The Breeding Birds of

Tommy Thompson Park

2017

Least Bittern on Nest (M. Dupuis-Desormeaux)

Toronto and Region Conservation

Toronto and Region Conservation for The Living City

Tommy Thompson Park
Toronto's Urban Wilderness

Prepared by
Don Johnston and Ian Sturdee

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1. Introduction

1.1 Study Area

TTP Aerial View (TRCA, 2014)

Tommy Thompson Park is located on the Leslie Street Spit, a man-made landform that extends five kilometres into Lake Ontario in Toronto. When construction of the Spit began in 1959 by the Toronto Harbour Commission (now Ports Toronto), the intention was to create new lands for port related facilities. However, for a variety of reasons port related expansion did not occur and natural succession was allowed to progress. As such, the Province of Ontario awarded Toronto and Region Conservation Authority (TRCA) the responsibility of creating a Master Plan for a public park. Although construction of the landform continues to the present day by Ports Toronto to mitigate shoreline erosion, the final size of the Spit (including the waterlots) is complete at approximately 500 hectares.

Over the years, the Spit evolved into the largest area of natural habitat on the Toronto waterfront, both through natural succession and habitat enhancement projects by the TRCA. A range of vegetation communities, including successional forests, meadows, coastal wetlands and sand dunes, provide diverse habitats for a wide range of species. A number of regionally rare plants have earned TTP the designation of an *Environmentally Significant Area*. The geographical location of the Spit is also significant for migrating wildlife; it is the first/last natural area for birds as they migrate across the lake to/from Toronto. Additionally, the Spit is within close proximity to the Don River valley which provides a corridor of natural vegetation through the city, to larger green spaces, including the Oak Ridges Moraine.

The diverse habitats at the park, along with the geographical position have made it a critical site for birds throughout the year. To date, 323 species have been recorded at the park, and in 2000, the Leslie Street Spit/TTP was named an *Important Bird Area* by BirdLife International. This designation is due to the globally significant number of nesting colonial waterbirds, the nationally significant number of waterfowl during migration and over winter, and the large concentrations of songbirds during migration.

2. Colonial Waterbirds

2.1 Project Background

Ring-billed Gull Nest (D. Johnston)

Colonial waterbirds have a long history at Tommy Thompson Park and are one of the reasons the park was designated a globally significant *Important Bird Area* in 2000 (Wilson et al., 2001). In 2017, five species of colonial waterbirds nested at Tommy Thompson Park: two species are tree nesters: Black-crowned Night-Heron and Great Egret; two species are ground nesters: Ring-billed Gull and Common Tern; and Double-crested Cormorants nest in trees and on the ground.

2.2 Population Estimate Methodology

Population estimates for tree nesting waterbirds, Double-crested Cormorants and Common Terns are conducted annually, while population estimates for Ringed-billed Gulls typically occur every 5 to 10 years with the 10 year survey coinciding with the Canadian Wildlife Service (CWS) decadal census. Individual Herring Gull nests are monitored by the CWS for ongoing contaminant research, and TRCA does not usually undertake a population census for this species. Caspian Terns are typically counted each year; however they were absent from 2004 to 2011 and were not counted in 2012 due to their proximity to the ground nesting cormorant colony. Since 2014 Caspian Terns are counted following the Ground Nest Survey Methodology. Population estimates for any species may also be undertaken more frequently in relation to other projects/studies or to address a population concern. All estimates and analysis are conducted by trained TRCA staff and researchers, using in-field techniques. Upon completion of the survey, Microsoft Excel is used to store and analyze the population data.

2.2.1 Tree Nest Survey Methodology

Each spring an annual census is conducted during the last week of May, at the peak nesting period, to determine the number of breeding Double-crested Cormorant, Black-crowned Night-Heron and Great Egret pairs and their nest distribution. Active nests of these species are counted by a team of observers who move systematically through the colony recording the tree number, tree species and number of nests of each bird species. As noted in Jarvie et al. (1999), each tree containing a nest is marked with a circular 2.5 cm metal tag bearing a unique number (National Band and Tag #85, 0.050 mm thick) attached with a single 5 cm galvanized roofing nail which is left out approximately 2.5 cm to allow for the growth of the tree without damage. Coordinates of each tree are recorded by GPS. All new nest trees are tagged and coordinates recorded. Every tree evaluated is marked with tree marking paint to identify that it has been counted. The tree coordinates and associated nest data are mapped with ArcView GIS software. Additionally, a sample of nest trees are evaluated post-breeding, in the late summer, to assess their health.

2.2.2 Ground Nest Survey Methodology

The census for Common Tern and Ring-billed Gull is conducted at the peak nesting period, typically the last week of May or the first week of June to determine their breeding population. The Common Tern colonies nest on three floating reef-rafts and one artificial island. The colonies can be subject to predation/disturbance pressures that can result in asynchronous nesting, making it difficult to obtain a reliable estimate of the breeding population. Therefore, depending on the circumstances of the sub-colony, multiple population counts may be conducted throughout the breeding season. The reef-rafts are approximately 24 m2, so all nests can be counted, noting the nest contents, by walking or canoeing the periphery of the raft. The artificially created tern island in the Cell One wetland is approximately 120 m2, and is more challenging to count because of its size and tall vegetation. Observers carefully walk the island in a grid pattern and note nests and nest contents. Since 2016, a single population count has been conducted for Common Tern colonies in mid-June by aerial photography from a helicopter. Individual nests can be seen in the images and are counted using GIS software by placing a dot on each nest.

Ring-billed Gulls are surveyed at least every 10 years with the CWS decadal surveys, however CWS also monitors individual Herring Gull nests annually. Because of the large nesting area, the colony is divided into smaller, discrete sections, and all active nests are counted by section using the rope transect method. Ropes are used to delineate 1m wide transects and observers carefully walk the transect counting all active nests with a manual handheld tally counter and marking each nest with survey paint to identify that it has been counted. Herring Gull nests are recorded on a field data sheet and not included in the tally counter. The ropes are then moved to the next transect line until all active nests within the colony are counted. In years where individual nests are not counted, trained staff undertake population estimates of the Ring-billed Gull nesting area.

Double-crested Cormorant ground nest estimates occur once management has largely stopped to account for birds that may have attempted to tree nest and instead ground nested. Nest counts for both cormorants and Caspian Terns are undertaken at the peak nesting period using aerial photography from a helicopter. This method minimizes disturbance to the ground nesting colonies. Individual nests can be seen in the images and are counted using GIS software by placing a dot on each nest.

2.3 Results

Record high Lake Ontario water levels in spring 2017 resulted in flooding in low lying areas at Tommy Thompson Park, affecting ground and island nesting species. In 2017, Double-crested Cormorants nested in trees on Peninsulas B and C, as well as on the ground on Peninsulas A and B. Black-crown Night-Herons nested on Peninsulas B and C. Great Egrets nested on Peninsula C. Ring-billed Gulls nested on the ground on Peninsulas A, B and C, and on the Embayment A Common Tern nesting raft. Common Terns attempted nesting on two artificial nesting rafts in Embayments A and D (Figure 2.A). Caspian Tern nesting attempts were not observed.

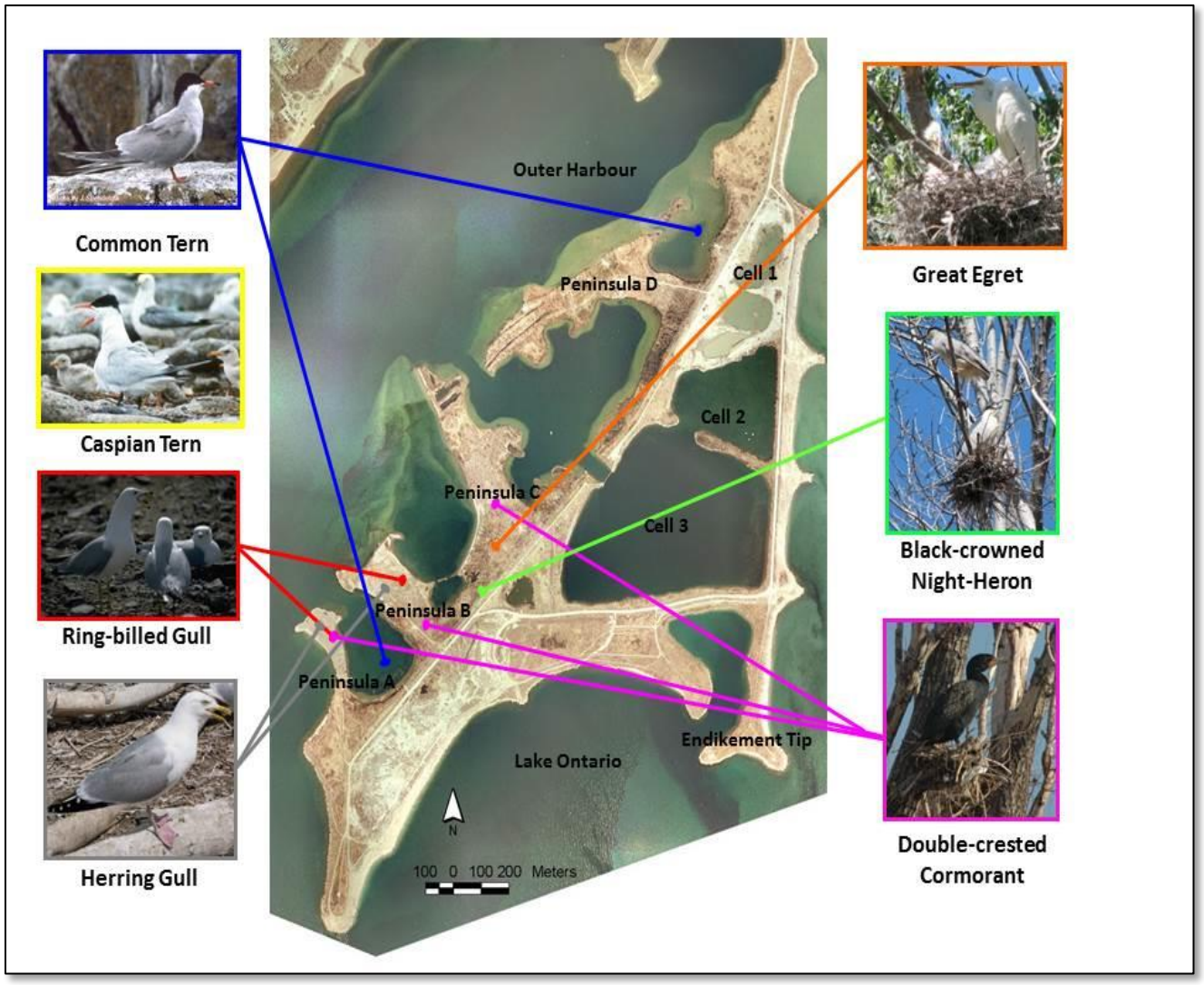

Figure 2.A. Colonial Waterbird Nesting Areas, 2017

Cormorant nests numbered 12,841, including 7,657 ground nests (Figure 2.B). The overall population decreased three percent; with tree nesting increasing by 62 percent and the ground nesting population decreasing by 24 percent over the previous year. The decline in the ground nest colony was a result of the flooding. As indicated in Figure 2.B, 60 percent of the TTP cormorant colony nested on the ground in 2017. Ground nesting is a target of the Double-crested Cormorant Management Strategy, which aims to achieve a balance between a healthy, thriving cormorant colony and the other ecological, educational, scientific and recreational values at the park (TRCA, 2008).

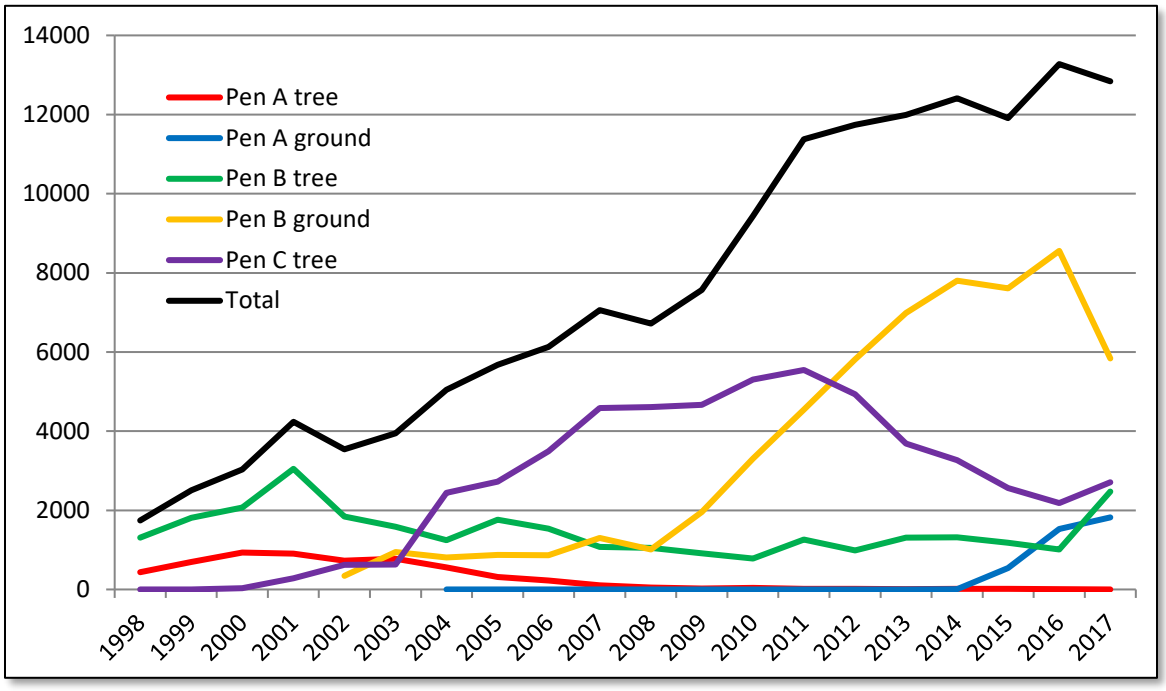

Figure 2.B. Double-crested Cormorant Nests at TTP by Location, 1998 - 2017

Black-crowned Night-Heron nests numbered 358, an increase of 7 percent from the previous year (Table 2.1). Most night-heron nesting occurred on Peninsula C and the back area of Embayment B, where they face less competition from cormorants.

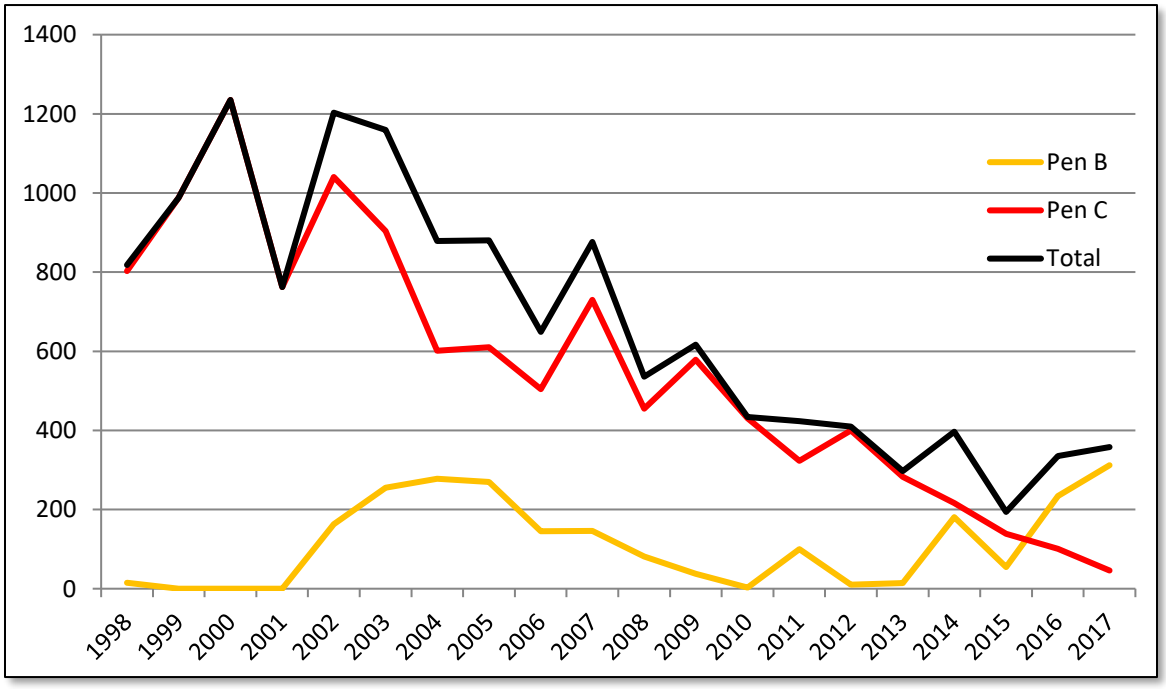

Figure 2.C. Black-crowned Night-Heron Nests at TTP by location, 1998 - 2017

Black-crowned Night-Herons at Nest (D. Johnston)

Table 2.1. Colonial Waterbird Nests at TTP, 2007 - 2017

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
DCCO	7,059	6,717	7,564	9,434	11,374	11,741	11,990	12,409	11,908	13,275	12,841
BCNH	730	455	546[a]	431	423	410	297	397	194	335	358
GREG	5	5	7	5	7	8	4	6	6	6	11
RBGU	33,000*	30,000	30,000*	28,000*	32,000*	32,000*	35,000*	35,000*	35,000*	35,000*	NC
HERG	45	30	NC	<20*	NC	NC	NC	NC	NC	NC	NC
COTE	367	310	354	231	54	24*	0	179	176	42	142
CATE	0	0	0	0	0	5*	98	263	NC	56[a]	0

a - Nesting attempts failed
*- Estimate
NC – no count

Common Terns had a successful season at TTP in 2017. Three nesting rafts, located in Embayments A, C and D were available for nesting; the island in Cell 1 was flooded for much of the breeding season, and therefore not available for nesting. Common Tern nesting was successful on the rafts in Embayments A and D, with 142 recorded nests.

Gull population estimates were not undertaken in 2017, although anecdotal evidence suggests Ringed-billed Gull nests may be below the last official count in 2008 of 30,000 nests (Table 2.1). Ring-billed Gulls nested on Peninsulas A, B and C, and on the Embayment A Common Tern nesting raft. Nesting was not observed on the Endikement this year. Herring Gulls typically nest among the Ring-billed Gulls in much lower numbers, however, none were observed in 2017. TRCA does not undertake a Herring Gull census due to their low numbers and the involvement of the Canadian Wildlife Service in individual nest monitoring for containment research.

2.3.1 Canada Geese and Mute Swans

Canada Geese and Mute Swans regularly nest at TTP and are monitored and managed by TRCA. The Mute Swan is an introduced invasive species and all nests encountered are managed to eliminate reproduction. Canada Goose nests are also managed due to the high number of human-wildlife conflicts on the Toronto waterfront. Management includes the application of food grade mineral oil to eggs to eliminate or reduce reproduction. In 2017 there were a total of 17 Canada Goose nests and six Mute Swan nests at TTP.

3. Landbirds and Non-colonial Waterbirds

3.1 Project Background

Until 2005, comparatively little effort had been put toward TTP's nesting bird species other than the colonial waterbirds of the previous section. The project detailed in this section of the report was initiated in 2005 as a method of monitoring and documenting landbirds and non-colonial waterbirds for the site.

3.1.1 Rationale

The project is organized around monitoring of breeding landbird and non-colonial waterbird density and diversity in response to habitat succession and restoration. Regular surveys of breeding landbird and non-colonial waterbird species at TTP provide the following:

* Relative abundance data
* Detailed and accurate nest records
* A measurement of breeding bird abundance and diversity in relation to landscape level change
* Assessment of nesting success including parasitism and predation rates
* Data that can help steer habitat restoration work

This project is appropriate for TRCA because the labour and material cost is low, and the expertise is both readily available and able to provide monitoring of avian response to habitat restoration efforts. TRCA volunteers, with some staff support, have carried out the project annually in spring and summer since 2005.

3.1.2 Change in Data Reporting

Commencing with the 2016 Breeding Bird Report, project data will be presented on a rolling 10-year basis. (Data from earlier years, commencing with 2005, the first year of the project, are available in earlier annual reports.)

Female Orchard Oriole Feeding Young at Nest (D. Johnston)

3.2 Methodology

Starting in 2005, a combination of variable circular plot (VCP) counts, nest searching and casual observations was employed from April – August each year (VCP counts restricted to June and July). Variable circular plot counts are the most recognized method for assessing breeding bird density and were employed for the Ontario Breeding Bird Atlas (OBBA). Nest searching and monitoring are also employed to provide valuable data on breeding success, nesting ecology and relative density of nesting attempts. Casual observations were recorded to augment the monitoring.

3.2.1 Variable Circular Plot (VCP) Protocol

The VCP counting method has been widely promoted by biologists over the more popular point count method, as it is much more applicable to analysis and has less bias. Nine station locations were initially set up based on the proportion of individual habitat types within the entire land area, and these locations have remained constant.

Between approximately June 15 and July 8, each of the nine stations is visited six times on a rotational schedule such that time of day is equally represented at all stations. All counts are conducted between 7:00 am and 10:00 am and last 5 minutes at each station. The protocol involves recording start time, finish time, date and visit number for each of the stations. Temperature, percentage cloud cover and wind speed are also recorded. Counts are completed on days with fair weather conditions such that visibility is high, wind speed is low to moderate (0-15 kph) and precipitation is absent. All birds detected are estimated to the following distance parameters: <10 m, 10-20 m, 20-30 m, 30-40 m, 40-50 m, 50-75 m, 75-100 m and >100 m. Any flyovers and any birds detected beyond 100 m are recorded in separate columns. The circumstances of each detection are also noted (e.g., observed, singing, territorial dispute, family group).

Station locations are distributed in the following manner: four in forest habitats, four in meadow communities (wet and dry) and a single station was placed in an extensive shrub thicket (termed “shrubland”) which is bordered by forest. A summary of station information is presented below in Table 3.1. The location of each station is shown on Appendix A, an annotated map of Tommy Thompson Park.

Table 3.1. VCP Station Information

Station	UTM Zone	Easting	Northing	Location	Habitat Type
1	17	635198	4834430	Baselands	Wet Thicket
2	17	635206	4834217	Baselands	Forest
3	17	634930	4834149	Baselands	Dry Meadow
4	17	635300	4833940	Baselands	Dry Meadow
5	17	635101	4832683	Neck	Shrubland
6	17	634360	4832165	Peninsula D	Forest
7	17	634726	4831138	Flats	Wet Meadow
8	17	634220	4831453	Peninsula C	Forest
9	17	634215	4831680	Peninsula C	Forest

3.2.1.1 VCP Station Vegetation Protocol

The habitats at the study area are relatively young in age and may be altered or enhanced through TRCA’s habitat restoration efforts, as well as natural succession. Changes in the habitats over time will also lead to changes in the bird communities and should be documented to help understand and interpret these data. Descriptions of the habitats for each of the VCP stations were initiated in 2010, repeated in 2013 and 2016, and should continue to be repeated every three years to help quantify changes in the vegetation communities. See Table 3.3 for the most recent station vegetation analysis.

In any year in which the vegetation analysis is completed, stations are surveyed once during the nesting season (June or July) to record the dominant habitat (meadow, thicket, deciduous forest, mixed forest, wetland, sand dune/sand barren, roads/trails and Lake Ontario/open water), as well as the dominant group of vegetation. Surveyors estimate major type of habitat by percentage via a field visit and orthophoto interpretation. Habitat types must sum to 100% per station. The dominant habitat types are sketched out from a bird’s-eye perspective. Dominant groups of vegetation communities are estimated for each station, but do not necessarily need to sum to 100%, as vegetation that is sub-dominant or areas without vegetation are not included in this total. See Appendix B for station maps.

3.2.2 Nest Searching and Monitoring Protocol

The nest searching survey method is valuable to bird conservation because it provides indicators of breeding success and parasitism/predation rates. As shown in Appendix C, the entire land area encompassing Tommy Thompson Park/Leslie Street Spit was divided into six survey zones (i.e., A – F). Participants are assigned

zones to avoid overlap in data collection, and effort is recorded separately for each zone. Table 3.2 describes the primary habitat for each zone.

Table 3.2. Primary Habitat Type by Zone

Zone	Primary Habitat Type
A	forest, meadow
B	meadow, shrubland, forest
C	forest
D	meadow, shrubland, barrens (lakefill)
E	Meadow, barrens (lakefill)
F	meadow, forest

The zones (excluding colonial waterbird nesting areas) are searched carefully for evidence of nesting, focusing primarily on the woodland and shrubland edges favoured by species nesting at TTP. Once the nest of any landbird or non-colonial waterbird is discovered, the UTM co-ordinates are determined by GPS and recorded in field notebooks, along with a description of the nest and the habitat. Following discovery of a nest, and to the extent that time and personnel are available, the nest is monitored to determine the outcome, as well as any incidence of parasitism.

Commencing in 2012, a change in protocol was adopted with regard to ground-nesting birds. In order to avoid providing a trail which would lead predators to ground nests, project participants no longer actively seek such nests. As a result, only ground nests found accidentally are recorded, and no follow-up monitoring to determine nest outcome is conducted. Species affected by this change include American Woodcock, Belted Kingfisher, Canvasback, Eastern Meadowlark, Gadwall, Killdeer, Mallard, Savannah Sparrow, Song Sparrow and Spotted Sandpiper. These species represented 7% of nests found from 2005 to 2011, inclusive, and 3% of nests found since 2011, so the change in protocol has had some affect, although these species have never represented a significant portion of the nests that are found each year.

While most nest records gathered are submitted to Project NestWatch at Bird Studies Canada, nests discovered after nesting is complete are typically not. Researchers are able to access Project NestWatch data via BSC's NatureCounts tool. Past Breeding Bird Reports are available at www.ttpbrs.ca.

3.3 Results

3.3.1 Variable Circle Plot Point Count Results

3.3.1.1 VCP Station Vegetation Survey

Table 3.3 below depicts the result of vegetation surveys conducted in 2010 and 2016 for each station. In addition, Appendix B contains a habitat sketch and photographs for each station in 2016. (The habitat sketches and photographs from 2010 can be found in the Breeding Bird Reports of 2010 – 2012, while the sketches and photographs from 2013 can be found in the reports of 2013 - 2015.)

As can be seen from Table 3.3, several changes in habitat have occurred over the past six years. This is not surprising, however, since most of TTP is intentionally left to naturally succeed on its own. Changes of note include:

Station 1: The wetland increase has resulted largely from the spread of phragmites.

Station 2: The meadow areas observed in 2010 have been completely overtaken by dogwood and willow.

Station 3: Some meadow has been replaced by thicket and forest.

Station 4: A portion of the meadow has been overtaken by phragmites, shrub willows and goldenrod.

Station 5: The area along the shoreline has been largely rebuilt, resulting in less shoreline and water, and more reeds. The dogwood and forest have also increased significantly.

Station 6: The sand barren has been overgrown by the vegetation.

Station 7: The increase in non-vegetation area reflects significant lake-filling in the last two years.

Station 9: Station 9 is located within the cormorant colony, and the effect of the nesting behaviours from these birds has been the loss of many trees and other vegetation.

Table 3.3. 2010 - 2016 VCP Station Vegetation Analysis

2010 OBSERVATIONS									
	VCP Station								
	1	2	3	4	5	6	7	8	9
% of Major Habitats Within 100 m Radius of Each VCP Station									
Meadow (tree cover ≤ 25%; shrub cover ≤ 25%)	55	40	70	95	10		85	5	5
Thicket (tree cover ≤ 25%; shrub cover ≥ 25%)	15	20	20		65	20		20	20
Deciduous Forest (tree cover ≥ 60%)	25	40	5		10	50		65	60
Mixed Forest (tree cover ≥ 60%; conifers ≥ 25%)									
Wetland (permanently saturated; water ≤ 2 m)	5								
Vegetation Sub-total (see detail below)	100	100	95	95	85	70	85	90	85
Sand Dune/Sand Barren (incl active shorelines)						5			
Roads/Trails			5	5	5		10		
Lake Ontario Shoreline (open water)					10	25	5	10	15
Non-vegetation Sub-total			5	5	15	30	15	10	15
Total of All Habitats	100	100	100	100	100	100	100	100	100
Dominant Vegetation Within 100 m of Each VCP Station									
Poplars (e.g., Eastern Cottonwood)	20	35	5	5	10	40	5	55	45
Dogwoods (e.g., Red-osier Dogwood)	10	15	10		20	15		5	15
Honeysuckles						10			
Shrub Willows	10	5	5	5	30	5	5	5	
Grasses and Sedges	55	40	65	60	15		45	20	10
Goldenrods and Asters		5	10	20	10		20		5
Reeds (e.g., Cattails, Bulrushes)	5			5				5	
Miscellaneous Herbs (e.g., Vetch, Nettles, etc.)							10		10
Vegetation Sub-total	100	100	95	95	85	70	80	90	85
2016 OBSERVATIONS									
	VCP Station								
	1	2	3	4	5	6	7	8	9
% of Major Habitats Within 100 m Radius of Each VCP Station									
Meadow (tree cover ≤ 25%; shrub cover ≤ 25%)	52		59	85	6	3	78	6	12
Thicket (tree cover ≤ 25%; shrub cover ≥ 25%)	7	59	23	1	66	23		14	21
Deciduous Forest (tree cover ≥ 60%)	20	41	10		18	51		70	19
Dead Deciduous Forest									30
Mixed Forest (tree cover ≥ 60%; conifers ≥ 25%)									
Wetland (permanently saturated; water ≤ 2 m)	18			8	5		2		
Vegetation Sub-total (see detail below)	95	100	92	94	95	77	80	90	82
Sand Dune/Sand Barren (incl active shorelines)								2	3
Roads, Trails and other man-made areas	3		7	6	3		20		
Lake Ontario Shoreline (open water)			1		2	23		8	15
Non-vegetation Sub-total	5		8	6	5	23	20	10	18
Total of All Habitats	100	100	100	100	100	100	100	100	100
Dominant Vegetation Within 100 m of Each VCP Station									
Poplars (e.g., Eastern Cottonwood)	25	35	5	5	15	40	5	60	30
Dogwoods (e.g., Red-osier Dogwood)	15	40	15		50	15		5	20
Honeysuckles						12			
Shrub Willows		5	5	5	20	5	5	5	
Grasses and Sedges	35	20	35	45	5	5	40	15	10
Goldenrods and Asters			5	30			10		5
Reeds (e.g., Cattails, Bulrushes, Phragmites)	20			8	5		5	5	
Miscellaneous Herbs (e.g., Vetch, Nettles, etc.)			27	1			15		17
Vegetation Sub-total	95	100	92	94	95	77	80	90	82

While some VCP locations have not seen a major change in vegetation over the course of the project, others have demonstrated significant change. The following photographs demonstrate one station (4) which is an example of the former and two stations (2 and 9) which are examples of the latter.

The south view at Station 4 (dry meadow) has seen little change over the life of the project other than changes in the make-up of the ground cover.



2010 2013 2016

Station 2 (forest – north view) exhibits little change between 2010 and 2013, but very noticeable additional shrub growth between 2013 and 2016.



2010 2013 2016

Station 9 (forest – north view) is located within the Double-crested Cormorant colony, and the effect of the birds' excrement on both the trees and the ground-level vegetation can be seen from 2010 to 2013 to 2016.



2010 2013 2016

3.3.1.2 VCP Observations

Analysis of VCP count data presented here is a basic summation of results. More sophisticated analysis will require the use of software such as DISTANCE (a software package that allows users to estimate the size or density of biological populations).

Table 3.4. VCP Species Lists and Total Birds Detected by Species Within 100 Metres

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVG
ALFL				1							0
AMGO	10	8	22	35	8	14	19	7	37	36	20
AMKE										1	0
AMRO	31	26	34	41	40	22	15	25	23	27	28
AMWO		1				1					0
BANS	2	5	4	14	35	7	22	4	106	7	21
BAEA						*					0
BAOR	22	23	13	28	22	26	21	25	15	23	22
BARS	3	11	8	32	31	22	15	55	48	41	27
BCCH	3	2	4	3	1	3		5	7	2	3
BEKI		2	1				1				0
BGGN	2	8					3	2	3	2	2
BHCO	11	19	19	10	17	12	5	3	6	7	11
BLJA	3	1	1		1					1	1
BLPW		1									0
BOBO											0
BRTH						1	3	1			1
CANG			*				*			7	1
CEDW	11	39	19	31	47	17	16	12	18	12	22
CHSW	2	*		2		3	2	2			1
COGR	11	9	17	23	8	12	5	17	5	11	12
COHA								1			0
COYE	1		2	2			4			1	1
DOWO				2	1	1	1			2	1
EAKI	25	12	20	18	12	7	2	9	3	6	11
EAME	5										1
EAWP	1	3	1	8	6	8	6	9	7	2	5
EUST	35	116	41	52	39	8	44	9	46	18	41
FISP											0
GADW	3	*	1	16		*	2			*	2
GBHE										*	0
GCFL		3							1		0
GRCA	19	17	38	16	21	16	21	12	18	22	20
HOFI				1							0
HOSP	2										0
HOWR						2	1		1		0
KILL	7	8	3		2	5	4	5	2	7	4
LEFL	6	7	11	11	8	10	4	5	1	3	7
MALL	*	4			*	*	2			5	1
MAWA		1									0
MODO	1		*			3			1	2	1
NOCA		4	3	1	2	5	3	3	10	21	5
NOFL	1	2		2						2	1
NOMO			*				1	1		1	0
NRWS	7	8	5	14	*	4	*	9	10	5	6
ORORO					1	1	1		2	2	1
RBNU									1		0
REVI							1				0
ROPI	*										0
RWBL	203	312	199	244	295	265	276	247	192	214	245
SAVS		1							1		0
SOSP	68	81	55	46	50	66	47	51	59	57	58
SPSA	9	6	3	4	2	1	5	7	2	2	4
TEWA									1		0
TRES	15	9	16	24	11	25	30	52	41	54	28
TRFL	1		1				2			2	1
VEER											0
WAVI	22	41	30	39	50	53	46	32	46	27	39
WIFL	17	26	14	25	16	17	20	18	16	27	20
YEWA	109	134	100	168	136	146	166	155	169	181	146
Birds	**668**	**950**	**685**	**913**	**862**	**783**	**816**	**783**	**898**	**840**	**820**
Species	**35**	**36**	**32**	**30**	**28**	**34**	**37**	**29**	**32**	**38**	**33**

* Species observed beyond 100 metres and/or flying over

Species recording a new high VCP count for the most recent ten years were Canada Goose, Mallard, Northern Cardinal, Tree Swallow, Willow Flycatcher and Yellow Warbler. Species matching the previous high were Downy Woodpecker, Northern Flicker, Northern Mockingbird, Orchard Oriole and Traill's Flycatcher (all of these species are only recorded once or twice per year).

Prior to 2015, swallows were recorded differently by different project participants during the VCP counts, with the result that swallow numbers in Table 3.4 are somewhat understated for the years 2006 – 2014.

A summary of abundance per species detected by VCP counts (<100 meters) is presented in Table 3.4. Some of the unusually high numbers (e.g., 116 EUST in 2009, 104 BANS, 31 BARS and 22 NRWS in 2007, 92 EUST in 2006, 106 BANS in 2016) are attributable to one or a few large flocks recorded in one or more of the visits.

As shown in Table 3.4, a total of 38 species was detected for all counts in 2017, including two new species for VCP counts, viz., American Kestrel and Great Blue Heron. The total of 38 species matches the previous high for the this project, which was recorded in 2007.

Points worth noting include:

- Barn Swallow sightings have increased in recent years as the number of nests has increased, as would be expected; the same is true of Northern Cardinals in 2017.
- The number of Brown-headed Cowbirds observed continues to be much lower than the numbers observed in earlier years of the project, which corresponds to the lower rate of nest parasitism by these birds (see Section 3.3.2.4.).
- Canada Goose and Mallard sightings were higher in 2017 as a result of the high water levels allowing the birds to get closer to VCP station #9.
- Since the nests of some species are well hidden, such as Common Grackle, European Starling and Song Sparrow, they are recorded much more frequently on VCP counts than the number of nests would suggest.
- Conversely to the previous point, Cedar Waxwing nests are more numerous than VCP sightings as the waxwings are late nesters and are not present in large numbers prior to nesting.
- Eastern Kingbird VCP sightings are always lower than the number of nests would suggest because very few VCP stations are close to kingbirds' preferred habitat.
- The two most common nesters other than colonial waterbirds, Red-winged Blackbirds and Yellow Warblers, both tended to have more VCP sightings than nests in the early years of this project, but, in more recent years, have had more nests than VCP sightings. This apparent anomaly can be explained when it is realized that the growth in nests has largely occurred in areas separate from the VCP locations.

Eastern Kingbird Nest (P. Xamin)
(Eastern Kingbird nests are usually found high in trees at TTP, so it is rare to have a close view of one)

It must be recognized that the number of birds recorded each year on VCP counts for many of the species is largely a matter of chance since only five minutes are spent at each station. (Note that the sequence of stations visited is intentionally different for each of the six VCP counts, so that the possibility of observing, or not observing, certain species at certain times is minimized.)

As can be seen in Figure 3.A below, three VCP stations experienced total bird abundance in 2017 that was much higher than the most recent 10-year average, viz., Stations 2 (forest), 6 (forest) and 8 (forest), while station 4 was significantly lower than the 10-year average. The other stations were all within 10% of the 10-year average for the station. Total abundance for all stations in 2017 (840 birds) was slightly higher than the 10-year average (823 birds).

Stations 8 (forest) and 9 (forest) consistently reflect the lowest bird abundance of the nine stations. While the habitat for both stations is described as forest, they exhibit very different characteristics. The trees around Station 8 are quite mature and dense, and now house a portion of the Black-crowned Night-Heron colony. Station 9 is surrounded by the Double-crested Cormorant colony, with the excretions from the birds having largely defoliated the trees and other vegetation, resulting in very limited biodiversity. See Appendix A for station locations.

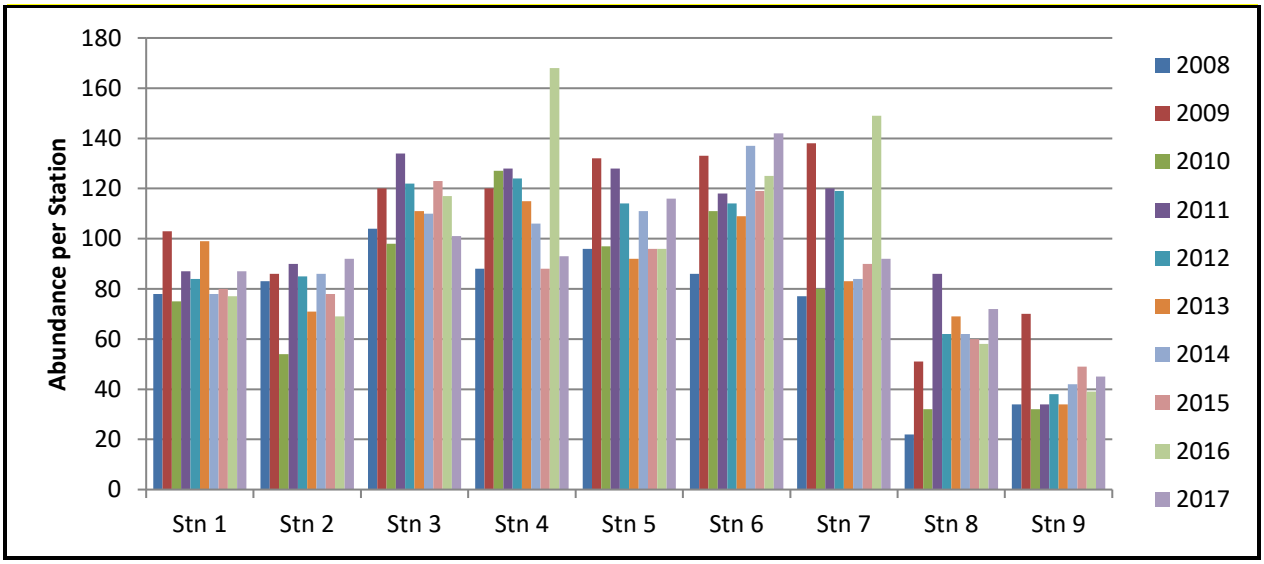

Figure 3.A. **Total Bird Abundance per VCP Station**

Species richness, or diversity, is shown in Figure 3.B. In 2017, Stations 2 (forest), 8 (forest) and 9 (forest) experienced diversity that was much higher than the most recent 10-year average. The other stations were all within 10% of the 10-year average for the station.

As with bird abundance, species diversity at Stations 8 and 9 suffers in comparison to the other stations due to the dense vegetation and Black-crowned Night-Herons at Station 8 and the lack of biodiversity caused by the Double-crested Cormorants at Station 9.

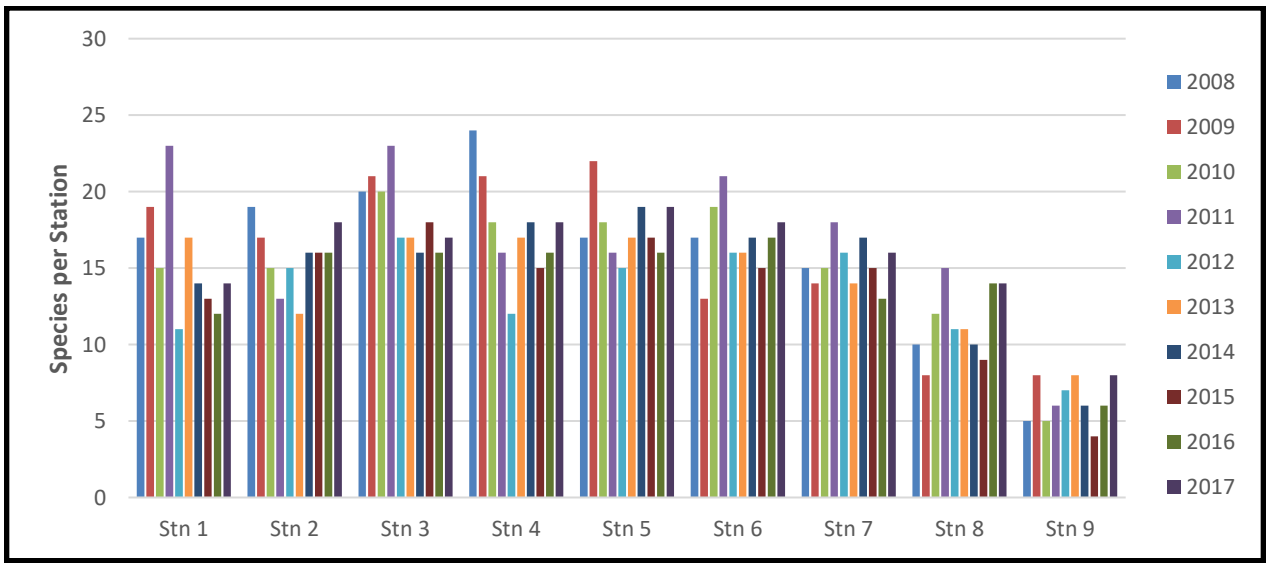

Figure 3.B. **Species Richness per VCP Station**

3.3.2 Nest Searching and Monitoring Results

In 2017, nine volunteers contributed a total of 595.5 hours to the project. This level of participation is a continuation of recent years' experience, which has been a major contributor to the number of nests which have been found over the past few years. Figure 3.C shows the breakdown of effort per zone. Zone D continued to experience the fewest number of nests, due to lack of suitable habitat and the conversion of Cell 2 to wetland, so that limited monitoring time continued to be required in that zone.

See Appendix C for a map of the TTP breeding bird survey zones.

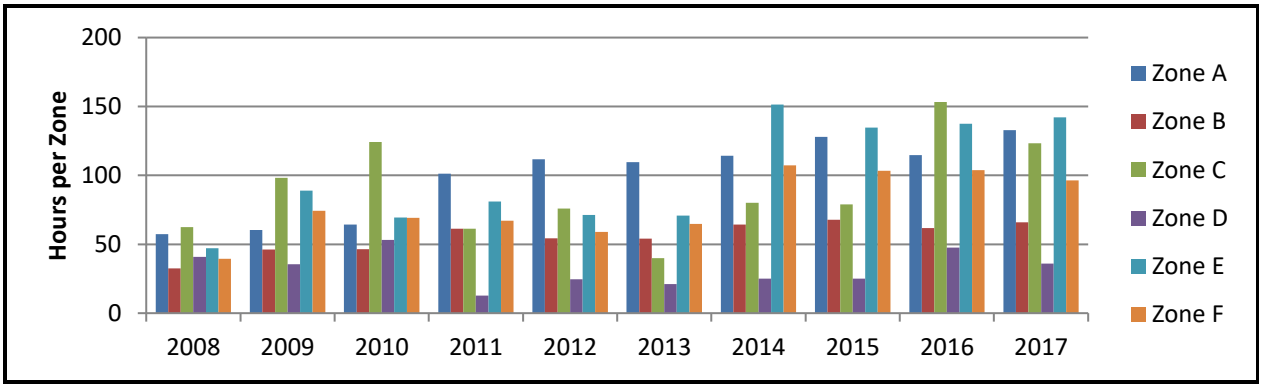

Figure 3.C. Nest Searching Effort per Zone from 2008 to 2017 (hours)

The use of standard nest searching data forms, along with greater nest searching and monitoring effort, combined with experience gained in previous years, have proved to be very successful in increasing the number of nests found in the most recent years of the project. In 2017, a total of 1,175 nests was discovered, an increase of over 15% from the previous high (in 2016). Of the total, 801 nests were monitored and reported to Bird Studies Canada's Project Nestwatch (see Tables 3.5 and 3.7). Excluding the seven colonial waterbird species, Canada Goose and Mute Swan, nests of 32 species were found in 2017, including Brown-headed Cowbird. When the five confirmed colonial waterbird nesters (i.e., Black-crowned Night-Heron, Common Tern, Double-crested Cormorant, Great Egret and Ring-billed Gull), as well as Canada Goose and Mute Swan, are added, the total becomes 39 species nesting at TTP in 2017.

House Wren at Nest (P. Robillard)

Table 3.5. Total Nests by Species from 2008 to 2017

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVG
AMGO	25	44	33	23	13	17	18	16	23	26	24
AMRO	51	93	69	115	93	93	89	78	113	125	92
AMWO			3	1	1			1		1	1
BANS		4	2	1					15	16	4
BAOR	9	9	10	17	16	15	35	17	18	24	17
BARS	3	3	2	4	11	26	31	24	29	49	18
BBCU							1		1		0
BCCH	1	2			1	2	1		2	2	1
BEKI	2						1				0
BGGN	1	3			2	4	6	7	6	4	3
BRTH	3	4	2		2	1	2	2		2	2
CANV							1				0
CEDW	14	40	14	21	23	19	37	40	49	33	29
COGR	1		4	4	2	3	2	5	5	1	3
DOWO			1	1	1	1		1	2	3	1
EAKI	26	22	14	12	27	21	20	27	24	25	22
EAME			1								0
EAWP			1	1	1		1				0
EUST	5	7	12	4	5	8	4	5	3	1	5
GADW	3	3	1	3	4	1	2	1	1		2
GRCA	11	23	11	16	21	24	34	30	46	33	25
HOFI											0
HOSP											0
HOWR	2	2	2	1						1	1
KILL	5	8	13	2	4	3	4	3	4	5	5
LEBI										2	0
LEFL		3	1				3	2			1
MALL	9	12	12	6	9	8	5	5	8	5	8
MODO		3			1				1	1	1
NOCA	2	4	1		1	1	3	2	4	14	3
NOFL	1		3	3			1		1	5	1
NRWS		2		1			1	2		2	1
OROR	1		2	1	2	3	2	1	2	1	2
RWBL	82	130	167	232	268	310	361	404	356	464	277
SOSP	1	7	8	2	3	2	8	10	7	4	5
SPSA	3	5	8	4	5	6	3	6	3	5	5
TRES	9	9	9	5	5	12	13	20	20	28	13
TRUS							1	1	1	1	0
WAVI	7	7	9	15	12	13	31	12	18	21	15
WIFL	15	25	15	12	14	13	18	15	19	18	16
YEWA	71	75	82	88	86	127	164	189	237	253	137
Total	**363**	**549**	**512**	**595**	**633**	**733**	**903**	**926**	**1,018**	**1,175**	**741**
Total Effort (hours)	**280**	**404**	**427**	**385**	**397**	**360**	**542**	**538**	**618**	**596**	**455**
Efficiency (nests/hour)	**1.3**	**1.36**	**1.2**	**1.54**	**1.59**	**2.04**	**1.67**	**1.72**	**1.65**	**1.97**	**1.63**

Note: A Trumpeter Swan nest was observed in 2014, but not included in the 2014 report. As another nest was observed in 2015 and reported to ONRS, it was decided to include the unreported 2014 nest in subsequent reports for completeness.

In 2017, Lake Ontario water levels reached their highest levels in over a century, resulting in extreme flooding around the periphery of TTP, with many areas that are normally dry being covered with up to one metre of water. While the flooding of significant nesting area might have been expected to result in fewer nests, the opposite turned out to be the case. The 1,175 total nests located in 2017 represent an increase of over 15% from the previous high of 1,018 in 2016 and an 86% increase over the 633 nests found just five years earlier in 2012. A possible partial explanation for this dramatic increase in 2017 might be that the birds which normally nest on the periphery were forced to retreat to higher ground and a smaller overall area, making them easier to locate. It will be interesting to see 2018's results, assuming that more normal water levels are experienced.

Additional reasons for the continued annual increase in nests include: (a) extensive tree and shrub planting by TRCA over recent years; (b) the natural spreading and maturation of appropriate breeding habitat in some areas, particularly dogwood, honeysuckle and reeds, which three represent the most common hosts for Red-winged Blackbirds and Yellow Warblers, the most prolific non-colonial-waterbird nesters at TTP; (c) the ever-increasing nest-searching skills in the project participants; (d) the availability of more volunteer effort; and (e) the discovery of areas rich in nests that had not been explored until recent years.

Table 3.6 lists those species realizing new nest highs for the project in 2017.

Table 3.6. Species Reaching New Nest Highs in 2017

Species	Increase in Number of Nests over Previous High
American Robin	9%
Bank Swallow	7%
Barn Swallow	58%
Downy Woodpecker	50%
Green-winged Teal	New in 2017
Least Bittern	New in 2017
Northern Cardinal	250%
Northern Flicker	67%
Red-winged Blackbird	15%
Tree Swallow	40%
Yellow Warbler	8%

Three species nesting at TTP in 2017 are of special note. A Least Bittern nest was discovered with eggs, the first nest of that species recorded at TTP. Further, a second nest was located accompanied by two adults, although no eggs were confirmed in that nest. (See Dupuis-Desormeaux, Marc et al. pp 146 – 150.) Green-winged Teal was a second species confirmed with a first record of nesting at TTP, when Nigel Shaw, TTPBRS Coordinator, observed an adult with three young, estimated to be approximately one week of age, in Embayment D.

In addition to the Least Bittern and Green-winged Teal, it is also significant and encouraging that the number of Barn Swallow nests increased by 58% from the previous high (in 2014), since this species is a provincially-listed Species at Risk. The existence of these nests is undoubtedly attributable to the nesting sites created by the new buildings erected by TRCA in 2011/2012.

Other species matching previous highs were Black-capped Chickadee, Northern Rough-winged Swallow and Trumpeter Swan. Single nests were confirmed for American Woodcock, Common Grackle, House Wren, Mourning Dove, Orchard Oriole and Trumpeter Swan, species which are relatively rare at TTP and/or whose nests can be difficult to locate.

Nest-searching efficiency figures (Table 3.5) can be misleading, as they are highly dependent on an area's vegetation (e.g., forest versus shrubland), the species found in the dominant habitat (e.g., shrub nesters versus high tree nesters) and the time spent on monitoring as opposed to finding nests. The efficiency realized in 2017, which was the second highest of the last 10 years, continues the improved experience of the last few years and points to the ability of the project participants to make effective use of their time in the field.

3.3.2.1 Yellow Warbler Nest Containing Record Number of Eggs

Y

A Yellow Warbler nest was discovered in 2017 containing nine eggs (see accompanying photo). A search of the literature by Mark Peck of the Royal Ontario Museum yielded a previous record of eight eggs (pers. comm.). What is not known is whether all of the eggs were laid by one bird, or by multiple birds. Lack of time and volunteer resources prevented close monitoring, but the nest was deemed a success.

Yellow Warbler Nest Containing Nine Eggs (P. Robillard)

3.3.2.2 Nest Relocation by Blue-gray Gnatcatchers

An unusual characteristic of Blue-gray Gnatcatchers is that birds sometimes destroy a completed nest and rebuild it nearby, using the material from the original nest. This has been observed at TTP in each of the most recent three years of this project. A possible explanation is that the birds become aware that the original nest has been discovered by potential predators during or shortly after construction (see Harrison, Hal H. p. 163).

3.3.2.3 Nest Productivity

A total of 801 nests was recorded online with Bird Studies Canada's Project NestWatch in 2017 (Table 3.6). In terms of nest productivity, 106 (i.e., 21%) of 500 nests with known outcomes failed, while 394 were successful in fledging young. The remaining 301 monitored nests had unknown outcomes. (The nests with unknown outcomes included all ground nests from Gadwall, Killdeer, Mallard, Song Sparrow and Spotted Sandpiper, which, commencing in 2012, were not monitored once found.)

As can be seen in Table 3.7, the 2017 nest failure rate of 21% matches the lowest of the last 10 years. Nest predation continues to be the most common cause of nest failure. Possible predators at TTP include raccoons, gartersnakes, mink and coyotes, as well as other bird species. Of the 106 failures, 37 occurred at the egg stage, 9 at young stage and 60 at either egg or young stage.

Table 3.7. Nest Productivity from 2008 to 2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVG
Nests discovered	363	549	512	593	633	733	903	926	1,018	1,175	741
Species	27	27	34	27	28	25	32	28	30	32	29
Nests monitored & reported to NestWatch	297	456	440	430	464	549	690	657	702	801	549
• Unknown outcome	148	170	213	155	213	266	232	226	211	301	214
• Known outcome	149	286	227	275	251	283	458	431	491	500	335
➢ Successful	97	162	144	177	171	186	338	323	388	394	238
➢ Failed	52	124	83	98	80	97	120	108	103	106	97
➢ **Failure rate**	**35%**	**43%**	**37%**	**36%**	**32%**	**34%**	**26%**	**25%**	**21%**	**21%**	**29%**

Figure 3.D demonstrates how the known nest failure rate has been trending down. One can speculate on the reasons for this, but confirming them is beyond the scope of the current project.

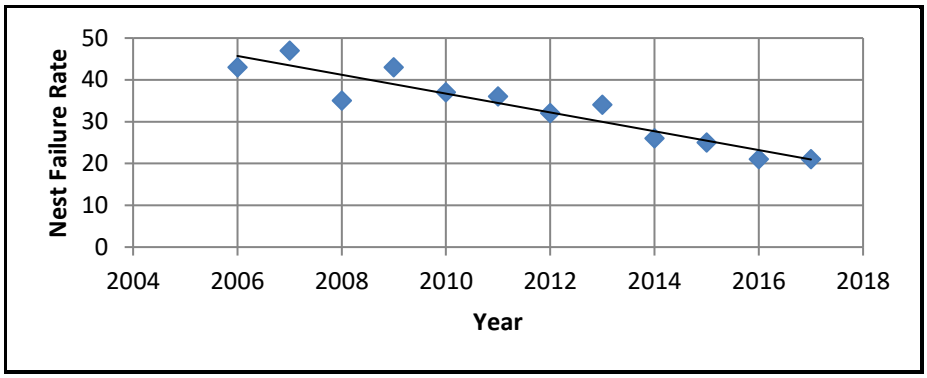

Figure 3.D Known Nest Failure Rate Trend

As can be seen in Table 3.8, the 41 confirmed breeders in 2017 is slightly above the most recent 10-year average, as is the 77 total species detected during all surveys. The sharp increase in total species observed in 2012 was an anomaly resulting from an unusually high number of late migrants being observed.

Table 3.8. Summary of Species Detected Through All Studies

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVG
Confirmed Breeding Species	34	37	40	36	40	40	44	39	39	41	39
Probable Breeding Species	9	11	2	4	3	5	5	3	4	3	5
Possible Breeding Species	15	14	8	3	6	4	8	14	11	8	9
Other Species Observed	16	20	17	21	36	22	12	17	16	25	20
Total Species	**74**	**82**	**67**	**64**	**85**	**71**	**69**	**73**	**70**	**77**	**73**

Looking at the past 10 years of data, some conclusions and trends continue to emerge. As noted previously, Bobolink, Eastern Meadowlark and Savannah Sparrow have virtually disappeared from both the VCP counts and confirmed nests, although there has actually never been a confirmed Bobolink nest at TTP. Herbaceous vegetation at TTP is becoming denser, which has an adverse effect on nesting suitability for these and other ground-nesting species. At the same time, the spread of dogwood, honeysuckle and reeds, as well as tree and shrub planting by TRCA, has created more nesting opportunities for species such as Red-winged Blackbirds, American Robins and Yellow Warblers.

3.3.2.4 Parasitism by Brown-headed Cowbirds

Brown-headed Cowbird parasitism is a major issue for small landbird populations in more open habitats and forest fragments. In 2017, a total of 40 nests of six species were parasitized by Brown-headed Cowbirds, including for the first time during the project, Northern Cardinal (Table 3.9). (For purposes of this report, a nest was considered parasitized if a cowbird egg was observed, regardless of what happened to that egg.) The parasitism rates in Table 3.9 were calculated as the ratio of parasitized nests to the total parasitized and non-

parasitized nests. (Note that nests of parasitized species were not included in this table unless evidence of parasitism, or lack thereof, could be confirmed.)

The overall rate of parasitism in 2017 of 10% represented the lowest rate experienced during this project. The two species with the most parasitized nests, Red-winged Blackbirds and Yellow warblers, both returned to 2014 and 2015 levels after experiencing an increase in parasitism in 2016.

Yellow Warblers continue to be the most heavily parasitized species by Brown-headed Cowbirds over the past ten years at an average rate of 23% per year of observable nests, followed by Red-winged Blackbirds at 22% average per year (see Table 3.9).

Table 3.9. **Brown-headed Cowbird Parasitism Data and Rates from 2007 to 2016**.

	Brown-headed Cowbird Parasitism									
		American Goldfinch	American Robin	Gray Catbird	Northern Cardinal	Red-winged Blackbird	Song Sparrow	Willow Flycatcher	Yellow Warbler	Totals
2008	Total nests *	15	28	11	2	45	0	15	51	165
	Nests parasitized	1	1	0	0	18	0	4	21	45
	% parasitized	**7%**	**4%**	**0%**	**0%**	**40%**	**0%**	**27%**	**41%**	**27%**
2009	Total nests *	21	44	23	4	112	4	24	68	296
	Nests parasitized	5	0	0	0	32	2	4	34	77
	% parasitized	**24%**	**0%**	**0%**	**0%**	**29%**	**50%**	**17%**	**50%**	**26%**
2010	Total nests *	19	28	11	1	110	4	11	66	249
	Nests parasitized	0	0	0	0	27	1	2	21	51
	% parasitized	**0%**	**0%**	**0%**	**0%**	**25%**	**25%**	**18%**	**32%**	**20%**
2011	Total nests *	13	26	16	0	81	2	11	36	185
	Nests parasitized	2	0	0	0	18	0	0	10	30
	% parasitized	**15%**	**0%**	**0%**	**0%**	**22%**	**0%**	**0%**	**29%**	**16%**
2012	Total nests *	8	17	19	1	77	2	8	33	164
	Nests parasitized	0	0	0	0	30	0	2	7	39
	% parasitized	**0%**	**0%**	**0%**	**0%**	**39%**	**0%**	**25%**	**21%**	**24%**
2013	Total nests *	9	26	20	1	145	2	11	75	288
	Nests parasitized	1	1	0	0	33	0	1	22	58
	% parasitized	**11%**	**4%**	**0%**	**0%**	**23%**	**0%**	**9%**	**29%**	**20%**
2014	Total nests *	10	27	27	3	134	6	13	96	313
	Nests parasitized	0	0	0	0	22	0	2	11	35
	% parasitized	**0%**	**0%**	**0%**	**0%**	**16%**	**0%**	**15%**	**12%**	**11%**
2015	Total nests *	5	18	21	2	181	7	7	82	321
	Nests parasitized	0	0	1	0	27	1	0	8	37
	% parasitized	**0%**	**0%**	**5%**	**0%**	**15%**	**14%**	**0%**	**10%**	**12%**
2016	Total nests *	7	38	18	4	133	3	12	123	334
	Nests parasitized	0	0	1	0	26	0	1	28	56
	% parasitized	**0%**	**0%**	**6%**	**0%**	**20%**	**0%**	**8%**	**23%**	**17%**
2017	Total nests *	12	45	20	7	182	4	12	128	390
	Nests parasitized	1	0	0	1	24	1	1	12	40
	% parasitized	**8%**	**0%**	**0%**	**14%**	**15%**	**25%**	**8%**	**9%**	**10%**
AVG	Avg total nests *	11.9	29.7	18.6	2.5	118.0	3.4	12.4	75.8	272.3
	Avg parasitized	1.0	0.2	0.2	0.1	25.7	0.5	1.7	17.4	46.8
	% parasitized	**8.4%**	**0.7%**	**1.1%**	**4.0%**	**21.8%**	**14.7%**	**13.7%**	**23.0%**	**17.2%**

* Total nests includes only those nests where parasitism could be observed and/or monitored; therefore not all nests on site are included in this total

The overall parasitism rate in 2017 of 10% continued the 10-year downward trend, as demonstrated in Figure 3.E. Not surprisingly, the number of cowbirds observed in the VCP counts continued to remain below that observed in the years of the project prior to 2014. As mentioned in earlier reports, possible explanations for this downward trend include (i) a reduction in the cowbirds' preferred foraging habitat at TTP due to the increase in tall herbaceous vegetation, and (ii) an overall decline in cowbird populations in Ontario, with the exception of the Carolinian region, as noted in the Atlas of the Breeding Birds of Ontario, 2001-2005 (p. 602).

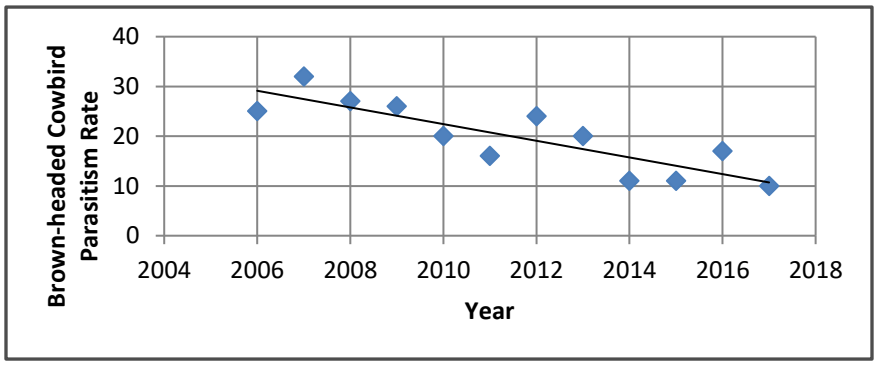

Figure 3.E Brown-headed Cowbird Parasitism Rate Trend

3.4 The Overall Picture in 2017

The most valuable aspect of this project will be its ability to reveal changes in breeding bird abundance and diversity over time at the VCP station, habitat and total area level. Breeding avifauna will respond to changes in habitat distribution, composition and structure due to natural succession and habitat creation. At present, the breeding bird communities (i.e., non-colonial waterbirds and landbirds) are typical of early successional environments. Dominant species in the past ten years of VCP counts include Red-winged Blackbird, Yellow Warbler, Song Sparrow, European Starling and Warbling Vireo, all of which require basic habitat conditions with a few fundamental components to thrive.

With the addition of Green-winged Teal and Least Bittern in 2017, there have been 46 nesters confirmed since the current project commenced. This total includes the 41 species listed in Table 3.5, plus Brown-headed Cowbird, Green-winged Teal (confirmed in 2017 by presence of recently-hatched young), Wood Duck (nesting confirmed in 2012 and 2015 by the presence of recently-hatched young), Canada Goose and Mute Swan, with the latter two species not being monitored as part of the project. In addition, the seven colonial waterbirds described in Section 2 of this report have also been confirmed as nesters: Black-crowned Night-Heron, Caspian Tern, Common Tern, Double-crested Cormorant, Great Egret, Herring Gull and Ring-billed Gull.

Tree Swallow at Nest (P. Robillard)

When all species and historical records are included, there are now 71 species confirmed to have bred at Tommy Thompson Park. Some rare and isolated breeding records are unlikely to recur with any regularity, if at all, (e.g., Wilson's Phalarope). A complete historical breeding bird species list is presented in Appendix D, Species Accounts.

Current habitat conditions remain appropriate for nesting by some additional species, so it is anticipated that the list of known breeding species may well continue to grow. Natural change, along with the habitat creation and restoration projects carried out by TRCA throughout TTP, such as the changes to Cell 2 to create a new marsh similar to Cell 1 (which are now largely complete), are also expected to increase the variety of habitats suitable for species not yet on the confirmed breeders list.

It is always interesting to note the species detected during VCP counts, but for which no nest was located, versus those species not detected during VCP counts, but for which a nest was found (Table 3.9). A variety of reasons exist to explain why a species could be recorded by one method, but not the other: (i) low abundance at TTP (e.g., Trumpeter Swan), (ii) secretive habits (e.g., Black-billed Cuckoo), (iii) well-hidden nests (e.g., Least Flycatcher), (iv) nests or normal habitat not located near VCP stations, and (v) nests not located at TTP.

Table 3.10 Species Recorded Only by VCP Counts Versus Species Recorded Only By Nest

VCP-recorded Species With No Nest Located	Species With Nest But Not Recorded During VCP
American Kestrel	American Woodcock
Blue Jay	Brown Thrasher
Common Yellowthroat	House Wren
Eastern Wood-Pewee	Least Bittern
Gadwall	Trumpeter Swan
Great Blue Heron	
Least Flycatcher	
Northern Mockingbird	

4. Acknowledgements

The colonial waterbird data were collected and presented by TRCA staff, who also produced most of the maps in the Appendices and provided valuable assistance in editing this report.

The landbird and non-colonial waterbird section of this report is the result of the ongoing efforts of several dedicated volunteers. The 2017 VCP observations were collected by Ian Sturdee and Don Johnston, and the volunteer contributions to the nest searching phase of the project in 2017 are enumerated in Table 3.11. Pierre Robillard created maps of the nests to help in monitoring during the breeding season and also in the preparation of this report.

Two people who contributed significantly in the past to the Breeding Bird Survey project are Dan Derbyshire and Andrew Jano. Dan Derbyshire, former TTPBRS coordinator, established the VCP point count and nest searching protocols for the landbirds and non-colonial waterbirds, as well as participating in the annual surveys and writing the reports until his departure in 2008. Andrew Jano, another active participant in the annual surveys until his untimely death early in 2012, created the initial detailed maps and vegetation graphics in the annual reports, and also helped write several of the reports.

Table 3.11 2017 Effort by Nest Searching Project Participants

Name	Total Hours
Abby Asuncion	2
Daniela Castellanos-Forero	13
Marc Dupuis-Desormeaux	6
Lynne Freeman	9
Don Johnston	135
Jan McDonald	5
Pierre Robillard	99
Ian Sturdee	177
Paul Xamin	150
Total	**596**

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Appendices

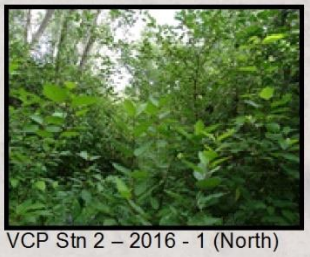
Appendix A: Annotated Map of TommyThompson Park with VCP Stations

Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 1

Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

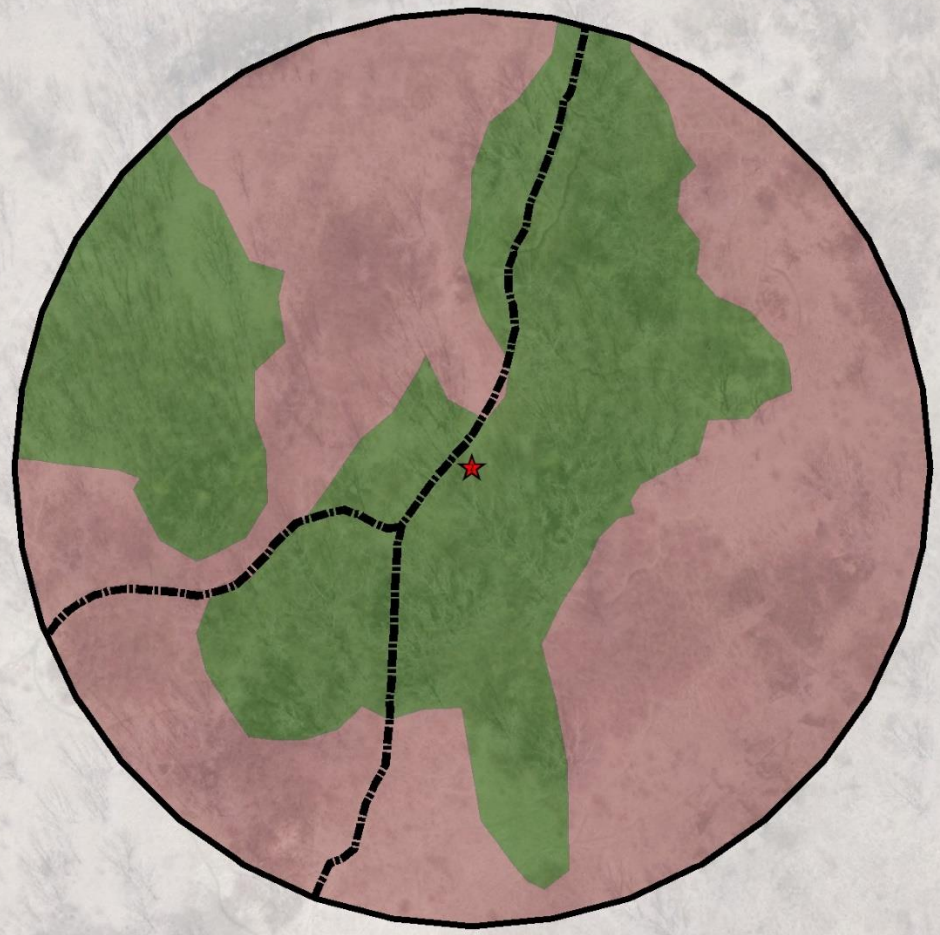
Station 2


VCP Stn 2 – 2016 - 1 (North)


VCP Stn 2 – 2016 – 2 (East)


VCP Stn 2 – 2016 – 3 (South)


VCP Stn 2 - 2016 - 4 (West)



Metres
0 15 30 60

Created by: T.R.C.A. Information Management
Orthophoto: City of Toronto, Spring 2016
Date: May 26, 2017

N

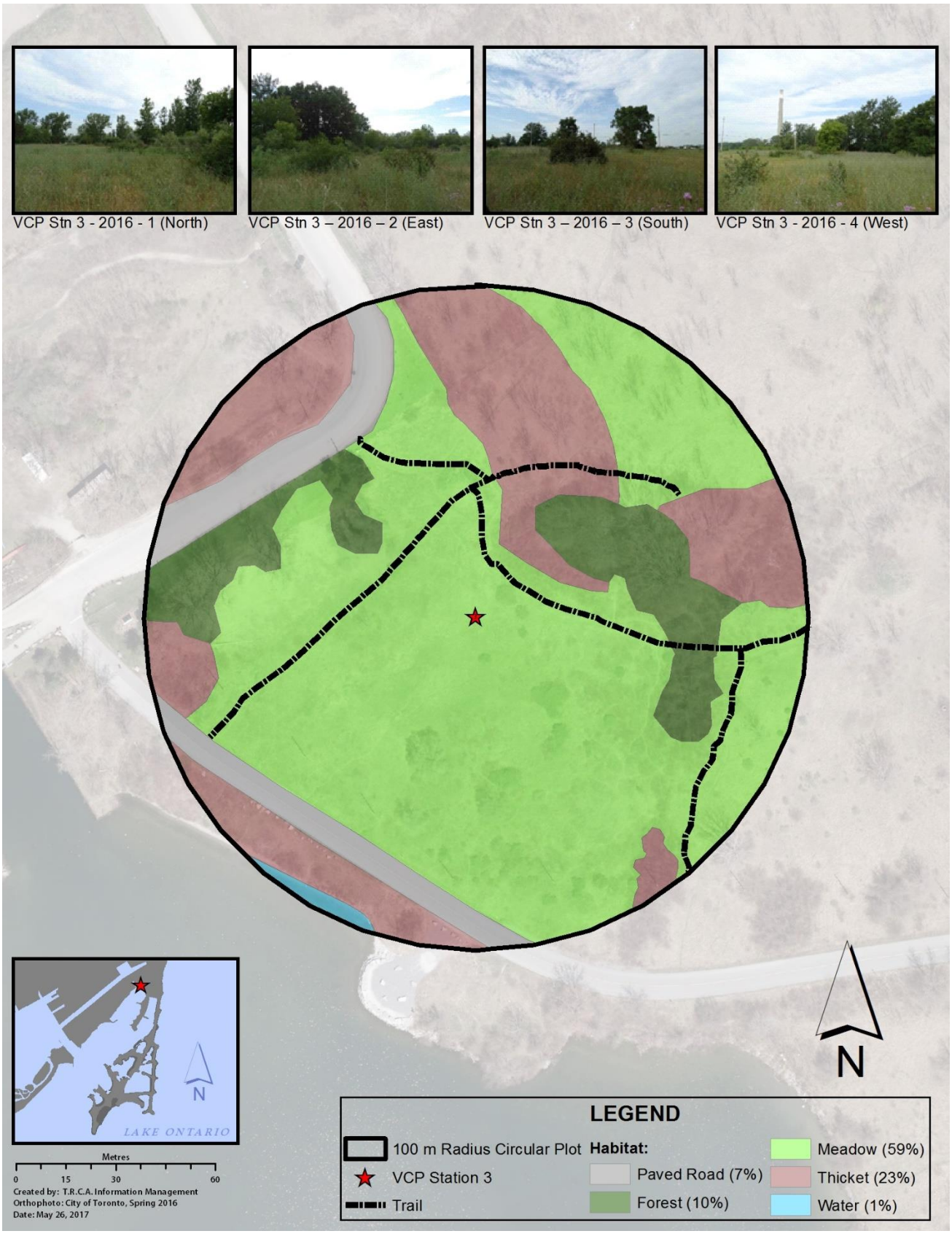
LEGEND

100 m Radius Circular Plot
VCP Station 2
Trail

Habitat:
Forest (41%)
Thicket (59%)

Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 3



Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

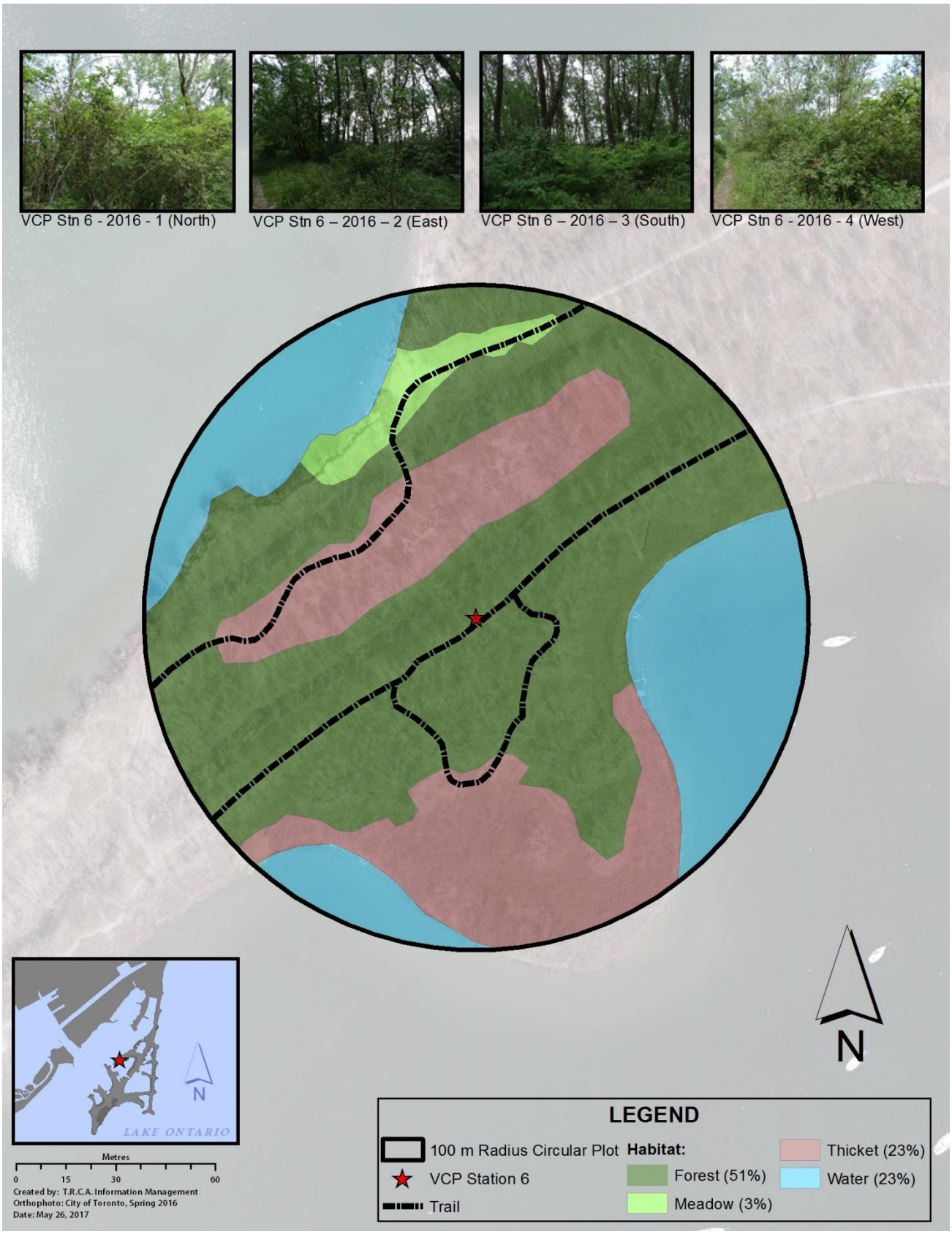
Station 4

Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 5

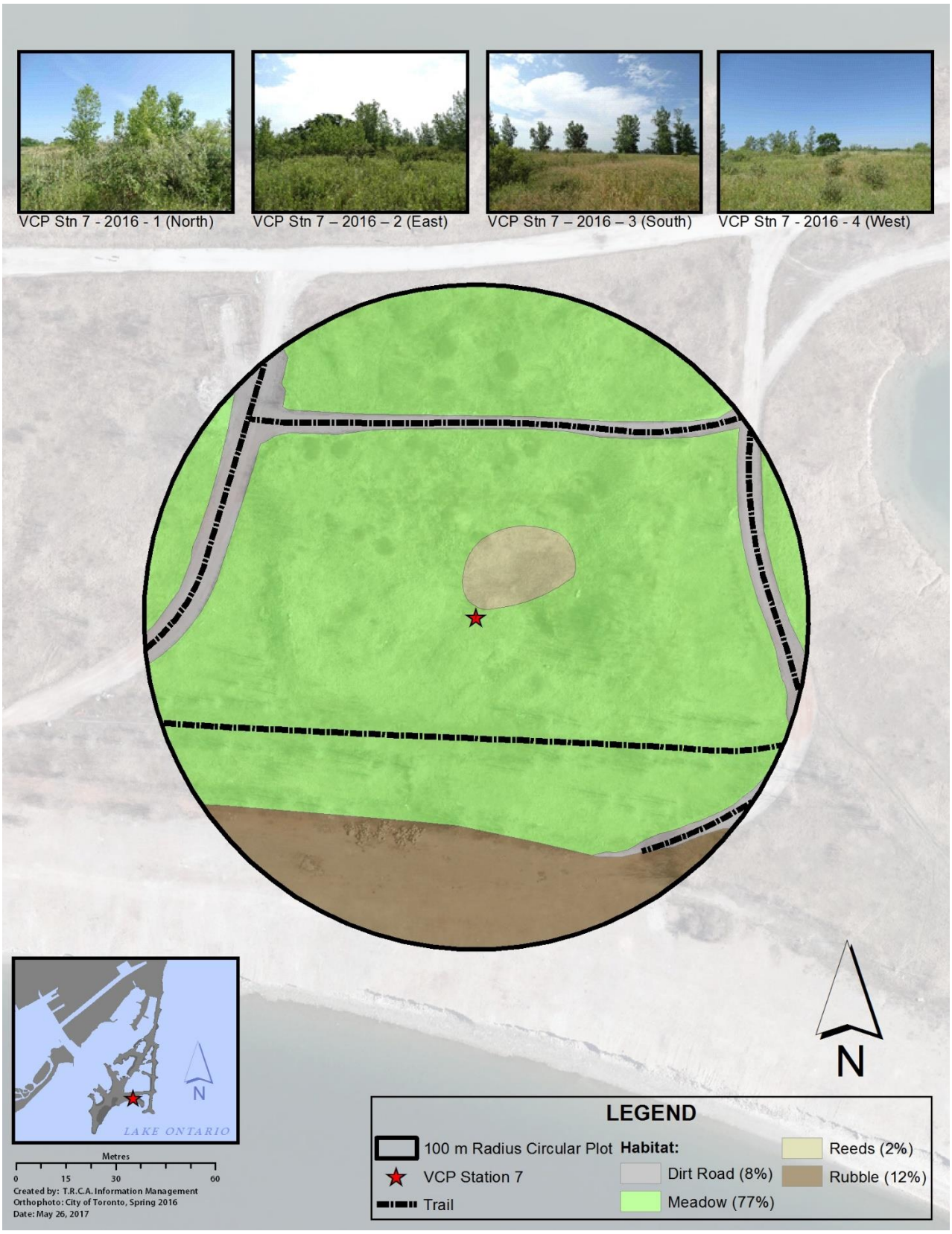
Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 6



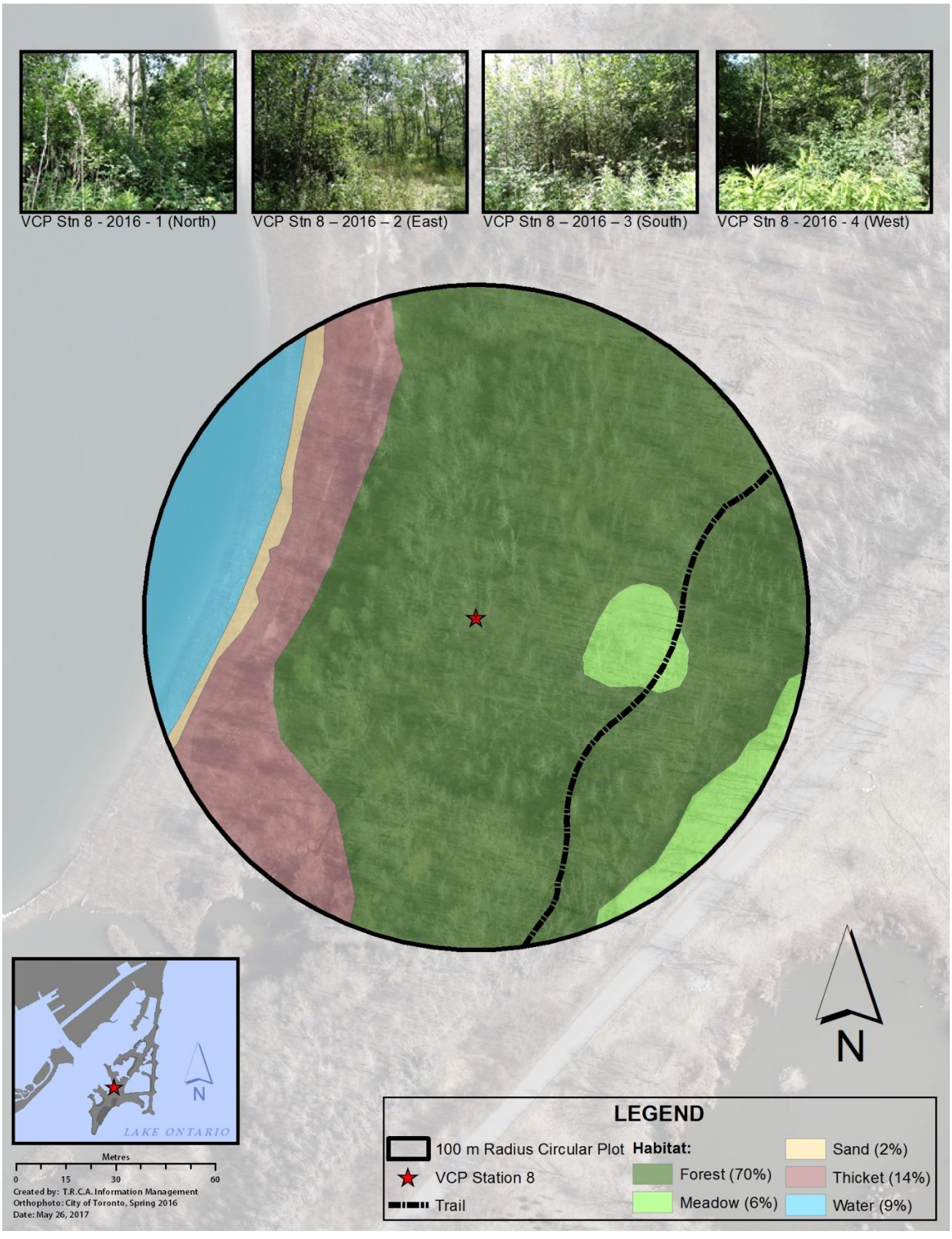
Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 7



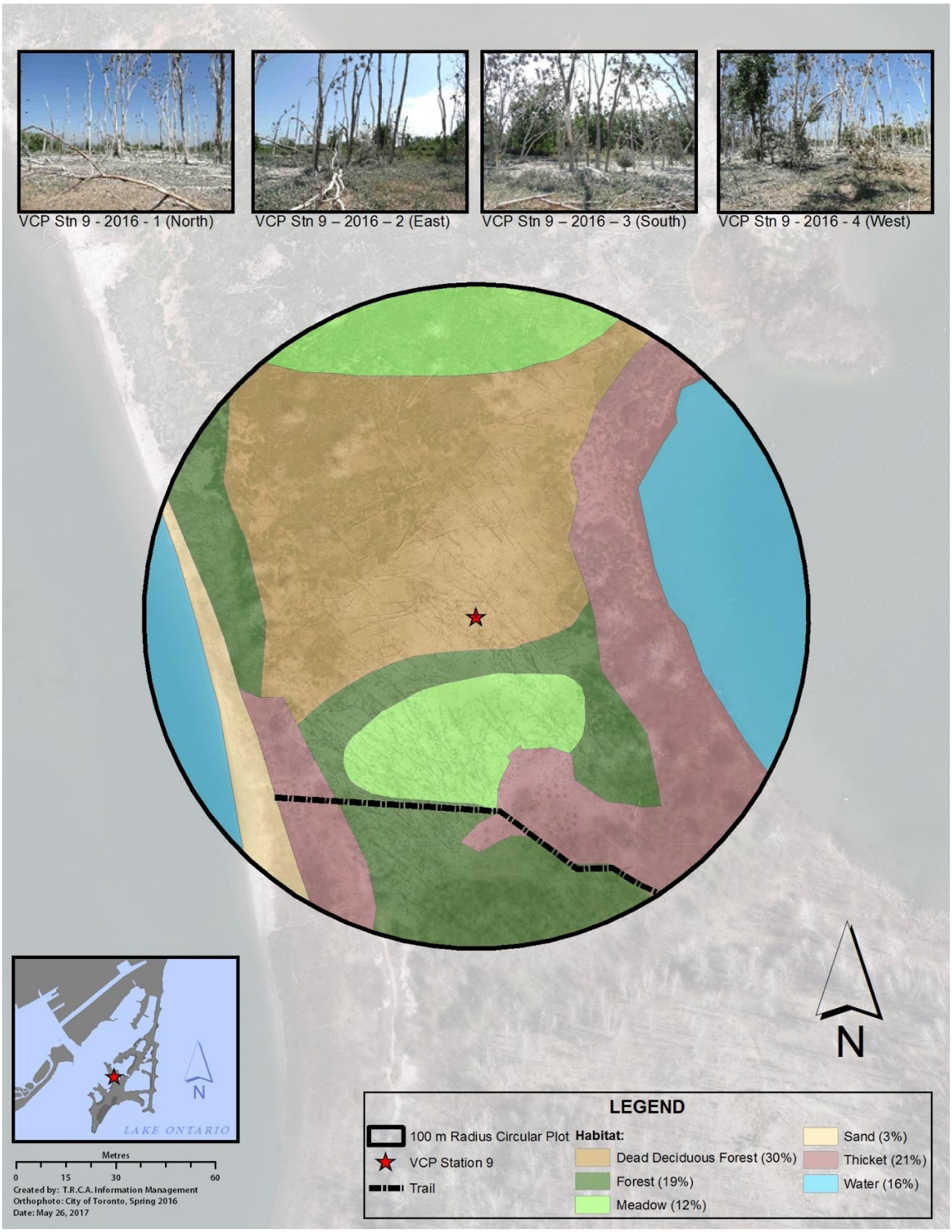
Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 8

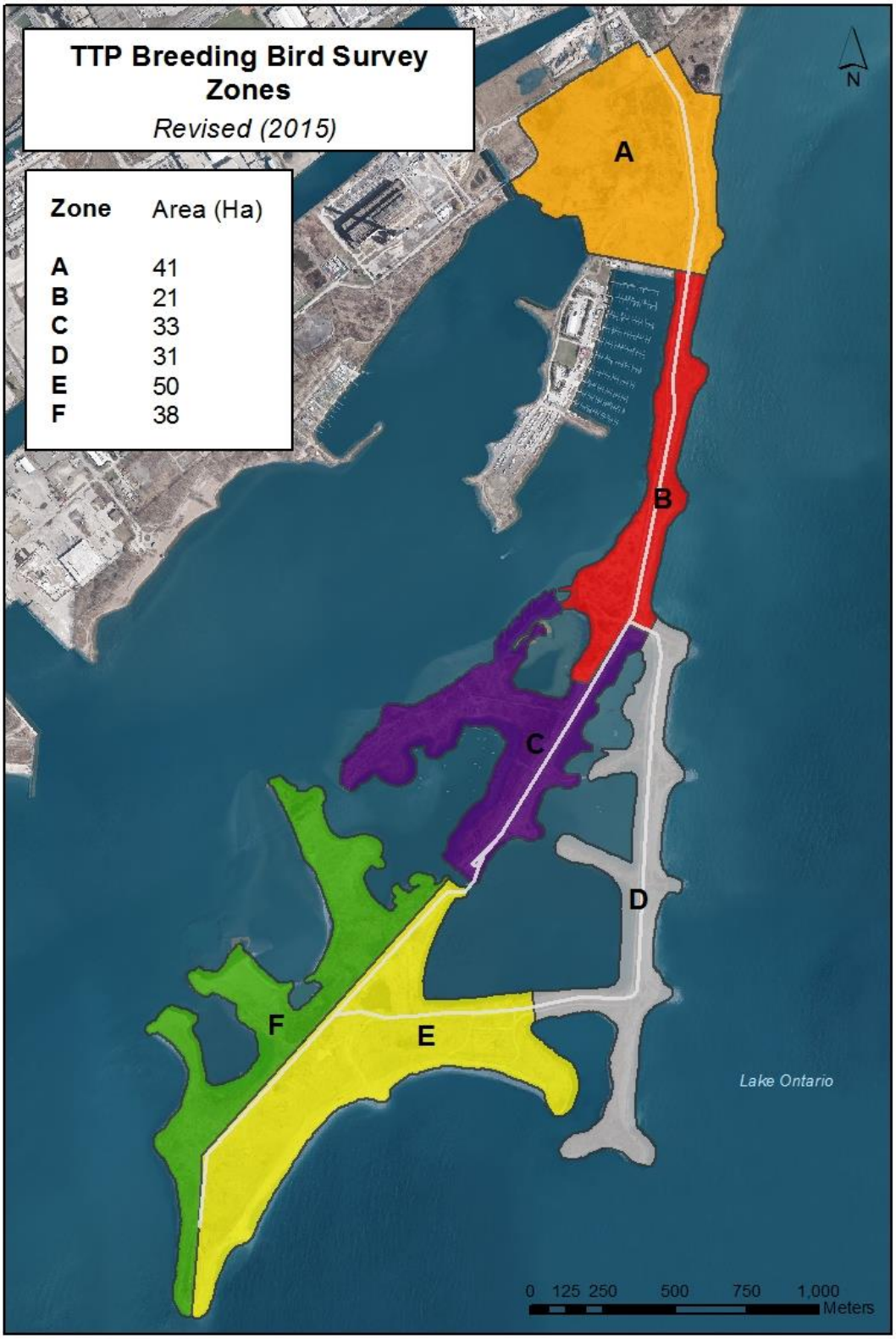


Appendix B: Description of VCP Stations (Habitat Pictures and Sketches)

Station 9



Appendix C: Map of TTP Breeding Bird Survey Zones



This map has been redone to reflect a minor change in zone alignment; changes in the TTP land base due to lake-filling activities; and mapping tool refinements. This has resulted in area increases to every zone except Zone B and an overall area increase of 11.5%. The land base at TTP is expected to continue to change as habitat creation and enhancement work continues.

Appendix D: Species Accounts

The following accounts include species that were listed as observed, or as possible, probable or confirmed breeders in 2017, as well as historically confirmed breeders. Species highlighted in red were detected in 2017 during the breeding bird survey, but have not yet been classified as confirmed breeders at Tommy Thompson Park. Species observed, but clearly out of their breeding range (shorebirds, e.g.) are not included here. For TTP locations specified in the following section, please consult Appendix A, an annotated map of the park.

Alder Flycatcher (2017 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 near Cell 2 was presumably a late migrant.

American Black Duck (2017 - absent) Known to have bred historically at TTP.

American Crow (2017 - absent) Known to have bred historically at TTP, but not in recent years.

American Goldfinch (2017 - confirmed) This species is a regular late nester at TTP. In 2017, 26 nests were discovered, which is slightly above the most recent ten-year average.

American Kestrel (2017 – observed) Known to have bred historically at TTP. A single bird was observed hunting during the breeding season.

American Robin (2017 - confirmed) Common nesting species in forested areas throughout TTP. In 2017, 125 nests were recorded, a new high for the project.

American Redstart (2017 - possible) This species has never been confirmed as a breeder at TTP. In 2017, a singing male was observed in suitable nesting habitat during the breeding season.

American Woodcock (2017 - confirmed) One nest was found in 2017, near Cell 3. This species is found regularly throughout much of TTP during the spring and summer. The 2012 change in protocol with regard to ground-nesting birds makes locating nests much less likely.

Baltimore Oriole (2017 - confirmed) Common nesting species in forest areas of TTP. A total of 24 nests was recorded in 2017, the second highest total of the past ten years of this project.

Bank Swallow (2017 - confirmed) A nesting site discovered in 2015 was occupied again in 2017 with at least 16 active nests.

Barn Swallow (2017 - confirmed) Barn Swallows are regular nesters at TTP under the eaves of buildings. In 2017, 49 nests were discovered at TTP, a 58% increase over the previous high. This species, listed provincially as a Species at Risk, continues to take advantage of three buildings constructed by TRCA in 2011/2012.

Belted Kingfisher (2017 - possible) This species was confirmed for the first time in 2003 based on observations of fledged young. In 2017, birds were observed calling at various suitable nesting habitats at TTP during the breeding season.

Black-billed Cuckoo (2017 – possible) In 2017, a bird was heard singing near where the species nested in previous years.

Black-capped Chickadee (2017 - confirmed) A regular but uncommon nester at TTP. In 2017, two nests were located.

Black-crowned Night-Heron (2017 - confirmed) While the population of this species at TTP had significantly declined in recent years, increases were recorded in both 2016 and 2017. At their peak in 2000, an estimated 30% of the Canada-wide population of Black-crowned Night-Herons were breeding at TTP.

Blackpoll Warbler (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Black-throated Green Warbler (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Blue-gray Gnatcatcher (2017 - confirmed) In 2017, four nests were found.

Blue Jay (2017 - observed) This species has never been confirmed as a breeder at TTP. The birds observed in 2017 were presumably late migrants.

Blue-winged Teal (2017 – absent) Known to have bred historically at TTP, although not in recent years.

Brown-headed Cowbird (2017 - confirmed) In 2017, a total of 40 nests of American Goldfinch (1), Northern Cardinal (1 – the first nest of this species found parasitized during this project), Red-winged Blackbird (24), Song Sparrow(1), Willow Flycatcher (1) and Yellow Warbler (12), were found to have been parasitized by cowbirds.

Brown Thrasher (2017 - confirmed) Brown Thrasher is a regular but uncommon nester at TTP. In 2017, two nests were located.

California Gull (2017 – absent) Known to have bred historically at TTP, but not detected in recent years.

Canada Goose (2017 - confirmed) Canada Goose is a regular breeder at TTP along shoreline edges of embayments and containment cells.

Canada Warbler (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Canvasback (2017 - absent) Canvasback has bred almost annually in recent years in the Triangle Pond area at TTP, although no birds were observed in either 2016 or 2017 during the breeding season.

Caspian Tern (2017 - observed) This species is a regular ground-nester at TTP most years. No nests could be confirmed in 2017.

Cedar Waxwing (2017 - confirmed) A common late nester at TTP; 33 nests were found in 2017, slightly above the most recent ten-year average for this project.

Chimney Swift (2017 - observed) This species has never been confirmed as a breeder at TTP. The birds observed in 2017 were presumably foraging from the city. There is no suitable nest habitat at TTP, i.e., no chimneys or hollow large-diameter trees.

Common Grackle (2017 - confirmed) Common Grackle is a regular nester at TTP, although nests are often well hidden. In 2017, one nest was found.

Common Raven (2017 – observed) This species has never been confirmed as a breeder at TTP, although a pair nested immediately north of TTP in 2017 and were seen from time to time foraging in TTP during the breeding season.

Common Tern (2017 – confirmed) The introduction in 2015 of new nesting rafts designed to repel predators, as well as further improvements in 2016, resulted in continued successful nesting for this species.

Common Yellowthroat (2017 - possible) Known to have bred historically at TTP. In 2017, a singing male was observed in suitable nesting habitat during the breeding season.

Double-crested Cormorant (2017 - confirmed) TTP has the largest colony of this species in North America. Well over half of the colony now nests on the ground as a result of TRCA efforts to limit damage to trees.

Downy Woodpecker (2017 - confirmed) Three nests were found in 2017, the highest number located in one year during this project.

Eastern Kingbird (2017 - confirmed) A regular breeder at TTP along forest edges where meadow and shrubs are present. In 2017, a total of 25 nests was found, slightly higher than the average for the most recent ten years.

Eastern Meadowlark (2017 - absent) In 2010, a nest was found in the Baselands meadow habitat, although it was not successful. Previously, the only indication of breeding obtained was that of a partially constructed nest in 2007. The change in protocol with regard to ground-nesting birds will make locating nests in future more difficult.

Eastern Wood-Pewee (2017 – possible) In 2017, singing males were observed in suitable nesting habitat in multiple locations during the breeding season. The nest of this species is always difficult to find, although the existence of singing adults in apparent territories during the breeding season suggests that nesting has probably been more common during this project than confirmed.

European Starling (2017 - confirmed) Starlings are an abundant species at TTP although their breeding density is difficult to estimate. The species is known to nest in man-made structures and natural cavities throughout the area. One nest was documented in 2017.

Gadwall (2017 - probable) Gadwall is a regular ground-nesting species at TTP. In 2017, a pair was observed in suitable nesting habitat during the breeding season, although no nests were located. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Gray Catbird (2017 - confirmed) Gray Catbird is a regular nester at TTP, preferring dense shrubs with some tree cover. An above-average total of 33 nests was found in 2017.

Great black-backed Gull (2017 - absent) Known to have bred historically at TTP.

Great Blue Heron (2017 - observed) Known to have bred historically at TTP. A bird was observed flying over during a VCP count in 2017.

Great-crested Flycatcher (2017 - observed) This species has never been confirmed as a breeder at TTP, although it has been observed regularly in suitable nesting habitat during this project in the breeding season, including in 2017.

Great Egret (2017 - confirmed) Regular nester in small numbers on Peninsula C.

Green Heron (2017 - possible) Known to have nested historically at TTP, but no nests have been detected during this project. A bird was observed calling in 2017 at Triangle Pond during the breeding season.

Green-winged Teal (2017 – confirmed) In 2017, this species was confirmed as a breeding species at TTP for the first time when an adult female and three young approximately one week old were observed in Embayment D.

Herring Gull (2017 – observed) Usually an annual ground-nesting colonial waterbird species at TTP, but no nests were recorded in 2017.

Hooded Merganser (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Horned Lark (2017 - absent) Known to have bred historically at TTP.

House Finch (2017 - observed) Known to have bred historically at TTP. In 2017, birds were observed during the breeding season in the Baselands.

House Sparrow (2017 - observed) Known to have bred historically at TTP. In 2017, birds were observed during the breeding season foraging around Cell 2.

House Wren (2017 - confirmed) Believed to be a regular nester at TTP, but in low numbers. In 2017, one nest was found near Goldfish Pond.

Killdeer (2017 - confirmed) Killdeer is a common ground-nesting species at TTP in open areas with low vegetation. Five nests were found in 2017, and observations of juveniles along roadways were frequent. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Least Bittern (2017 – confirmed) In 2017, this threatened species was confirmed as a breeding species at TTP for the first time. Two nests were found: one in Embayment D and the other in Triangle Pond. Although breeding success could not be confirmed at either nest, a juvenile captured at TTPBRS may have come from one of the nests.

Least Flycatcher (2017 - possible) A regular but uncommon breeder at TTP. In 2017, singing males were observed in suitable nesting habitat in the Wet Woods section of the Baselands at TTP during the breeding season.

Mallard (2017 - confirmed) Mallard is a regular ground-nester at TTP. Five nests were documented in 2017, slightly below the average for the most recent ten years of this project. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Mourning Dove (2017 - confirmed) One nest was found in 2017 in the Baselands. Mourning Dove nests have been scarce at TTP in recent years.

Mute Swan (2017 - confirmed) Mute Swan is a regular nesting species along TTP shorelines.

Myrtle Warbler (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Nashville Warbler (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Northern Bobwhite A known escapee may have bred at TTP in 1980, but the species has not otherwise been recorded in the park. This species is listed here for the sake of completeness, but is not included in the total of known breeding species at TTP.

Northern Cardinal (2017 - confirmed) Until 2017, Northern Cardinal had been an uncommon but usually an annually-nesting species at TTP. In 2017, however, 14 nests were found, by far the highest total for this project. Similarly, the 21 birds seen or heard during the VCP counts was the highest recorded during this project.

Northern Flicker (2017 - confirmed) Northern Flicker is an uncommon but regular nesting species at TTP. Five nests were found in 2017, the highest total recorded during this project.

Northern Harrier (2017 – observed) This species has never been confirmed as a breeder at TTP, although it is a regular winter visitor. The bird observed in 2017 was possibly a late migrant.

Northern Mockingbird (2017 - possible) This species has never been confirmed as a breeder at TTP, although it is known to breed in the vicinity of TTP. The species was observed in 2017 during its breeding season singing in suitable nesting habitat in the Baselands at TTP.

Northern Parula (2017 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Northern Rough-winged Swallow (2017 - confirmed) An uncommon nester at TTP, two nests were found in 2017 on the south shore of the Toplands.

Orchard Oriole (2017 - confirmed) One or two nests of this species have been found in most years of the project, and in 2017, one nest was found.

Purple Martin (2017 – observed) This species has never been confirmed as a breeder at TTP. The birds observed in 2017 were presumably foraging from the city, possibly from nests immediately north of TTP. There is no suitable nesting habitat at TTP.

Red-bellied Woodpecker (2017 – observed) This species has never been confirmed as a breeder at TTP. A bird was observed on two separate occasions during the breeding season in 2017 in wooded areas towards the south end of TTP.

Red-breasted Nuthatch (2017 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Red-eyed Vireo (2017 - probable) This species has never been confirmed as a breeder at TTP. In 2017, courtship display and singing males were observed in suitable nesting habitat in the Wet Woods section of the Baselands at TTP during the breeding season.

Redhead (2017 - absent) Known to have bred historically at TTP.

Red-winged Blackbird (2017 - confirmed) The most abundant nesting species at TTP (excluding colonial waterbirds), found throughout the TTP area. In 2017, 464 nests were found, the highest total recorded during this project.

Ring-billed Gull (2017 - confirmed) An abundant nesting colonial waterbird species at TTP.

Ring-necked Pheasant (2017 - absent) Known to have bred historically at TTP, but not detected in many years.

Rock Pigeon (2017 - observed) Known to have bred historically at TTP. Observed in 2017, but no nest was found.

Savannah Sparrow (2017 - probable) Prior to the start of this project, Savannah Sparrow was a common ground nester in open areas of TTP with substantial ground cover, particularly in the Baselands, along the Neck and in some areas of the Flats and Toplands. No nests have been found during the project, but in 2017 probable nesting was evidenced by a singing male, an observed pair, and agitated behaviour in suitable nesting habitat during the breeding season. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Song Sparrow (2017 - confirmed) Song Sparrow is one of the most abundant nesting species at TTP, although few of its well-concealed nests are ever found. In 2017, four nests were found in a variety of habitats, fewer than in recent years, but close to the most recent ten-year average. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely, although not all Song Sparrow nests are on the ground.

Sora (2017 - absent) Known to have bred historically at TTP, but not detected in recent years.

Spotted Sandpiper (2017 - confirmed) A common ground nester at TTP in open areas near water. Five nests were found in 2017, the same as the most recent ten-year average of this project. The 2012 change in protocol with regard to ground-nesting birds making locating nests less likely.

Swainson's Thrush (2017 - observed) Known to have bred historically at TTP. The bird observed in 2017 was presumably a late migrant.

Tree Swallow (2017 - confirmed) Tree Swallow is a common breeder at TTP. In 2017, 28 nests in nest boxes and natural cavities around TTP were documented and monitored, a new high for this project.

Trumpeter Swan (2017 - confirmed) This species was confirmed as a breeder at TTP for the first time in 2013. This is the fifth successive year of nesting by the original pair in Triangle Pond, producing seven cygnets in 2017.

Virginia Rail (2017 - absent) Known to have bred historically at TTP.

Warbling Vireo (2017 - confirmed) A common nesting species in forested areas in TTP, usually high in the trees, where the nest can often be found by hearing the female singing on the nest. In 2017, 21 nests were found, above average for this project.

White-throated Sparrow (2017 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2017 was presumably a late migrant.

Willow Flycatcher (2017 - confirmed) Willow Flycatcher is a common nesting species in more open areas with dense shrubs. In 2017, 18 nests were found, slightly above average for this project.

Wilson's Phalarope (2017 - absent) Known to have bred historically at TTP, but not detected in recent years.

Wood Duck (2017 - absent) This species was confirmed in 2012 as a breeder at TTP for the first time, but was not observed in 2017 in the breeding season.

Yellow Warbler (2017 - confirmed) Yellow Warblers are common to abundant through much of TTP, usually nesting in dogwoods and honeysuckle. A total of 253 nests was found in 2017, the highest total for this project. The number of Yellow Warbler nests has increased almost every year of this project. This species continues to show the highest rate of parasitism by Brown-headed Cowbirds at TTP.

Appendix E: Map of 2017 Landbird Nest Locations *

* Excludes colonial waterbird, Canada Goose and Mute Swan nests

Appendix F: Breeding Status Codes for Each Species Detected In 2017

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OBSERVED	POSSIBLE	PROBABLE	CONFIRMED
Alder Flycatcher	American Redstart	Gadwall	American Goldfinch
American Kestrel	Belted Kingfisher	Red-eyed Vireo	American Robin
Blackpoll	Black-billed Cuckoo	Savannah Sparrow	American Woodcock
Black-throated Green Warbler	Common Yellowthroat		Baltimore Oriole
Blue Jay	Eastern Wood-Pewee		Bank Swallow
Canada Warbler	Green Heron		Barn Swallow
Caspian Tern	Least Flycatcher		Black-capped Chickadee
Chimney Swift	Northern Mockingbird		Black-crowned Night-Heron
Common Raven			Blue-gray Gnatcatcher
Great Blue Heron			Brown-headed Cowbird
Great Crested Flycatcher			Brown Thrasher
Herring Gull			Canada Goose
Hooded Merganser			Cedar Waxwing
House Finch			Common Grackle
House Sparrow			Common Tern
Myrtle Warbler			Double Crested Cormorant
Nashville Warbler			Downy Woodpecker
Northern Harrier			Eastern Kingbird
Northern Parula			European Starling
Purple Martin			Gray Catbird
Red-bellied Woodpecker			Great Egret
Red-breasted Nuthatch			Green-winged Teal
Rock Pigeon			House Wren
Swainson's Thrush			Killdeer
White-throated Sparrow			Least Bittern
			Mallard
			Mourning Dove
			Mute Swan
			Northern Cardinal
			Northern Flicker
			N. Rough-winged Swallow
			Orchard Oriole
			Red-winged Blackbird
			Ring-billed Gull
			Song Sparrow
			Spotted Sandpiper
			Tree Swallow
			Trumpeter Swan
			Warbling Vireo
			Willow Flycatcher
			Yellow Warbler

Observed	Species observed in its breeding season (no evidence of breeding)
Possible Status	Singing male present or breeding calls heard in breeding season in suitable nesting habitat
	Species observed in breeding season in suitable nesting habitat
Probable Status	Nest building or excavation of nest hole
	Pair observed in their breeding season in suitable nesting habitat
	Permanent territory presumed through registration of territorial song on at least 2 days, one week or more apart at the same place
Confirmed Status	Adults leaving or entering nest site in circumstances indicating occupied nest
	Adult carrying food for young
	Recently fledged young or downy young
	Nest containing eggs
	Nest with young seen or heard