

First nest records of the Great Black-backed Gull on Lake Erie

Dave Moore, Ralph Morris and D.V. Chip Weseloh

The Great Black-backed Gull (GBBG, *Larus marinus*; Fig. 1) is a large, black-mantled gull with a mainly palearctic breeding distribution. In North America, it breeds on the Atlantic coast from Labrador to North Carolina, in the St. Lawrence Estuary and in the Great Lakes region (Godfrey 1986, Good 1998).

Prior to the early 1930s, it was considered a rare or uncommon winter visitor/resident on the lower Great Lakes (De Kay 1844, McIlwraith 1894, Savage 1895, Eaton 1910, Mayfield 1943, Good 1998). After 1934, reports of GBBGs in winter increased greatly on Lake Ontario, Lake Huron (Angehrn *et al.* 1979) and the south shore of western Lake Erie (Mayfield 1943; Dolbeer and Bernhardt 1986). Christmas Bird Count indices for Ontario show similar patterns to the studies cited above: few birds were observed prior to the early 1940s, an increase from 1943 to 1952 followed by a decline, then a dramatic increase from the mid-1970s to 1999 followed by a decline to present (National Audubon Society 2002).

The first recorded nesting of the Great Black-backed Gull on the Great Lakes, in 1954, was on Little Haystack Island, one of the Fishing Islands off the west coast of the Bruce Peninsula in Lake Huron (Krug 1956). During the 1960s and 1970s, GBBGs nested irregularly on two islands (Gull Island and Pigeon Island)

in eastern Lake Ontario (Angehrn *et al.* 1979, Blokpoel & Weseloh 1982, Peck & James 1983, Weseloh 1984, Blokpoel 1987, Ewins *et al.* 1992, Canadian Wildlife Service [CWS], unpubl. data). During 1981–1985, single pairs were confirmed at six islands on Lake Ontario and one island on Lake Huron (Blokpoel 1987). It was also during this period that the first annually re-occurring multiple nestings of this species were recorded on the Great Lakes (Little Galloo Island, eastern Lake Ontario; Weseloh 1984).





Figure 1: An adult Great Black-backed Gull.

Photo by Brian Morin

Between 1988 and 1991, 12 breeding attempts were reported at 8 sites in Lake Huron (Ewins *et al.* 1992). The breeding population on Lake Ontario reached a peak in the late 1990s and early 2000s; for example, in 2001, 18 nests were found on Pigeon Island and 16 pairs nested on Little Galloo Island (C. Pekarik, unpubl. data). In 1994, GBBGs were also reported nesting on Spider Island, Lake Michigan, the westernmost point of this species' breeding range on the Great Lakes (Tessen 1994).

Great Black-backed Gulls currently breed or have bred on all of the Great Lakes except lakes Erie and Superior (Good 1998), with the greatest number of nests occurring in eastern Lake Ontario (CWS, unpubl. data). Here we present the first nesting records for Great

Black-backed Gulls on Lake Erie, where single nests were discovered at Mohawk Island (1993 and 1996) and the Port Colborne Breakwall (1995-1996 and 1999-2001) in the eastern section of the lake.

Nest records

The first GBBG nest reported for Lake Erie was found on Mohawk Island (42°50'3"N, 79 °31'21"W), located 5 km southeast of the mouth of the Grand River near Port Maitland, Ontario, and 5 km southwest of Lowbanks, Ontario. Mohawk Island is relatively small (4 ha), but is the largest naturally occurring island in the eastern basin of Lake Erie. The island supports a lighthouse and keeper's house that were built in 1848 and decommissioned in 1969.

Figure 2. Mohawk Island, Lake Erie in 2007. Photo by Clive Hodder.





Figure 3. An aerial photograph (facing north) of the Port Colborne Breakwall, Lake Erie in the early 1980s. The rockpile is the white area on the north side of the breakwall, at the junction of the southern and east-west arms. Photo by Ralph Morris.

At present, only the stone structures for these two buildings remain; all original woodwork has been destroyed (Fig. 2). Currently, efforts are under way to restore these buildings (M. Walker, pers. comm.). Mohawk Island is a National Wildlife Area of the Canadian Wildlife Service (CWS). As such, it is protected from disturbance and access is restricted during the breeding season. The island is low lying, except for an elevated gravel mound on its north side. It is currently devoid of permanent vegetation and most of the island's surface is exposed limestone.

Herring Gulls (*Larus argentatus*) nest mainly on the top of the mound, with additional scattered nests along the northern shoreline (253 nests in 2007). Double-crested Cormorants (*Phalacro-*

corax auritus) nest on the ground, in high density, on the western end of the mounded area (1,563 nests in 2007). Ring-billed Gull (*Larus delawarensis*) nests are found in the low-lying area surrounding the lighthouse (2,201 nests in 2007). Caspian Terns (*Hydroprogne caspia*) nest on a ridge of mussel (*Dreissena spp.*) shells that have accumulated along the southeastern shoreline during the past few years (300 nests in 2007).

On 7 June 1993, Dave Moore and Larry Benner visited Mohawk Island to census colonial waterbird nests. While on the island, they observed a pair of adult Great Black-backed Gulls with two, 7-10 day old chicks. The nest was located on the northeast side of the top of the elevated mound, among Herring Gull nests. The nest contained a single

egg in which the chick had died during pipping. No further nesting attempts were observed at this site during the next two years.

On 27 June 1996, Chip Weseloh and Dave Ryckman visited Mohawk Island and observed a pair of GBBGs attending a single nestling that was too small to band. This GBBG nest was also located at the top of the mound area, surrounded by nesting Herring Gulls.

The third breeding record for GBBGs on Lake Erie was at the Port Colborne Breakwall (42°52'6"N, 79°15'22"W), located at the mouth of the Welland Canal, 0.5 km offshore from Port Colborne, Ontario (Fig. 3). The breakwall, which runs in an east-west direction on the west side of the canal terminus, was constructed in the early 1900s; a lighthouse was added at the eastern end in 1903. A third arm of the breakwater runs to the south. The breakwater is currently owned and maintained by the St. Lawrence Seaway Authority; its function is to protect ships entering and leaving the Welland Canal from the prevailing south-west winds. Waterbird nests are found along the flat shelf area of the east leg of the breakwall, on a limestone bolder "rock-pile" at the junction of the east-west and southern legs of the wall, and on flat rock and sand substrates extending to the west of the rockpile. The rockpile, and the sand strips surrounding the southern edges are the primary nesting sites of Ring-billed Gulls (2,740 nests in 2007) and Herring Gulls (158 nests in

2007). Double-crested Cormorants (262 nests in 2007) and Black-crowned Night-Herons (*Nycticorax nycticorax*; 10 nests in 2007) nest in the trees and shrubs on the western flat portion of the rockpile, while Common Terns (*Sterna hirundo*) nest exclusively on the shelf substrate of the section of breakwall east of the rockpile (14 nests in 2007).

All observations of GBBGs at the Port Colborne breakwall, from 1994-1996, were recorded by Kevin Brown and Rob Game. The first sighting of a Great Black-backed Gull during the breeding season occurred in 1994. A single adult was seen loafing near the rockpile on 6 May 1994; the next day an adult (the same?) was observed consuming a Ring-billed Gull egg at the north edge of the rockpile. This adult(s) was not seen again in that year.

On 1 May 1995, a pair of GBBGs was engaged in nest building activity in the centre of the Common Tern nesting area, on the eastern arm of the break-wall. The pair was observed consuming eggs and stealing nest material from nearby Ring-billed Gull nests. A single egg (mass = 135 g) was discovered in the GBBG nest on 2 May 1995, but was missing the following day. On 4 May 1995, a second egg was laid. However, the following day this egg was also missing and only shell fragments remained in the nest. The GBBG pair remained in the area, mainly loafing on the eastern arm of the breakwall. No further nesting attempts were recorded in 1995.

A pair of Great Black-backed Gulls was observed at Port Colborne again in 1996. From 21 April to 6 May 1996, the pair was seen loafing and appeared to have established a nesting territory on the extreme western end of the east arm of the breakwall (the western end of the Common Tern nesting area). On 6 May 1996, a GBBG egg was discovered in this area. The egg was removed immediately, and the pair subsequently abandoned this nesting territory. The egg was removed as a precaution, to protect nesting Common Terns, which were experiencing a severe decline at this site at the time (Morris 2007). In late May 1996, a (the same?) pair of GBBGs was observed incubating at a nest located on the north edge of the rockpile, approximately two metres from the water's edge. The nest was not visited, in order to minimize disturbance to the nesting pair. In late June, both of the adults and two large chicks, close to fledging age, were seen at this nest site. The nest was visited later that season, and was found to be surrounded by a large "halo", devoid of both Ring-billed Gull and Herring Gull nests. No further nesting attempts by GBBGs were recorded at the breakwall until 1999.

A single pair (likely the same pair) of Great Black-backed Gulls nested on the top of the rockpile in three successive years (1999-2001; all three nests were found by Ralph Morris). In each year, the GBBGs nested on the highest point of the rockpile, on the extreme north edge, completely surrounded by nesting

Ring-billed Gulls. Both adults were extremely aggressive; a circle of dead Ring-billed Gulls, approximately 6 m in diameter, surrounded the nest each year (discovered after each breeding season). In 1999 and 2000, both nests contained two eggs (the modal clutch size for GBBGs is three eggs; Good 1998). Nest contents were not recorded in 2001, although the adults were still present at the colony in early August 2001. We have no information on the fate of eggs, or of chicks (if any successfully hatched), for any of these years.

Discussion

In this paper, we present the first nesting records of the Great Black-backed Gull on Lake Erie. All observations were made of single nests, spanning the period from 1993 to 2001. Nesting by this species was limited to two islands in eastern Lake Erie: the Port Colborne Breakwall (five nests, initiated from 1995-2001) and Mohawk Island (two nests, between 1993 and 1996). Parents successfully hatched chicks in three of these nests (two at Mohawk Island, one at Port Colborne) and one nest failed during incubation; the fates of eggs were not known for the remaining three nests.

Since the mid-1970s, personnel of the Canadian Wildlife Service have visited selected gull and waterbird colonies annually in western Lake Erie. In addition, four joint surveys of all colonial waterbird nesting colonies on Lake Erie

have been conducted by CWS and U.S. Fish and Wildlife Service personnel, at approximately 10 year intervals since the late-1970s (see Morris *et al.* 2003 for references). At the Port Colborne colony, Morris and his students have conducted intensive research on colonial waterbirds since the mid-1970s. Stapanian and Waite (2003) conducted extensive surveys in the offshore waters of western Lake Erie (including the areas containing most of the region's seabird islands) and did not record any GBBGs between 24 April and 24 August 2000. Finally, no GBBG nests were found on Lake Erie during either Ontario Breeding Bird Atlas survey period (1981-1985, Blokpoel 1987; 2001-2005, Weseloh 2007). Despite the opportunity to discover nesting Great Black-backed Gulls, only the seven nests reported here have been found on Lake Erie.

From the 1970s to the early 2000s, there was a rapid increase in the number of GBBG pairs breeding on Lake Ontario (CWS unpubl. data) and this species has been recorded nesting regularly on Lake Huron (Ewins *et al.* 1992, Good 1998). From Christmas Bird Count data, lakes Erie and Ontario appear to have similar densities of overwintering GBBGs, and counts are fairly uniform across Lake Erie (i.e. birds are found in similar densities along all shorelines; National Audubon Society 2002). This begs the question, why have there been so few nesting attempts on Lake Erie?

The delayed and limited expansion of the Great Black-backed Gull into Lake Erie, relative to lakes Huron and Ontario, may simply be a function of a paucity of available nesting sites. Suitable breeding islands are much less numerous on Lake Erie compared to the other water bodies in the Great Lakes Basin. Other than Port Colborne and Mohawk Island, and a few man-made sites in Buffalo Harbour, all other seabird colonies are located at the extreme western end of Lake Erie. Most of the islands in the western basin of the lake are heavily wooded and gulls only nest on their perimeters. As GBBGs seldom nest on wooded islands elsewhere in the Great Lakes, this type of island may not represent a suitable breeding habitat.

An alternative explanation for the lack of breeding records is that the colonization of Lake Erie by Great Black-backed Gulls coincided with the emergence and spread of botulism on the lower Great Lakes. Since 2004, CWS has conducted surveys for die-offs of waterbirds in eastern Lake Ontario. More than 4,600 dead waterbirds have been found (L. Shutt *et al.* in prep). The main cause of mortality has been identified as Type E botulinum toxin, a neurotoxin produced by the bacterium *Clostridium botulinum* (confirmed from lab tests on dead and dying birds collected in the region). Exposure to the toxin occurs through the ingestion of contaminated prey items, resulting in paralysis, and usually, death. One of the

main findings of this study was that Great Black-backed Gulls appeared to be more susceptible to this strain of botulism than other waterbird species. More than 130 dead GBBGs have been found since 2005. As a result, the breeding population of GBBGs has almost been eradicated on Lake Ontario: In 2007, only a single nesting pair was recorded on Lake Ontario, on Little Galloo Island. At least one member of this pair was found dead later in the breeding season.

On Lake Erie, large-scale waterbird mortality due to Type E Botulism was recorded earlier (in 1999; Carpentier 2000) than it appeared on Lake Ontario, coinciding with the period when GBBGs first colonized that water body. Botulism-related mortality has also been recorded annually on Lake Huron since 1999, first at Pinery Provincial Park and then moving steadily northward into Georgian Bay. In 2007, botulism cases were documented for the first time on Lake Michigan. Botulism could now be regulating the breeding population of Great Black-backed Gulls on the lower Great Lakes and/or preventing the species from getting a foothold in new nesting areas such as Lake Erie. Christmas Bird Count data confirms the decline of GBBGs in this region: count indices for Ontario have declined rapidly since the mid-1990s (National Audubon Society 2002). The emergence of avian botulism may explain why no GBBG nests have been found on Lake Erie since 2001, but it remains

unclear why no pairs nested there prior to 1993, particularly when nesting by this species has been long-established on lakes Huron and Ontario.

The Great Black-backed Gull has now expanded its Great Lakes breeding range to include Lake Erie, the most southerly Great Lake. However, one has to wonder, given it was the fourth Great Lake to be colonized, and that there has been no further nesting since 2001, whether Lake Erie really represents suitable nesting habitat for this species. Given the spread and severity of botulism-related mortality for this species on the Great Lakes, it could be some time (if at all) before the breeding population of GBBGs rebounds. Future monitoring should answer these questions.

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- Dave Moore*, Canadian Wildlife Service – Ontario Region, Environment Canada, 867 Lakeshore Road, Burlington, Ontario L7R 4A6.
- Ralph Morris*, 18 Timmsdale Crescent, Fonthill, Ontario L0S 1E5.
- D.V. Chip Weseloh*, Canadian Wildlife Service – Ontario Region, Environment Canada, 4905 Dufferin Street, Toronto, Ontario M3H 5T4.