3)

- L1
- L2
- L3

Planted Flora Species of Concern (L1-L3)

- L1
- L2
- L3

High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 11b: Location of Flora Species of Concern L4

Flora Species of Concern (L4)
L4

Planted Flora Species of Concern (L4)
L4

High Park Study Area

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

- Forest (Deciduous)
- Forest (Mixed)
- Forest (Plantation)
- Woodland/Savannah/Prarie
- Successional
- Meadow
- Wetland
- Aquatic
- Flora Species
- Planted Flora Species
- High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 12: 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 Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 13: Locations of Fauna Species of Concern

Fauna Species of Concern

L1 L3
L2 L4

Frog Species of Concern

L1 L3
L2 L4

High Park Study Area

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

- Forest (Deciduous)
- Forest (Mixed)
- Forest (Plantation)
- Woodland/Savannah/Prarie
- Successional
- Meadow
- Wetland
- Aquatic
- Fauna Species
- Frog Species
- High Park Study Area

Toronto and Region Conservation Authority

N

0 100 200 400 Meters

Date: January 2019
Orthophoto: Spring 2017, First Base Solutions

Map 14: Fauna Species Habitat Dependence Scores

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

Appendix 1: Vegetation Communities found in High Park (2018)

ELC Code	Vegetation Type *(* indicates present as inclusion and/or complex only)*	Tot. Area # ha	Scores Local Occur.	Geophy. Requir.	2018 Score	Local Rank May-18
	Forest					
FOM2-1	Dry-Fresh White Pine - Oak Mixed Forest	5.8	3.5	4.0	7.5	**L2**
FOM3-1	Dry-Fresh Hardwood Hemlock Mixed Forest	0.2	2.5	3.0	5.5	**L3**
FOM6-2	Fresh-Moist Hemlock - Hardwood Mixed Forest	0.5	2.5	3.0	5.5	**L3**
FOM8-B	Fresh-Moist Hardwood Mixed Forest	0.3	3.0	2.0	5.0	**L3**
FOD1-1	Dry-Fresh Red Oak Deciduous Forest	5.0	3.5	4.0	7.5	**L2**
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest	5.0	3.5	4.0	7.5	**L2**
FOD2-4	Dry-Fresh Oak - Hardwood Deciduous Forest	15.0	2.5	2.0	4.5	**L4**
FOD4-2	Dry-Fresh White Ash Deciduous Forest	0.1	3.0	0.0	3.0	**L4**
FOD4-d	Dry-Fresh Norway Maple Deciduous Forest	0.1	3.5	0.0	3.5	**L+**
FOD4-e	Dry-Fresh Exotic Deciduous Forest	1.4	2.5	0.0	2.5	**L+**
FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest	0.1	1.5	0.0	1.5	**L5**
FOD5-3	Dry-Fresh Sugar Maple - Oak Deciduous Forest	0.3	2.0	2.0	4.0	**L4**
FOD6-5	Fresh-Moist Sugar Maple - Hardwood Deciduous Forest	0.1	2.0	0.0	2.0	**L5**
FOD7-2	Fresh-Moist Ash Deciduous Forest	0.9	2.0	1.0	3.0	**L4**
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	0.7	2.0	0.0	2.0	**L5**
FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	1.1	1.5	0.0	1.5	**L5**
FOD7-b	Fresh-Moist Norway Maple Deciduous Forest	1.9	3.0	0.0	3.0	**L+**
FOD7-c	Fresh-Moist Exotic Lowland Deciduous Forest	1.7	2.0	0.0	2.0	**L+**
FOD8-1	Fresh-Moist Poplar Deciduous Forest	0.1	2.0	0.0	2.0	**L5**
FOD9-1	Fresh-Moist Oak - Sugar Maple Deciduous Forest	0.7	2.5	2.0	4.5	**L4**
FOD9-2	Fresh-Moist Oak - Lowland Maple Deciduous Forest	3.3	3.5	1.0	4.5	**L4**
FOD9-B	Fresh-Moist Oak - Birch Deciduous Forest	0.3	5.0	2.0	7.0	**L2**
CUP1-1	Sugar Maple Deciduous Plantation	0.3	4.0	0.0	4.0	**L5**
CUP1-5	Silver Maple Deciduous Plantation	0.1	3.0	0.0	3.0	**L5**
CUP1-A	Restoration Deciduous Plantation	*c	2.0	0.0	2.0	**L5**
CUP1-c	Locust Deciduous Plantation	0.4	2.0	0.0	2.0	**L+**
CUP2-A	Restoration Mixed Plantation	0.2	2.0	0.0	2.0	**L5**
CUP2-c	Norway Maple - Conifer Mixed Plantation	2.8	3.0	0.0	3.0	**L+**
CUP2-h	Horticultural Mixed Plantation	0.3	3.0	0.0	3.0	**L+**
CUP3-2	White Pine Coniferous Plantation	0.1	2.0	0.0	2.0	**L5**
CUP3-3	Scots Pine Coniferous Plantation	0.3	2.0	0.0	2.0	**L+**
CUP3-b	Austrian Pine Coniferous Plantation	0.3	3.0	0.0	3.0	**L+**

Appendix 1: Vegetation Communities found in High Park (2018)

ELC Code	Vegetation Type *(* indicates present as inclusion and/or complex only)*	Tot. Area # ha	Scores Local Occur.	Geophy. Requir.	2018 Score	Local Rank May-18
CUP3-e	Norway Spruce Coniferous Plantation	0.1	2.0	0.0	2.0	**L+**
CUP3-H	Mixed Conifer Coniferous Plantation	*i	1.0	0.0	1.0	**L5**
	Successional					
CUT1-1	Sumac Deciduous Thicket	0.6	2.0	0.0	2.0	**L5**
CUT1-4	Grey Dogwood Deciduous Thicket	0.2	4.0	0.0	4.0	**L4**
CUT1-A1	Native Deciduous Sapling Regeneration Thicket	0.1	2.0	0.0	2.0	**L5**
CUT1-b	Buckthorn Deciduous Thicket	0.1	2.0	0.0	2.0	**L+**
CUT1-G	Willow Deciduous Thicket	0.2	3.5	0.0	3.5	**L4**
CUS1-A4	Fresh-Moist Cottonwood Tall Treed Savannah	0.1	3.5	0.0	3.5	**L4**
CUS1-b	Exotic Successional Savannah	0.4	2.0	0.0	2.0	**L+**
CUW1-A3	Native Deciduous Successional Woodland	0.9	1.0	0.0	1.0	**L5**
CUW1-b	Exotic Successional Woodland	3.9	1.0	0.0	1.0	**L+**
	Wetland					
SWD3-4	Manitoba Maple Mineral Deciduous Swamp	0.5	3.0	1.0	4.0	**L4**
SWD4-1	Willow Mineral Deciduous Swamp	1.0	2.0	1.0	3.0	**L4**
SWD4-3	Paper Birch - Poplar Mineral Deciduous Swamp	0.3	2.0	2.0	4.0	**L4**
SWD7-A	Willow Organic Deciduous Swamp	0.1	3.5	2.0	5.5	**L3**
SWT2-5	Red-osier Mineral Thicket Swamp	0.1	2.0	2.0	4.0	**L4**
MAM2-1	Bluejoint Mineral Meadow Marsh	0.1	3.5	2.0	5.5	**L3**
MAM2-2	Reed Canary Grass Mineral Meadow Marsh	0.0	2.0	1.0	3.0	**L+**
MAM2-10	Forb Mineral Meadow Marsh	0.4	2.0	1.0	3.0	**L4**

Appendix 1: Vegetation Communities found in High Park (2018)

ELC Code	Vegetation Type *(* indicates present as inclusion and/or complex only)*	Tot. Area # ha	Scores: Local Occur.	Scores: Geophy. Requir.	Scores: 2018 Score	Local Rank May-18
MAM2-h	Japanese Knotweed Mineral Meadow Marsh	0.1	5.0	0.0	5.0	**L+**
MAS2-1b	Narrow-Leaved Cattail Mineral Shallow Marsh	0.3	1.5	0.0	1.5	**L+**
MAS2-a	Common Reed Mineral Shallow Marsh	0.4	2.5	0.0	2.5	**L+**
MAS3-1b	Narrow-leaved Cattail Organic Shallow Marsh	0.3	3.5	1.0	4.5	**L+**
MAS3-9	Common Reed Organic Shallow Marsh	0.7	4.0	2.0	6.0	**L+**
	Aquatic					
SAS1-A	Coon-tail Submerged Shallow Aquatic	3.4	3.0	1.0	4.0	**L4**
SAM1-A	Water Lily - Bullhead Lily Mixed Shallow Aquatic	0.5	2.5	2.0	4.5	**L4**
OAO1-T	Turbid Open Aquatic (disturbed unvegetated)	2.6	2.0	0.0	2.0	**L+**
	Dynamic (Beach, Bluff, Barren, Prairie, Savannah)					
BBO2-B	Rubble Open Riparian Bank	*i	4.0	0.0	4.0	**L5**
BBT2-B	Rubble Treed Riparian Bank	*i	5.0	0.0	5.0	**L5**
SBO1-c	Hard Fescue Sand Barren	0.1	5.0	3.0	8.0	**L+**
TPO1-1	Dry Tallgrass Prairie	1.1	4.5	5.0	9.5	**L1**
TPS1-1	Dry Black Oak Tallgrass Savannah	4.4	4.5	4.0	8.5	**L1**
TPS1-2A	Mixed Oak - Pine Tallgrass Savannah	0.6	5.0	4.0	9.0	**L1**
TPW1-1	Dry Black Oak - White Oak Tallgrass Woodland	14.6	4.5	4.0	8.5	**L1**
TPW1-A	Mixed Oak - Pine Tallgrass Woodland	0.6	4.5	4.0	8.5	**L1**
CUS1-3A	White Oak Non-tallgrass Savannah	0.3	5.0	3.0	8.0	**L2**
CUW1-2	Red Oak Non-tallgrass Woodland	2.6	3.5	2.0	5.5	**L3**
CUW1-2A	Black Oak Non-tallgrass Woodland	5.9	4.5	3.0	7.5	**L2**
	Meadow					
CUM1-A	Native Forb Meadow	0.1	1.0	0.0	1.0	**L5**

Legend

L1-L3: community of regional conservation concern
L4: community of conservation concern in urban area
L5: community not of concern at this time
L+: community of predominantly introduced species
*c,i: community only present as complex (c) or inclusion (i)

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Orobanchaceae	*Agalinis purpurea var. parviflora*	small-flowered gerardia	5	4	5	5	19	**L1**	x		e	1889
Fabaceae	*Astragalus canadensis*	Canada milk-vetch	5	5	4	5	19	**L1**	x		e	1891
Campanulaceae	*Campanula rotundifolia*	harebell	5	5	4	5	19	**L1**	x	xpn		2018
Rhamnaceae	*Ceanothus americanus*	New Jersey tea	5	5	4	5	19	**L1**	x	xpn		2018
Asteraceae	*Cirsium muticum*	swamp thistle	5	5	4	5	19	**L1**	x		e	1953
Myricaceae	*Comptonia peregrina*	sweet-fern	5	5	5	5	20	**L1**	x	x		2018
Orchidaceae	*Corallorhiza trifida*	early coral-root	4	5	5	5	19	**L1**	x		e	1913
Cistaceae	*Crocanthemum bicknellii*	Bicknell's frostweed	5	5	4	5	19	**L1**	x	x		2018
Cistaceae	*Crocanthemum canadense*	frostweed	5	5	5	5	20	**L1**	x	x		2018
Ericaceae	*Gaultheria hispidula*	creeping snowberry	4	5	5	5	19	**L1**	x		e	1907
Gentianaceae	*Gentianella quinquefolia*	stiff gentian	5	5	5	5	20	**L1**	x		e	1907
Hypericaceae	*Hypericum prolificum*	shrubby St. John's-wort	5	5	5	4	19	**L1**	x	xp	pe	2018
Cistaceae	*Lechea intermedia*	pinweed	5	5	5	4	19	**L1**	x	x		2018
Fabaceae	*Lespedeza hirta*	hairy bush-clover	5	5	4	5	19	**L1**	x	x		2018
Asteraceae	*Liatris cylindracea*	cylindric blazing-star	5	5	5	5	20	**L1**	x	xpn		2018
Saxifragaceae	*Micranthes virginiensis*	early saxifrage	5	5	5	5	20	**L1**	x		e	1905
Orobanchaceae	*Pedicularis canadensis*	wood-betony	4	5	5	5	19	**L1**	x		e	2007
Asteraceae	*Petasites frigidus*	palmate-leaved sweet coltsfoot	5	5	5	4	19	**L1**	x		e	1933
Polygalaceae	*Polygala polygama*	racemed milkwort	5	5	5	5	20	**L1**	x		e	1999
Polygalaceae	*Polygala verticillata*	whorled milkwort	5	5	5	5	20	**L1**	x		e	1999
Ophioglossaceae	*Sceptridium multifidum*	leathery grape fern	5	5	5	5	20	**L1**	x		e	1907
Asteraceae	*Solidago ptarmicoides*	upland white goldenrod	5	5	5	4	19	**L1**	xp	xp	!	2018
Orchidaceae	*Spiranthes romanzoffiana*	hooded ladies' tresses	5	4	5	5	19	**L1**	x		e	1896
Violaceae	*Viola sagittata* var. *ovata*	arrow-leaved violet	5	5	4	5	19	**L1**	x	x		2018
Rosaceae	*Amelanchier spicata*	running serviceberry	4	4	4	5	17	**L2**	x	xpn		2018
Ranunculaceae	*Anemone americana*	round-lobed hepatica	3	5	5	5	18	**L2**	x	x		2018
Apocynaceae	*Asclepias exaltata*	poke milkweed	3	5	4	5	17	**L2**	x		e	1972
Poaceae	*Avenella flexuosa*	common hairgrass	5	5	4	4	18	**L2**	x	x		2018
Araceae	*Calla palustris*	water arum	3	5	4	5	17	**L2**	x		e	1953
Brassicaceae	*Cardamine nymanii*	cuckoo-flower	4	4	5	4	17	**L2**	x		e	1890
Cyperaceae	*Carex aquatilis*	water sedge	4	4	5	5	18	**L2**	x		e	1980
Cyperaceae	*Carex lasiocarpa*	slender woolly sedge	3	4	5	5	17	**L2**	x		e	1896
Ericaceae	*Chimaphila umbellata* ssp. *umbellata*	pipsissewa	4	4	5	5	18	**L2**	x		e	1897
Ranunculaceae	*Coptis trifolia*	goldthread	2	5	5	5	17	**L2**	x		e	1980
Cornaceae	*Cornus canadensis*	bunchberry	3	5	5	5	18	**L2**	x		e	1980
Lythraceae	*Decodon verticillatus*	swamp loosestrife	4	5	4	5	18	**L2**	x		e	1976
Poaceae	*Dichanthelium latifolium*	broad-leaved panic grass	4	5	5	4	18	**L2**	x		e	1927
Poaceae	*Dichanthelium xanthophysum*	yellow panic grass	5	4	4	5	18	**L2**	x		e	1953
Cyperaceae	*Eleocharis elliptica*	elliptic spike-rush	5	3	5	4	17	**L2**	x		e	1906
Asteraceae	*Erechtites hieraciifolius* var. *hieraciifolius*	burnweed	5	5	3	4	17	**L2**	x		e	1920s
Asteraceae	*Erigeron pulchellus*	Robin's plantain	4	5	4	5	18	**L2**	x		e	1980
Phrymaceae	*Erythranthe moschata*	musk-flower	5	5	4	4	18	**L2**	x		e	1932
Ericaceae	*Gaultheria procumbens*	wintergreen	3	5	4	5	17	**L2**	x	x		2018
Ericaceae	*Gaylussacia baccata*	black huckleberry	4	4	4	5	17	**L2**	x	x		2018
Gentianaceae	*Gentianopsis crinita*	fringed gentian	3	4	5	5	17	**L2**	x		e	1925
Asteraceae	*Heliopsis helianthoides*	ox-eye	5	5	4	4	18	**L2**		xpr	!	2018
Lycopodiaceae	*Huperzia lucidula*	shining club-moss	3	5	5	5	18	**L2**	x		e	1913
Hypericaceae	*Hypericum fraseri*	marsh St. John's-wort	3	5	4	5	17	**L2**	x		e	1896
Fabaceae	*Lathyrus palustris*	marsh vetchling	5	4	4	4	17	**L2**	x		e	1972

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Asteraceae	*Liatris spicata*	spike blazing-star	5	3	5	5	18	**L2**		xp	!	2018
Caprifoliaceae	*Linnaea borealis* ssp. *longiflora*	twinflower	3	5	5	5	18	**L2**	x		e	1886
Fabaceae	*Lupinus perennis*	wild lupine	5	3	5	5	18	**L2**	x	x		2018
Menyanthaceae	*Menyanthes trifoliata*	bog buckbean	4	4	5	5	18	**L2**	x		e	1896
Osmundaceae	*Osmunda claytoniana*	interrupted fern	3	5	5	5	18	**L2**	x	x		2018
Pinaceae	*Pinus resinosa*	red pine	2	5	5	5	17	**L2**	x	xpn		2018
Platanaceae	*Platanus occidentalis*	sycamore	5	5	5	3	18	**L2**	x	xpn		2018
Polygalaceae	*Polygaloides paucifolia*	fringed polygala	3	5	4	5	17	**L2**	x		e	1972
Pontederiaceae	*Pontederia cordata*	pickerel-weed	4	4	5	4	17	**L2**	x		e	1953
Potamogetonaceae	*Potamogeton amplifolius*	large-leaved pondweed	4	4	5	4	17	**L2**	x		e	1896
Potamogetonaceae	*Potamogeton illinoensis*	Illinois pondweed	5	4	5	4	18	**L2**	x		e	1896
Fagaceae	*Quercus alba*	white oak	3	5	4	5	17	**L2**	x	xpn		2018
Fagaceae	*Quercus velutina*	black oak	4	4	4	5	17	**L2**	x	xpn		2018
Fagaceae	*Quercus* x *hawkinsii*	red-black hybrid oak	5	4	4	4	17	**L2**	x	x		2018
Ranunculaceae	*Ranunculus aquatilis* var. *diffusus*	white water crowfoot	4	3	5	5	17	**L2**	x		e	1910
Rosaceae	*Rosa carolina*	pasture rose	5	5	4	3	17	**L2**	x	xpr	pe	2018
Rosaceae	*Rosa palustris*	swamp rose	4	4	5	4	17	**L2**		xp	!	2018
Alismataceae	*Sagittaria rigida*	sessile-fruited arrowhead	5	4	5	4	18	**L2**	x		e	1949
Salicaceae	*Salix humilis*	prairie willow	5	4	5	4	18	**L2**	x	xpn		2018
Ophioglossaceae	*Sceptridium dissectum*	cut-leaved grape fern	4	4	5	5	18	**L2**	x		e	1913
Poaceae	*Schizachyrium scoparium*	little bluestem	4	4	5	5	18	**L2**	x	xpn		2018
Elaeagnaceae	*Shepherdia canadensis*	russet buffalo-berry	4	4	5	4	17	**L2**	x		e	1972
Asteraceae	*Solidago hispida*	hairy goldenrod	5	4	4	5	18	**L2**	x	xpn		2018
Asteraceae	*Solidago squarrosa*	stout goldenrod	5	5	4	4	18	**L2**	x		e	1980
Poaceae	*Sorghastrum nutans*	Indian grass	5	4	5	4	18	**L2**	x	xpn		2018
Apiaceae	*Taenidia integerrima*	yellow pimpernel	4	4	4	5	17	**L2**	x		e	1933
Ericaceae	*Vaccinium angustifolium*	lowbush blueberry	5	4	4	5	18	**L2**	x	x		2018
Ericaceae	*Vaccinium myrtilloides*	velvet-leaf blueberry	4	4	4	5	17	**L2**	x	x		2018
Ericaceae	*Vaccinium pallidum*	hillside blueberry	4	4	5	5	18	**L2**	x	x		2018
Pinaceae	*Abies balsamea*	balsam fir	2	3	4	5	14	**L3**		xp	!	2018
Acoraceae	*Acorus americanus*	sweet flag	3	3	5	4	15	**L3**	x	xpn		2018
Orobanchaceae	*Agalinis tenuifolia*	slender gerardia	3	4	5	4	16	**L3**	x		e	pre-1926
Rosaceae	*Agrimonia pubescens*	hairy agrimony	5	3	4	3	15	**L3**	x	x		2018
Poaceae	*Agrostis perennans*	upland bent grass	5	3	4	3	15	**L3**		x		2018
Betulaceae	*Alnus incana* ssp. *rugosa*	speckled alder	1	4	4	5	14	**L3**	x		e	1998
Asteraceae	*Anaphalis margaritacea*	pearly everlasting	3	4	4	3	14	**L3**	xp	xpr	!	2018
Poaceae	*Andropogon gerardii*	big bluestem	4	3	4	4	15	**L3**	x	xpn		2018
Ranunculaceae	*Anemone acutiloba*	sharp-lobed hepatica	1	4	4	5	14	**L3**	x		e	1972
Ranunculaceae	*Anemone cylindrica*	long-fruited thimbleweed	2	4	3	5	14	**L3**	x	xpn		2018
Ranunculaceae	*Anemone quinquefolia* var. *quinquefolia*	wood-anemone	2	4	3	5	14	**L3**	x	x		2018
Asteraceae	*Antennaria parlinii* ssp. *fallax*	plantain-leaved pussytoes	3	4	3	4	14	**L3**	x		e	2008
Araliaceae	*Aralia racemosa* ssp. *racemosa*	spikenard	2	4	4	4	14	**L3**	x	x		2018
Asteraceae	*Artemisia campestris* ssp. *caudata*	beach wormwood	4	4	4	4	16	**L3**	x		e	2003
Cyperaceae	*Bolboschoenus fluviatilis*	river bulrush	3	2	5	4	14	**L3**	x(p?)	xpr		2018
Poaceae	*Brachyelytrum aristosum*	northern short-husk	4	4	4	4	16	**L3**	x	x		2018
Poaceae	*Bromus ciliatus*	fringed brome grass	3	4	4	5	16	**L3**	x		e	2003
Convolvulaceae	*Calystegia spithamaea* ssp. *spithamaea*	low bindwind	4	4	4	4	16	**L3**	x	x		2018
Campanulaceae	*Campanula aparinoides*	marsh bellflower	3	4	5	4	16	**L3**	x		e	1889

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Brassicaceae	*Cardamine douglassii*	purple cress	4	4	4	4	16	**L3**	x		e	1907
Cyperaceae	*Carex brevior*	short-fruited sedge	4	3	4	4	15	**L3**		xpr	!	2018
Cyperaceae	*Carex crinita*	fringed sedge	2	4	4	4	14	**L3**		x		2018
Cyperaceae	*Carex diandra*	lesser panicled sedge	3	4	5	4	16	**L3**	x		e	1939
Cyperaceae	*Carex laevivaginata*	smooth-sheathed sedge	2	4	4	4	14	**L3**	x	x		2018
Cyperaceae	*Carex leptonervia*	few-nerved wood sedge	2	4	4	4	14	**L3**	x		e	1939
Cyperaceae	*Carex muehlenbergii* var. *muehlenbergii*	Muhlenberg's sedge	4	4	4	4	16	**L3**	x		e	1980
Cyperaceae	*Carex siccata*	hay sedge	4	3	4	4	15	**L3**	x	x		2018
Cyperaceae	*Carex tonsa* var. *rugosperma*	red-seeded sedge	4	4	4	4	16	**L3**	x	x		2018
Juglandaceae	*Carya ovata*	shagbark hickory	2	4	4	4	14	**L3**		x		2018
Celastraceae	*Celastrus scandens*	American bittersweet	2	4	3	5	14	**L3**	x		e	1970s?
Onagraceae	*Chamerion angustifolium* ssp. *angustifolium*	fire-weed	4	4	4	4	16	**L3**	x		e	pre-1926
Plantaginaceae	*Chelone glabra*	turtlehead	2	3	4	5	14	**L3**	x	x		2018
Poaceae	*Cinna arundinacea*	tall wood reed	3	4	4	3	14	**L3**		x		2018
Liliaceae	*Clintonia borealis*	bluebead lily	2	5	4	5	16	**L3**	x	x		2018
Santalaceae	*Comandra umbellata*	comandra	4	2	5	5	16	**L3**	x	x		2018
Rosaceae	*Comarum palustre*	marsh cinquefoil	3	4	4	5	16	**L3**	x		e	1898
Betulaceae	*Corylus americana*	American hazel	5	4	4	3	16	**L3**	x	xpn		2018
Cyperaceae	*Cyperus bipartitus*	two-parted umbrella-sedge	3	3	4	4	14	**L3**	x	x		2018
Cyperaceae	*Cyperus lupulinus*	slender umbrella-sedge	4	3	5	4	16	**L3**	x	x		2018
Woodsiaceae	*Deparia acrostichoides*	silvery glade fern	3	4	5	4	16	**L3**	x		e	1927
Poaceae	*Dichanthelium acuminatum* ssp. *implicatum*	Columbia panic grass	4	4	4	4	16	**L3**	x		e	1936
Asteraceae	*Doellingeria umbellata* var. *umbellata*	flat-topped aster	3	4	3	4	14	**L3**	x	x		2018
Rosaceae	*Drymocallis arguta*	tall cinquefoil	5	2	4	4	15	**L3**	xp		e	2003
Hydrocharitaceae	*Elodea nuttallii*	Nuttall's water-weed	4	3	5	3	15	**L3**	x		e	2003
Equisetaceae	*Equisetum pratense*	thicket horsetail	2	4	5	3	14	**L3**	x	x		2018
Equisetaceae	*Equisetum sylvaticum*	woodland horsetail	2	3	5	4	14	**L3**	x	x		2018
Rubiaceae	*Galium boreale*	northern bedstraw	3	4	4	3	14	**L3**	x	x		2018
Rubiaceae	*Galium lanceolatum*	wild licorice	4	5	4	3	16	**L3**	x		e	2008
Gentianaceae	*Gentiana andrewsii*	bottle gentian	3	4	4	5	16	**L3**	x		e	1889
Rosaceae	*Geum rivale*	water avens	3	4	5	4	16	**L3**	x		e	1898
Hamamelidaceae	*Hamamelis virginiana*	witch-hazel	2	4	4	4	14	**L3**	x	xpn		2018
Asteraceae	*Helianthus decapetalus*	thin-leaved sunflower	4	3	4	3	14	**L3**	x	xcf		2018
Asteraceae	*Helianthus divaricatus*	woodland sunflower	4	3	4	4	15	**L3**	x	xpn		2018
Asteraceae	*Hieracium umbellatum*	Canada hawkweed	5	2	4	5	16	**L3**	x	x		2018
Fabaceae	*Hylodesmum glutinosum*	pointed-leaved tick-trefoil	2	4	4	5	15	**L3**	x	xpn		2018
Iridaceae	*Iris versicolor* (poss. *I. virginicus*)	blue flag	2	5	4	5	16	**L3**	xcf		e	2003
Juglandaceae	*Juglans cinerea*	butternut	1	5	4	4	14	**L3**	x		e	2007
Araceae	*Lemna trisulca*	star duckweed	2	4	5	3	14	**L3**	x		e	1936
Fabaceae	*Lespedeza capitata*	round-headed bush-clover	4	2	4	5	15	**L3**	x	xpn		2018
Campanulaceae	*Lobelia inflata*	Indian tobacco	2	4	4	4	14	**L3**	x		e	2008
Campanulaceae	*Lobelia siphilitica*	great blue lobelia	2	3	4	5	14	**L3**	xp	xp	!	2018
Caprifoliaceae	*Lonicera canadensis*	fly honeysuckle	2	4	4	4	14	**L3**	x		e	1980?
Caprifoliaceae	*Lonicera dioica*	wild honeysuckle	2	4	4	4	14	**L3**	x	x		2018
Juncaceae	*Luzula acuminata*	hairy wood rush	3	4	4	3	14	**L3**	x	x		2018
Juncaceae	*Luzula multiflora* ssp. *multiflora*	wood rush	3	4	4	3	14	**L3**	x	x		2018
Primulaceae	*Lysimachia quadrifolia*	whorled loosestrife	5	4	4	3	16	**L3**	x	x		2018
Primulaceae	*Lysimachia terrestris*	swamp candles	4	4	4	4	16	**L3**	x		e	1976

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Liliaceae	*Medeola virginiana*	Indian cucumber-root	2	5	4	5	16	**L3**	x		e	1976
Menispermaceae	*Menispermum canadense*	moonseed	2	4	4	4	14	**L3**		x		2018
Poaceae	*Milium effusum*	wood millet	3	5	5	3	16	**L3**	x		e	1890
Rubiaceae	*Mitchella repens*	partridgeberry	2	4	4	5	15	**L3**	x		e	1976
Saxifragaceae	*Mitella diphylla*	mitrewort	2	3	4	5	14	**L3**	x		e	1980
Ericaceae	*Monotropa uniflora*	Indian-pipe	2	4	5	5	16	**L3**	x			2008
Asteraceae	*Nabalus albus*	white wood lettuce	3	4	4	3	14	**L3**	x		e	2003
Nymphaeaceae	*Nuphar variegata*	bullhead lily	3	4	5	3	15	**L3**	x		e	2003
Nymphaeaceae	*Nymphaea odorata* ssp. *tuberosa*	tuberous water-lily	3	3	5	3	14	**L3**	x	x		2018
Osmundaceae	*Osmunda regalis* var. *spectabilis*	royal fern	2	4	5	5	16	**L3**	x		e	1933
Osmundaceae	*Osmundastrum cinnamomeum*	cinnamon fern	2	4	5	5	16	**L3**	x		e	1970
Poaceae	*Panicum virgatum*	switch grass	3	2	5	5	15	**L3**	xp	xpr	!	2018
Araceae	*Peltandra virginica*	tuckahoe	5	2	5	4	16	**L3**	xp		e	2003
Plantaginaceae	*Penstemon digitalis*	foxglove beard-tongue	3	3	4	4	14	**L3**	xp	xpr	!	2018
Plantaginaceae	*Penstemon hirsutus*	hairy beard-tongue	4	4	4	3	15	**L3**		xpr	!	2018
Polygonaceae	*Persicaria amphibia* var. *emersa*	swamp smartweed	3	3	4	4	14	**L3**	x	xpr	pe	2018
Thelypteridaceae	*Phegopteris connectilis*	northern beech fern	3	3	5	5	16	**L3**	x		e	1982
Rosaceae	*Physocarpus opulifolius*	ninebark	3	2	5	4	14	**L3**	xp	xp	!	2018
Lamiaceae	*Physostegia virginiana* ssp. *virginiana*	false dragonhead	4	3	4	4	15	**L3**	xp		e	2003
Pinaceae	*Picea glauca*	white spruce	1	5	4	4	14	**L3**		xp	!	2018
Potamogetonaceae	*Potamogeton natans*	floating pondweed	2	4	5	3	14	**L3**	x		e	1896
Potamogetonaceae	*Potamogeton zosteriformis*	flat-stemmed pondweed	3	4	5	4	16	**L3**	x		e	1898
Rosaceae	*Potentilla simplex*	old-field cinquefoil	3	3	4	4	14	**L3**	x	x		2018
Lamiaceae	*Pycnanthemum virginianum*	Virginia mountain-mint	5	2	5	3	15	**L3**	xp	xpr	!	2018
Grossulariaceae	*Ribes triste*	swamp red currant	2	4	4	5	15	**L3**	x	x		2018
Rosaceae	*Rubus flagellaris*	northern dewberry	3	3	4	4	14	**L3**	x	xpn		2018
Salicaceae	*Salix nigra*	black willow	3	2	5	4	14	**L3**	xp		e	2003
Cucurbitaceae	*Sicyos angulatus*	bur cucumber	4	5	2	4	15	**L3**	x	x		2018
Poaceae	*Sporobolus cryptandrus*	sand dropseed	3	3	5	3	14	**L3**	x	x		2018
Colchicaceae	*Streptopus lanceolatus* var. *lanceolatus*	rose twisted-stalk	2	4	4	5	15	**L3**	x	x		2018
Caprifoliaceae	*Symphoricarpos albus* var. *albus*	eastern snowberry	2	4	4	5	15	**L3**	x	xpn		2018
Asteraceae	*Symphyotrichum laeve* var. *laeve*	smooth aster	4	4	4	2	14	**L3**	x	xpr		2018
Lamiaceae	*Teucrium canadense* ssp. *canadense*	wood-sage	3	3	4	4	14	**L3**	x		e	1896
Primulaceae	*Trientalis borealis*	star-flower	1	4	4	5	14	**L3**	x	x		2018
Lentibulariaceae	*Utricularia vulgaris*	common bladderwort	3	4	5	4	16	**L3**	x		e	1936
Verbenaceae	*Verbena stricta*	hoary vervain	3	5	4	4	16	**L3**	xp	xpr	!	2018
Adoxaceae	*Viburnum acerifolium*	maple-leaved viburnum	2	3	4	5	14	**L3**	x	x		2018
Violaceae	*Viola blanda*	sweet white violet	3	4	4	5	16	**L3**	x		e	1907
Violaceae	*Viola selkirkii*	Selkirk's violet	3	3	4	4	14	**L3**	x		e	1891
Apiaceae	*Zizia aurea*	golden Alexanders	4	4	4	3	15	**L3**		xp	!	2018
Sapindaceae	*Acer rubrum*	red maple	1	4	1	5	11	**L4**	x	xpn		2018
Sapindaceae	*Acer saccharinum*	silver maple	1	2	5	3	11	**L4**		xpn		2018
Sapindaceae	*Acer spicatum*	mountain maple	1	3	4	4	12	**L4**	x	xpn		2018
Ranunculaceae	*Actaea pachypoda*	white baneberry	1	3	4	3	11	**L4**	x	x		2018
Ranunculaceae	*Actaea* x *ludovici*	hybrid baneberry	3	3	4	3	13	**L4**		x		2018
Amaryllidaceae	*Allium tricoccum*	wild leek	1	3	4	4	12	**L4**		x		2018
Rosaceae	*Amelanchier arborea*	downy serviceberry	1	3	4	3	11	**L4**	x	xpn		2018
Rosaceae	*Amelanchier interior*	hybrid serviceberry complex	3	3	3	3	12	**L4**	x			2008

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Rosaceae	*Amelanchier laevis*	smooth serviceberry	2	2	4	3	11	**L4**		x		2018
Rosaceae	*Amelanchier sanguinea*	round-leaved serviceberry	2	2	3	4	11	**L4**	x	x		2018
Fabaceae	*Apios americana*	ground-nut	3	4	3	3	13	**L4**	x	x		2018
Ranunculaceae	*Aquilegia canadensis*	wild columbine	1	4	3	5	13	**L4**	x	xpn		2018
Aristolochiaceae	*Asarum canadense*	wild ginger	1	3	4	3	11	**L4**	x		e	2003
Apocynaceae	*Asclepias incarnata* ssp. *incarnata*	swamp milkweed	1	3	4	4	12	**L4**	x		e	2003
Betulaceae	*Betula alleghaniensis*	yellow birch	1	4	3	5	13	**L4**	x	x		2018
Betulaceae	*Betula papyrifera*	paper birch	1	4	2	4	11	**L4**	x	xpn		2018
Urticaceae	*Boehmeria cylindrica*	false nettle	2	4	4	2	12	**L4**	x		e	1925
Poaceae	*Calamagrostis canadensis*	Canada blue joint	2	3	4	4	13	**L4**	x	xpn		2018
Ranunculaceae	*Caltha palustris*	marsh marigold	1	4	3	4	12	**L4**	x	x		2018
Brassicaceae	*Cardamine diphylla*	broad-leaved toothwort	1	3	4	4	12	**L4**	x	x		2018
Brassicaceae	*Cardamine pensylvanica*	bitter cress	2	2	4	4	12	**L4**	x		e	1927
Cyperaceae	*Carex communis*	fibrous-rooted sedge	1	4	3	3	11	**L4**		x		2018
Cyperaceae	*Carex echinodes*	marsh straw sedge	2	3	3	3	11	**L4**	x		e	2003
Cyperaceae	*Carex hystericina*	porcupine sedge	1	3	2	5	11	**L4**	x		e	1976
Cyperaceae	*Carex laxiflora*	loose-flowered sedge	1	3	4	3	11	**L4**		x		2018
Cyperaceae	*Carex pallescens*	pale sedge	2	3	5	3	13	**L4**		x		2018
Cyperaceae	*Carex pensylvanica*	Pennsylvania sedge	1	4	3	4	12	**L4**	x	xpn		2018
Cyperaceae	*Carex projecta*	necklace sedge	2	2	4	3	11	**L4**		x		2018
Cyperaceae	*Carex pseudocyperus*	pseudocyperus sedge	1	3	3	4	11	**L4**	x		e	1980
Cyperaceae	*Carex scabrata*	rough sedge	2	3	4	3	12	**L4**	x	x		2018
Cyperaceae	*Carex sparganioides*	bur-reed sedge	2	2	5	2	11	**L4**		x		2018
Cyperaceae	*Carex sprengelii*	long-beaked sedge	2	4	4	2	12	**L4**		x		2018
Cyperaceae	*Carex stricta*	tussock sedge	2	3	3	4	12	**L4**	x	x		2018
Cyperaceae	*Carex tribuloides*	blunt broom sedge	3	2	4	3	12	**L4**	x		e	1980
Juglandaceae	*Carya cordiformis*	bitternut hickory	1	4	4	2	11	**L4**	x			2008
Ceratophyllaceae	*Ceratophyllum demersum*	coontail	1	3	5	3	12	**L4**	x	x		2018
Cornaceae	*Cornus obliqua*	silky dogwood	2	3	5	3	13	**L4**	xp			2008
Cornaceae	*Cornus rugosa*	round-leaved dogwood	2	4	4	3	13	**L4**	x	xpn		2018
Betulaceae	*Corylus cornuta*	beaked hazel	2	4	3	4	13	**L4**	x	x		2018
Rosaceae	*Crataegus holmesiana*	Holmes' hawthorn	2	3	4	3	12	**L4**		xcf		2018
Woodsiaceae	*Cystopteris bulbifera*	bulblet fern	2	3	4	4	13	**L4**	x		e	1890
Poaceae	*Danthonia spicata*	poverty oat grass	2	3	3	4	12	**L4**	x	x		2018
Poaceae	*Dichanthelium acuminatum* ssp. *acuminatum*	hairy panic grass	2	3	3	3	11	**L4**	x			2007
Dryopteridaceae	*Dryopteris cristata*	crested wood fern	1	3	4	4	12	**L4**	x		e	1927
Hydrocharitaceae	*Elodea canadensis*	common water-weed	1	3	5	3	12	**L4**	x		e	1976
Poaceae	*Elymus canadensis*	Canada wild rye	3	2	5	3	13	**L4**	x	xpr	pe	2018
Poaceae	*Elymus hystrix*	bottle-brush grass	2	3	4	3	12	**L4**	x	xpn		2018
Poaceae	*Elymus riparius*	riverbank wild rye	2	2	4	4	12	**L4**		x		2018
Fagaceae	*Fagus grandifolia*	American beech	1	4	3	4	12	**L4**	x	x		2018
Geraniaceae	*Geranium maculatum*	wild geranium	2	3	4	3	12	**L4**	x	x		2018
Rosaceae	*Geum fragarioides*	barren strawberry	2	4	4	3	13	**L4**	x	xpn		2018
Asteraceae	*Helianthus strumosus*	pale-leaved sunflower	4	2	4	3	13	**L4**	x	xpn		2018
Balsaminaceae	*Impatiens pallida*	yellow touch-me-not	2	3	4	2	11	**L4**	x	x		2018
Juncaceae	*Juncus balticus* ssp. *littoralis*	Baltic rush	3	2	5	2	12	**L4**	xp		e	2003
Asteraceae	*Lactuca biennis*	tall blue lettuce	2	4	2	4	12	**L4**	x	x		2018
Asteraceae	*Lactuca canadensis*	wild lettuce	3	3	2	3	11	**L4**	x		e	1972

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Brassicaceae	*Lepidium virginicum*	Virginia pepper-grass	4	3	4	2	13	**L4**	x	x		2018
Liliaceae	*Lilium michiganense*	Michigan lily	1	4	3	5	13	**L4**		x		2018
Lamiaceae	*Lycopus americanus*	cut-leaved water-horehound	1	4	3	3	11	**L4**	x		e	2003
Primulaceae	*Lysimachia thyrsiflora*	tufted loosestrife	2	3	4	4	13	**L4**	x		e	1976
Asparagaceae	*Maianthemum canadense*	Canada May-flower	1	4	1	5	11	**L4**	x	x		2018
Poaceae	*Muhlenbergia frondosa*	wire-stemmed muhly grass	4	2	4	2	12	**L4**	x	x		2018
Boraginaceae	*Myosotis laxa*	smaller forget-me-not	1	4	3	4	12	**L4**	x			2008
Onagraceae	*Oenothera parviflora*	smaller evening-primrose	3	3	4	3	13	**L4**	x	x		2018
Poaceae	*Oryzopsis asperifolia*	white-fruited mountain-rice	2	4	3	4	13	**L4**	x		e	1980
Apiaceae	*Osmorhiza claytonii*	woolly sweet cicely	2	3	4	3	12	**L4**	x	x		2018
Polygonaceae	*Persicaria pensylvanica*	Pennsylvania smartweed	2	2	4	3	11	**L4**	x		e	2003
Pinaceae	*Pinus strobus*	white pine	1	4	3	4	12	**L4**	x	xpn		2018
Asparagaceae	*Polygonatum pubescens*	downy Solomon's seal	1	4	2	5	12	**L4**	x	x		2018
Dryopteridaceae	*Polystichum acrostichoides*	Christmas fern	2	3	5	3	13	**L4**	x	xp	pe	2018
Salicaceae	*Populus grandidentata*	large-toothed aspen	1	3	4	3	11	**L4**	x	xpn		2018
Potamogetonaceae	*Potamogeton foliosus*	leafy pondweed	1	3	5	4	13	**L4**		x		2018
Rosaceae	*Prunus pensylvanica*	pin cherry	2	4	3	3	12	**L4**	x	xpr	pe	2018
Dennstaedtiaceae	*Pteridium aquilinum* var. *latiusculum*	eastern bracken	1	4	2	4	11	**L4**	x	x		2018
Ericaceae	*Pyrola elliptica*	shinleaf	1	4	4	4	13	**L4**	x	x		2018
Fagaceae	*Quercus macrocarpa*	bur oak	1	4	3	3	11	**L4**		x		2018
Fagaceae	*Quercus rubra*	red oak	1	4	2	4	11	**L4**	x	xpn		2018
Ranunculaceae	*Ranunculus hispidus* var. *caricetorum*	swamp buttercup	2	4	4	3	13	**L4**	x		e	2003
Ranunculaceae	*Ranunculus pensylvanicus*	bristly buttercup	3	3	4	3	13	**L4**	x		e	1953
Rosaceae	*Rosa blanda*	smooth wild rose	1	3	3	4	11	**L4**	x	xpn		2018
Rosaceae	*Rubus pubescens*	dwarf raspberry	1	3	3	5	12	**L4**	x		e	1980
Asteraceae	*Rudbeckia hirta*	black-eyed Susan	1	4	4	3	12	**L4**	x	xpr	pe	2018
Asteraceae	*Rudbeckia laciniata*	cut-leaved coneflower	3	2	4	2	11	**L4**	xp	xpr	!	2018
Polygonaceae	*Rumex britannica*	great water dock	2	3	4	4	13	**L4**	x		e	2003
Alismataceae	*Sagittaria latifolia*	common arrowhead	1	2	5	4	12	**L4**	x	xpn		2018
Salicaceae	*Salix amygdaloides*	peach-leaved willow	1	2	5	3	11	**L4**	x	x		2018
Salicaceae	*Salix bebbiana*	Bebb's willow	1	3	3	4	11	**L4**	xp		e	2003
Salicaceae	*Salix discolor*	pussy willow	1	3	4	3	11	**L4**	xp	xp	!	2018
Apiaceae	*Sanicula marilandica*	sanicle	2	3	3	3	11	**L4**	x		e	1976
Lauraceae	*Sassafras albidum*	sassafras	5	2	4	2	13	**L4**	x	x		2018
Cyperaceae	*Schoenoplectus pungens* var. *pungens*	three-square	3	2	5	3	13	**L4**	x	xpn		2018
Cyperaceae	*Schoenoplectus tabernaemontani*	soft-stemmed bulrush	1	2	5	3	11	**L4**	x	x		2018
Iridaceae	*Sisyrinchium montanum*	blue-eyed grass	1	3	4	5	13	**L4**	x		e	1972
Smilacaceae	*Smilax tamnoides*	bristly greenbrier	2	3	3	3	11	**L4**	x	x		2018
Asteraceae	*Solidago juncea*	early goldenrod	2	3	4	2	11	**L4**	x	xpn		2018
Asteraceae	*Solidago patula*	rough-leaved goldenrod	2	3	4	4	13	**L4**	x	x		2018
Rosaceae	*Spiraea alba*	wild spiraea	2	4	4	3	13	**L4**	x	xpr	pe	2018
Araceae	*Spirodela polyrhiza*	greater duckweed	1	4	5	3	13	**L4**	x	x		2018
Caryophyllaceae	*Stellaria longifolia*	long-leaved chickweed	2	3	4	4	13	**L4**	x		e	1907
Potamogetonaceae	*Stuckenia pectinata*	sago pondweed	2	2	5	3	12	**L4**	x	x		2018
Asteraceae	*Symphyotrichum oolentangiense*	sky-blue aster	2	1	4	4	11	**L4**	x	xpn		2018
Asteraceae	*Symphyotrichum urophyllum*	arrow-leaved aster	2	3	4	4	13	**L4**	x	xpn		2018
Thelypteridaceae	*Thelypteris palustris* var. *pubescens*	marsh fern	2	4	2	4	12	**L4**	x		e	2008
Cupressaceae	*Thuja occidentalis*	white cedar	1	4	1	5	11	**L4**	x	xpn		2018

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Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Saxifragaceae	*Tiarella cordifolia*	foam-flower	1	3	3	4	11	**L4**	x	x		2018
Melanthiaceae	*Trillium erectum*	red trillium	1	4	3	5	13	**L4**	x	x		2018
Melanthiaceae	*Trillium grandiflorum*	white trillium	1	3	4	5	13	**L4**	x	x		2018
Pinaceae	*Tsuga canadensis*	eastern hemlock	1	4	3	5	13	**L4**	x	xpn		2018
Typhaceae	*Typha latifolia*	broad-leaved cattail	1	4	4	4	13	**L4**	x	x		2018
Plantaginaceae	*Veronica americana*	American speedwell	2	3	4	4	13	**L4**	x		e	2003
Violaceae	*Viola cucullata*	marsh blue violet	2	3	4	4	13	**L4**	x		e	1939
Araceae	*Wolffia borealis*	dotted water-meal	2	4	5	2	13	**L4**	x	x		2018
Araceae	*Wolffia columbiana*	Columbia water-meal	2	4	5	2	13	**L4**	x	x		2018
Euphorbiaceae	*Acalypha rhomboidea*	three-seeded mercury	2	1	2	0	5	**L5**	x	x		2018
Sapindaceae	*Acer saccharum* ssp. *saccharum*	sugar maple	1	3	0	2	6	**L5**	x	xpn		2018
Asteraceae	*Achillea borealis* var. *borealis*	woolly yarrow	1	2	0	1	4	**L5**	x	x		2018
Ranunculaceae	*Actaea rubra* f. *neglecta*	white form red baneberry	4	2	1	3	10	**L5**		x		2018
Ranunculaceae	*Actaea rubra* ssp. *rubra*	red baneberry	1	3	1	3	8	**L5**	x	x		2018
Asteraceae	*Ageratina altissima* var. *altissima*	white snakeroot	1	2	2	1	6	**L5**	x	x		2018
Rosaceae	*Agrimonia gryposepala*	agrimony	1	2	0	2	5	**L5**	x	x		2018
Alismataceae	*Alisma triviale*	common water-plantain	1	2	4	2	9	**L5**	x		e	1972
Asteraceae	*Ambrosia artemisiifolia*	common ragweed	1	1	3	0	5	**L5**	x	x		2018
Asteraceae	*Ambrosia trifida*	giant ragweed	2	1	4	0	7	**L5**		x		2018
Fabaceae	*Amphicarpaea bracteata*	hog-peanut	1	2	2	2	7	**L5**	x			2008
Ranunculaceae	*Anemone canadensis*	Canada anemone	1	2	2	2	7	**L5**	x			2008
Ranunculaceae	*Anemone virginiana*	common thimbleweed	1	3	0	3	7	**L5**	x	xpn		2018
Asteraceae	*Antennaria howellii* ssp. *howellii*	Howell's pussytoes	2	2	3	3	10	**L5**	x			2008?
Apocynaceae	*Apocynum androsaemifolium*	spreading dogbane	1	3	2	4	10	**L5**	x	x		2018
Apocynaceae	*Apocynum cannabinum* var. *cannabinum*	hemp dogbane	2	2	2	2	8	**L5**	x	x		2018
Apocynaceae	*Apocynum cannabinum* var. *hypericifolium*	clasping-leaved hemp dogbane	2	2	3	2	9	**L5**		x		2018
Araliaceae	*Aralia nudicaulis*	wild sarsaparilla	1	3	1	4	9	**L5**	x	x		2018
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit	1	3	2	3	9	**L5**	x	x		2018
Apocynaceae	*Asclepias syriaca*	common milkweed	1	2	0	2	5	**L5**	x	x		2018
Woodsiaceae	*Athyrium filix-femina* var. *angustum*	northeastern lady fern	1	3	1	3	8	**L5**	x	x		2018
Asteraceae	*Bidens cernua*	nodding bur-marigold	1	2	3	3	9	**L5**	x			2008
Asteraceae	*Bidens frondosa*	common beggar's-ticks	1	1	4	0	6	**L5**	x	x		2018
Asteraceae	*Bidens tripartita*	three-parted beggar's-ticks	2	2	4	2	10	**L5**	x	x		2018
Asteraceae	*Bidens vulgata*	tall beggar's-ticks	2	2	3	2	9	**L5**	x	x		2018
Convolvulaceae	*Calystegia sepium* ssp. *americana*	pink hedge bindweed	3	2	2	2	9	**L5**	x	x		2018
Cyperaceae	*Carex arctata*	nodding wood sedge	1	4	2	3	10	**L5**	x	x		2018
Cyperaceae	*Carex bebbii*	Bebb's sedge	1	2	3	3	9	**L5**	x			2008
Cyperaceae	*Carex blanda*	common wood sedge	1	2	1	2	6	**L5**	x	xcf		2018
Cyperaceae	*Carex cristatella*	crested sedge	1	2	4	1	8	**L5**	x	x		2018
Cyperaceae	*Carex granularis*	meadow sedge	1	2	1	3	7	**L5**	x	x		2018
Cyperaceae	*Carex pedunculata*	early-flowering sedge	1	3	3	3	10	**L5**	x	x		2018
Cyperaceae	*Carex rosea*	curly-styled sedge	1	2	3	2	8	**L5**	x	x		2018
Cyperaceae	*Carex stipata*	awl-fruited sedge	1	3	2	3	9	**L5**	x		e	2003
Cyperaceae	*Carex vulpinoidea*	fox sedge	1	2	4	1	8	**L5**	x			2008
Amaranthaceae	*Chenopodiastrum simplex*	maple-leaved goosefoot	3	2	3	1	9	**L5**	x		e	1972
Apiaceae	*Cicuta bulbifera*	bulblet-bearing water-hemlock	1	2	4	3	10	**L5**	x	x		2018
Apiaceae	*Cicuta maculata*	spotted water-hemlock	1	2	2	2	7	**L5**	x	x		2018
Onagraceae	*Circaea canadensis* ssp. *canadensis*	enchanter's nightshade	1	1	1	1	4	**L5**	x	x		2018

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Ranunculaceae	*Clematis virginiana*	virgin's bower	1	2	2	3	8	**L5**	x	xpr		2018
Cornaceae	*Cornus alternifolia*	alternate-leaved dogwood	1	2	1	2	6	**L5**	x	x		2018
Cornaceae	*Cornus racemosa*	grey dogwood	2	2	3	2	9	**L5**	x	x		2018
Cornaceae	*Cornus sericea*	red osier dogwood	1	2	0	3	6	**L5**	x	x		2018
Rosaceae	*Crataegus punctata*	dotted hawthorn	1	2	3	3	9	**L5**	x			2008
Apiaceae	*Cryptotaenia canadensis*	honewort	2	2	4	1	9	**L5**	x	x		2018
Fabaceae	*Desmodium canadense*	showy tick-trefoil	2	2	3	3	10	**L5**	x	xpn		2018
Caprifoliaceae	*Diervilla lonicera*	bush honeysuckle	1	3	2	4	10	**L5**	x	x		2018
Dryopteridaceae	*Dryopteris carthusiana*	spinulose wood fern	1	3	2	2	8	**L5**	x			2008
Dryopteridaceae	*Dryopteris* x *triploidea*	confusing hybrid wood fern	2	2	3	3	10	**L5**	x	x		2018
Poaceae	*Echinochloa muricata* var. *microstachya*	small-spiked barnyard grass	2	2	4	0	8	**L5**		x		2018
Cucurbitaceae	*Echinocystis lobata*	wild cucumber	1	2	3	1	7	**L5**	x			2008?
Cyperaceae	*Eleocharis erythropoda*	creeping spike-rush	1	2	4	1	8	**L5**	x		e	2003
Poaceae	*Elymus virginicus* var. *virginicus*	Virginia wild rye	2	2	3	2	9	**L5**	x			2008
Onagraceae	*Epilobium ciliatum* ssp. *ciliatum*	sticky willow-herb	1	2	2	2	7	**L5**	x	x		2018
Onagraceae	*Epilobium coloratum*	purple-leaved willow-herb	1	3	4	2	10	**L5**	x		e	1976
Equisetaceae	*Equisetum arvense*	field horsetail	1	2	1	1	5	**L5**	x	x		2018
Equisetaceae	*Equisetum hyemale* ssp. *affine*	scouring-rush	1	2	2	2	7	**L5**	x	x		2018
Asteraceae	*Erigeron annuus*	daisy fleabane	1	2	0	1	4	**L5**	x	x		2018
Asteraceae	*Erigeron canadensis*	horse-weed	1	1	2	0	4	**L5**	x	x		2018
Asteraceae	*Erigeron philadelphicus* var. *philadelphicus*	Philadelphia fleabane	1	2	0	1	4	**L5**	x	x		2018
Asteraceae	*Erigeron strigosus*	rough fleabane	2	2	1	1	6	**L5**	x	x		2018
Liliaceae	*Erythronium americanum* ssp. *americanum*	yellow trout-lily	1	3	3	2	9	**L5**		x		2018
Asteraceae	*Eupatorium perfoliatum*	boneset	1	2	4	3	10	**L5**	x			2008
Asteraceae	*Eurybia macrophylla*	big-leaved aster	1	3	2	4	10	**L5**	x	x		2018
Asteraceae	*Euthamia graminifolia*	grass-leaved goldenrod	1	1	4	1	7	**L5**	x	x		2018
Asteraceae	*Eutrochium maculatum* var. *maculatum*	spotted Joe-Pye weed	1	2	3	3	9	**L5**	x	x		2018
Rosaceae	*Fragaria vesca* ssp. *americana*	woodland strawberry	2	2	2	2	8	**L5**	x	x		2018
Rosaceae	*Fragaria virginiana* ssp. *virginiana*	common wild strawberry	1	2	0	2	5	**L5**	x	x		2018
Oleaceae	*Fraxinus americana*	white ash	1	5	0	3	9	**L5**	x	x		2018
Oleaceae	*Fraxinus pennsylvanica*	red ash	1	5	0	3	9	**L5**		xpn		2018
Rubiaceae	*Galium aparine*	cleavers	1	1	3	2	7	**L5**	x	x		2018
Rubiaceae	*Galium triflorum*	sweet-scented bedstraw	1	2	2	2	7	**L5**		x		2018
Rosaceae	*Geum aleppicum*	yellow avens	1	3	3	2	9	**L5**	x		e	1988?
Rosaceae	*Geum canadense*	white avens	1	2	1	2	6	**L5**	x	x		2018
Poaceae	*Glyceria grandis*	tall manna grass	1	3	4	2	10	**L5**	x	x		2018
Poaceae	*Glyceria striata*	fowl manna grass	1	2	1	2	6	**L5**	x	x		2018
Boraginaceae	*Hackelia virginiana*	Virginia stickseed	1	2	0	2	5	**L5**	x	x		2018
Asteraceae	*Helianthus tuberosus*	Jerusalem artichoke	2	1	2	0	5	**L5**	x	x		2018
Apiaceae	*Heracleum maximum*	cow-parsnip	2	2	3	2	9	**L5**	x	x		2018
Boraginaceae	*Hydrophyllum virginianum*	Virginia waterleaf	1	2	1	2	6	**L5**	x	x		2018
Balsaminaceae	*Impatiens capensis*	orange touch-me-not	1	2	0	2	5	**L5**	x	x		2018
Juglandaceae	*Juglans nigra*	black walnut	1	1	2	1	5	**L5**	x	x		2018
Juncaceae	*Juncus articulatus*	jointed rush	1	2	4	2	9	**L5**	x			2008
Juncaceae	*Juncus bufonius*	toad rush	2	1	4	1	8	**L5**	x		e	1976
Juncaceae	*Juncus dudleyi*	Dudley's rush	1	2	3	1	7	**L5**	x		e	2003
Juncaceae	*Juncus effusus*	soft rush	1	2	4	3	10	**L5**	x		e	2003
Juncaceae	*Juncus tenuis*	path rush	1	2	1	1	5	**L5**	x	x		2018

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Urticaceae	*Laportea canadensis*	wood nettle	1	3	2	2	8	**L5**		x		2018
Poaceae	*Leersia oryzoides*	rice cut grass	1	2	3	2	8	**L5**	x	x		2018
Araceae	*Lemna minor*	common duckweed	1	2	4	2	9	**L5**	x	x		2018
Araceae	*Lemna turionifera*	turion duckweed	2	2	3	3	10	**L5**	x	x		2018
Lamiaceae	*Lycopus uniflorus*	northern water-horehound	1	3	3	3	10	**L5**	x		e	1988
Primulaceae	*Lysimachia ciliata*	fringed loosestrife	1	2	2	2	7	**L5**	x	x		2018
Asparagaceae	*Maianthemum racemosum* ssp. *racemosum*	false Solomon's seal	1	3	2	3	9	**L5**	x	x		2018
Asparagaceae	*Maianthemum stellatum*	starry false Solomon's seal	1	2	1	3	7	**L5**	x	x		2018
Onocleaceae	*Matteuccia struthiopteris* var. *pensylvanica*	ostrich fern	1	2	2	2	7	**L5**	x	x		2018
Lamiaceae	*Mentha canadensis*	wild mint	1	2	3	2	8	**L5**	x			2008?
Lamiaceae	*Monarda fistulosa*	wild bergamot	1	3	2	3	9	**L5**	x	xpn		2018
Poaceae	*Muhlenbergia mexicana* var. *mexicana*	common muhly grass	2	2	0	1	5	**L5**	x	x		2018
Asteraceae	*Nabalus altissimus*	tall wood lettuce	1	3	2	2	8	**L5**	x	x		2018
Onagraceae	*Oenothera biennis*	common evening-primrose	1	1	1	1	4	**L5**	x	x		2018
Onocleaceae	*Onoclea sensibilis*	sensitive fern	1	3	1	3	8	**L5**	x			2008
Betulaceae	*Ostrya virginiana*	ironwood	1	3	2	2	8	**L5**		x		2018
Oxalidaceae	*Oxalis dillenii*	deflexed yellow wood-sorrel	3	1	0	1	5	**L5**	x			2008?
Oxalidaceae	*Oxalis stricta*	common yellow wood-sorrel	1	1	1	1	4	**L5**	x	x		2018
Poaceae	*Panicum capillare*	panic grass	1	1	4	1	7	**L5**	x	x		2018
Urticaceae	*Parietaria pensylvanica*	Pennsylvania pellitory	3	2	3	2	10	**L5**	x			2008
Vitaceae	*Parthenocissus quinquefolia*	Virginia creeper	2	1	4	2	9	**L5**	x			2008
Vitaceae	*Parthenocissus vitacea*	thicket creeper	1	2	0	1	4	**L5**	x	x		2018
Polygonaceae	*Persicaria lapathifolia*	pale smartweed	1	1	4	0	6	**L5**	x	x		2018
Phrymaceae	*Phryma leptostachya*	lopseed	2	2	3	2	9	**L5**		x		2018
Solanaceae	*Physalis heterophylla*	clammy ground-cherry	2	2	3	3	10	**L5**	x	x		2018
Urticaceae	*Pilea pumila*	dwarf clearweed	1	2	1	1	5	**L5**	x	x		2018
Plantaginaceae	*Plantago rugelii*	red-stemmed plantain	1	2	0	1	4	**L5**	x	x		2018
Poaceae	*Poa palustris*	fowl meadow-grass	1	2	3	2	8	**L5**	x	x		2018
Berberidaceae	*Podophyllum peltatum*	May-apple	1	3	3	2	9	**L5**	x	x		2018
Salicaceae	*Populus balsamifera*	balsam poplar	1	2	3	2	8	**L5**	x	x		2018
Salicaceae	*Populus deltoides*	cottonwood	1	1	4	1	7	**L5**	x	x		2018
Salicaceae	*Populus tremuloides*	trembling aspen	1	3	1	3	8	**L5**	x	x		2018
Salicaceae	*Populus* x *jackii*	Jack's poplar	3	2	4	1	10	**L5**		x		2018
Rosaceae	*Potentilla anserina* ssp. *anserina*	silverweed	2	2	3	2	9	**L5**	x		e	2003
Lamiaceae	*Prunella vulgaris* ssp. *lanceolata*	heal-all (native)	1	2	3	2	8	**L5**	x	x		2018
Rosaceae	*Prunus serotina*	black cherry	1	2	0	2	5	**L5**	x	x		2018
Rosaceae	*Prunus virginiana* var. *virginiana*	choke cherry	1	2	0	1	4	**L5**	x	x		2018
Ranunculaceae	*Ranunculus abortivus*	kidney-leaved buttercup	1	3	1	2	7	**L5**	x	x		2018
Ranunculaceae	*Ranunculus recurvatus* var. *recurvatus*	hooked buttercup	1	3	2	3	9	**L5**	x	x		2018
Ranunculaceae	*Ranunculus sceleratus*	cursed crowfoot	1	2	3	2	8	**L5**	x		e	2003
Anacardiaceae	*Rhus typhina*	staghorn sumach	1	1	2	2	6	**L5**	x	x		2018
Grossulariaceae	*Ribes americanum*	wild black currant	1	3	2	2	8	**L5**	x	x		2018
Grossulariaceae	*Ribes cynosbati*	prickly gooseberry	1	3	2	2	8	**L5**	x	x		2018
Brassicaceae	*Rorippa palustris* ssp. *palustris*	Fernald's marsh cress	2	2	4	2	10	**L5**	x			2008?
Rosaceae	*Rubus allegheniensis*	common blackberry	1	3	0	1	5	**L5**	x	x		2018
Rosaceae	*Rubus idaeus* ssp. *strigosus*	wild red raspberry	1	1	0	1	3	**L5**	x	x		2018
Rosaceae	*Rubus occidentalis*	wild black raspberry	1	1	0	1	3	**L5**	x	x		2018
Rosaceae	*Rubus odoratus*	purple-flowering raspberry	1	2	2	2	7	**L5**	x	xpn		2018

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Salicaceae	*Salix eriocephala*	narrow heart-leaved willow	1	1	3	1	6	**L5**	xp	x		2018
Salicaceae	*Salix interior*	sandbar willow	1	1	5	2	9	**L5**	x	x		2018
Adoxaceae	*Sambucus canadensis*	common elderberry	1	3	2	2	8	**L5**	x	xpn		2018
Adoxaceae	*Sambucus racemosa* ssp. *pubens*	red-berried elder	1	3	2	2	8	**L5**		x		2018
Papaveraceae	*Sanguinaria canadensis*	bloodroot	1	3	0	3	7	**L5**		xpn		2018
Cyperaceae	*Scirpus atrovirens*	black-fruited bulrush	1	2	4	2	9	**L5**	x	x		2018
Cyperaceae	*Scirpus microcarpus*	barber-pole bulrush	1	2	4	3	10	**L5**	x	x		2018
Lamiaceae	*Scutellaria galericulata*	common skullcap	2	2	3	2	9	**L5**	x		e	1972
Asteraceae	*Silphium perfoliatum*	cup-plant	3	1	3	2	9	**L5**	x	xpn		2018
Smilacaceae	*Smilax herbacea*	carrion-flower	1	3	2	2	8	**L5**	x	x		2018
Solanaceae	*Solanum ptychanthum*	American black nightshade	2	1	4	0	7	**L5**	x	x		2018
Asteraceae	*Solidago altissima*	tall goldenrod	1	2	0	0	3	**L5**	x	x		2018
Asteraceae	*Solidago caesia*	blue-stemmed goldenrod	1	2	4	2	9	**L5**	x			2008?
Asteraceae	*Solidago canadensis* var. *canadensis*	Canada goldenrod	1	2	0	1	4	**L5**	x	x		2018
Asteraceae	*Solidago flexicaulis*	zig-zag goldenrod	1	1	3	2	7	**L5**	x	x		2018
Asteraceae	*Solidago gigantea*	late goldenrod	1	1	1	1	4	**L5**	x	x		2018
Asteraceae	*Solidago nemoralis* ssp. *nemoralis*	grey goldenrod	2	2	2	2	8	**L5**	x	x		2018
Asteraceae	*Symphyotrichum cordifolium*	heart-leaved aster	1	1	0	2	4	**L5**	x	x		2018
Asteraceae	*Symphyotrichum ericoides* var. *ericoides*	heath aster	1	1	2	1	5	**L5**	x	x		2018
Asteraceae	*Symphyotrichum lanceolatum* var. *lanceolatum*	panicled aster	1	2	3	1	7	**L5**	x	x		2018
Asteraceae	*Symphyotrichum lateriflorum* var. *lateriflorum*	calico aster	1	2	3	2	8	**L5**	x	x		2018
Asteraceae	*Symphyotrichum lateriflorum* x *puniceum*	calico-swamp hybrid aster	5	ns	ns	ns	5	**L5**		x		2018
Asteraceae	*Symphyotrichum novae-angliae*	New England aster	1	2	2	1	6	**L5**	x	x		2018
Asteraceae	*Symphyotrichum puniceum* var. *puniceum*	swamp aster	1	2	2	2	7	**L5**	x	x		2018
Ranunculaceae	*Thalictrum dioicum*	early meadow rue	1	3	3	2	9	**L5**	x	x		2018
Ranunculaceae	*Thalictrum pubescens*	tall meadow rue	1	3	2	2	8	**L5**	x			2008
Malvaceae	*Tilia americana*	basswood	1	3	2	3	9	**L5**	x	x		2018
Anacardiaceae	*Toxicodendron radicans* var. *radicans*	poison ivy (vine form)	2	2	4	2	10	**L5**		x		2018
Anacardiaceae	*Toxicodendron radicans* var. *rydbergii*	poison ivy (shrub form)	1	2	0	2	5	**L5**	x	x		2018
Ulmaceae	*Ulmus americana*	white elm	1	4	0	2	7	**L5**	x	x		2018
Urticaceae	*Urtica dioica* ssp. *gracilis*	American stinging nettle	1	3	2	2	8	**L5**	x	x		2018
Verbenaceae	*Verbena hastata*	blue vervain	1	2	4	2	9	**L5**	x	x		2018
Verbenaceae	*Verbena urticifolia*	white vervain	1	2	2	2	7	**L5**	x	x		2018
Adoxaceae	*Viburnum lentago*	nannyberry	1	3	1	2	7	**L5**	x	xpr		2018
Violaceae	*Viola labradorica*	dog violet	1	2	0	2	5	**L5**	x		e	1939
Violaceae	*Viola pubescens* var. *scabriuscula*	smooth yellow violet	2	4	1	2	9	**L5**	x	x		2018
Violaceae	*Viola sororia* var. *sororia*	common blue violet	1	2	0	2	5	**L5**	x	x		2018
Vitaceae	*Vitis riparia*	riverbank grape	1	1	0	0	2	**L5**	x	x		2018
Asteraceae	*Xanthium strumarium*	clotbur	2	1	4	0	7	**L5**	x		e	2003
Primulaceae	*Lysimachia* x *producta*	elongated loosestrife	5	0	0	0	5	**LH**	x		e	1976
Solanaceae	*Physalis virginiana*	Virginia ground-cherry	5	4	3	3	15	**LU**	x		e	1909
Apocynaceae	*Asclepias tuberosa*	butterfly milkweed	5	2	5	5	17	**LX**	x	xpr	pe	2018
Orobanchaceae	*Aureolaria pedicularia*	fern-leaved false floxglove	5	0	5	0	10	**LX**	x		e	1980
Ophioglossaceae	*Botrychium matricariifolium*	least grape fern	5	5	5	5	20	**LX**	x		e	1906
Poaceae	*Bromus kalmii*	Kalm's brome	5	5	5	4	19	**LX**	x		e	1890
Orobanchaceae	*Castilleja coccinea*	Indian paintbrush	5	5	5	5	20	**LX**	x		e	1890
Ericaceae	*Epigaea repens*	trailing arbutus	5	5	5	5	20	**LX**	x		e	2000?
Phrymaceae	*Erythranthe geyeri*	smooth monkey-flower	5	5	4	5	19	**LX**	x		e	1922

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Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Asteraceae	*Helianthus giganteus*	tall sunflower	5	2	4	3	14	**LX**	xp	xpr	!	2018
Liliaceae	*Lilium philadelphicum*	wood lily	5	5	5	5	20	**LX**	x		e	1997?
Linaceae	*Linum virginianum*	Virginia yellow flax	5	5	5	4	19	**LX**	x		e	1890
Orobanchaceae	*Pedicularis lanceolata*	swamp lousewort	5	5	5	5	20	**LX**	x		e	1914
Poaceae	*Piptatheropsis pungens*	slender mountain-rice	5	5	4	4	18	**LX**	x		e	1911
Ranunculaceae	*Ranunculus fascicularis*	early buttercup	5	5	4	4	18	**LX**	x		e	1890
Ranunculaceae	*Ranunculus hispidus* var. *hispidus*	hispid buttercup	5	5	5	5	20	**LX**	x		e	1890
Ranunculaceae	*Ranunculus rhomboideus*	prairie buttercup	5	5	4	4	18	**LX**	x		e	1933
Asteraceae	*Solidago bicolor*	silver-rod	5	5	4	5	19	**LX**	x	xpr	pe	2018
Pinaceae	*Abies concolor*	silver fir	ns	ns	ns	ns	ns	**L+**		xp		2018
Malvaceae	*Abutilon theophrasti*	velvet-leaf	3	ns	ns	ns	3	**L+**	x	x		2018
Sapindaceae	*Acer campestre*	hedge maple	4	ns	ns	ns	4	**L+**		x		2018
Sapindaceae	*Acer platanoides*	Norway maple	1	ns	ns	ns	1	**L+**	x	xpn		2018
Sapindaceae	*Acer pseudoplatanus*	sycamore maple	3	ns	ns	ns	3	**L+**		x		2018
Apiaceae	*Aegopodium podagraria*	goutweed	1	ns	ns	ns	1	**L+**	x	x		2018
Sapindaceae	*Aesculus hippocastanum*	horse-chestnut	2	ns	ns	ns	2	**L+**	x	x		2018
Lamiaceae	*Agastache foeniculum*	fennel giant hyssop	4	ns	ns	ns	4	**L+**		xpr		2018
Poaceae	*Agrostis gigantea*	redtop	1	ns	ns	ns	1	**L+**	x	x		2018
Simaroubaceae	*Ailanthus altissima*	tree-of-heaven	3	ns	ns	ns	3	**L+**	x	x		2018
Brassicaceae	*Alliaria petiolata*	garlic mustard	1	ns	ns	ns	1	**L+**	x	x		2018
Betulaceae	*Alnus glutinosa*	European alder	1	ns	ns	ns	1	**L+**	x			2008?
Amaranthaceae	*Amaranthus blitoides*	prostrate pigweed	5	ns	ns	ns	5	**L+**	x		e	2003
Amaranthaceae	*Amaranthus hybridus*	slender pigweed	4	ns	ns	ns	4	**L+**	x		e	1940
Amaranthaceae	*Amaranthus powellii*	Powell's pigweed	5	ns	ns	ns	5	**L+**	x		e	2003
Amaranthaceae	*Amaranthus retroflexus*	red-root pigweed	2	ns	ns	ns	2	**L+**	x	x		2018
Asteraceae	*Anthemis cotula*	stinking mayweed	4	ns	ns	ns	4	**L+**	x			2008?
Asteraceae	*Arctium lappa*	great burdock	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Arctium minus*	common burdock	1	ns	ns	ns	1	**L+**	x	x		2018
Caryophyllaceae	*Arenaria serpyllifolia*	thyme-leaved sandwort	2	ns	ns	ns	2	**L+**	x	x		2018
Asteraceae	*Artemisia biennis*	biennial wormwood	2	ns	ns	ns	2	**L+**	x			2008?
Asteraceae	*Artemisia vulgaris*	common mugwort	1	ns	ns	ns	1	**L+**	x		e	1976
Asparagaceae	*Asparagus officinalis*	asparagus	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Avena sativa*	oats	4	ns	ns	ns	4	**L+**		x		2018
Amaranthaceae	*Axyris amaranthoides*	Russian pigweed	5	ns	ns	ns	5	**L+**	x		e	1976
Brassicaceae	*Barbarea vulgaris*	winter cress	1	ns	ns	ns	1	**L+**	x	x		2018
Berberidaceae	*Berberis aquifolium*	Oregon-grape	4	ns	ns	ns	4	**L+**		x		2018
Berberidaceae	*Berberis thunbergii*	Japanese barberry	1	ns	ns	ns	1	**L+**	x	x		2018
Betulaceae	*Betula pendula*	European white birch	2	ns	ns	ns	2	**L+**		x		2018
Boraginaceae	*Borago officinalis*	borage	5	ns	ns	ns	5	**L+**	x		e	"old"
Brassicaceae	*Brassica juncea*	brown mustard	4	ns	ns	ns	4	**L+**		x		2018
Brassicaceae	*Brassica rapa*	turnip	4	ns	ns	ns	4	**L+**	x	x		2018
Poaceae	*Bromus commutatus*	upright chess	3	ns	ns	ns	3	**L+**	x		e	1976
Poaceae	*Bromus inermis*	smooth brome grass	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Bromus tectorum*	downy chess	2	ns	ns	ns	2	**L+**	x		e	1976
Poaceae	*Calamagrostis* x *acutiflora*	feather reed grass	5	ns	ns	ns	5	**L+**		x		2018
Campanulaceae	*Campanula rapunculoides*	creeping bellflower	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Capsella bursa-pastoris*	shepherd's purse	1	ns	ns	ns	1	**L+**	x	x		2018
Cyperaceae	*Carex spicata*	spiked sedge	1	ns	ns	ns	1	**L+**		x		2018

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Betulaceae	*Carpinus betulus*	European hornbeam	5	ns	ns	ns	5	**L+**		xp		2018
Bignoniaceae	*Catalpa speciosa*	northern catalpa	3	ns	ns	ns	3	**L+**	x	xpn		2018
Celastraceae	*Celastrus orbiculatus*	oriental bittersweet	2	ns	ns	ns	2	**L+**	x	x		2018
Caryophyllaceae	*Cerastium fontanum*	mouse-ear chickweed	1	ns	ns	ns	1	**L+**	x	x		2018
Papaveraceae	*Chelidonium majus*	celandine	1	ns	ns	ns	1	**L+**	x	x		2018
Amaranthaceae	*Chenopodium album*	lamb's quarters	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Chrysanthemum maximum*	Shasta daisy	4	ns	ns	ns	4	**L+**	xp			2008
Asteraceae	*Cichorium intybus*	chicory	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Cirsium arvense*	creeping thistle	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Cirsium vulgare*	bull thistle	1	ns	ns	ns	1	**L+**	x	x		2018
Commelinaceae	*Commelina communis*	Asiatic dayflower	4	ns	ns	ns	4	**L+**	x	x		2018
Asparagaceae	*Convallaria majalis*	lily-of-the-valley	1	ns	ns	ns	1	**L+**	x	x		2018
Convolvulaceae	*Convolvulus arvensis*	field bindweed	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Coreopsis grandiflora*	large-flowered tickseed	5	ns	ns	ns	5	**L+**	x		e	1942
Asteraceae	*Coreopsis lanceolata*	lance-leaved coreopsis	3	ns	ns	ns	3	**L+**	xp			2008
Betulaceae	*Corylus maxima*	filbert	5	ns	ns	ns	5	**L+**		xcf		2018
Rosaceae	*Cotoneaster acutifolius*	Peking cotoneaster	3	ns	ns	ns	3	**L+**		x		2018
Asteraceae	*Crepis tectorum*	narrow-leaved hawk's beard	3	ns	ns	ns	3	**L+**	x		e	1976
Amaranthaceae	*Cycloloma atriplicifolium*	winged pigweed	5	ns	ns	ns	5	**L+**	x		e	1942
Apocynaceae	*Cynanchum louiseae*	black swallow-wort	5	ns	ns	ns	5	**L+**		x		2018
Apocynaceae	*Cynanchum rossicum*	dog-strangling vine	1	ns	ns	ns	1	**L+**	x	x		2018
Boraginaceae	*Cynoglossum officinale*	hound's tongue	2	ns	ns	ns	2	**L+**		x		2018
Cyperaceae	*Cyperus fuscus*	brown umbrella-sedge	3	ns	ns	ns	3	**L+**	x		e	2003
Poaceae	*Dactylis glomerata*	orchard grass	1	ns	ns	ns	1	**L+**	x	x		2018
Apiaceae	*Daucus carota*	Queen Anne's lace	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Descurainia sophia*	flixweed	4	ns	ns	ns	4	**L+**	x		e	1972
Caryophyllaceae	*Dianthus armeria*	Deptford pink	2	ns	ns	ns	2	**L+**	x	x		2018
Poaceae	*Digitaria ischaemum*	smooth crab grass	2	ns	ns	ns	2	**L+**	x	x		2018
Poaceae	*Digitaria sanguinalis*	hairy crab grass	2	ns	ns	ns	2	**L+**	x		e	2003
Brassicaceae	*Diplotaxis tenuifolia*	slender-leaved wall rocket	4	ns	ns	ns	4	**L+**	x			2008?
Caprifoliaceae	*Dipsacus fullonum*	teasel	1	ns	ns	ns	1	**L+**		x		2018
Lamiaceae	*Dracocephalum parviflorum*	American dragonhead	5	ns	ns	ns	5	**L+**	x		e	1976
Asteraceae	*Echinacea purpurea*	purple coneflower	3	ns	ns	ns	3	**L+**	xp	xpr		2018
Poaceae	*Echinochloa crus-galli*	barnyard grass	1	ns	ns	ns	1	**L+**	x	x		2018
Boraginaceae	*Echium vulgare*	viper's bugloss	1	ns	ns	ns	1	**L+**	x			2008?
Elaeagnaceae	*Elaeagnus angustifolia*	Russian olive	2	ns	ns	ns	2	**L+**		x		2018
Elaeagnaceae	*Elaeagnus umbellata*	autumn olive	1	ns	ns	ns	1	**L+**		x		2018
Poaceae	*Eleusine indica*	goose grass	5	ns	ns	ns	5	**L+**		x		2018
Poaceae	*Elymus repens*	quack grass	1	ns	ns	ns	1	**L+**	x	x		2018
Onagraceae	*Epilobium hirsutum*	European willow-herb	2	ns	ns	ns	2	**L+**	x	x		2018
Onagraceae	*Epilobium parviflorum*	small-flowered willow-herb	1	ns	ns	ns	1	**L+**	x	x		2018
Orchidaceae	*Epipactis helleborine*	helleborine	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Eragrostis minor*	little love grass	2	ns	ns	ns	2	**L+**	x	x		2018
Ranunculaceae	*Eranthis hyemalis*	winter aconite	5	ns	ns	ns	5	**L+**		x		2018
Brassicaceae	*Erucastrum gallicum*	dog mustard	2	ns	ns	ns	2	**L+**	x			2008
Brassicaceae	*Erysimum cheiranthoides*	wormseed mustard	2	ns	ns	ns	2	**L+**	x			2008?
Brassicaceae	*Erysimum inconspicuum*	small-flowered prairie rocket	5	ns	ns	ns	5	**L+**	x		e	1927
Celastraceae	*Euonymus alatus*	winged spindle-tree	2	ns	ns	ns	2	**L+**		x		2018

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Celastraceae	*Euonymus europaeus*	European spindle-tree	2	ns	ns	ns	2	**L+**	x	x		2018
Celastraceae	*Euonymus fortunei*	wintercreeper euonymus	2	ns	ns	ns	2	**L+**	x	x		2018
Euphorbiaceae	*Euphorbia cyparissias*	cypress spurge	2	ns	ns	ns	2	**L+**	x		e	1976
Euphorbiaceae	*Euphorbia dentata*	toothed spurge	5	ns	ns	ns	5	**L+**	x	x		2018
Euphorbiaceae	*Euphorbia esula*	leafy spurge	4	ns	ns	ns	4	**L+**	x		e	1976
Euphorbiaceae	*Euphorbia marginata*	snow-on-the-mountain	5	ns	ns	ns	5	**L+**	x		e	1941
Euphorbiaceae	*Euphorbia serpyllifolia* ssp. *serpyllifolia*	thyme-leaved spurge	4	ns	ns	ns	4	**L+**	x			2008?
Polygonaceae	*Fallopia convolvulus*	black bindweed	2	ns	ns	ns	2	**L+**	x	x		2018
Poaceae	*Festuca filiformis*	hair fescue	3	ns	ns	ns	3	**L+**	x	x		2018
Poaceae	*Festuca rubra* ssp. *rubra*	red fescue	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Festuca trachyphylla*	hard fescue	3	ns	ns	ns	3	**L+**	x	x		2018
Ranunculaceae	*Ficaria verna*	lesser celandine	4	ns	ns	ns	4	**L+**		x		2018
Rosaceae	*Filipendula vulgaris*	dropwort	5	ns	ns	ns	5	**L+**	x		e	1976
Oleaceae	*Forsythia suspensa*	weeping forsythia	3	ns	ns	ns	3	**L+**		x		2018
Oleaceae	*Forsythia viridissima*	forsythia	2	ns	ns	ns	2	**L+**		xpr		2018
Rhamnaceae	*Frangula alnus*	glossy buckthorn	3	ns	ns	ns	3	**L+**	x	x		2018
Oleaceae	*Fraxinus excelsior*	European ash	3	ns	ns	ns	3	**L+**	x	x		2018
Asteraceae	*Gaillardia aristata*	blanket-flower	5	ns	ns	ns	5	**L+**	xp	x		2018
Asteraceae	*Galinsoga quadriradiata*	hairy galinsoga	3	ns	ns	ns	3	**L+**	x	x		2018
Rubiaceae	*Galium mollugo*	white bedstraw	2	ns	ns	ns	2	**L+**		x		2018
Rubiaceae	*Galium sylvaticum*	wood bedstraw	5	ns	ns	ns	5	**L+**		x		2018
Geraniaceae	*Geranium macrorrhizum*	zdravets	5	ns	ns	ns	5	**L+**		xp		2018
Rosaceae	*Geum urbanum*	urban avens	1	ns	ns	ns	1	**L+**	x	x		2018
Lamiaceae	*Glechoma hederacea*	creeping Charlie	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Gleditsia triacanthos*	honey locust	3	ns	ns	ns	3	**L+**	xp	xpr		2018
Asteraceae	*Gnaphalium uliginosum*	low cudweed	4	ns	ns	ns	4	**L+**	x		e	2003
Fabaceae	*Gymnocladus dioicus*	Kentucky coffee-tree	4	ns	ns	ns	4	**L+**		xpr		2018
Asteraceae	*Helianthus annuus*	common sunflower	3	ns	ns	ns	3	**L+**		x		2018
Xanthorrhoeaceae	*Hemerocallis fulva*	orange day-lily	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Hesperis matronalis*	dame's rocket	1	ns	ns	ns	1	**L+**	x	x		2018
Malvaceae	*Hibiscus syriacus*	rose-of-Sharon	5	ns	ns	ns	5	**L+**		xpr		2018
Asteraceae	*Hieracium vulgatum*	blotched hawkweed	3	ns	ns	ns	3	**L+**	x	x		2018
Poaceae	*Holcus lanatus*	velvet grass	5	ns	ns	ns	5	**L+**		xpr		2018
Poaceae	*Hordeum vulgare*	barley	4	ns	ns	ns	4	**L+**		x		2018
Asparagaceae	*Hosta ventricosa*	hosta	3	ns	ns	ns	3	**L+**		x		2018
Hypericaceae	*Hypericum perforatum*	common St. John's-wort	1	ns	ns	ns	1	**L+**	x	x		2018
Balsaminaceae	*Impatiens balsamina*	garden balsam	5	ns	ns	ns	5	**L+**	x		e	1976
Balsaminaceae	*Impatiens glandulifera*	Himalayan balsam	2	ns	ns	ns	2	**L+**	x	x		2018
Convolvulaceae	*Ipomoea purpurea*	common morning-glory	4	ns	ns	ns	4	**L+**		x		2018
Iridaceae	*Iris pseudacorus*	yellow flag	2	ns	ns	ns	2	**L+**	x	x		2018
Aristolochiaceae	*Isotrema macrophyllum*	Dutchman's pipe	5	ns	ns	ns	ns	**L+**	xpr		e	1976
Juncaceae	*Juncus compressus*	round-fruited rush	2	ns	ns	ns	2	**L+**	x	x		2018
Cupressaceae	*Juniperus chinensis*	Chinese juniper	3	ns	ns	ns	3	**L+**		xp		2018
Asteraceae	*Lactuca serriola*	prickly lettuce	1	ns	ns	ns	1	**L+**	x	x		2018
Lamiaceae	*Lamium amplexicaule*	henbit	4	ns	ns	ns	4	**L+**	x		e	1891
Lamiaceae	*Lamium purpureum*	purple dead-nettle	3	ns	ns	ns	3	**L+**		x		2018
Asteraceae	*Lapsana communis*	nipplewort	2	ns	ns	ns	2	**L+**	x	x		2018
Pinaceae	*Larix decidua*	European larch	3	ns	ns	ns	3	**L+**		xp		2018

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Lamiaceae	*Leonurus cardiaca* ssp. *cardiaca*	motherwort	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Lepidium campestre*	field pepper-grass	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Leucanthemum vulgare*	ox-eye daisy	1	ns	ns	ns	1	**L+**	x			2008
Oleaceae	*Ligustrum obtusifolium*	Amur privet	5	ns	ns	ns	5	**L+**		x		2018
Oleaceae	*Ligustrum vulgare*	privet	1	ns	ns	ns	1	**L+**	x	x		2018
Plantaginaceae	*Linaria vulgaris*	butter-and-eggs	1	ns	ns	ns	1	**L+**	x	x		2018
Linaceae	*Linum usitatissimum*	common flax	4	ns	ns	ns	4	**L+**		x		2018
Boraginaceae	*Lithospermum officinale*	Eurasian gromwell	1	ns	ns	ns	1	**L+**		x		2018
Poaceae	*Lolium arundinaceum*	tall fescue	2	ns	ns	ns	2	**L+**	x	x		2018
Poaceae	*Lolium perenne*	perennial rye	1	ns	ns	ns	1	**L+**	x		e	1976
Poaceae	*Lolium pratense*	meadow fescue	1	ns	ns	ns	1	**L+**	x	x		2018
Caprifoliaceae	*Lonicera morrowii*	Morrow's honeysuckle	1	ns	ns	ns	1	**L+**	x	x		2018
Caprifoliaceae	*Lonicera tatarica*	Tartarian honeysuckle	1	ns	ns	ns	1	**L+**	x	x		2018
Caprifoliaceae	*Lonicera* x *bella*	shrub honeysuckle	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Lotus corniculatus*	bird's foot trefoil	1	ns	ns	ns	1	**L+**	x	x		2018
Solanaceae	*Lycium barbarum*	matrimony-vine	5	ns	ns	ns	5	**L+**	x		e	1976
Lamiaceae	*Lycopus europaeus*	European water-horehound	1	ns	ns	ns	1	**L+**	x	x		2018
Primulaceae	*Lysimachia arvensis*	scarlet pimpernel	2	ns	ns	ns	2	**L+**	x	x		2018
Lythraceae	*Lythrum salicaria*	purple loosestrife	1	ns	ns	ns	1	**L+**	x	x		2018
Rosaceae	*Malus baccata*	Siberian crab-apple	3	ns	ns	ns	3	**L+**	xp			2008?
Rosaceae	*Malus pumila*	apple	1	ns	ns	ns	1	**L+**	x	x		2018
Rosaceae	*Malus toringo*	Toringo crab-apple	5	ns	ns	ns	5	**L+**		x		2018
Malvaceae	*Malva neglecta*	common mallow	2	ns	ns	ns	2	**L+**		x		2018
Asteraceae	*Matricaria discoidea*	pineappleweed	2	ns	ns	ns	2	**L+**	x	x		2018
Fabaceae	*Medicago lupulina*	black medick	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Medicago sativa* ssp. *sativa*	alfalfa	1	ns	ns	ns	1	**L+**	x		e	1976
Fabaceae	*Melilotus albus*	white sweet clover	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Melilotus officinalis*	yellow sweet clover	1	ns	ns	ns	1	**L+**	x	x		2018
Lamiaceae	*Mentha* x *gentilis*	red mint	3	ns	ns	ns	3	**L+**	x		e	1976
Cupressaceae	*Metasequoia glyptostroboides*	dawn redwood	5	ns	ns	ns	ns	**L+**		xp		2018
Moraceae	*Morus alba*	white mulberry	1	ns	ns	ns	1	**L+**	x	x		2018
Asparagaceae	*Muscari botryoides*	grape hyacinth	3	ns	ns	ns	3	**L+**	x		e	1901
Boraginaceae	*Myosotis arvensis*	garden forget-me-not	5	ns	ns	ns	5	**L+**		x		2018
Boraginaceae	*Myosotis scorpioides*	true forget-me-not	1	ns	ns	ns	1	**L+**	x	x		2018
Haloragaceae	*Myriophyllum spicatum*	Eurasian water-milfoil	3	ns	ns	ns	3	**L+**	x	x		2018
Amaryllidaceae	*Narcissus pseudonarcissus*	daffodil	3	ns	ns	ns	3	**L+**		x		2018
Brassicaceae	*Nasturtium microphyllum*	small-leaved watercress	2	ns	ns	ns	2	**L+**	x	x		2018
Lamiaceae	*Nepeta cataria*	catnip	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Neslia paniculata*	yellow ball mustard	5	ns	ns	ns	5	**L+**	x		e	1914
Asparagaceae	*Ornithogalum umbellatum*	summer snowflake	4	ns	ns	ns	4	**L+**	x	x		2018
Amaranthaceae	*Oxybasis glauca* ssp. *glauca*	oak-leaved goosefoot	2	ns	ns	ns	2	**L+**	x		e	2003
Poaceae	*Panicum dichotomiflorum*	fall panic grass	3	ns	ns	ns	3	**L+**	x	x		2018
Poaceae	*Panicum miliaceum*	millet	4	ns	ns	ns	4	**L+**		x		2018
Vitaceae	*Parthenocissus tricuspidata*	Boston-ivy	4	ns	ns	ns	4	**L+**		x		2018
Apiaceae	*Pastinaca sativa*	wild parsnip	2	ns	ns	ns	2	**L+**		x		2018
Polygonaceae	*Persicaria longiseta*	oriental lady's thumb	5	ns	ns	ns	5	**L+**		x		2018
Polygonaceae	*Persicaria maculosa*	lady's thumb	1	ns	ns	ns	1	**L+**	x	x		2018
Polygonaceae	*Persicaria orientalis*	prince's feather	4	ns	ns	ns	4	**L+**	x		e	1895

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Poaceae	*Phalaris canariensis*	canary grass	5	ns	ns	ns	5	**L+**	x		e	1889
Poaceae	*Phleum pratense*	Timothy grass	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Phragmites australis* ssp. *australis*	common reed	1	ns	ns	ns	1	**L+**	x	x		2018
Solanaceae	*Physalis peruviana*	Cape ground-cherry	5	ns	ns	ns	5	**L+**	xpr		e	1976
Phytolaccaceae	*Phytolacca americana*	pokeweed	5	ns	ns	ns	5	**L+**		x		2018
Pinaceae	*Picea abies*	Norway spruce	3	ns	ns	ns	3	**L+**	xp	xp		2018
Pinaceae	*Picea pungens*	Colorado spruce	5	ns	ns	ns	5	**L+**		xp		2018
Asteraceae	*Pilosella aurantiaca*	orange hawkweed	3	ns	ns	ns	3	**L+**	x		e	1976
Asteraceae	*Pilosella caespitosa*	yellow hawkweed	1	ns	ns	ns	1	**L+**	x			2008
Asteraceae	*Pilosella* x *floribunda*	smoothish hawkweed	3	ns	ns	ns	3	**L+**		x		2018
Pinaceae	*Pinus nigra*	Austrian pine	3	ns	ns	ns	3	**L+**	xp	xpr		2018
Pinaceae	*Pinus sylvestris*	Scots pine	1	ns	ns	ns	1	**L+**	xp	xp		2018
Plantaginaceae	*Plantago arenaria*	sand plantain	4	ns	ns	ns	4	**L+**	x		e	1929
Plantaginaceae	*Plantago lanceolata*	English plantain	1	ns	ns	ns	1	**L+**	x	x		2018
Plantaginaceae	*Plantago major*	common plantain	1	ns	ns	ns	1	**L+**	x	x		2018
Platanaceae	*Platanus* x *hispanica*	London plane tree	4	ns	ns	ns	4	**L+**		xp		2018
Poaceae	*Poa annua*	annual blue grass	2	ns	ns	ns	2	**L+**	x	x		2018
Poaceae	*Poa bulbosa*	bulblet-bearing blue grass	5	ns	ns	ns	5	**L+**		x		2018
Poaceae	*Poa compressa*	flat-stemmed blue grass	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Poa nemoralis*	woodland spear grass	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Poa pratensis* ssp. *pratensis*	Kentucky blue grass	1	ns	ns	ns	1	**L+**	x	x		2018
Asparagaceae	*Polygonatum multiflorum*	European Solomon's seal	3	ns	ns	ns	3	**L+**	x		e	1976
Polygonaceae	*Polygonum achoreum*	striate knotweed	3	ns	ns	ns	3	**L+**	x	x		2018
Polygonaceae	*Polygonum aviculare* ssp. *aviculare*	prostrate knotweed	1	ns	ns	ns	1	**L+**	x	x		2018
Salicaceae	*Populus alba*	white poplar	1	ns	ns	ns	1	**L+**	x	x		2018
Salicaceae	*Populus* x *canadensis*	Carolina poplar	2	ns	ns	ns	2	**L+**		x		2018
Salicaceae	*Populus* x *canescens*	grey poplar hybrid	3	ns	ns	ns	3	**L+**		x		2018
Salicaceae	*Populus* x *heimburgeri*	Heimburger's poplar	4	ns	ns	ns	4	**L+**		x		2018
Portulacaceae	*Portulaca grandiflora*	garden portulaca	5	ns	ns	ns	5	**L+**	x		e	2003
Portulacaceae	*Portulaca oleracea*	purslane	3	ns	ns	ns	3	**L+**		x		2018
Potamogetonaceae	*Potamogeton crispus*	curly pondweed	1	ns	ns	ns	1	**L+**	x		e	1976
Rosaceae	*Potentilla argentea*	silvery cinquefoil	3	ns	ns	ns	3	**L+**	x	x		2018
Rosaceae	*Potentilla inclinata*	lintermediate cinquefoil	3	ns	ns	ns	3	**L+**	x			2008?
Rosaceae	*Potentilla recta*	sulphur cinquefoil	1	ns	ns	ns	1	**L+**	x			2008?
Lamiaceae	*Prunella vulgaris* ssp. *vulgaris*	heal-all (European)	2	ns	ns	ns	2	**L+**		x		2018
Rosaceae	*Prunus avium*	mazzard cherry	2	ns	ns	ns	2	**L+**	x			2008?
Rosaceae	*Prunus serrulata*	Japanese flowering cherry	5	ns	ns	ns	5	**L+**		xpr		2018
Rosaceae	*Prunus tomentosa*	Manchu cherry	3	ns	ns	ns	3	**L+**		x		2018
Pinaceae	*Pseudotsuga menziesii* var. *glauca*	Rocky Mountain Douglas-fir	5	ns	ns	ns	5	**L+**		xp		2018
Fagaceae	*Quercus palustris*	pin oak	5	ns	ns	ns	5	**L+**		xp		2018
Fagaceae	*Quercus robur*	English oak	3	ns	ns	ns	3	**L+**		xpr		2018
Ranunculaceae	*Ranunculus acris*	tall buttercup	1	ns	ns	ns	1	**L+**	x	x		2018
Ranunculaceae	*Ranunculus repens*	creeping buttercup	2	ns	ns	ns	2	**L+**	x		e	1976
Asteraceae	*Ratibida columnifera*	prairie coneflower	5	ns	ns	ns	5	**L+**	xp			2008
Asteraceae	*Ratibida pinnata*	grey-headed coneflower	3	ns	ns	ns	3	**L+**	xp	xpr		2018
Polygonaceae	*Reynoutria japonica var. japonica*	Japanese knotweed	2	ns	ns	ns	2	**L+**	x	x		2018
Rhamnaceae	*Rhamnus cathartica*	common buckthorn	1	ns	ns	ns	1	**L+**	x	x		2018
Anacardiaceae	*Rhus aromatica*	fragrant sumach	3	ns	ns	ns	3	**L+**	xp	xpr		2018

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Grossulariaceae	*Ribes rubrum*	garden red currant	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Robinia pseudoacacia*	black locust	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Robinia viscosa*	clammy locust	5	ns	ns	ns	5	**L+**	x		e	1988?
Rosaceae	*Rosa canina*	dog rose	2	ns	ns	ns	2	**L+**		x		2018
Rosaceae	*Rosa multiflora*	multiflora rose	1	ns	ns	ns	1	**L+**	x	x		2018
Rosaceae	*Rosa spinosissima*	burnet rose	5	ns	ns	ns	5	**L+**		xpr		2018
Rosaceae	*Rubus idaeus* ssp. *idaeus*	garden red raspberry	3	ns	ns	ns	3	**L+**	xp			2008
Asteraceae	*Rudbeckia triloba*	brown-eyed Susan	2	ns	ns	ns	2	**L+**	xp	x		2018
Polygonaceae	*Rumex acetosella*	sheep sorrel	3	2	ns	4	9	**L+**	x		e	1976
Polygonaceae	*Rumex crispus*	curly dock	1	ns	ns	ns	1	**L+**	x	x		2018
Polygonaceae	*Rumex obtusifolius*	bitter dock	1	ns	ns	ns	1	**L+**	x	x		2018
Polygonaceae	*Rumex thyrsiflorus*	garden sorrel	5	ns	ns	ns	5	**L+**	x		e	1972
Polygonaceae	*Rumex triangulivalvis*	willow-leaved dock	5	ns	ns	ns	5	**L+**	x		e	1972
Salicaceae	*Salix alba*	white willow	1	ns	ns	ns	1	**L+**		x		2018
Salicaceae	*Salix caprea*	goat willow	3	ns	ns	ns	3	**L+**		xp		2018
Salicaceae	*Salix matsudana*	corkscrew willow	3	ns	ns	ns	3	**L+**	xp			2008
Salicaceae	*Salix pentandra*	laurel willow	5	ns	ns	ns	5	**L+**	x	x		2018
Salicaceae	*Salix purpurea*	purple-osier willow	2	ns	ns	ns	2	**L+**	x	x		2018
Salicaceae	*Salix* x *fragilis*	crack willow	1	ns	ns	ns	1	**L+**	x	x		2018
Salicaceae	*Salix* x *sepulcralis*	weeping willow	1	ns	ns	ns	1	**L+**	x	xpn		2018
Amaranthaceae	*Salsola tragus*	Russian thistle	4	ns	ns	ns	4	**L+**	x		e	1930
Caryophyllaceae	*Saponaria officinalis*	bouncing Bet	1	ns	ns	ns	1	**L+**	x	x		2018
Asparagaceae	*Scilla siberica*	Siberian squill	2	ns	ns	ns	2	**L+**		x		2018
Scrophulariaceae	*Scrophularia nodosa*	European figwort	4	ns	ns	ns	4	**L+**		x		2018
Fabaceae	*Securigera varia*	crown vetch	1	ns	ns	ns	1	**L+**	x		e	2003
Crassulaceae	*Sedum acre*	mossy stonecrop	3	ns	ns	ns	3	**L+**	x		e	1932
Crassulaceae	*Sedum sarmentosum*	Asiatic stonecrop	4	ns	ns	ns	4	**L+**	x	x		2018
Asteraceae	*Senecio vulgaris*	common groundsel	3	ns	ns	ns	3	**L+**	x	x		2018
Poaceae	*Setaria faberi*	giant foxtail	3	ns	ns	ns	3	**L+**		x		2018
Poaceae	*Setaria italica*	foxtail millet	4	ns	ns	ns	4	**L+**		x		2018
Poaceae	*Setaria pumila* ssp. *pumila*	yellow foxtail	1	ns	ns	ns	1	**L+**	x		e	2003
Poaceae	*Setaria viridis*	green foxtail	1	ns	ns	ns	1	**L+**	x	x		2018
Caryophyllaceae	*Silene latifolia*	evening lychnis	2	ns	ns	ns	2	**L+**	x	x		2018
Caryophyllaceae	*Silene noctiflora*	night-flowering catchfly	5	ns	ns	ns	5	**L+**	x		e	1972
Caryophyllaceae	*Silene vulgaris*	bladder campion	1	ns	ns	ns	1	**L+**	x	x		2018
Brassicaceae	*Sinapis arvensis*	charlock	2	ns	ns	ns	2	**L+**	x			2008?
Brassicaceae	*Sisymbrium altissimum*	tumble mustard	3	ns	ns	ns	3	**L+**	x			2008?
Brassicaceae	*Sisymbrium officinale*	hedge mustard	4	ns	ns	ns	4	**L+**	x			2008?
Solanaceae	*Solanum dulcamara*	bittersweet nightshade	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Sonchus arvensis* ssp. *arvensis*	glandular perennial sow-thistle	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Sonchus arvensis* ssp. *uliginosus*	smooth perennial sow-thistle	2	ns	ns	ns	2	**L+**		x		2018
Asteraceae	*Sonchus asper*	spiny sow-thistle	2	ns	ns	ns	2	**L+**	x	x		2018
Asteraceae	*Sonchus oleraceus*	annual sow-thistle	1	ns	ns	ns	1	**L+**	x	x		2018
Rosaceae	*Sorbaria sorbifolia*	false spiraea	2	ns	ns	ns	2	**L+**	x	xpr		2018
Rosaceae	*Sorbus aucuparia*	European mountain-ash	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Sorghum bicolor*	sorghum	5	ns	ns	ns	5	**L+**		x		2018
Caryophyllaceae	*Spergularia rubra*	red sand spurrey	5	ns	ns	ns	5	**L+**	x		e	2003
Rosaceae	*Spiraea* x *vanhouttei*	bridalwreath spiraea	3	ns	ns	ns	3	**L+**		x		2018

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Lamiaceae	*Stachys palustris*	marsh hedge-nettle	2	3	4	3	12	**L+**	x		e	1972
Caryophyllaceae	*Stellaria graminea*	grass-leaved chickweed	2	ns	ns	ns	2	**L+**	x		e	1976
Caryophyllaceae	*Stellaria media*	common chickweed	2	ns	ns	ns	2	**L+**	x	x		2018
Caprifoliaceae	*Symphoricarpos albus* var. *laevigatus*	western snowberry	2	ns	ns	ns	2	**L+**		xpr		2018
Boraginaceae	*Symphytum officinale*	common comfrey	2	ns	ns	ns	2	**L+**		x		2018
Oleaceae	*Syringa reticulata*	Japanese tree lilac	4	ns	ns	ns	4	**L+**		x		2018
Oleaceae	*Syringa vulgaris*	common lilac	1	ns	ns	ns	1	**L+**		xpn		2018
Asteraceae	*Tanacetum parthenium*	feverfew	4	ns	ns	ns	4	**L+**		x		2018
Asteraceae	*Tanacetum vulgare*	tansy	2	ns	ns	ns	2	**L+**	x		e	1976
Asteraceae	*Taraxacum erythrospermum*	red-seeded dandelion	5	ns	ns	ns	5	**L+**	x		e	2003
Asteraceae	*Taraxacum officinale*	dandelion	1	ns	ns	ns	1	**L+**	x	x		2018
Taxaceae	*Taxus cuspidata*	Japanese yew	3	ns	ns	ns	3	**L+**		x		2018
Brassicaceae	*Thlaspi arvense*	penny-cress	2	ns	ns	ns	2	**L+**	x		e	1976
Malvaceae	*Tilia cordata*	little-leaf linden	2	ns	ns	ns	2	**L+**	x	xpn		2018
Apiaceae	*Torilis japonica*	hedge-parsley	2	ns	ns	ns	2	**L+**	x	x		2018
Asteraceae	*Tragopogon dubius*	lemon-yellow goat's beard	1	ns	ns	ns	1	**L+**	x	x		2018
Asteraceae	*Tragopogon pratensis*	meadow goat's beard	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Trifolium aureum*	hop-clover	3	ns	ns	ns	3	**L+**	x		e	1954
Fabaceae	*Trifolium campestre*	large hop-clover	5	ns	ns	ns	5	**L+**	x		e	"old"
Fabaceae	*Trifolium hybridum*	alsike clover	2	ns	ns	ns	2	**L+**	x	x		2018
Fabaceae	*Trifolium pratense*	red clover	1	ns	ns	ns	1	**L+**	x	x		2018
Fabaceae	*Trifolium repens*	white clover	1	ns	ns	ns	1	**L+**	x	x		2018
Liliaceae	*Tulipa x hybrida*	garden tulip	3	ns	ns	ns	3	**L+**		x		2018
Asteraceae	*Tussilago farfara*	coltsfoot	1	ns	ns	ns	1	**L+**	x	x		2018
Typhaceae	*Typha angustifolia*	narrow-leaved cattail	1	ns	ns	ns	1	**L+**	x	x		2018
Typhaceae	*Typha x glauca*	hybrid cattail	1	ns	ns	ns	1	**L+**	x	x		2018
Ulmaceae	*Ulmus glabra*	Scotch elm	2	ns	ns	ns	2	**L+**	x	x		2018
Ulmaceae	*Ulmus pumila*	Siberian elm	1	ns	ns	ns	1	**L+**	x	x		2018
Poaceae	*Uniola paniculata*	sea-oats	5	ns	ns	ns	5	**L+**		xpr		2018
Urticaceae	*Urtica dioica* ssp. *dioica*	European stinging nettle	1	ns	ns	ns	1	**L+**	x	x		2018
Scrophulariaceae	*Verbascum blattaria*	moth mullein	4	ns	ns	ns	4	**L+**	x		e	1976
Scrophulariaceae	*Verbascum thapsus*	common mullein	1	ns	ns	ns	1	**L+**	x	x		2018
Plantaginaceae	*Veronica arvensis*	corn speedwell	2	ns	ns	ns	2	**L+**	x	x		2018
Plantaginaceae	*Veronica longifolia*	long-leaved speedwell	4	ns	ns	ns	4	**L+**		x		2018
Plantaginaceae	*Veronica officinalis*	common speedwell	1	ns	ns	ns	1	**L+**	x	x		2018
Plantaginaceae	*Veronica serpyllifolia* ssp. *serpyllifolia*	thyme-leaved speedwell	1	ns	ns	ns	1	**L+**		x		2018
Adoxaceae	*Viburnum lantana*	wayfaring tree	1	ns	ns	ns	1	**L+**	x	x		2018
Adoxaceae	*Viburnum opulus* ssp. *opulus*	European highbush cranberry	1	ns	ns	ns	1	**L+**	x			2008
Fabaceae	*Vicia cracca*	cow vetch	1	ns	ns	ns	1	**L+**	x	x		2018
Apocynaceae	*Vinca minor*	periwinkle	1	ns	ns	ns	1	**L+**	x		e	2003
Fabaceae	*Wisteria sinensis*	Chinese wisteria	5	ns	ns	ns	5	**L+**		x		2018
Poaceae	*Zea mays*	maize	5	ns	ns	ns	5	**L+**		x		2018
Sapindaceae	*Acer negundo*	Manitoba maple	1	ns	ns	ns	1	**L+?**	x	x		2018
Poaceae	*Agrostis stolonifera*	creeping bent grass	1	ns	ns	ns	1	**L+?**	x	x		2018
Amaranthaceae	*Atriplex patula*	halberd-leaved orache	2	ns	ns	ns	2	**L+?**	x			2008?
Cyperaceae	*Cyperus esculentus*	yellow nut-sedge	2	ns	4	1	7	**L+?**		x		2018
Poaceae	*Eragrostis pectinacea* var. *pectinacea*	tufted love grass	4	1	4	3	12	**L+?**		x		2018
Euphorbiaceae	*Euphorbia glyptosperma*	ridge-seeded spurge	3	ns	ns	ns	3	**L+?**	x			2008

Appendix 2: Flora Species for High Park (2018 and all earlier records)

Family	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-18)	High Park pre-2018	High Park 2018	Status in High Park	Most recent obs.
Euphorbiaceae	*Euphorbia maculata*	spotted spurge	2	ns	ns	ns	2	**L+?**	x	x		2018
Geraniaceae	*Geranium robertianum*	herb Robert	1	ns	ns	ns	1	**L+?**	x	x		2018
Asteraceae	*Helenium autumnale*	sneezeweed	5	ns	ns	ns	5	**L+?**	xp			2008
Cannabaceae	*Humulus lupulus*	common hops	3	ns	ns	ns	3	**L+?**	x		e	1976
Brassicaceae	*Lepidium densiflorum*	common pepper-grass	2	ns	ns	ns	2	**L+?**	x	x		2018
Polygonaceae	*Persicaria hydropiper*	water-pepper	2	ns	ns	ns	2	**L+?**	x	x		2018
Poaceae	*Phalaris arundinacea*	reed canary grass	1	ns	ns	ns	1	**L+?**	x	x		2018
Rosaceae	*Potentilla norvegica*	rough cinquefoil	1	ns	ns	ns	1	**L+?**	x			2008
Rosaceae	*Rosa virginiana*	Virginia rose	3	ns	ns	ns	3	**L+?**		xp		2018
Poaceae	*Sporobolus vaginiflorus*	ensheathed dropseed	3	ns	ns	ns	3	**L+?**		x		2018
Plantaginaceae	*Veronica peregrina* ssp. *peregrina*	purslane speedwell	3	ns	ns	ns	3	**L+?**	x		e	1976

Legend

L1-L3: species of regional conservation concern	ns: criterion not scored
L4: species of conservation concern in urban area	e: extirpated from High Park
L5: species not of conservation concern at this time	pe: extirpated then reintroduced
LX: species is extirpated from TRCA	cf: identification not certain
mL+: introduced species, not native to TRCA	p: planted only
mL+?: species is probably introduced	pr: regenerating but of planted origin
!: native to TRCA but not historically from High Park	pn: both natural origin and planted

Survey Species: species for which the TRCA protocol effectively surveys.

Birds

Common Name	Scientific Name	Code	pre-2009	2009	2010	2011	2012	2017	2018	LO	PTn	PTt	AS	PIS	StD	HD	+	TS	L-Rank
black-billed cuckoo	*Coccyzus erythropthalmus*	BBCU							1	1	3	3	3	1	3	3	0	17	**L3**
scarlet tanager	*Piranga olivacea*	SCTA	x							0	3	2	4	1	4	3	0	17	**L3**
wood thrush	*Hylocichla mustelina*	WOTH					x	x	2	0	4	2	3	2	4	2	0	17	**L3**
blue-grey gnatcatcher	*Polioptila caerulea*	BGGN							18	0	1	2	3	1	3	1	0	11	**L4**
Carolina wren	*Thryothorus ludovicianus*	CARW						x		3	1	2	1	2	1	2	0	12	**L4**
chimney swift	*Chaetura pelagica*	CHSW	x						1	1	4	2	1	1	1	1	0	11	**L4**
common yellowthroat	*Geothlypis trichas*	COYE	x				x			0	4	2	1	2	4	1	0	14	**L4**
Cooper's hawk	*Accipiter cooperii*	COHA	x			x			1	0	2	2	4	1	2	3	0	14	**L4**
eastern bluebird	*Sialia sialis*	EABL							1	1	1	1	2	1	2	2	0	10	**L4**
eastern kingbird	*Tyrannus tyrannus*	EAKI	x						6	0	4	2	2	1	3	1	0	13	**L4**
eastern screech-owl	*Megascops asio*	EASO			x				(1)	0	2	2	1	2	3	3	0	13	**L4**
eastern wood-pewee	*Contopus virens*	EAWP	x						6	0	4	2	2	1	3	1	0	13	**L4**
great-crested flycatcher	*Myiarchus crinitus*	GCFL	x						3	0	2	1	3	1	2	2	0	11	**L4**
great-horned owl	*Bubo virginianus*	GHOW			x			x	1	0	2	2	2	2	2	1	0	11	**L4**
grey catbird	*Dumetella carolinensis*	GRCA	x						11	0	2	2	1	1	3	1	0	10	**L4**
hairy woodpecker	*Picoides villosus*	HAWO							4	0	2	2	3	1	2	2	0	12	**L4**
indigo bunting	*Passerina cyanea*	INBU	x						5	0	3	2	1	1	4	2	0	13	**L4**
northern flicker	*Colaptes auratus*	NOFL	x						3	0	4	2	1	1	3	2	0	13	**L4**
northern rough-winged swallow	*Stelgidoptery x serripennis*	NRWS							1	0	3	2	1	1	2	3	0	12	**L4**
pine warbler	*Setophaga pinus*	PIWA	x	x						0	1	2	4	1	3	3	0	14	**L4**
purple martin	*Progne subis*	PUMA	x							3	3	1	1	1	1	2	0	12	**L4**
red-eyed vireo	*Vireo olivaceus*	REVI	x						9	0	1	2	2	1	3	1	0	10	**L4**
ruby-throated hummingbird	*Archilochus colubris*	RTHU	x					x		0	2	1	1	1	3	2	0	10	**L4**
rose-breasted grosbeak	*Pheucticus ludovicianus*	RBGR							1	0	3	2	3	1	3	2	0	14	**L4**
spotted sandpiper	*Actitis macularius*	SPSA	x						1	0	3	2	1	2	4	1	0	13	**L4**
tree swallow	*Tachycineta bicolor*	TRES							1	0	4	2	1	1	2	2	0	12	**L4**
white-breasted nuthatch	*Sitta carolinensis*	WBNU	x						7	0	2	2	3	1	2	2	0	12	**L4**
wood duck	*Aix sponsa*	WODU							7	0	2	2	3	2	3	2	0	14	**L4**

Appendix 3: Fauna Species for High Park (2018 and all earlier records)

Common Name	Scientific Name	Code	pre-2009	2009	2010	2011	2012	2017	2018	LO	PTn	PTt	AS	PIS	StD	HD	+	TS	L-Rank
American Crow	*Corvus brachyrhynchos*	AMCR	x						x	0	2	1	1	1	0	0	0	5	**L5**
American goldfinch	*Spinus tristis*	AMGO	x						x	0	3	1	1	1	1	0	0	7	**L5**
American robin	*Turdus migratorius*	AMRO	x						x	0	1	1	1	1	1	0	0	5	**L5**
Baltimore oriole	*Icterus galbula*	BAOR	x						x	0	4	2	1	1	1	0	0	9	**L5**
black-capped chickadee	*Parus atricapillus*	BCCH	x						x	0	1	1	1	1	1	0	0	5	**L5**
blue jay	*Cyanocitta cristata*	BLJA	x						x	0	3	1	1	1	1	0	0	7	**L5**
brown-headed cowbird	*Molothrus ater*	BHCO	x						x	0	3	1	1	1	1	0	0	7	**L5**
Canada goose	*Branta canadensis*	CANG							x	0	0	1	1	2	0	1	0	5	**L5**
cedar waxwing	*Bombycilla cedrorum*	CEDW							x	0	2	1	1	1	1	0	0	6	**L5**
chipping sparrow	*Spizella passerina*	CHSP	x						x	0	3	2	1	1	2	0	0	9	**L5**
common grackle	*Quiscalus quiscula*	COGR	x						x	0	4	1	1	1	1	0	0	8	**L5**
downy woodpecker	*Picoides pubescens*	DOWO	x						x	0	2	1	1	1	1	1	0	7	**L5**
eastern phoebe	*Sayornis phoebe*	EAPH							1	0	1	2	1	1	1	2	0	8	**L5**
house wren	*Troglodytes aedon*	HOWR	x						x	0	1	2	1	2	1	1	0	8	**L5**
mallard	*Anas platyrhynchos*	MALL	x						x	0	1	1	1	2	1	0	0	6	**L5**
mourning dove	*Zenaida macroura*	MODO	x						x	0	3	1	1	1	0	0	0	6	**L5**
northern cardinal	*Cardinalis cardinalis*	NOCA	x						x	0	1	1	1	1	2	1	0	7	**L5**
red-bellied woodpecker	*Melanerpes carolinus*	RBWO							2	0	1	0	3	1	2	2	0	9	**L5**
red-tailed hawk	*Buteo jamaicensis*	RTHA							x	0	2	1	2	1	1	1	0	8	**L5**
red-winged blackbird	*Agelaius phoeniceus*	RWBL	x						x	0	3	1	1	1	1	0	0	7	**L5**
song sparrow	*Melospiza melodia*	SOSP	x						x	0	3	1	1	1	2	0	0	8	**L5**
warbling vireo	*Vireo gilvus*	WAVI	x						x	0	1	1	1	1	2	1	0	7	**L5**
yellow warbler	*Setophaga petechia*	YEWA							x	0	3	2	1	1	2	0	0	9	**L5**
European starling	*Sturnus vulgaris*	EUST	x						x	0	4								**L+**
house finch	*Haemorhous mexicanus*	HOFI	x						x	0	1								**L+**
house sparrow	*Passer domesticus*	HOSP	x						x	0	4								**L+**
mute swan	*Cygnus olor*	MUSW							x	3	2								**L+**
rock dove	*Columba livia*	ROPI							x	0	4								**L+**

Common Name	Scientific Name	Code	pre-2009	2009	2010	2011	2012	2017	2018	LO	PTn	PTt	AS	PIS	StD	HD	+	TS	L-Rank
Herpetofauna																			
American toad	*Anaxyrus americanus*	AMTO	x	x				x	x	0	3	2	1	4	4	0	0	14	**L4**
green frog	*Lithobates clamitans*	GRFR	x			x			x	0	2	2	1	3	4	1	0	13	**L4**
Incidental Species: species that are reported on as incidental to the TRCA protocol.																			
Mammals																			
big brown bat	*Eptesicus fuscus*	BBBA							x	4	2	2	1	1	2	1	0	13	**L4**
eastern chipmunk	*Tamias striatus*	EACH	x					x		0	2	1	2	3	3	1	0	12	**L4**
meadow vole	*Microtus pennsylvanicus*	MEVO							x	1	2	2	1	2	2	1	0	11	**L4**
muskrat	*Ondatra zibethicus*	MUSK							x	0	2	2	1	3	3	1	0	12	**L4**
red fox	*Vulpes vulpes*	REFO	x		x					1	2	2	1	3	1	0	0	10	**L4**
red squirrel	*Tamiasciurus hudsonicus*	RESQ							x	0	2	1	1	3	2	1	0	10	**L4**
coyote	*Canis latrans*	COYO	x						x	0	2	2	1	3	2	0	0	10	**L4**
grey squirrel	*Sciurus carolinensis*	GRSQ	x						x	0	2	1	1	3	0	0	0	7	**L5**
raccoon	*Procyon lotor*	RACC							x	0	2	1	1	3	0	1	0	8	**L5**
Herpetofauna																			
common snapping turtle	*Chelydra serpentina serpentina*	SNTU		x		x	x		2	0	3	1	1	5	5	2	2	19	**L3**
midland painted turtle	*Chrysemys picta marginata*	MPTU							1	0	2	2	1	5	4	1	1	16	**L3**
eastern gartersnake	*Thamnophis sirtalis sirtalis*	EAGA	x						5	0	2	1	1	3	3	0	0	10	**L4**
red-eared slider	*Trachemys scripta elegans*	SLID							x	3									**L+**

LEGEND

eastern screech-owl = possible transient

LO = local occurrence
PTn = National population trend
PTt = TRCA population trend
AS = area sensitivity
PIS = Patch Isolation Sensitivity
STD = sensitivity to development
HD = habitat dependence
+ = additional points
TS = total score
L-rank = TRCA Rank, February, 2018 - based on data up to 2017 inclusive

L1 = Species of Regional Conservation Concern, regionally scarce due to either accidental occurrence or extreme sensitivity to human impacts
L2 = Species of Regional Conservation Concern, somewhat more abundant and generally slightly less sensitive than L1 species
L3 = Species of Regional Conservation Concern, generally less sensitive and more abundant than L1 and L2 ranked species
L4 = Species of Urban Concern; occur throughout the region but could show declines if urban impacts are not mitiagted effectively
L5 = species that are considered secure throughout the region
L+ = introduced species, not native to the Toronto region
LX = extirpated species; species not recorded in the region in the past 10 years

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