The Breeding Birds of

Tommy Thompson Park

2013

Warbling Vireo on Nest (I. Sturdee)

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

April, 2014

Table of Contents

Tables, Figures and Appendices

Colonial Waterbirds

Tables

Figures

Landbirds and Non-colonial Waterbirds

Tables

Figures

Appendices

1. Introduction

1.1 Study Area

TTP Aerial View (TRCA, 2013)

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 Port Authority, 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 the Toronto Port Authority 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 wildlife as they migrate across the lake or through 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 on the park, along with the geographical position have made it a critical site for birds throughout the year. To date, 316 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

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). This year seven species of colonial waterbirds nested at Tommy Thompson Park: two species are tree nesters, Black-crowned Night-Heron and Great Egret; four species are ground nesters, Ring-billed Gull, Herring Gull, Caspian Tern and Common Tern; and Double-crested Cormorants nest equally in trees and on the ground.

Black-crowned Night-Heron on Nest (D. Johnston)

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. 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 four 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 24m^2, 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 120m^2, 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.

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.

Cormorant ground nest estimates occur during the last week of May, at peak nesting period. Nest counts are conducted at night, using minimal light, in order to minimize disturbance and nest predation by Ring-billed Gulls. A minimal number of observers move quickly and systemically through the ground nesting area and place a coloured popsicle stick in the nest to mark it as counted.

2.3 Results

In 2013 Double-crested Cormorants nested in trees on Peninsulas A, B and C, as well as on the ground on Peninsula B. Black-crown Night-Herons nested on Peninsulas B and C. Great Egrets nested on Peninsula C. Ringed-billed Gulls and Herring Gulls nested on the ground on Peninsulas A and B. Caspian Terns nested on the ground on Peninsula B. Common Terns attempted nesting on three artificial reef rafts in Cell Two, one artificial reef raft in Embayment D and a man-made island in Cell One (Figure 2.A).

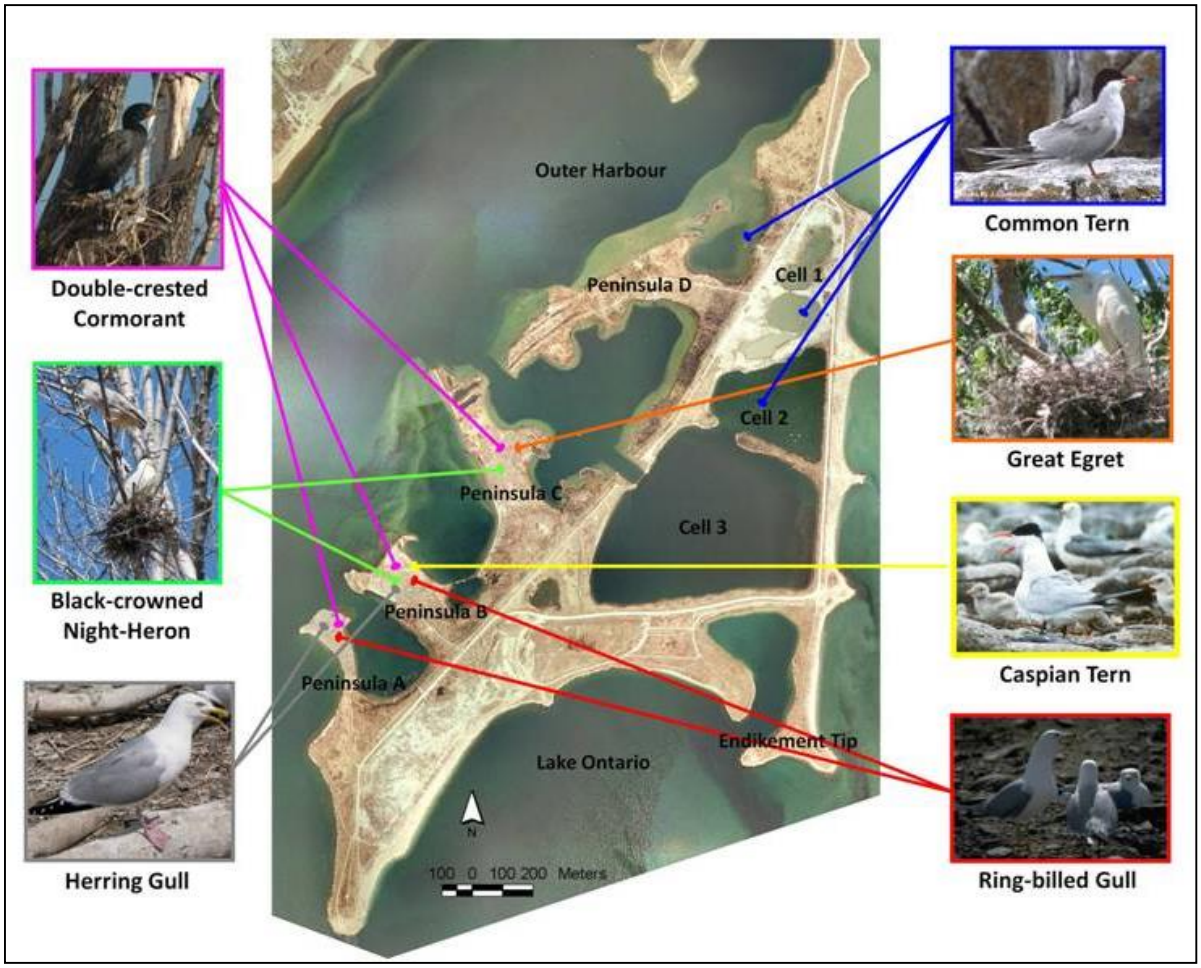


Figure 2.A. Colonial Waterbird Nesting Areas, 2013

Cormorant nests numbered 11,990, including 6,986 ground nests (Figure 2.B). The overall population increased two percent; while the ground nesting population increased 20 percent over the previous year (Figure 2.B). As indicated in Figure 2.B, 58 percent of the TTP cormorant colony nested on the ground in 2013. 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). As in 2012, tree nesting continued to decrease on Peninsulas A and C, however, there was a slight increase on Peninsula B (Figure 2.B).

Double-crested Cormorant (D. Johnston)

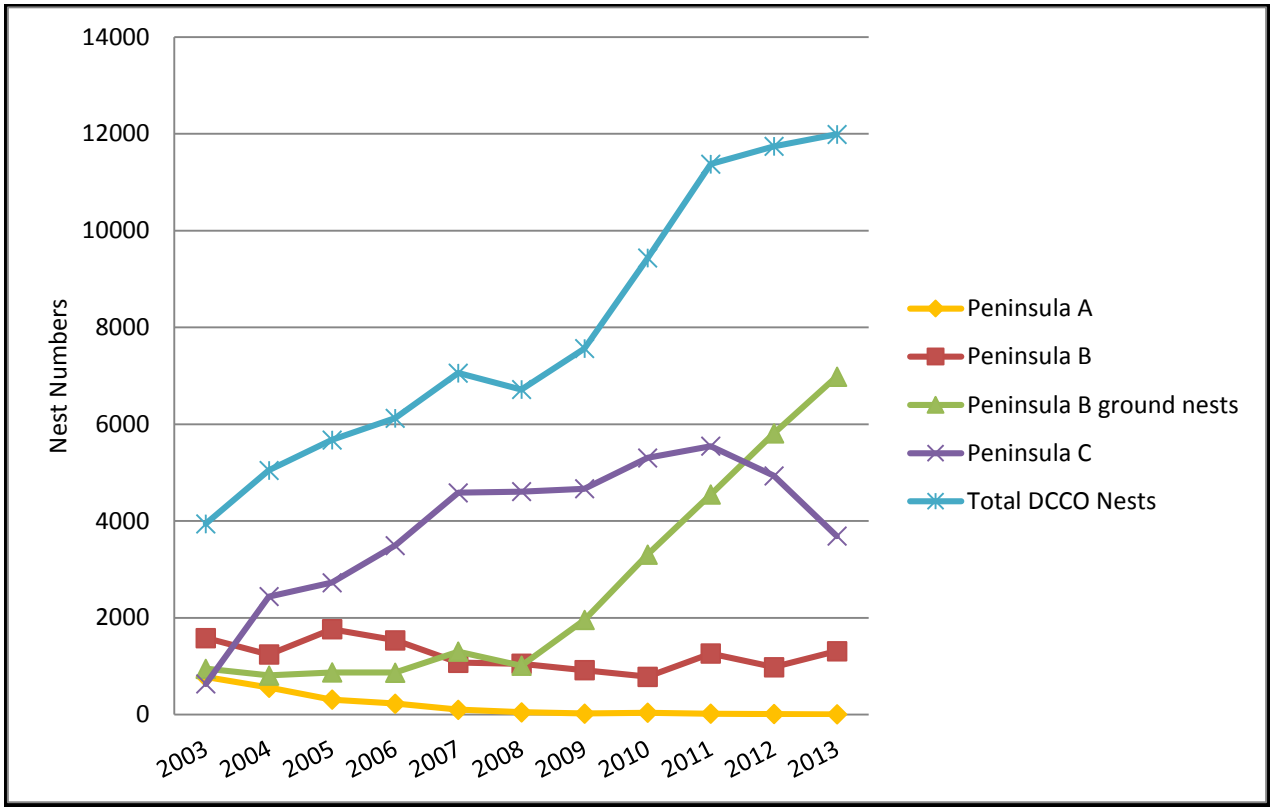


Figure 2.B. Double-crested Cormorant Nests at TTP by Location, 2003 - 2013

Black-crowned Night-Heron nests numbered 297 (Table 2.1). Interestingly, in 2013 nests on Peninsula B increased by 40 percent, while nests on Peninsula C decreased by 29 percent; this trend was opposite to 2012 (Figure 2.C). Note, however that the largest night-heron nesting population remains on Peninsula C. The nest numbers of night-herons at TTP has always been stochastic, however, the downward trend appears to continue in 2013. Great Egrets had 4 nests. Caspian Terns continued to nest and expand their colony on Peninsula B: 98 nests were counted and 136 eggs and/or chicks were recorded.

Table 2.1. Colonial Waterbird Nests at TTP, 2002 - 2013

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DCCO	3,543	3,942	5,046	5,674	6,125	7,059	6,717	7,564	9,434	11,374	11,741	11,990
BCNH	1,040	904	601	610	504	730	455	546[a]	431	423	410	297
GREG	0	0	1	4	3	5	5	7	5	7	8	4
RBGU	58,000*	56,151	45,000*	40,000*	35,000*	33,000*	30,000	30,000*	28,000*	32,000*	32,000*	35,000*
HERG	NC	48	79	NC	NC	45	30	NC	<20*	NC	NC	NC
COTE	445	420	433	448	NC	367	310	354	231	54	24*	0
CATE	65	252	350*	0	0	0	0	0	0	0	5*	98

a - Nesting failed by June 30
*- Estimate

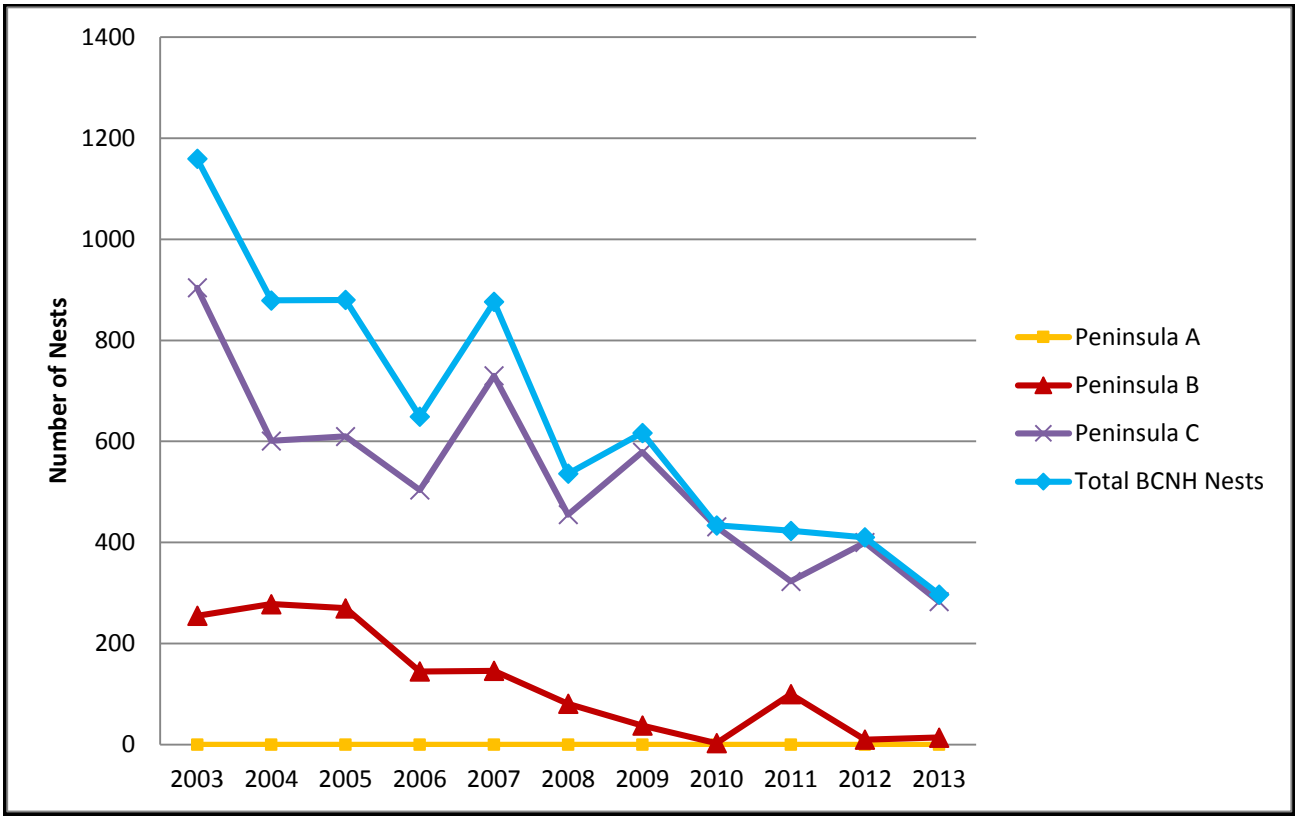


Figure 2.C. Black-crowned Night-Heron Nests at TTP by location, 2003-2013

For the third consecutive year Common Terns did not have a good breeding season at TTP. All five nesting locations were colonized in late April, and nesting, mating and egg laying took place throughout May. 64 nests and 169 eggs were recorded on the raft in Embayment D on May 29, however, several predation events took place on or before June 5 (evidence of mink) and all nesting attempts were abandoned. Similarly, the rafts in Cell Two were abandoned due to predation events by May 29, and the Cell One Island was predated by a mink on June 5. No further nesting was attempted in any location.

Gull population estimates were not undertaken in 2012, although anecdotal evidence suggests Ringed-billed Gull nests may be above the last official count in 2008 of 30,000 nests (Table 2.1). Ring-billed Gulls nested on Peninsulas A and B as in previous years, and they expanded to additional nesting grounds on the Peninsula B road, the Endikement and by the Lighthouse. As per the Ring-billed Gull Management Plan the eggs laid in these new locations were oiled to control the population. Herring Gulls nest among the Ring-billed Gulls in much lower numbers. TRCA does not undertake a Herring Gull census due to their low numbers and the involvement of CWS in individual nest monitoring for containment research.

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. The Tommy Thompson Park Bird Research Station (TTPBRS), through volunteers and some staff support, has carried out the project annually in spring and summer since 2005.

3.1.2 Change in Data Reporting

Commencing with the 2013 Breeding Bird Report, data from 2005 will no longer be included. While the project effort in 2005 established the methodology and determined the viability of the project, the work was completed with minimum resources, with the result that the thoroughness of TTP coverage (and consequently the number of nests detected) was not comparable to subsequent years. (Data from 2005 are still available in all previous annual reports.)

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. While most nest records gathered are submitted to the Ontario Nest Records Scheme (ONRS), nests discovered after nesting is complete are typically not.

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 should continue to be repeated every three years to help quantify changes in the vegetation communities.

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.

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, Eastern Meadowlark, Gadwall, Killdeer, Mallard, Savannah Sparrow, Song Sparrow and Spotted Sandpiper. These species represented 6.2% of nests found from 2006 to 2012, inclusive, and 2.7% of nests found in 2013, so there have never been many such nests found, and the change in protocol does not appear to have had a major impact on the number of such nests found, as they have always been notoriously difficult to locate.

All nesting data are submitted to ONRS online, and these data are available through inquiry to the TTPBRS at ttpbrs@trca.on.ca.

3.3 Results

3.3.1 Variable Circle Plot Point Count Results

3.3.1.1 VCP Station Vegetation Survey

In both 2010 and 2013, a vegetation survey was completed for each station, resulting in the vegetation descriptions found in Table 3.3 below. In addition, Appendix B contains a habitat sketch and photographs for each station in 2013. (The habitat sketches and photographs from 2010 can be found in the Breeding Bird Reports of 2010 – 2102.)

As can be seen from Table 3.3, several changes in habitat have occurred in only three years. This is not surprising, however, since most of TTP is intentionally left to develop on its own. Changes of note include:

Station 1: The increase in roads and trails in 2013 is due to the nearby parking lot being enlarged.

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

Station 3: Some meadow has been replaced by thicket and forest, but, more significantly, the meadow component has almost entirely been taken over by Spotted Knapweed, an invasive species.

Station 4: The trail recorded in 2010 is now largely overgrown during the nesting season.

Station 5: As with Station 2, the meadow area recorded in 2010 is now covered by dogwood and willow.

Station 7: The increase in non-vegetation area reflects the significant lake-filling that has taken place along the south shore in the last two years.

Station 8: The meadow area recorded in 2010 has been overtaken by trees, mainly poplar.

Station 9: Station 9 is located within the cormorant colony, and the effect of the excretions from these birds has been the loss of many trees and other vegetation, as demonstrated below by the north view in 2010 and 2013.

Table 3.3. 2010 - 2013 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
Aquatic Vegetation (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
2013 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		60	100			80		10
Thicket (tree cover ≤ 25%; shrub cover ≥ 25%)	15	60	25		75	20		20	20
Deciduous Forest (tree cover ≥ 60%)	20	40	10		10	50		70	35
Dead Deciduous Forest									15
Mixed Forest (tree cover ≥ 60%; conifers ≥ 25%)									
Wetland (permanently saturated; water ≤ 2 m)	5								
Vegetation Sub-total (see detail below)	95	100	95	100	85	70	80	90	80
Sand Dune/Sand Barren (incl active shorelines)						5			5
Roads/Trails	5		5		5		20		
Lake Ontario Shoreline (open water)					10	25		10	15
Non-vegetation Sub-total	5		5		15	30	20	10	20
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	10	40	5	60	40
Dogwoods (e.g., Red-osier Dogwood)	10	40	15		40	15		5	20
Honeysuckles						10			
Shrub Willows	10	5	5	5	30	5	5	5	
Grasses and Sedges	50	20	35	35	5		40	15	5
Goldenrods and Asters			5	30			15		5
Aquatic Vegetation (e.g., Cattails, Phragmites)	5			20				5	
Miscellaneous Herbs (e.g., Vetch, Nettles, etc.)			30	5			15		10
Vegetation Sub-total	100	100	95	100	85	70	80	90	80

3.3.1.2 VCP Observations

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

Species	2006	2007	2008	2009	2010	2011	2012	2013	AVG
ALFL						1			0.1
AMGO	22	15	10	8	22	35	8	14	16.8
AMRO	14	25	31	26	34	41	40	22	29.1
AMWO				1				1	0.3
BANS	*	104	2	5	4	14	35	7	21.4
BAEA								*	0.0
BAOR	21	29	22	23	13	28	22	26	23.0
BARS	1	31	3	11	8	32	31	22	17.4
BCCH	3	1	3	2	4	3	1	3	2.5
BEKI	3			2	1				0.8
BGGN	3	3	2	8					2.0
BHCO	15	22	11	19	19	10	17	12	15.6
BLJA			3	1	1		1		0.8
BLPW				1					0.1
BOBO	*	3							0.4
BRTH		4						1	0.6
CANG	*				*				0.0
CEDW	12	12	11	39	19	31	47	17	23.5
CHSW	*	*	2	*		2		3	0.9
COGR	21	12	11	9	17	23	8	12	14.1
COYE	1	2	1		2	2			1.0
DOWO						2	1	1	0.5
EAKI	12	18	25	12	20	18	12	7	15.5
EAME	1	2	5						1.0
EAWP		1	1	3	1	8	6	8	3.5
EUST	24	21	35	116	41	52	39	8	42.0
FISP		3							0.4
GADW			3	*	1	16		*	2.5
GCFL		2		3					0.6
GRCA	26	24	19	17	38	16	21	16	22.1
HOFI	1	*				1			0.3
HOSP	3		2						0.6
HOWR								2	0.3
KILL	3	1	7	8	3		2	5	3.6
LEFL	5	17	6	7	11	11	8	10	9.4
MALL	*		*	4			*	*	0.5
MAWA				1					0.1
MODO	1	6	1		*			3	1.4
NOCA	2	3		4	3	1	2	5	2.5
NOFL	2	1	1	2		2			1.0
NOMO					*				0.0
NRWS	*	22	7	8	5	14	*	4	7.5
ORORO							1	1	0.3
ROPI	*	*	*						0.0
RWBL	167	154	203	312	199	244	295	265	229.9
SAVS	12	2		1					1.9
SOSP	74	72	68	81	55	46	50	66	64.0
SPSA	6	7	9	6	3	4	2	1	4.8
TRES	*	8	15	9	16	24	11	25	13.5
TRFL			1		1				0.3
VEER		1							0.1
WAVI	25	31	22	41	30	39	50	53	36.4
WIFL	23	27	17	26	14	25	16	17	20.6
YWAR	105	118	109	134	100	168	136	146	127.0
Birds	**608**	**804**	**668**	**950**	**685**	**913**	**862**	**783**	784.1
Species	**37**	**38**	**35**	**37**	**32**	**29**	**26**	**31**	33.1

* Species observed beyond 100 metres and/or flying over

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) are attributable to one or a few large flocks recorded in one or more of the visits.

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 design and analyze distance sampling surveys of wildlife populations).

As shown in Table 3.4, a total of 31 species was detected for all counts in 2013, including one new species for VCP counts, i.e., House Wren. The total of 31 species is higher than the two preceding years, but still below the annual average for the project. Several species were recorded on counts in earlier years, but not in 2013, although they were detected during other surveys. Since some species are present at TTP in relatively low numbers, the frequency of detection for these species is low, and therefore we can expect year-to-year fluctuations in representation by VCP counts.

In 2013, total bird abundance (Figure 3.A) per station was down slightly from the preceding two years for Stations 2 (forest), 3 (dry meadow), 4 (dry meadow), 5 (shrubland), 6 (forest) and 7 (wet meadow). Stations 1 (wet thicket) and 8 (forest) were up slightly from the past two years, with the last three years for Station 8 showing a significant increase over the earlier years of the project. Station 9 (forest) has been fairly steady since 2008, with the exception of 2009. Overall abundance was generally in line with previous years of the project, with no dramatic swings.

Station 9 (forest) continued to reflect the lowest abundance, presumably due to its location in the Double-crested Cormorant colony and its limited biodiversity. See Appendix A for station locations,

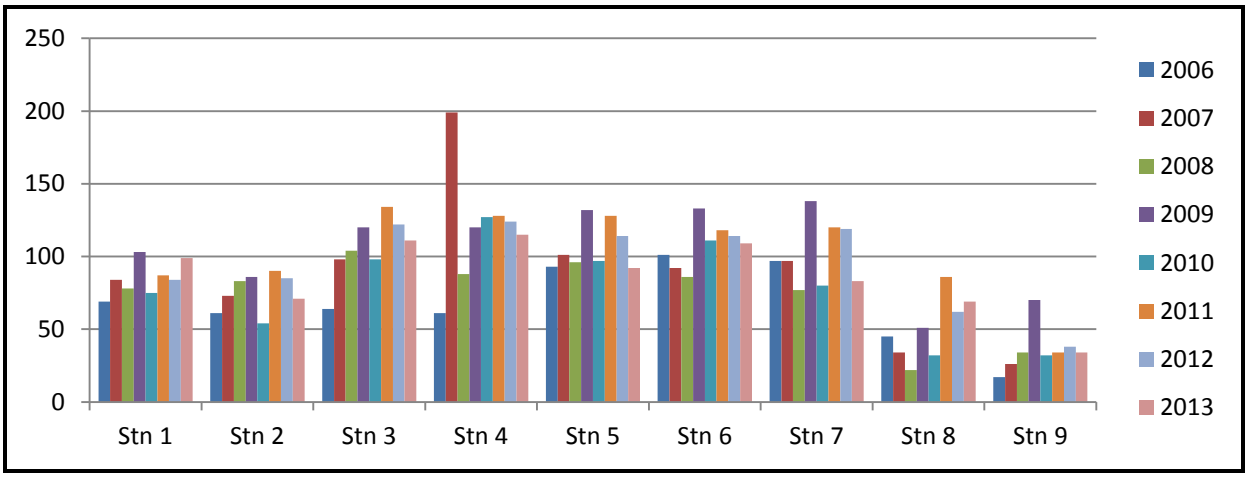


Figure 3.A. **Total Bird Abundance per VCP Station**

Species richness, or diversity, (Figure 3.B) for Stations 1 (wet thicket) and 4 (dry meadow) rebounded in 2013 from project-low numbers of species recorded in 2012 for those stations. Station 2 (forest), on the other hand, recorded a project low, and Stations 3 (dry meadow) and 7 (wet meadow) matched the lows set in 2012. The remaining stations were generally in line with experience in previous years, although Station 9 (forest) matched the project high for that station.

Despite the number of species recorded at Station 9, it remains the weakest station in terms of both diversity and abundance, as it is located on Peninsula C within the large Double-crested Cormorant colony and in an area with limited biodiversity.

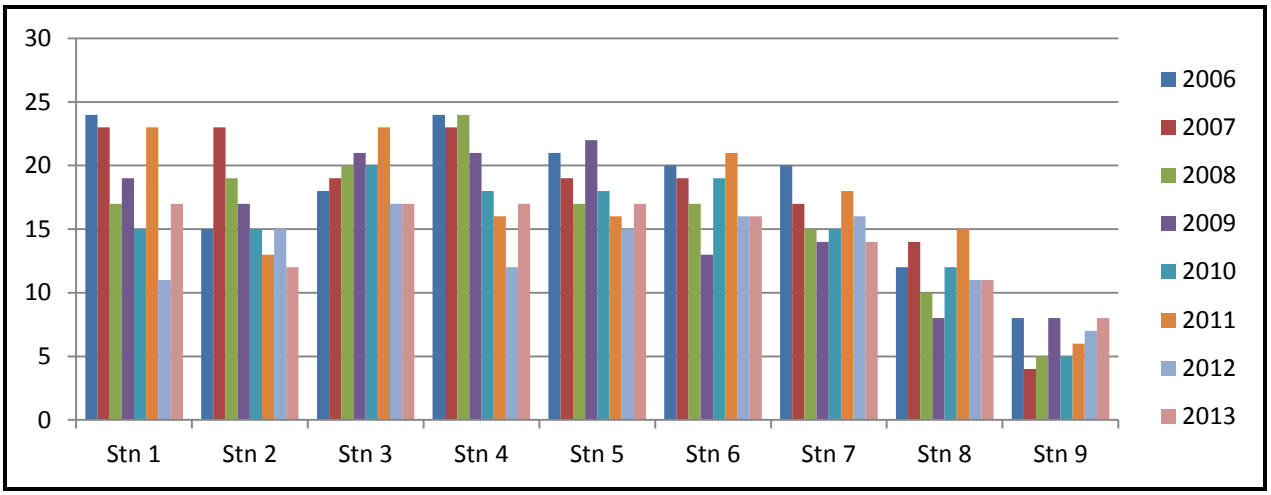


Figure 3.B. Species Richness per VCP Station

The total VCP count in 2013 was very close to the annual average for the project (i.e., 783 birds observed versus an eight-year average of 786.9). One new species was recorded for the VCP counts – House Wren. Species recording a new high count for the project were Chimney Swift, Northern Cardinal and Warbling Vireo, while Eastern Wood-Pewee matched it's previous high.

3.3.2 Nest Searching and Monitoring Results

In 2013, a total of 360.1 hours was logged by six participants. Figure 3.C shows the breakdown of effort per zone. As in 2011 and 2012, the greater effort in Zone A reflects the presence of additional volunteer time, as well as the discovery of nests in a section not previously extensively examined due to high water levels in early spring. The lower effort in Zone D continues to be the result of fewer nests being located in this zone, thereby requiring less monitoring time.

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

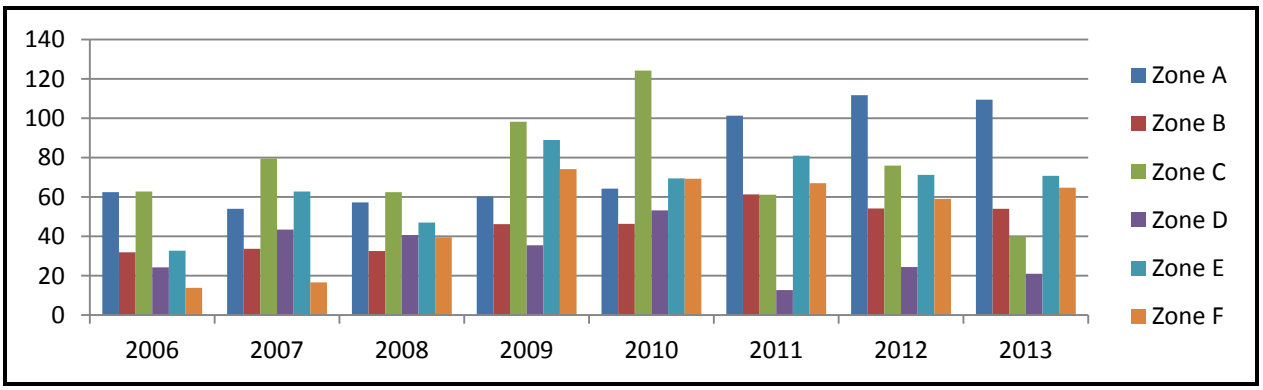


Figure 3.C. Nest Searching Effort per Zone from 2006 to 2013 (hours)

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 2013, a total of 733 nests was discovered, by far the highest number of nests found to date, and 549 of these nests were monitored (see Table 3.5), excluding ground nests. Nests of 25 species were found in 2013.

Table 3.5. Total Nests by Species from 2006 to 2013

Species	2006	2007	2008	2009	2010	2011	2012	2013	AVG
AMGO	1	19	25	44	33	23	13	17	21.9
AMRO	12	26	51	93	69	115	93	93	69.0
AMWO					3	1	1		0.6
BANS	2			4	2	1			1.1
BAOR	13	12	9	9	10	17	16	15	12.6
BARS	5	5	3	3	2	4	11	26	7.4
BCCH			1	2			1	2	0.8
BEKI	1	1	2						0.5
BGGN	1	1	1	3			2	4	1.5
BRTH	1	1	3	4	2		2	1	1.8
CEDW	3	7	14	40	14	21	23	19	17.6
COGR	3	2	1		4	4	2	3	2.4
DOWO		1			1	1	1	1	0.6
EAKI	11	17	26	22	14	12	27	21	18.8
EAME	1				1				0.3
EAWP		1			1	1	1		0.5
EUST	5	2	5	7	12	4	5	8	6.0
GADW	1	4	3	3	1	3	4	1	2.5
GRCA	12	9	11	23	11	16	21	24	15.9
HOFI		1							0.1
HOSP	1								0.1
HOWR	1		2	2	2	1			1.0
KILL	3	2	5	8	13	2	4	3	5.0
LEFL	1	2		3	1				0.9
MALL	6	7	9	12	12	6	9	8	8.6
MODO	4	4		3			1		1.5
NOCA	1	6	2	4	1		1	1	2.0
NOFL	4		1		3	3			1.4
NRWS	1	1		2		1			0.6
ORORR	1	2	1		2	1	2	3	1.5
RWBL	45	58	82	130	167	232	268	310	161.5
SOSP	6	5	1	7	8	2	3	2	4.3
SPSA	5	6	3	5	8	4	5	6	5.3
TRES	7	6	9	9	9	5	5	12	7.8
WAVI	8	4	7	7	9	15	12	13	9.4
WIFL	13	21	15	25	15	12	14	13	16.0
YWAR	34	71	71	75	82	88	86	127	79.3
Total	**213**	**304**	**363**	**549**	**512**	**595**	**633**	**733**	**487.8**
Total Effort (hours)	**228**	**289.2**	**279.5**	**403.7**	**427**	**384.6**	**397**	**360.1**	**346.1**
Efficiency (nests/hour)	**0.94**	**1.05**	**1.3**	**1.36**	**1.2**	**1.54**	**1.59**	**2.04**	**1.41**

The 733 total nests located in 2013 was 15% more than the previous highest total (in 2012). Besides ever-increasing nest-searching skills in the project participants, possible explanations for this increase include: the wet spring in 2013, which likely resulted in more insects to feed young birds, thereby encouraging more nesting; and the maturation of nesting habitat, particularly in Zones E and F at the south end of TTP. It will obviously be interesting to see what happens to nest totals in subsequent years.

The total number of Red-winged Blackbird and Yellow Warbler nests located in 2013 both set new highs for the eight years of the project, exceeding the previous highs by 15% and 44%, respectively. These two species are taking advantage of the increasing number of dogwood bushes, as well as densification of the existing dogwoods. It should be noted that the vegetation throughout the park in general appears to be gradually maturing more each year as one moves south on TTP. This vegetation development, of course, serves to provide more nesting habitat for the birds.

The dramatic increase in Barn Swallow nests in the past two years is significant in that this species is a provincially-listed Species at Risk and is attributable to the swallows making good use of the new buildings erected by TRCA.

Single nests were confirmed for Brown Thrasher, Downy Woodpecker and Northern Cardinal, species whose nests are difficult to locate.

The total number of nests in Zones E and F combined was at least 33% higher than in any previous year. This increase was largely attributable to the increased number of Red-winged Blackbird nests (at least 40% higher than any other year for these zones combined) and Yellow Warbler nests (at least 88% higher) in Zones E and F.

Some grassland management was undertaken by TRCA in early spring of 2013 when the vegetation on part of the Toplands (see Appendix A for the Toplands location) was mowed. The area chosen had previously been frequented by Savannah and Song Sparrows during past breeding seasons, but these birds had almost totally disappeared from the area in recent years as the vegetation (such as clover and goldenrod) became denser and taller. The mowing unfortunately was followed by a very wet spring, such that the area was not conducive to nesting in any event, and no evidence of sparrows was detected in the area during 2013's breeding season. Nevertheless, the area will be monitored closely in future years to determine if the mowing does result in the return of sparrows to the Toplands.

Nest-searching efficiency figures (Table 3.5) are somewhat misleading, as they are highly dependent on the vegetation type of the area (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 continued to improve in 2013, although the greater number of nests found meant less subsequent monitoring time, given the limited number of project participants. As mentioned previously, ground nests were not monitored once they were found.

3.3.2.1 Nest Productivity

A total of 549 nests was recorded online with ONRS in 2013 (Table 3.6). In terms of nest productivity, 97 (i.e., 34%) of 283 nests with known outcomes failed, while 186 were successful in fledging young. The remaining 266 nests had unknown outcomes, with the ratio of unknown outcomes to nests monitored being roughly in line with most previous years. The nests with unknown outcomes included all ground nests, which, commencing in 2012, were not monitored once found.

As can be seen in Table 3.6, the 2013 nest failure rate of 34% is on the low end of the range experienced since 2006. Nest predation was the most common cause of nest failure again in 2013. Possible predators at TTP include raccoons, gartersnakes, mink and coyotes, as well as other bird species. Of the 97 failures, 25 occurred at the egg stage, 14 at young stage and 58 at either egg or young stage.

Table 3.6. Nest Productivity from 2006 to 2013

	2006	2007	2008	2009	2010	2011	2012	2013	AVG
Nests discovered	214	304	363	549	512	593	633	733	487.6
Species	33	30	27	27	34	27	28	25	28.9
Nests monitored & reported to ONRS	214	236	297	456	440	430	464	549	385.8
Unknown outcome	71	160	148	170	213	155	213	266	174.5
Known outcome	143	144	149	286	227	275	251	283	219.8
- Successful nests	82	77	97	162	144	177	171	186	137.0
- Failed nests	61	67	52	124	83	98	80	97	82.8
- **Failure rate**	**43%**	**47%**	**35%**	**43%**	**37%**	**36%**	**32%**	**34%**	**38%**

Predated Red-winged Blackbird Nest (D. Johnston)

As shown in Table 3.7, the 40 confirmed breeders in 2013 were very close to the eight-year average. The 71 total species detected during all surveys is slightly below the eight-year average. The sharp increase in total species observed in 2012 may have been an anomaly resulting from an unusual number of late migrants being observed, and it will be interesting to see how this number changes in succeeding years.

Table 3.7. Summary of Species Detected Through VCP Counts and Nest Searching

	2006	2007	2008	2009	2010	2011	2012	2013	AVG
Confirmed Breeding Species	45	43	34	37	40	36	40	40	39.4
Probable Breeding Species	4	7	9	11	2	4	3	5	5.6
Possible Breeding Species	19	10	15	14	8	3	6	4	9.9
Other Species Observed	7	13	16	20	17	21	36	22	18.9
Total Species	**75**	**73**	**74**	**82**	**67**	**64**	**85**	**71**	**73.8**

With eight years of data now available, some conclusions and trends continue to emerge. As noted in 2011, 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 may be having an adverse effect on nesting suitability for such species. More study is required.

As shown in Figure 3.D, the known nest failure rate has been trending down over the course of the project. Reasons for this apparent trend are unknown and require further study.

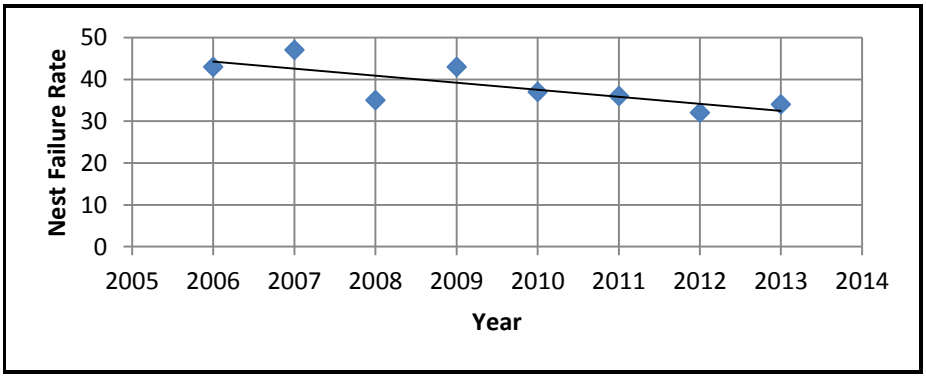


Figure 3.D Known Nest Failure Rate Trend

3.3.2.2 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 2013, a total of 58 nests of five species were parasitized by Brown-headed Cowbirds (Table 3.8). (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 3.8 were calculated as the ratio of parasitized nests to the 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 rate of parasitism for Red-winged Blackbirds in 2013 returned to the level of most previous years after a much higher incidence in 2012. At the same time, the rate for Yellow Warblers also returned to more usual levels, although in this case from a low level of incidence in 2012.

As indicated in Table 3.8, it is apparent that Yellow Warblers continue to be the most heavily parasitized species by Brown-headed Cowbirds at an average rate of 36.9% per year of observable nests, followed by Red-winged Blackbirds (27.5% average per year). A second incidence of an American Robin being parasitized during the project was detected in 2013, following one other nest in 2008, but no other species have been observed to be parasitized.

Table 3.8. **Brown-headed Cowbird Parasitism Data and Rates from 2006 to 2013**.

	Brown-headed Cowbird Parasitism							
		American Goldfinch	American Robin	Red-winged Blackbird	Song Sparrow	Willow Flycatcher	Yellow Warbler	**Totals**
2006	Total nests *	1	5	41	6	13	30	96
	Nests parasitized	1	0	12	2	3	9	27
	% parasitized	**100.0%**	**0.0%**	**29.3%**	**33.3%**	**23.1%**	**30.0%**	**28.1%**
2007	Total nests *	8	3	36	5	17	56	125
	Nests parasitized	2	0	8	0	4	29	43
	% parasitized	**25.0%**	**0.0%**	**22.2%**	**0.0%**	**23.5%**	**51.8%**	**34.4%**
2008	Total nests *	15	28	45		15	51	154
	Nests parasitized	1	1	18		4	21	45
	% parasitized	**6.7%**	**3.6%**	**40.0%**		**26.7%**	**41.2%**	**29.2%**
2009	Total nests *	21	44	112	4	24	68	273
	Nests parasitized	5	0	32	2	4	34	77
	% parasitized	**23.8%**	**0.0%**	**28.6%**	**50.0%**	**16.7%**	**50.0%**	**28.2%**
2010	Total nests *	19	28	110	4	11	66	238
	Nests parasitized	0	0	27	1	2	21	51
	% parasitized	**0.0%**	**0.0%**	**24.5%**	**25.0%**	**18.2%**	**31.8%**	**21.4%**
2011	Total nests *	13	26	81	2	11	36	169
	Nests parasitized	2	0	18	0	0	10	30
	% parasitized	**15.4%**	**0.0%**	**22.2%**	**0.0%**	**0.0%**	**27.8%**	**17.8%**
2012	Total nests *	8	17	77	2	8	33	145
	Nests parasitized	0	0	30	0	2	7	39
	% parasitized	**0.0%**	**0.0%**	**39.0%**	**0.0%**	**25.0%**	**21.2%**	**26.9%**
2013	Total nests *	9	26	145	2	11	75	268
	Nests parasitized	1	1	33	0	1	22	58
	% parasitized	**11.1%**	**3.8%**	**22.8%**	**0.0%**	**9.1%**	**29.3%**	**21.6%**
Avg	Avg total nests *	11.8	22.1	80.9	3.1	13.8	51.9	183.5
	Average parasitized	1.5	0.3	22.3	0.6	2.5	19.1	46.3
	% parasitized	**12.8%**	**1.1%**	**27.5%**	**20.0%**	**18.2%**	**36.9%**	**25.2%**

* 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

Red-winged Blackbird Nest with One Cowbird Egg (M. Dupuis-Desormeaux)

The overall parasitism rate in 2013 continued to trend downwards, as demonstrated in Figure 3.E. While 2012 saw a jump in both the overall parasitism rate and the number of cowbirds recorded in the VCP counts, both of these numbers decreased in 2013. As mentioned in earlier reports, possible explanations for this downwards 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 Breeding Birds of Ontario, 2001-2005 (p. 602).

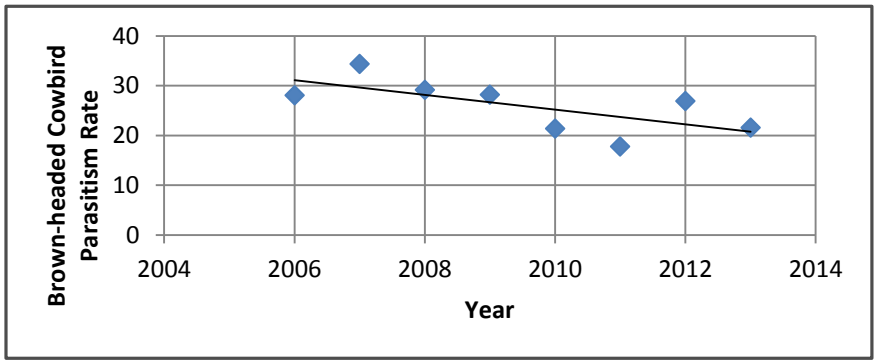


Figure 3.E Brown-headed Cowbird Parasitism Rate Trend

3.4 The Overall Picture in 2013

The most valuable aspect of this project will be its ability to reveal changes in breeding bird abundance and diversity over time at the 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 eight years of VCP counts include Red-winged Blackbird, Song Sparrow, European Starling, Warbling Vireo and Yellow Warbler, all of which require basic habitat conditions with a few fundamental components to thrive.

With the addition of Trumpeter Swan in 2013, there have been 42 nesters confirmed during the eight years of surveys. This total includes the 37 species listed in Table 3.5, plus Brown-headed Cowbird, Wood Duck (nesting confirmed in 2012 by presence of recently-hatched young), Canada Goose, Mute Swan and Trumpeter Swan, with the latter three 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.

Trumpeter Swan Family (P. Xamin)

When all species and historical records are included, there are now 68 species confirmed to have bred at Tommy Thompson Park. Some rare and isolated breeding records are unlikely to recur with any regularity (e.g., Wilson's Phalarope or Northern Bobwhite). 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 will grow in the future. Natural change and habitat creation and restoration projects carried out by TRCA, such as the recent changes to Embayment D, are also expected to increase the variety of habitats suitable for species not yet on the confirmed breeders list.

It is interesting to note the species detected only by VCP counts versus those recorded only by nest discovery (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, (ii) secretive habits (e.g., American Woodcock), (iii) well-hidden nests (e.g., Eastern Wood-Pewee, Least Flycatcher), (iv) nests or normal habitat not located near VCP stations (e.g., Gadwall, Mallard).

Table 3.9 Species Recorded Only by VCP Counts Versus Species Recorded Only By Nest

Species Recorded Only Through VCP Counts	Species Recorded Only Through Nest Discovery
American Woodcock	Blue-gray Gnatcatcher
Bank Swallow	Gadwall
Chimney Swift	Mallard
Eastern Wood-Pewee	
House Wren	
Least Flycatcher	
Mourning Dove	
Northern Rough-winged Swallow	

4. Acknowledgements

The colonial waterbird data were collected by TRCA staff, who also produced the maps in the Appendices.

The landbird and non-colonial waterbird section of this report is the result of the ongoing efforts of several dedicated volunteers. The 2013 VCP observations were collected by Ian Sturdee and Don Johnston, and the volunteer contributions to the nest searching phase of the project in 2013 are enumerated in Table 3.10.

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

Table 3.10 2013 Effort by Nest Searching Project Participants

Name	Total Hours
Marc Dupuis-Desormeaux	43.5
Don Johnston	89.8
Jan McDonald	30.5
Ian Sturdee	120.0
Bert Vanderzon	15.3
Paul Xamin	61.0
Total	**360.1**

References

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature,Toronto, xx11 + 706 pp.

Canadian Wildlife Service. Herring Gull monitoring. Unpublished raw data.

Jarvie, S., H. Blokpoel, and T. Chipperfield. 1999. A geographic information system to monitor nest distributions of Double-crested Cormorants and Black-crowned Night-Herons at shared colony sites near Toronto, Canada. Pages 121-129 *In* Symposium on Double-crested Cormorants: Population Status and Management Issues in the Midwest (M.E. Tobin, ed.). USDA Tech. Bull. No. 1879. 164pp.

Metropolitan Toronto and Region Conservation Authority. 1982. Environmentally Significant Areas Study (ESA No. 120, Tommy Thompson Park). MTRCA.

Metropolitan Toronto and Region Conservation Authority. 1994. Environmentally Significant Areas Study Update. MTRCA.

Metropolitan Toronto and Region Conservation Authority. 1996. Reefrafts for Common Terns and Fish: Guidelines for Design, Construction and Operation. Environment Canada.

Peck, G.K,, M. K. Peck, & C. M. Francis. 2001. Ontario Nest Records Scheme Handbook. ONRS. Toronto, Ontario.

Toronto and Region Conservation Authority. 2008. Double-crested Cormorant Management Strategy, May 2008. Authority Meeting Recommendation #110/08.

Toronto and Region Conservation Authority. 2006. The Breeding Birds of Tommy Thompson Park Project.

Toronto and Region Conservation Authority. 2007. The Breeding Birds of Tommy Thompson Park 2006.

Toronto and Region Conservation Authority. 2008. The Breeding Birds of Tommy Thompson Park 2007.

Toronto and Region Conservation Authority. 2009. The Breeding Birds of Tommy Thompson Park 2008.

Toronto and Region Conservation Authority. 2010. The Breeding Birds of Tommy Thompson Park 2009.

Toronto and Region Conservation Authority. 2011. The Breeding Birds of Tommy Thompson Park 2010.

Toronto and Region Conservation Authority, 2012. The Breeding Birds of Tommy Thompson Park 2012.

Wilson, W.G., E.D. Cheskey and IBA Steering Committee. 2001. Leslie Street Spit - Tommy Thompson Park Important Bird Area Conservation Plan. Canadian Nature Federation, Bird Studies Canada, Federation of Ontario Naturalists.

Appendices

Appendix A: Annotated Map of TommyThompson Park with VCP Stations

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

Station 1

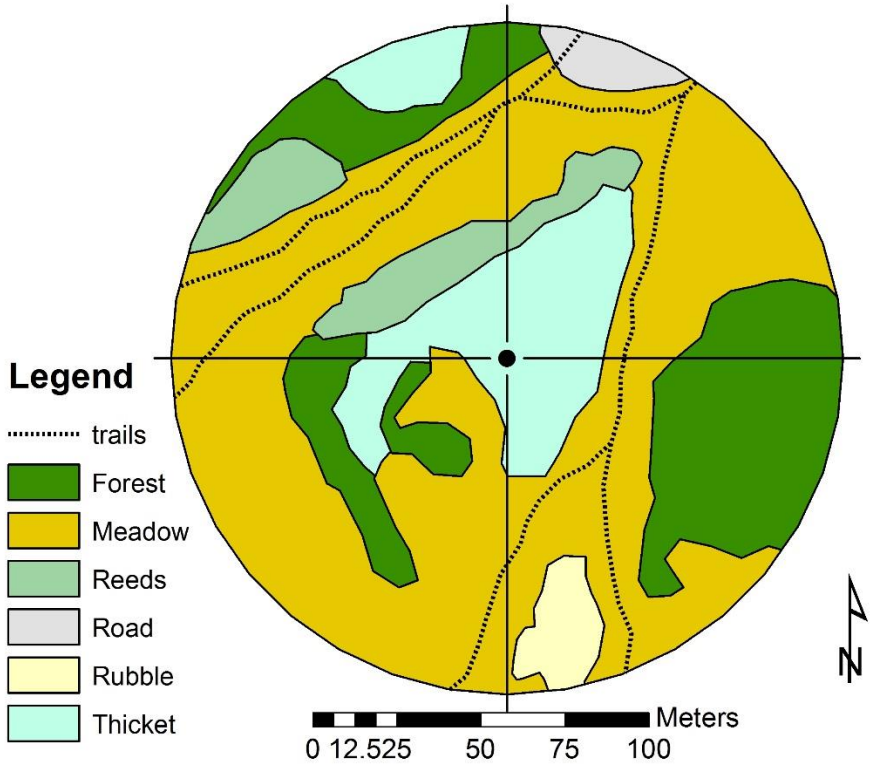

VCP Stn 1 – 2013 – 1 (North)


VCP Stn 1 – 2013 – 2 (East)


VCP Stn 1 – 2013 – 3 (South)


VCP Stn 1 – 2013 – 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 2

VCP Stn 2 – 2013 - 1 (North)

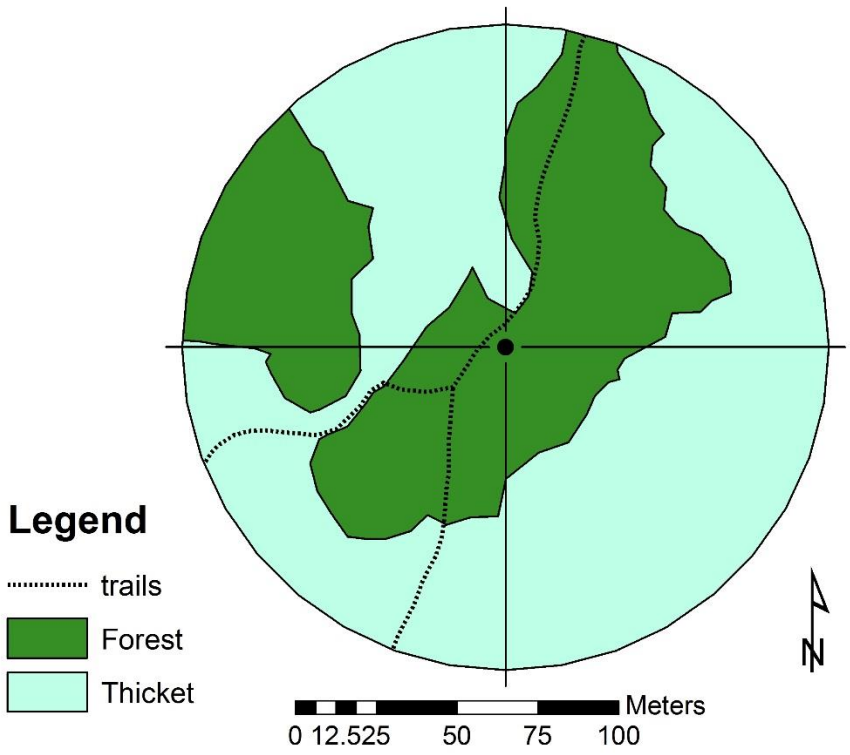
VCP Stn 2 – 2013 – 2 (East)

VCP Stn 2 – 2013 – 3 (South)

VCP Stn 2 - 2013 - 4 (West)

Sketch Map of Key Habitat Features

100 m radius circular plot



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

Station 3

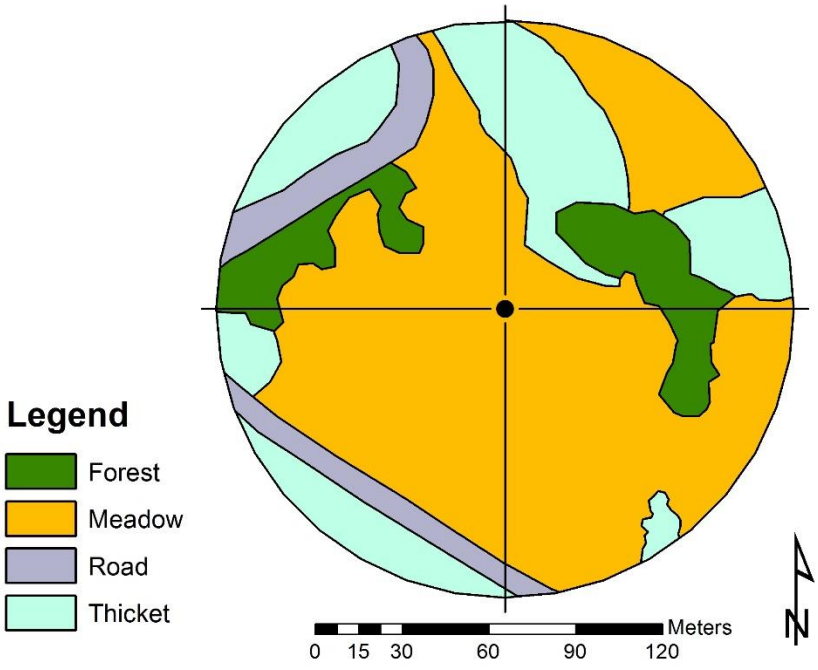
VCP Stn 3 - 2013 - 1 (North)

VCP Stn 3 – 2013 – 2 (East)

VCP Stn 3 – 2013 – 3 (South)

VCP Stn 3 - 2013 - 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 4

VCP Stn 4 - 2013 - 1 (North)

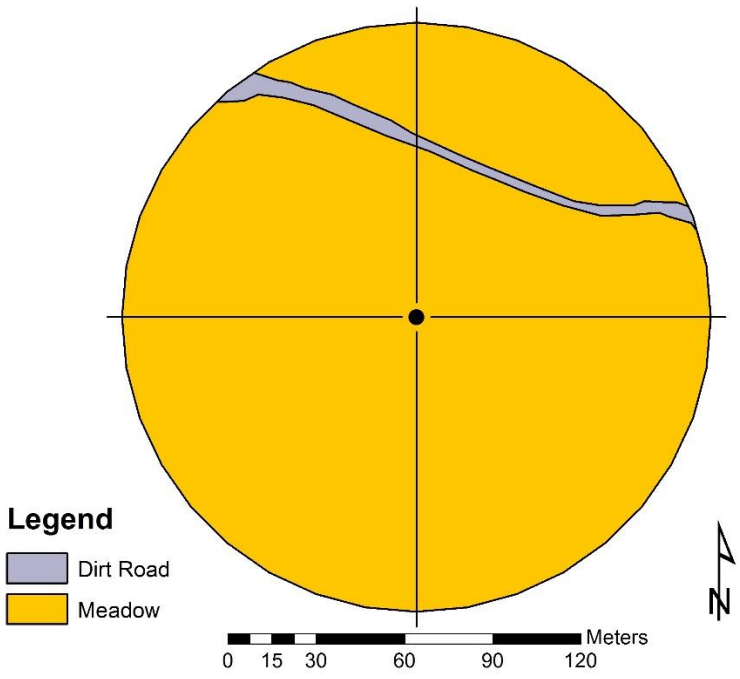
VCP Stn 4 – 2013 – 2 (East)

VCP Stn 4 – 2013 – 3 (South)

VCP Stn 4 - 2013 - 4 (West)

Sketch Map of Key Habitat Features

100 m radius circular plot



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

Station 5

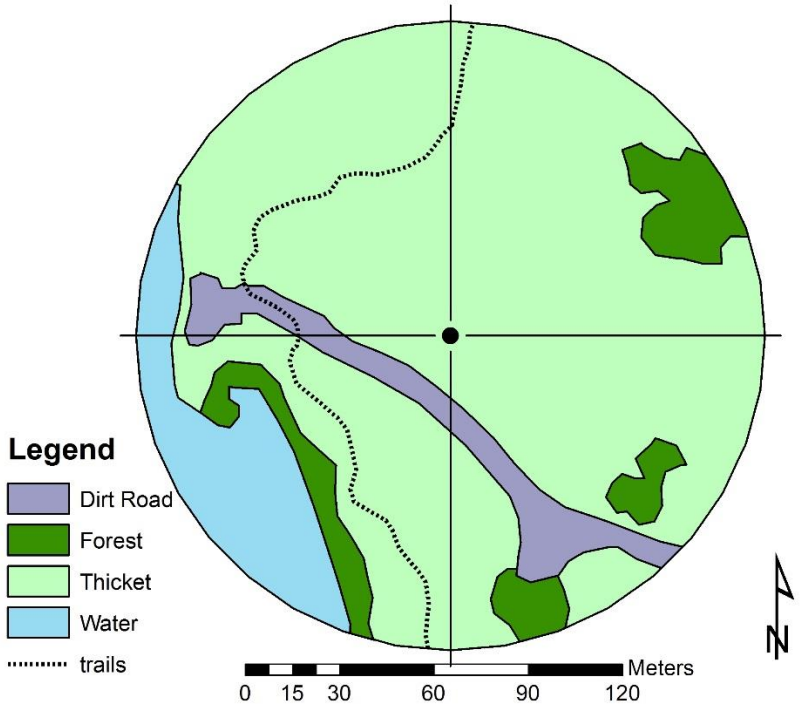
VCP Stn 5 - 2013 - 1 (North)

VCP Stn 5 – 2013 – 2 (East)

VCP Stn 5 – 2013 – 3 (South)

VCP Stn 5 - 2013 - 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 6

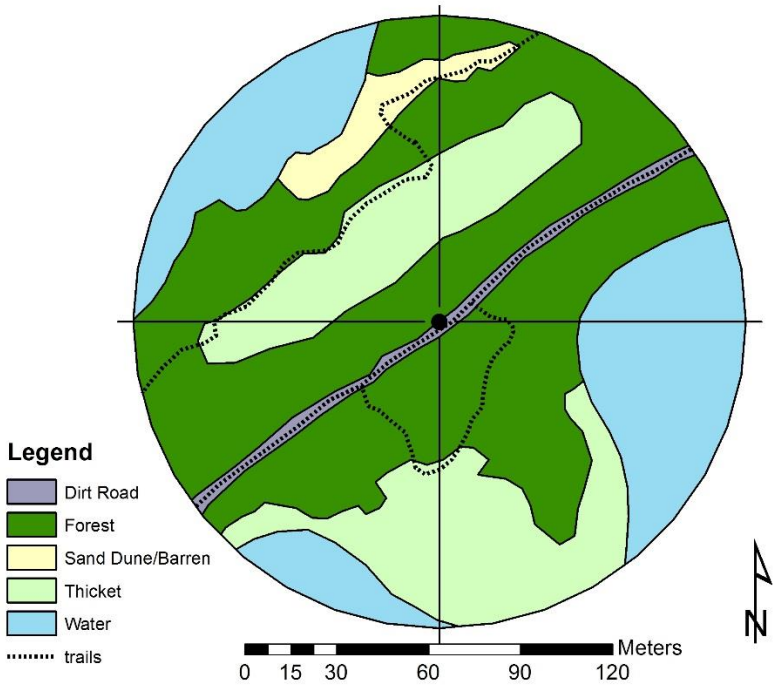
VCP Stn 6 - 2013 - 1 (North)

VCP Stn 6 – 2013 – 2 (East)

VCP Stn 6 – 2013 – 3 (South)

VCP Stn 6 - 2013 - 1 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 7

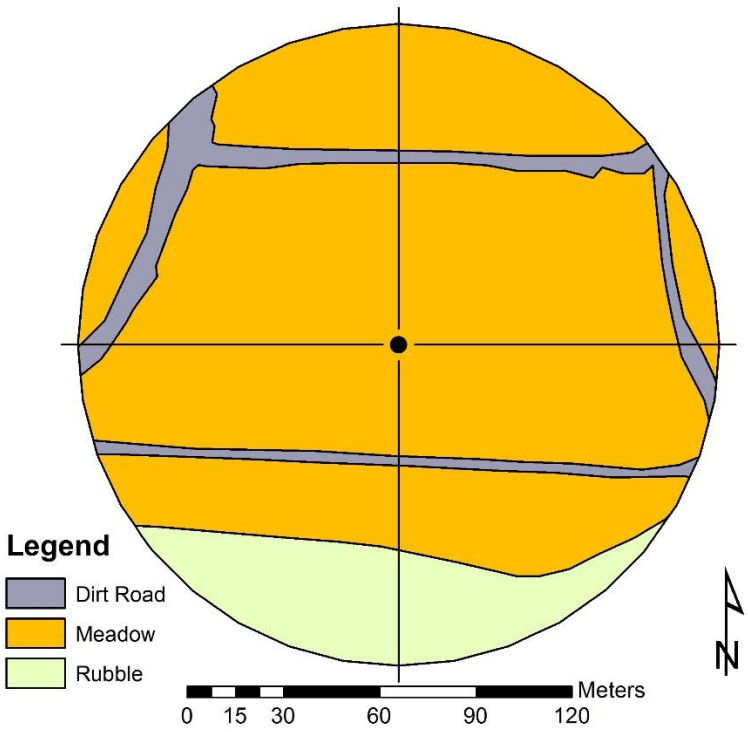
VCP Stn 7 - 2013 - 1 (North)

VCP Stn 7 – 2013 – 2 (East)

VCP Stn 7 – 2013 – 3 (South)

VCP Stn 7 - 2013 - 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 8

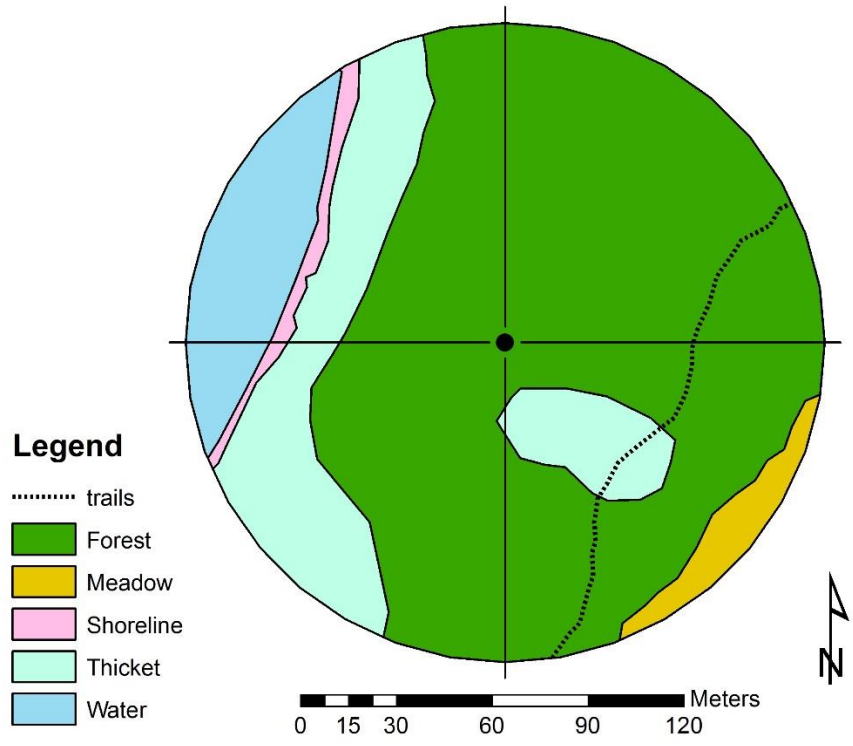
VCP Stn 8 - 2013 - 1 (North)

VCP Stn 8 – 2013 – 2 (East)

VCP Stn 8 – 2013 – 3 (South)

VCP Stn 8 - 2013 - 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



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

Station 9

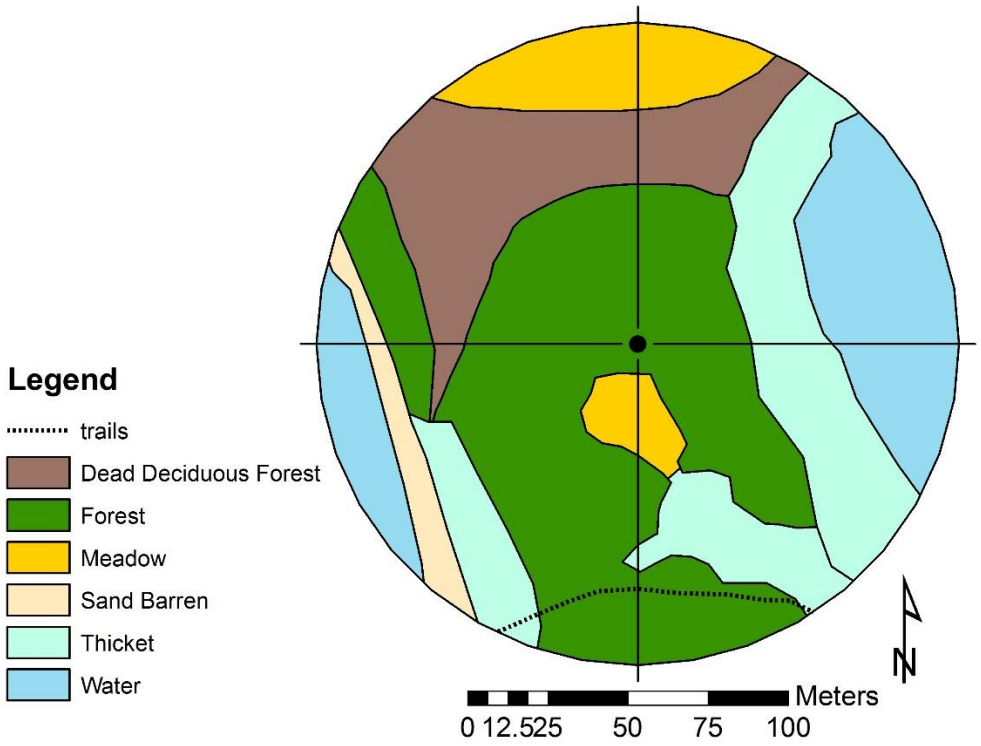
VCP Stn 9 - 2013 - 1 (North)

VCP Stn 9 – 2013 – 2 (East)

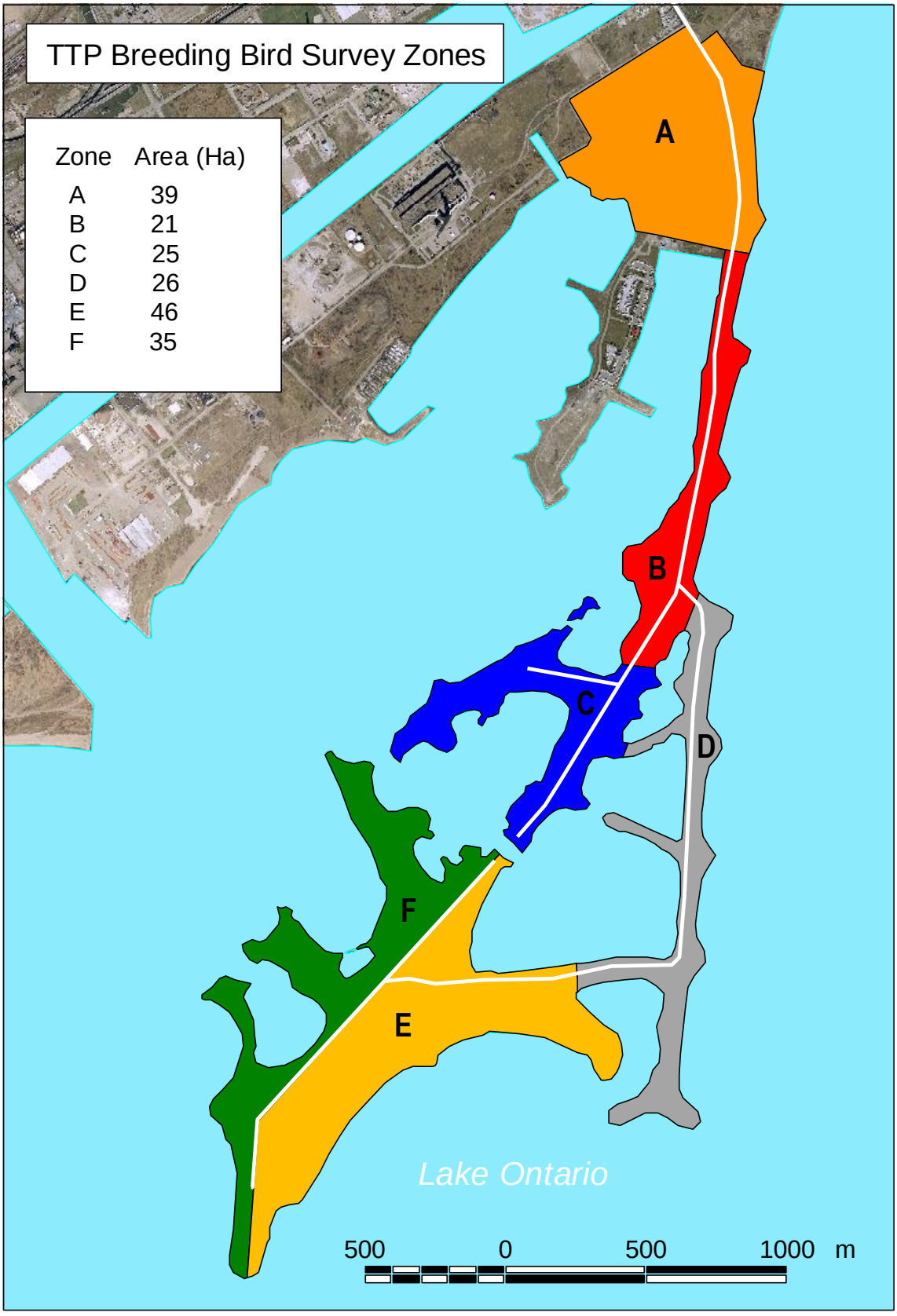
VCP Stn 9 – 2013 – (South)

VCP Stn 9 - 2013 - 4 (West)

Sketch Map of Key Habitat Features
100 m radius circular plot



Appendix C: Map of TTP Breeding Bird Survey Zones



Appendix D: Species Accounts

The following accounts include species that were listed as observed, or as possible, probable or confirmed breeders in 2013, as well as historically confirmed breeders. Species highlighted in red were detected in 2013 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.

American Crow (2013 - absent) Known to have bred historically at TTP.

American Goldfinch (2013 - confirmed) This species is a regular late nester at TTP. In 2013, 17 nests were discovered, an increase over 2012, but still below the annual average for the project.

American Green-winged Teal (2013 - absent) Known to have bred historically at TTP.

American Kestrel (2013 – absent) Known to have bred historically at TTP.

American Robin (2013 - confirmed) Common nesting species in forested areas throughout TTP. In 2013, 93 nests were recorded, the exact same number as in 2012 and well above the project annual average.

American Woodcock (2013 - probable) Although no nests were located in 2013, several individuals seen throughout TTP would suggest that breeding was probable. The 2012 change in protocol with regard to ground-nesting birds makes locating nests much less likely.

American Black Duck (2013 - absent) Known to have bred historically at TTP.

Bald Eagle (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Baltimore Oriole (2013 - confirmed) Common nesting species in forest areas of TTP. A total of 15 nests was recorded in 2013, slightly above the project's annual average.

Bank Swallow (2013 - confirmed) Small nesting colonies were discovered in both the meadows and southern shoreline of the Toplands area in earlier years. Although recent lakefilling operations to prevent shoreline erosion, particularly along the southern shoreline, have undoubtedly restricted the swallows' normal nesting habitat, recently-fledged young were observed being fed by adults beside Cell 3 in 2013, confirming successful breeding.

Barn Swallow (2013 - confirmed) Barn Swallows are regular nesters at TTP under the eaves of buildings. In 2013, 26 nests were discovered at TTP, significantly higher than in any previous year of the project. The construction of new buildings by TRCA has provided new nesting habitat for this species.

Belted Kingfisher (2013 - probable) This species was confirmed for the first time in 2003 based on observations of fledged young. A bird was observed visiting a probable nest site in 2013.

Black-capped Chickadee (2013 - confirmed) A regular but uncommon nester at TTP. Two nests were detected in 2013 through observing adults carrying food to the nest.

Black-crowned Night-Heron (2013 - confirmed) The population of this species has significantly declined in recent years. At their peak in 2000, an estimated 30% of the Canada-wide population of Black-crowned Night-Herons were breeding at TTP.

Blackpoll Warbler (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Black-throated Blue Warbler (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Blue-gray Gnatcatcher (2013 - confirmed) Known to have bred historically. In 2013, four nests were found, representing a new high for the project.

Blue Jay (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Blue-winged Teal (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Bobolink (2013 - observed) This species has never been confirmed as a breeder at TTP. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely. The bird observed in 2013 during the breeding season was presumably a late migrant.

Brown-headed Cowbird (2013 - confirmed) Brown-headed Cowbird is a common species throughout TTP during summer, and in 2013, a total of 58 nests of American Goldfinch (1), American Robin (1), Yellow Warbler (22), Red-winged Blackbird (33) and Willow Flycatcher (1) were found to have been parasitized by cowbirds.

Brown Thrasher (2013 - confirmed) Brown Thrasher is a regular but uncommon nester at TTP. One nest was discovered in 2013.

California Gull (2013 – absent) Known to have bred historically at TTP, but not detected in recent years.

Canada Goose (2013 - confirmed) Canada Goose is a regular breeder at TTP along shoreline edges of embayments and containment cells.

Canvasback (2013 - probable) Canvasback has bred almost annually in recent years in the Triangle Pond area at TTP, and a pair was observed on the pond during the 2013 breeding season, indicating probable breeding.

Caspian Tern (2013 - confirmed) 98 nests were located on Peninsula B in 2013.

Cedar Waxwing (2013 - confirmed) A common late nester at TTP; 19 nests were found in 2013, close to average for the project.

Cerulean Warbler (2013 - observed) This species has never been confirmed as a breeder at TTP. The singing male observed in 2013 during the breeding season was presumably a late migrant.

Chestnut-sided Warbler (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Chimney Swift (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably foraging from the city.

Chipping Sparrow (2013 - possible) This species has never been confirmed as a breeder at TTP. A bird was observed in 2013 during the breeding season in suitable nesting habitat.

Cliff Swallow (2013 – observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 may have been nesting in the vicinity of TTP.

Common Grackle (2013 - confirmed) Common Grackle is a regular nester at TTP. In 2013, three nests were found, about average for the project.

Common Tern (2013 – confirmed, but nests abandoned) Although nesting attempts were made in several locations, all nests were abandoned in early June after predation events.

Common Yellowthroat (2013 - observed) Known to have bred historically at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Double-crested Cormorant (2013 - confirmed) TTP has the largest colony in the lower Great Lakes region. 58% of the colony nests on the ground on Peninsula B.

Downy Woodpecker (2013 - confirmed) In 2013, one nest was found. This was only the fifth nest confirmation since the project started in 2005, although other nests have been suspected.

Eastern Kingbird (2013 - confirmed) A regular breeder at TTP along forest edges where meadow and shrubs are present. In 2013, a total of 21 nests was found, slightly above average for the project.

Eastern Meadowlark (2013 - 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 (2013 – probable) Although no nests were located in 2013, the existence of singing adults observed in apparent territories during the breeding season suggest that nesting probably occurred.

European Starling (2013 - 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. Eight nests were documented in 2013, slightly above average for the project.

Gadwall (2013 - confirmed) Gadwall is a surprisingly common nesting species at TTP, although in 2013, only one nest was confirmed. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Gray Catbird (2013 - confirmed) Gray Catbird is a regular nester at TTP, preferring dense shrubs with some tree cover. A total of 24 nests were found in 2013, a new high for the project.

Great black-backed Gull (2013 - absent) Known to have bred historically at TTP.

Great-crested Flycatcher (2013 - observed) This species has never been confirmed as a breeder at TTP, but is often observed during the breeding season.

Great Egret (2013 - confirmed) Regular nester in small numbers on Peninsula C.

Great Blue Heron (2013 - absent) Known to have bred historically at TTP.

Herring Gull (2013 - confirmed) A common annual nesting colonial waterbird species at TTP.

Hooded Merganser (2013 - possible) This species has never been confirmed as a breeder at TTP. In 2013, as in previous years, several individuals were seen in the waters around and on TTP in June and July.

Horned Lark (2013 - absent) Known to have bred historically at TTP.

House Finch (2013 - absent) Known to have bred historically at TTP.

House Sparrow (2013 - absent) Known to have bred historically at TTP.

House Wren (2013 - confirmed) A regular nester at TTP, but in low numbers. In 2013, adults were observed carrying food to a nest.

Killdeer (2013 - confirmed) Killdeer is a common nesting species at TTP in open areas with low vegetation. Three nests were found in 2013, 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 Flycatcher (2013 - probable) A regular but uncommon breeder at TTP. In 2013, a bird was observed registering its territory in suitable nesting habitat.

Mallard (2013 - confirmed) Mallard is a regular nester at TTP. Eight nests were documented in 2013, close to the average for the project. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Mourning Dove (2013 - absent) Mourning Dove nests have been scarce at TTP in recent years, and no nests were located in 2013.

Mute Swan (2013 - confirmed) Mute Swan is a regular nesting species along TTP shorelines.

Northern Bobwhite (2013 - absent) Known to have bred historically at TTP, but not detected in recent years.

Northern Cardinal (2013 - confirmed) Northern Cardinal is an uncommon but usually an annually-nesting species at TTP. In 2013, one nest was found, about average the last few years.

Northern Flicker (2013 - confirmed) Northern Flicker is an uncommon but regular nesting species at TTP. No nests were found in 2013, although recently-fledged young were observed learning how to fly on Peninsula A.

Northern Mockingbird (2013 - possible) This species has never been confirmed as a breeder at TTP, although it is known to breed in the vicinity of TTP. A bird was observed near the Lighthouse in 2013 singing during the breeding season.

Northern Parula (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Northern Rough-winged Swallow (2013 - confirmed) Although no nest was located in 2013, fledged young were recorded, confirming breeding success.

Orchard Oriole (2013 - confirmed) One or two nests of this species have been found in most years of the project. In 2013, three nests were found, a new high for the project.

Purple Martin (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably nesting near TTP.

Red-eyed Vireo (2013 - possible) This species has never been confirmed as a breeder at TTP, but a singing bird was observed in suitable habitat during the breeding season in 2013.

Redhead (2013 - absent) Known to have bred historically at TTP.

Red-winged Blackbird (2013 - confirmed) The most abundant nesting species at TTP (excluding waterbirds), found throughout the TTP area. A total of 310 nests were found in 2013, a new high for the project and almost double the annual average of the project to date.

Ring-billed Gull (2013 - confirmed) An abundant nesting colonial waterbird species at TTP.

Ring-necked Pheasant (2013 - absent) Known to have bred historically at TTP, but not detected in many years.

Rock Pigeon (2013 - observed) Known to have bred historically at TTP. Observed in 2013, but no nest was found.

Savannah Sparrow (2013 - absent) Prior to the start of the project, Savannah Sparrow was a common 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, and no birds at all were observed in 2013 during the breeding season, including on the Toplands where vegetation had become quite tall and was mowed to encourage nesting. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Song Sparrow (2013 - confirmed) Song Sparrow is one of the most abundant nesting species at TTP, although few of its well-concealed nests are ever found. In 2013, two nests were found. The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.

Sora (2013 - absent) Known to have bred historically at TTP, but not detected in recent years.

Spotted Sandpiper (2013 - confirmed) A common nester at TTP in open areas near water. Six nests were found in 2013, despite the 2012 change in protocol with regard to ground-nesting birds making locating nests less likely.

Swainson's Thrush (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Tree Swallow (2013 - confirmed) Tree Swallow is a common breeder at TTP. There are several nest boxes occupied around Cell 1 which are not monitored as part of the project, but 12 nests in other nest boxes and natural cavities around TTP were documented and monitored in 2013.

Trumpeter Swan (2013 - confirmed) This species was confirmed as a breeder at TTP for the first time in 2013. A pair was observed nesting in the reeds in the Triangle Pond, and five cygnets were successfully raised.

Virginia Rail (2013 - absent) Known to have bred historically at TTP.

Warbling Vireo (2013 - confirmed) A common nesting species in forested areas of TTP. In 2013, an above-average 13 nests were found.

White-throated Sparrow (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Willow Flycatcher (2013 - confirmed) Willow Flycatcher is a common nesting species in more open areas with dense shrubs. In 2013, 13 nests were found, slightly below average for the project.

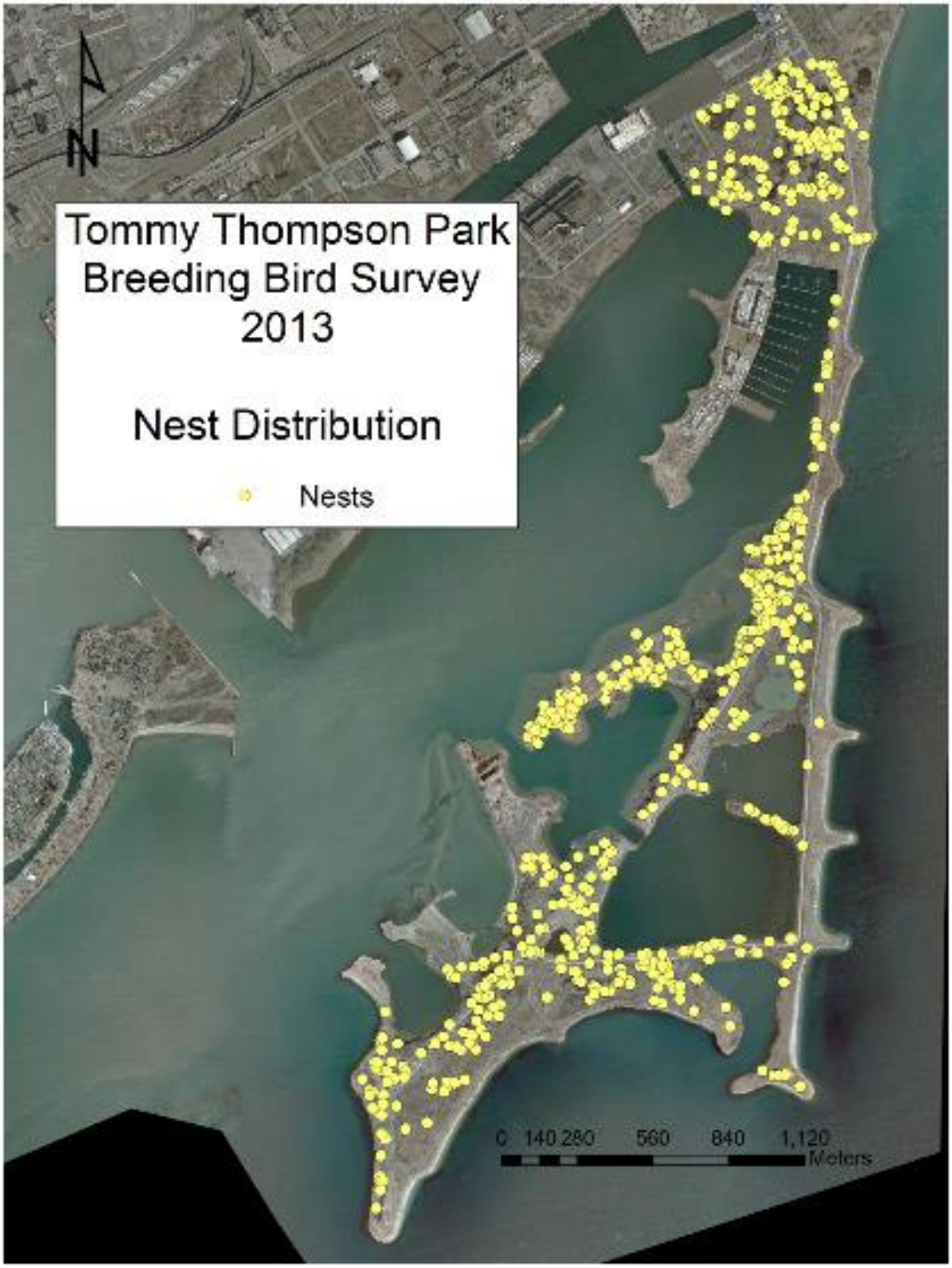
Wilson's Phalarope (2013 - absent) Known to have bred historically at TTP, but not detected in recent years.

Wood Duck (2013 - absent) This species was confirmed in 2012 as a breeder at TTP for the first time, but not observed during the breeding season in 2013.

Yellow Warbler (2013 - confirmed) Yellow Warblers are common to abundant through much of TTP. A total of 127 nests were found in 2013, by far the highest total for the project. This species continues to be the most frequently parasitized species by Brown-headed Cowbirds at TTP.

Yellow-throated Vireo (2013 - observed) This species has never been confirmed as a breeder at TTP. The bird observed in 2013 during the breeding season was presumably a late migrant.

Appendix E: Map of 2013 Nest Locations



Appendix F: Breeding Status Codes for Each Species Detected In 2013

OBSERVED	POSSIBLE	PROBABLE	CONFIRMED
American Crow	Chipping Sparrow	American Woodcock	American Goldfinch
American Redstart	Hooded Merganser	Belted Kingfisher	American Robin
American Wigeon	Northern Mockingbird	Canvasback	Baltimore Oriole
Bald Eagle	Red-eyed Vireo	Eastern Wood-Pewee	Bank Swallow
Blackpoll Warbler		Least Flycatcher	Barn Swallow
Black-thr. Blue Warbler			Black-capped Chickadee
Blue Jay			Black-crowned Night-Heron
Blue-winged Teal			Blue-gray Gnatcatcher
Bobolink			Brown-headed Cowbird
Cerulean Warbler			Brown Thrasher
Chestnut-sided Warbler			Canada Goose
Chimney Swift			Caspian Tern
Cliff Swallow			Cedar Waxwing
Common Yellowthroat			Common Grackle
Great Crested Flycatcher			Common Tern
Magnolia Warbler			Double Crested Cormorant
Northern Parula			Downy Woodpecker
Purple Martin			Eastern Kingbird
Rock Pigeon			European Starling
Swainson's Thrush			Gadwall
White-throated Sparrow			Gray Catbird
Yellow-throated Vireo			Great Egret
			Herring Gull
			House Wren
			Killdeer
			Mallard
			Mute Swan
			Northern Cardinal
			N. Rough-winged Swallow
			Northern Flicker
			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