





Double-crested Cormorants at Port Weller, St. Catharines, Niagara, Ontario

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Introduction

The Double-crested Cormorant (*Phalacrocorax auritus*, henceforth cormorant) is a member of the cormorant family of waterbirds (*Phalacrocoracidae*). It occurs along the east and west coasts of North America as well as at many inland lakes especially in the prairie region. In the last 40-50 years, its numbers have increased greatly and its range has spread across much of North America in the area south of the Boreal Forest. It is commonly found throughout the Great Lakes and in many inland waterways such as the Welland Canal at Port Weller in St. Catharines, Ontario. The purpose of this paper is to report on the occurrence, breeding and, especially, the overwintering of cormorants in the Welland Canal section of Port Weller.

Figure 1. Double-crested Cormorants in trees on the west side of the Welland Canal, Port Weller, 6 May 2010. *Photo: Kayo J. Roy.*



Figure 2. Adult Double-crested Cormorant, 18 February 2010. *Photo: Kayo J. Roy.*

Description

Cormorants are a large, heavy-bodied, colonial waterbird that seeks water bodies large enough to support their diet that consists mostly of fish. In addition, they need perching areas for the considerable amount of time they spend at rest each day. Most often they form breeding colonies in clusters of trees in or near water allowing them, after fishing, to go to high spacious branches to dry their

wings and digest their meal (Hatch and Weseloh 1999). The approximately 15-20 m tall trees that line the Port Weller west pier of the Welland Canal entrance from Lake Ontario are perfectly suited to house a nesting colony for this abundant species (Figure 1). Cormorants are also ground nesters and, in many colonies, their nests can be found both in trees and on the ground. They are often observed on shoreline rocks holding their wings

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out to dry. The cormorant is a glossy, scaly-looking, black bird with a small head and long neck. Prominently seen is the bird's yellow-orange gular pouch. The long thin hooked bill is grayish and the eyes are a distinct aqua colour (Figure 2)

General History

In the Great Lakes, between the 1910s-1950s, cormorant populations showed a 40 year colonization period. During the 1950s-1970s, there was a 30 year decline and in the 1970s-2000s, a substantial 30 year resurgence occurred (Weseloh *et al.* 1995, Hebert *et al.* 2005). From the 1950s through to the early 1970s, cormorants were virtually extirpated by DDT-induced eggshell thinning (Weseloh *et al.* 1983, 1995). Butcher and Niven (2007) state that in North America the cormorant has undergone a large and statistically significant increase over the last 40 years, a 2200% increase equating to a 120% increase per decade. Today this species has rebounded to their present abundant status due to reduced human persecution, decreased use of pesticides over the past few decades and to increased forage fish populations (Weseloh *et al.* 1995). The maltreatment cormorants have received from some fishermen has been disputed for many years. Research that challenged fishermen's complaints that cormorants consumed the fish species the fishermen were coveting was reported as early as 1946 (Baillie 1946). An overabundance of cormorants

may effect fish and wildlife populations by impacting vegetation (Hebert *et al.* 2005) and possibly degrading fisheries by consuming too many forage and sport fish (Lantry *et al.* 2002, Weseloh *et al.* 2002, Rudstam *et al.* 2004).

Two distinguished Canadian ornithological elder statesmen describe the status of the cormorant in Ontario in the late 1800s: Montague Chamberlain (1887) states that the species is "an abundant bird in the Maritime Provinces and Labrador, and that it occurs rather sparingly as a migrant on the Great Lakes." The eminent Thomas McIlwraith (1894) merely mentions that "the species is seen in southern Ontario." Three prominent local ornithologists describe the distribution and status of cormorants in Niagara from the 1930s to the 1960s as follows: Sheppard (1970) states that the species is "a somewhat uncommon migrant through the Frontier area, appearing only at rather wide intervals, but there are a number of both spring and autumn records of solitary birds of this species seen on the Niagara River." Beardslee and Mitchell (1965) identify the species as an "uncommon transient visitor, and a very rare winter visitor, that are observed regularly, though not in large numbers, during migration. Usually single individuals are observed chiefly on the Niagara River, Buffalo Harbour, and on Lakes Erie and Ontario."



Figure 3. Adult Double-crested Cormorant in alternate (breeding) plumage, 6 May 2010. As the name implies, breeding adults develop a small double crest of stringy black feathers or plumes (white on birds on the Pacific Coast and western North America) at the top of and on each side of the head. The bird often swims low in the water with only its neck and head visible. When feeding, it dives from the water surface and swims underwater, propelled by its feet as it chases its prey. The bird's legs and webbed feet are black.

Photo: Kayo J. Roy.

Occurrence in Niagara and the Port Weller Area

The first reported sighting in Niagara was of 10 or more individuals observed by William L. Putman on 30 April 1936 off Jordan Harbour, Ontario (Sheppard 1970). The second sighting, six years later on 19 July 1942, was Harold Mitchell's observation of a lone cormorant at Sherkston, Ontario (Beardslee and Mitchell 1965). The third record was of a deceased body of a cormorant found and collected from the Niagara River below the Horseshoe Falls on 14 December 1948 by Conservation Officer A. R. Muma (Sheppard 1970). These three are the earliest known documented sightings authenticating the presence of cormorants in Ontario's Niagara Region. The first known Port Weller observation was on 30 September 1984 when two birds were observed off the Port Weller east pier (John Black pers. comm.).

A short distance away from Port Weller during the 30 year period 1950-1980, the Buffalo Ornithological Society Noteworthy Records (DiTommaso and Suggs 2015) identified 32 single bird sightings and three multiple sightings of two or three cormorants in the Ontario portion of their study area between Niagara-on-the-Lake and Morgan's Point. Single sightings of cormorants continued into the mid-1980s after which the species numbers began to increase rapidly. In the Niagara River gorge and particularly above Niagara Falls, eight birds were seen on 30 December 1984 (Willie D'Anna, Betsy Potter pers. comm.), 10 birds were there on

27 August 1986 (Willie D'Anna, Betsy Potter pers. comm.), 20 birds there on 30 September 1987 (David Freeland pers. comm.), up to 60 birds there in May – October 1989 (Michael Galas, Willie D'Anna, Betsy Potter pers. comm.), up to 149 birds there in July – September 1990 (William W. Watson pers. comm.), up to 386 birds there in July – October 1991 (William W. Watson pers. comm.), and up to 824 birds there in June – September 1992 (William W. Watson, Donald C. Roberson pers. comm.). Cormorant numbers continued their dramatic increase in adjacent Norfolk County with 6,500 birds found at Rock Point Provincial Park on 21 September 2002 (Willie D'Anna, Betsy Potter pers. comm.), increasing to an incredible 17,100 birds there on 9 September 2014 (William W. Watson pers. comm.). In Niagara, cormorants begin to arrive in late March, and most have left the region by early November (Curry 2006). A few birds, however, over-winter here (Black and Roy 2010). A record early occurrence of 50 plus cormorants found at Port Weller on 8 May 1993 was surprising for this 1993 date (John Black pers. comm.).

Figure 4. Double-crested Cormorant on nest, 14 April 2013.

Photo: Sam Barone





Figure 5. East and west piers of the Welland Canal exiting into Lake Ontario at Port Weller, St. Catharines. The red arrows pinpoint the areas on the west pier where cormorants are nesting, or attempted to nest. The green arrow identifies the location of the Canadian Coast Guard Station.

Aerial photo: David Walker, 8 July 2009.

Nesting at Port Weller

The bulky nest of the cormorant is built typically by the female and is comprised mostly of sticks and other materials the male brings to her (Figure 4). Most often the nest is constructed on any level area, or crotch, in trees that are near water however, they can also build their nests on the ground under suitable conditions.

Cormorants nested or attempted to nest in nine years between 2003 and 2014 at Port Weller (Figure 5). In May of 2003, they made their first known attempt to roost and nest on the west pier at Port Weller in trees that line the Welland Canal from the Canadian Coast Guard Station north to the tip. Three nests were built but they were soon abandoned. In the spring of 2004, four nests were constructed there again but were aborted quickly when the coast guard personnel installed bangers to discourage the birds from the trees. Regardless, some 600 birds remained in the area for the rest of the summer. In May 2005, the cormorants moved a bit south, away from the Coast Guard Station, where 650-700 birds settled in to a line of trees on the west pier near an old water outlet. In early July, five nests were built there;

however, by late July, only three contained young (Black and Roy 2010). In succeeding years, substantial numbers of cormorants arrived at Port Weller establishing summer residence along the west pier. By May 2007, the number of cormorants continued to increase and nesting was in full swing. During May 2008, a record number of 800-850 cormorants settled into the area and on 19 June 2008, 111 cormorant nests were counted along the west pier (John Black pers. comm.).

In 2009, for some unknown reason, fewer cormorants were found than in the previous three or four years and the nesting colony was somewhat diminished (Figure 6). In 2010, 2012 and 2014, numbers of nesting cormorants began to once again flourish and nesting resumed in larger numbers (John Black, Kayo Roy pers. comm.).

It is well known that accumulated fecal matter can have a significant effect on vegetation at cormorant breeding and roost sites (Herbert *et al.* 2005). Cormorant guano is acidic and can change soil chemistry, killing ground vegetation (Figure 7) and irreversibly



damaging nest trees in less than three years (Sullivan *et al.* 2006). Further, occupying similar habitat for nesting may affect other colonial waterbirds such as gulls, terns, egrets and herons (Sullivan *et al.* 2006). A close-by example is the Black-crowned Night-Heron (*Nycticorax nycticorax*) colony on the Weseloh Rocks in the Niagara River. Since the cormorants have taken over the top tier of

the few trees that are on these three small islands that lie close to the crest of the Horseshoe Falls, they may seriously jeopardize the success there of the nesting Black-crowned Night-Herons. This clearly was the case on islands in the Dundas Marsh and Hamilton Harbour where the cormorant guano killed trees and displaced the nesting Black-crowned Night-Herons (Curry 2006).

Figure 6. Double-crested
Cormorants at Port Weller,
6 May 2009.

Photo: Kayo J. Roy.



Over-wintering at Port Weller

Given the recent dramatic population increase of cormorants at Port Weller and with the milder winters over the past decade, it is hardly surprising that this species now over-winters along the Welland Canal, albeit in relatively small numbers. The Christmas Bird Counts are an excellent source of information on birds remaining in the area early in the winter. The west

pier, where the Welland Canal exits into Lake Ontario, lies in the St. Catharines Christmas Bird Count (SCCBC) and the east pier of the canal, forms part of the Niagara Falls Christmas Bird Count (NFC BC). Over the 30 year period 1984-2014, 855 cormorants were observed in the SCCBC. Of these, 699 were observed at Port Weller with 107 individuals found there on 16 December 2012 (Robert Z.



Figure 7. Damage to west side trees from cormorant guano, Welland Canal, Port Weller, 6 August 2008.

Photo: Kayo J. Roy.

Dobos pers. comm.), (Potter *et al.* 2013). A solitary bird that was found along the west pier during the SCCBC on 16 December 1984 (Drennan 1985) would appear to be the very first cormorant to ever attempt to over-winter at Port Weller. This count is always conducted in mid-December of each year. The NFCBC commenced in 1966 and takes place every year in the fourth week of December almost always between Christmas Day and New Year's Day. From 1966 to 1988, in these first 23 counts, no cormorants were observed. Two individuals observed on the east pier on 23 December 1989 (LeBaron 1991) were the first birds of this species ever located on a NFCBC and over the 26 year period 1989-2014, 734 cormorants were recorded. Of these, 558 were observed at Port Weller with a

high of 92 birds found there on 27 December 2008 (Pickles and Laar 2009).

The combined St. Catharines and Niagara Falls Christmas Bird Counts through the years 1966 to 2014 reported a total of 1257 cormorants attempting to over-winter at Port Weller's east and west piers. In the 18 years 1966 to 1983, no cormorants were recorded there until 1984 when one bird was observed, and only six others being recorded in the five years 1985-1989. Incredibly, in the next 25 years 1990 to 2014, 1250 cormorants were observed compared to only seven birds recorded there in the previous 24 year period 1966 to 1989 (Figure 8).

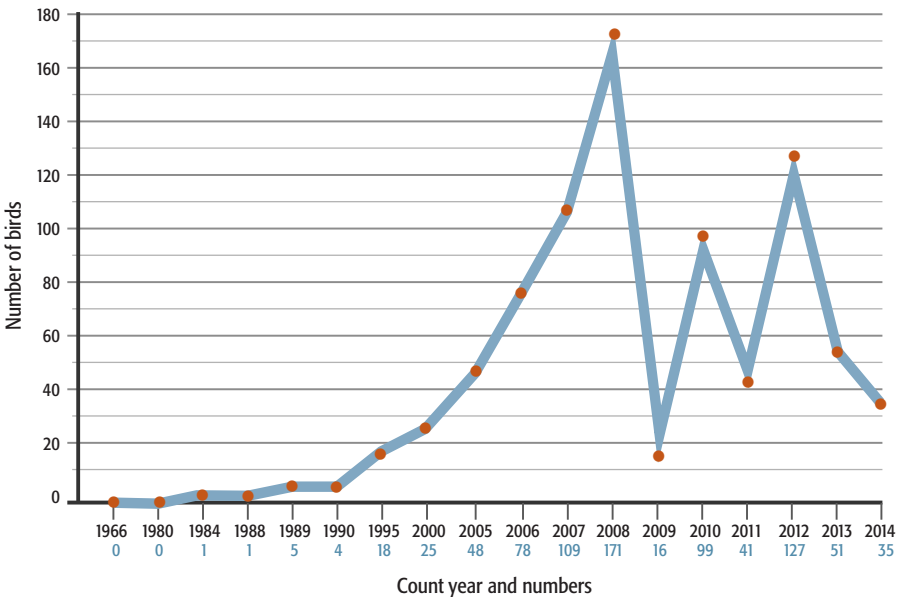
This is an 1800% increase and demonstrates the explosive growth the cormorant has experienced at Port Weller over the last 25 years. As well, it more or

less mirrors the results Butcher and Niven (2007) describe above of cormorant data from all of the combined North American Christmas Bird Counts, albeit over a 40 year period. The record high number of 171 cormorants attempting to over-winter during 2008-2009 was followed by a sharp decline in numbers for the Christmas Bird Counts of 2009-2010. It is believed that this decline was the result of colder December temperatures that froze over a good portion of the Welland Canal and forced most of the lingering cormorants to move to open water areas like Lake Ontario and the Niagara River. The count dates for the SCCBC and the NFCBC are separated every year by only 10-12 days. Given the two counts at Port Weller are directly adjacent to one another, and with the proximity of the two

count dates being so close to one another, some duplication in the counting of bird numbers might have occurred.

The numbers from these two Christmas Bird Counts that identify a total of 1257 cormorants attempting to over-winter at Port Weller's east and west piers is not sufficient proof alone to confirm that any of these cormorants have unquestionably over-wintered there. More substantive evidence is required to authenticate their presence throughout a longer winter period and over a number of years. Local birders start every New Year's Day by birding the Niagara River and at some point during the day, in most cases, they check out Port Weller. Many local birders have observed wintering cormorants at Port Weller on various dates in January, February and March during the years 1984 to 2015.

Figure 8. The combined number of Double-crested Cormorants recorded at Port Weller. Data from the 1966-2014 St. Catharines and Niagara Falls Christmas Bird Counts.



High numbers recorded were: 26 on 01 January 2006 (Kayo Roy pers. comm.), 22 on 04 January 2005 (Jean Farnan and Blayne Farnan pers. comm.), 20 on 10 February 2012 (Frank Pinilla pers. comm.), 50 plus on 23 February 2013 (Marcie Jacklin pers. comm.), 22 on 25 February 2006 (DiTommaso and Suggs 2015), 18 on 5 March 2006 (Kayo Roy pers. comm.) and 9 on 11 March 1996 (DiTommaso and Suggs 2015). Given that early migrant cormorants do not begin to arrive at Port Weller until late March, these observations of 10, 23 and 25 February and 5 and 11 March would more than likely be those of over-wintering birds.

Another excellent source of over-wintering data is the cormorant totals from the Mid-Winter Waterfowl Inventory (MWWI) that is conducted on the second week-end of January (dates vary from 5-14 January) of each year. Cormorants have been seen every January at Port Weller in 24 of 32 survey years from 1984 to 2015 (none from 1984 to 1989). Commencing in 1990, when three birds were observed, a total of 392 individuals has been recorded up to 2015 on this near mid-month survey. High numbers noted were 49 in 2012, 48 in 2007 and 45 in each of 2003 and 2013 (John Black, unpublished MWWI data).

Over-wintering would not have occurred every winter between 1984-1985 and 2014-2015, especially in the early years, and clearly not in those harsh winter years when the canal was frozen over. The data from two winter periods stand out and support over-wintering having occurred for cormorants at Port Weller. The first is the winter months of

2005-2006, where 48 cormorants were observed on the two 2005 December Christmas counts (Pickles and Laar 2006, Potter and Smith 2006), 26 on 01 January 2006, (Kayo Roy pers. comm.), 13 on 8 January (John Black, unpublished MWWI data), 22 on 25 February 2006 (DiTommaso and Suggs 2015) and 18 on 05 March 2006 (Kayo Roy pers. comm.). The second is the winter months of 2012-2013, where 127 cormorants were recorded on the two 2012 December Christmas counts (Pickles and Laar 2013, Potter *et al.* 2013), 45 on 13 January 2013 (John Black, unpublished MWWI data), 30 on 27 January 2013 (Jean Hampson, Bob Highcock pers. comm.), 10 on 18 February 2013 (Jean Hampson, Bob Highcock pers. comm.), 50 plus on 23 February 2013 (Marcie Jacklin pers. comm.), and 11 on 18 March 2013 (Brian Ahara, Kayo Roy pers. comm.). While there is no doubt that cormorants over-wintered in other years, with the sightings data that were available, I can only state as a true fact that the cormorants over-wintered in only these two winter years at Port Weller. The collective sightings data support the presence of Double-crested Cormorants over-wintering at Port Weller to at least the month of January during the winter periods of 1995-1996, 2002-2003, 2006-2007, 2011-2012 and 2013-2014.

Management, Population and Lifespan

In Canada, cormorants are not protected under the federal Migratory Bird Convention Act (*i.e.* the migratory bird treaty with the USA). Cormorants are protected by acts of the provincial legislatures, which also have responsibility for managing the species (Wires 2014). In Ontario,

provincial agencies have managed cormorants because of concerns about negative ecological impacts to specific habitats or other species (Wires 2014, 2015). The current population of cormorants in North America is estimated at two million birds (Hebert *et al.* 2005, USFWS 2006). Its population trend appears to be increasing and does not approach the threshold for Vulnerable; accordingly it is evaluated as Least Concern (Birdlife International 2015). A species is Vulnerable when the best available evidence indicates that it meets any of the criteria for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild (to view or download the Red List Criteria see: IUCN Red List Criteria: <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria>). The bird's average lifespan is unknown but presumably similar to other related species. An age of 17-18 years is not exceptional for this species (Gaston *et al.* 2008). The oldest known cormorant was more than 22 years old, banded in Ontario in 1984 and found in Louisiana, USA in 2006 (Hatch and Weseloh 1999).

Today, in June 2015, the status and abundance of the Double-crested Cormorant at Port Weller can be summarized as being an abundant summer resident, that breeds along the tree-lined west pier near the north end of the Welland Canal, and is a fairly uncommon winter resident.

Acknowledgements

I thank Brian Ahara, the late Gordon Bellerby, John Black, Drew Campbell, Rob Dobos, Blayne Farnan, Jean Farnan, Jean Hampson, Bob Highcock, Marcie Jacklin, Dan Salisbury, the late Alan J. Smith and the late Bill Watson for their cormorant sighting records, David Suggs for providing me with the BOS Noteworthy Records database on Niagara cormorant observations, Judie Shore for the Christmas Bird Counts graph, Sam Barone for the excellent nesting cormorant image and David Walker for the superb aerial photograph of the Welland Canal and Port Weller area. I am indebted to Cynthia Pekarik for reviewing an earlier draft of this article and for her most helpful comments.



Dedication

This article is dedicated to the memory of a good friend, William Worden Watson, a Buffalo, New York area birder who passed away on 18 March 2015. Over many years, Bill devoted a great deal of his birding time documenting the presence of cormorants and egrets on the Niagara River and the Lake Erie shoreline of Ontario. He extensively submitted significant sighting and numbers reports to the Buffalo Ornithological Society (BOS) and to the Canadian Wildlife Service on

all of his observations. Bill was particularly passionate about Double-crested Cormorants and in all of his reports he never failed to refer to them as anything other than "beautiful Double-crested Cormorants."

Juvenal at Port Weller, 18 April 2013. *Photo: Kayo Roy.*

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