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City of Mississauga

Natural Areas Survey

2005 Update

City of Mississauga

NATURAL AREAS SURVEY

2005 UPDATE

prepared for:
Planning and Building Department
City of Mississauga

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EXECUTIVE SUMMARY

The intent of updating the Natural Areas Survey is to review the current status of natural areas and update information on flora, fauna, impacts, boundary changes and management needs. The Natural Areas Survey for the City of Mississauga (Geomatics 1996) identified one hundred and forty-four natural areas representing the best remaining natural features in the City. Of these 144 natural areas, 141 were classified as either Significant Natural Sites, Natural Sites, or Natural Green Spaces, and three were classified as Residential Woodlands. With the completion of the 2001 update (North-South Environmental 2001), all Wards in the City were updated once since the initial study in 1996. The start of the second round of updates commenced in 2002 and this year natural areas in Wards 3, 4 and 7 have been updated, as well as a limited number of additional natural areas in other Wards that have been identified as having possible changes.

In 1996 the 141 natural sites comprised 7.10% of the total area of the City. Also identified were 55 Special Management Areas (SMAs) and 40 Linkages. The total number of natural areas decreased from 141 in 1996 to 136 in 2005. The total area of the City identified as part of the natural area system in 2005 is 6.62% which is essentially unchanged from 2002. This reflects an overall decline in area from the 7.10% reported in 1996 and represents an overall loss of 153.72 ha (379.84 a.). Two Special Management Areas were removed due to development in 2005. An additional Special Management Area was included within the adjacent natural area in 2005 due to naturalization. This brings the number of Special Management Areas in 2005 down to 39 from the original number of 55 identified in 1996. The total number of Linkages remains the same (36) as in 2000.

The natural areas in the City can also be grouped into three major landform types (valleyland, tableland, and wetland). The majority of the natural areas system (80.3%) is associated with valleylands in 2005. This proportion has increased from approximately 78.4% of the system in 1996, but is unchanged from 2002. In contrast, tablelands only account for 14.7% of the natural areas system in 2005. This represents a continued decrease from 16.4% in 1996, but again is unchanged from 2002. From a City-wide perspective, there were steady decreases from 1.16% in 1996 to 0.97% in 2002 of the landbase represented in tableland natural areas. From 2002 until 2005 this proportion has remained constant. Tableland natural areas (which are mainly wooded) tend to be discrete islands that have limited connections to other remnant natural features. Valleylands are better connected by virtue of the linearity of the landform and because they have historically been better protected from development. This reinforces the need to place a high priority on the protection of the remaining tableland features present within the City, and an emphasis on their management to maintain or improve their quality. The proportion of the natural areas system associated with wetlands has remained more or less constant from 1996 at approximately 5.0%. The proportion of the City that is classified as wetland decreased marginally from 0.36% in 1996 to 0.33% in 2002, but has remained constant from 2002 to 2005.

Generally, the condition of natural areas within the City that were surveyed in 2005 continue to be in fair condition. Natural areas evaluated as in fair condition have moderate disturbances (few trails, limited dumping, some trampling, *etc*.) and an average number of non-native flora species

typical of what can be expected in an urban natural area. The overall condition of the natural areas visited in 2005 remained largely unchanged from previous studies. As with all of the other update surveys, the most common disturbances within natural areas are those associated with an increase in uncontrolled human use of natural areas following development in adjacent areas. Examples of these disturbances include: the creation of *ad hoc* trails, the use of mountain bikes (including the construction of some elaborate racing circuits), the presence of garbage, boundary encroachment, and vandalism (tree carving, tree cutting, spray paint). These disturbances have become more prevalent at all of the natural areas surveyed this year. Deterioration of the quality of Mississauga's natural areas can be expected to continue unless there is a substantial effort to manage natural areas through site specific Conservation Plans and community stewardship iniatives.

After seven years of update surveys covering the entire City, two trends have emerged. There has been a decrease in the quality of vegetation and there has been a decrease in the amount of tableland (woodland and successional categories) and wetland habitats. Development between 1996 and 2005 has resulted in the total loss of 153.72 ha (379.84 a.) from the natural areas system including the loss of thirteen natural areas. Two woodland vegetation communities have been lost, as a result of development removing the only two natural areas in which they were represented in the City. Eleven woodland communities, four successional communities and all six of the wetland vegetation communities are uncommon in the City, occupying less than 1% of the total area of the natural areas system. Of these, six of the woodland communities, one successional community and one wetland community are "at risk" in the City, occurring in only one natural area each. In addition, a longer-term conversion of vegetation community composition (from wetland pockets to old field) in some natural areas is also occurring, likely as a result of increased human disturbance and changes in hydrology resulting from development. These trends reinforce the urgent need to maintain and manage (and where possible restore) all of the remaining natural areas in the City. In particular, tableland natural areas (including woodlands, wetlands and successional vegetation communities) continue to be the most seriously threatened by development.

One positive trend is the naturalization projects undertaken by the City. The majority of naturalization projects initiated between 1996 and 2005 have involved leaving an area of unmowed grass adjacent to a watercourse or woodlot feature to regenerate naturally. While this approach will increase the overall size of the natural area in question, this initiative could be enhanced by taking an approach that includes long-term management which will more likely result in a healthy natural area with a diversity of native plant and animal species such as at Jack Darling Park.

1.0 INTRODUCTION

A Natural Areas Survey for the City of Mississauga was undertaken during 1995 and 1996 (Geomatics 1996) which identified one hundred and forty-four natural areas representing the best remaining natural features in the City. Of these 144 natural areas, 141 were classified as either Significant Natural Sites, Natural Sites, or Natural Green Spaces, and three were classified as Residential Woodlands. In 1996 the 141 natural sites comprised 7.10% of the total area of the City. Also identified were 55 Special Management Areas (SMAs) and 40 Linkages. Definitions for these classifications are given in Appendix 1.

Since completion of the Natural Areas Survey in 1996 a number of development projects have been initiated within or adjacent to the natural areas originally identified. In order to keep the Natural Areas database current, updates have been undertaken on an annual basis that focus on areas that may have been affected by these developments. Each year, natural areas in different quadrants of the City are reviewed. With the completion of the 2001 work, all Wards in the City were updated once since the initial study in 1996. The start of the second round of updates commenced in 2002 with natural areas in Wards 5 and 6. Wards 1 and 2 were updated in 2004. This year natural areas in Wards 3, 4 and 7 were updated, as well as a limited number of additional natural areas in other Wards that have been identified as having possible changes.

The intent of updating the Natural Areas Survey is to review the current status of natural areas and update information on floristics, fauna, impacts, boundary changes and management needs. In addition, now that the second round of updates is underway, it is anticipated that some trends should emerge. This report documents the methods used, summarizes changes to the natural areas, and provides some recommendations for the mitigation of impacts and management considerations.

2.0 METHODS

2.1 Background Review

The primary focus of this update was the 30 natural areas located in Wards 3, 4 and 7. Also reviewed were 8 additional natural areas in the City that have been the subject of recent Environmental Impact Studies (EIS) or Conservation Plans. Information from the reports reviewed was incorporated into the Natural Areas System database and are listed in Appendix 2. In addition, 34 natural areas (7 of which are within Wards 3, 4 and 7) with documented butternut (*Juglans cinerea*) were visited in an attempt to locate individuals based on a recommendation from the 2004 update study (North-South Environmental 2004).

A background review was undertaken comprising a careful analysis of aerial photographs and review of reports (inventory reports, EIS, etc.) undertaken since the last update study that may affect natural areas. Colour aerial photographs overlayed with natural area boundaries were used to identify impacts to natural area boundaries. Where necessary, revisions to natural area boundaries were delineated on aerial photographs and verified in the field. A total of 64 sites were thus identified as requiring field investigations (Appendix 3). This includes: all 30 natural

areas that occur in Wards 3, 4 and 7; five sites that were subject to Environmental Impact Statements; 1 site with a recently completed conservation plan; two sites with recent residential redevelopment; and 34 sites documented with butternut. Note that some sites fell into more than one of the above categories thus they add up to more than 64. Natural areas within Wards 3, 4 and 7 were, at minimum, the subject of a "drive by" inspection, if there was no permission granted to access privately owned sites.

2.2 Fieldwork

Field visits were made to 62 of the 64 sites identified. Natural areas MI7 and MV15 did not receive a field visit because permission to access these sites was not granted. Landowner contact for natural areas in private ownership was undertaken by the City Planning and Building Department.

Appendix 3 lists the reasons for fieldwork, and the date when fieldwork was conducted for each of the remaining 62 natural areas. For those sites in Wards 3, 4 and 7 in public ownership, or for which access was available, a two season field program was undertaken. This entailed a late spring visit to update information on spring ephemeral plant species and a mid summer visit to document summer flora, disturbances and any other changes. For sites outside of Wards 3, 4 and 7 one field visit was undertaken to document disturbances and any changes.

The following information was recorded on data sheets for each natural area that received a field visit:

- all flora and fauna species observed were recorded, and specimens collected where necessary;
- vegetation community descriptions were updated where necessary;
- evidence of disturbance, regeneration and management needs were noted; and
- the overall condition was qualitatively rated in comparison to other sites in the City.

In addition, breeding bird surveys were conducted in the early morning hours (05:00 to 10:00) between July 1 and July 10, 2005 for all of the natural areas in Wards 3, 4 and 7 where road access was available. For each natural area, a rough tally was obtained in each natural area to obtain approximate numbers of birds. For most sites, the field visit entailed a search throughout the habitat, but in sites where permission was not granted for access, birds were recorded from as many nearby road access points as possible.

Butternut surveys were conducted in 31 natural areas where access was available. A maximum time limit of 1 hour was spent in each natural area searching in appropriate vegetation communities (e.g., floodplains, forest edges) to locate individual trees. If a butternut tree was found, it was accurately located in the field using a Global Positioning System (GPS). The condition of the individual was assessed, including a determination of whether the tree is infected with butternut canker (see discussion in section 4.2).

2.3 Analysis

The City of Mississauga database records and fact sheets for each natural area were updated based on the literature review and fieldwork carried out in 2005. Hard copies of species lists and field notes were provided under separate cover to the City.

The provincial rarity ranks of floral and faunal species were also reviewed to determine the need for updating. Provincial rarity status was based on Natural Heritage Information Centre (NHIC 2005) rankings. The natural areas summary table for the City (Table 4 in the Natural Areas Survey, Geomatics 1996) was updated to allow a comparison of the revised sites with other natural areas in the City (see Table 1, page 5).

The Floristic Quality Indices (FQI) were updated for natural areas where the floral inventory changed between 1996 and 2005. For a summary of the methodology and interpretation of the Floristic Quality Assessment see the Natural Areas Survey (Geomatics 1996). Overall, the definitions for the high, medium and low categories of the native mean coefficients (high > 4.00, medium = 3.3 to 3.99, low < 3.3) and Floristic Quality Indices (FQIs) (high > 40, medium = 30 to 39.99, low < 30) remained the same as in 1996.

Recent disturbances, threats and management needs were noted where they changed from previous assessments (Geomatics 1996, 1998; North-South Environmental 1999, 2000, 2001, 2002, 2004). Recommendations for the mitigation of real or potential impacts that resulted from recent developments, including naturalization projects, were provided.

2.4 Mapping

Boundary changes identified for natural areas were updated on colour aerial photographs overlayed with natural area boundaries provided by the City. Boundary delineation followed the approach used in the Natural Areas Survey (Geomatics 1996). These revisions were subsequently digitized using MicroStation GeoGraphics format by the City of Mississauga, Geographic Technology Services. Updated surficial areas (hectares and acres) for the natural areas and vegetation communities were determined using GIS and incorporated into the database. Updated UTM coordinates for the natural areas and vegetation communities were also incorporated into the database.

3.0 NATURAL AREAS FRAMEWORK

Table 1 (page 5) summarizes the current information available for each natural area in the City of Mississauga. This table updates Table 4 from Geomatics (1996) and summarizes the following information:

- the classification of each natural area;
- designation of natural areas as significant features (ANSI, ESA, evaluated wetland);
- size of each natural area in hectares and acres;
- the number of floral species;
- the proportion of the flora that is non-native;
- the native FQI and native mean coefficient;
- the number of vegetation communities;
- the number of provincially and regionally significant floral and faunal species;
- the number of bird, mammal, amphibian and reptile species;
- the number of Credit Valley Conservation species of conservation interest; and
- the condition of the natural areas.

Appendix 4 documents the changes that occurred in natural areas between 1996 and 2005 using the same categories. Some of the changes outlined in Appendix 4 are minor revisions while others are considered significant in the context of the natural areas program. Significant changes are considered to be:

- a change in the classification of a natural area (e.g., from Significant Natural Site to Natural Site);
- a change in the designation of a natural area (e.g., the removal or addition of ANSI status);
- a change of more then 25% in the original size of a natural area;
- a change in the FQI or native mean coefficient rank for a natural area (e.g., a rank that goes from a high to medium category);
- the addition of rare floral or faunal species (provincial, local and CVC); and
- the addition or deletion of a vegetation community.

Figure 1 (see page 15) shows the location of natural areas, Special Management Areas, Residential Woodlands (RW) and Linkages. This figure updates Figure 2 from Geomatics (1996). Due to the scale of mapping, Significant Natural Sites (SNS), Natural Sites (NS) and Natural Green Space (NGS) are not discriminated on this map, and are all labelled as “natural area”.

Table 1: Summary of Natural Area Features, Significance and Condition.

This table represents an update of Table 4 in the Natural Areas Survey (Geomatics 1996). Native FQI and native mean C are defined in the Natural Areas Survey (Geomatics 1996). Definitions for provincially significant species (prov. sig. species) and regionally significant species (reg. sig. species) are in the Natural Areas Survey (Geomatics 1996) with updates as discussed in this report (section 4.0). See North-South (2000), Section 4.4, for a discussion of Credit Valley Conservation (CVC) Species of Conservation Interest. Condition is explained in Appendix 1 of the Natural Areas Survey (Geomatics 1996). Abbreviations used in this table are as follows: n/a = not available. An asterix indicates areas evaluated that changed between 1996 and 2005 (see Appendix 4 for a summary of the changes).

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
1	SD1	Significant Natural Site		19.55	48.28	170	67	39.41%	35.96	3.54	6	1	10	113	7	2		6	Fair
2	SD4	Natural Site		23.67	58.45	106	24	22.64%	31.69	3.50	6		2	13				2	Fair
3	SD5	Significant Natural Site		10.14	25.05	80	17	21.25%	34.65	4.37	3		5	14	1	1		2	Good
4	CL52	Natural Site		6.69	16.53	73	43	58.90%	14.61	2.67	1	1		25	1	2		3	Poor
5	CL1	Significant Natural Site		3.59	8.86	80	17	21.25%	34.65	4.37	1		5	14	1	1		2	Good
6	CL9	Significant Natural Site	ESA,ANSI,wetland	45.62	112.68	501	163	32.53%	80.30	4.37	13	1	133	203	22	21	3	14	Good
7	CL8	Significant Natural Site	wetland	11.28	27.86	85	24	28.24%	24.58	3.15	8		6	28	10	1		5	Good
8	CL15	Natural Site		0.83	2.05	54	9	16.67%	25.79	3.84	1		3	10	3			1	Fair
9	CL16	Significant Natural Site		11.79	29.12	161	49	30.43%	39.02	3.84	6	1	15	42	17			6	Fair - Poor
10	CL17	Residential Woodland		33.28	82.21	73	15	20.55%	0.00	0.00	1		19			4			n/a
11	CL13	Natural Site		7.03	17.35	86	49	56.98%	15.04	2.54	3		1	11	1			1	Poor
12	CL43	Natural Site		4.16	10.27	87	18	20.69%	31.18	3.75	2		6	14	2			1	Fair - Poor
13	CL42	Natural Site		8.31	20.54	119	34	28.57%	37.31	4.05	3		12	18	1			4	Fair - Poor
14	CL21	Significant Natural Site	ESA,wetland	9.05	22.34	112	23	20.54%	41.23	4.37	3		20	17	3	1		3	Fair - Poor
15	CL39	Significant Natural Site		12.59	31.10	271	79	29.15%	57.23	4.13	2		42	39	6	8		7	Fair
16	CL22	Significant Natural Site	ESA,ANSI	17.75	43.84	134	46	34.33%	37.31	3.98	1	1	13	2	1	6			Good
17	CL30	Significant Natural Site	ESA,ANSI	0.06	0.15	83	33	39.76%	27.86	3.94	1	1	20	1					Fair
18	CL31	Significant Natural Site	ESA,ANSI	2.55	6.29	82	34	41.46%	23.09	3.33	1	1	3	4	1				Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
19	CL24	Significant Natural Site	ESA,ANSI	7.76	19.16	245	65	26.53%	59.89	4.46	5	1	36	20	1	1		3	Good
20	CL26	Significant Natural Site		1.97	4.86	189	70	37.04%	36.03	3.30	1	1	17	19	7				Fair
21	PC1	Natural Site		1.03	2.54	101	49	48.51%	25.17	3.56	1		7	69	1			1	Poor
22	PC2	Natural Green Space		4.37	10.79	26	15	57.69%	0.00	0.00	1			5		1			Poor
23	PC3	Removed		0.00	0.00	11	3	27.27%	0.00	0.00	1								Removed
24	CRR9	Significant Natural Site	ESA,ANSI,wetland	25.63	63.30	49	17	34.69%	20.86	3.69	3		17	40	1	10	2	9	Fair
25	MI4	Residential Woodland		154.32	381.32	28	16	57.14%	0.00	0.00	1		1						Fair
26	MI1	Natural Site		5.64	13.94	57	36	63.16%	0.00	0.00	4			51	2			2	Fair
27	LV3	Natural Site		3.54	8.75	94	36	38.30%	28.23	3.71	5		1	34	3			4	Fair
28	LV4	Natural Site		2.31	5.70	51	27	52.94%	11.29	2.30	5		2	20	1			1	Poor
29*	LV5	Natural Site		1.12	2.77	115	61	53.04%	22.46	3.06	1		8						Poor
30	LV2	Natural Site		2.09	5.17	40	13	32.50%	13.09	2.52	1			12	1			2	Poor
31	LV1	Significant Natural Site		14.22	35.12	123	46	37.40%	29.74	3.39	5	1	1	27	2			5	Fair
32	ETO8	Significant Natural Site		15.96	39.44	101	37	36.63%	29.21	3.65	4		4	26	6	1		5	Fair
33	LV14	Natural Site		1.86	4.59	51	24	47.06%	15.20	2.93	1			10				1	Poor
34	LV6	Natural Site		2.03	5.01	82	24	29.27%	29.41	3.86	1		4	7	1			1	Fair
35	LV7	Significant Natural Site	ESA,ANSI,wetland	21.56	53.25	336	110	32.74%	63.66	4.23	2	1	62	68	7	5	1	5	Good
36	ETO7	Significant Natural Site	ESA	31.09	76.82	103	38	36.89%	24.82	3.08	3		6	11	2	11	3	1	Fair
37	SP1	Natural Site		7.17	17.7	194	77	39.69%	39.57	3.66	5		17	27	7			4	Fair
38	SP3	Significant Natural Site		8.54	21.09	134	30	22.39%	40.89	4.01	5		11	13	2	1		2	Good
39	SH6	Natural Site		6.28	15.51	104	49	47.12%	24.68	3.33	4		2	12	3			1	Poor
40*	CRR7	Significant Natural Site	ESA,ANSI	92.95	229.68	115	28	24.35%	41.13	4.44	5	2	18	41	5	7		12	Good
41*	CRR8	Significant Natural Site	ESA,ANSI,wetland	110.73	273.61	67	8	11.94%	39.71	5.17	4	1	30	48	8	8	1	14	Good - Fair

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
42*	ER6	Significant Natural Site		1.29	3.19	59	26	44.07%	19.50	3.39	1	1		9	1			1	Poor
43	CRR6	Significant Natural Site	ESA,ANSI	134.94	333.3	272	91	33.46%	61.74	4.59	4	2	64	67	7	18	1	10	Good
44*	CV1	Natural Site		1.65	4.08	61	25	40.98%	17.50	2.92	2			11	1				Fair
45*	CV2	Residential Woodland		49.53	122.39	143	42	29.37%	41.29	4.11	1	1	10	17	4			3	Fair
46*	CV12	Significant Natural Site		7.44	18.38	227	101	44.49%	39.73	3.54	4	1	17	17	2	1		3	Fair
47*	CV10	Natural Site		5.05	12.48	85	37	43.53%	21.94	3.17	2		4	17	2			1	Poor
48*	CV8	Natural Site		8.09	19.99	86	37	43.02%	18.52	2.65	5		3	17	3			1	Poor
49*	ETO6	Significant Natural Site		11.36	28.07	7	5	71.43%	0.00	0.00	4		1	18	1			2	Poor
50*	AW1	Significant Natural Site		7.52	18.58	88	34	38.64%	25.23	3.43	3	1	2	21	2			2	Fair
51	WB1	Natural Site		3.94	9.73	57	10	17.54%	26.11	3.81	5			5		1			Fair
52	EM30	Natural Site		5.57	13.75	68	9	13.24%	30.98	4.03	5		7	7	8				Good
53	EM6	Natural Site		1.07	2.65	58	14	24.14%	24.72	3.73	1		1	6	1				Fair
54	EM2	Significant Natural Site		4.90	12.09	74	15	20.27%	29.81	3.88	1	1		8	1				Fair
55	EM10	Natural Site		3.73	9.22	54	13	24.07%	22.96	3.59	2			4	2				Fair
56	EM14	Significant Natural Site		9.19	22.70	74	36	48.65%	17.36	2.82	2	1		8					Poor
57*	EM4	Significant Natural Site	ESA,ANSI	42.99	106.22	251	75	29.88%	56.01	4.22	8	2	32	67	5	6		2	Good - Fair
58	EM5	Natural Site		1.87	4.63	49	17	34.69%	22.27	3.94	1			4					Fair
59	EM21	Natural Site		1.13	2.80	42	8	19.05%	19.89	3.41	1			2	1				Fair
60	CR1	Significant Natural Site	ESA	4.90	12.1	70	11	15.71%	33.72	4.39	2		6	4	1				Fair
61*	FV1	Natural Site		2.05	5.07	59	11	18.64%	23.82	3.44	1		2	8	1			1	Fair
62*	FV3	Natural Site		6.35	15.69	108	44	40.74%	28.50	3.56	3			19	2			2	Fair
63*	CC1	Significant Natural Site		3.32	8.20	165	54	32.73%	40.03	3.82	1	1	11	18	3		1	3	Fair
64*	MY1	Significant Natural Site		13.45	33.23	165	54	32.73%	40.03	3.82	2	1	11	18	3		1	3	Fair

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
65*	MY3	Natural Green Space		2.31	5.71	56	34	60.71%	11.09	2.36	1		1	12	1				Poor
66*	AW4	Natural Site		11.60	28.66	54	33	61.11%	11.85	2.65	2		3	12					Poor
67*	AW3	Natural Site		7.96	19.67	58	31	53.45%	14.90	2.92	2		1	18	1			2	Poor
68*	ETO5	Significant Natural Site		7.83	19.35	83	46	55.42%	16.36	2.76	6		5	16	1			3	Poor - Fair
69*	ETO4	Significant Natural Site	ESA	52.81	130.49	179	53	29.61%	45.36	4.09	4	1	18	41	3	5		9	Good - Fair
70*	RW5	Natural Site		2.39	5.91	75	37	49.33%	14.83	2.47	1		3	14	1			1	Poor
71*	RW6	Natural Site		6.13	15.15	71	37	52.11%	14.61	2.67	1		2	23	1			5	Poor
72*	RW4	Natural Site		1.22	3.01	52	8	15.38%	27.14	4.09	2			8	1				Fair
73*	RW1	Natural Site		2.11	5.21	77	18	23.38%	34.11	4.44	1		3	1	1				Fair - Poor
74*	RW2	Natural Site		3.84	9.49	57	31	54.39%	16.67	3.27	1			15	1			2	Fair
75	CM7	Significant Natural Site		11.38	28.12	89	18	20.22%	35.13	4.17	3		3	15	1	5	1		Excellent
76	CM9	Natural Site		3.37	8.34	64	12	18.75%	27.74	3.85	2		3	8	2				Good
77	CM11	Removed		0.00	0.00	22	1	4.55%	18.33	4.00	1			1					Removed
78	CM12	Natural Site		5.77	14.25	82	16	19.51%	30.65	3.77	1		3	14	5	6			Good
79	CM17	Removed		0.00	0.00	25	4	16.00%	16.80	3.67	1			5					Removed
80	CM13	Removed		0.00	0.00	37	14	37.84%	16.26	3.39	1			1	1				Removed
81	CE7	Significant Natural Site		10.08	24.9	98	30	30.61%	33.35	4.04	2	1	6	4	1	7			Good
82	CE9	Natural Site		4.74	11.7	78	17	21.79%	32.52	4.16	3		5	10	2				Fair
83	CE10	Significant Natural Site		18.20	44.95	111	23	20.72%	39.12	4.17	3		10	13	2	2			Good - Fair
84	CE5	Natural Green Space		5.47	13.50	13	8	61.54%	2.68	1.20	1								Poor
85	CE1	Natural Green Space		16.93	41.82	50	23	46.00%	0.00	0.00	2			3		5			Poor
86	CE12	Significant Natural Site		17.62	43.51	97	42	43.30%	22.52	3.04	2	1	1	14	3	1			Fair
87	CRR5	Significant Natural Site		24.74	61.10	64	26	40.63%	21.09	3.42	2	1		15	2	2	1	2	Fair

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
88	CRR4	Significant Natural Site	ESA,ANSI	21.17	52.29	54	22	40.74%	18.07	3.19	4		6	22	3	7	2	5	Good
89	SV12	Significant Natural Site		1.72	4.25	97	42	43.30%	22.52	3.04	1	1	1	14	3	1			Fair
90	SV10	Natural Green Space		3.04	7.50	40	20	50.00%	10.29	2.30	1			1		1			Poor
91	SV1	Significant Natural Site		4.57	11.29	102	23	22.55%	35.67	4.01	2	1	5	10	2				Fair
92	CRR3	Significant Natural Site		68.94	170.28	91	31	34.07%	27.44	3.54	4	1	3	37	5	8	1	7	Fair
93	CRR2	Significant Natural Site	ESA,ANSI	91.30	225.60	112	35	31.25%	33.85	3.86	12		3	45	9	11		11	Good
94	EC22	Natural Site		2.32	5.73	75	9	12.00%	31.14	3.83	1		6	4	2				Fair - Poor
95	EC10	Removed		0.00	0.00	46	10	21.74%	21.83	3.64	2			2					Removed
96	EC13	Significant Natural Site	wetland	4.39	10.84	186	31	16.67%	54.62	4.39	4		71	88	6	11		13	Excellent
97	EC1	Removed	ESA,wetland	0.00	0.00	10	4	40.00%	4.90	2.00	1			5		2			Removed
98	HO1	Natural Site		1.20	2.97	33	7	21.21%	19.81	3.88	1			5	1				Fair - Poor
99	HO2	Removed		0.00	0.00	24	3	12.50%	18.77	4.10	2			3					Removed
100	HO3	Natural Site		14.41	35.59	60	11	18.33%	26.43	3.78	3			13	2				Fair
101	HO6	Natural Green Space		8.50	21.00				0.00	0.00	1								Poor
102	HO7	Natural Site		1.07	2.65	80	17	21.25%	30.62	3.86	2		2	8	1				Fair - Poor
103	HO9	Significant Natural Site	ESA	11.34	28.01	207	55	26.57%	51.34	4.16	1	1	22	19	2	1			Good - Poor
104*	NE4	Natural Site		13.15	32.49	134	27	20.15%	39.15	3.79	5		16	24				4	Good
105*	NE3	Natural Site		2.85	7.04	59	26	44.07%	12.19	2.12	2			15	2			3	Poor
106	NE2	Removed		0.00	0.00	55	10	18.18%	28.17	4.20	1			5					Removed
107*	NE1	Natural Site		1.07	2.64	70	27	38.57%	20.28	3.09	1		2	7	1			2	Fair
108*	NE6	Significant Natural Site		1.64	4.05	91	28	30.77%	26.96	3.40	1	1	2	13	3				Good
109*	NE5	Natural Site		12.58	31.08	30	20	66.67%	0.00	0.00	1			14				4	Poor
110	NE7	Natural Site		2.76	6.82				0.00	0.00	1								Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
111	ETO3	Significant Natural Site		78.87	194.81	400	164	41.00%	56.35	3.67	4	2	59	7	5	5		3	Fair - Poor
112	NE8	Natural Green Space		2.98	7.37				0.00	0.00	1								Poor
113	NE10	Natural Green Space		8.27	20.42				0.00	0.00	1								Poor
114	NE11	Natural Green Space		5.63	13.90				0.00	0.00	1								Poor
115	NE12	Natural Green Space		6.49	16.02				0.00	0.00	1								Poor
116	ETO2	Significant Natural Site		13.01	32.14	31	19	61.29%	7.22	2.08	1			3	1				Poor
117	ETO1	Significant Natural Site		9.13	22.55	39	10	25.64%	15.00	2.79	4		1	4	2				Fair - Poor
118	NE9	Significant Natural Site		46.00	113.61	197	78	39.59%	37.74	3.47	4	1	27	39	3	4		5	Fair
119	LS1	Significant Natural Site	wetland	28.47	70.32	111	39	35.14%	28.99	3.42	3		7	9	1				Good - Poor
120	LS2	Natural Site		1.03	2.55	52	16	30.77%	23.50	3.92	1			5	1				Fair
121	LS3	Natural Site		3.00	7.40	95	30	31.58%	28.16	3.49	3		4	4	1	2			Fair
122	ME10	Significant Natural Site		2.92	7.22	64	17	26.56%	26.26	3.83	1	1	2	4	1				Fair
123	ME12	Significant Natural Site		2.90	7.16	64	36	56.25%	14.63	2.81	1			8	2	7	1		Poor
124	ME11	Natural Green Space		4.36	10.78	56	27	48.21%	11.13	2.43	1		3	9	2	4			Poor
125	ME9	Natural Site		2.39	5.90	54	13	24.07%	29.20	4.56	1		3	2	1				Fair
126	ME8	Significant Natural Site		5.82	14.38	90	24	26.67%	31.27	3.85	1	1	4	7	3	4			Fair
127	MB9	Natural Green Space		6.60	16.31				0.00	0.00	1					2			Poor
128	MB7	Natural Green Space		10.45	25.80	35	20	57.14%	6.92	1.79	1			4					Poor
129	MB8	Significant Natural Site		10.17	25.11	90	24	26.67%	31.27	3.85	2	1	4	7	3	4			Fair
130	MB3	Natural Green Space		4.91	12.13	26	15	57.69%	4.82	1.45	1			3		1			Poor
131	MB5	Removed		0.00	0.00	42	5	11.90%	23.67	3.89	1								Removed
132	MB4	Natural Site		1.94	4.78	40	11	27.50%	19.31	3.59	1								Poor
133	MB6	Significant Natural Site		23.76	58.71	100	18	18.00%	33.57	3.71	2		9	5	2	2			Good

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
134	MB2	Natural Site		1.34	3.31	41	6	14.63%	23.66	4.00	1		1	1					Poor
135	MB1	Natural Site		0.94	2.32	34	6	17.65%	22.87	4.32	1								Fair
136	MV19	Significant Natural Site		22.93	56.64	212	56	26.42%	51.80	4.15	6		31	23	6	4			Good
137*	CRR1	Significant Natural Site	ESA, wetland	69.83	172.55	266	89	33.46%	49.97	3.76	10	1	38	50	7	8		4	Fair
138	MV18	Natural Site		2.60	6.43	19	1	5.26%	0.00	0.00	2		1	7				2	Fair
139	MV2	Significant Natural Site	ESA,ANSI	60.56	149.64	218	71	32.57%	47.33	3.90	5	1	19	67	15	5	1	14	Good - Fair
140	MV3	Removed		0.00	0.00	57	17	29.82%	23.40	3.70	1			6	2				Removed
141	MV12	Natural Site		8.27	20.44	125	35	28.00%	36.26	3.82	2		7	8	4				Fair
142	MV14	Removed		0.00	0.00				0.00	0.00	1								Removed
143	MV11	Natural Site		2.90	7.17	24	4	16.67%	17.44	3.90	1			1					Fair
144	MV15	Natural Site		10.69	26.41	53	24	45.28%	14.48	2.69	2		1	7	1				Poor
145	GT1	Removed		0.00	0.00	41	10	24.39%	18.50	3.32	1			2					Removed
146	GT2	Natural Site		7.20	17.78	68	11	16.18%	29.80	3.95	6		6	10	3	1			Good
147	GT3	Natural Site		2.67	6.59	43	11	25.58%	18.74	3.31	2		1	1					Fair
148	GT4	Removed		0.00	0.00	206	56	27.18%	51.03	4.17	1	1		22	4	1			Removed
149	MA1	Natural Site		24.06	59.42	61	31	50.82%	13.66	2.63	1		3	4					Poor
150	SD7	Significant Natural Site		3.81	9.41	94	49	52.13%	18.84	2.84	3	1	5	54	1			1	Poor
151	MI17	Significant Natural Site		5.98	14.77	167	54	32.34%	43.56	4.10	2		16	19	8	3		3	Fair
152	MI7	Significant Natural Site		4.98	12.30	125	39	31.20%	39.90	4.30	2	1	7	10	4			2	Poor
153*	CV6	Natural Site		2.71	6.69	75	16	21.33%	26.17	3.41	1		3	11	1			2	Fair
154	CRR10	Significant Natural Site	ESA,ANSI	63.58	157.04	365	130	35.62%	66.56	4.34	9	2	67	88	9	10	1	26	Good
155	CRR11	Significant Natural Site	ESA	32.16	79.44	101	44	43.56%	24.64	3.26	4		3	19	2	5			Good
156*	ER7	Natural Site		3.15	7.78	77	29	37.66%	21.00	3.06	3		4	13	1			1	Poor

Figure 1: Legend For Natural Area Framework for the City of Mississauga
(arranged by Planning District).

(Note: There are 136 natural areas and 3 Residential Woodlands identified on Figure 1, however 143 areas are listed below because 4 areas span two planning districts and are thus listed twice).

SOUTHDOWN
1. SD1
2. SD4
3. SD5 (Meadowwood)
150. SD7 (Lakeside)

CLARKSON-LORNE PARK
4. CL52 (Meadowwood)
5. CL1 (Meadowwood)
6. CL9 (Rattray Marsh)
7. CL8
8. CL15
9. CL16 (Jack Darling Park)
10. CL17 (Lorne Park Estates)
11. CL13
12. CL43
13. CL42
14. CL21 (Birch Glen)
15. CL39 (Whiteoaks)
16. CL22
17. CL30 (Lorne Park Prairie)
18. CL31 (Lornewood Creek Trail)
19. CL24 (Tecumseh)
20. CL26
24. CRR9 (Credit River Flats)

PORT CREDIT
21. PC1 (Rhododendron Gardens)
22. PC2 (Port Credit Memorial)

MINEOLA
24. CRR9 (Credit River Flats)
25. MI4
26. MI1
151. MI17 (Mary Fix)
152. M17

LAKEVIEW
27. LV3 (Adamson Estate)
28. LV4 (Helen Molasy Memorial)
29. LV5
30. LV2
31. LV1
32. ETO8
33. LV14 (Lakeview Golf Course)
34. LV6
35. LV7 (Cawthra Woods)
36. ETO7

SHERIDAN PARK
37. SP1
38. SP3

SHERIDAN
39. SH6
40. CRR7
41. CRR8

ERINDALE
40. CRR7
41. CRR8
42. ER6
43. CRR6
156. ER7

COOKSVILLE
44. CV1 (Iroquois Flats)
45. CV2
46. CV12 (Richard Jones)
47. CV10
48. CV8 (Camilla)
153. CV6 (Stillmeadow)

DIXIE
36. ETO7
49. ETO6
50 . AW1 (Willowcreek)

WESTERN BUSINESS PARK
51. WB1 (Erin Mills Twin Arena

ERIN MILLS
52. EM30 (Tom Chater Memorial)
53. EM6 (King's Masting)
54. EM2 (South Common)
55. EM10
56. EM14
57. EM4
58. EM5 (Glen Erin Trail)
59. EM21 (R.F.C. Mortensen)
154. CRR10

CREDITVIEW
60. CR1

FAIRVIEW
61. FV1
62. FV3

CITY CENTRE
63. CC1 (Bishopstoke Walk)

MISSISSAUGA VALLEY
64. MY1 (Mississauga Valley)
65. MY3 (Stonebrook)

APPLEWOOD
50. AW1 (Willowcreek)
66. AW4 (Applewood Hills)
67. AW3 (Applewood Hills)
68. ETO5
49. ETO6

Figure 1 continued...

RATHWOOD
69. ETO4
70. RW5 (Applewood Hills)
71. RW6 (Applewood Hills)
72. RW4 (Rathwood District)
73. RW1
74. RW2 (Woodington Green)

CHURCHILL MEADOWS
75. CM7
76. CM9
78. CM12

CENTRAL ERIN MILLS
81. CE7 (Sugar Maple Woods)
82. CE9 (Quenippenon Meadows
83. CE10 (Erin Wood)
84. CE5
85. CE1 (Woodland Chase Trail)
86. CE12 (Bonnie Brae)
87. CRR5
88. CRR4155.CRR11
155 CRR11

STREETSVILLE
89. SV12 (Bonnie Brae)
90. SV10
88. CRR4
91. SV1 (Turney Woods)
92. CRR3
93. CRR2

EAST CREDIT
87. CRR5
88. CRR4
92. CRR3
93. CRR2
94. EC22
96. EC13
155. CRR11

HURONTARIO
98. HO1
100. HO3 (Staghorn Woods)
101. HO6
102. HO7
103. HO9 (Britannia Woods)

NORTHEAST
104. NE4
105. NE3
107. NE1
108. NE6
109. NE5
110. NE7
69. ETO4
111. ETO3
112. NE8
113. NE10
114. NE11
115. NE12
116. ETO2
117. ETO1
118. NE9 (Wildwood)

LISGAR
119. LS1 (Lisgar Meadow Brook)
120. LS2
121. LS3 (Trelawny Woods)

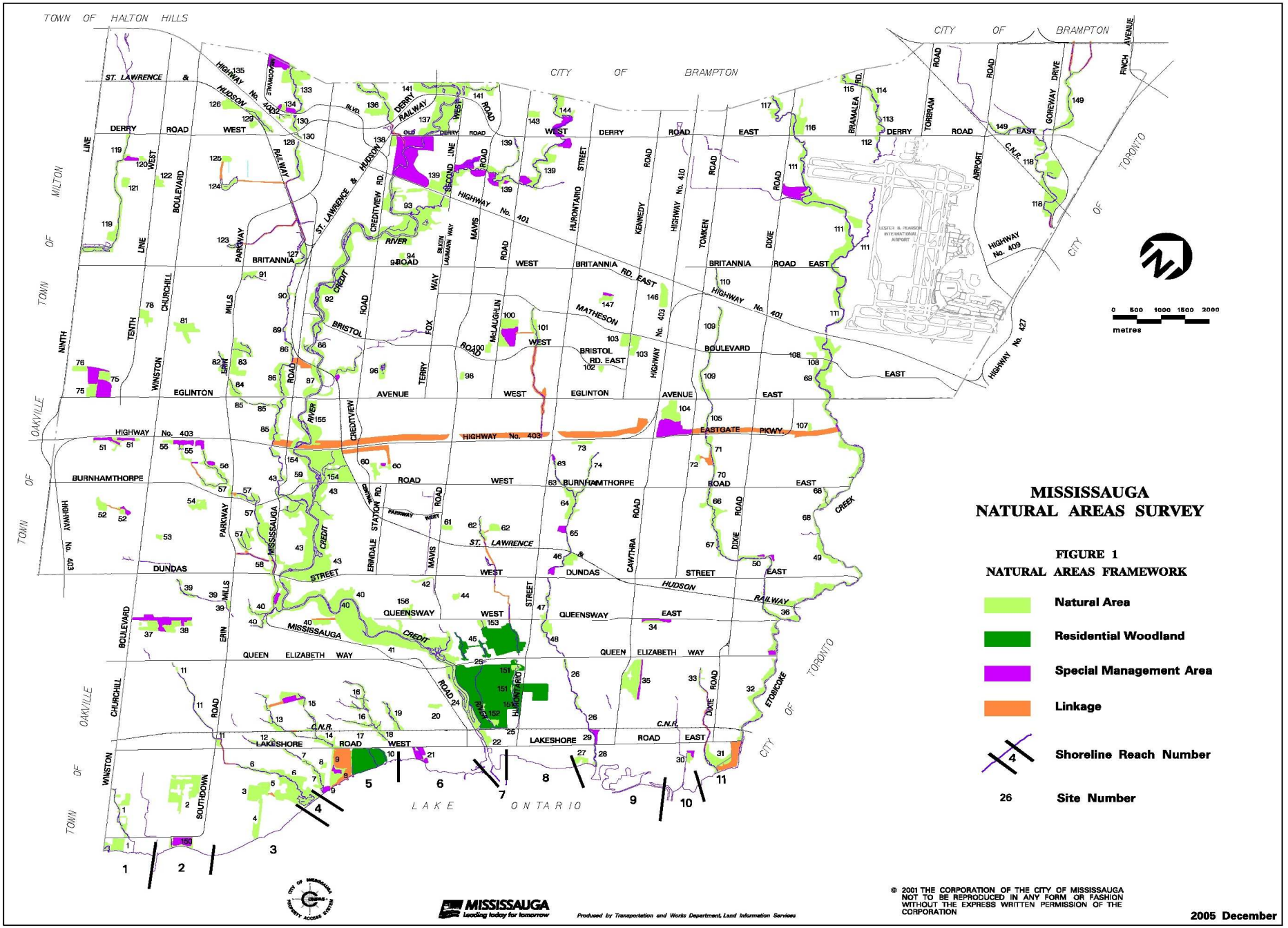
MEADOWVALE
122. ME10 (Eden Woods)
123. ME12 (Lake Wabukayne)
124. ME11 (Lake Aquitaine)
125. ME9 (Maplewood)
126. ME8 (Windrush Woods)

MEADOWVALE BUSINESS PARK
127. MB9
128. MB7 (Mullet Creek)
129. MB8
130. MB3
132. MB4
133. MB6 (Totoredaca)
134. MB2
135. MB1

MEADOWVALE VILLAGE
136. MV19
137. CRR1 (Meadowvale C.A.)
138. MV18
139. MV2
141. MV12
143. MV11
144. MV15
93. CRR2

GATEWAY
146. GT3
147. GT2

MALTON
149. MAI



MISSISSAUGA
NATURAL AREAS SURVEY

FIGURE 1
NATURAL AREAS FRAMEWORK

- Natural Area
- Residential Woodland
- Special Management Area
- Linkage
- 4 — Shoreline Reach Number
- 26 — Site Number

MISSISSAUGA
Leading today for tomorrow
Produced by Transportation and Works Department, Land Information Services
2005 December

3.1 Summary of Changes

Figure 2 illustrates the overall change between 1996 and 2005 in the proportion of the City occupied by the Natural Areas System. A detailed summary of the changes to natural area classification between 1996 and 2005 is provided in Appendix 5. The total number of natural areas decreased from 141 in 1996 to 136 in 2004, but remained the same in 2005. The total area of the City identified as part of the natural area system in 2005 is 6.62% which is essentially unchanged from 2002. This reflects an overall decline in area from the 7.10% reported in 1996 and represents an overall loss of 153.72 ha (379.84 a.).

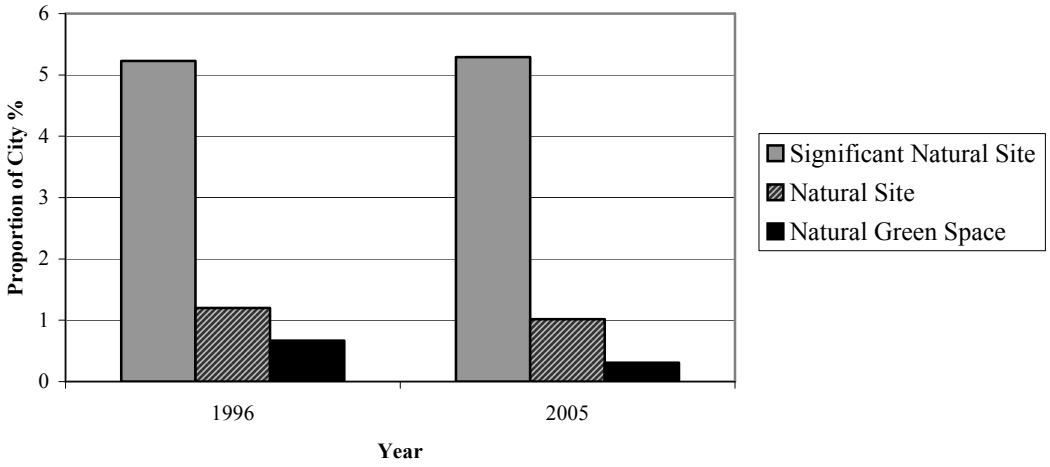


Figure 2: The proportion of the City contributed by each natural area classification in 1996 and 2005. (See Appendix 5 for a complete summary.)

Two Special Management Areas associated with natural areas ETO4 and CRR7 were removed due to development. An additional Special Management Area associated with natural area CV10 was brought into the natural area due to naturalization. This brings the 2005 total for Special Management Areas down to 39 from the original number of 55 identified in 1996. The total number of Linkages remains the same (36) as in 2000. One natural area (NE6) was substantially (50%) reduced in size due to development. Another two natural areas (RW5 and MY3) were also substantially reduced in size (30%) due to an increase in size of the adjacent manicured parks. Most changes to natural area boundaries in 2005 were minor in nature and as a result the overall statistics did not change dramatically from 2002.

The overall change to the three major landform types (valleyland, tableland, and wetland) in the City between 1996 and 2005 is presented in Figure 3. A detailed summary of the changes to the landform types is provided in Appendix 6. Figure 3 illustrates that the majority of the natural areas system (80.3%) is associated with valleylands in 2005. This proportion has increased from approximately 78.4% of the system in 1996, but is unchanged from 2002. The actual number of valleyland sites decreased from 78 in 2002 to 77 in 2004 with the removal of natural area PC3 for development.

In contrast, tablelands only account for 14.7% of the natural areas system in 2005 (Figure 3). This represents a continued decrease from 16.4% in 1996, but again is unchanged from 2002. The total number of tableland natural areas has decreased from 60 in 1996 to 52 in 2005. From a City-wide perspective, there were steady decreases from 1.16% in 1996 to 0.97% in 2002 of the landbase represented in tableland natural areas. From 2002 up until 2005 this proportion has remained constant. Tableland natural areas (which are mainly wooded) tend to be discrete islands that have limited connections to other remnant natural features. Valleylands are better connected by virtue of the linearity of the landform and because they have historically been better protected from development. This reinforces the need to place a high priority on the protection of the remaining tableland features present within the City, and an emphasis on their management to maintain or improve their quality.

The proportion of the natural areas system associated with wetlands has remained more or less constant from 1996 at approximately 5.0% (Figure 3). The proportion of the City that is classified as wetland decreased marginally from 0.36% in 1996 to 0.33% in 2002, but has remained constant from 2002 to 2005 (Appendix 6)

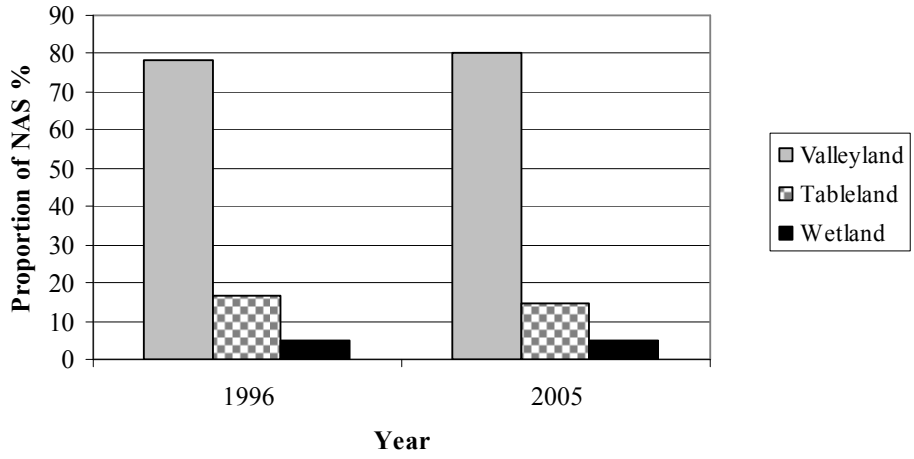


Figure 3: The proportion of the Natural Areas System contributed by landform type in 1996 and 2005. (See Appendix 6 for a complete summary.)

The mean size of natural areas in all three landscape types has been decreasing since 1996 due to the removal of portions of natural areas for development (Appendix 6). The exception to this is the mean size of wetlands which increased between 2001 and 2002 with the removal of EC1 which was smaller than the average wetland size. Currently the mean size of wetlands is 19.2 ha (47.44 a). Tableland natural areas are generally very small (mean size of 5.4 ha or 13.3 a.) when compared to the valleyland areas (mean size of 19.4 ha or 47.94 a.).

4.0 NATURAL ENVIRONMENT OVERVIEW

4.1 Vegetation Communities

The 49 vegetation communities described for the City (see Table 2 in Geomatics 1996) were compared between 1996 and 2005 (see Figure 4, as well as Appendices 7 and 8). In 2000, the Ecological Land Classification (ELC) (Lee *et al.* 1998) was applied to the vegetation communities described for the City. A list of the City's vegetation communities and their corresponding ELC vegetation community classification is provided in North-South (2000), Appendix 6. To facilitate the comparison of vegetation communities between updates, the City designations are discussed in this report.

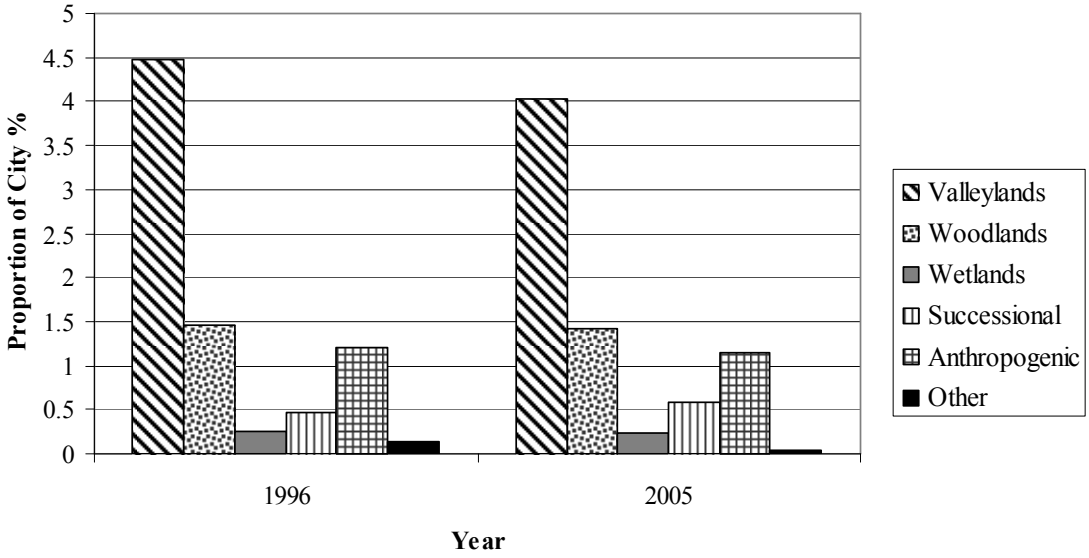


Figure 4: The proportion of the City contributed by vegetation community in 1996 and 2005. (See Appendix 7 and 8 for a complete summary.)

The vegetation communities have been grouped into six broad categories to facilitate discussion; valleylands, woodlands, successional, wetlands, anthropogenic and other. The category "other" was used for three communities (tall-grass prairie, beach and unknown) that did not easily fit into one of the other five categories. The category "anthropogenic" refers to five communities that have been created and maintained through human intervention (manicured, urban lake, wooded residential, plantation, black walnut grove). The most prevalent vegetation communities within the City remain those in the valleyland category. The tall-grass prairie community is still considered the only provincially rare vegetation community within the City.

Appendices 7 and 8 summarize the changes in the vegetation community categories between 1996 and 2005. Figure 4 highlights the significant decrease in the size of all vegetation community categories within the City from 7.96% in 1996 to 7.43% in 2005 (Note: this figure is

higher then reported in section 3.1 due to the inclusion of wooded residential areas in the anthropogenic category). Figure 4 also illustrates that the Anthropogenic category accounts for almost the same proportion of the city as the Woodland category with 1.14% and 1.42%, respectively. This loss of vegetation communities will result in a reduction in biodiversity in the City, contrary to the goals and objectives of the Natural Areas Program (Geomatics 1996).

Valleylands

Valleylands includes nine vegetation communities, two of which "open with wooded slopes" (M) and "manicured with wooded slopes" (O) no longer occur in the natural areas system as a result of naturalization programs initiated by the City (listed in Appendices 7 and 8). Even though this category is termed valleylands, the boundaries of these vegetation communities do not necessarily follow floodplain boundaries. For example, wooded slope could occur on valley slopes or above the top of bank (tableland is included in wooded slope as long as it contiguous with the valleyland). In 2005, this category comprised 4.02 % of the total City area (Figure 4). This category has seen a decrease in area between 1996 and 2005 of 124.29 ha (Table 2). More than half of this loss (59%) occurred between 2001 and 2002 with a decrease of 58.28 ha (143.95 a.). Four of the vegetation communities in this category continue to be the most widespread in the City: wooded slope, floodplain, wooded non-native valleyland, and open with open slopes valleyland.

Table 2: Changes to the area of vegetation communities 1996-2005.

Vegetation Community Category	Areal Change (1996 - 2005)		Areal Change (2002 - 2005)		Extent of Change and Reason (2000 - 2005)
	hectares	acres	hectares	acres	
Valleylands	-124.29	- 307.12	- 8.92	- 22.04	Revision of communities in CV8, NE3, AW1, AW3 Removal of portions of LV5 Addition of communities in ETO5, CV10, CV12
Woodlands	- 8.26	- 20.41	+ 0.10	+ 0.25	Revision of communities in NE1, NE4, CC1/MY1, FV1, FV3, ER6, CV1
Successional	+ 33.92	+ 83.82	+ 5.14	+ 12.70	Addition of communities in CRR7, ETO6, ETO5, RW4 Revision of communities in CV8, CC1/MY1 Removal of portion of NE6
Wetland	- 6.23	- 15.39	- 0.92	- 2.27	Removal of community in NE4 Addition of community in ETO5
Anthropogenic	- 19.99	- 49.39	+ 6.23	+ 15.39	Revision of communities in CV2 Addition of communities in AW4, CRR7, ETO5
Other	- 27.96	- 69.09	0.00	0.00	No change in 2005

Wooded slope valleylands (A) had substantial decreases in 2005 of 7.25 ha (17.91 a.) (Appendix 7). In contrast, wooded non-native valleylands increased in size by 4.20 ha (10.38 a.) with the addition of this community in three natural areas (ETO5, CV10 and CV12). Floodplain valleylands (B), open with open slopes valleyland and open with manicured slopes valleyland

also saw decreases of 2.96 ha (7.31 a.), 3.66 ha (9.04 a.) and 5.5 ha (13.59 a.) respectively (Appendix 7). The decreases can primarily be attributed to minor revisions of natural area boundaries and the reclassification of a number of natural areas.

Woodlands

Woodlands includes twenty vegetation communities (listed in Appendices 7 and 8), all of which occur outside of valleylands, although intermittent streams may be present within. Two of these communities, "bur oak - American beech forest" (QQ) and "bur oak - black walnut forest" (WW), no longer occur in the natural areas system due to their removal as a result of development. In 2005, this category comprised 1.42 % of the total City area, essentially unchanged from 2002 (Figure 4). This category has seen a total decrease between 1996 and 2005 of 8.26 ha (20.41 a.). However, between 2004 and 2005 this category saw an increase of 0.10 ha (0.25 a.) (Table 2).

This minor change is due to minor revisions to natural area boundaries. Ten of the vegetation communities in this category (see Appendix 8 for a complete list) are considered uncommon in the City, each occupying less than 1% of the total area of natural areas or containing an uncommon "working-group" (Krahn *et al.* 1995). Six of these ten communities can also be considered "at risk" in the City, each represented only in a single natural area. These communities are: sugar maple-eastern hemlock forest (GG); sugar maple-black cherry forest (II); sugar maple-American beech-eastern hemlock forest (LL); white pine-eastern hemlock-sugar maple forest (MM); American beech forest (PP); and black cherry-eastern hemlock-white ash forest (VV).

An emphasis should be placed on the protection and management of the remaining woodland vegetation communities. Even though these communities remained essentially unchanged in total size in 2005 there is still an overall continued loss of these communities that will result in a subsequent loss of plant and animal species from the City. The additional pressures associated with development adjacent to natural areas will jeopardize the remaining communities even more (see section 5.0 for a discussion of disturbances related to development).

Successional

The successional category has six vegetation communities (listed in Appendices 7 and 8). This category has increased in size by 33.92 ha (83.82 a.) between 1996 and 2005 (Table 2) with 75 % (21.55 ha) of this increase occurring in 2004. In 2005 this category increased by 5.14 ha (12.70 a.). Even with this substantial increase in size, in 2005, this category comprised only 0.58 % of the total City area (Figure 4). Four of the vegetation communities in this category remain uncommon in the City occupying approximately 1% of the total area of natural areas (Appendix 8). One of these five communities, birch forest (XX), can also be considered "at risk" in the City, as it is represented in a single natural area.

"Early successional forest" (E) increased by 8.85 ha (21.87 a.) between 2004 and 2005. This community now occupies 1.53% of the total of natural areas and is no longer considered uncommon in the City. This community was added to four natural areas (CV8, CRR7, ETO6 and ETO5) in 2005. "Old field" (C) increased by 3.15 ha (7.78 a.) between 2002 and 2005 with the addition of this community to natural areas ETO5 and RW4.

The small overall size of successional communities in the City continues to highlight the perception that these types of communities do not contribute to the biodiversity of the City and, therefore are not important to retain. However, these communities perform a number of important ecological functions: they provide habitat for a number of plant and animal species (including birds), they act as a buffer between forests and adjacent development, they provide structural diversity to a site (variation in the height of plant species provides a wider range of animal habitat), and they provide habitat for small mammals and insects, which in turn provide a prey base for other species higher up the food chain.

Wetland

The wetland category is composed of six vegetation communities (listed in Appendices 7 and 8). Between 1996 and 2005 this category decreased in size by 6.32 ha (15.39 a.) to only 0.24% of the total City area (Table 2 and Figure 4). Between 2004 and 2005 this category decreased marginally by 0.92 ha (2.27 a.) primarily by the decrease in size of this community in natural area NE4. Each of the vegetation communities in this category continue to be considered uncommon in the City occupying approximately 1% of the total area of natural areas (cattail marsh is 1.2%). One of these six communities, "willow-buttonbush swamp thicket" (X), can also be considered "at risk" in the City as it is represented in a single natural area.

Despite their small size, wetland communities tend to contribute a disproportionately high amount of biodiversity to the City. A large number of both plant and animal species are restricted to this habitat. In addition to the concern about outright removal of these communities for development, there is also the concern that even if a wetland is retained within a subdivision, alterations to the hydrological and/or hydrogeological regime from the development will result in permanent conversion of the vegetation community from wetland to upland.

Anthropogenic

Anthropogenic is composed of five vegetation communities (listed in Appendices 7 and 8). Between 2004 and 2005 this category increased by 6.23 ha (15.39) with the addition of manicured communities in two natural areas (AW4 and CRR7) as well as through the addition of a plantation community in natural area ETO5. Overall, the size of this category decreased between 1996 and 2005 by 19.99 ha (49.39 a.) and currently comprises 1.14% of the total City area (Table 2 and Figure 4). This is more than the amount of the City occupied by wetlands (0.24%) and successional (0.56%) communities combined. "Wooded residential" is still considered to be one of the largest communities in the City. The community "manicured" (F) increased in size by 7.15 ha (17.67 a.) between 2004 and 2005.

Other

The "other" category is composed of three vegetation communities (listed in Appendices 7 and 8): "beach", "tall grass prairie" and "unknown". This category has had an overall decrease in size by 27.96 ha (69.09 a.) between 1996 and 2005 (Table 2). However, there has been no change to this category in 2005. The "other" category now only occupies 0.03 % of the total City area (Table 2 and Figure 4) and is found only in natural area SD5.

4.2 Flora

The total number of flora species in the City of Mississauga stands at 1121 (see database for a complete list). There are 670 native species in Mississauga (60% of the flora) and non-natives number 451 (40% of the flora). One native species, low bindweed (*Calystegia spithamaea*), previously considered extirpated, was added to natural area CRR7 based on fieldwork in 2005.

Butternut is currently designated as Endangered nationally by COSEWIC and provincially by Ontario Ministry of Natural Resources (OMNR). Species listed as Endangered in the province are afforded habitat protection under the Provincial Policy Statement of the Planning Act (OMNR 2004). Butternut was listed as Endangered because it is being infected throughout its entire North American range by a fungal infection, butternut canker (*Sirococcus clavigignenti-juglandacearum*). A number of the butternut records for the City's natural areas date prior to 1984 (are greater than 20 years old) and their current health and in some cases continued presence is unknown. In 2005 surveys for butternut were conducted in 31 natural areas of the 34 documented sites where access was available. Butternut were observed in 9 of the 31 natural areas visited and was also observed in a new natural area for a total of 10 natural areas (Appendix 9). Of these observations only 5 natural areas (AW1, CRR7, CV12, ETO4, NE6) contained butternut that did not appear to be infected with the butternut canker.

There was only one change in the regional rarity rankings for plant species in 2004. Low bindweed was given a regional rarity rank of "rare". Of the 670 native species in the Mississauga flora, 36 (6%) are considered extirpated, 397 (59%) are rare (known from only 1 to 3 locations in the City) or uncommon (known from 4 to 10 locations in the City), and 237 (35%) are common (known from more than 10 locations in the City).

There have been no changes to provincial rarity ranks in 2005, thus Appendix 8 from the 2004 update report (North-South Environmental 2004) is considered to be current and is not provided in this report.

Table 3 lists the plant species documented in natural areas in the literature reviewed in 2005 that are currently not confirmed as occurring in the City of Mississauga [*i.e.*, there are no confirmed specimens and they are not listed by Kaiser (2001)]. These species need to be confirmed prior to their inclusion in the flora of Mississauga.

Table 3: Flora species documented for the City of Mississauga that require confirmation.
Numbers in the source column correspond to Appendix 2.

Scientific Name	Common Name	Site	Reg Rank	NHIC Rarity	Source	Status in Kaiser (2001)
Raphanus raphanistrum	wild radish	LV5	new	SE3	226	not documented in Peel
Epilobium strictum	downy willow herb	LV5	new	SE5	226	not documented in Peel
Polygonum erectum	prostrate knotweed	LV5	new	S1	226	not documented in Peel
Crataegus crus-galli	cockspur hawthorn	LV5	new	S5	226	not documented in Peel
Sorbus americana	mountain ash	LV5	new	S5	226	not documented in Peel

4.3 Floristic Quality Assessment

Table 1 (page 5) provides the FQIs and native mean coefficients for all natural areas that are assessed, and changes are summarized in Appendix 4 (some of the changes noted in this appendix are significant in the context of the natural areas program while others are considered minor revisions). In 1996, 107 of the 144 natural areas were assessed. FQIs ranged from 2.68 to 80.10 and the native mean coefficients ranged from 1.20 to 4.82. In 2005, a total of 123 of the 136 natural areas and one residential woodland are currently assessed. Currently, the FQIs range from 2.68 to 80.30 and the native mean coefficients range from 1.20 to 4.59. High, medium and low values are defined in the 1996 Natural Areas report (page 29) (Geomatics 1996).

In 1996, the majority of natural areas fell in the medium range of native mean coefficients (3.3 to 3.99) and in the low range for the FQIs (< 30.00). This is still the case in 2005 for both FQIs and native mean coefficients. In 2005, 75 of the 123 (63%) natural areas assessed have low FQIs. Thirty-seven of the 123 (31%) natural areas assessed have low native mean coefficients (< 3.3) while 56 of the 123 (47%) natural areas assessed have medium native mean coefficients (3.3 to 3.99).

Lower native mean coefficients indicate an increase in the presence of native plant species characteristic of disturbed environments, and a commensurate decrease in plant species that indicate high quality habitat. Species with low coefficients tend to occur in a wide range of habitats and are not as susceptible to disturbance. In contrast, plant species with high coefficients tend to be conservative in their habitat requirements. The Natural Areas report (Geomatics 1996) has a more complete explanation of native mean coefficients. The decrease in the high end of the native mean coefficient range, from 4.82 in 1996 to 4.59 (a 5% decrease), reflects a trend towards increasing disturbance in Mississauga's natural areas.

FQIs and native mean coefficients were re-calculated for the 32 natural areas re-assessed through field studies in 2005; *i.e.*, for those natural areas that had a change in their floral inventories. Of the natural areas evaluated in 2005, one third (11) have medium mean coefficients and two thirds (21) have low FQI values. The proportion of sites with medium mean coefficients has decreased from 2002 and the proportion with low FQI values has increased. FQIs and native mean coefficents for the natural areas evaluated in 2005 are basically unchanged and likely represent minor revisions resulting from additional fieldwork. Two sites (CRR7 and CC1/MY1) increased their FQI range and two sites (AW1 and CV6) increased their mean coefficient range. Three sites were newly evaluated in 2005 (LV5, CRR8 and NE3)

4.4 Fauna

No new species were added to the fauna of the City of Mississauga in 2005 through field work conducted in 2005 and literature reviewed. The breeding bird surveys conducted in natural areas in Wards 3, 4 and 7 documented yellow-billed cuckoo (CL8 and CL9) and ruffed grouse (CL9) for the second time in the natural areas system.

The 2005 studies continued to document the widespread use of most natural areas by habitat-generalist breeding bird species. However, a few habitat-specialists, many of which are significant (birds of conservation concern) in the Credit River Watershed (Credit Valley Conservation undated) because their habitat has become increasingly fragmented, are still present in larger patches. For example, highlights included extensive riparian areas such as Etobicoke Creek (ET04), the Credit Valley Golf and Country Club (CRR7) and the Mississauga Golf and Country Club (CRR8). These sites sustained the highest number of possible breeding bird species of any areas surveyed in 2005, with a high diversity of adaptable species tolerant of urban habitats (e.g., American robin, northern cardinal and song sparrow), as well as habitat-specific species that can utilize small patches of habitat (for example, yellow warbler, red-winged blackbird, spotted sandpiper). Species dependent on certain specific microhabitats (for example species that depend on high bluffs such as bank swallow, rough-winged swallow, belted kingfisher) were only found along Etobicoke Creek and larger creek valleys. These habitats were also among the few that supported a few habitat-specific species that require larger tracts of habitat, for example cooper's hawk and mourning warbler. The most common Credit Valley Species of Concern were the mid-to late-successional species eastern kingbird, common grackle and gray catbird. This is not because the habitats are successional (this vegetation type is not common in Mississauga), but because the narrow band of riparian vegetation along the smaller creek valleys contained many elements common to successional areas, such as shrubs and young trees. This is likely because of the high level of disturbance and high light levels. Species that are solely dependent on large forests as habitat were absent, as were marsh area-sensitive species, from the areas studied in 2005. However, pine warbler and hairy woodpecker, considered area-sensitive by MNR, were present in an older neighbourhood with a high density of mature trees. Raptorial birds are also uncommon, reflecting the lack of open natural areas to support a forage base, with cooper's hawk noted only once, from Etobicoke Creek in an area contiguous with a power line, several table land woodlots and several undeveloped fields (ET04). Older areas of the City still provide habitat for declining bird species that depend on human structures in older neighbourhoods, which are sensitive to human tolerance and are not present in new residential areas: such as barn swallow, chimney swift and cliff swallow.

No changes to provincial rarity ranks for fauna species have occurred since 2004. Thus, the list provided in Appendix 9 (North-South Environmental 2004) is considered up to date. Most provincially significant bird species noted in the City are migrants. However, the one provincially significant bird species considered a confirmed breeder is peregrine falcon, which nested on a building (the Mississauga Executive Centre complex) adjacent to CC1. This species has been monitored intensively during the breeding season since 2002, and the fate of the nestlings can be found on the website: www.peregrine-foundation.ca/tops/missmec.html.

There has been no change to the status of Credit Valley Conservation species of conservation interest (Credit Valley Conservation undated). A complete list of bird species of conservation interest documented from natural areas is provided in Appendix 10. Currently, 95 bird species of conservation interest are documented, of which 60 species are likely breeding in natural areas. As described above, most of these species are habitat specialists, for which habitat is more likely to be eliminated as natural areas become isolated, fragmented and altered by surrounding development.

4.5 Significant Features

There are no changes to Areas of Natural and Scientific Interest (ANSIs) since they were last updated by the MNR, as reported in the 1998 update report.

5.0 NATURAL AREA CLASSIFICATION SCHEME

In 2004, the criteria for classifying the natural areas was updated (see section 3.0, North-South Environmental 2004). No updates are proposed in 2005 and thus the 2004 criteria are considered up to date and are provided in Appendix 1.

6.0 CONDITION OF NATURAL AREAS

6.1 Condition

Generally, the natural areas within the City that were surveyed in 2005 continue to be in fair condition (see Table 1, Appendix 4). Natural areas evaluated as in fair condition have moderate disturbances (few trails, limited dumping, some trampling, *etc*.) and an average number of non-native flora species typical of what can be expected in an urban natural area. The overall condition of the natural areas visited in 2005 remained largely unchanged from previous studies.

Spring surveys in natural areas in Wards 3, 4 and 7 documented an abundance of spring ephemeral plant species in most natural areas, with the exception of those areas considered to be in "poor" condition. This is similar to the results of the spring 2004 survey in Wards 1 and 2. This indicates that suitable conditions (e.g., adequate moisture, soils that are not compacted, adequate nutrients, etc.) are present to support these plant species in most natural areas in the City.

Access was available to three sites (CRR7, CRR8 and LV5) for the first time since the initiation of the natural areas survey in 1996. Natural areas CRR7 and CRR8 were evaluated as good to fair condition due to the limited human disturbances and mature nature of the habitats. Natural area LV5 was evaluated in poor condition due to the dominance of the site by non-native species, associated extensive disturbances and the narrow, linear nature of the site. Naturalization in two Special Management Areas has resulted in their inclusion in the adjacent natural areas in 2005 (CV10 and CV12).

6.2 Disturbances

As with the all of the other update surveys, the most common disturbances within natural areas are those associated with an increase in uncontrolled human use of natural areas following development in adjacent areas. Examples of these disturbances include: the creation of *ad hoc* trails, the use of mountain bikes (including the construction of some elaborate racing circuits), the presence of garbage, boundary encroachment, and vandalism (tree carving, tree cutting, spray

paint). These disturbances have become more prevalent at all of the natural areas surveyed this year. In particular, a mountain bike circuit has been newly created in natural area NE4 that prior to this did not have any disturbances.

Observations at natural areas in Mississauga are consistent with reports from the literature that human use of natural areas results in the alteration of decomposition and nutrient cycles through: the loss of understory vegetation (particularly herbaceous species) (Friesen 1998, Matlock 1993); the loss of leaf litter, humus as well as moss species; and soil compaction (Matlock 1993). Matlock (1993) also suggested that the recovery of soil and understory vegetation could take 10 to 20 years after the cessation of traffic. Deterioration of the quality of Mississauga's natural areas can be expected to continue unless there is a substantial effort to manage natural areas through site specific Conservation Plans and community stewardship initiatives.

6.3 Development

Direct impacts from development have resulted in the removal of portions, as well as entire natural areas. Development can include the removal of entire natural areas through the construction of a new residential subdivision or new industrial complex, infill construction of a single residential dwelling within a natural area, or the expansion of an industrial or commercial parking lot into a natural area.

In addition, 16 of the 38 natural areas surveyed in 2004 decreased in overall size due to development. Some of the associated indirect impacts that resulted from the removal of portions of natural areas included: increased light penetration in the remainder of the area, and changes in the vegetation composition (e.g., invasion of non-native species, removal of canopy tree species, etc.). Other potential long-term impacts that could occur are: changes in moisture (soil and air); increased impacts from air pollution and temperature within the natural area; as well as the less well documented impacts of increased light and noise pollution.

6.4 Non-native Species

There has been a continual increase in the proportion of non-native to native plant species in the natural areas surveyed between 1996 and 2005 (see Appendix 4). An increase in the presence and dominance of non-native species within the City's natural areas is a serious management concern. Without active management species such as Norway maple (*Acer platanoides*), garlic mustard (*Alliaria petiolata*), European buckthorn (*Rhamnus cathartica*), and others will result in a continued loss of native plant species in a number of natural areas. A City-wide strategy to deal with aggressive non-native species impacts needs to be formulated and management plans developed to remove the most invasive exotic species as soon as possible.

Naturalization projects initiated at a number of natural areas typically has involved leaving an area of unmowed grass to regenerate naturally. While the size of the natural areas increases as a result of this regeneration, this strategy also provides habitat for invasive plants such as purple loosestrife (*Lythrum salicaria*) and dog-strangling vine (*Cynachum rossicum*). In addition, if the

natural area occurs in a valleyland its inherent ability to function as a linkage will promote the spread of these invasive species within the City.

As noted in previous studies, the dumping of discarded horticultural plants, largely as a result of encroachment where residents use the natural areas behind their house for compost and dumping yard waste, is a common vector for the introduction of non-native plants to natural areas. This was present in most of the residential areas visited during this update.

7.0 CONCLUSIONS

After seven years of update surveys covering the entire City, two trends have emerged. There has been a decrease in the quality of vegetation as indicated by an increase in the number of natural areas with lower native mean coefficients (section 4.3); and there has been a decrease in the amount of tableland (woodland and successional categories) and wetland habitats (section 3.1). Development between 1996 and 2005 has resulted in the total loss of 153.72 ha (379.84 a.) from the natural areas system including the loss of thirteen natural areas. Two woodland vegetation communities have been lost, as a result of development removing the only two natural areas in which they were represented in the City (section 4.1). Eleven woodland communities, four successional communities and all six of the wetland vegetation communities are uncommon in the City, occupying less than 1% of the total area of the natural areas system (Appendix 8). Of these, six of the woodland communities, one successional community and one wetland community are "at risk" in the City, occurring in only one natural area each. In addition, a longer-term conversion of vegetation community composition (from wetland pockets to old field) in some natural areas is also occurring, likely as a result of increased human disturbance and changes in hydrology resulting from development. These trends reinforce the urgent need to maintain and manage (and where possible restore) all of the remaining natural areas in the City. In particular, tableland natural areas (including woodlands, wetlands and successional vegetation communities) continue to be the most seriously threatened by development.

One positive trend is the naturalization projects undertaken by the City. The majority of naturalization projects initiated between 1996 and 2005 have involved leaving an area of unmowed grass adjacent to a watercourse or woodlot feature to regenerate naturally. While this approach will increase the overall size of the natural area in question, this initiative could be enhanced by taking an approach that includes long-term management, which would more likely result in a healthy natural area with a diversity of native plant and animal species such as at Jack Darling Park.

8.0 RECOMMENDATIONS

1. All of the remaining natural areas in the City should be protected from development and managed to maintain the biodiversity of the City for future generations. Of particular importance is the protection and subsequent management of all woodlands, wetlands and successional habitats.

2. It is recommended that the City consider prioritizing the natural areas based on significance, representation, size and condition, and initiate Conservation Plans for those of greatest value.

3. Initiate greater control over natural areas to reduce impacts related to human use. This is best achieved through site-specific Conservation Plans. Issues addressed in the Conservation Plans should include, but not be limited to: access, encroachment, appropriate activities, non-native plant control, and restoration initiatives (see Geomatics 1996 for a complete description of Conservation Plan requirements).

4. Initiate a public education program in concert with community-based stewardship initiatives to involve local citizens in the conservation and management of natural areas, as outlined in the Natural Areas Survey (Geomatics 1996). Key to this is demonstrating the ongoing degradation of woodland through careless and improper use. The public education and stewardship activities on-going in Cawthra Woods (LV7) offer a good example of what can be achieved.

5. Formulate a City-wide strategy to deal with non-native species and develop management initiatives to address the most invasive exotic species. Part of such a study should include an assessment of the feasibility of managing some aggressive exotics. Species that are a high priority are Norway maple, garlic mustard, purple loosestrife, dog-strangling vine, white poplar (*Populus alba*), Japanese knotweed (*Polygonum cuspidatum*) and white mulberry (*Morus alba*). At a minimum the City should immediately adopt policies to restrict or prevent the planting of invasive non-native plants, as well as providing encouragement and a mechanism for the City and the community to work together to remove such plants.

6. All naturalization (creation of natural habitat from manicured parkland) projects undertaken in natural areas by the City should involve both the planting/seeding of native species and the control of non-native species.

7. Investigate the possibility of rehabilitating the compacted soils of mountain bike circuits through a combination of leveling the circuits and undertaking planting trials in publicly owned natural areas. This could be combined with a community education program and involve local volunteers. Some publicly owned natural areas that would benefit include ME8, CL39, CL1, and MI17.

8. At confirmed locations, continued monitoring of butternut is warranted and contact should be made with the Butternut Conservation Coalition to determine if any conservation strategies have been developed.

9.0 REFERENCES CITED

Credit Valley Conservation. Undated. Credit Watershed Bird Species of Conservation Interest. 2nd Edition. Bird Data Card.

Friesen, L. 1998. Impacts of urbanization on plant and bird communities in forest ecosystems. The Forestry Chronicle 74(6):855-860.

Geomatics International Inc. 1996. City of Mississauga Natural Areas Survey. Report prepared for Planning and Building Department, City of Mississauga. 110 pp.

Geomatics International Inc. 1998. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 45 pp.

Kaiser, J. 2001. The Vascular Plant Flora of the Region of Peel and the Credit Valley Conservation. Prepared for Credit Valley Conservation, Regional Municipality of Peel, and Toronto and Region Conservation.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Matlock, G.R. 1993. Sociological Edge Effects: Spatial Distribution of Human Impact in Suburban Forest Fragments. Environmental Management 17(6): 829-835.

Natural Heritage Information Centre (NHIC). 2005. Natural Heritage Information website. www.mnr.gov.on.ca/MNR/nhic/nhic.cfm

Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario Plant List. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario. Forest Research Information Paper No. 123, 550pp + appendices.

North-South Environmental Inc. 1999. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 56pp.

North-South Environmental Inc. 2000. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 53pp.

North-South Environmental Inc. 2001. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 56pp.

North-South Environmental Inc. 2002. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 67pp.

North-South Environmental Inc. 2004. City of Mississauga Natural Areas Survey - Update. Report prepared for Planning and Building Department, City of Mississauga. 80pp.

Ontario Ministry of Natural Resources (OMNR). 2004. Species at Risk in Ontario List. www.ontarioparks.com/english/sar.html

Appendix 1: Natural Area Classification Scheme

Appendix 1: Natural Area Classification Scheme. As updated in Section 5.0 (North-South Environmental Inc. 2004)

With recent changes to the rarity status of significant species at the national, provincial and regional levels, the criteria for classifying the natural areas were updated in 2004. Changes to the criteria as defined in Geomatics (1996) are highlighted in bold. Areas still need only fulfill one criteria in any class to be designated in that class.

Significant Natural Site

These are areas that are outstanding from a natural areas perspective, in the context of the City of Mississauga. Significant Natural Sites must fulfill one of the following criteria:

- ANSI, ESA and other areas designated for outstanding ecological features
- areas with a Floristic Quality Index (FQI) of ≥ 40.00
- areas with a mean floristic coefficient of ≥ 4.50
- woodlands ≥ 10ha (25 acres) in size
- areas that support provincially significant **(S1, S2, S3)** or **"species at risk" listed as special concern**, threatened or endangered **(designated by COSEWIC or COSSARO)**
- woodlands with the potential to provide interior conditions (i.e., no dimension of the woodland is < 700m)
- woodlands that support old-growth trees (≥ 100 years old)
- wetlands ≥ 2ha (5 acres) in size regardless of rank
- the Credit River and Etobicoke Creek valleys

Natural Site

These are areas that represent good examples of remnant features that once characterized the City of Mississauga. Natural Sites must fulfill one of the following criteria:

- woodlands ≥ 2ha (5 acres) but < 10ha (25 acres) (defined as forests which support appropriate understory and canopy species
- **areas** that represent uncommon vegetation associations in the City
- **areas that support regionally significant plant (in the City of Mississauga) or animal species (CVC species of concern)**
- areas with a Floristic Quality Index (FQI) of 25.00 to 39.99
- areas with a mean floristic coefficient of 3.50 to 4.49
- areas that include natural (i.e., not engineered) landscape features [i.e., valley lands, watercourses, unusual (in the context of the City) landform features]

Natural Green Space

This class includes areas which perform ecological functions but do not satisfy any of the criteria for the previous two natural area classes. Natural Green Space includes:

- watercourses with vegetation other than mowed grass, even if they are predominantly engineered (i.e., straightened or channelized)
- wooded areas that are < 2ha (5 acres) in size and do not fulfill any of the other criteria for Natural Site or Significant Natural Site
- Lakes Aquitaine and Wabukayne

Residential Woodland

These are older residential areas, generally with large lots, and almost completely in private ownership. They support trees with a mature, fairly continuous canopy, but the native understory is generally absent or degraded, usually through maintenance of residential lawns and landscaping. However, these areas still serve some functions such as: providing habitat for tolerant canopy birds, both in migration and for breeding; fixing atmospheric carbon; and facilitating groundwater recharge owing to the high proportion of permeable ground cover. With approaches that involve landscaping with native species, the ecological function of these areas would be greatly increased.

Special Management Areas

These are areas adjacent to or close to existing natural areas, and which have the potential for restoration, or which should be planned or managed specially. They are primarily identified to alert planners to the possibility of directing compatible land uses to lands adjacent to natural areas.

Linkages

These are areas which serve to link two or more of any of the five previous classes within the City, or to natural areas outside of the City boundaries. Linkages could include:

- stormwater management facilities including ponds and watercourses;
- designated open space;
- rights of way; and
- greenspace along major arterial roads providing there is an adequate barrier between the linkage and roadway.

Appendix 2: Reports Examined for Background Review

Appendix 2: Reports Examined for Background Review

The format of this appendix follows Appendix 2 in the Natural Areas Survey (Geomatics 1996). The numbers correspond to those used in the database for literature references.

225 Gartner Lee Limited. 2004. Environmental Impact Study for the Proposed Training Facility, Part of Lot 2, Concession 4, East of Hurontario Street, Part 1.

226 Dillon Consulting Limited. 2003. Beaverbrook Homes (Lakeshore Village) Project Inc. "Lakeshore Village" Environmental Analysis Report.

227 Gartner Lee Limited. 2003. Scoped Environmental Impact Study, Glenerin Inn Redevelopment, City of Mississauga.

229 Philips Engineering Limited. 2004. North Sixteen District 'Scoped' Subwatershed Study and Ninth Line District Floodplain Mapping.

230 Stantec Consulting Ltd. 2004. Letter to Glen Schnarr & Associates Inc. re: Derrydale Golf Course - Ecological Constraints.

231 Bird and Hale Limited. 2003. Tree Evaluation Report 816 Meadow Wood Road Mississauga

232 Stantec Consulting Ltd. 2004. Credit River Pedestrian Bridge City of Mississauga Environmental Impact Study.

233 Aboud & Associates. 2004. Scoped Environmental Impact Study and Arborist Report. 77 Indian Valley Trail, Mississauga.

Appendix 3: Fieldwork Identified and Date Completed

Appendix 3: Fieldwork Identified and Date Completed

Natural areas for which the need for a field visit was identified based on aerial photograph interpretation and literature review. Natural areas are grouped into categories based on the type of change identified either within or adjacent to the natural area. Field Visit indicates the type of visit the natural area received, field work or a road side visit (see section 2.2 for an explanation). Ownership indicates whether the natural area is privately owned and therefore required access permission or whether it is a City owned site (*i.e.*, parkland or greenbelt).

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
Major Development Within Natural Area					
ETO4	Office development with natural area adjacent to Hwy 401; also minor boundary revisions; locate butternut (last observation 1995)	field work	breeding birds	parkland	08/07/05
			spring flora		22/06/05
			summer flora		22/06/05
			butternut		27/10/05
No Change					
AW1	Minor boundary revision required; locate butternut (last observation 2000)	field work	breeding birds	parkland	09/07/05
			spring flora		19/05/05
			summer flora		26/10/05
			butternut		26/10/05
AW3	No change	field work	breeding birds	parkland	01/07/05
			spring flora		19/05/05
			summer flora		26/10/05
AW4	No change	field work	breeding birds	parkland	01/07/05
			spring flora		19/05/05
			summer flora		26/10/05
CC1	No change; locate butternut (last observation 1980)	field work	breeding birds	parkland/private	05/07/05
			spring flora		19/05/05
			summer flora		28/09/05
			butternut		28/09/05

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
CRR7	No change	field work	breeding birds	private	09/07/05
			spring flora		09/07/05
			summer flora		26/10/05
CRR8	Minor boundary revision required	field work	breeding birds	private	09/07/05
			spring flora		09/07/05
			summer flora		26/10/05
CV1	No change	field work	breeding birds	parkland	05/07/05
			spring flora		31/05/05
			summer flora		28/09/05
CV8	Minor boundary revision required	field work	breeding birds	parkland	05/07/05
			spring flora		31/05/05
			summer flora		28/09/05
CV10	No change; investigate potential for inclusion of SMA in natural area	field work	breeding birds	parkland	05/07/05
			summer flora		31/05/05
			summer flora		28/09/05
CV12	No change; investigate potential for inclusion of SMA in natural area; locate butternut (last observation 1979)	field work	breeding birds	parkland	05/07/05
			spring flora		31/05/05
			summer flora		28/09/05
			butternut		05/07/05
CV2	Residential woodland; locate butternut (last observation 1995)	road visit	breeding birds	private	02/07/05
			road visit		19/10/05
CV6	No change	field work	breeding birds	parkland	02/07/05
			spring flora		31/05/05
			summer flora		19/10/05

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
ER6	No change; locate butternut (last observation 2000)	field work	breeding birds	private/parkland	02/07/05
			spring flora		31/05/05
			summer flora		19/10/05
			butternut		19/10/05
ER7	No change	field work	breeding birds	parkland	02/07/05
			spring flora		31/05/05
			summer flora		19/10/05
ETO5	No change	field work	breeding birds	parkland	08/07/05
			spring flora		22/06/05
			summer flora		26/10/05
ETO6	No change	field work	breeding birds	private/parkland	08/07/05
			summer flora		26/10/05
FV1	No change	field work	breeding birds	parkland	02/07/05
			spring flora		19/05/05
			summer flora		19/10/05
FV3	No change	field work	breeding birds	parkland	02/07/05
			spring flora		19/05/05
			summer flora		19/10/05
MY1	No change	field work	breeding birds	parkland	05/07/05
			spring flora		19/05/05
			summer flora		28/09/05
MY3	Minor boundary revision required	field work	breeding birds	parkland	05/07/05
			spring flora		19/05/05
			summer flora		28/09/05

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
NE1	No change	field work	breeding birds	private	01/07/05
			spring flora		22/06/05
			summer flora		27/10/05
NE3	No change	field work	breeding birds	greenbelt	01/07/05
			spring flora		22/06/05
			summer flora		27/10/05
NE4	No change	field work	breeding birds	parkland	01/07/05
			spring flora		22/06/05
			summer flora		21/10/05
NE5	No change	field work	breeding birds	parkland	01/07/05
			spring flora		22/06/05
			summer flora		21/10/05
RW1	No change	road visit	breeding birds	private	05/07/05
			road visit		10/21/05
RW2	Minor boundary revision required	field work	breeding birds	parkland	08/07/05
			spring flora		19/05/05
			summer flora		21/10/05
RW4	No change	field work	breeding birds	parkland	08/07/05
			spring flora		19/05/05
			summer flora		21/10/05
RW5	Minor boundary revision required	field work	breeding birds	parkland	01/07/05
			spring flora		19/05/05
			summer flora		26/10/05
RW6	Minor boundary revision required	field work	breeding birds	parkland	01/07/05
			spring flora		19/05/05
			summer flora		26/10/05

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
Locate Butternut					
CE12	literature record 1977	field work	summer	parkland	22/07/05
CE7	literature record 1976	field work	summer	parkland	22/07/05
CL16	last observation 1998	field work	summer	parkland	29/07/05
CL24	last observation 1999; possibly planted	field work	summer	parkland	29/07/05
CL26	last observation 1995	field work	summer	parkland	29/07/05
CL31	last observation 2004; possibly planted	field work	summer	parkland	29/07/05
CL52	last observation 1995; possibly planted	field work	summer	parkland	29/07/05
CRR10	last observation 2001	field work	summer	parkland	13/10/05
CRR3	last observation 1998	field work	summer	parkland	13/10/05
CRR5	literature record 1976	field work	summer	parkland	13/10/05
CRR6	last observation 1998	field work	summer	parkland	13/10/05
EM14	last observation 2001	field work	summer	parkland	22/07/05
EM2	last observation 1995	field work	summer	parkland	22/07/05
HO9	last observation 1978	field work	summer	parkland	12/10/05
LV1	last observation 1995	field work	summer	parkland	13/10/05
LV7	last observation 1999	field work	summer	parkland	13/10/05
MB8	last observation 1995	field work	summer	parkland	22/07/05
ME10	last observation 2001	field work	summer	parkland	22/07/05
ME8	last observation 1995	field work	summer	parkland	22/07/05
MI7	last observation 1999	field work	summer	private	no access
MV2	literature record 1994	field work	summer	parkland	12/10/05
NE9	last observation 2002	field work	summer	parkland	12/10/05
SD1	literature record 2003	field work	summer	parkland	29/07/05
SD7	last observation 1999; possibly planted	field work	summer	parkland	29/07/05
SV1	literature record 1976	field work	summer	parkland	22/07/05

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
SV12	literature record 1977	field work	summer	parkland/private	22/07/05
Confirmation and Adjustment of Communities/Inventory Based on Literature					
NE6	Environmental Impact Study; locate butternut (last observation 1996)	field work	summer flora	private	09/07/05
			locate butternut		27/10/05
LV5	Environmental Impact Study	field work	summer flora	private	25/10/05
EM4	Environmental Impact Study; locate butternut (last observation 1995)	field work	summer flora		19/10/05
			locate butternut		13/10/05
MV15	Ecological Constraints for Severance	field work	summer flora		no access
CL9	house development; locate butternut (literature record 1970)	road visit		private/parkland	22/07/05
CRR1	installation of pedestrian bridge; locate butternut (literature record 1979)	field work	summer flora	parkland	12/10/05
			locate butternut		12/10/05
MI17	house development	road visit	not applicaple	private	no access
EC13	Creditview Wetland Conservation Plan (Dougan & Associates 2004)	field work	perimeter walk		19/10/05

Appendix 4: Comparison of Natural Areas (1996 to 2005)

Appendix 4: Comparison of Natural Areas (1996 to 2005)

Comparison of changes within natural areas evaluated in 2005. All changes between 1996 and 2005 are shown for natural areas where changes occurred. Blank cells represent no change from the previous year. Abbreviations as follows: SNS = Significant Natural Site, NS = Natural Site, NGS = Natural Green Space, Increase = ↑, Decrease = ↓. Some of the increases or decreases are significant in the context of the natural areas program while others are considered minor. Native FQI and native mean coefficient as well as definitions for provincially and regionally significant species are defined in the Natural Areas Survey (Geomatics 1996). Condition is explained in the Natural Areas Survey (Geomatics 1996). Credit Valley Conservation (CVC) Species of Conservation Interest are discussed in North-South (2000).

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
29	LV5	96	NGS		1.09	2.69	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99			↓ 0.95	↓ 2.34													
		00																	
		01																	
		02																	
		04																	
		05	↑ NS		↑ 1.12	↑ 2.77	↑ 115	↑ 61 (53.04%)	↑ 22.46	↑ 3.06			↑ 8						
40	CRR7	96	SNS	ESA,ANSI	88.96	219.73	61	10 (13.10%)	33.89	4.75	3	1	8	0	0	9	0	0	Good
		98					↑ 74	↑ 18 (23.00%)	↑ 34.88	↓ 4.66			↑ 9						
		99					↑ 92	↑ 24 (26.00%)	↓ 34.68	↓ 4.21				↑ 4	↑ 1				
		00			↓ 88.94	↓ 219.69										↓ 6			
		01					↑93	↓ 23 (24.73%)	↑ 34.90	↓ 4.17			↑ 10	↑ 29	↑ 5	↑ 7		↑ 8	
		02																	
		04																	
		05			↑ 92.95	↑ 229.68	↑ 115	↑ 28 (24.35%)	↑ 41.13	↑ 4.44	↑ 5	↑ 2	↑ 18	↑ 41				↑ 12	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
41	CRR8	96	SNS	ESA,ANSI	110.62	273.23	43	3 (7.00%)	n/a	n/a	4	2	31	8	1	4	0	0	Good
		98		↑ ESA,ANSI,wetland															
		99																	
		00																	
		01					↑ 50					↓ 1	↓ 30	↑ 38	↑ 6	↑ 8		↑ 6	
		02																	
		04																	
		05			↑ 110.73	↑ 273.61	↑ 67	↑ 8 (11.94%)	↑ 39.71	↑ 5.17				↑ 48	↑ 8		↑ 1	↑ 14	Good - Fair
42	ER6	96	SNS		1.56	3.85	36	13 (36.1%)	16.26	3.39	1	1	0	1	0	0	0	0	Poor
		98																	
		99																	
		00	↓ NS		↓ 1.31	↓ 3.24	↑ 46	↑ 18 (39.13%)	↑ 18.33	↑ 3.46		↓ 0		↑ 5	↑ 1				
		01																	
		02																	
		04																	
		05	↑ SNS		↓ 1.29	↓ 3.19	↑ 59	↑ 26 (44.07%)	↑ 19.50	↓ 3.39		↑ 1		↑ 9				↑ 1	
44	CV1	96	NS		1.48	3.66	29	9 (31.0%)	13.86	3.10	1	0	0	5	1	0	0	0	Fair
		98																	
		99																	
		00			↑ 1.71	↑ 4.23	↑ 52	↑ 25 (48.08%)	↑ 14.05	↓ 2.7	↑ 2			↑ 6					
		01																	
		02																	
		04																	
		05			↓ 1.65	↓ 4.08	↑ 61	↑ 25 (40.98%)	↑ 17.50	↑ 2.92				↑ 11					

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
45	CV2	96	RW		53.17	131.33	143	43 (29.6%)	41.71	4.19	1	0	12	6	1	0	0	0	Fair
		98											↓ 10						
		99																	
		00			↓ 50.66	↓ 125.18		↓ 41 (28.67%)											
		01																	
		02																	
		04																	
		05			↓ 49.53	↓ 122.39		↑ 42 (29.37%)	↓ 41.29	↓ 4.11		↑ 1	↑ 10	↑ 17	↑ 4			↑ 3	
46	CV12	96	SNS		6.99	17.27	199	89 (44.2%)	37.19	3.55	3	1	13	2	1	0	0	0	Fair
		98	↓ NS				↑ 201					↓ 0	↑ 14						
		99																	
		00					↑ 213	↑ 92 (43.19%)	↑ 38.34	↓ 3.5			↑ 16	↑ 4					
		01																	
		02																	
		04																	
		05	↑ SNS		↑ 7.44	↑ 18.38	↑ 227	↑101 (44.49%)	↑ 39.73	↑ 3.54	↑ 4	↑ 1	↑ 17	↑ 17	↑ 2	↑ 1		↑ 3	
47	CV10	96	NS		4.59	11.34	20	9 (40.0%)	8.74	2.64	2	0	0	2	0	0	0	0	Poor
		98																	
		99																	
		00			↓ 4.26	↓ 10.53	↑ 51	↑ 22 (43.14%)	↑ 15.04	↑ 2.79			↑ 1	↑ 6	↑ 1				
		01																	
		02																	
		04																	
		05			↑ 5.05	↑ 12.48	↑ 85	↑ 37 (43.53%)	↑ 21.94	↑ 3.17			↑ 4	↑ 17	↑ 2			↑ 1	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
48	CV8	96	NS		7.87	19.44	39	18 (43.6%)	13.53	2.95	4	0	1	1	0	0	0	0	Poor
		98																	
		99																	
		00			↑ 8.04	↑ 19.85	↑ 60	↑ 25 (41.67%)	↑ 15.72	↓ 2.66			↑ 2	↑ 7	↑ 2				
		01																	
		02																	
		04																	
		05			↑ 8.09	↑ 19.99	↑ 86	↑ 37 (43.02%)	↑ 18.52	↓ 2.65	↑ 5		↑ 3	↑ 17	↑ 3			↑ 1	
49	ETO6	96	SNS		11.39	28.13	0	0	0	0	3	0	0	0	0	0	0	0	Poor
		98																	
		99																	
		00			↓ 9.52	↓ 23.52													
		01																	
		02																	
		04																	
		05			↑ 11.36	↑ 28.07	↑ 7	↑ 5 (71.43%)			↑ 4		↑ 1	↑ 18	↑ 1			↑ 2	
50	AW1	96	SNS		7.98	19.71	51	18 (35.0%)	18.45	3.21	3	1	1	5	1	0	0	0	Poor
		98	NS ↓									↓ 0							
		99																	
		00					↑ 75	↑ 28 (37.33%)	↑ 22.17	↑ 3.23			↑ 2	↑ 10					
		01																	
		02																	
		04																	
		05	↑ SNS		↓ 7.52	↓ 18.58	↑ 88	↑ 34 (38.64%)	↑ 25.23	↑ 3.43		↑ 1		↑ 21	↑ 2			↑ 2	↑ Fair

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
57	EM4	96	SNS	ESA,ANSI	46.82	115.65	225	61 (26.70%)	55.05	4.30	8	2	28	67	4	6	0	0	Good - Fair
		98					↑ 228					↓ 1	↑ 30						
		99			↓ 43.18	↓ 106.65	↑ 235	↑ 64 (27.20%)	↑ 56.28				↑ 31		↑ 5				
		00																	
		01			↓ 42.98	↓106.17		↓ 62 (26.38%)	↓ 55.96	↓ 4.25		↑ 2						↑ 2	
		02																	
		04					↑ 240	↑ 66 (27.50%)	↑ 56.25	↑ 4.26			↑ 32						
		05			↑ 42.99	↑ 106.22	↑ 251	↑ 75 (29.88%)	↓ 56.01	↓ 4.22									
61	FV1	96	NS		2.23	5.51	38	7 (18.5%)	18.50	3.32	1	0	0	0	0	0	0	0	Fair
		98					↑ 46	↑ 9 (19.6%)	↑ 20.55	↑ 3.38			↑ 1	↑ 2					
		99																	
		00			↓ 2.11	↓ 5.22	↑ 54	↑ 11 (20.37%)	↑ 22.72	↑ 3.47			↑ 2						
		01																	
		02																	
		04																	
		05			↓ 2.05	↓ 5.07	↑ 59	↑ 11 (18.64%)	↑ 23.82	↓ 3.44				↑ 8	↑ 1			↑ 1	
62	FV3	96	NS		7.00	17.29	50	15 (22.0%)	25.63	3.86	3	0	0	15	2	0	0	0	
		98					↑ 59	↑ 15 (23.7%)											
		99																	
		00			↓ 6.76	↓ 16.71	↑ 100	↑ 39 (39.00%)	↑ 27.69	↓ 3.52				↑ 16					
		01																	
		02																	
		04																	
		05			↓ 6.35	↓ 15.69	↑ 108	↑ 44 (40.74%)	↑ 28.50	↑ 3.56				↑ 19				↑ 2	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
63 / 64	CC1 / MY1	96	NS		15.33	37.87	129	43 (32.6%)	35.58	3.84	2	0	5	8	1	5	0	0	Fair
		98					↑ 130						↑ 7						
		99					↑ 133	↑ 44 (33.1%)	↑ 36.36	↑ 3.85				↑ 9		0**			
		00			↑ 16.62	↑ 41.08	↑ 145	↑ 49 (33.79%)	↑ 36.84	↓ 3.76			↑ 9	↑ 10					
		01																	
		02																	
		04																	
		05	↑ SNS		↑ 16.77	↑ 41.44	↑ 165	↑ 54 (32.73%)	↑ 40.03	↑ 3.82		↑ 1	↑ 11	↑ 18	↑ 3		↑ 1	↑ 3	
65	MY3	96	NGS		3.71	9.16	26	18 (69.2%)	6.01	2.13	1	0	0	0	0	0	0	0	Poor
		98																	
		99					↑ 41	↑ 27 (65.9%)	↑ 6.68	↓ 1.79			↑ 1						
		00																	
		01																	
		02																	
		04																	
		05			↓ 2.31	↓ 5.71	↑ 56	↑ 34 (60.71%)	↑ 11.09	↑ 2.36				↑ 12	↑ 1				
66	AW4	96	NGS		11.71	28.92	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99																	
		00	↑ NS				↑ 42	↑ 28 (66.67%)	↑ 8.29	↑ 2.21			↑ 2	↑ 3					
		01																	
		02																	
		04																	
		05			↓ 11.60	↓ 28.66	↑ 54	↑ 33 (61.11%)	↑ 11.85	↑ 2.65	↑ 2		↑ 3	↑ 12					

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
67	AW3	96	NGS		7.92	19.57	33	21 (60.6%)	0	0	2	0	0	4	1	0	0	0	Poor
		98																	
		99																	
		00					↑ 52	↑ 30 (57.69%)	↑ 13.22	↑ 2.82				↑ 8					
		01																	
		02																	
		04																	
		05	↑ NS		↑ 7.96	↑ 19.67	↑ 58	↑ 31 (53.45%)	↑ 14.90	↑ 2.92			↑ 1	↑ 18				↑ 2	
68	ETO5	96	SNS		9.12	22.56	0	0	0	0	2	0	0	0	0	0	0	0	Poor
		98																	
		99																	
		00					↑ 53	↑ 32 (60.38%)	↑ 10.91	↑ 2.38			↑ 2	↑ 8	↑ 1				
		01																	
		02																	
		04																	
		05			↓ 7.83	↓ 19.35	↑ 83	↑ 46 (55.42%)	↑ 16.36	↑ 2.76	↑ 6		↑ 5	↑ 16				↑ 3	Poor - Fair
69	ETO4	96	SNS	ESA	58.00	143.32	128	35 (26.6%)	42.31	4.39	3	0	14	23	2	9	0	0	Fair
		98					↑ 141	↑ 37 (26.2%)	↑ 43.93	4.31			↑ 15	↑ 24	↑ 3				
		99																	
		00						↓ 36 (25.53%)								↑ 5		↑ 2	
		01																	
		02																	
		04																	
		05			↓ 52.81	↓ 130.49	↑ 179	↑ 53 (29.61%)	↑ 45.36	↓ 4.09	↑ 4	↑ 1	↑ 18	↑ 41				↑ 9	Good - Fair

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
70	RW5	96	NS		3.51	8.68	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99					↑ 54	↑ 27 (50.0%)	↑ 13.66	2.63			↑ 2	↑ 7	↑ 1				
		00																	
		01																	
		02						↓ 26 (48.15%)	↓ 13.42	↓ 2.54									
		04																	
		05			↓ 2.39	↓ 5.91	↑ 75	↑ 37 (49.33%)	↑ 14.83	↓ 2.47			↑ 3	↑ 14				↑ 1	
71	RW6	96	NS		7.31	18.06	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99					↑ 51	↑ 29 (56.9%)	↑ 14.28	↑ 3.05			↑ 1	↑ 11	↑ 1				
		00																	
		01																	
		02						↓ 28 (54.90%)	↓ 13.97	↓ 2.91									
		04																	
		05			↓ 6.13	↓ 15.15	↑ 71	↑ 37 (52.11%)	↑ 14.61	↓ 2.67			↑ 2	↑ 23				↑ 5	
72	RW4	96	NS		1.08	2.67	33	7 (18.2%)	22.36	4.38	1	0	0	3	0	0	0	0	Fair
		98																	
		99			↑ 1.09	↑ 2.68	↓ 32												
		00					↑ 44	↓ 7 (15.91%)	↑ 24.99	↓ 4.11				↑ 7	↑ 1				
		01																	
		02																	
		04																	
		05			↑ 1.22	↑ 3.01	↑ 52	↑ 8 (15.38%)	↑ 27.14	↓ 4.09	↑ 2			↑ 8					

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
73	RW1	96	SNS		2.11	5.21	69	12 (17.4%)	34.04	4.51	1	0	3	0	1	0	0	0	Fair
		98																	
		99																	
		00																	
		01																	
		02																	
		04																	
		05	↓ NS				↑ 77	↑ 18 (23.38%)	↑ 34.11	↓ 4.44				↑ 1					Fair - Poor
74	RW2	96	NGS		3.50	8.64	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99																	
		00			↑ 3.90	↑ 9.63	↑ 34	↑ 20 (58.82%)	↑ 9.89	↑ 2.64				↑ 4					
		01																	
		02																	
		04																	
		05	↑ NS		↓ 3.84	↓ 9.49	↑ 57	↑ 31 (54.39%)	↑ 16.67	↑ 3.27				↑ 15	↑ 1			↑ 2	↑ Fair
104	NE4	96	NS		13.43	33.17	95	22 (23.0%)	33.04	3.79	5	0	8	5	0	0	0	0	Excellent
		98					↑ 96						↑ 9						
		99																	
		00					↑ 106	↓ 19 (17.92%)	↑ 34.31	↓ 3.68				↑ 8					
		01																	
		02																	
		04																	
		05			↓ 13.15	↓ 32.49	↑ 134	↑ 27 (20.15%)	↑ 39.15	↑ 3.79			↑ 16	↑ 24				↑ 4	↓ Good

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
105	NE3	96	NGS		2.59	6.4	29	11 (34.5%)	0	0	2	0	0	0	0	0	0	0	Poor
		98																	
		99																	
		00						↓ 10 (34.48%)											
		01																	
		02																	
		04																	
		05	↑ NS		↑ 2.85	↑ 7.04	↑ 59	↑ 26 (44.07%)	↑ 12.19	↑ 2.12				↑ 15	↑ 2			↑ 3	
107	NE1	96	NGS		0.95	2.35	54	26 (48.1%)	14.93	2.82	1	0	0	3	0	0	0	0	Fair
		98																	
		99																	
		00					↑ 62	26 (41.94%)	↑ 17	↑ 2.83				↑ 4					
		01																	
		02																	
		04																	
		05	↑ NS		↑ 1.07	↑ 2.64	↑ 70	↑ 27 (38.57%)	↑ 20.28	↑ 3.09			↑ 2	↑ 7	↑ 1			↑ 2	
108	NE6	96	NS		4.34	10.72	40	10 (25.0%)	20.27	3.70	2	0	0	0	0	0	0	0	Good
		98					↑ 60	↑ 16 (26.7%)	↑ 24.27	↑ 3.66			↑ 1	↑ 4	↑ 1				
		99																	
		00																	
		01																	
		02			↓ 4.00	↓ 9.87		↓ 15 (25.00%)	↓ 24.00	↓ 3.58									
		04																	
		05	↑ SNS		↓ 1.64	↓ 4.05	↑ 91	↑ 28 (30.77%)	↑ 26.96	↓ 3.40	↓ 1	↑ 1	↑ 2	↑ 13	↑ 3				

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
109	NE5	96	NGS		13.29	32.83	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98			↓ 12.75	↓ 31.50													
		99																	
		00																	
		01																	
		02			↓ 12.20	↓ 30.14	↑ 17	↑ 11 (64.71%)						↑ 1					
		04																	
		05	↑ NS		↑ 12.58	↑ 31.08	↑ 30	↑ 20 (66.67%)						↑ 14				↑ 4	
137	CRR1	96	SNS	ESA,ANSI	71.40	176.36	41	12 (26.80%)	n/a	n/a	5	0	2	2	2	1	0	0	Fair
		98		↓ESA			↑ 76	↑ 23 (30.26%)	26.65	3.66			↑ 4	↑ 6					
		99																	
		00																	
		01							↓ 25.55	↓ 3.51				↑ 29	↑ 4	↑7		↑4	
		02					↑ 249	↑ 82 (32.93%)	↑ 48.66	↑ 3.77			↑ 37						
		04		↑ ESA, wetland	↓ 69.82	↓ 172.52	↑ 252		↑ 49.07	↓ 3.76	↑ 10	↑ 1			↑ 5				
		05			↓ 69.83	↓ 172.55	↑ 266	↑ 89 (33.46%)	↑ 49.97				↑ 38	↑ 50	↑ 7	↑ 8			
153	CV6	96																	
		98																	
		99																	
		00	NS		2.71	6.69	57	13 (22.81%)	20.8	3.14	1	0	1	2	1	0	0	0	Fair
		01																	
		02																	
		04																	
		05					↑ 75	↑ 16 (21.33%)	↑ 26.17	↑ 3.41			↑ 3	↑ 11				↑ 2	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
156	ER7	96																	
		98																	
		99																	
		00																	
		01	NS		3.15	7.78	50	17 (34.00%)	16.54	2.88	3	0	2	2	1	0	0	0	Poor
		02																	
		04																	
		05					↑ 77	↑ 29 (37.66%)	↑ 21.00	↑ 3.06			↑ 4	↑ 13				↑ 1	

Appendix 5: Comparison of Classifications (1996 to 2005)

Appendix 5: Comparison of Natural Area Classifications (1996 to 2005) *

Comparison Categories	Year	Classification				
		Significant Natural Site (SNS)	Natural Site (NS)	Natural Green Space (NGS)	Residential Woodland (RW)	TOTAL
Number of Sites	1996	51	59	31	3	144
	1998	45	64	31	3	143
	1999	46	68	28	3	145
	2000	45	70	27	3	145
	2001	47	67	26	3	143
	2002	47	66	24	3	140
	2004	62	53	21	3	139
	2005	61	61	14	3	139
Total Area (ha)	1996	1530.17	349.92	197.05	252	2329.14
	1998	1423.39	426.35	171.55	252	2273.29
	1999	1425.44	445.66	160.18	239.93	2271.21
	2000	1416.56	456.57	148.86	237.42	2259.41
	2001	1413.16	433.64	145.89	237.42	2230.11
	2002	1388.21	428.56	133.63	237.42	2182.82
	2004	1552.40	267.64	123.15	238.25	2181.44
	2005	1548.29	299.69	90.31	237.13	2175.42
Proportion of Natural Areas System	1996	74%	17%	9%	-	100%
	1998	70%	21%	9%	-	100%
	1999	70%	22%	8%	-	100%
	2000	70%	23%	7%	-	100%
	2001	71%	22%	7%	-	100%
	2002	71%	22%	7%	-	100%
	2004	80%	14%	6%	-	100%
	2005	80%	15%	5%	-	100%
Proportion of the City	1996	5.23%	1.2%	0.67%	-	7.10%
	1998	4.91%	1.41%	0.60%	-	6.92%
	1999	4.87%	1.52%	0.55%	-	6.94%
	2000	4.84%	1.56%	0.51%	-	6.91%
	2001	4.83%	1.48%	0.50%	-	6.81%
	2002	4.73%	1.46%	0.46%	-	6.65%
	2004	5.30%	0.91%	0.42%	-	6.63%
	2005	5.29%	1.02%	0.31%	-	6.62%

*Note: Residential Woodlands were not used in the calculations for proportion of natural areas system or proportion of the City.

Appendix 6: Comparison of Major Landform Types (1996 to 2005)

Appendix 6: Comparison of Major Landform Types (1996 and 2005)*

Comparison Categories	Year	Landform Type			
		valleylands and associated tablelands	tablelands	wetlands and associated valleylands	TOTAL
Number of Sites	1996	73	60	6	139
	1998	73	59	6	138
	1999	76	58	6	140
	2000	76	58	6	140
	2001	79	53	6	138
	2002	78	52	5	135
	2004	77	52	5	134
	2005	77	52	5	134
Total Area (ha)	1996	1626.3	339.9	103.7	2069.9
	1998	1588.0	328.5	100.4	2016.9
	1999	1622.1	301.6	100.3	2024
	2000	1594.8	319.7	100.3	2014.7
	2001	1593.9	291.2	100.3	1985.4
	2002	1555.3	285.2	97.7	1938.1
	2004	1554.8	285.1	96.0	1935.9
	2005	1550.08	284.98	95.97	1931.03
Mean Size (ha)	1996	22.3	5.7	17.3	-
	1998	21.8	5.6	16.7	-
	1999	21.3	5.2	16.7	-
	2000	20.2	5.3	16.7	-
	2001	19.4	5.3	16.7	-
	2002	19.2	5.4	19.5	-
	2004	19.4	5.4	19.2	-
	2005	19.4	5.4	19.2	-
Proportion of Natural Areas System	1996	78.3%	16.4%	5.0%	99.7%
	1998	78.5%	16.2%	5.0%	99.7%
	1999	79.9%	14.8%	4.9%	99.7%
	2000	79.1%	15.8%	4.9%	99.8%
	2001	80.3%	14.7%	5.0%	100%
	2002	80.3%	14.7%	5.0%	100%
	2004	80.3%	14.7%	5.0%	100%
	2005	80.3%	14.7%	5.0%	100%

Appendix 6: continued.....

Comparison Categories	Year	Landform Type			
		valleylands and associated tablelands	tablelands	wetlands and associated valleylands	TOTAL
Proportion of the City		5.60%	1.16%	0.36%	7.1%
	1998	5.43%	1.12%	0.34%	6.9%
	1999	5.55%	1.03%	0.34%	6.92%
	2000	5.45%	1.09%	0.34%	6.88%
	2001	5.45%	0.99%	0.34%	6.78%
	2002	5.31%	0.97%	0.33%	6.62%
	2004	5.31%	0.97%	0.33%	6.61%
	2005	5.30%	0.97%	0.33%	6.60%

*Note: two small areas that did not readily fall into these three categories and the residential woodlands were omitted from this analysis so figures differ slightly from those provided elsewhere in the report.

Appendix 7: Comparison of Community Size (1996 to 2005)

Appendix 7: Comparison of Community Size (1996 to 2005).

A comparison of the area (in hectares) of vegetation communities mapped for the City of Mississauga from 1996 to 2005 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Geomatics (1996). See North-South (2000), Appendix 5, for a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	# Occurrences								Area (hectares)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
	Valleylands																
A	wooded slope	19	20	20	20	22	22	22	21	347.36	348.54	348.72	340.69	347.85	341.65	335.38	328.13
B	floodplain	22	21	21	21	23	23	23	24	458.42	426.21	426.10	426.10	426.32	393.50	390.48	387.52
G	golf course	4	4	4	4	4	4	4	4	101.18	101.19	101.19	101.13	101.13	99.73	99.73	99.30
J	wooded non-native valleylands	18	18	20	20	22	22	24	27	93.43	94.36	100.27	100.22	109.09	109.09	115.56	119.76
K	open with open slopes valleylands	31	32	33	33	33	33	33	33	229.02	210.58	217.50	217.62	215.34	197.49	196.47	192.81
L	wooded native valleylands	5	5	5	5	5	5	5	5	39.77	39.78	39.64	39.64	38.64	38.64	33.49	33.32
M	open with wooded slopes valleylands	2	2	2	2	1	1	1	0	5.26	5.25	5.25	5.25	0.82	0.82	0.82	0.00
N	open with manicured slopes valleylands	2	2	3	2	2	2	2	2	22.16	22.15	22.15	22.15	22.15	22.15	22.15	16.65
O	manicured with wooded slopes valleylands	1	1	1	1	0	0	0	0	5.17	5.17	5.17	5.17	0.00	0.00	0.00	0.00
	Totals									***1301.77***	***1253.23***	***1265.99***	***1257.98***	***1261.35***	***1203.0***	***1194.08***	***1177.48***
	Woodlands																
BB	red ash-American elm forest	14	15	15	15	16	16	18	18	35.32	35.61	37.35	37.16	36.40	36.40	48.14	47.83
CC	sugar maple forest	7	7	7	7	7	7	7	7	14.79	13.12	13.12	13.12	13.12	11.62	11.62	11.15
DD	sugar maple-American beech forest	15	16	16	17	16	16	16	16	108.35	102.44	100.07	100.07	95.15	97.23	93.06	93.08
EE	sugar maple-white ash forest	9	9	9	9	9	9	9	9	63.06	62.18	62.18	61.73	61.27	61.20	61.07	62.36
FF	sugar maple-red oak forest	10	10	10	9	9	9	10	10	42.48	44.96	44.96	43.12	42.76	42.70	43.44	43.45
GG	sugar maple-eastern hemlock forest	1	1	1	1	1	1	1	1	16.03	16.07	16.07	16.07	15.97	15.97	15.97	15.97
II	sugar maple-black cherry forest	1	1	1	1	1	1	1	1	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94
KK	sugar maple-American beech-red oak forest	5	5	5	5	5	5	5	5	29.46	29.46	29.46	29.46	29.46	28.92	28.92	28.80
LL	sugar maple-American beech-eastern hemlock forest	1	1	1	1	1	1	1	1	4.44	4.45	4.44	4.45	4.45	4.45	4.45	4.45

Code	Vegetation Community	# Occurrences								Area (hectares)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
MM	white pine-eastern hemlock-sugar maple forest	1	1	1	1	1	1	1	1	6.77	6.77	5.69	5.69	5.69	5.69	5.69	5.69
NN	eastern hemlock forest	3	3	3	3	3	4	4	4	4.09	4.11	4.11	4.11	4.11	5.20	5.20	5.20
OO	red maple-red oak forest	5	6	6	6	6	6	6	6	30.24	30.24	30.42	30.42	30.42	30.42	29.89	29.89
PP	American beech forest	1	1	1	1	1	1	1	1	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
QQ	bur oak-American beech forest	1	1	1	1	0	0	0	0	2.24	2.24	2.24	2.24	0.00	0.00	0.00	0.00
RR	oak-ash forest	8	9	9	10	10	9	9	9	28.61	28.57	24.75	27.34	27.34	24.23	23.94	23.88
SS	oak-hickory forest	5	7	7	7	7	8	8	8	24.20	23.56	23.55	23.31	22.58	27.22	26.92	26.65
TT	ash-hickory forest	3	3	3	3	3	3	4	4	6.94	6.68	6.68	6.68	6.21	6.21	8.88	8.88
VV	black cherry-eastern hemlock-white ash forest	1	1	1	1	1	1	1	1	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.03
WW	bur oak-black walnut forest	1	1	1	1	0	0	0	0	0.90	0.90	0.90	0.90	0.00	0.00	0.00	0.00
ZZ	oak-white pine forest	0	0	2	2	2	2	2	2	0	0	2.35	2.35	2.35	2.35	2.35	2.35
	Totals									***424.43***	***417.89***	***414.87***	***414.73***	***403.81***	***406.32***	***416.07***	***416.17***
	Successional																
C	old field	26	27	27	27	32	36	40	41	88.45	95.33	95.33	95.30	97.75	109.12	116.24	113.09
D	hedgerow	5	5	4	4	4	4	4	4	7.68	7.01	6.95	6.95	5.46	5.46	5.46	5.46
E	early successional forest	9	10	10	10	7	9	12	16	21.68	14.66	14.66	12.82	7.68	11.12	24.33	33.18
P	hawthorn thicket	4	4	4	4	4	5	5	4	14.54	14.35	14.35	14.35	14.35	14.57	14.36	13.80
XX	birch forest	1	1	1	1	1	1	1	1	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
YY	poplar forest	1	2	2	2	2	2	4	4	2.37	1.69	1.69	1.69	1.69	1.69	3.11	3.11
	Totals									***135.18***	***133.5***	***133.44***	***131.56***	***127.39***	***142.41***	***163.96***	***169.10***
	Wetland																
V	cattail marsh	13	14	14	14	15	16	16	17	27.73	26.99	26.99	26.99	27.07	27.21	27.10	26.18
W	open water marsh	6	6	6	6	7	7	8	8	22.70	22.70	22.70	22.70	22.56	22.56	21.29	21.29
X	willow-buttonbush swamp thicket	1	1	1	1	1	1	1	1	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
Y	wet meadow	1	3	3	3	3	4	5	5	3.43	3.72	3.72	3.72	3.72	4.23	10.91	10.91
Z	willow-ash forest	2	2	2	2	2	2	3	3	0.55	0.56	0.56	0.56	0.56	0.56	1.15	1.15
AA	silver maple forest	5	5	5	5	3	3	3	3	18.59	18.14	18.14	17.58	7.24	7.24	7.24	7.24
	Totals									***75.77***	***74.88***	***74.88***	***74.32***	***63.92***	***64.56***	***70.45***	***69.54***

Code	Vegetation Community	# Occurrences								Area (hectares)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
	Anthropogenic																
F	manicured	11	11	11	12	13	12	16	18	72.41	75.16	75.16	76.28	72.99	61.25	58.52	65.67
H	urban lake	2	2	2	2	2	2	2	2	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26
I	wooded residential	3	3	3	3	3	3	3	3	251.59	251.59	239.93	237.43	237.43	237.43	238.26	237.13
T	plantation	11	11	11	13	12	13	14	15	21.58	21.57	21.60	21.73	20.80	20.92	22.67	22.80
UU	black walnut grove	1	1	1	1	1	1	1	1	0.17	0.17	0.17	0.17	0.17	0.17	0.08	0.08
	Totals									***353.01***	***355.75***	***344.12***	***342.87***	***338.65***	***327.03***	***326.79***	***333.02***
	Other																
R	beach	3	3	4	4	4	4	6	6	2.36	1.96	2.18	2.18	2.18	2.18	2.72	2.72
S	tall grass prairie	1	1	1	1	1	1	1	1	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
U	unknown	5	3	3	3	3	3	1	1	35.65	35.64	35.68	35.68	35.68	35.68	7.33	7.33
	Totals									***38.07***	***37.66***	***37.92***	***37.92***	***37.91***	***37.91***	***10.11***	***10.11***

Appendix 8: Comparison of Community Proportion (1996 to 2005)

Appendix 8: Comparison of Community Proportion (1996 to 2005)

A comparison of the proportion of the vegetation communities within the Natural Areas System and the City of Mississauga from 1996 to 2005 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Geomatics (1996). North-South (2000) Appendix 5 shows a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	Proportion of Natural Areas (%)								Proportion of City Area (%)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
	Valleylands																
A	wooded slope	14.92	15.33	15.4	15.08	15.40	15.12	14.84	15.08	1.19	15.33	15.35	1.16	1.19	1.17	1.15	1.12
B	floodplain	19.69	18.75	18.8	18.86	18.87	17.42	17.28	17.81	1.57	18.75	18.76	1.46	1.46	1.34	1.33	1.32
G	golf course	4.35	4.45	4.45	4.48	4.48	4.41	4.41	4.56	0.35	4.45	4.45	0.35	0.35	0.34	0.34	0.34
J	wooded non-native valleylands	4.01	4.15	4.42	4.44	4.83	4.83	5.11	5.50	0.32	4.15	4.42	0.34	0.37	0.37	0.39	0.41
K	open with open slopes valleylands	9.84	9.26	9.58	9.63	9.53	8.74	8.70	8.86	0.78	9.26	9.58	0.74	0.74	0.67	0.67	0.66
L	wooded native valleylands	1.71	1.75	1.75	1.75	1.71	1.71	1.48	1.53	0.14	1.75	1.75	0.14	0.13	0.13	0.11	0.11
M	open with wooded slopes valleylands	0.23	0.23	0.23	0.23	0.04	0.04	0.04	0.00	0.02	0.23	0.23	0.02	0.00	0.00	0.00	0.00
N	open with manicured slopes valleylands	0.95	0.97	0.97	0.98	0.98	0.98	0.98	0.77	0.08	0.97	0.97	0.08	0.08	0.08	0.08	0.06
O	manicured with wooded slopes valleylands	0.22	0.23	0.23	0.23	0.00	0.00	0.00	0.00	0.02	0.23	0.23	0.02	0.00	0.00	0.00	0.00
	Totals	***55.92***	***55.12***	***55.74***	***55.68***	***55.83***	***53.25***	***52.93***	***54.13***	***4.47***	***55.12***	***55.74***	***4.30***	***4.31***	***4.11***	***4.08***	***4.02***
	Woodlands																
BB	red ash-American elm forest	1.52	1.57	1.64	1.64	1.61	1.61	2.13	2.20	0.12	1.57	1.64	0.13	0.12	0.12	0.16	0.16
CC	sugar maple forest	0.64	0.58	0.58	0.58	0.58	0.51	0.51	0.51	0.05	0.58	0.58	0.04	0.04	0.04	0.04	0.04
DD	sugar maple-American beech forest	4.65	4.51	4.41	4.43	4.21	4.30	4.12	4.28	0.37	4.51	4.41	0.34	0.33	0.33	0.32	0.32
EE	sugar maple-white ash forest	2.71	2.74	2.74	2.73	2.71	2.71	2.70	2.87	0.22	2.74	2.74	0.21	0.21	0.21	0.21	0.21
FF	sugar maple-red oak forest	1.82	1.98	1.98	1.91	1.89	1.89	1.92	2.00	0.15	1.98	1.98	0.15	0.15	0.15	0.15	0.15
GG	sugar maple-eastern hemlock forest	0.69	0.71	0.71	0.71	0.71	0.71	0.71	0.73	0.05	0.71	0.71	0.05	0.05	0.05	0.05	0.05
II	sugar maple-black cherry forest	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.01	0.08	0.08	0.01	0.01	0.01	0.01	0.01
KK	sugar maple-American beech-red oak forest	1.27	1.30	1.30	1.30	1.30	1.28	1.28	1.32	0.10	1.30	1.30	0.10	0.10	0.10	0.10	0.10

Code	Vegetation Community	Proportion of Natural Areas (%)								Proportion of City Area (%)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
LL	sugar maple-American beech-eastern hemlock forest	0.19	0.20	0.19	0.20	0.20	0.20	0.20	0.20	0.02	0.20	0.19	0.02	0.02	0.02	0.02	0.02
MM	white pine-eastern hemlock-sugar maple forest	0.29	0.30	0.25	0.25	0.25	0.25	0.25	0.26	0.02	0.30	0.25	0.02	0.02	0.02	0.02	0.02
NN	eastern hemlock forest	0.18	0.18	0.18	0.18	0.18	0.23	0.23	0.24	0.01	0.18	0.18	0.01	0.01	0.02	0.02	0.02
OO	red maple-red oak forest	1.30	1.33	1.33	1.35	1.35	1.35	1.32	1.37	0.10	1.33	1.33	0.10	0.10	0.10	0.10	0.10
PP	American beech forest	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.01	0.11	0.11	0.01	0.01	0.01	0.01	0.01
QQ	bur oak-American beech forest	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.01	0.10	0.10	0.01	0.00	0.00	0.00	0.00
RR	oak-ash forest	1.23	1.26	1.09	1.21	1.21	1.07	1.06	1.10	0.10	1.26	1.09	0.09	0.09	0.08	0.08	0.08
SS	oak-hickory forest	1.04	1.04	1.04	1.03	1.00	1.20	1.19	1.23	0.08	1.04	1.04	0.08	0.08	0.09	0.09	0.09
TT	ash-hickory forest	0.30	0.29	0.29	0.30	0.27	0.27	0.39	0.41	0.02	0.29	0.29	0.02	0.02	0.02	0.03	0.03
VV	black cherry-eastern hemlock-white ash forest	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.01	0.09	0.09	0.01	0.01	0.01	0.01	0.01
WW	bur oak-black walnut forest	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00
ZZ	oak-white pine forest	0.00	0.00	0.1	0.10	0.10	0.10	0.10	0.11	0.00	0.00	0.1	0.01	0.01	0.01	0.01	0.01
	Totals	***18.25***	***18.41***	***18.25***	***18.36***	***17.87***	***17.98***	***18.42***	***19.13***	***1.45***	***18.41***	***18.25***	***1.42***	***1.38***	***1.39***	***1.42***	***1.42***
	Successional																
C	old field	3.80	4.19	4.19	4.22	4.33	4.83	5.14	5.20	0.30	0.33	0.33	0.33	0.33	0.37	0.40	0.39
D	hedgerow	0.33	0.31	0.31	0.31	0.24	0.24	0.24	0.25	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
E	early successional forest	0.93	0.65	0.65	0.57	0.34	0.49	1.08	1.53	0.07	0.05	0.05	0.04	0.03	0.04	0.08	0.11
P	hawthorn thicket	0.62	0.63	0.63	0.64	0.64	0.64	0.64	0.63	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
XX	birch forest	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YY	poplar forest	0.10	0.07	0.07	0.07	0.07	0.07	0.14	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Totals	***5.8***	***5.87***	***5.87***	***5.82***	***5.64***	***6.30***	***7.26***	***7.77***	***0.46***	***0.46***	***0.46***	***0.46***	***0.44***	***0.49***	***0.56***	***0.58***

Code	Vegetation Community	Proportion of Natural Areas (%)								Proportion of City Area (%)							
		1996	1998	1999	2000	2001	2002	2004	2005	1996	1998	1999	2000	2001	2002	2004	2005
	Wetland																
V	cattail marsh	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
W	open water marsh	0.97	1.00	1.00	1.00	1.00	1.00	0.94	0.98	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07
X	willow-buttonbush swamp thicket	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Y	wet meadow	0.15	0.16	0.16	0.16	0.16	0.19	0.48	0.50	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.04
Z	willow-ash forest	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	silver maple forest	0.80	0.80	0.80	0.78	0.32	0.32	0.32	0.33	0.06	0.06	0.06	0.06	0.02	0.02	0.02	0.02
	Totals	***3.25***	***3.29***	***3.29***	***3.29***	***2.83***	***2.86***	***3.12***	***3.20***	***0.25***	***0.25***	***0.25***	***0.25***	***0.22***	***0.22***	***0.24***	***0.24***
	Anthropogenic																
F	manicured	3.11	3.31	3.31	3.38	3.23	2.71	2.59	3.02	0.25	0.26	0.26	0.26	0.25	0.21	0.20	0.22
H	urban lake	0.31	0.32	0.32	0.32	0.32	0.32	0.32	0.33	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
I	wooded residential	10.81	11.07	10.56	10.51	10.51	10.51	10.55	10.90	0.86	0.86	0.82	0.81	0.81	0.81	0.81	0.81
T	plantation	0.93	0.95	0.95	0.96	0.92	0.93	1.00	1.05	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
UU	black walnut grove	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Totals	***15.17***	***15.66***	***15.15***	***15.18***	***14.99***	***14.47***	***14.46***	***15.31***	***1.2***	***1.21***	***1.17***	***1.17***	***1.16***	***1.12***	***1.12***	***1.14***
	Other																
R	beach	0.10	0.09	0.10	0.10	0.10	0.10	0.12	0.13	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
S	tall grass prairie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U	unknown	1.53	1.57	1.57	1.57	1.58	1.58	0.32	0.34	0.12	0.12	0.12	0.12	0.12	0.12	0.03	0.03
	Totals	*1.63*	*1.66*	*1.67*	*1.67*	*1.68*	*1.68*	*0.45*	*0.46*	*0.13*	*0.13*	*0.13*	*0.13*	*0.13*	*0.13*	0.03	*0.03*

Appendix 9: Butternut Survey Summary

Appendix 9. Butternut Survey Summary

Site	Results of 2005 Survey	Last Recorded Observation Prior to 2005 Survey
AW1	located in good condition	NAS database 2000
CC1/MY1	not located MJ 28/09/05	NAS database 1980
CE12/SV12	not located MJ 22/07/05	duToit Associates Limited and Ecoplans Limited (1977)
CE7	not located MJ 22/07/05	City of Mississauga (1976)
CL16	60cm, 50 cm, 45cm, 15cm dbh infected with canker; 80cm dbh almost dead	NAS database 1998, HBT AGRA Limited (1993)
CL24	not located MJ 29/07/05	NAS database 1999
CL26	not located MJ 29/07/05	NAS database 1995
CL31	not located MJ 29/07/05; planted?	NAS database 2004
CL52	not located MJ 29/07/05; planted?	NAS database 1995
CL9	not located MJ 22/07/05	Macdonald (1970)
CRR1	35cm; 25cm; 35cm; 25cm; 15cm; all infected with canker	Ecologistics Limited (1979)
CRR10	not located MJ 13/10/05; located on Zaichuk terrace in 2001; recheck after garden park construction complete	NAS database 2001
CRR3	not located MJ 13/10/05	NAS database 1998
CRR5	no access in 2005	City of Mississauga (1976)
CRR6	not located MJ 13/10/05	NAS database 1998
CRR7	located in good condition	newly documented during 2005 update survey
CV12	15cm dbh in good condition	Gore & Storrie Limited and R.E. Winter and Associates Limited (1994)
CV2	no access in 2005	NAS database 1995
EM14	not located MJ 22/07/05	NAS database 1995
EM2	not located MJ 22/07/05	NAS database 1995
EM4	not located MJ 13/10/05	NAS database 1995
ER6	not located MJ 19/10/05	NAS database 2000
ETO3	no access in 2005	Weber (1980)
ETO4	located in good condition	NAS database 1995
HO9	not located MJ 12/10/05	NAS database 1978
LV1	30cm, 10 cm dbh infected with canker	NAS database 1995

Site	Results of 2005 Survey	Last Recorded Observation Prior to 2005 Survey
LV7	not located MJ 13/10/05	NAS database 1999
MB8/ME8	not located MJ 22/07/05	NAS database 1995
ME10	not located MJ 22/07/05	MJ 25/07/01, MJ/CZ 15/06/95
MI7	no access in 2005	NAS database 1999
MV2	not located MJ 12/10/05	Gartner Lee Limited (1994)
NE6	3 healthy trees to remain after development in 2005 (Gartner Lee Limited 2004)	NAS database 1995
NE9	2 dead trees possibly butternut	NAS database 2002
SD1	not located MJ 29/07/05	Dougan & Associates (2003)
SD7	45cm dbh infected with canker	NAS database 1999
SV1	not located MJ 22/07/05	City of Mississauga (1976)

Appendix 10: Updated CVC Species of Conservation Interest

Appendix 10: Updated CVC Species of Conservation Interest.

Updated list of Credit River Watershed birds of conservation interest documented for the City of Mississauga including migrant and wintering species listed alphabetically by common name. An asterix indicates an historical record. Rarity status follows (NHIC 2005). Rarity ranks are defined in Appendix 4 of the Natural Areas Survey (Geomatics 1996).

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
Acadian flycatcher	Empidonax virescens	G5	S2B,SZN	END	END	migrant	CL9
alder flycatcher	Empidonax alnorum	G5	S5B,SZN			possible	CRR10
American bittern	Botaurus lentiginosus	G4	S4B,SZN			possible	CRR9
American black duck	Anas rubripes	G5	S5B,SZN			possible	ETO8
American coot	Fulica americana	G5	S4B,SZN	NAR	NAR	migrant	CL9
American redstart	Setophaga ruticilla	G5	S5B,SZN			probable	CL16, CRR6
bank swallow	Riparia riparia	G5	S5B,SZN			possible	CRR8, ETO4
barn swallow	Hirundo rustica	G5	S5B,SZN			possible	CL9, Credit River, MV2, CL52, ETO4, ETO5, MV2, NE5, RW5, RW6
barred owl	Strix varia	G5	S4S5			migrant	CL9
belted kingfisher	Ceryle alcyon	G5	S5B,SZN			probable	CL9, Credit River, MV2, ETO4, ETO5
black tern	Chlidonias niger	G4	S3B,SZN	NAR	SC	migrant	CL9
black-and-white warbler	Mniotilta varia	G5	S5B,SZN			migrant	8 sites
blackburnian warbler	Dendroica fusca	G5	S5B,SZN			migrant	5 sites
black-crowned night-heron	Nycticorax nycticorax	G5	S3B,SZN			probable	Credit River, Etobicoke Creek
black-throated blue warbler	Dendroica caerulescens	G5	S5B,SZN			migrant	5 sites
black-throated green warbler	Dendroica virens	G5	S5B,SZN			migrant	6 sites
blue-gray gnatcatcher	Polioptila caerulea	G5	S4B,SZN			migrant	3 sites
blue-winged warbler	Vermivora pinus	G5	S4B,SZN			migrant	CL9
bobolink	Dolichonyx oryzivorus	G5	S4B,SZN			probable	CRR2, EC13, MV2
broad-winged hawk	Buteo platypterus	G5	S5B,SZN			migrant	CL9
brown creeper	Certhia americana	G5	S5B,SZN			probable	LV7

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
brown thrasher	Toxostoma rufum	G5	S5B,SZN			probable	CL16, CRR10, EC13, SD4
Canada warbler	Wilsonia canadensis	G5	S5B,SZN			possible	CL8, CRR3
Carolina wren	Thryothorus ludovicianus	G5	S3S4			possible	CL9, Credit River, LV3, MI7, SD1
Caspian tern	Sterna caspia	G5	S3B,SZN	NAR	NAR	migrant	CL9, PC1
chestnut-sided warbler	Dendroica pensylvanica	G5	S5B,SZN			possible	CL39
chimney swift	Chaetura pelagica	G5	S5B,SZN			possible	AW3, CL42, Credit River, Etobicoke Creek, LV7, SP3
clay-colored sparrow	Spizella pallida	G5	S4B,SZN			probable	EC13
cliff swallow	Petrochelidon pyrrhonota	G5	S5B,SZN			possible	CRR10, CRR2, ETO4, RW6
common grackle	Quiscalus quiscula	G5	S5B,SZN			probable	city wide
common merganser	Mergus merganser	G5	S5B,SZN			possible	CRR8
common moorhen	Gallinula chloropus	G5	S4B,SZN			migrant	CL9
common nighthawk	Chordeiles minor	G5	S4B,SZN			possible	SD1
common snipe	Gallinago gallinago	G5	S5B,SZN			migrant	EC13
common tern	Sterna hirundo	G5	S4B,SZN	NAR	NAR	migrant	Lake Ontario shoreline
Connecticut warbler	Oporornis agilis	G4	S4B,SZN			migrant	CL9
Coopers hawk	Accipiter cooperii	G5	S4B,SZN	NAR	NAR	probable	ETO4, SD1
dark-eyed junco	Junco hyemalis	G5	S5B,SZN			wintering	11 sites
eastern kingbird	Tyrannus tyrannus	G5	S5B,SZN			probable	12 sites, Credit River
eastern meadowlark	Sturnella magna	G5	S5B,SZN			probable	CRR2, EC13
eastern towhee	Pipilo erythrophthalmus	G5	S4B,SZN			possible	CRR1, EC13
eastern wood-pewee	Contopus virens	G5	S5B,SZN			possible	9 sites, Credit River
evening grosbeak	Coccothraustes vespertinus	G5	S5B,SZN			migrant	MI1, CL9
gadwall	Anas strepera	G5	S4B,SZN			migrant	Lake Ontario shoreline
golden-crowned kinglet	Regulus satrapa	G5	S5B,SZN			migrant	7 sites
golden-winged warbler	Vermivora chrysoptera	G4	S4B,SZN			migrant	CL9, CRR10
grasshopper sparrow	Ammodramus savannarum	G5	S4B,SZN			confirmed	ETO3

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
gray catbird	Dumetella carolinensis	G5	S5B,SZN			probable	city wide
great blue heron	Ardea herodias	G5	S5B,SZN			possible	CRR10
green-winged teal	Anas crecca	G5	S4B,SZN			probable	EC13
hairy woodpecker	Picoides villosus	G5	S5			probable	CL9, Credit River, LV3, LV7
herring gull	Larus argentatus	G5	S5B,SZN			probable	CL9
hooded merganser	Lophodytes cucullatus	G5	S5B,SZN			possible	Lake Ontario shoreline
horned lark	Eremophila alpestris	G5	S5B,SZN			probable	EC13, MV2
killdeer	Charadrius vociferus	G5	S5B,SZN			probable	AW1, CL9, CRR10, CRR6, CRR8, EC13, ETO4, MV2, NE3, NE5, SP1
least bittern	Ixobrychus exilis	G5	S3B,SZN	THR	THR	migrant	CL9
least flycatcher	Empidonax minimus	G5	S5B,SZN			possible	CRR10, CRR2, CRR9
loggerhead shrike	Lanius ludovicianus	G5	S2B,SZN	END	END	migrant	CL9
magnolia warbler	Dendroica magnolia	G5	S5B,SZN			possible	CRR10
marsh wren	Cistothorus palustris	G5	S5B,SZN			possible	CL9
mourning warbler	Oporornis philadelphia	G5	S5B,SZN			possible	CL9, CRR10, CRR3, CRR7
Nashville warbler	Vermivora ruficapilla	G5	S5B,SZN			migrant	5 sites
northern goshawk	Accipiter gentilis	G5	S4	NAR	NAR	probable	CRR3
northern harrier	Circus cyaneus	G5	S4B,SZN	NAR	NAR	probable	ETO3
northern mockingbird	Mimus polyglottos	G5	S4B,SZN			possible	CL21, LV1, MV2, NE1
northern saw-whet owl	Aegolius acadicus	G5	S4B,SZN			wintering	HO9, MI1
northern waterthrush	Seiurus noveboracensis	G5	S5B,SZN			migrant	CL9, CRR10, EC13, EM4
orchard oriole	Icterus spurius	G5	SZB,SZN			migrant	EC13
osprey	Pandion haliaetus	G5	S4B,SZN			migrant	CL9, CRR1, EC13
ovenbird	Seiurus aurocapillus	G5	S5B,SZN			possible	CRR10
peregrine falcon	Falco peregrinus anatum	G4T3	S2S3B,SZN	END	END-R	confirmed	CC1/MY1
pied-billed grebe	Podilymbus podiceps	G5	S4B,SZN			migrant	Lake Ontario shoreline
pileated woodpecker	Dryocopus pileatus	G5	S4S5			probable	CL1, CRR10, CRR8, MV18, SD5

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
pine siskin	Carduelis pinus	G5	S5B,SZN			migrant	CL9
pine warbler	Dendroica pinus	G5	S5B,SZN			possible	CL39, CRR10, CRR6, CRR7, CRR8, CV2, CV6, MI17
purple finch	Carpodacus purpureus	G5	S5B,SZN			possible	CRR10
purple martin	Progne subis	G5	S4B,SZN			possible	CL42, CL9
red-breasted nuthatch	Sitta canadensis	G5	S5B,SZN			possible	CL24, CL39, CRR10, CRR6, CRR7, CRR8, CV2, CV6, MI17
red-headed woodpecker	Melanerpes erythrocephalus	G5	S3B,SZN	SC	SC	possible	CRR10
red-shouldered hawk	Buteo lineatus	G5	S4B,SZN	SC	SC	confirmed	LV7*, MV2
ruffed grouse	Bonasa umbellus	G5	S5			possible	CL9
savannah sparrow	Passerculus sandwichensis	G5	S5B,SZN			probable	CRR10, CRR2, EC13, MV2, NE1, NE9, SP1
scarlet tanager	Piranga olivacea	G5	S5B,SZN			possible	CRR10
sharp-shinned hawk	Accipiter striatus	G5	S5B,SZN	NAR	NIAC	possible	SD1
short-eared owl	Asio flammeus	G5	S3S4B,SZN	SC	SC	migrant	CL9
turkey vulture	Cathartes aura	G5	S4B,SZN			migrant	6 sites
upland sandpiper	Bartramia longicauda	G5	S4B,SZN			confirmed	ETO3
veery	Catharus fuscescens	G5	S4B,SZN			migrant	CL9, CRR10, HO9, LV7
vesper sparrow	Pooecetes gramineus	G5	S4B,SZN			probable	EC13, MV2
white-throated sparrow	Zonotrichia albicollis	G5	S5B,SZN			migrant	8 sites, Credit River
winter wren	Troglodytes troglodytes	G5	S5B,SZN			probable	CL16, CRR10
wood thrush	Hylocichla mustelina	G5	S5B,SZN			probable	CL9, CRR10, CRR7, CRR8, ETO8, MV2, NE9, CL16
yellow-bellied sapsucker	Sphyrapicus varius	G5	S5B,SZN			probable	CL16
yellow-billed cuckoo	Coccyzus americanus	G5	S4B,SZN			possible	CL8, CL9, NE4
yellow-rumped warbler	Dendroica coronata	G5	S5B,SZN			migrant	7 sites, Credit River