Toronto and Region Conservation Authority

Tommy Thompson Park Double-crested Cormorant Management Report 2024

Prepared by Liam Graham

January 2025

Table of Contents

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

Four species of colonial waterbirds currently breed at Tommy Thompson Park: Double-crested Cormorant (*Phalacrocorax auritus*, hereafter cormorant), Ring-billed Gull (*Larus delawarensis*), Herring Gull (*Larus argentatus*) and Common Tern (*Sterna hirundo*), with varying degrees of success. Three additional species nested in the park over the last 30 years but have been limited or absent in recent years: Black-crowned Night-Heron (*Nycticorax nycticorax*), Great Egret (*Ardea alba*), and Caspian Tern (*Hydroprogne caspia*).

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).

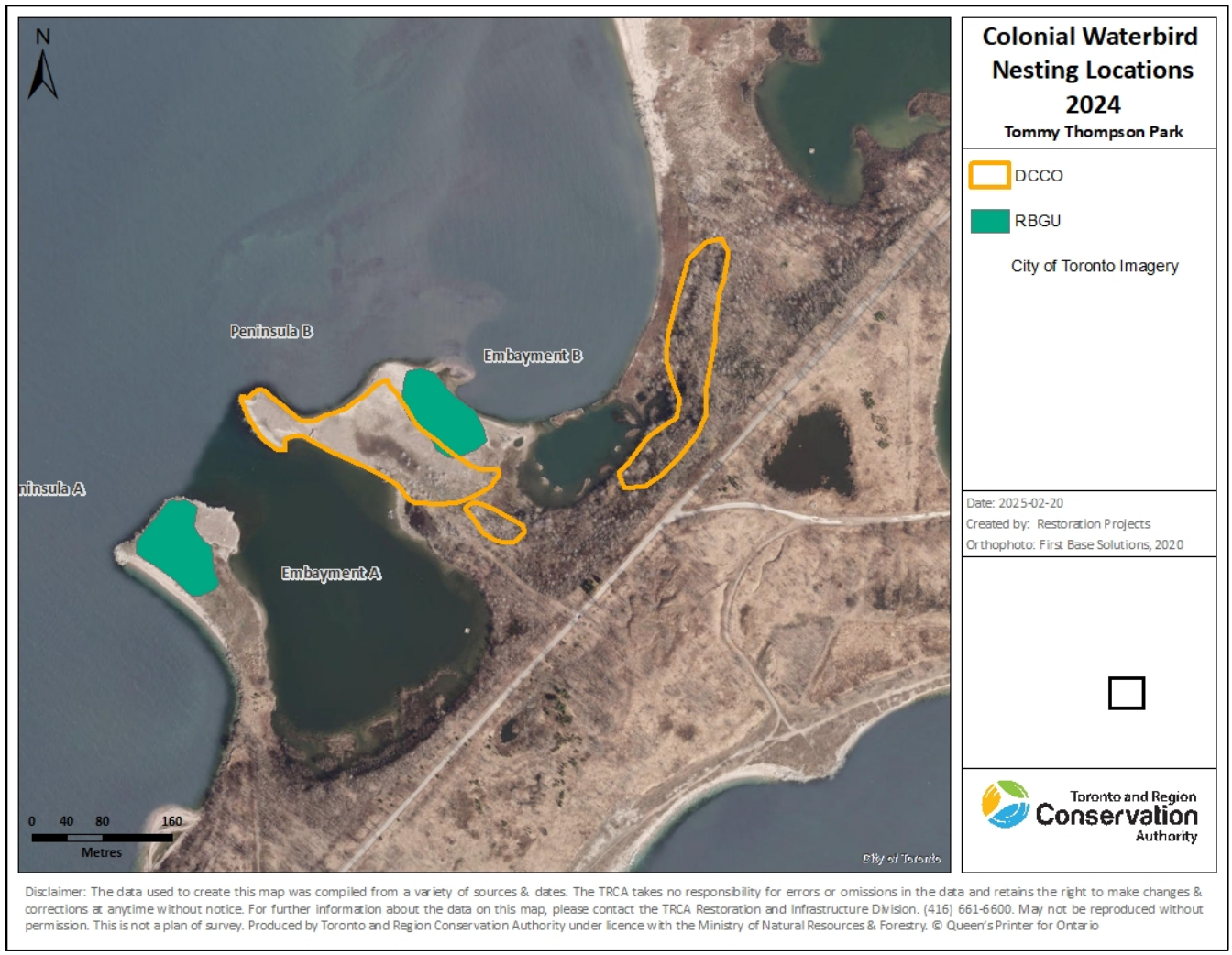


FIGURE 2. COLONIAL WATERBIRD NESTING LOCATIONS, TOMMY THOMPSON PARK, 2024

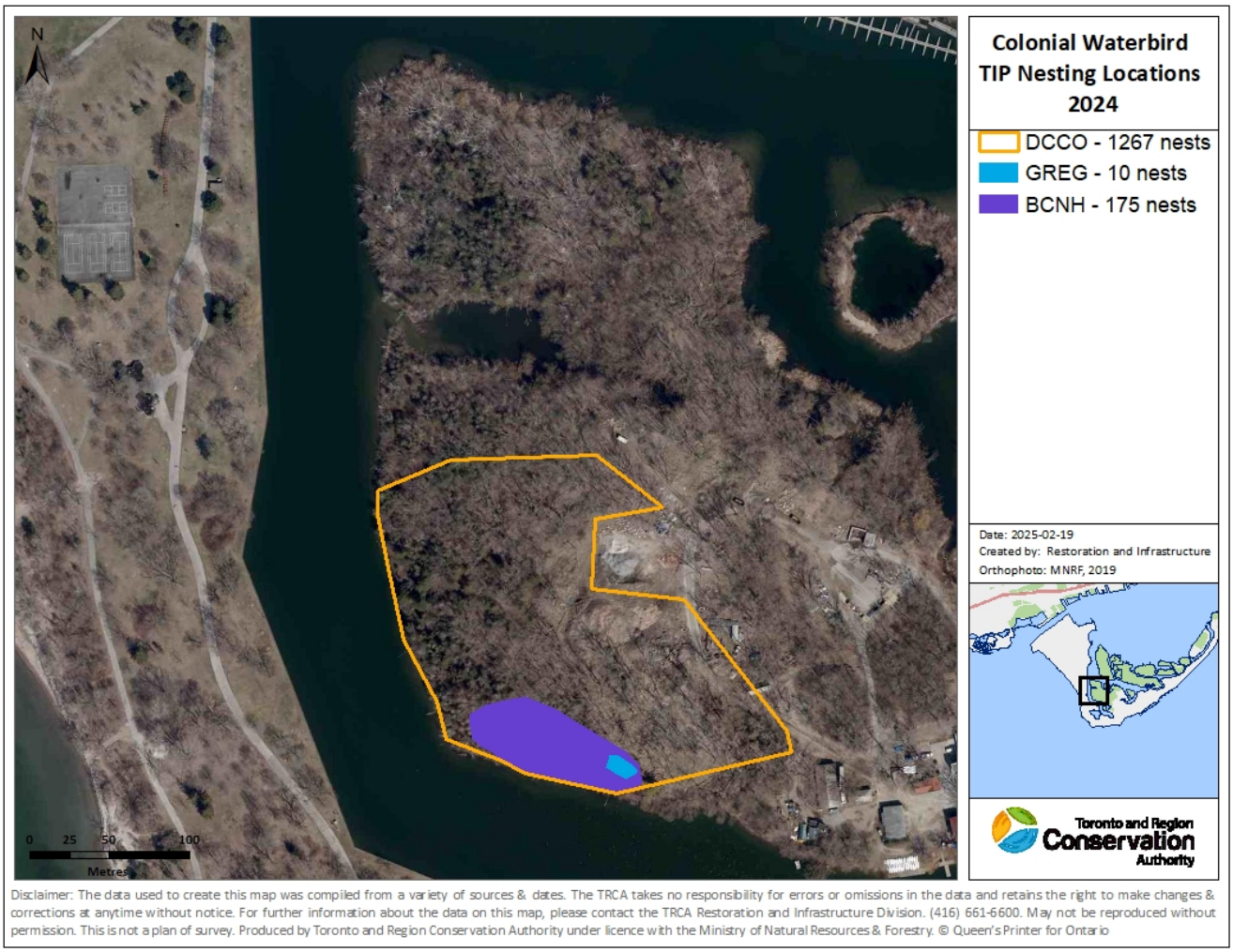


FIGURE 3. COLONIAL WATERBIRD NESTING LOCATIONS, TORONTO ISLAND PARK, 2024

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 are discouraged.

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

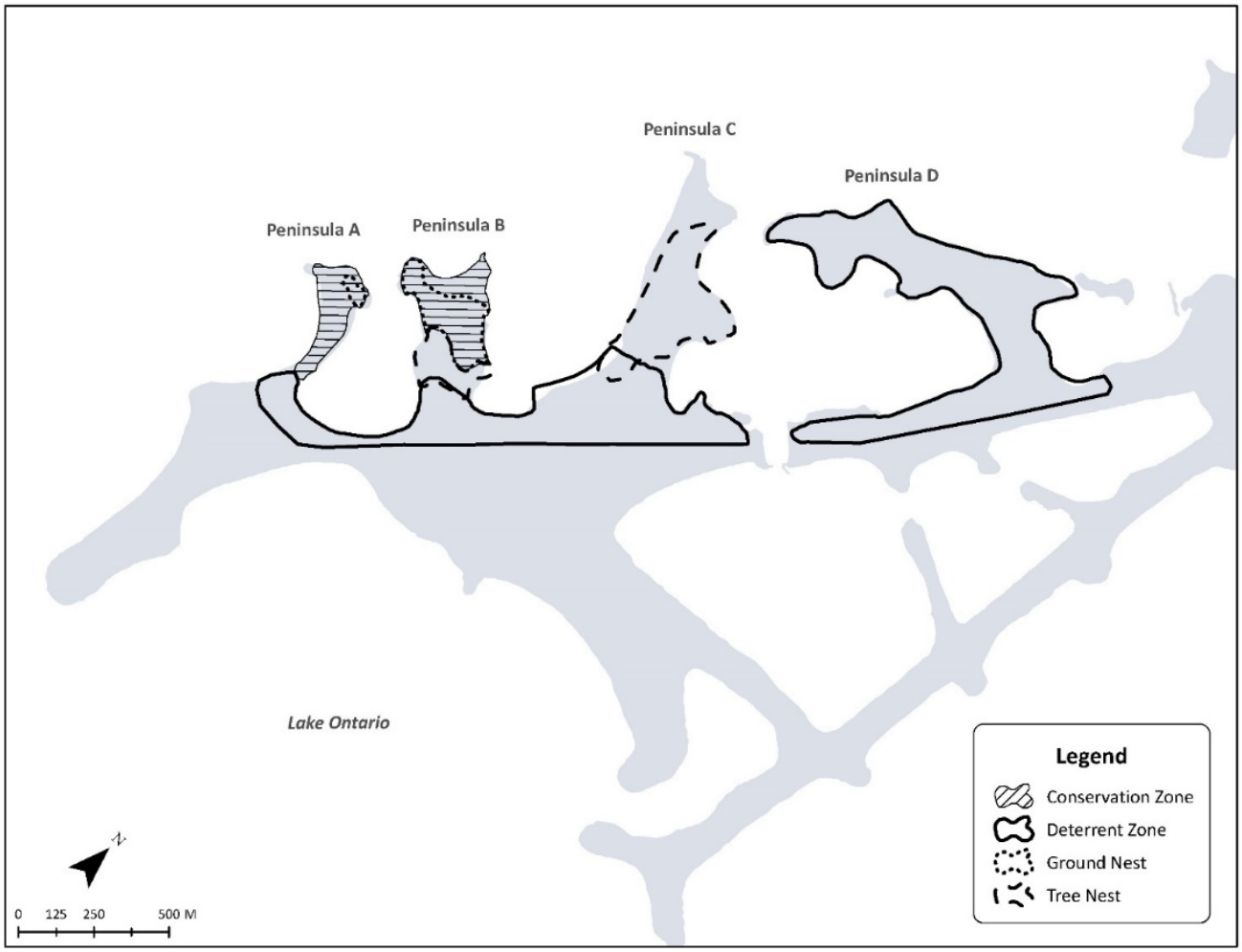


FIGURE 4. CORMORANT MANAGEMENT ZONES AT TOMMY THOMPSON PARK

2024 Population Data

Breeding Census

First of season cormorants were observed on the central Toronto waterfront on 19 March 2024. The peak-season breeding cormorant population decreased by 23% with 9,006 nests counted in late-June at Tommy Thompson Park and in October at Toronto Island Park (Table 1, Figure 5). 90% of the colony at TTP was ground-nesting on Peninsula B (Figure 6), and the total tree nests decreased by 39% with a record low 596 tree-nests restricted to small areas on Peninsulas B and C. An artificial nesting platform was introduced in the TTP ground nest colony in spring 2024 to provide an alternative option to obligate tree nesters. 150 nests were recorded on the structure, representing 20% of the non-ground nesting population.

Tree-nesting increased by 40% at Toronto Island Park compared to 2023 due to unrestricted cormorant nesting within a 100-m buffer zone around a Bald Eagle nest; cormorant nesting was prevented outside of this buffer zone.

TABLE 1. CENTRAL TORONTO WATERFRONT CORMORANT NEST COUNT 2014 TO 2024

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Pen A	14	14	4	0	0	53	474	20	0	647	0
Pen A Ground	10	541	1525	1821	1445	2354	741	590	372	0	0
Pen B	1316	1184	1007	2474	1815	1962	1215	568	96	539	24
Pen B Ground	7799	7608	8555	5836	9061	6327	5982	7820	7410	8450	6993
Pen B Structure											150
Pen C	3270	2561	2184	2710	2194	2918	3034	1739	982	1205	572
TIP	0	0	0	0	0	0	0	0	1667	902	1267
Total	**12409**	**11908**	**13275**	**12841**	**14515**	**13614**	**11446**	**10737**	**10527**	**11743**	**9006**

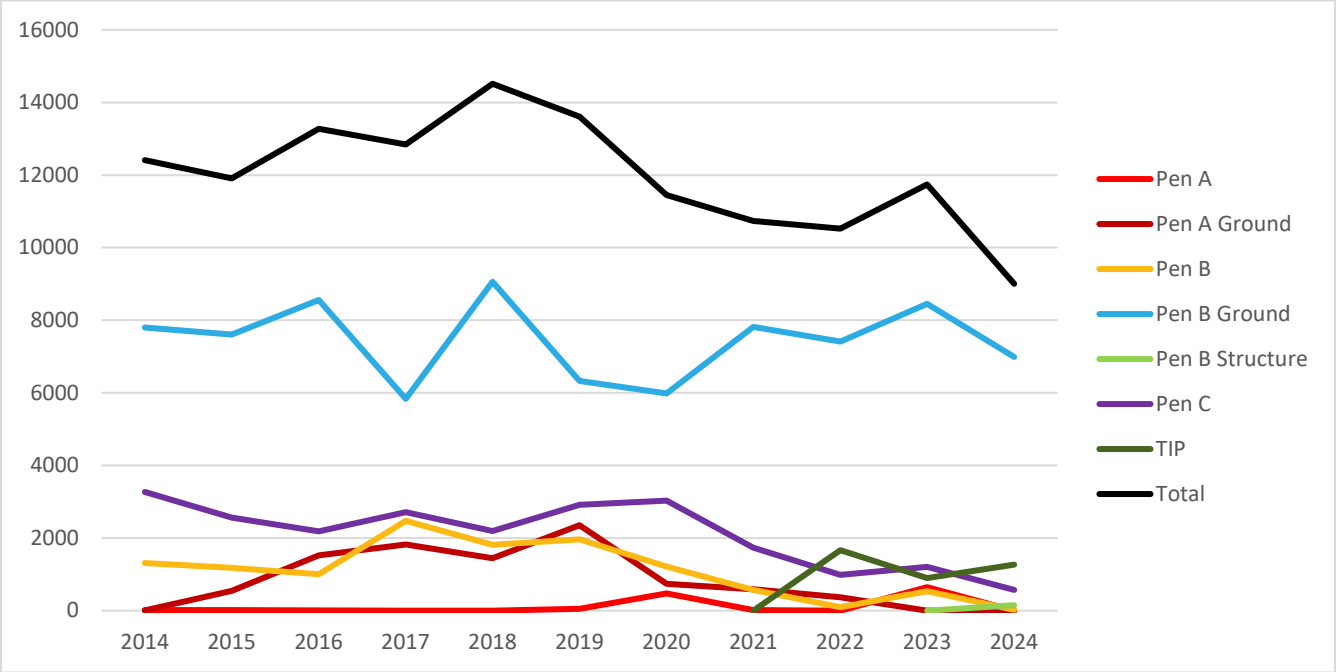


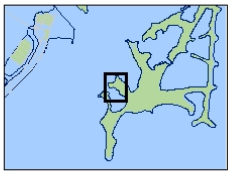
FIGURE 5. CENTRAL TORONTO WATERFRONT CORMORANT NEST COUNT 2014 TO 2024

2024 TTP DCCO Ground Nest Footprint

Peninsula B

Toronto and Region Conservation Authority

◆ Ground Nest



Date: 2025-02-26
Created by: Restoration and Infrastructure
Orthophoto: City of Toronto, 2023

FIGURE 6. 2024 CORMORANT GROUND-NEST COLONIES ON PENINSULA B

Chick Banding

Cormorant chick banding was not conducted in 2024.

Three band recoveries/sightings were reported in 2024. A cormorant banded in 2021 was found dead in Michigan on August 14 due to control operations. A cormorant banded in 2023 was observed alive on September 21 in Everett, Ontario. And a cormorant banded in 2021 was found dead in Newcastle Village, Ontario in November 2021.

2024 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. 2024 STRATEGIC APPROACH MATRIX

	Peninsula A	Peninsula B	Peninsula C	Peninsula D	TIP
Inactive Nest Removal (post 2023 breeding season)	*	*	*		*
Enhanced Ground Nesting	*	*			
Pre-Nesting Deterrents	*	*	*	*	*
Active Nest Removals	*	*	*		*
Post-Breeding Deterrents	*	*	*	*	*

Increasing Public Knowledge, Awareness and Appreciation

Increasing public knowledge and fostering 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, 8 July 2024: Plans to move the cormorants away from Toronto islands were working. Then two eagles showed up
- City TV News, 10 July 2024: Cormorants have taken over the Toronto Islands. The reason? Two bald eagles

Inactive Nest Removal

Tommy Thompson Park

Pre-nesting season inactive nest removal was conducted in December 2023 (191 nests as reported in the 2023 Annual Report) and in January to early April 2024. 215 nests were removed using forestry poles from the ground, and an additional 107 nests were removed by arborists who climbed into the high canopy.

Toronto Island Park

Pre-nesting inactive nest removal was undertaken between January and March 2024 at Toronto Island Park. 379 cormorant nests from the 2023 breeding season were removed from the trees, however complete removal was not achieved as a pair of Bald Eagles established a nest within the cormorant colony in early February. To prevent disturbance to the eagles, management activities were suspended within a 100-m buffer of the eagle nest. 30

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-2024 breeding season inactive nest removal began in November 2024, and 791 nests were removed by December 19, 2024. Remaining inactive nests will be removed in early 2025.

Enhanced Ground Nesting

In late winter 2024, a large, raised, multi-tier nesting platform was constructed to provide alternative nesting options for obligate tree-nesting cormorants. This platform was erected in a low-lying area on Peninsula B that formerly served as ground colony space, but due to several years of flooding was abandoned by cormorants. Thirty nests were pulled from the ground and attached to the platform using rope to encourage cormorants to use the platforms. The structure was monitored throughout the breeding season by Dr. Gail Fraser (York University) from the secrecy of her research blind and was otherwise undisturbed during the breeding season. 150 cormorant nests were recorded on the structure.

Pre-nesting and Active Deterrents

Tommy Thompson Park

Pre-nesting deterrents started on 4 April 2024. Nesting pressure was high early in the 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. The adaptive schedule with dawn and dusk shifts Monday through Saturday was implemented 6 May 2024. Dusk deterrents were discontinued after 17 May 2024, as additional staff were required at Toronto Island Park and cormorant pressure at TTP was low; morning deterrents continued until management activities ended on 3 June 2024.

Deterrents at Tommy Thompson Park began with human presence, waving arms, clapping, and shouting. Techniques quickly escalated to shaking a tarp and flying it in the tree canopy, and using screamers and bangers (Figure 7). Cormorants were easily deterred at Tommy Thompson Park this year, and they continued to respond well to shouting until the end of the season. Banger and screamer use was discontinued after 11 May to reduce potential emigration to Toronto Island Park. Between 16 April and 29 May 2024, 545 nests containing 471 immature eggs were removed from trees at TTP.

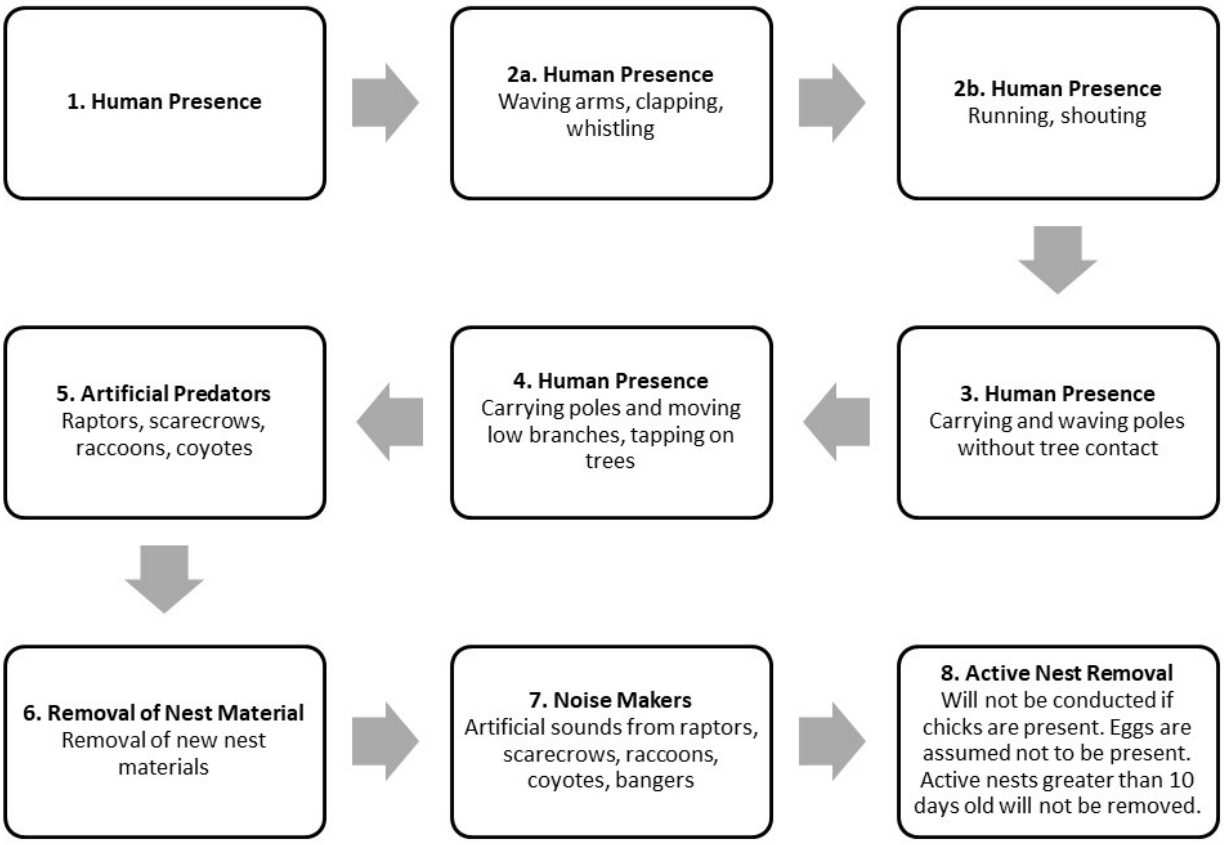


FIGURE 7: CORMORANT DETERRENT ESCALATION SCALE

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 altrical 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).

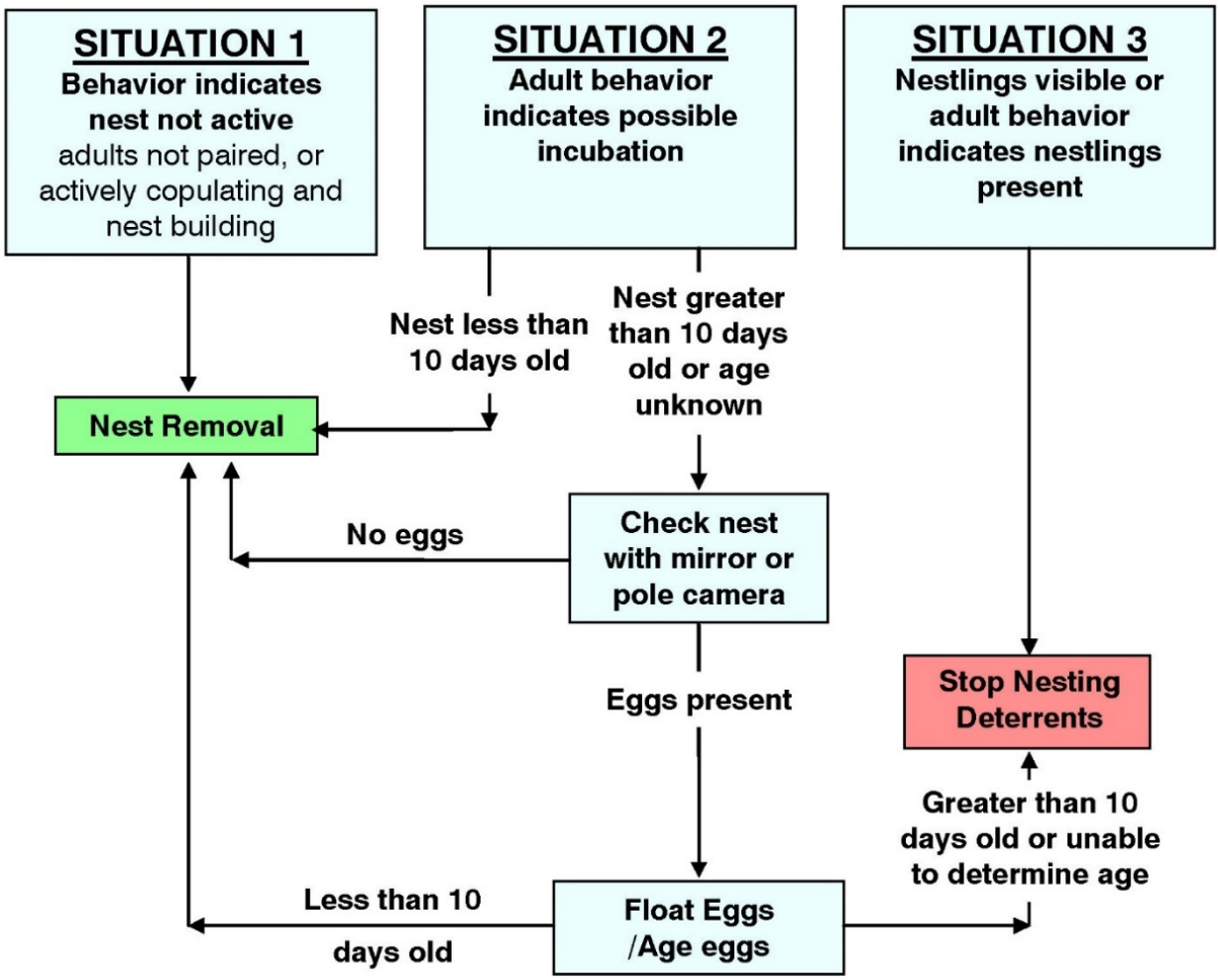


FIGURE 8. ACTIVE NEST REMOVAL DECISION MATRIX.

Toronto Island Park

Management activities at Toronto Island Park were modified in 2024 to prevent disturbance to a nesting pair of Bald Eagles that established a nest within the cormorant colony in February 2024. Based on Bald Eagle habitat management guidelines, a 100-m buffer was established around the nest and no cormorant management activities took place within this zone. Management activities within the rest of Toronto Island Park were also modified: deterrents focused on visual and low-impact audio techniques (e.g. shouting), without the use of bangers and screamers. Furthermore, the eagle nest was monitored throughout the spring to ensure cormorant deterrents did not negatively impact the eagles.

The field team was on-site for the season starting 18 March 2024, before the first cormorants returned from wintering grounds, and deterrent techniques were implemented immediately upon cormorant return to the nesting area on 8 April 2024. Dawn and dusk shifts started on 21 April 2024 and were implemented 7-days/week until 7 June. Monday to Friday deterrents continued until 14 June. Deterrents were conducted within all previous nesting colony areas, with the exception of the 100-m buffer zone, and in key roosting areas throughout the park. The use of

bangers and screamers was introduced in mid-May to deter cormorants from nesting at the north tip of Mugg's Island and did not affect the eagles.

Cormorant nesting effort was minimal and manageable in April and early May, though they quickly desensitized to the progressing level of deterrent techniques. While nesting attempts were made across the islands, deterrent activities and nest removals were successful, and ultimately cormorants identified the 100-m buffer as a safe nesting zone. 90% of the cormorant nests were within the buffer. Between 15 April and 29 May 2024, 652 nests containing 255 immature eggs were removed from trees at Toronto Island Park. Approximately 42,900 cormorants were deterred between 15 April and 29 May; 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 from June to August to discourage roosting in healthy trees outside of the nesting colony. A total of 15,000 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

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.

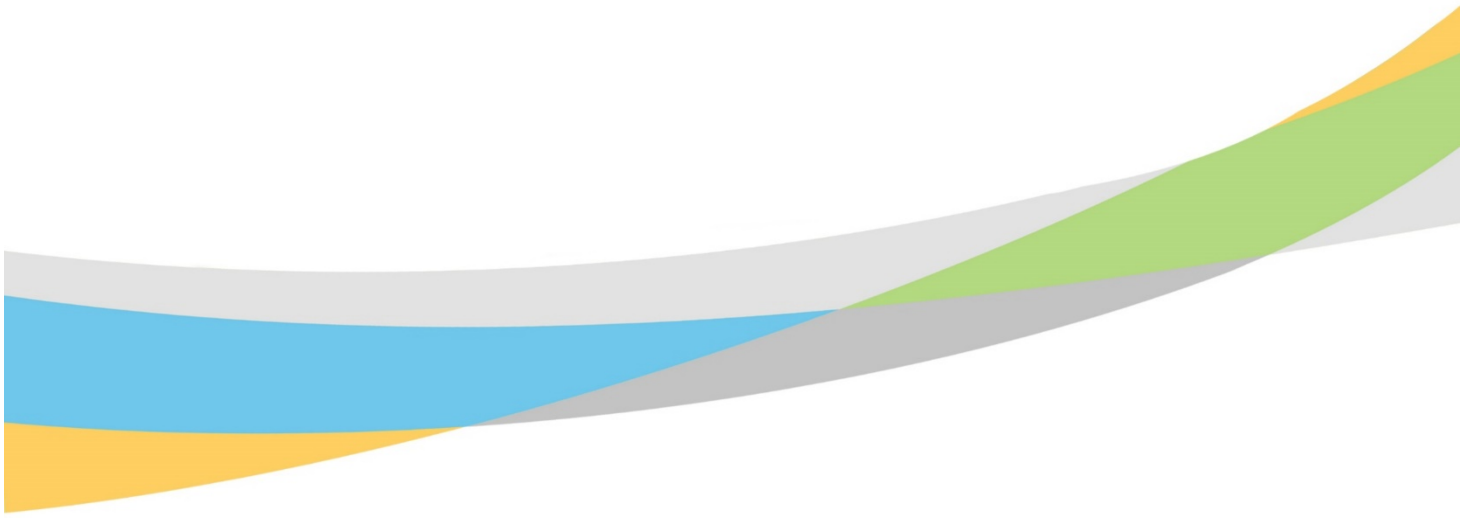
Toronto and Region Conservation Authority. (2016). Double-crested Cormorant Management Strategy, February 2016. Authority Meeting Recommendation #A15/16.

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

Toronto and Region Conservation Authority