

# Final Report on the Breeding Birds of Tommy Thompson Park

2023



Red-necked Grebes on Nest (I. Sturdee)

**Toronto and Region Conservation Authority**



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# Table of Contents

## 1. Introduction

1.1 Study Area (Tommy Thompson Park) .....	1
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## 2. Colonial Waterbirds and Managed Waterfowl

2.1 Project Background.....	1
2.2 Results in 2023 .....	2
2.2.1 Managed Waterfowl .....	4

## 3. Landbirds and Non-colonial Waterbirds

3.1 Project Background.....	5
3.1.1 Rationale.....	5
3.1.2 Change in Data Reporting.....	5
3.2 Results in 2023 .....	
3.2.1 Point Count Results.....	5
3.2.1.1 Point Count Station Vegetation Survey .....	5
3.2.1.2 Point Count Observations .....	9
3.2.2 Nest Searching and Monitoring Results.....	12
3.2.2.1 New Species Nesting at TTP in 2023 .....	15
3.2.2.1.1 Marsh Wren .....	15
3.2.2.1.2 Red-necked Grebe .....	15
3.2.2.2 Ground Nests at TTP .....	17
3.2.2.3 Changes in Nest Density for Each Zone .....	18
3.2.2.4 Nest Productivity .....	18
3.2.2.5 Nest Predation .....	19
3.2.2.6 Most Numerous Breeding Species.....	20
3.2.2.7 Species Detected During the Breeding Season from All Studies .....	22
3.2.2.8 Parasitism by Brown-headed Cowbirds.....	22
3.3 Species Recorded by Point Counts Versus Species Recorded by Nests .....	24
3.4 The Overall Picture .....	25

4. Acknowledgments.....	26
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References.....	26
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## Appendices

A Description of Point Count Stations (Habitat Pictures and Maps) .....	29
B Map of TTP Breeding Bird Zones .....	38
C Species Accounts .....	39
D Map of 2023 Landbird Nest Locations .....	58
E Breeding Status Codes for Each Species Detected in 2023 .....	59
F Breeding Bird Report Methodologies and Protocols .....	60
G Notes to Annual Breeding Bird Reports 2005 to 2023 .....	64

# Tables and Figures

## Colonial Waterbirds and Managed Waterfowl

### Tables

2.1	Colonial Waterbird Nests at TTP, 2012 – 2023 .....	4
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### Figures

2.A	Colonial Waterbird Nesting Areas, 2023 .....	2
2.B	Cormorant Nest Count at Tommy Thompson Park 2007 – 2023 .....	3
2.C	Black-crowned Night-Heron Nest Count at Tommy Thompson Park 1998 – 2023 .....	3

## Landbirds and Non-colonial Waterbirds

### Tables

3.1	2010 - 2023 Point Count Station Vegetation Analysis .....	7
3.2	Point Count Species List and Total Birds Detected by Species Within 100 Metres .....	10
3.3	Species Reaching New Nest Highs in 2023 .....	12
3.4	Total Nests by Species from 2014 to 2023 .....	14
3.5	Nest Productivity from 2014 to 2023 .....	19
3.6	Summary of Species Detected During Breeding Season from All Studies .....	22
3.7	Brown-headed Cowbird Parasitism Rates from 2014 to 2023 .....	23
3.8	Species Recorded Only by Point Counts Versus Species Recorded Only by Nests .....	24
3.9	Volunteer Staff Participation .....	26
F.1	Point Count Station Information .....	61
F.2	Primary Habitat Type by Zone .....	62

### Figures

3.A	Annotated Map of Tommy Thompson Park with Point Count Station Locations .....	6
3.B	Total Bird Abundance per Point Count Station .....	9
3.C	Species Richness per Point Count Station .....	11
3.D	Nest Density by Zone .....	18
3.E	Known Nest Failure Rate Trend .....	19
3.F	Predation Rates of the Most Numerous Breeding Species .....	20
3.G	Trend in Percent of Total Nests for the Most Numerous Breeding Species .....	21
3.H	Brown-headed Cowbird Parasitism Rate Trend .....	24

# 1. Introduction

## 1.1 Study Area



Tommy Thompson Park (TTP) is located on the Leslie Street Spit, a 471-ha, 5-km long constructed peninsula extending into Lake Ontario in Toronto. When construction of the Spit began in 1959 by the Toronto Harbour Commission (now PortsToronto), 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. Landform construction was ongoing until 2015, and while the final size of the Spit (including waterlots) is complete, occasional works will be required into the future to maintain shoreline stability.

**TTP Aerial View (TRCA, 2014)**

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 TRCA. A variety of vegetation communities, including successional forests, meadows, coastal wetlands and sand dunes, provide diverse habitats for a wide range of species. Gulls and terns began nesting in the early 1970s, and continued nesting by these species and night-herons earned TTP the designation of an *Environmentally Significant Area* in 1982. Further, in 2015, this designation was extended to the entire Spit due to rare species and/or rare communities, and significant ecological functions.

The diverse habitats at the park, along with the geographical position have made it a critical site for birds throughout the year. To date, 334 species have been recorded at the park. In 2000, the Leslie Street Spit/TTP was named an *Important Bird Area* due to the globally significant populations of nesting colonial waterbirds, the continentally significant numbers of overwintering waterfowl, and nationally significant numbers of migratory birds. This designation was upgraded in 2022 to *Key Biodiversity Area*.

## 2. Colonial Waterbirds and Managed Waterfowl

### 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).

In 2023, five species of colonial waterbirds nested at Tommy Thompson Park, namely four species of ground-nesters (Caspian Tern, Common Tern, Herring Gull and Ring-billed Gull), and one species which nests both in trees and on the ground (Double-crested Cormorant).

**Double-crested Cormorant  
with Nesting Material  
(J. Nishikawa)**

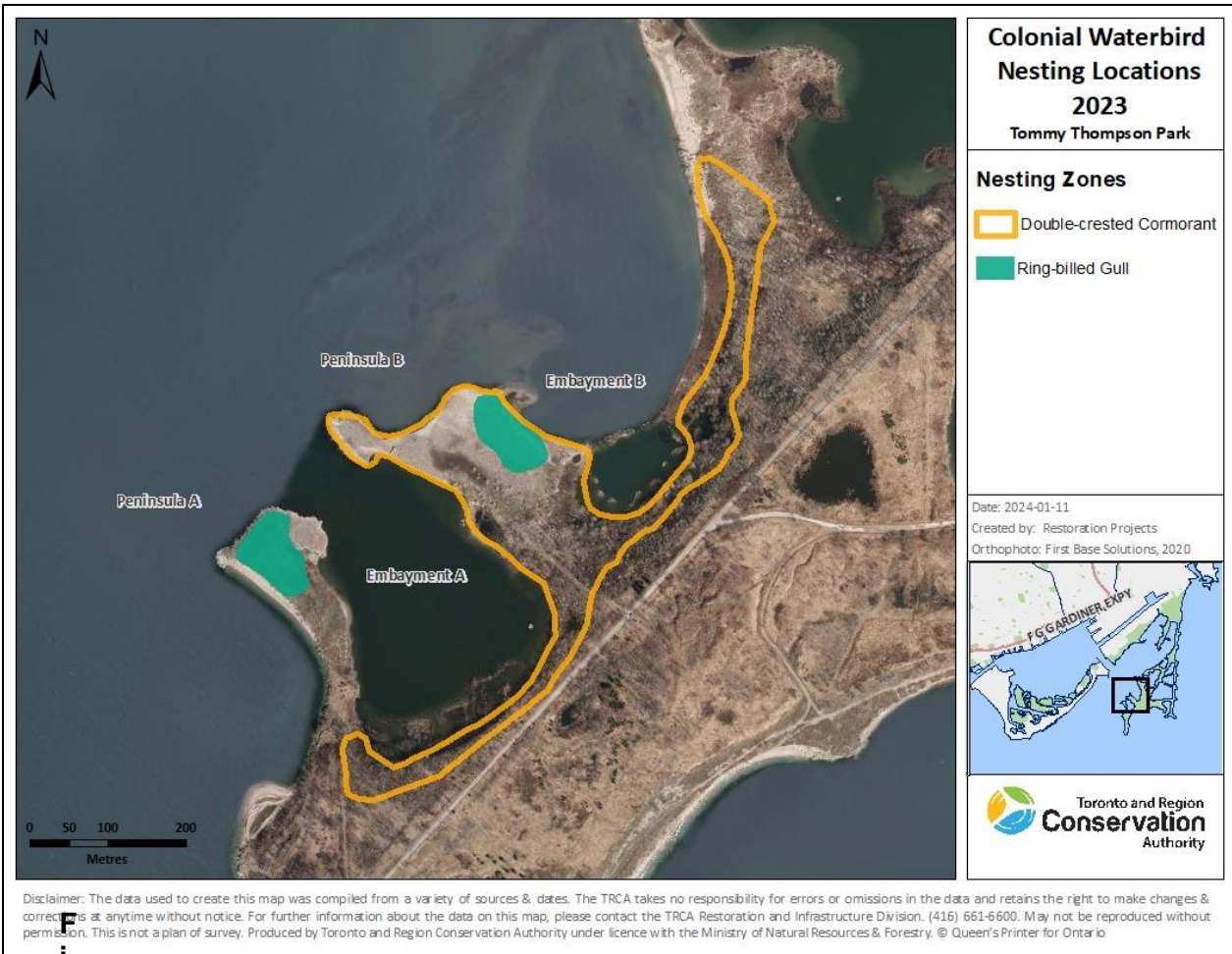




## 2.2 Results in 2023

In 2023 Double-crested Cormorants nested in trees on Peninsulas A, B and C, and on the ground on Peninsula B. There were no confirmed Great Egret nests, however adults were regularly observed in all wetlands in the park from April through October. A few Black-crown Night-Herons were observed in suitable nesting habitat during the breeding season, and two nests were found on Peninsula C during peak breeding season, but nest outcome was not confirmed. A healthy, productive colony was confirmed at Toronto Island Park.

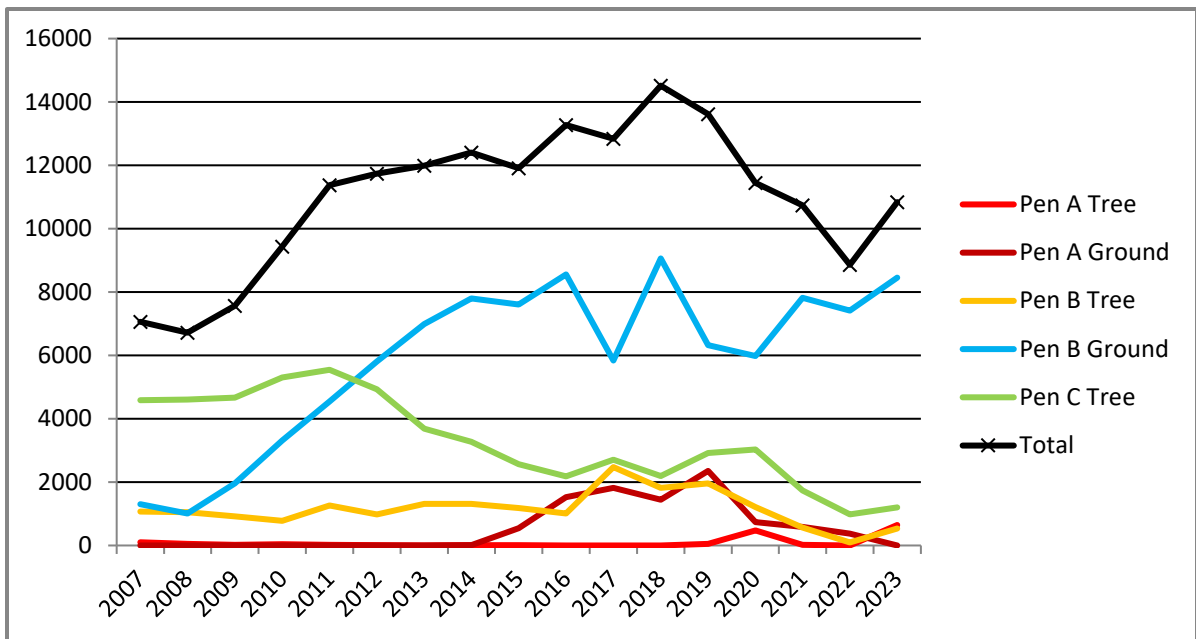
Ring-billed Gull nesting was recorded on Peninsulas A and B, and 3,665 nests were counted on May 15. A suspected predation event caused the gulls to abandon their nests by June 18, leading to no confirmed successful Ring-billed Gull nesting in 2023. There were two Herring Gull nests observed on Peninsula B, however the outcome is unknown. The cormorant and gull nesting areas are illustrated in Figure 2A.



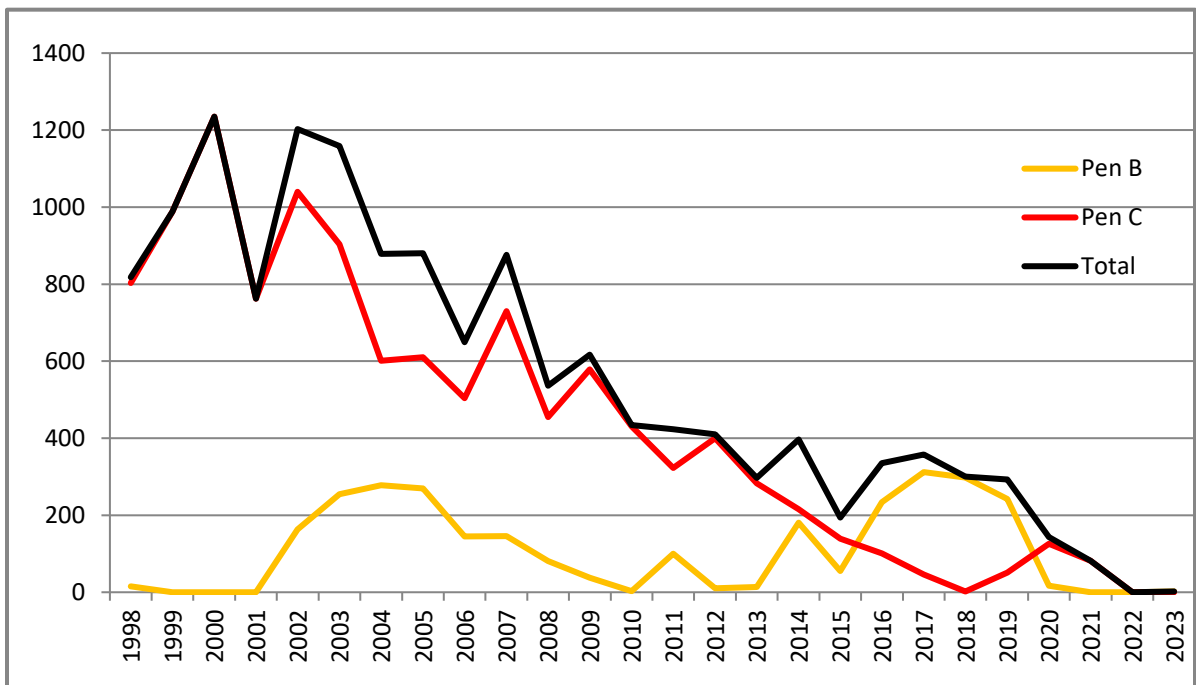
**Figure 2.A. Colonial Waterbird Nesting Areas, 2023**

Common Terns nested on two artificial nesting rafts in Embayment D and one in Cell 3. As a result of predation, the rafts were abandoned by mid-July. Caspian Terns were observed in the Cell 2 wetland from April to August, however, no nests were observed. Seven nests were recorded on Peninsula B on May 15, however the outcome is unknown.

Cormorant nests numbered 10,841, including 8,450 ground nests on Peninsula B (Figure 2.A), which represented 78% of the population. The total number of tree-nests increased by 122% compared to 2022 with nesting on all peninsulas except Peninsula D. This increase results from discontinuing management at TTP on May 12, before peak breeding season, to focus all cormorant management efforts at the Toronto Island Park colony. Tree nesting density increased in all locations with 4.49 nests per tree on Peninsula A, 4.35 nests per tree on Peninsula B, and 5.29 nests per tree on Peninsula C. The overall population at Tommy Thompson Park has been influenced by a new colony at Toronto Island Park since 2022. Although the TTP population shows a dip in 2022, the overall nest numbers were stable when accounting for nests at Toronto Island Park.



**Figure 2.B. Cormorant Nest Count at Tommy Thompson Park 2007 to 2023**



**Figure 2.C. Black-crowned Night-Heron Nest Count at Tommy Thompson Park 1998 to 2023**



**Common Tern Egg and Hatchling on Tern Raft  
(D. Johnston)**

**Table 2.1. Colonial Waterbird Nests at TTP, 2012 – 2023**

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Double-crested Cormorant	11,990	12,409	12,073	13,275	12,841	14,515	13,614	11,446	10,737	8,860	10,841
Black-crowned Night-Heron	297	397	194	335	358	300	293	143	82	0	2
Great Egret	4	6	6	6	11	5	10	20	4	1 <sup>a</sup>	0
Ring-billed Gull	35,000*	35,000*	35,000*	35,000*	NC	15,000*	NC	NC	3,700 <sup>a</sup>	2,927 <sup>a</sup>	3,665 <sup>a</sup>
Herring Gull	NC	NC	NC	NC	NC	NC	0	NC	<10	<10	2
Common Tern	0	179	176	142	142	70	90	84*	3	127	NC <sup>a</sup>
Caspian Tern	98	263	NC	56 <sup>a</sup>	0	0	0	0	16 <sup>a</sup>	0	7

a - Nesting attempts failed

\*- Estimate

NC – no count

### 2.2.1 Managed Waterfowl

Canada Geese and Mute Swans regularly nest at TTP and are monitored and managed by TRCA. The Mute Swan is an introduced 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 egg adding by removal or oiling to eliminate or reduce reproduction. In 2023, 19 Canada Goose nests and three Mute Swan nests were managed 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 has been organized around monitoring of breeding landbird and non-colonial waterbird density and diversity in response to habitat succession and restoration by TRCA. 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 has been appropriate for TRCA because the labour and material costs are 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 have been 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.)

#### **3.2 Results in 2023**

##### **3.2.1 Point Count Results**

###### **3.2.1.1 Point Count Station Vegetation Survey**

Table 3.1 depicts the result of the triennial vegetation surveys conducted in 2010 and 2022 for each station. In addition, Appendix A contains a habitat map and photographs for each station in 2022. (The habitat maps and photographs from 2010 can be found in the Breeding Bird Reports of 2010 – 2012, those from 2013 in the reports of 2013 – 2015, those from 2016 in the reports of 2016 – 2018, and those from 2019 in the reports of 2019 - 2021.) See Figure 3.A and Appendix A for station locations and Appendix F for the Point Count protocol.

As can be seen from Table 3.1, several changes in habitat occurred between 2010 and 2022. This is not surprising, however, since much of TTP is intentionally left to naturally succeed on its own. Changes of note:

- One of the most striking changes since 2010 has been the loss of meadow in Stations 1 – 4, particularly in Station 2 where no meadow now exists. Grasses and sedges have been overtaken by dogwood and willows in some areas, as well as by herbs such as goldenrod and asters and miscellaneous herbs such as vetch and nettles in other areas. Station 4 has additionally experienced a noticeable increase in phragmites.
- Since 2010, Station 3 has lost land to the Martin Goodman and Link trails, while Station 4 has also lost a portion to the Link trail.
- Station 5 has seen a considerable expansion of the forested area, as well as the amount of dogwood.
- The forested area in Station 8 has increased as the grasses and sedges have again shrunk.



- Station 9 is located within the previous tree-nesting cormorant colony, and the result of the birds' excrement has been the loss of most of the trees as well as, initially, any other vegetation. As the trees and nests largely disappeared within the Station area, the previously barren soil has started to again support vegetation, primarily miscellaneous herbs.



**Figure 3.A. Annotated Map of Tommy Thompson Park with Point Count Stations**



**Table 3.1. 2010 - 2022 Point Count Station Vegetation Analysis**

(It is important to recognize that the habitat breakdown in this table is based on field observations, so the percentages included in the table should be viewed with an appropriate margin of error in mind.)

2010 OBSERVATIONS									
	Point Count Station								
	1	2	3	4	5	6	7	8	9
% of Major Habitats Within 100 m Radius of Each Point Count 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 Point Count 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
2022 OBSERVATIONS									
	Point Count Station								
	1	2	3	4	5	6	7	8	9
% of Major Habitats Within 100 m Radius of Each Point Count Station									
Meadow (tree cover ≤ 25%; shrub cover ≤ 25%)	35		53	64	9	2	88	5	45
Thicket (tree cover ≤ 25%; shrub cover ≥ 25%)	33	59	21	3	58	23		9	15
Deciduous Forest (tree cover ≥ 60%)	22	41	11	6	26	52	5	72	18
Dead Deciduous Forest									3
Mixed Forest (tree cover ≥ 60%; conifers ≥ 25%)									
Wetland (permanently saturated; water ≤ 2 m)	8			16	1		2	3	
Vegetation Sub-total (see detail below)	98	100	85	89	94	77	95	89	81
Sand Dune/Sand Barren (incl active shorelines)								2	3
Roads, Trails and other man-made areas	2		14	11	4		5		
Lake Ontario Shoreline (open water)			1		2	23		9	16
Non-vegetation Sub-total	2	0	15	11	6	23	5	11	19
Total of All Habitats	100	100	100	100	100	100	100	100	100
Dominant Vegetation Within 100 m of Each Point Count Station									
Trees (e.g., Eastern Cottonwood)	22	41	13	5	20	40	9	60	10
Dogwoods (e.g., Red-osier Dogwood)	29	59	28	1	40	15	2	3	17
Honeysuckles			2			12			
Shrub Willows	3			3	24	5	5	4	9
Grasses and Sedges	11			30		5	43	15	5
Goldenrods and Asters	25		8	34	4		10		
Reeds (e.g., Cattails, Bulrushes, Phragmites)	8			16	1		6	7	
Miscellaneous Herbs (e.g., Vetch, Nettles, etc.)			34		5		20		40
Vegetation Sub-total	98	100	85	89	94	77	95	89	81

While some Point Count 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 (8 and 9) which are examples of the latter.

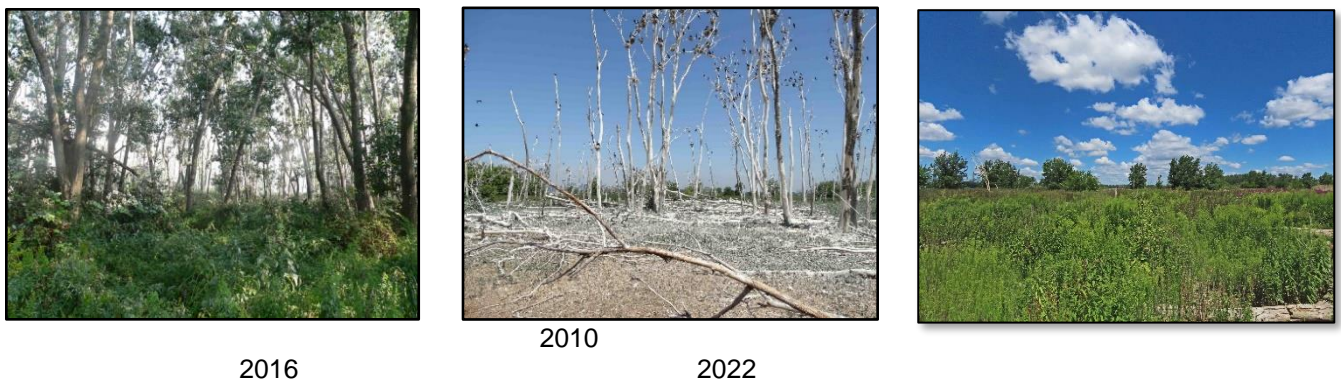
The south view at **Station 4** (dry meadow) is an example of a station which has seen little change over the life of the project other than changes in the make-up of the ground cover.



**Station 8** (forest – north view) showed moderate change between 2010 and 2016, but by 2023 has been seriously degraded as the Peninsula C cormorant colony has expanded into the area and the birds' excrement has started destroying the vegetation.



**Station 9** (forest – north view) was within the Peninsula C cormorant colony in 2010, and the effect of the birds' excrement on both the trees and the ground-level vegetation can be seen in 2016. By 2023, the trees and nests are gone from the north side of the station, and ground cover has taken over.



### 3.2.1.2 Point Count Observations

The total number of birds recorded at all Point Count stations in 2023 was 937, slightly above the average of the past 10 years. Species for which the total recorded was the highest of the past 10 years were: American Goldfinch, American Robin, Barn Swallow, Cliff Swallow and Tree Swallow. It is interesting that the higher number of Barn and Cliff Swallows occurred at the same time as the number of nests of these species was down considerably (see section 3.2.2 below.).

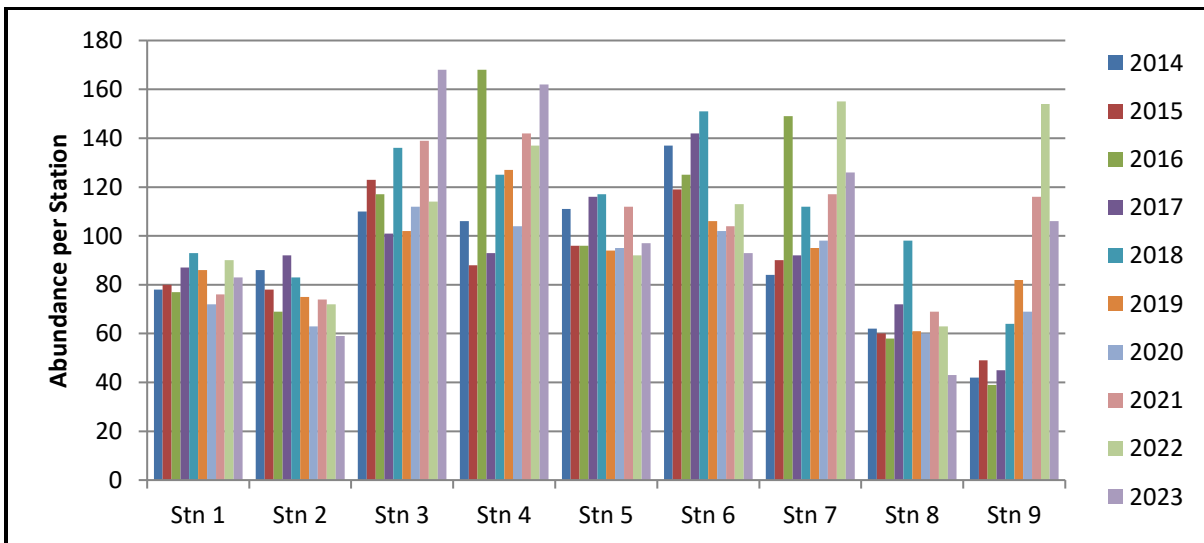
A summary of abundance per species detected by Point Counts (<100 meters) is presented in Table 3.2. As shown in Table 3.2, 33 species were detected for all counts in 2023, which is slightly above the average of 29 for the past 10 years.

Several Point Count observations from previous reports continue to apply:

- 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 3.2.2.8).
- Song Sparrows are recorded much more frequently on Point Counts than the number of nests would imply, which suggests that there are many more nests than are found. (See Section 3.2.2.2 for discussion on this subject.)
- Cedar Waxwing nests are generally more numerous than Point Count sightings as the waxwings are late nesters and are not present in large numbers when Point Counts are conducted.
- Eastern Kingbird Point Count sightings are always lower than the number of nests would suggest because very few Point Count stations are close to kingbirds' preferred habitat. Similarly, Point Count sightings of Red-winged Blackbirds and Yellow Warblers have become fewer than the number of their nests would suggest as the growth in the number of nests has largely occurred in areas separate from the Point Count locations.
- Prior to 2015, swallows were recorded differently by different project participants during the Point Counts, such that swallow numbers in Table 3.2 are understated for 2014.

As can be seen in Figure 3.B below, there was considerable variation in bird abundance at most stations in 2023 compared to average experience over the most recent 10 years. Abundance at Stations 2, 6 and 8 was 21%, 22% and 33%, respectively, below their most recent 10-year average. The vegetation at all three stations is becoming much denser, which presumably has contributed to the lack of birds.

Stations 3, 4 and 9 were 37%, 29% and 38%, respectively, above their average of the last 10 years. The higher abundance at Stations 3 and 4 can be explained by the presence of small groups of foraging swallows. Station 9 continues to see more birds as the vegetation continues to recover from the damage created by the past cormorant colony. Abundance at each of the remaining three stations was close to its 10-year average.



**Figure 3.B. Total Bird Abundance per Point Count Station**



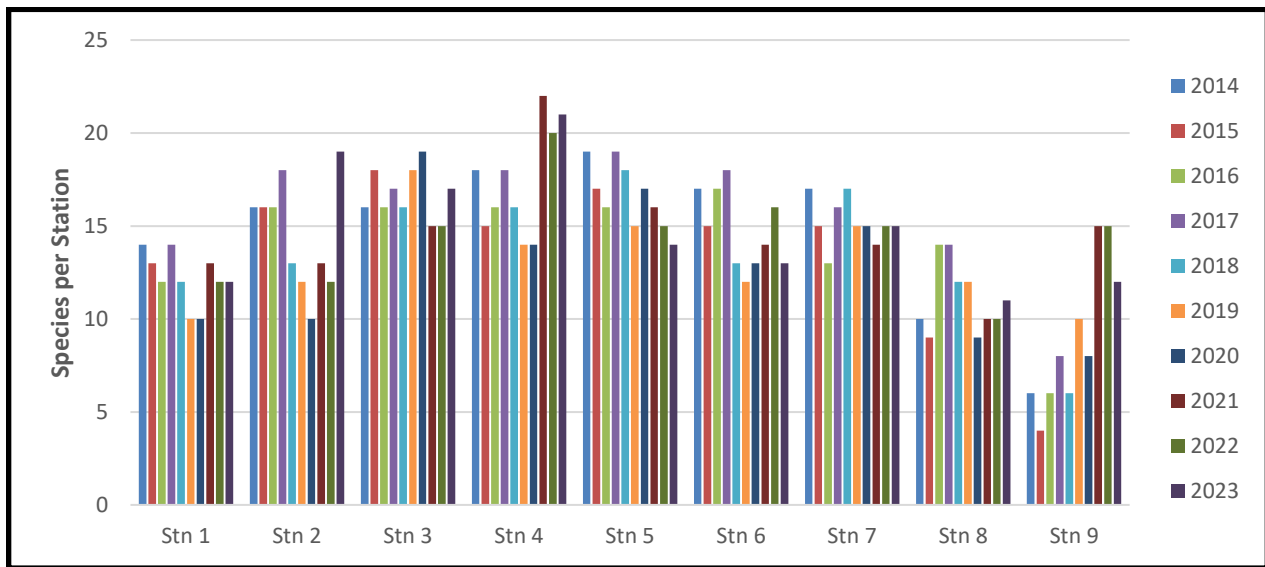
**Table 3.2. Point Count Species List and Total Birds Detected by Species Within 100 Metres**

Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG
American Goldfinch	19	7	37	36	19	19	30	44	41	67	32
American Kestrel				1				1			
American Redstart						2	1			1	
American Robin	15	25	23	27	26	19	27	41	50	76	33
American Woodcock							1		2		
Baltimore Oriole	21	25	15	23	19	9	18	6	13	21	17
Bank Swallow	22	4	106	7	9	3	8	4	1		16
Barn Swallow	15	55	48	41	68	76	46	75	49	77	55
Black-capped Chickadee		5	7	2	3			8		8	3
Belted Kingfisher	1					1			3	1	1
Blue-gray Gnatcatcher	3	2	3	2				1		1	1
Brown-headed Cowbird	5	3	6	7	3		5	6	6	4	5
Blue Jay				1		1	*				
Brown Thrasher	3	1				1					1
Canada Goose	*			7		3					1
Cedar Waxwing	16	12	18	12	1	12	3	8	7	2	9
Chimney Swift										3	
Cliff Swallow					*	1	6	3	1	30	4
Common Grackle	5	17	5	11	14	6	9	18	10	4	10
Common Raven										2	
Cooper's Hawk		1					1		5		1
Common Yellowthroat	4			1		3			1		1
Downy Woodpecker	1			2	1	4	1	1	6	1	2
Eastern Kingbird	2	9	3	6	8	2	3	7	13	6	6
Eastern Wood-Pewee	6	9	7	2	2				2	2	3
European Starling	44	9	46	18	18	4	5	39	19	6	21
Gadwall	2			*	2	1	1				1
Great Blue Heron				*							
Great Crested Flycatcher			1		1					1	
Gray Catbird	21	12	18	22	18	33	16	22	31	19	21
House Wren	1		1		1		1	7	9	7	3
Killdeer	4	5	2	7		2	2	1	1		2
Least Flycatcher	4	5	1	3	6	7	1		1		3
Mallard	2			5	1	11	*	11	3		3
Mourning Dove			1	2	1						
Northern Cardinal	3	3	10	21	17	4	7	8	8	6	9
Northern Flicker				2	4						1
Northern Mockingbird	1	1		1				1	1		1
N. Rough-winged Swallow	*	9	10	5	7	6	5	1	2	7	5
Orchard Oriole	1		2	2	5	1		1	2	1	2
Red-breasted Nuthatch			1								
Red-eyed Vireo	1									3	
Red-winged Blackbird	276	247	192	214	316	215	237	233	214	159	230
Savannah Sparrow			1								
Song Sparrow	47	51	59	57	102	93	81	114	97	111	81
Spotted Sandpiper	5	7	2	2	1	8	2	4	1	1	3
Tree Swallow	30	52	41	54	37	47	46	65	150	120	64
Trail's Flycatcher	2			2		2					1
Warbling Vireo	46	32	46	27	44	40	29	24	39	26	35
Willow Flycatcher	20	18	16	27	24	15	10	22	19	22	19
Yellow Warbler	166	155	169	181	201	177	168	173	183	141	171
<b>Birds</b>	<b>814</b>	<b>782</b>	<b>897</b>	<b>840</b>	<b>979</b>	<b>828</b>	<b>770</b>	<b>949</b>	<b>990</b>	<b>937</b>	<b>879</b>
<b>Species</b>	<b>34</b>	<b>28</b>	<b>31</b>	<b>36</b>	<b>31</b>	<b>33</b>	<b>29</b>	<b>30</b>	<b>33</b>	<b>33</b>	<b>32</b>

\* Species observed beyond 100m and/or flying over

Species richness, or diversity, is shown in Figure 3.C below. In 2023, diversity at Stations 2, 4 and 9 was 31%, 21% and 33%, respectively, above their most recent 10-year average. The increase at Station 2 is difficult to explain as it is not in keeping with recent experience there. Conversely, the increase in diversity at Stations 4 and 9 is much the same as the previous two years, presumably reflecting an increasingly inviting feeding habitat. Diversity at Stations 5 and 6 was 16% and 12%, respectively, below the average of the past 10 years. The vegetation at both stations has become much denser the last few years, which may be discouraging some species. The other four stations were all close to their most recent 10-year average.

For most of the past 10 years, both the bird abundance and species diversity at Stations 8 and 9 have suffered in comparison to the other stations due to the presence of thick vegetation and/or the lack of biodiversity. This continues to apply to Station 8 with its dense vegetation and nesting Double-crested Cormorants. Due to the improving biodiversity at Station 9, however, abundance and diversity are both now becoming similar to those of Stations 1 – 7.



**Figure 3.C. Species Richness per Point Count Station**



**Nest Building: Left - Baltimore Oriole (J. Alvo); Right - Yellow Warbler (J. Nishikawa)**



### 3.2.2 Nest Searching and Monitoring Results

In 2023, project participants discovered 1,246 nests of 36 species (including the parasitic Brown-headed Cowbird, the female of which uses the nests of other species to deposit her eggs). For the second year in a row, the total nests represent the highest total of the project. Of this total, 947 nests were monitored and reported to Project NestWatch (see Tables 3.4 and 3.5).

The reasons for the continued high number of nests compared to the early years of the project continue to 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 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; and (d) the introduction of several new project participants, which has helped to ensure a more thorough examination of the whole of TTP.

Table 3.3 lists those species realizing new nest highs for the project in 2023.

**Table 3.3. Species Reaching New Nest Highs in 2023**

Species	Previous High	Number of Nests in 2023
American Robin	159	196
Black-capped Chickadee	2	3
Northern Cardinal	17	18
Northern Mockingbird	3	4
Tree Swallow	35	47
Trumpeter Swan	2	3
Willow Flycatcher	25	27
Yellow Warbler	320	348

The following nesting activities in 2023 are noteworthy:

- Two new species nested at TTP in 2023: Marsh Wren and Red-necked Grebe, meaning that 80 species have now been confirmed to have nested at TTP. There had been evidence of nesting attempts at TTP in the past few years by both species, so successful nesting was not unexpected. See section 3.2.2.1 for more details on these nests.
- American Robin nests increased significantly to a new high of 196 in 2023, which is 61% above the most recent 10-year average. After trending at about 12% of all nests throughout the project, the total in 2023 represented 16% of all nests. There was a higher number of robin nests than usual found in April and early May of 2023, which might have resulted in more birds having second and third nests. American Robins are the third most common of the landbird nesters at TTP.
- Gray Catbird nests dropped to only 55% of the most recent 10-year average. Although there have been significant fluctuations in the number of nests in recent years, the total in 2023 was the lowest of the most recent 10 years. There is no apparent explanation for this decrease.
- Northern Cardinals reached a new high of 18 nests, one more than in 2022. While their nest numbers fluctuate from year to year, they have recently been trending up. This species will abandon a nest if they feel threatened, so project participants must avoid any disturbance when a nest is located.
- Swallow nesting experience in 2023 at TTP was mixed. While swallows have generally been described as threatened in recent years, it is difficult to explain why two species at TTP did well in 2023 while two others did not.
  - The Bank Swallow nesting location discovered in 2022 was used again in 2023, with a similar number of nests as that found in 2022.
  - Barn Swallow nest numbers were the second lowest of the most recent 10 years and only 60% of the average over that period. Studies have shown that ectoparasitism by mites and blowflies can reduce reproductive success by up to 33% in Barn Swallows; nest infestation by blowfly larvae can result in young falling from the nest (COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. p. 27), which could explain the dead nestlings found below the TTP nests.
  - Cliff Swallow nest numbers were the lowest since this species first nested at TTP in 2018.
  - The number of Tree Swallow nests was the highest of the project and was 88% above the most recent 10-year average.

- Northern Rough-winged Swallow nesting was confirmed by the presence of recently fledged young, although no nest numbers could be determined. This species typically nests in low numbers at TTP and on banks difficult to access.
- Willow Flycatchers reached a new high of 27 nests, two more than the previous high from 2009, and 42% above the most recent 10-year average for the project.
- Yellow Warbler nests climbed to a new high of 348, which is 39% above the most recent 10-year average. The number of nests of this species, which is the second most common landbird nester at TTP, has gradually been increasing as a percentage of all nests and now approaches that of the Red-winged Blackbirds.

In addition to the 36 species confirmed as nesters through the existence of their nests (and in the case of the Brown-headed Cowbird, the presence of their eggs and fledglings), the discovery of recently fledged young of a further five species confirmed their nesting TTP in 2023 as well. These five species were American Redstart, Canvasback, Killdeer, Northern Rough-winged Swallow and Wood Duck. Thus, in total, there were 41 species of landbirds and non-colonial waterbirds nesting at TTP in 2023. (See Table 3.6 below.)



#### Adult Birds on the Nest

Upper Left - American Robin (J. Alvo); Upper Right – Eastern Kingbird (J. Nishikawa)

Lower Left – Gray Catbird (J. Nishikawa); Lower Right - Tree Swallow (J. Nishikawa)

**Table 3.4. Total Nests by Species from 2014 to 2023**

Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG
American Goldfinch	18	16	23	26	14	13	19	14	14	17	17
American Redstart								1			
American Robin	89	78	113	125	104	122	106	129	159	196	122
American Woodcock		1		1				1		1	
Baltimore Oriole	35	17	18	24	16	13	14	15	13	18	18
Bank Swallow			15	16		1		1	22	20	8
Barn Swallow	31	24	29	49	51	51	54	39	44	24	40
Belted Kingfisher	1										
Black-billed Cuckoo	1		1								
Black-capped Chickadee	1		2	2		2				3	1
Blue-gray Gnatcatcher	6	7	6	4	4	4	2	2	6	3	4
Brown Thrasher	2	2		2	1		1				1
Canvasback	1							1	2		
Carolina Wren								1			
Cedar Waxwing	37	40	49	33	35	18	36	35	31	24	34
Cliff Swallow					24	11	13	46	28	8	13
Common Grackle	2	5	5	1	7	6	4	11	18	8	7
Cooper's Hawk									1	1	
Downy Woodpecker		1	2	3	1		1	5	2	3	2
Eastern Kingbird	20	27	24	25	21	14	21	39	32	23	25
Eastern Phoebe							1	2	2	2	1
Eastern Wood-Pewee	1										
European Starling	4	5	3	1	2		2	3		2	2
Gadwall	2	1	1				1	2	1		1
Gray Catbird	34	30	46	33	21	35	20	24	34	16	29
House Finch					2	3		1			1
House Wren				1	3	2	3	2	2	3	2
Killdeer	4	3	4	5	1		1	7	2		3
Least Bittern				2			1			1	
Least Flycatcher	3	2			1		2	2	3	2	2
Mallard	5	5	8	5	2	6	3	1	3	3	4
Marsh Wren										1	
Mourning Dove			1	1	3						1
Northern Cardinal	3	2	4	14	12	5	6	12	17	18	9
Northern Flicker	1		1	5	3	2	1			1	1
Northern Mockingbird					2			3	2	4	1
N. Rough-winged Swallow	1	2		2		5					1
Orchard Oriole	2	1	2	1	3	4	5	4	5	3	3
Red-necked Grebe										3	
Red-winged Blackbird	361	404	356	464	418	357	287	323	385	374	373
Song Sparrow	8	10	7	4	10	4	8	9	12	9	8
Spotted Sandpiper	3	6	3	5	4	2	2	1	1	3	3
Tree Swallow	13	20	20	28	15	18	20	35	35	47	25
Trumpeter Swan	1	1	1	1	2	2	2	2	2	3	3
Virginia Rail						2					
Warbling Vireo	31	12	18	21	18	19	27	27	24	27	22
Willow Flycatcher	18	15	19	18	15	19	20	23	16	27	19
Wood Duck					1						
Yellow Warbler	164	189	237	253	211	320	235	235	318	348	251
<b>Total Nests</b>	<b>902</b>	<b>926</b>	<b>1,018</b>	<b>1,175</b>	<b>1,027</b>	<b>1,060</b>	<b>918</b>	<b>1,058</b>	<b>1,236</b>	<b>1,246</b>	<b>1,057</b>
<b>Total Species</b>	<b>32</b>	<b>28</b>	<b>29</b>	<b>32</b>	<b>32</b>	<b>28</b>	<b>31</b>	<b>35</b>	<b>31</b>	<b>35</b>	<b>31</b>

Note: A Trumpeter Swan nest was observed in 2014, but not included in these reports until 2015 when another nest was observed and reported to Project NestWatch, The unreported 2014 nest has been included in subsequent reports for completeness.



### 3.2.2.1 New Species Nesting at TTP in 2023

Two new species nested at TTP in 2023, Marsh Wren and Red-necked Grebe, making 80 species that have now been confirmed to have nested at TTP. Both species had been observed in recent years during the breeding season, so it had been expected that breeding would eventually occur.

#### 3.2.2.1.1 Marsh Wrens



A male Marsh Wren builds at least six dummy nests in wetland vegetation in the hopes that one will attract a female. After accepting a nest, the female then completes the nest before breeding. In 2020, a male was observed in Embayment D building nests and then unsuccessfully attempting to lure a female to join him. There was a single record of a bird singing in Cell 2 in 2021, but no records during breeding season in 2022. In 2023, birds were observed by project participants in Cells 1 and 2 a total of 12 times between June 5 and September 6. Territorial singing was noted, and there appeared to be a few nests in the reeds, but no evidence of breeding was detected.

Although project participants were unable to access the reeds to search for nests, TRCA staff working on the vegetation in Cell 1 confirmed a



total of 10 nests, with more probable, although it could not be

confirmed how many were dummy nests. In August, TRCA staff were able to discern activity in one of the nests. A photograph on August 24 then confirmed the presence of nestlings. In September, after all the wrens had left the area, TRCA staff were able to retrieve two infertile eggs.



Above left – Marsh Wren Nest

Above right – Marsh Wren Nestlings in Nest on August 24

Left – Infertile Marsh Wren Eggs  
(TRCA)

#### 3.2.2.1.2 Red-necked Grebes

Breeding season sightings of Red-necked Grebes by project participants occurred in 2020 (a single bird in East Cove), 2021 (a pair in East Cove) and 2022 (a pair in each of Cell 3 and Embayment D), but no evidence of breeding was found. On May 1, 2023, a nest was finally found, this time in Embayment A. The nest was a mound of vegetation built on the water and quite visible to park visitors.



**Embayment A Red-necked Grebe on Nest on  
May 17 (J. Alvo)**

Undaunted, the adults proceeded to build a second nest in the same location in Embayment A and by July 5 were observed incubating eggs again. The birds appeared to have learned from the first nest, as this nest was sturdier, and the eggs were held safely above the water.

In June, project participants also heard Red-necked Grebes calling in Embayment C, and on July 5, a second pair and nest were found there in a secluded area of the embayment. This nest seemed to be approximately on the same schedule as the Embayment A nest, and hatching for both was anticipated by the end of July. A check on July 26 found adults sitting on both nests, but a follow-up visit on July 31 found both nests completely gone. This species is known to head to open water as soon as the young are born, so it is not known if either nest was successful, or if they might have been predated.

Normal incubation time for the 3 - 4 eggs laid by this species is 22 – 25 days. As there was only one egg on May 1 and an egg is usually laid every two days, hatching was expected around the end of May. However, the nest seemed to require constant reinforcing by the adults to avoid sinking in the water. Perhaps the eggs became waterlogged, as there was no hatching. The adults continued to take turns sitting on the nest and eggs as they gradually sank until they finally disappeared by the middle of June.



**Embayment A Red-necked Grebes Copulating June 21  
Prior to Second Nesting (D. Johnston)**



**Embayment C Red-necked Grebe  
Adjusting Eggs on Nest on July 11  
(E-K. Hunter)**



### 3.2.2.2 Ground Nests at TTP

In 2012, it was recognized that monitoring ground nests could result in the creation of trails which might lead predators to the nests. As a result, the nest searching protocol was changed to eliminate searching for these nests. Each year since then, project participants have inevitably continued to find ground nests by chance as they searched for nests in bushes, trees and reeds, but in keeping with the updated protocol, there was no follow-up on any such nests.

In 2023, ground nests were discovered by accident for American Woodcock, Mallard, Song Sparrow and Spotted Sandpiper. Other ground nests discovered during the course of this project belonged to Canvasback, Eastern Meadowlark, Killdeer and Gadwall.

Project participants have found an average of eight Song Sparrow (mostly ground) nests per year over the past 10 years. At the same time, an average of 81 Song Sparrows has been recorded annually on the Point Counts, which would suggest many more than eight nests exist each year. The ratio of nests found to birds recorded on Point Counts for Red-winged Blackbirds and Yellow Warblers has been fairly consistent over the past 10 years, and has averaged 1.7 and 1.5, respectively, over that time. If that ratio could be applied to the 81 Song Sparrows recorded on Point Counts, the result would be a more realistic estimated annual total of about 130 Song Sparrow nests at TTP.



**American Woodcock Nest (J. Alvo)**



**Mallard Nest (S. Birkett)**

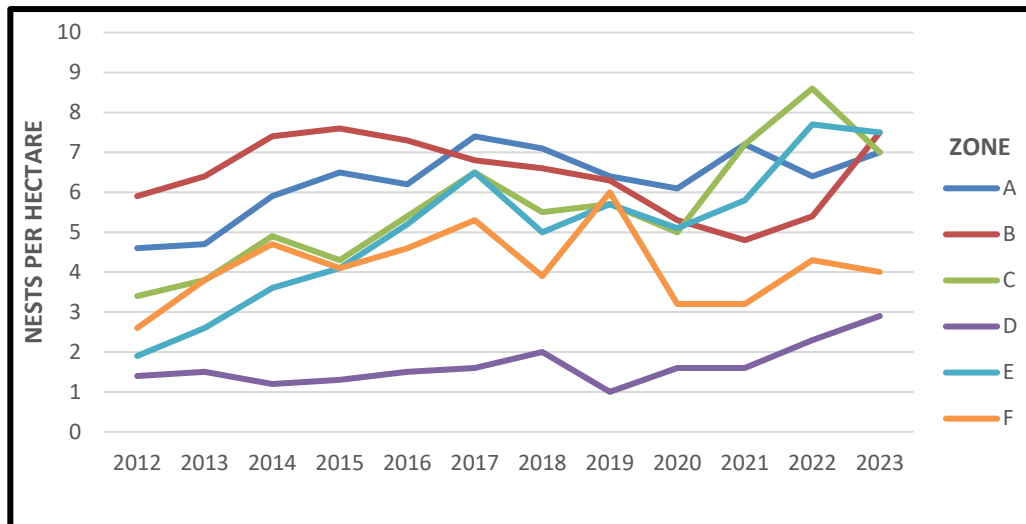


**Song Sparrow Nest in Goldenrod (I. Sturdee)**



**Spotted Sandpiper Nest (S. Birkett)**

### 3.2.2.3 Changes in Nest Density for Each Zone



**Figure 3.D. Nest Density by Zone**

In Figure 3.D, the nest density for each zone is determined by the number of nests per hectare. (In this chart, the number of hectares for Zone F has been reduced to eliminate the area occupied by the colonial waterbirds.) A map of the zones can be found in Appendix B.

- As can be seen in Figure 3.D, the nest density in Zones A, B, C and E has converged at 7 – 7.5 nests per hectare in 2023.
- Zone A density has remained at a fairly constant level of 6 – 7.5 nests per hectare since 2014, probably reflecting the relative stability of the vegetation in recent years.
- The gradual decrease in Zone B density between 2015 and 2021 was presumably the result of the removal of phragmites in Embayment D in fall 2020, as well as dogwood along the Neck in 2016 when the shoreline was being enhanced for fish habitat. The increase in density in 2023 to levels seen in 2014 and 2015 reflects the restoration and enhancement of the vegetation by TRCA along the Neck. The number of nests found on the Neck increased from 61 in 2021 to 107 in 2023, an increase of 75%. Species diversity was also significant, with nests of 13 species recorded.
- Zone C nest density has been steadily increasing. A contributor in recent years has been the loss of many trees (principally birch) from the flooding in 2017 and 2019, which has created space for dogwood and honeysuckle to flourish and present nesting habitat. Both Zones C and D benefitted from vegetation regrowth after the previous removal of phragmites in Cells 1 and 2 and Embayment C.
- Zone D density has been the lowest of all zones over the last 10 years due to the lack of suitable habitat. This resulted from storm damage along the Endikement and the Cell 2 construction. Now that the vegetation is recovering in these areas, there was a modest increase in density in 2022 and 2023.
- The nest density in Zone E has been trending steadily upwards, aided by a wide biodiversity and the natural growth and expansion of shrubs.
- The sharp decrease in Zone F in 2020 was probably linked to the significant flooding in this zone in 2017 and 2019. This flooding caused several trees to die, while simultaneously encouraging many shrubs on Peninsulas B and C to become too dense to offer suitable nesting habitat.

### 3.2.2.4 Nest Productivity

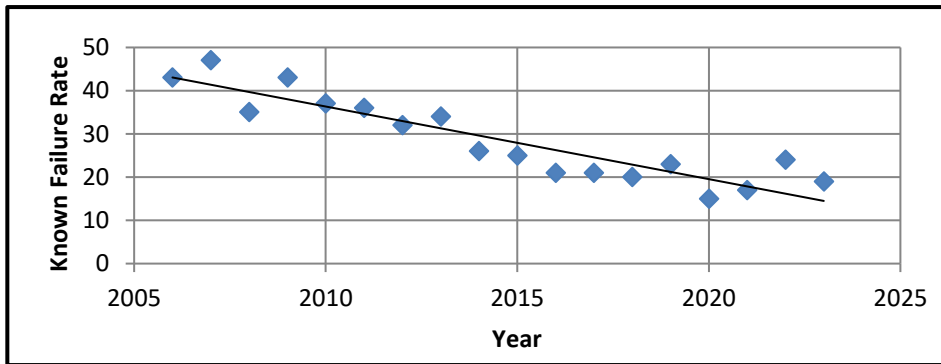
In 2023, 947 nests were recorded online with Project NestWatch (Table 3.5). In terms of nest productivity, of the 579 nests which had known outcomes, 112 (or 19%) failed, meaning that 467 (or 81%) were successful in fledging young. The remaining 368 nests which were monitored and reported to NestWatch, but had unknown outcomes, represented 35% of the nests reported to NestWatch. (The nests with unknown outcomes included all ground nests from American Woodcock, Mallard, Song Sparrow and Spotted Sandpiper, which, commencing in 2012, were not monitored once found.) As can be seen in Table 3.5 and Figure 3.E, the 2023

nest failure rate of 19% continues the recent general trend in decreasing failure rates. (Of the 112 failures, 35 occurred at the egg stage, 9 at the young stage and 68 at either the egg or the young stage.)

**Table 3.5. Nest Productivity from 2014 to 2023**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG
Nests discovered	902	926	1,018	1,175	1,027	1,060	918	1,058	1,236	1,246	1,057
Nests monitored & reported to NestWatch	690	657	702	801	663	736	564	769	941	947	747
• Unknown outcome	232	226	211	301	244	243	165	251	329	368	257
• Known outcome	458	431	491	500	421	493	399	518	613	579	490
➤ Successful	338	323	388	394	335	382	338	431	466	467	386
➤ Failed	120	108	103	106	86	111	61	87	147	112	104
➤ <b>Failure rate</b>	26%	25%	21%	21%	20%	23%	15%	17%	24%	19%	21%

Figure 3.E demonstrates how the downward trend in the known nest failure rate resumed in 2023 after the interruption of 2022.



**Figure 3.E. Known Nest Failure Rate Trend**

### 3.2.2.5 Nest Predation

Nest predation continues to be the most common cause of nest failure. Possible predators at TTP, in addition to other bird species, include raccoons, gartersnakes, mink, coyotes, foxes and, rarely, squirrels.

Of the 112 failed nests noted in Table 3.5 for 2023, a total of 70 nests were predated, representing 12% of nests with a known outcome. In total, 12 species had at least one nest predated in 2023. The species with the most predated nests were Red-winged Blackbird at 17% of their nests with a known outcome, Yellow Warbler at 18%, and American Robin at 5%.

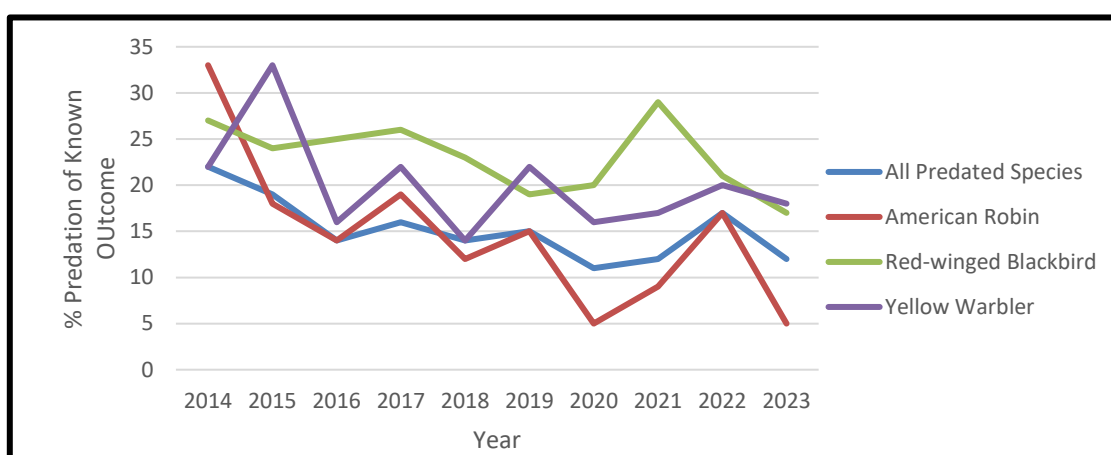
**Predated American Goldfinch Nest (L. Freeman)**







Left - Predated Yellow Warbler Nest; Right - Predated American Robin Nest  
(D. Johnston)



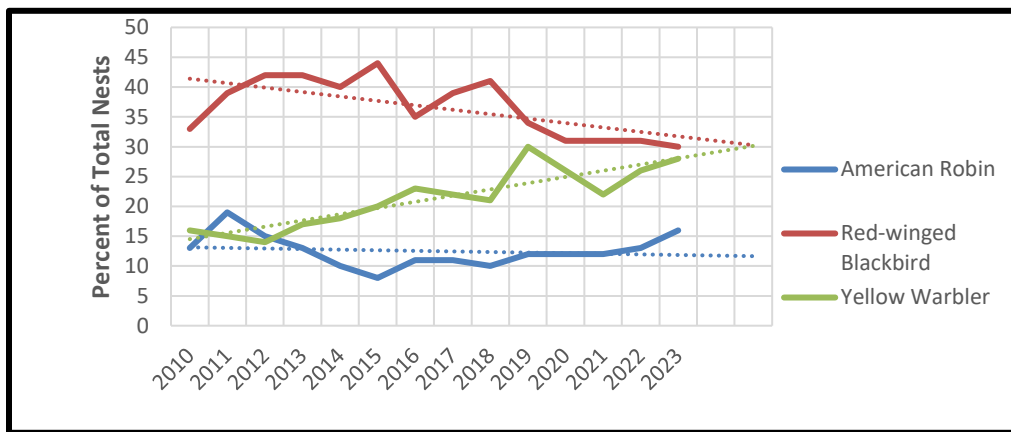
**Figure 3.F. Predation Rates of the Most Numerous Breeding Species**

Figure 3.F depicts the recent trend in predation rates for Red-winged Blackbirds, Yellow Warblers and American Robins, as well as the rate for all predated species combined. As can be seen, the trend for all of these converged in the 17 – 20% range in 2022, and this represented an increase in predation for American Robins, Yellow Warblers and all species combined. In 2023, each of these predation rates can be seen to have declined to pre-2022 levels, particularly in the case of American Robins.

### 3.2.2.6 Most Numerous Breeding Species

From the beginning of the project, the top three landbird nesters have been Red-winged Blackbirds, Yellow Warblers and American Robins, and together they represented 74% of all nests in 2023. Over the course of the project, Red-winged Blackbirds and Yellow Warblers have seen notable changes in their proportion of the total nests. American Robin nests, on the other hand, have traditionally ranged from 10 to 13% of all nests. In 2023, however, robin nests reached their highest total of the project and were 61% above their most recent 10-year average, resulting in an increase to 16% of all nests.

TRCA initiated a phragmites management program in Cells 1 and 2 in 2018, extended it to Embayments C and D in 2020, and then to Embayments A and B, Triangle Pond and the Toplands in 2021. As phragmites are often used by Red-winged Blackbirds for nesting, the apparent effect of the program on this species can be seen in Table 3.4, which shows a significant drop-off in Red-winged Blackbird nests starting in 2019. Prior to 2019, blackbird nests represented approximately 40% of all nests. While the number of blackbird nests has started to show signs of recovery, for the last four years it has only been able to maintain a 30 - 31% proportion of the steadily increasing total nests. At the same time, the proportion of Yellow Warbler nests, which was below 20% every year prior to 2015, has been gradually increasing and has surpassed 25% of all nests in four of the last five years, reaching 28% in 2023. The overall trends depicted in Figure 3.G continue to suggest that Yellow Warblers may eventually overtake Red-winged Blackbirds as a percentage of all nests.



**Figure 3.G. Trend in Percent of Total Nests for the Most Numerous Breeding Species**



**Young Birds Being Fed**

**3.2.**  
**2.7**  
**Species**  
**Detected**

Upper Left – Barn Swallows (J. Alvo); Upper Right – Downy Woodpecker (J. Alvo)

Lower Left – Eastern Kingbirds eating dragonfly (D. Johnston); Lower Right – Mallards eating aerial insects (J. Nishikawa)



## During the Breeding Season from All Studies

As can be seen in Table 3.6, the 48 confirmed breeders in 2023 are the highest of the past 10 years, while the 74 total species detected in 2023 are slightly higher than the most recent 10-year average. These numbers are a good reflection of the general health of TTP for a diversity and abundance of species.

The first section of Table 3.6 provides a breakdown of the 48 confirmed breeders in 2023. There were five confirmed colonial waterbird nesters (i.e., Caspian Tern, Common Tern, Double-crested Cormorant, Herring Gull and Ring-billed Gull), as well as the two managed waterfowl (i.e., Canada Goose and Mute Swan). To these 7 nesters are added 36 species of landbirds and non-colonial waterbirds (as listed in Table 3.4), including Brown-headed Cowbird, along with five species confirmed by the presence of recently fledged young (i.e., American Redstart, Canvasback, Killdeer, Northern Rough-winged Swallow and Wood Duck), making a total of 48 species nesting at TTP in 2023.

**Table 3.6. Summary of Species Detected During Breeding Season from All Studies**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG
Breeding Species:											
Colonial Waterbirds	7	5	7	5	6	5	5	7	5	5	6
Managed Waterfowl	2	2	2	2	2	2	2	2	2	2	2
Sub-total	9	7	9	7	8	7	7	9	7	7	8
Landbird Nests (incl cowbirds)	33	29	30	33	33	29	32	36	32	36	32
Additional Nesting Confirmed	2	3	0	1	3	4	3	1	5	5	3
Sub-total	35	32	30	34	36	33	35	37	37	41	35
Confirmed Breeding Species (total of above)	44	39	39	41	44	40	42	46	44	48	43
Probable Breeding Species	5	3	4	3	2	6	2	4	4	5	4
Possible Breeding Species	8	14	11	8	5	4	7	12	16	10	9
Other Species Observed	8	15	12	17	20	20	17	15	24	11	16
<b>Total Species Detected</b>	<b>65</b>	<b>71</b>	<b>66</b>	<b>69</b>	<b>71</b>	<b>70</b>	<b>68</b>	<b>77</b>	<b>88</b>	<b>74</b>	<b>72</b>

### 3.2.2.8 Parasitism by Brown-headed Cowbirds

Brown-headed Cowbird parasitism is a major issue for small landbird species in open habitats and forest



fragments. In 2023, seven nests of four species were parasitized by Brown-headed Cowbirds (Table 3.7). (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 3.7 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 2023 of 1% was the lowest of this project and well below the 10-year average of 8%. Both Red-winged Blackbird and Yellow Warbler nests, which have seen the highest number of parasitized

**Red-winged Blackbird Nest with One Brown-headed Cowbird Egg (S. Birkett)**

ts over the past 10 years, realized their lowest rate of parasitism at only 1% in 2023.

**Table 3.7. Brown-headed Cowbird Parasitism Data and Rates from 2014 to 2023.**

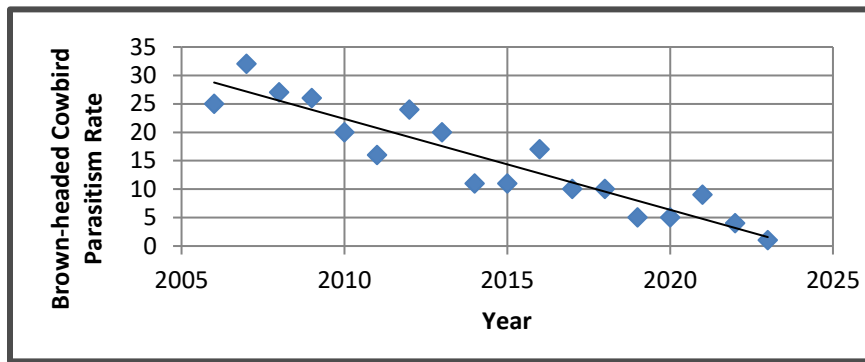
Brown-headed Cowbird Parasitism											
		American Goldfinch	American Robin	Gray Catbird	House Finch	Northern Cardinal	Red-winged Blackbird	Song Sparrow	Willow Flycatcher	Yellow Warbler	Totals
2014	Nests checked*	10	27	27	0	3	134	6	13	96	316
	No. parasitized	0	0	0	0	0	22	0	2	11	35
	% parasitized	0%	0%	0%	0%	0%	16%	0%	15%	11%	11%
2015	Nests checked*	5	18	21	0	2	181	7	7	82	323
	No. parasitized	0	0	1	0	0	27	1	0	8	37
	% parasitized	0%	0%	5%	0%	0%	15%	14%	0%	10%	11%
2016	Nests checked*	7	38	18	0	4	133	3	12	123	338
	No. parasitized	0	0	1	0	0	26	0	1	28	56
	% parasitized	0%	0%	6%	0%	0%	20%	0%	8%	23%	17%
2017	Nests checked*	12	45	20	0	7	182	4	12	128	410
	No. parasitized	1	0	0	0	1	24	1	1	12	40
	% parasitized	8%	0%	0%	0%	14%	13%	25%	8%	9%	10%
2018	Nests checked*	6	34	10	2	6	153	6	9	73	299
	No. parasitized	0	0	0	1	1	14	3	0	10	29
	% parasitized	0%	0%	0%	50%	17%	9%	50%	0%	14%	10%
2019	Nests checked*	5	38	17	1	4	135	3	13	135	351
	No. parasitized	0	0	0	0	0	14	0	1	4	19
	% parasitized	0%	0%	0%	0%	0%	10%	0%	8%	3%	5%
2020	Nests checked*	11	17	9	0	2	99	5	12	83	238
	No. parasitized	0	0	0	0	0	4	0	1	6	11
	% parasitized	0%	0%	0%	0%	0%	4%	0%	8%	7%	5%
2021	Nests checked*	9	53	10	0	2	119	4	8	101	305
	No. parasitized	0	1	2	0	0	9	2	0	14	28
	% parasitized	0%	2%	20%	0%	0%	8%	50%	0%	14%	9%
2022	Nests checked*	8	78	20	0	6	134	6	11	149	411
	No. parasitized	0	0	0	0	0	6	1	2	9	18
	% parasitized	0%	0%	0%	0%	0%	4%	17%	15%	6%	4%
2023	Nests checked*	6	106	13	0	11	220	7	23	238	624
	No. parasitized	0	0	0	0	0	3	2	0	2	7
	% parasitized	0%	0%	0%	0%	0%	1%	29%	0%	1%	1%
AVG	Avg nests checked *	7.9	45.4	16.5	0.3	4.7	149.0	5.1	12.0	120.8	361.5
	Avg parasitized	0.1	0.1	0.4	0.1	0.2	14.9	1.0	0.8	10.4	28.0
	Avg % parasitized	1%	0%	2%	33%	4%	10%	20%	7%	9%	8%

\* Nests checked include only those nests where parasitism could be observed and/or monitored; therefore, not all nests on site are included in this total

Although the overall parasitism rate has fluctuated from year to year during this project, the rate in 2023 of 1% continued the overall downward trend, as can be seen in Table 3.7 and Figure 3.H. This trend is paralleled in the Point Counts, where cowbird numbers have remained low since 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).

It should be noted that Table 3.7 above includes only the nine species where at least one instance of parasitism has been observed during the project. Many nests cannot be monitored for parasitism if they are

high in trees or in cavities, but no evidence of parasitism was confirmed in 2023 for any other species whose nests were able to be examined by project participants.



**Figure 3.H. Brown-headed Cowbird Parasitism Rate Trend**

Song Sparrow Nest with One Brown-headed Cowbird Egg (I. Sturdee)

Yellow Warbler Nest with One Brown-headed Cowbird Egg (D. Johnston)

### 3.

### 3 Species Recorded by Point Counts Versus Species Recorded by Nests

Table 3.8 lists the species detected during Point Counts, but for which breeding was not confirmed, versus those species not detected during Point Counts, but for which breeding was confirmed. Reasons that address why a species might be recorded by one method, but not the other include: (i) low abundance in breeding season (e.g., American Redstart), (ii) secretive habits (e.g., Least Bittern), (iii) well-hidden nests (e.g., American Woodcock), and (iv) nests or normal habitat not located near Point Counts (e.g., Marsh Wren).

**Table 3.8 Species Recorded Only by Point Counts Versus Species Recorded Only by Nest**

Point Count-recorded Species but No Nest Found	Species With Nest Found but Not Recorded During Point Counts
American Redstart	American Woodcock
Belted Kingfisher	Bank Swallow
Brown-headed Cowbird	Cooper's Hawk
Chimney Swift	Eastern Phoebe
Common Raven	Least Bittern
Eastern Wood-Pewee	Least Flycatcher
Great Crested Flycatcher	Mallard
Northern Rough-winged Swallow	Marsh Wren
Red-eyed Vireo	Northern Flicker



### 3.4 The Overall Picture

With the completion of the 2023 landbird and non-colonial waterbird breeding study, and after 19 consecutive years, the breeding bird project has been concluded. The most recent period of 2014 – 2023 has provided 10 years of consistent data based on 900+ nests each year and from which much has been learned.

- Since the project began in 2005, nesting by 56 species have been confirmed by project participants, not including the seven colonial waterbirds and the two managed waterfowl. With the average number of nests found in the last 10 years exceeding 1,000 annually, and the number of species averaging 35, it is evident that TTP provides a healthy environment for diverse and abundant nesting.
- The total number of species known to have nested at TTP has grown from 65 at the beginning of the project in 2005 to 80 species in 2023 (including the seven colonial waterbirds and two managed waterfowl).
- The number of nests found in the most recent two years of the project exceeded 1,200, and the overall density for TTP exceeded 6 nests per hectare. Considering that the true total of nests probably exceeded 1,500, the overall density in reality is likely to be at least 7.5 nests per hectare.
- The restoration and rehabilitation efforts by TRCA have played a major role in the increase of both the abundance of nests and the diversity of nesting species, as demonstrated by the recent addition of species such as American Redstart, Hairy Woodpecker, Marsh Wren, Red-necked Grebe and Swamp Sparrow.
- Throughout the project, the most common nesters at TTP have been Red-winged Blackbird, Yellow Warbler and American Robin, in that order. Together, these three species represented close to 75% of the nests annually. In the last 10 years, the number of Yellow Warbler nests has been approaching that of the Red-winged Blackbirds and may well soon equal or surpass that of the blackbirds.
- Parasitism by Brown-headed Cowbirds at TTP has decreased significantly over the course of the project. This can be attributed to a general decrease in the cowbird population as noted in the Atlas of the Breeding Birds of Ontario, and also to the decrease in meadow habitat at TTP where cowbirds typically like to forage.
- For reasons that are not clear, both the known nest failure rate and the rate of nest predation have decreased by approximately 50% over the last 10 years.

Given the consistency in the trends noted above over the past 10 years – i.e., increase in the number of nests and species, decrease in cowbird parasitism, and decrease in nest failure and predation – there is reason to believe that these trends will continue for the foreseeable future.

While the success of the breeding bird project was due to the participation of many dedicated volunteers, these project participants also benefited by increasing their knowledge of avian ecology, as well as improving their bird



Northern Flicker nestling looking for food (J. Alvo)



identification skills.

## 4. Acknowledgements

The colonial waterbird and managed waterfowl data in all of the annual reports were collected and presented by TRCA staff, who also produced all of the maps in the reports and provided valuable assistance in editing the reports.

The landbird and non-colonial waterbird breeding bird project was initiated in 2005 by TRCA employee Dan Derbyshire, who was involved through 2008. From the beginning, the project was sustained through extensive participation by a series of volunteers; over the 19 years of the project, a total of 29 volunteers contributed at least 10 hours to the program.

**Table 3.9 Volunteer Staff Participation**

Jack Alvo	2018 - 2023	Andrew Jano	2006 - 2010
Stephanie Birkett	2021 - 2023	Don Johnston	2007 - 2023
Heidi Brown	2009	Annette Lambert	2022 – 2023
Daniela Castellanos-Forero	2017	Seabrooke Leckie	2005 - 2007
Gwendolyn Clark	2022 – 2023	Jan McDonald	2006, 2009 - 2019
John Crawford	2022 – 2023	Larry Menard	2006
Alex Desormeaux	2018	JohN Nishikawa	2022 – 2023
Marc Dupuis-Desormeaux	2011 - 2020	Paul Reddick	2023
Mark Field	2009 - 2010	Glenn Reed	2009, 2012
Lynne Freeman	2016 - 2023	Pierre Robillard	2006, 2014 – 2019
Helen Fu	2018	Ian Sturdee	2005 – 2023
Attila Fust	2007	Peter Van Bussel	2023
Alex Hoffman	2022 – 2023	Bert Vanderzon	2009 – 2014
Emma Horrigan	2023	Paul Xamin	2010 – 2022
Emily-Kate Hunter	2022 – 2023		

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## **Appendices**

## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

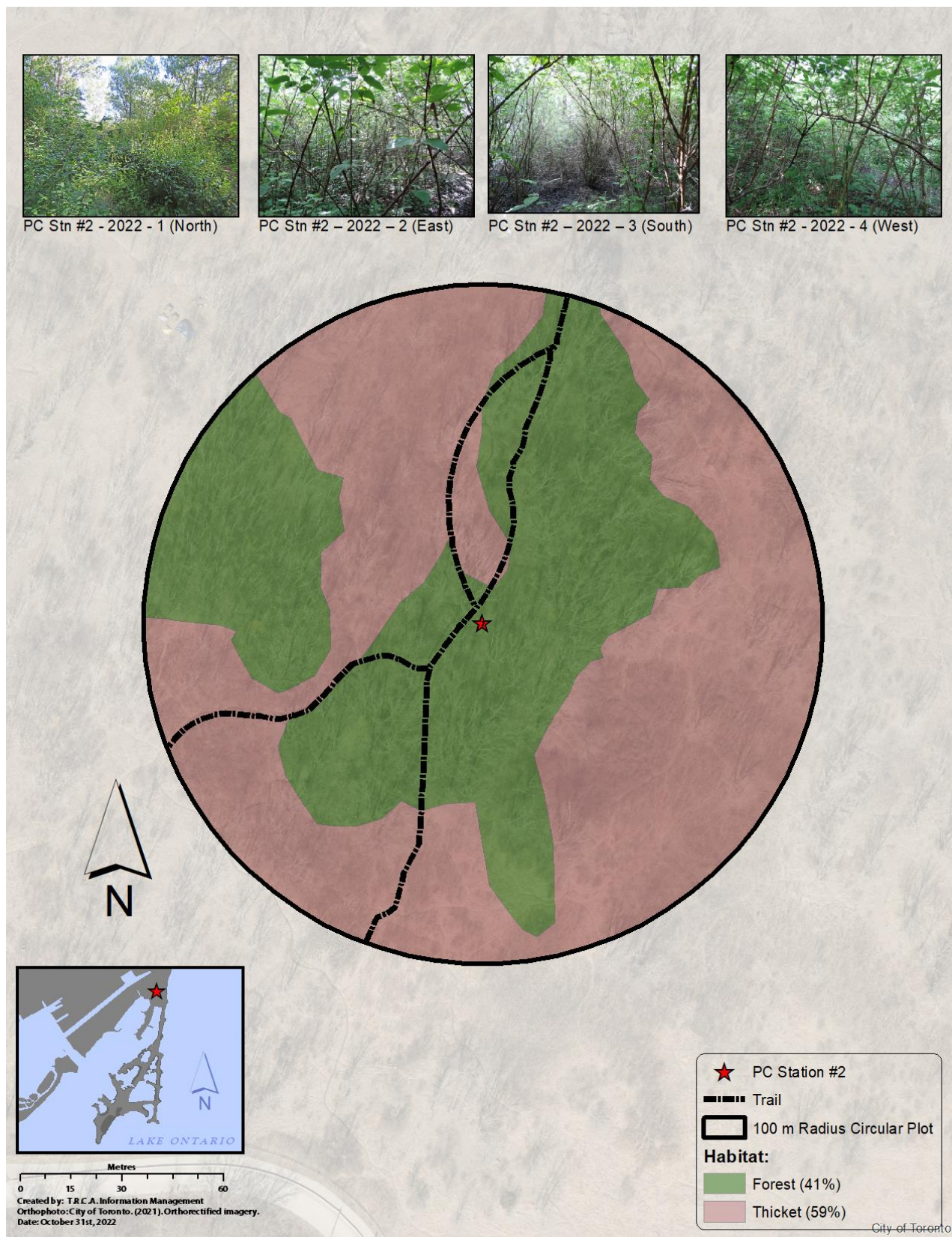
### Station 1





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

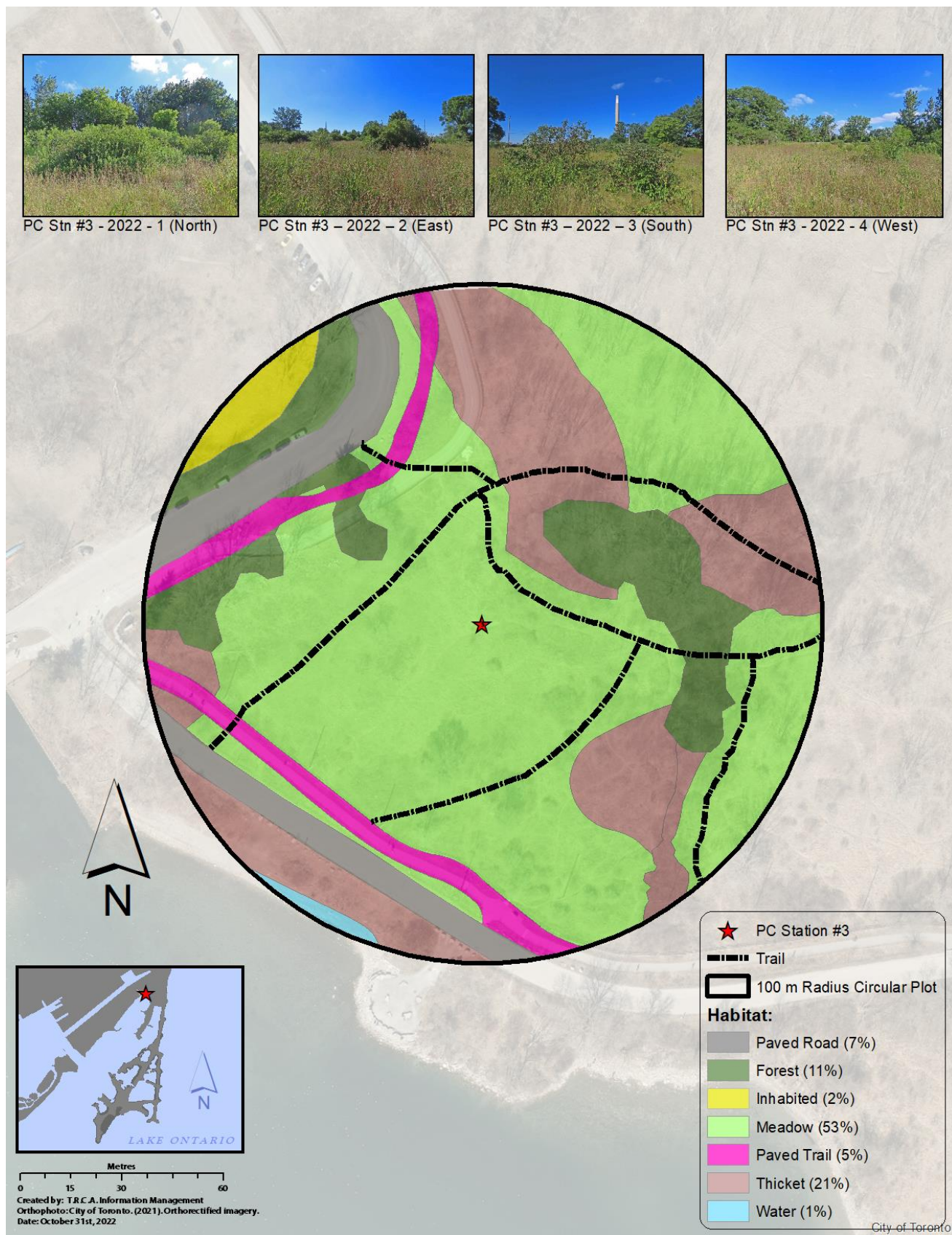
### Station 2





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

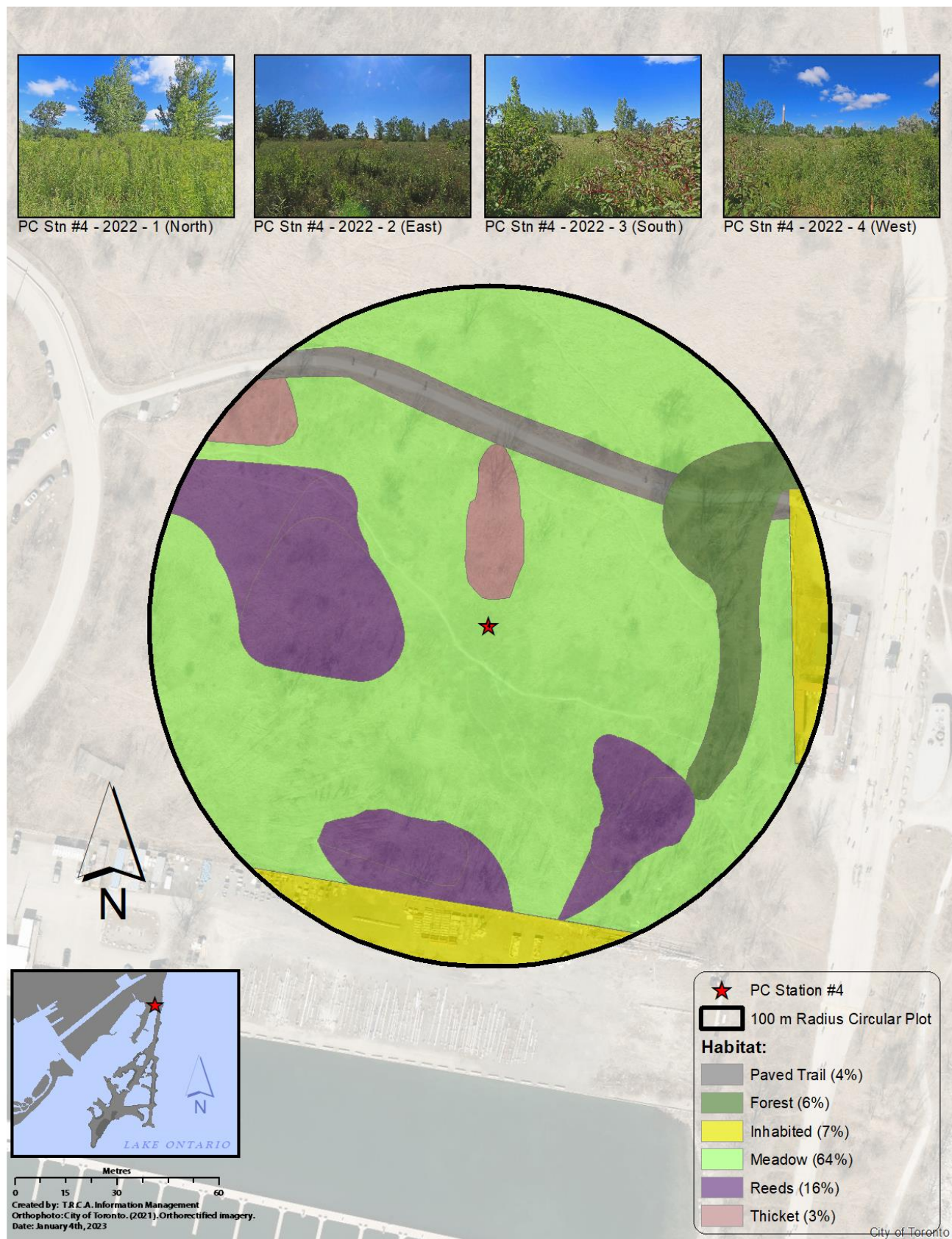
### Station 3





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

### Station 4





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

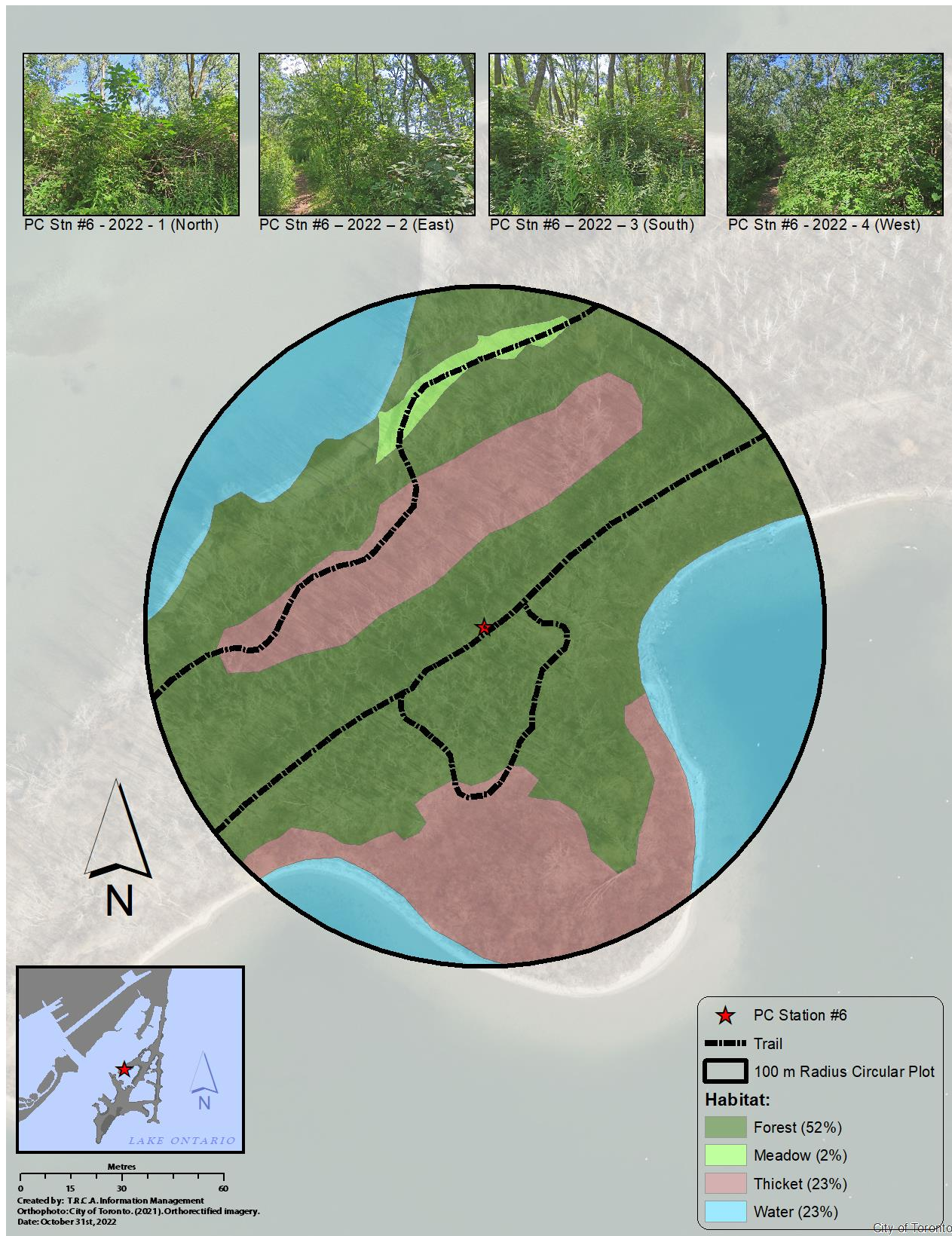
### Station 5





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

### Station 6



## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

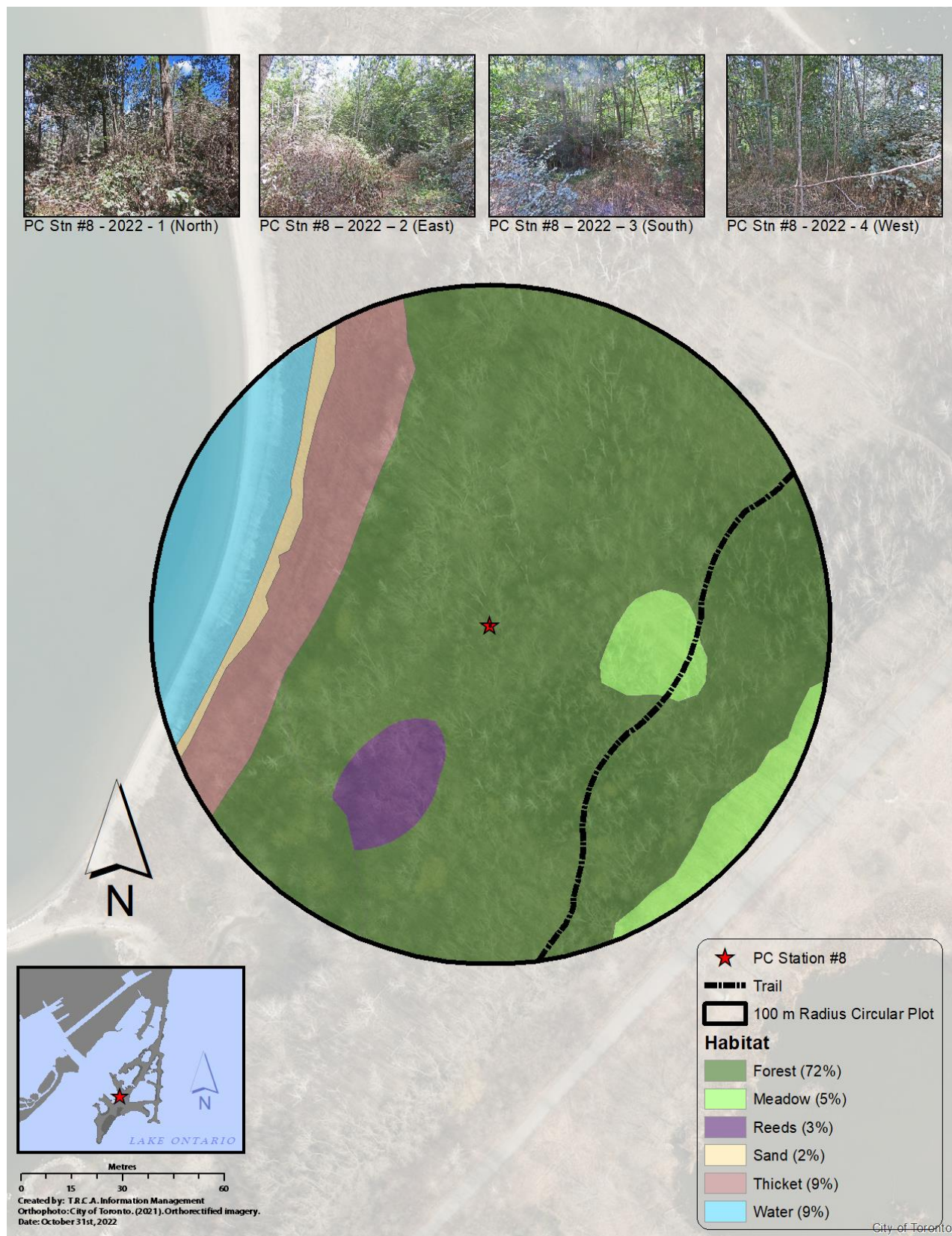
### Station 7





## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

### Station 8



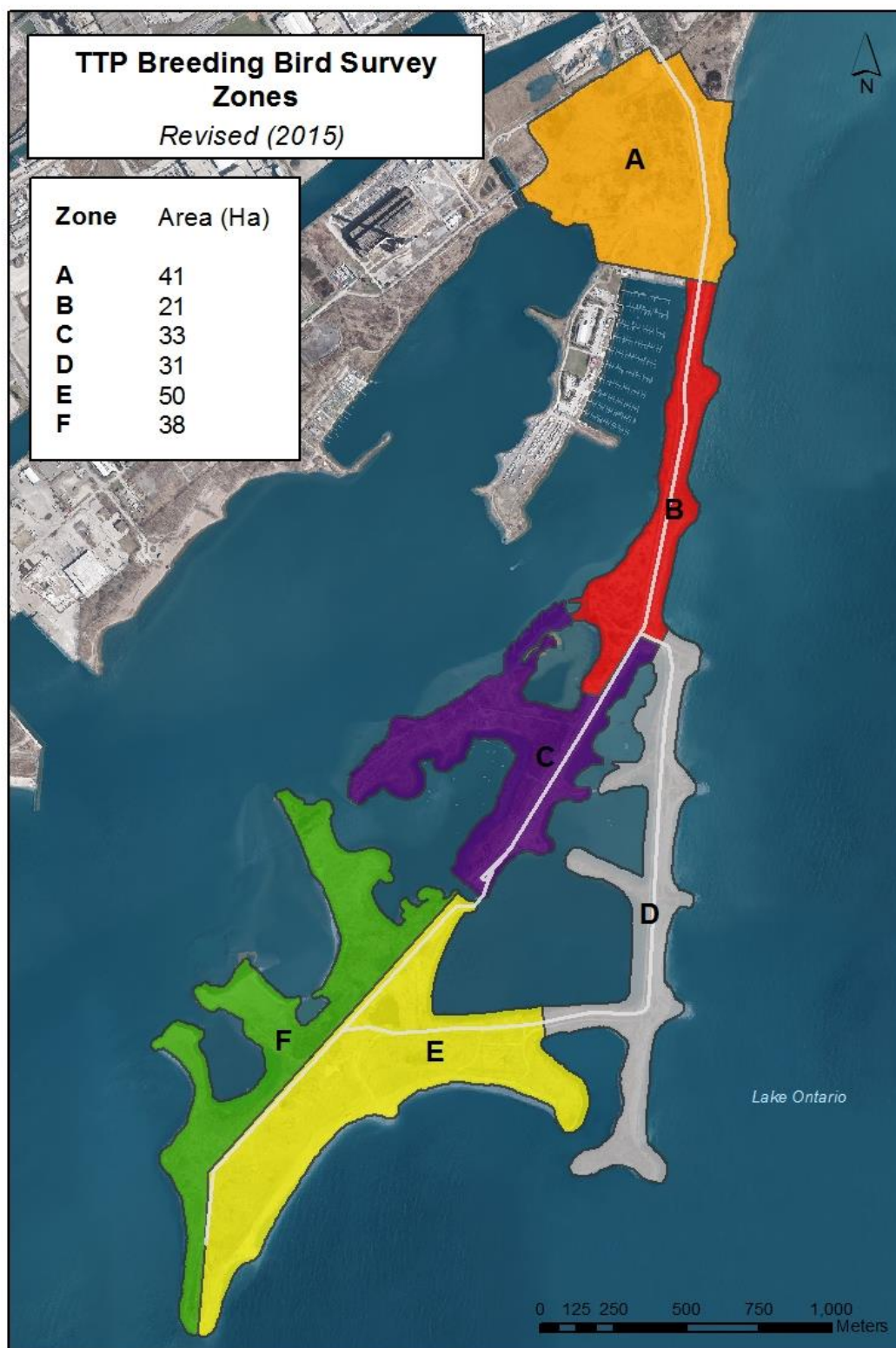


## Appendix A: Description of Point Count Stations (Habitat Pictures and Maps)

### Station 9



## Appendix B: Map of TTP Breeding Bird Survey Zones



This map was updated in 2015 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 C: Species Accounts

The following accounts include all species confirmed as breeders at TTP, whether in 2023 or previously, as well as any other species recorded in 2023 during its breeding season and whose breeding range includes TTP. The species recorded in 2023 are listed below as observed, or as possible, probable or confirmed breeders, and those highlighted in red have not yet been confirmed as breeders at TTP. Species observed, but clearly out of their breeding range (e.g., most shorebirds) are not included here. For TTP locations specified below, please consult Figure 3.A, an annotated map of the park.



**American Black Duck** (2023 - absent) Known to have bred historically at TTP. Not seen in 2023.

(J. Alvo)



**American Crow** (2023 - observed) Known to have bred historically at TTP. Occasional sightings in late April and May in 2023 were presumably migrants or visiting from elsewhere in the Toronto area.

(D. Johnston)



**American Goldfinch** (2023 - confirmed) This species is a regular late breeder at TTP, nesting in both shrubs and trees. In 2023, 17 nests were discovered, which matches the most recent 10-year average.

(D. Johnston)



**American Kestrel** (2023 – absent) Known to have bred historically at TTP. Not seen in 2023.

(J. Alvo)





**American Redstart** (2023 - confirmed) In 2021, this species nested in the Baselands, the first recorded nest at TTP. In 2023, the adults were spotted several times north of Goldfish Pond in May, and then three fledglings were seen being fed by the female near Embayment A.

(D. Johnston)



**American Robin** (2023 - confirmed) The third most common landbird nester at TTP, nesting in forested areas throughout TTP. In 2023, 196 nests were recorded, by far the highest total of this project. This species is one of the first to nest each year, and birds often have two or even three broods.

(D. Johnston)



**American Woodcock** (2023 - confirmed) This species is a regular ground nester at TTP in low numbers, with their nests being well concealed. In 2023, one nest was found on Peninsula D. (The 2012 change in protocol with regard to ground-nesting birds makes locating nests much less likely.)

(J. Alvo)



**Baltimore Oriole** (2023 - confirmed) Common nesting species in forest areas of TTP in moderate numbers. In total, 18 nests were recorded in 2023, the same as the average of the past 10 years of this project.

(D. Johnston)



**Bank Swallow** (2023 - confirmed) In 2022, 22 nests were found on a steep bank on the south edge of TTP in an area not previously checked and difficult to access, and 20 nests were located in the same area in 2023.

(D. Johnston)



**Barn Swallow** (2023 - confirmed) Barn Swallows are regular nesters at TTP under the eaves and roofs of buildings. In 2023, 24 nests were found, well below the most recent 10-year average. The cause of the decline could not be determined but was possibly linked to ectoparasites. This species, listed as Threatened on the Ontario Species at Risk list, continues to take advantage of buildings constructed by TRCA in 2011/2012.

(D. Johnston)



**Belted Kingfisher** (2023 - possible) In 2023, there were several observations and calling heard in suitable habitat during the species' breeding season in the Baselands just north of the Neck.

(J. Alvo)



**Black-billed Cuckoo** (2023 – absent) This species first nested at TTP in 2014. In 2023, it was not seen during the breeding season.

(P. Robillard)



**Black-capped Chickadee** (2023 - confirmed) A regular but uncommon cavity nester at TTP, with nests often difficult to locate. In 2023, three nests were found, compared to an average of one over the past 10 years.

(J. Alvo)



**Black-crowned Night-Heron** (2023 – probable) In 2023, two nests were found on Peninsula C during peak breeding season, but nest outcome was not confirmed. At their peak in 2000, an estimated 30% of the Canada-wide population of Black-crowned Night-Herons were breeding at TTP.

(D. Johnston)



**Blue-gray Gnatcatcher** (2023 - confirmed) In 2023, three nests were found, one less than the most recent 10-year average. These very small nests, usually well up in a tree, are always difficult to find and often moved if the birds believe the nest has been discovered.

(I. Sturdee)

**Blue Jay** (2023 - observed) This species has never been confirmed as a breeder at TTP. Several birds which were observed in spring of 2023 throughout TTP were presumed migrants.



**Blue-winged Teal** (2023 – possible) Known to have bred historically at TTP. In 2023, a pair raised hopes of nesting when they spent most of the spring in a corner of Goldfish Pond, but no nesting could be confirmed.

(J. Alvo)



**Bobolink** (2023 - observed) This species has never been confirmed as a breeder at TTP. In 2023, a few birds observed in May near East Cove were presumably migrants.

(J. Alvo)



**Brown-headed Cowbird** (2023 - confirmed) In 2023, a total of seven nests of Red-winged Blackbird (3), Song Sparrow (2), and Yellow Warbler (2), were found to have been parasitized by cowbirds. This was the lowest rate of parasitism of the project by far.

(J. Alvo)





**Brown Thrasher** (2023 – absent) Brown Thrasher is a regular but uncommon shrub and ground nester at TTP whose nests can be difficult to find. Not seen in 2023.

(J. Alvo)



**California Gull** (2023 – absent) Known to have bred historically at TTP.

**Canada Goose** (2023 - confirmed) There were 19 nests confirmed in 2023, and these were managed according to the TRCA Canada Goose Management Strategy.

(J. Alvo)



**Canvasback** (2023 - confirmed) In 2023, although a nest was not found, evidence of successful nesting was confirmed by the presence of recently fledged young in Cell 2.

(J. Alvo)



**Carolina Wren** (2023 – absent). In 2021, this species was confirmed as a breeder at TTP for the first time. Not seen in 2023.

(J. Alvo)



**Caspian Tern** (2023 - confirmed) This species is an intermittent ground-nester at TTP in recent years. In 2023, seven nests were found on Peninsula B, although the outcome of these nests is unknown.

(J. Alvo)



**Cedar Waxwing** (2023 - confirmed) A common late nester at TTP, usually at mid-level heights in trees. A total of 24 nests was found in 2023, well below the most recent 10-year average for this project.

(D. Johnston)



**Chipping Sparrow** (2023 – observed) This species has never been confirmed as a breeder at TTP. In 2023, two birds were observed in April on Peninsula A, presumably migrants.

(J. Alvo)



**Cliff Swallow** (2023 - confirmed) A total of only eight nests was recorded in 2023 under the eaves of the Nature Centre, the lowest number since the species started nesting at TTP in 2018.

(J. Alvo)



**Common Grackle** (2023 - confirmed) Common Grackle is a regular nester in low numbers at TTP. In 2023, eight nests were found, slightly above the most recent 10-year average. The birds have been taking advantage of maturing, thick conifers.

(D. Johnston)



**Common Raven** (2023 – possible) This species has never been confirmed as a breeder at TTP, although a pair has nested immediately nearby TTP in recent years. In 2023, birds were seen during their breeding season in suitable breeding habitat with tall trees, which ravens are known to use.

(J. Alvo)



**Common Tern** (2023 – confirmed) In 2023, Common Terns nested on two artificial nesting rafts in Embayment D and one in Cell 3, although the rafts were abandoned by mid-July as a result of predation. No count of nests was taken.

(J. Alvo)



**Common Yellowthroat** (2023 - probable) Known to have bred historically at TTP. Singing males have been present throughout the breeding season in most recent years, and in 2023, males were observed performing territorial songs in suitable nesting habitat in several locations during their breeding season, although no nest could be found.

(J. Alvo)



**Cooper's Hawk** (2023 - confirmed) In 2022, this species was confirmed as a breeder at TTP for the first time. In 2023, probably the same pair nested again at mid-level height in a tree on Peninsula C.

(D. Johnston)



**Double-crested Cormorant** (2023 - confirmed) A total of 10,841 nests were confirmed in the tree and ground nest colonies at TTP in 2023, an overall population increase of 22.4% from 2022. The 8,450 ground nests represented 78% of the population. Cormorants are managed for spatial distribution, where ground nesting is encouraged and tree nesting is discouraged, following the TTP Double-crested Cormorant Management Strategy.

(D. Johnston)



**Downy Woodpecker** (2023 - confirmed) A regular breeder in tree cavities at TTP, but in low numbers. In 2023, three nests were found, one more than the most recent 10-year average for this project.

(J. Alvo)





**Eastern Kingbird** (2023 - confirmed) A regular breeder at TTP along forest edges where meadow and shrubs are present. In 2023, a total of 23 nests was found, slightly below the average for the past 10 years.

(D. Johnston)

**Eastern Meadowlark** (2023 - absent) In 2010, a nest found in the Baselands meadow habitat was unsuccessful. The decrease in meadow at TTP and the 2012 change in protocol to not seek ground-nesting birds will combine to make finding nests in future unlikely.



**Eastern Phoebe** (2023 – confirmed) In 2020, a pair nested on a ledge at the TTPBRS building, the first nest recorded at TTP. In 2023, nesting took place there for the fourth year in a row, and the pair had a successful second brood as well.

(J. Alvo)



**Eastern Wood-Pewee** (2023 – probable) In recent years, males were frequently observed performing possible territorial songs in suitable nesting habitat in several locations at TTP during their breeding season. This was observed again in 2023 in several locations, although no nest was confirmed.

(J. Alvo)



**European Starling** (2023 - 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. In 2023, two nests were found, average for the project.

(D. Johnston)



**Field Sparrow** (2023 - possible) This species has never been confirmed as a breeder at TTP. In 2023, a bird was observed singing in suitable breeding habitat early in the breeding season on Peninsula A.

(J. Alvo)



**Gadwall** (2023 - possible) Gadwall has been a regular ground-nesting species at TTP in low numbers. In 2023, no nests were found, but pairs were observed a number of times in May and June. (The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.)

(D. Johnston)



**Gray Catbird** (2023 - confirmed) Gray Catbird is a regular nester at TTP, preferring dense shrubs with some tree cover. In 2023, 16 nests were found, well below the most recent 10-year average.

(J. Alvo)



**Great Black-backed Gull** (2023 - absent) Known to have bred historically at TTP.

(D. Johnston)



**Great Blue Heron** (2023 - observed) Known to have bred historically at TTP. In 2023, the birds, often juveniles, seen regularly in June and July presumably arrived from a heronry outside TTP as a result of the usual post-breeding dispersal.

(J. Alvo)



**Great-crested Flycatcher** (2023 - probable) This cavity-nesting species has never been confirmed as a breeder at TTP. In 2023, birds were seen and heard on multiple occasions on Peninsula C during June.

(J. Alvo)



**Great Egret** (2023 - observed) In recent years a regular breeder at TTP in low numbers. In 2023, occasional birds seen foraging at TTP during the breeding season were probably visiting from the Toronto Island Park.

(D. Johnston)



**Green Heron** (2023 - observed) Known to have nested historically at TTP. In 2023, three sightings in May were presumably migrants or visitors from outside TTP.

(J. Alvo)



**Green-winged Teal** (2023 – absent) In 2017, this species was confirmed as a breeding species at TTP for the first time. Not seen in 2023 during its breeding season.

(D. Johnston)



**Hairy Woodpecker** (2023 – possible) In 2022, this species was confirmed as a breeder for the first time at TTP. In 2023, this species was observed on two occasions in the same area on the Toplands in the latter part of April.

(D. Johnston)





**Herring Gull** (2023 – confirmed) A breeder at TTP in small numbers in some years. In 2023, two nests were observed on Peninsulas B, although the outcome of the nests is not known.

(D. Johnston)



**Horned Lark** (2023 - absent) Known to have bred historically at TTP.

(J. Alvo)



**House Finch** (2023 - absent) Nesting by this species at TTP has been sporadic. Not seen in 2023.

(J. Alvo)



**House Sparrow** (2023 - probable) Nests of this cavity-nesting species have not been found at TTP since 2006, although it is known to nest immediately north of TTP. In 2023, birds were recorded in suitable nesting habitat in the Baselands on multiple occasions in June.

(J. Alvo)



**House Wren** (2023 - confirmed) Believed to be a regular cavity nester at TTP, but in very low numbers. In 2023, two nests were found, one more than the most recent 10-year average.

(J. Alvo)



**Killdeer** (2023 - confirmed) Killdeer has been a regular ground-nesting species at TTP in low numbers in open areas with low or no vegetation, although the numbers have been declining recently. In 2023, while no nests were found, nesting was confirmed by the presence of recently fledged young. (The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.)

(J. Alvo)



**Least Bittern** (2023 – confirmed) In 2017, this species, listed as Threatened both provincially and federally, first nested at TTP. This nesting was in Embayment D and Triangle Pond, where phragmites management has since been implemented. In 2023, TRCA staff working in Cell 1 discovered a nest in the reeds.

(M. Dupuis-Desormeaux)



**Least Flycatcher** (2023 - confirmed) A regular but uncommon breeder in very low numbers at TTP. In 2023, two nests were found, the same number as the most recent 10-year average.

(J. Alvo)



**Mallard** (2023 - confirmed) Mallard is a regular ground-nester at TTP in low numbers. Three nests were found in 2023, one below the most recent 10-year average of four. (The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.)

(D. Johnston)

**Marsh Wren** (2023 – confirmed) After a male Marsh Wren attempted unsuccessfully to find a mate in 2020, it was expected that nesting would eventually occur at TTP. In 2023, successful nesting was confirmed when TRCA staff found a nest with young in the reeds in Cell 1.



**Mourning Dove** (2023 – possible) Mourning Dove nests have been scarce at TTP in recent years. In 2023, a pair was seen in early May in suitable breeding habitat near East Cove.

(J. Alvo)



**Mute Swan** (2023 - confirmed) The Mute Swan is an introduced species, and all nests are managed by TRCA to eliminate reproduction. In 2023, three nests were managed.

(D. Johnston)



**Nashville Warbler** (2023 - observed) This species has never been confirmed as a breeder at TTP. In 2023, birds observed in May and June were presumably migrants.

(J. Alvo)

**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 it is not included in the total of known breeding species at TTP.*



**Northern Cardinal** (2023 - confirmed) A regular nester at TTP, although in varying numbers. In 2023, 18 nests were found, the highest total of this project. The nests of this species are usually well hidden in dense shrubs and may be abandoned if the adults believe they have been discovered.

(D. Johnston)





**Northern Flicker** (2023 - confirmed) Northern Flicker is a regular cavity-nesting species in very low numbers at TTP. In 2023, one nest was found in a telephone pole in the Baselands. This is the same number as the most recent 10-year average.

(D. Johnston)



**Northern Mockingbird** (2023 - confirmed) In 2023, a pair of birds was recorded nesting four times in the Baselands. Predation was confirmed as the cause of at least one failure, as happened in the previous two years. Fledged young were only confirmed in the third nest.

(D. Johnston)



**Northern Rough-winged Swallow** (2023 - confirmed) Nests have been detected in some recent years in the steep banks on the south shore of TTP. In 2023, recently fledged young were observed in the Baselands.

(J. Alvo)



**Orchard Oriole** (2023 - confirmed) This species has been a regular nester at TTP in recent years, although in low numbers. Three nests were found in 2023, matching the average number for the past 10 years.

(J. Alvo)



**Red-bellied Woodpecker** (2023 - observed) This species has never been confirmed as a breeder at TTP. In 2023, a bird was seen or heard a few times in May in the Sunken Woods.

(P. Robillard)



**Red-eyed Vireo** (2023 - possible) This species has never been confirmed as a breeder at TTP. In 2023, a male was singing in June in the species' breeding season in suitable nesting habitat in the Baselands.

(J. Alvo)



**Redhead** (2023 - absent) Known to have bred historically at TTP.

(D. Johnston)



**Red-necked Grebe** (2023 – confirmed) This species was confirmed as a breeder at TTP for the first time in 2023. A pair nested a second time in Embayment A, after the first nest failed, and another pair nested at least once in Embayment C. It could not be determined if either nest succeeded or was predated.

(D. Johnston)



**Red-winged Blackbird** (2023 - confirmed) The most abundant nesting species at TTP (excluding colonial waterbirds), found throughout TTP in shrubs and reeds. In 2023, 374 nests were found, well above the most recent 10-year average for this project. The elimination of phragmites in the last few years has resulted in fewer nests in some areas, but the eventual return of native species will help restore the species' usual breeding habitat. In the meantime, the species has proved to be quite resilient in adapting to the available reed stubble.

(I. Sturdee)



**Ring-billed Gull** (2023 - confirmed) In 2023, there were 3,665 nests on Peninsulas A and B, but a suspected predation event caused the gulls to abandon their nests in mid-June, resulting in no confirmed successful nesting.

(D. Johnston)

**Ring-necked Pheasant** (2023 - absent) Known to have bred historically at TTP.



**Rock Pigeon** (2023 - possible) Known to have bred historically at TTP. In 2023, birds were seen in the Baselands in May in suitable breeding habitat.

(J. Nishikawa)



**Savannah Sparrow** (2023 - absent) Prior to the start of this project, Savannah Sparrow was a common ground nester in the Baselands, along the Neck, in some areas south of Cell 3 and on the Toplands. No nests have been found during the project since 2007. (The 2012 change in protocol with regard to ground-nesting birds makes locating nests less likely.)

(J. Alvo)



**Song Sparrow** (2023 - confirmed) Song Sparrow is one of the most abundant nesting species at TTP, although few of its well-concealed nests are ever found. In 2023, nine nests were found in a variety of habitats, one more than the average for the past 10 years. (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.)

(J. Alvo)





**Sora** (2023 – observed) Known to have bred historically at TTP. Birds were heard calling in the Wet Woods in the Baselands in May of 2023, and that, along with recent sightings around Cells 1 and 2, suggests a possibility of future nesting once again.

(TRCA)



**Spotted Sandpiper** (2023 - confirmed) A regular ground nester at TTP in low numbers in grassy areas. Three nests were found in 2023, matching the most recent 10-year average. (The 2012 change in protocol with regard to ground-nesting birds making locating nests less likely.)

(J. Alvo)



**Swamp Sparrow** (2023 – absent) In 2022, this species was confirmed as a breeder for the first time at TTP. Not seen during the breeding season in 2023.

(J. Alvo)



**Tree Swallow** (2023 - confirmed) Tree Swallow is a common breeder at TTP. In 2023, 47 nests were found in nest boxes and natural cavities around TTP, by far the highest number of the project.

(J. Alvo)



**Trumpeter Swan** (2023 - confirmed) Trumpeter Swans have nested in the wetlands at Tommy Thompson Park since 2014. In 2023, there were three nests for the first time, in Embayment D, Cell 1 and Cell 2. Two of the three nests were successful, while the third was abandoned.

(D. Johnston)



**Virginia Rail** (2023 - absent) Although known to have bred historically at TTP, no nest had been found during the project until 2019, when two nests were found in the Baselands.

**Warbling Vireo** (2023 - 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 adult singing on the nest. In 2023, 27 nests were found, well above the most recent 10-year average of 22.

(J. Alvo)



**White-throated Sparrow** (2023 - observed) This species has never been confirmed as a breeder at TTP. In 2023, there were several sightings through the first part of May, presumably late migrants.

(J. Nishikawa)



**White-breasted Nuthatch** (2023 – possible) This species has never been confirmed as a breeder at TTP. In 2023 a bird was observed in June in suitable nesting habitat in the Baselands.

(I. Sturdee)



**Willow Flycatcher** (2023 - confirmed) Willow Flycatcher is a common nesting species in more open areas with dense shrubs. In 2023, 27 nests were found, the highest total of the project.

(J. Alvo)

**Wilson's Phalarope** (2023 - absent) Known to have bred historically at TTP.



**Wood Duck** (2023 - confirmed) This cavity-nesting species was confirmed in 2012 as a breeder at TTP for the first time. Nesting in 2023 was confirmed by the presence of recently fledged young in both Triangle Pond and Embayment D.

(J. Alvo)



**Yellow Warbler** (2023 - confirmed) Yellow Warblers are common to abundant through much of TTP, usually nesting in dogwoods and honeysuckle. The number of nests has been steadily increasing over the last few years, and a total of 348 nests was found in 2023, the highest total of this project by far.

(J. Alvo)



## Appendix D: Map of 2023 Landbird Nest Locations \*



\* Excludes colonial waterbirds, Canada Goose and Mute Swan nests

## Appendix E: Breeding Status Codes for Each Species Detected In 2023

Species in red have never been confirmed as having bred at TTP.

OBSERVED	POSSIBLE	PROBABLE	CONFIRMED
American Crow	Belted Kingfisher	Black-crowned Night-Heron	American Goldfinch
Blue Jay	Blue-winged Teal	Common Yellowthroat	American Redstart
Bobolink	Common Raven	Eastern Wood-Pewee	American Robin
Chipping Sparrow	Field Sparrow	Great-crested Flycatcher	American Woodcock
Great Blue Heron	Gadwall	House Sparrow	Baltimore Oriole
Green Heron	Hairy Woodpecker		Bank Swallow
Great Egret	Mourning Dove		Barn Swallow
Nashville Warbler	Red-eyed Vireo		Black-capped Chickadee
Sora	Rock Pigeon		Blue-gray Gnatcatcher
Red-bellied Woodpecker	White-breasted Nuthatch		Brown-headed Cowbird
White-throated Sparrow			Canada Goose
			Canvasback
			Caspian Tern
			Cedar Waxwing
			Cliff Swallow
			Common Grackle
			Common Tern
			Cooper's Hawk
			Double-crested Cormorant
			Downy Woodpecker
			Eastern Kingbird
			Eastern Phoebe
			European Starling
			Gray Catbird
			Herring Gull
			House Wren
			Killdeer
			Least Bittern
			Least Flycatcher
			Mallard
			Marsh Wren
			Mute Swan
			Northern Cardinal
			Northern Flicker
			Northern Mockingbird
			N. Rough-winged Swallow
			Orchard Oriole
			Red-necked Grebe
			Red-winged Blackbird
			Ring-billed Gull
			Song Sparrow
			Spotted Sandpiper
			Tree Swallow
			Trumpeter Swan
			Warbling Vireo
			Willow Flycatcher
			Wood Duck
			Yellow Warbler

<b>Observed</b>	Species observed in its breeding season (no evidence of breeding)
<b>Possible Status</b>	Singing male present or breeding calls heard in breeding season in suitable nesting habitat Species observed in breeding season in suitable nesting habitat
<b>Probable Status</b>	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
<b>Confirmed Status</b>	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

## **Appendix F: Breeding Bird Report Methodologies and Protocols**

### **1. Colonial Waterbird 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.

#### **1.1 Tree Nest Survey Methodology**

An annual census is conducted during mid-June, 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 in the late summer to assess their health.

#### **1.2 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 24m<sup>2</sup>, so all nests could be counted, noting the nest contents, by walking or canoeing the periphery of the raft. The artificially created tern island in the Cell 1 wetland is approximately 120m<sup>2</sup> 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. From 2016 to 2020, a single population count was conducted for Common Tern colonies in mid-June by aerial photography from a helicopter or drone. Individual nests can be seen in the images and are counted using GIS software by placing a dot on each nest. Since 2021, count methodology has reverted to in-person visits, either counting all nests on-site, or counting nests based on ground-level photos.

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 drone. 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. Landbird and Non-colonial Waterbird 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).

VCP counts provide a more sophisticated approach to determining species density than standard Point Counts. VCP counts assume a series of concentric bands around a central point, with birds being recorded according to the band in which they are seen or heard. With Point Counts, there are no bands, although in some cases birds may not be counted beyond a certain distance from the central point.

From 2005 to 2020, data were collected following the VCP protocol. However, since the VCP density calculations are complex and labour intensive, they were never employed. Instead, the data were treated as standard Point Count data, with no distinction as to in which band the birds were recorded. Commencing in 2021, it was decided to stop recording data following the VCP methodology and to start using standard Point Count methodology.

In addition to the Point Counts, nest searching and monitoring are employed to provide valuable data on breeding success, nesting ecology and relative density of nesting attempts. Casual observations are recorded to augment the monitoring.

### 2.1 Point Count Protocol

Nine Point Count 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 Point 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, including flyovers, are recorded in categories, i.e., either within 100m or beyond 100m.

As a result of the vegetation analysis completed in 2019, it was determined that the dominant habitat has changed over time for Stations 1 (from Thicket to Meadow), 2 (from Forest to Thicket) and 9 (from Forest to Mixed). Much of the thicket at Station 1 has become wetland since 2010 as a result of the recent high-water levels and new growth of phragmites. Station locations are now distributed in the following manner: two in forest habitats, four in meadow communities, two in an extensive shrub thicket (termed “shrubland”) which is bordered by forest, and one with a mixed habitat (with no habitat dominating). A summary of station information is presented below in Table F.1. The location of each station is shown in Figure 3.A, an annotated map of Tommy Thompson Park, and in Appendix A.

**Table F.1. Point Count Station Information**

Station	UTM Zone	Easting	Northing	Location	Dominant Habitat
1	17	635198	4834430	Baselands	Meadow
2	17	635206	4834217	Baselands	Shrubland
3	17	634930	4834149	Baselands	Meadow
4	17	635300	4833940	Baselands	Meadow
5	17	635101	4832683	Neck	Shrubland
6	17	634360	4832165	Peninsula D	Forest
7	17	634726	4831138	Flats (s.of Cell 3)	Meadow
8	17	634220	4831453	Peninsula C	Forest
9	17	634215	4831680	Peninsula C	Mixed

## 2.2 Point Count 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 Point Count stations were initiated in 2010, repeated in 2013, 2016, 2019 and 2023, and should continue to be repeated every three years to help quantify changes in the vegetation communities. See Table 3.1 of the report 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 A for station maps.

## 2.3 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 B, 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 F.2 describes the primary habitat for each zone.

**Table F.2. Primary Habitat Type by Zone**

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

Starting in mid to late April and continuing until late August, 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 and monitor 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 2% of nests found since 2011, so the change in protocol has had some effect, 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 Birds Canada, nests with no breeding evidence detected during one or more visits are typically not. Researchers are able to access NestWatch data via Birds Canada's NatureCounts tool. Past Breeding Bird Reports are available at [www.ttpbrs.ca](http://www.ttpbrs.ca).



## Appendix G: Notes to Annual Breeding Bird Reports 2005 to 2023

These notes are meant to assist researchers to take into account changes that have occurred in protocols and treatment of data over the life of the project from 2005 to 2018.

ONRS stands for **Ontario Nest Record Scheme**, administered by the Royal Ontario Museum, where nests were reported in the early years of the project. Nest reporting has transitioned to **Project NestWatch**, administered by Bird Canada. Researchers are able to access Project NestWatch data via Birds Canada's **NatureCounts** tool.

Past Breeding Bird Reports are available at [www.ttpbrs.ca](http://www.ttpbrs.ca). Data spreadsheets which include nests not reported to Project Nestwatch can be obtained through TRCA (Toronto and Region Conservation Authority).

### 2005

Pages 1 to 3- detailed Tommy Thompson Park habitat overview; not repeated in subsequent reports.

The **Toronto Harbour Commission** changed its name to **The Toronto Port Authority** and then to **Ports Toronto** (see also 2016 Notes).

### 2006

Results Pages 5 and 6- an attempt to establish two smaller grids, C1 and E1 of similar habitat (the larger zones A to F are all mixed habitats) was:

**“Splitting the study area into specific zones and recording time spent in each zone allows us to assess nesting density on a spatial scale and determine species distribution. This is taken one step further by establishing grids that delineate smaller areas with a relatively homogenous habitat type. The grid in zone C (peninsula D) is primarily mixed age poplar forest while the grid in zone E (Toplands) is primarily meadow. These grids therefore provide samples of nesting density and species composition within primary habitats at Tommy Thompson Park. These standardized samples will be very powerful when compared to results ten or more years from now. A breakdown of nests per species for each zone/grid is presented below in Table 8.”**

### 2008

Page 7- Nest Searching Protocol- proposal rejected:

**“The nest searching survey method is valuable to bird conservation because it provides indicators of breeding success and parasitism/predation rates. The protocol used in 2008 essentially followed the 2007 protocol. It involved exhaustive area searches of as much of the TTP area as time and personnel permitted. To satisfy the requirement of standardizing effort, a suggestion was made to limit nest searching and monitoring effort to five specific periods during the breeding season. This suggestion was not accepted for practical reasons (weather, volunteer availability), but as a compromise, the date of each visit (detection and subsequent nest checks) was recorded. This way any subset of the database could be extracted if desirable for standardizing.”**

Page 7- Nest Searching Protocol- change to method of recording data:

**“From 2008 on, the use of ONRS nest cards was discontinued in favour of recording information in field notebooks and submitting the same to ONRS online. Consequently, no unique ONRS numbers appear in Appendix B listing the data submitted to ONRS. However, each submitted record can still be identified by a combination of unique codes, such as observer code, waypoint number or UTM coordinates. “**

Page 7- Nest Searching Protocol- use of subsets C1 and E1 discontinued:

**“Starting in 2008, nests located in Grids C1 and E1 were no longer recorded separately from the rest of Zones C and E, respectively, as had been done in 2006 and 2007.”**

**“The rate of parasitism among known host species at TTP is shown below in Table 9. (For purposes of this report, a nest was considered parasitized if a Cowbird egg was observed, regardless of what happened to that egg.) In previous reports only a total parasitism rate was presented. With the larger data sets available in 2007 and 2008, it is reasonable to present parasitism rates by individual species. The parasitism rates were calculated as the ratio of parasitized nests to the parasitized and not parasitized nests. Nests of the parasitized species where evidence of parasitism could not be determined were not considered in the calculation.”**

### **2009**

Results Page 9- extension of nest searching period:

**“The nest searching period covered 111 days in 2008 (April 30 to August 19), and in 2009 it was extended to 131 days (April 10 to August 19), an 18% increase.”**

### **2010**

Section 2 Page 1- Colonial Waterbird Report was merged with the Breeding Bird Report:

**“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., 2000). Six species of colonial waterbirds breed at Tommy Thompson Park; three species are predominately tree nesters: Double-crested Cormorant, Black-crowned Night-Heron and Great Egret, and three species are ground nesters: Ring-billed Gull, Herring Gull and Common Tern.”**

Section 3.2.1.1 Page 6- introduced vegetation surveys in Point Count circles:

**“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 POINT COUNT stations were initiated in 2010 and should be repeated every three years to help quantify changes in the vegetation communities.”**

### **2011**

Section 3.3.2 Page 12- extension of nest searching period- repeated statement from 2009 report and amended start and end dates, but date changes were not considered material (see 2009).

**“Prior to 2009, the nest searching period was approximately May 1 – August 30, but this was extended in 2009 to approximately April 1 – September 15 in order to include more early and late nesters.”**

### **2012**

Section 3.2.2 Page 8- ground nesting protocol change:

**“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 over the first seven years of surveys and 4.1% of nests found in 2012, 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”**

## **2014**

Section 3.1.2 Page 6- change in Data Reporting- dropped earlier years from tables:

**“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 annual reports prior to 2013.)”**

Section 3.3.1.1 Page 8- POINT COUNT Station Vegetation Survey- dropped 2010 Vegetation Survey from this report:

**“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.)”**

## **2015**

3.3.1.2 page 11- Point Count advisory:

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

Table 3.5 page 13- Trumpeter Swan Nest

**“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 this report for completeness.”**

## **2016**

Section 1.1 Page 1 first paragraph- Toronto Port Authority changed name to Ports Toronto

**“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.”**

Section 2.2.2 Page 2 – change in Common Tern nest counting methodology:

**“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.”**

Section 3.1.2 Page 6- change data reporting to rolling 10-year basis:

**“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.)”**

Section 3.2.2 Page 8- ONRS and Project Nestwatch:

**“While most nest records gathered are submitted to Project NestWatch at Bird Studies Canada, nests discovered after nesting is complete are typically not. Researchers access Project NestWatch data via BSC’s NatureCounts tool. Past Breeding Bird Reports are available at [www.ttpbrs.ca](http://www.ttpbrs.ca).”** CHANGED from 2015 3.2 page 6 **“While most nest records gathered are submitted**



to the Ontario Nest Records Scheme (ONRS), nests discovered after nesting is complete are typically not.”

### 2017

3.3.2 page 16- continued annual increases in number of nests:

**“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.”**

### 2018

Table 8 Page 19- changed Other Species Observed

**“In Table 3.8, all years of the project are shown because the “Other Species Observed” has been adjusted to eliminate species that would never breed at TTP, such as most shorebirds and north-nesting warblers. In previous reports, these northern breeders were included in the “Other Species Observed” tally. As can be seen in Table 3.8, the 44 confirmed breeders and 71 total species detected in 2018 are at the high end of the numbers recorded over the entire project to date. (In the first two years of the project, as is apparent in Table 3.8, species were more likely to be categorized as Possible Breeders rather than Other Species Observed, as has been the practice since 2007 when there is no evidence of breeding intent observed.)”**

### 2019

Sections dealing with Colonial Waterbird and Managed Waterfowl Population Estimate Methodology and Landbird and Non-colonial Waterbird Methodology moved to new Appendix F – Breeding Bird Report Methodologies and Protocols

Appendix F, Section 2.3 (4th paragraph) – Bird Studies Canada changed its name to Birds Canada

**“While most nest records gathered are submitted to Project NestWatch at Birds Canada, nests with no breeding evidence detected during one or more visits are typically not. Researchers are able to access NestWatch data via Birds Canada’s NatureCounts tool.”**

### 2020

The protocol followed for the “NEST” category in the “Nest Record Spreadsheet 2021” that is used to record data for this report (but not included in the report itself other than in Table 3.4) is: If a nest is built and not used then it is recorded as a “NEST”. The rationale is that this information is “data” and is more useful if it is recorded, rather than ignored, provided a nest that has been built can be correctly identified as to species. These nests are not always lined. Examples are American Robin which sometimes constructs nests which it does not use; House Wren/Marsh Wren when the male builds a nest to attract a mate but is unsuccessful, and a woodpecker that excavates a nest cavity that is not used for nesting.

If the nest is used for nesting, then it becomes an active nest, subject to Nest Outcome codes in the categories of Success, Failure and Unknown.

## 2021

In 2018 (see above), the Other Birds Observed category shown in Table 3.6 and Appendix E was adjusted to eliminate species that were never expected to breed at Tommy Thompson Park. However, this change was overlooked in 2019 and 2020, such that the number of Other Birds Observed was overstated. The number has now been corrected for those years.

In Appendix F, the Variable Circular Plot (VCP) protocol was changed to a standard Point Count protocol, effective with the 2021 report:

**“VCP counts provide a more sophisticated approach to determining species density than standard Point Counts. VCP counts assume a series of concentric bands around a central point, with birds being recorded according to the band in which they are seen or heard. With standard Point Counts, there are no bands, although in some cases birds may not be counted beyond a certain distance from the central point.**

**From 2005 to 2020, data were collected following the VCP protocol. However, since the VCP density calculations are complex and labour intensive, they were never employed. Instead, the data were treated as standard Point Count data, with no distinction as to in which band the birds were recorded. Commencing in 2021, it was decided to stop recording data following the VCP methodology and to start using standard Point Count methodology.”**

## 2022

Page 6. Figure 3.A. Annotated Map of Tommy Thompson Park with Point Count Stations was updated to reflect the change in name from Endikement Tip to Pipit Point.

Pages 12 & 13. Section 3.2.2 and Table 3.4 – nest searching efficiency. Prior to 2022, volunteer nest searching efficiency was determined by dividing each year’s total nest count by the total hours that volunteers spent searching for and monitoring nests. While this metric provided a rough guide as to the average amount of time each volunteer spent in the field to find and monitor each nest, no use was made of this metric in the nest data analysis. Further, whenever new volunteers were added to the project, comparisons with prior years were moot until the new volunteers were able to become fully productive. With six new volunteers joining the project in 2022, it became apparent that it would be impossible to compare future efficiency rates to prior years, and it was decided to discontinue calculating nest searching efficiency.