

## Tommy Thompson Park Double-crested Cormorant Management Report 2023

Prepared by Hillary Stead

January 2024

## Table of Contents

Background.....	3
Cormorant Management Strategy .....	6
Current Status.....	7
2023 Population Data.....	8
Breeding Census .....	8
Chick Banding .....	11
2023 Management Review.....	11
Increasing Public Knowledge, Awareness and Appreciation .....	11
Inactive Nest Removal .....	11
Enhanced Ground Nesting.....	12
Pre-nesting and Active Deterrents .....	12
Post Breeding Deterrents .....	14
References .....	15

*The information contained in this document is copyright  
© Toronto and Region Conservation Authority*

## Background

Tommy Thompson Park (TTP) is located on the Leslie Street Spit, a constructed landform that extends five kilometres into Lake Ontario in Toronto, Ontario (Figure 1). Originally intended for port-related infrastructure, construction of the peninsula began in the 1950s, but through natural succession and habitat enhancement efforts by Toronto and Region Conservation Authority (TRCA), it has become the largest area of natural habitat on the central Toronto waterfront.

The final size of the Spit is approximately 500 hectares, including the associated water lots. The Spit was designated as an Important Bird Area (IBA) in 2000 based on the globally significant populations of nesting colonial waterbirds, the continentally significant numbers of overwintering waterfowl, and nationally significant numbers of migratory birds (Wilson & Cheskey, 2001); this designation was upgraded to Key Biodiversity Area in 2022.



FIGURE 1. TOMMY THOMPSON PARK/LESLIE STREET SPIT

Six species of colonial waterbirds breed regularly at Tommy Thompson Park. Two species are predominately tree-nesters: Black-crowned Night-Heron (*Nycticorax nycticorax*) and Great Egret (*Ardea alba*); and four species are ground-nesters: Double-crested Cormorant (*Phalacrocorax auritus*, hereafter cormorant), Ring-billed Gull (*Larus delawarensis*), Herring Gull (*Larus argentatus*) and Common Tern (*Sterna hirundo*). Caspian Terns (*Hydroprogne caspia*) historically nested at TTP, disappeared from 2004 to 2011, then attempted ground-nesting with varying success from 2012 to 2016 and again from 2021 to 2023.

Until 2012, cormorants were predominantly a tree-nesting species at TTP, however, since 2013 most nests have been on the ground. Increased mammalian predation within the tree and ground nesting colonies has impacted recent nest success and nest attempts for most species, with all but cormorants showing decreased nest numbers since 2022.

Cormorants began nesting on Peninsula B in 1990 (Wilson & Cheskey, 2001) and expanded to Peninsula A the following year. The population steadily increased and expanded onto Peninsula C in 2000, followed by ground-nesting on Peninsula B in 2002, likely in response to fallen trees (due to the negative health implications of their tree-nesting behavior) as well as an increase in the overall Great Lakes population (Weseloh, et al., 1995). Today, cormorants nest on three of the four peninsulas at the park, Peninsulas A, B and C (Figure 2).

In 2022, cormorants initiated a new tree-nesting colony at Toronto Island Park (TIP). Toronto Island Park forms the southeastern extent of the Toronto Inner Harbour; it is a small archipelago designated as an Environmentally Significant Area, a Provincially Significant Wetland Complex, and a Life Science Candidate Area of Natural and Scientific Interest (ANSI). Black-crowned Night-Heron and Great Egret also tree-nest within the same area as cormorants at TIP (Figure 3).

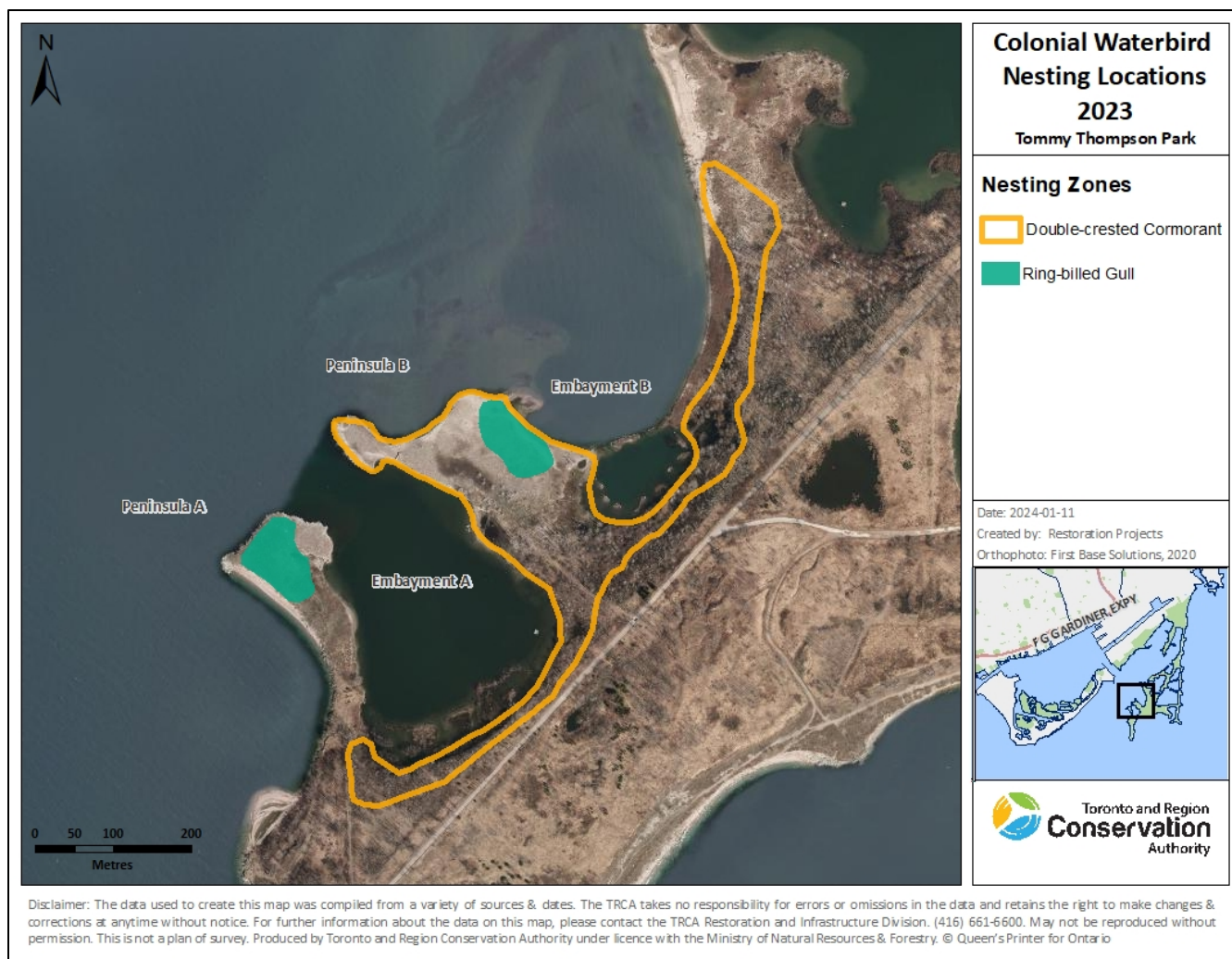
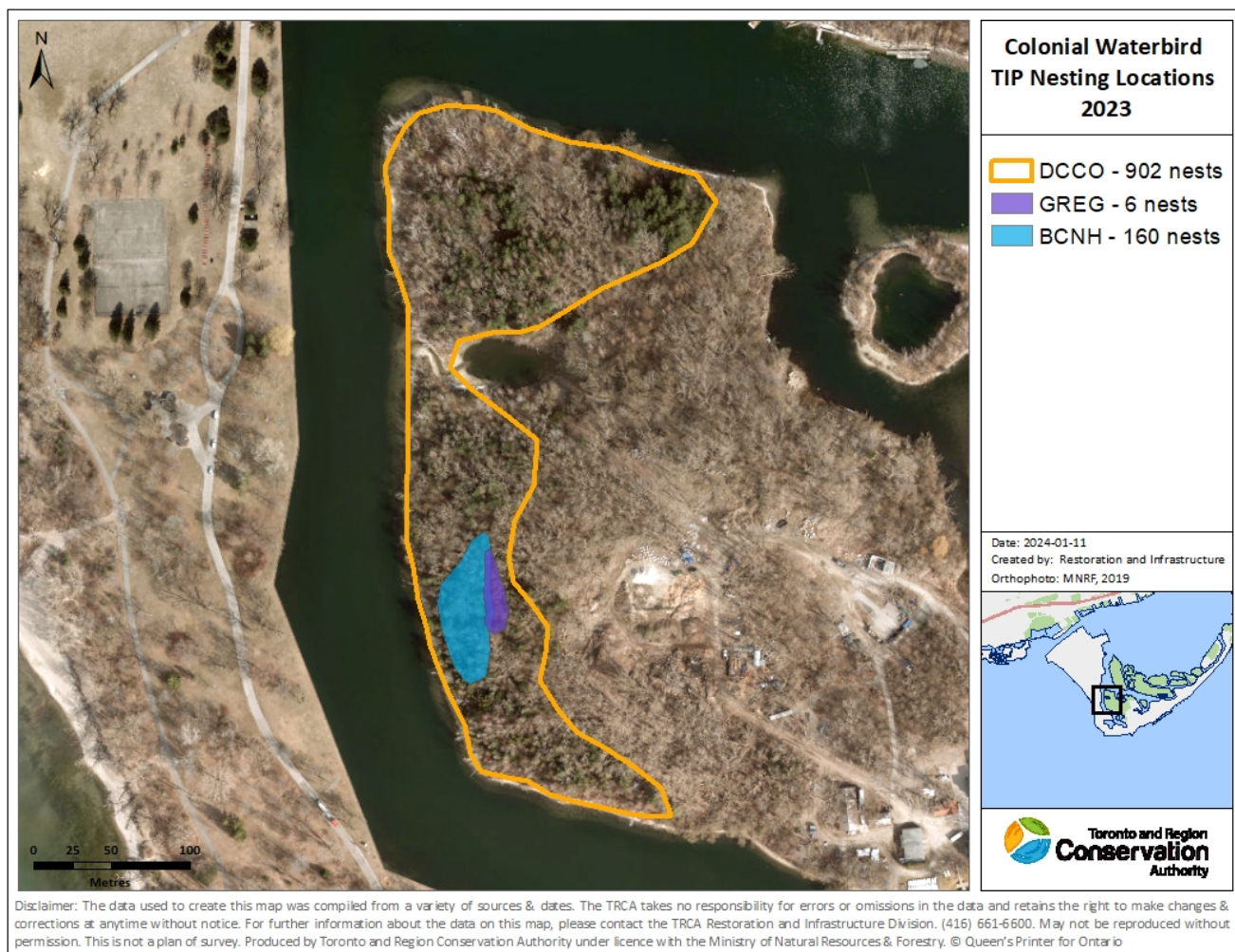


FIGURE 2. COLONIAL WATERBIRD NESTING LOCATIONS, TOMMY THOMPSON PARK, 2023





**FIGURE 3. COLONIAL WATERBIRD NESTING LOCATIONS, TORONTO ISLAND PARK, 2023**

### Cormorant Management Strategy

In 2008, TRCA developed the Tommy Thompson Park Double-crested Cormorant Management Strategy in response to the significant decline and public concern for the loss of forest habitat on the peninsulas (Toronto and Region Conservation Authority, 2008, 2009, 2010, 2012, 2013, 2014, 2016, 2018, 2020). The development of the strategy involved founding a Cormorant Advisory Group of stakeholders and experts, including conservationists, academics, and interest groups from across the spectrum to provide advice and input on the management plan. The inaugural meeting was in late 2007 and the group continued to meet annually to review management results and provide input on proposed management scenarios until 2016 (Toronto and Region Conservation Authority, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016).

The overall goal of the Double-crested Cormorant Management Strategy, as established by the Cormorant Advisory Group in 2008, is to achieve a balance between the continued existence of a healthy, thriving cormorant colony and the other ecological, educational, scientific and recreational values of TTP. The objectives of the Strategic Approach are to:

1. Increase public knowledge, awareness, and appreciation of colonial waterbirds;
2. Deter cormorant expansion to Peninsula D;
3. Limit further loss of tree canopy on Peninsulas A, B and C; and
4. Continue research on colonial waterbirds in an urban wilderness context (Toronto and Region Conservation Authority, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2018, 2020).

To achieve the goals and objectives of the Double-crested Cormorant Management Strategy, TRCA employed a suite of management techniques between 2009 and 2011 which included inactive nest removals, pre-nesting deterrents, active nest removals, habitat enhancements and post-nesting deterrents. Results from annual population counts during this time showed an increase in the ground-nesting colony and a leveling off in the tree-nesting colonies. These data suggested that the techniques had been successful in changing the nesting behaviour of cormorants.

In 2012, TRCA slightly modified the strategy to reduce pre-nesting deterrents to assess whether a reduced level of intensity would be effective. Results from the 2012 season confirmed reduced pre-nesting deterrents remained as effective. However, since 2014 there has been an annual increase in the pre-nesting deterrents required to prevent cormorants from expanding their tree nesting range into new areas.

#### *Toronto Island Park*

Since 2022, TRCA has been contracted by the City of Toronto to manage cormorants at Toronto Island Park. The goal is to achieve zero nesting at TIP and encourage cormorants to return to the TTP ground-nest colony. Management is conducted following the strategic approach and integrated deterrent techniques of the Tommy Thompson Park Cormorant Management Strategy.

### Current Status

Cormorant nesting on the central Toronto waterfront includes four sub-colonies. Three sub-colonies are located at Tommy Thompson Park: Peninsula A (ground-nesting), Peninsula B (tree- and ground-nesting), and Peninsula C (tree-nesting); and one sub-colony at Toronto Island Park (tree-nesting).

At Tommy Thompson Park, ground-nesting colonies are classified as Cormorant Conservation Zones (Figure 4), where cormorant nesting and roosting is encouraged and enhanced. The tree-nesting colonies are classified as Deterrent Areas, where cormorant nesting is discouraged through management activities. Peninsula D is the only remaining forested peninsula at TTP and is not occupied by nesting colonial waterbirds. The entirety of Toronto Island Park is classified as a Deterrent Area, where cormorant nesting and roosting is discouraged.

TRCA takes precautions across all deterrent areas to ensure management efforts do not adversely impact non-target species.

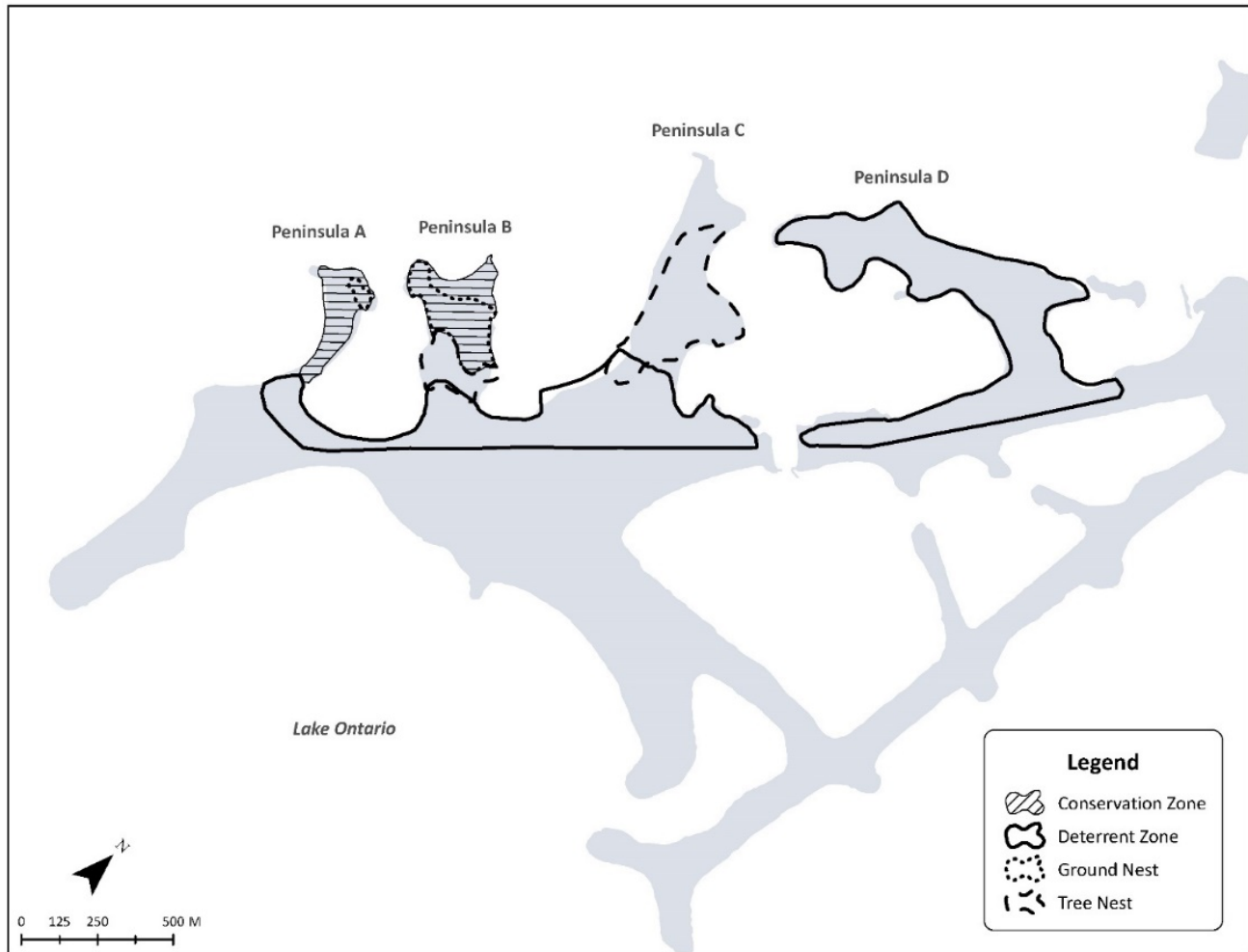


FIGURE 4. CORMORANT MANAGEMENT ZONES AT TOMMY THOMPSON PARK

## 2023 Population Data

### Breeding Census

First of season cormorants were observed on the central Toronto waterfront on 24 March. The peak-season breeding cormorant population increased by 11.5% with 11,743 nests counted in late-June (Table 1, Figure 5). 78% of the colony at TTP was ground-nesting on Peninsula B (Figure 6); as a result of the discontinued management at TTP on 12 May due to the pressure at Toronto Island Park, the total number of tree-nests increased by 122%, with nesting on all peninsulas except Peninsula D. Tree-nesting decreased by 46% at Toronto Island Park compared to 2022.



TABLE 1. CENTRAL TORONTO WATERFRONT CORMORANT NEST COUNT 2012 TO 2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Pen A	5	14	14	4	0	0	53	474	20	0	647
Pen A Ground	-	10	541	1525	1821	1445	2354	741	590	372	0
Pen B	1310	1316	1184	1007	2474	1815	1962	1215	568	96	539
Pen B Ground	6986	7799	7608	8555	5836	9061	6327	5982	7820	7410	8450
Pen C	3689	3270	2561	2184	2710	2194	2918	3034	1739	982	1205
TIP	0	0	0	0	0	0	0	0	0	1667	902
Total	11990	12409	11908	13275	12841	14515	13614	11446	10737	10527	11743

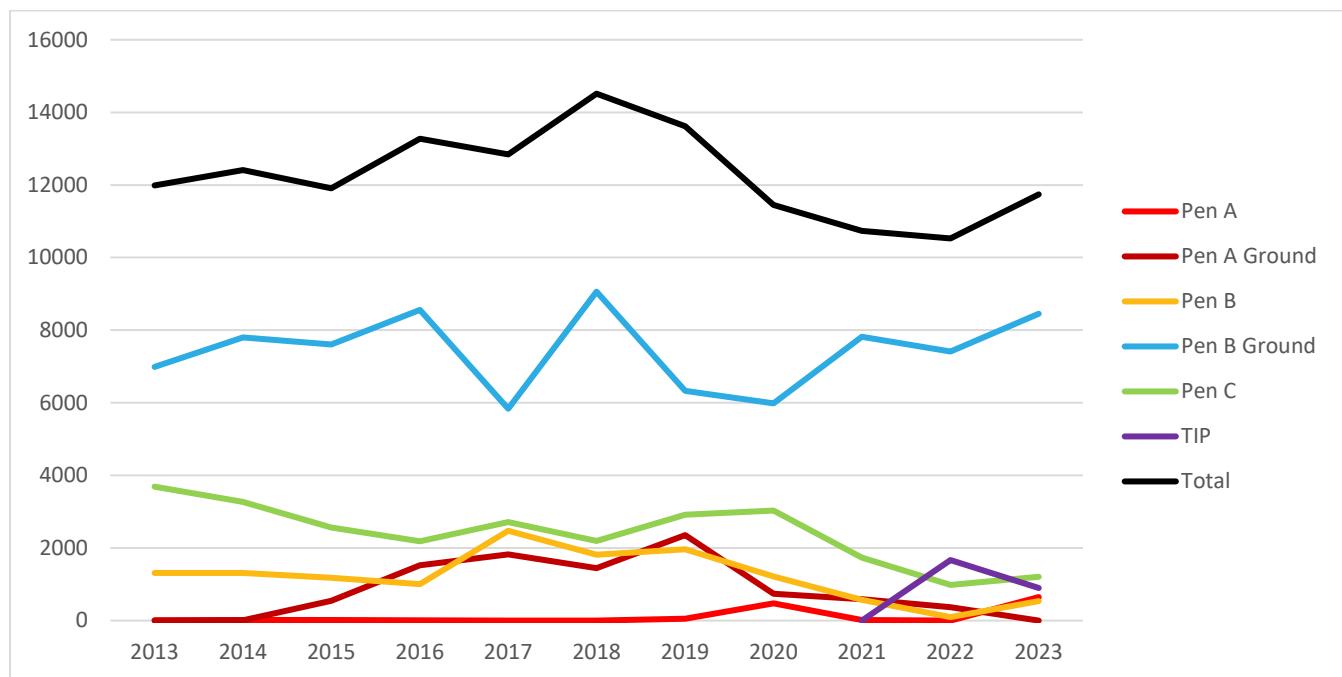


FIGURE 5. CENTRAL TORONTO WATERFRONT CORMORANT NEST COUNT 2013 TO 2023



**2023 TTP DCCO Ground Nest Footprint**

Peninsula B



◆ GroundNest

Date: 2024-01-11  
Created by: Restoration and Infrastructure  
Orthophoto: MNRF, 2019



Disclaimer: The data used to create this map was compiled from a variety of sources & dates. The TRCA takes no responsibility for errors or omissions in the data and retains the right to make changes & corrections at anytime without notice. For further information about the data on this map, please contact the TRCA Restoration and Infrastructure Division, (416) 661-6600. May not be reproduced without permission. This is not a plan of survey. Produced by Toronto and Region Conservation Authority under licence with the Ministry of Natural Resources & Forestry. © Queen's Printer for Ontario

**FIGURE 6. 2023 CORMORANT GROUND-NEST COLONIES ON PENINSULA B**

## Chick Banding

TRCA has a Scientific Permit to Capture and Band Migratory Birds from Environmental Canada (#10716). A banding team led by Dr. G. S. Fraser (York University, but acting as TRCA volunteer) captured and banded 39 cormorant chicks from the Peninsula B ground-nest colony after sunset on 17 July 2023. Accessing the ground-nest colony after dark minimizes disturbance to the birds and reduces risk of chick predation.

Of the 39 birds banded in 2023, 2 were found dead in the colony later in the season and another 2 were encountered in September; one was shot in Long Point, Ontario, and the other was shot in Summerstown, Ontario. A cormorant banded in 2021 was photographed in Fort Pierce, Florida on 6 March 2022 and reported in early 2023.

## 2023 Management Review

Cormorant management followed the adaptive Strategic Approach (Table 2). This included inactive nest removals, pre-nesting deterrents, active nest removals, habitat enhancements and post-nesting deterrents, all implemented as required within target areas in the cormorant colonies.

TABLE 2. 2023 STRATEGIC APPROACH MATRIX

	Peninsula A	Peninsula B	Peninsula C	Peninsula D	TIP
<b>Inactive Nest Removal (post 2022 breeding season)</b>	*	*	*		*
<b>Enhanced Ground Nesting</b>	*	*			
<b>Pre-Nesting Deterrents</b>	*	*	*	*	*
<b>Active Nest Removals</b>	*	*	*		*
<b>Post-Breeding Deterrents</b>	*	*	*	*	*

## Increasing Public Knowledge, Awareness and Appreciation

Increasing public knowledge and fostering an appreciation for cormorants is an important aspect of the Tommy Thompson Park Management Strategy. Staff engaged Tommy Thompson Park visitors in informal interpretation as part of the weekend nature interpretation program, and the management strategy was presented to post-secondary academic groups, conference participants, and local interest groups throughout the year. Furthermore, the TTP Cormorant Management Strategy was highlighted in two news articles:

- Toronto Star, 2 October 2023: Cormorants are making nests on the Toronto Islands. Here's why that's a problem
- City TV News, 4 October 2023: Toronto Islands has a cormorant problem. What's being done to address it

## Inactive Nest Removal

### Tommy Thompson Park

Pre-nesting season inactive nest removal was conducted in December 2022 (details in the 2022 Annual Report).

Post-nesting season inactive nest removal started in December 2023. 191 nests were removed from Deterrent Areas on Peninsula A. Additional inactive nests within Deterrent Areas will be removed during winter 2024.

### Toronto Island Park

Pre-nesting inactive nest removal was undertaken between January and March 2023. All existing cormorant nests (957) were removed from 986 trees at Toronto Island Park. 143 dead/dying trees were removed by arborists under City of Toronto Ravine and Natural Feature Protection exemption, to further eliminate nesting cues ahead of the breeding season. Post-breeding season nest removals will take place in winter 2024.

### Enhanced Ground Nesting

There were no ground nesting enhancements in 2023.

### Pre-nesting and Active Deterrents

Deterrents at both Tommy Thompson Park and Toronto Island Park began with human presence, waving of arms, clapping, and shouting. Techniques quickly escalated to shaking trees with rope, shaking a tarp, flying a tarp in the tree canopy, and using screamers and bangers (Figure 7). Like 2022, the cormorants quickly became accustomed to the bangers and screamers, however there was intermittent success throughout the season.

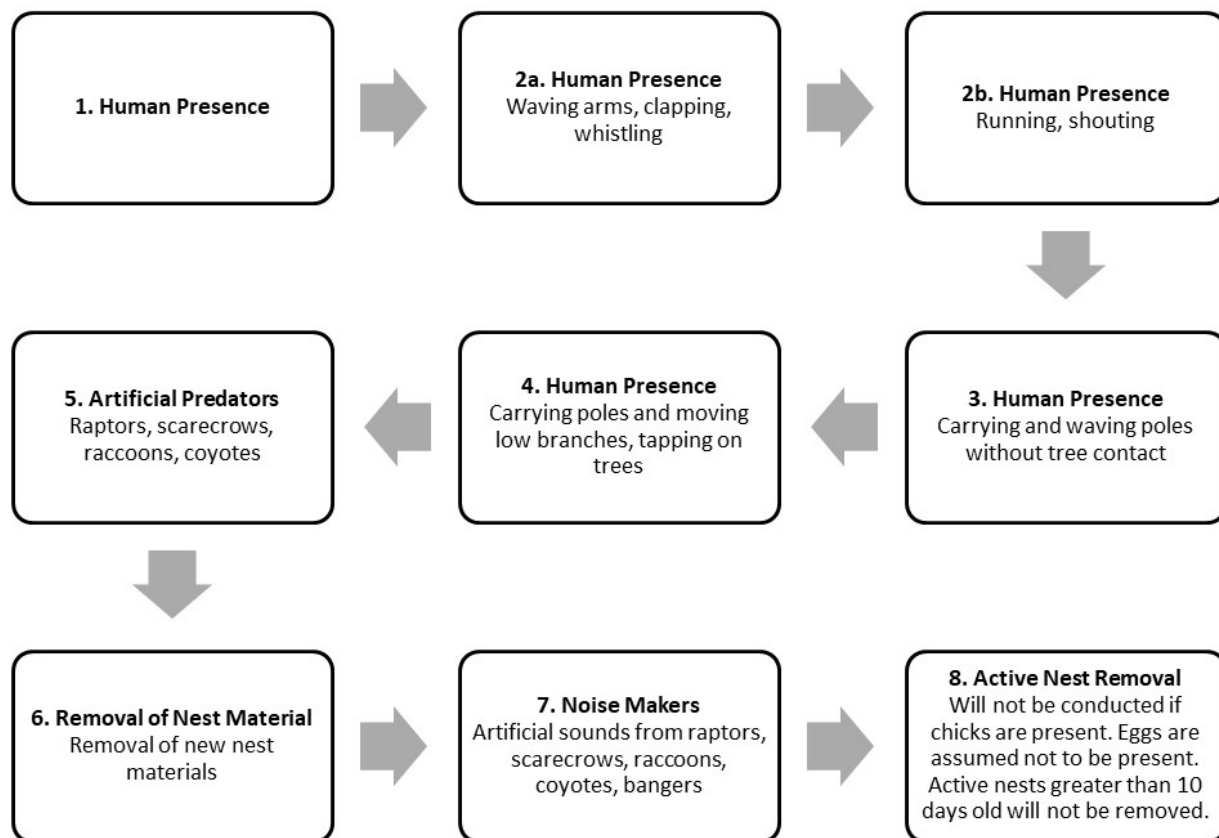


FIGURE 7: CORMORANT DETERRENT ESCALATION SCALE

Active nests were carefully monitored to track the age of any eggs present, and a 10-day threshold was maintained to ensure any removed eggs were immature. The conservative 10-day threshold is based on current scientific literature of embryo development in altricial waterbirds (Humane Society of United States, 2009, Powell et al, 1998). If eggs older than 10 days were discovered, or a nest was known to be older than 10 days, deterrent activities on that nest were ceased (Figure 8).

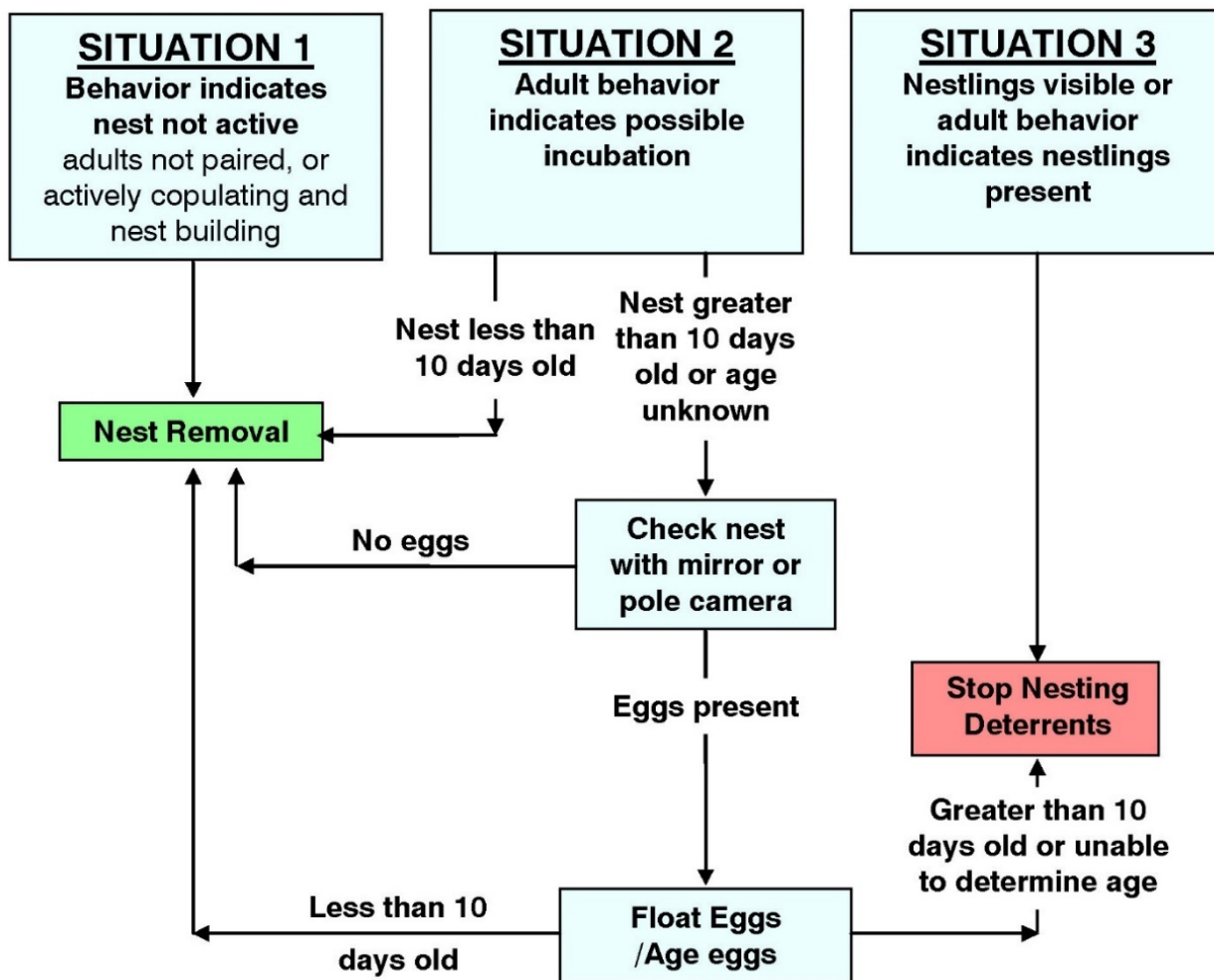


FIGURE 8. ACTIVE NEST REMOVAL DECISION MATRIX.

#### *Tommy Thompson Park*

Pre-nesting deterrents started on 13 April 2023. Nesting pressure was low during the early breeding season and management activities focused on deterrents and nest removals within Embayment B (area between Peninsulas B and C) during regular work hours, Monday to Friday, 7 a.m. to 3:30 p.m. This was unlike previous seasons, where the adaptive schedule with dawn and dusk shifts, Monday through Saturday, was typically implemented in the last week of April. Based on increasing pressure at Toronto Island Park, management at TTP was discontinued on 12 May 2023 to reallocate resources to TIP.



Between 13 April and 12 May 2023, 153 nests containing 41 immature eggs were removed from trees at TTP, primarily within Embayment B and a few on Peninsula C. Without active management during peak nest building season, coupled with increased deterrent activities at Toronto Island Park, cormorant tree-nesting pressure increased across all areas (except Peninsula D) at Tommy Thompson Park.

### *Toronto Island Park*

The management team was present at Toronto Island Park starting on 22 March 2023, before the first cormorants returned from wintering grounds. Pre-nesting deterrent techniques were implemented immediately upon cormorants returning to the nesting area, starting 27 March 2023, to discourage nesting. Dawn and dusk shifts started on 30 March 2023, following reports of roosting cormorants during the evening hours; and a Monday through Saturday schedule started 10 April. Deterrents were conducted within the 2022 nesting colony area, and in key roosting areas throughout the park.

As planned, additional staff joined the team in April, which provided the opportunity to implement a 7-day/week, dawn to dusk management schedule, where individual team members worked rotating 5 days on/2 days off each week. This new schedule allowed for consistent daily management activities from 30 April through 15 June.

Cormorant nesting effort was minimal and manageable in April and early-May, though they quickly desensitized to the progressing level of deterrent techniques and new ones, such as air cannons. Nest establishment was prevented until 12 May 2023, when approximately 700 nests were built within 24 hours. At this point, deterrent activities were reduced (primarily conducted in the evening only) and efforts focused on nest removals.

Furthermore, Black-crowned Night-Herons and Great Egrets nested in an area south of the 2022 cormorant colony. This attracted cormorants to expand their range in mid-May. Deterrenting within the expansion area was conducted with care and attention to prevent disturbance to non-target species. Black-crowned Night-Heron chicks hatched 23 May, and deterrent activities were promptly discontinued in the immediate area.

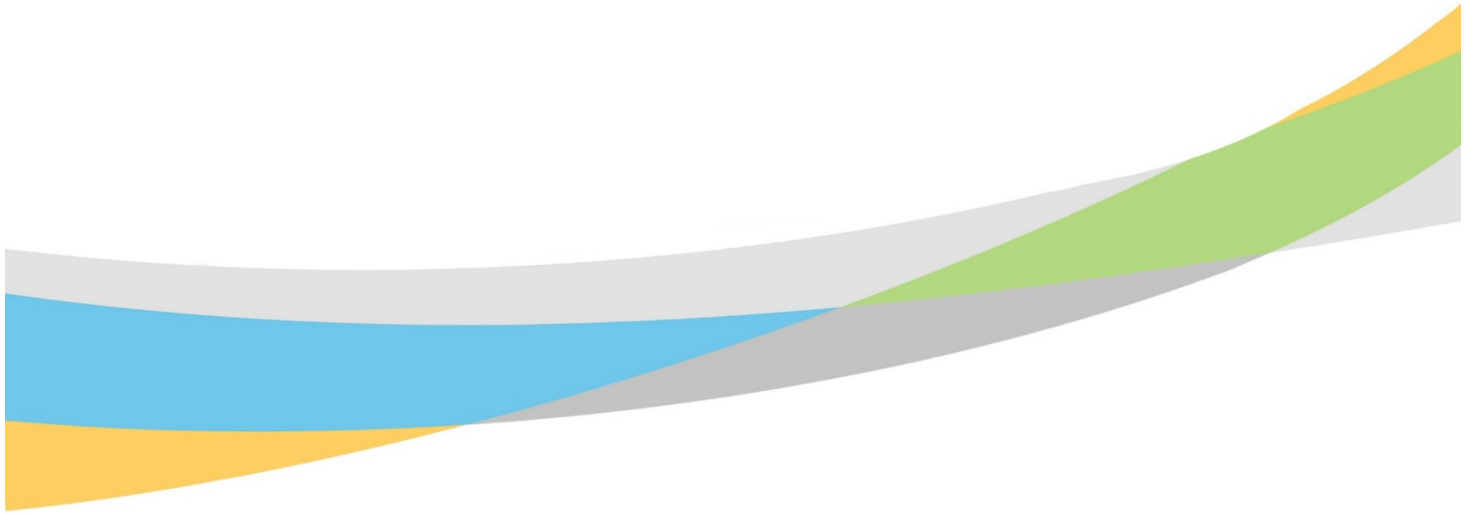
Between 24 April and 15 June 2023, 867 nests containing 915 immature eggs were removed from trees at Toronto Island Park. Approximately 77,000 cormorants were deterred between 27 March and 15 June; this does not represent a total number of individuals, but total birds flushed (i.e. the same individual may have been flushed and reported multiple times during the season).

### Post Breeding Deterrents

Post-breeding deterrents were not required at Tommy Thompson Park as cormorants were not loafing in any target areas. Summer deterrents were implemented at Toronto Island Park through July and August to discourage roosting in healthy trees outside of the nesting colony. A total of 8,400 cormorants were deterred during this period.

## References

- Feldmann, I., McDonald, K., & Fraser, G. (2012). A conspecific attraction experiment for Double-crested Cormorants at an urban park. Unpublished manuscript.
- Humane Society of United States. (2009). Canada Goose Egg Addling Protocol. Retrieved March 2, 2010, from Humane Society of United States:  
[http://www.humanesociety.org/issues/wildlife\\_overpopulation/tips/canada\\_goose\\_addling\\_protocol.html](http://www.humanesociety.org/issues/wildlife_overpopulation/tips/canada_goose_addling_protocol.html)
- Jarvie, S., Blokpoel, H., & Chipperfield, T. (1999). A geographic information system to monitor nest distributions of Double-crested Cormorants and Black-crowned Night-Herons at shared colony sites near Toronto, Canada. In M. Tobin (Ed.), *Symposium on Double-crested Cormorants: Population Status and Management Issues in the Midwest*, (pp. 121-129).
- Powell, D.C., Aulerich, R.J., Balander, R.J., et al. (1998). A Photographic Guide to the Development of Double-crested Cormorant Embryos. *Colonial Waterbirds*, 21, 348-355.
- Toronto and Region Conservation Authority. (2006). Tommy Thompson Park/Leslie Street Spit Bird Checklist, 3rd edition.
- Toronto and Region Conservation Authority. (2008). Double-crested Cormorant Management Strategy, May 2008. Authority Meeting Recommendation #110/08.
- Toronto and Region Conservation Authority. (2009). Double-crested Cormorant Management Strategy, March 2009. Authority Meeting Recommendation #A22/09.
- Toronto and Region Conservation Authority. (2010). Double-crested Cormorant Management Strategy, March 2010. Authority Meeting Recommendation #A23/10.
- Toronto and Region Conservation Authority. (2011). Double-crested Cormorant Management Strategy, March 2011. Authority Meeting Recommendation #A49/11.
- Toronto and Region Conservation Authority. (2012). Double-crested Cormorant Management Strategy, March 2012. Authority Meeting Recommendation #A19/12.
- Toronto and Region Conservation Authority. (2013). Double-crested Cormorant Management Strategy, January 2013. Authority Meeting Recommendation #A259/12.
- Toronto and Region Conservation Authority. (2014). Double-crested Cormorant Management Strategy, January 2014. Authority Meeting Recommendation #A227/13.
- Toronto and Region Conservation Authority. (2016). Double-crested Cormorant Management Strategy, February 2016. Authority Meeting Recommendation #A15/16.
- Toronto and Region Conservation Authority. (2018). Double-crested Cormorant Management Strategy, March 2018. Authority Meeting Recommendation #A40/18.
- Toronto and Region Conservation Authority. (2020). Double-crested Cormorant Management Strategy, May 2020. Board of Directors Meeting Recommendation #A59/20.
- Weseloh, D., Ewins, P., Struger, J., Mineau, P., Bishop, C., Postupalsky, S., et al. (1995). Double-crested Cormorants of the Great Lakes: Changes in Population Size, Breeding Distribution and Reproductive Output between 1913 and 1991. *Colonial Waterbirds*, 18, 48-59.
- Wilson, W. G., & Cheskey, E. D. (2001). Leslie Street Spit Tommy Thompson Park Important Bird Area Conservation Plan. Canadian Nature Federation, Bird Studies Canada, Federation of Ontario Naturalists.



[www.trca.ca](http://www.trca.ca)