

STATUS OF COLONIAL WATERBIRDS NESTING ON LITTLE GALLOO ISLAND, LAKE ONTARIO

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Little Galloo Island, located in eastern Lake Ontario, off Sackets Harbor, Jefferson County, has attracted ornithological attention because of an enormous increase in its population of Ring-billed Gulls (*Larus delawarensis*) (Belknap 1968) and, more recently, the presence of nesting Cattle Egrets (*Bubulcus ibis*) (Chamberlaine 1978).

The Ring-billed Gulls are known to have nested on Little Galloo Island as early as 1938 (Bull 1974). Estimates of their population in 1966 ranged from 75,000 - 85,000 nests (Ludwig 1974) to 100,000 - 120,000 nests (Gordon 1966) and in 1967 their numbers were estimated at 82,000 pairs (Ludwig 1974) and 85,000 pairs (Belknap 1968). Since then the colony has greatly declined or merely leveled off, depending on whose figures are correct. According to Scharf *et al.* (1978) there were more than 30,000 pairs in 1976 and 27,308 pairs in 1977, but Chamberlaine (1978) reported 77,000 nests for 1978. If the last figure is correct, Little Galloo Island would probably still be the largest Ring-billed Gull colony in North America (Belknap, 1968), but if the population was 27,000 pairs, the colonies at the Eastern Headland of the Toronto Outer Harbor, Lake Ontario, would be larger (Blokpoel, 1977 and unpublished data).

One of us (DVW) had visited Little Galloo Island for studies of Herring Gull (*L. argentatus*) reproduction during 1979 and 1980. As those studies were to be continued in 1981, we decided that we would attempt to census all nests in the spring of that year in order to arrive at reliable numbers of nesting birds. Our census involved all colonial waterbird species nesting on the island, *i.e.* Herring and Ring-billed Gulls, Cattle Egrets, Double-crested Cormorants (*Phalacrocorax auritus*), Black-crowned Night Herons (*Nycticorax nycticorax*) and Great Black-backed Gulls (*L. marinus*). This paper presents and discusses those census figures.

STUDY AREA AND METHODS

Belknap (1968) described the islands as follows: "Little Galloo Island, about 43 acres in extent, lies near the eastern end of Lake Ontario some 5½ miles from the mainland. Roughly oval, it is three-sevenths of a mile in the longer dimension. The island is composed of rock with a thin covering of soil. Grass and weeds constitute much of the vegetation. The number of trees is limited and these are mainly

around the perimeter. The interior resembles a level, grassy meadow." This description is valid for 1981.

To census the gull nests we divided the island in halves by stretching a yellow rope across the island along its long (NE-SW) axis. These halves were further divided into strips using colored plastic tapes. We slowly walked down the strips counting all nests with eggs and/or chicks, using hand-counters. We reduced the width of the strips as nest density increased to maintain accuracy of counting.

The main census took place on 11 and 12 May 1981 and involved three teams each consisting of two men. In addition, one of us (DVW) made brief visits on 23 April, 7 May, 27 May, 9 June, and 24 July as part of his studies of Herring Gull reproduction.

RESULTS AND DISCUSSION

The results are shown in Table 1, which also gives a summary of previous efforts to estimate the size of the colonies.

Ring-billed Gull

We counted 73,780 nests in 1981. Our count is in close agreement with the estimate of 77,000 nests for 1978, and much higher than the estimates for 1976 and 1977, which were presumably too low (see Table 1). As the entire island has been virtually covered by nesting Ring-bills since 1967, we suggest that the nesting population has been more or less stable for the last 14 years. We expect that the Little Galloo population will remain stable because (1) virtually all available habitat is already occupied, and (2) it is unlikely that the density of nests will increase. Instead we predict that colonies in the vicinity of Little Galloo Island will continue to grow rapidly and that new colonies will be established wherever conditions are favorable. In fact, this appears to have happened in recent years. The new colony at High Bluff Island in Presqu'île Provincial Park has increased from 679 nests in 1979 (R. D. McRae, pers. comm.) to an estimated 10,000-15,000 pairs in 1981 (G. A. Fox, pers. comm.). In 1981 Ring-bills were nesting in small numbers at four "new" sites in Lake Ontario near Kingston: (1) Nut Island off the south shore of Amherst Island (about 300 nests on 26 May), (2) Salmon Island off Kingston (about 200 nests on 26 May), (3) West Brothers Island near Collin's Bay (three nests on 26 May) and (4) a small island off the north end of Horseshoe Island (three nests on 26 May) (Weir, 1981). Farther west in Lake Ontario, the colony at the Eastern Headland of the Toronto Outer Harbor has increased from 21 nests in 1973 to 67,000 nest ins1980 (census) and to 70,000-75,000 nests in 1981 (estimate).

We did not count the nests of Ring-bills at the Eastern Headland in 1981, but estimated the size of that population based on a census in 1980, the nest density in several test plots in 1980 and 1981, and the expanse of their nesting areas in 1980 and 1981. Our estimate of 70,000-75,000 nests in 1981 makes it uncertain whether Little Galloo Island or the Eastern Headland is now the largest Ring-billed Gull colony in North America.

Double-crested Cormorant

First reported breeding at Little Galloo in 1967, this species has now become the second most numerous nesting species there, with 461 nests counted in 1981 (Table 1).

In contrast to most cormorants on the Great Lakes, those at Little Galloo nest in trees. In 1976 and 1977 there were 76 and 96 cormorant nests, respectively. They were confined to four clumps of trees in the southern portion of the island (Scharf *et al.* 1978, Fig. 23a and b). This situation persisted through 1978. During the period 1979-1981 the cormorants occupied an increasing number of trees (Weseloh, unpublished data). In 1980, 264 nests were distributed in 24 trees primarily on the west, south, and east shores of the island. Twelve additional nests were located on the ground, in the southwest sector, late in the season in August. In 1981, the cormorants began nesting in trees on the north and northwest shores of the islands. In that year 455 nests were distributed in 32 trees of seven kinds: elm (10), oak (8), ash (7), hackberry (4), willow (1), basswood (1), and shagbark hickory (1); six additional nests were on the ground. Twelve of the trees were dead (five elm and seven oak). As the birds continue to nest, presumably the other trees will also die. Leaves and branches have been stripped from several of the living trees and much guano deposition was also evident on the leaves.

The increase in cormorant numbers at Little Galloo Island roughly parallels the increase that has occurred on other Lake Ontario and Great Lakes colonies. For example, from 1973 to 1981 the cormorant population in the Canadian waters of Lake Ontario and the Great Lakes increased from three nests to 180 nests and from 139+ nests to 970 nests, respectively (Weseloh, unpublished data). During that same period the number of colonies on the Canadian Great Lakes has increased from 11 to 21. The colony on Pigeon Island (21 km north of Little Galloo) has quadrupled in the last three years (Weseloh, unpublished data).

If cormorants on Little Galloo Island exploit the available ground nesting sites as they have the tree sites, there is room for growth for

many more years. However, at present, with nearly all trees on the island harboring at least one cormorant nest and only a total of 18 nests on the ground in the last two years, it does not appear that such exploitation is yet occurring. If the cormorants do not utilize ground sites any more than they have, it is unlikely that the colony will expand much beyond 600-650 tree nests.

Herring Gull

As Table 1 shows, Herring Gull numbers have steadily increased from "not more than 50 pairs" in 1955 to 350 nests in 1981.

In 1981 the distribution of Herring Gull nests was still as depicted by Scharf *et al.* (1978) for 1976 and 1977. The birds nested contiguously and most densely from the center of the island to the southern shore. All nests were on the ground.

From 1976 to 1981 the Herring Gull population on six older, long-established colonies on Lake Ontario increased from approximately 309 to 452 nests, or approximately 11% annually on average (Weseloh, unpublished data). The Little Galloo figures show an increase from 200 pairs in 1977 to 350 in 1981 (on average about 19% per year). Reproductive success in two fenced enclosures in the center of the island in 1981 was 2.43 young/pair. This is the highest success we have encountered in four years of monitoring on the Great Lakes (Weseloh *et al.*, 1979; Weseloh, unpublished data). It would appear that Herring Gulls are reproducing very well and increasing.

Black-crowned Night Heron

This species has nested at Little Galloo Island since 1950 when 11 nests were reported (Table 1). The colony increased to 121 nests (counted) in 1977 and has since declined to 96 nests (counted) in 1981. In 1981 all nests were in low bushes, often red-osier dogwood of one to two meters height, on the south and southwest side of the island.

Black-crowned Night Herons appear to be increasing on the Canadian side of Lake Ontario. In recent years the species has begun to nest at Hamilton Harbor, the Toronto Outer Harbor and High Bluff Island (Blokpoel, unpublished data; R. D. McRae, pers. comm.).

Cattle Egret

In 1977 the first two nests were reported and by 1981 five pairs were observed nesting (Table 1). In 1981 the nests were located in willows at heights ranging from one to two meters on the southwest side of the island. The egrets were nesting in close proximity to both the night herons and the cormorants.

In 1981 four nests were first observed on 27 May; two contained four eggs each and two held single eggs. Seven adult Cattle Egrets were also observed on that date. On 9 June three nests held 13 eggs and the fourth had two eggs and two chicks. Assuming an incubation period of 23 days and a two-day interval between the laying of the first and second egg (Palmer 1962), the first egg was laid on or before 14 May. On 24 July a fifth nest with six eggs was found in the same location as the previous four nests. Young egrets were noted climbing among the willow branches on this visit.

The Cattle Egret, a relatively recent immigrant to North America, appears to be extending its breeding range northward. On Lake Ontario the species has nested at Gull Island, Presqu'ile Provincial Park (one nest in 1962, Woodward, 1962; one nest in 1965, Goodwin, 1965; present in 1966, Goodwin, 1966) and at Pigeon Island (single nests in 1969, Goodwin 1969; in 1972, Goodwin and Rosche, 1972; in 1977, Goodwin, 1977; two nests in 1968, Goodwin 1968; and in 1978, Goodwin, 1978; but no nests in 1979-1981, Weseloh, unpublished data). It will be interesting to monitor any further development of the Cattle Egret colony at Little Galloo Island, which is probably at the northern edge of the species' present breeding range in eastern North America.

Great Black-backed Gull

This species had not been reported to nest at Little Galloo Island prior to 1981 and we therefore document its nesting in greater detail. On 23 April, after observing two adult Great Black-backed Gulls on the colony, DVW and S. M. Teeple located a nest with three eggs on the northwest side of the island. Although the nest was situated in a grassy area in the midst of densely nesting Ring-billed Gulls, its immediate vicinity (*i.e.* within a radius of four to five meters) was devoid of Ring-bill nests. On 7 May, when Herring Gulls eggs were just beginning to hatch, and again on 11 and 12 May, there were still three eggs in the nest. On the latter visit however, three additional Great Black-backed Gull nests were suspected on a cobblestone beach ridge on the extreme west shore of the island. Owing to the size variation in Herring Gull eggs and our own lack of familiarity with the eggs of Great Black-backed Gulls, we were unable to identify the nests with certainty. On 27 May we observed adult Great Black-backed Gulls incubating all three of the nests on the beach ridge. The nests contained one, two and three eggs, respectively; the single egg was rotten. On this date, the first Great Black-backed Gull nest (among the Ring-billed Gulls) held two mobile downy young. On 9

June, the single-egg clutch had disappeared but the adults were still in attendance, the three-egg clutch was intact, and the two-egg nest held one young and one pipping egg. On our last visit of the season, on 27 July, all the nests were empty and although we were unable to locate any of the young, we concluded that at least one and probably three of the four Great Black-backed Gull pairs had fledged young.

During our visits we measured a total of seven Great Black-backed Gull eggs (two three-egg clutches and the pipping egg). The mean dimensions ($\pm$ S.D.) were $78.1 \pm 2.34 \times 51.3 \pm 1.03$ mm. These agree closely with average measurements given by Bent (1963) of 77.9×54.2 mm.

A recent review of the status of this species in the Great Lakes area (Angehr *et al.*, 1979) mentioned only ten records of single nests: one in Lake Huron in 1954 and nine in Lake Ontario (Gull Island—1962, 1963 and 1970 and Pigeon Island—1971, 1972, 1976 through 1979). Thus the presence of four nests in one season at Little Galloo is highly unusual. The Great Black-backed Gull also nested for the first time in 1981 at the Eastern Headland (Blokpoel, unpubl. data). Because the Black-back is highly predatory, it is important to keep track of any further penetration into the Great Lakes by this essentially maritime species.

THE ORNITHOLOGICAL IMPORTANCE OF LITTLE GALLOO ISLAND

Another species of colonial waterbird, the Common Tern (*Sterna hirundo*), once flourished on Little Galloo Island. Kutz (1946) observed Common Tern nests during his visit in 1945 and Baillie (1952) reported at least 500 pairs in 1952. Belknap (1968) reported that the tern colony flourished in the early 1950s, but that it was "gradually wiped out by competition from the Ring-billed Gulls." This competition was presumably for nesting space because the Ring-bill had occupied the entire island except for the Herring Gull colony.

Herring Gulls and Great Black-backed Gulls can easily defend their territories against encroaching Ring-billed Gulls because they are bigger. It seems unlikely that any increase in numbers of the two larger gull species will be affected by the teeming numbers of Ring-bills. The cormorants, night herons and Cattle Egrets are not in competition with the Ring-bills because they nest in trees. Because of their larger size the cormorants can probably compete successfully with Ring-bills for nest sites on the ground.

Six species of colonial waterbirds nested at Little Galloo Island in 1981. Although reproductive success was properly assessed only for

the Herring Gulls, which reproduced very well, casual observations indicated that all other species raised fledglings as well.

Little Galloo Island is important as a nesting area both in terms of species variety and numbers. Efforts should be made to preserve the island as a nesting site of major importance.

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REFERENCES

- Angehrn, P. A. M., H. Blokpoel and P. A. Courtney. 1979. A review of the status of the Great Black-backed Gull in the Great Lakes area. *Ontario Field Biologist* 33: 27-33.
- Baillie, J. L. 1952. Ontario-Western New York Region. *Audubon Field Notes* 6: 279-280.
- Belknap, J. B. 1950. Bird colonies in eastern Lake Ontario. *Kingbird* 1: 3-6.
- Belknap, J. B. 1961. Little Galloo Island Revisited. *Kingbird* 11: 90.
- Belknap, J. B. 1968. Little Galloo Island—a twenty year summary. *Kingbird* 18: 80-81.
- Bent, A. C. 1963. *Life Histories of North American Gulls and Terns*. Dover Publications, New York. 337 pp.
- Blokpoel, H. 1977. Gulls and terns nesting in northern Lake Ontario and the upper St. Lawrence River. *Canadian Wildlife Service Progress Note* 75. 12 p.
- Bull, J. 1974. *Birds of New York State*. Doubleday/Natural History Press, New York. 392 pp.
- Chamberlaine, L. B. 1975. Region 6—St. Lawrence. *Kingbird* 25: 224-226.
- Chamberlaine, L. B. 1976. Region 6—St. Lawrence. *Kingbird* 26: 226-227.
- Chamberlaine, L. B. 1978. Region 6—St. Lawrence. *Kingbird* 28: 250-253.
- Clinch, F. A. 1963. Region 6—St. Lawrence. *Kingbird* 13: 172.
- Clinch, F. A. 1965. Region 6—St. Lawrence. *Kingbird* 15: 179-181.
- Goodwin, C. E. 1965. Nesting Season June 1, 1965-August 15, 1965, Ontario-Western New York Region. *Audubon Field Notes* 19: 537-540.

- Goodwin, C. E. 1966. Nesting Season June 1, 1966-August 15, 1966, Ontario-Western New York Region. *Audubon Field Notes* 20: 565-566.
- Goodwin, C. E. 1968. Nesting Season June 1, 1968-August 15, 1968, Ontario-Western New York Region. *Audubon Field Notes* 22: 602-604.
- Goodwin, C. E. 1969. Nesting Season June 1, 1969-August 15, 1969, Ontario-Western New York Region. *Audubon Field Notes* 23: 655-657.
- Goodwin, C. E. 1977. The Nesting Season June 1-July 31, 1977, Ontario Region. *American Birds* 31: 1131-1135.
- Goodwin, C. E. 1978. The Nesting Season June 1-July 31, 1978, Ontario Region. *American Birds* 32: 1153-1156.
- Goodwin, C. E. and R. C. Rosche. 1972. The Nesting Season June 1, 1972-August 15, 1972. Ontario-Western New York Region. *American Birds* 26: 851-856.
- Gordon, D. C. 1966. Region 6—St. Lawrence. *Kingbird* 16: 172-173.
- Kutz, H. L. 1946. Breeding of the Ring-billed Gull in New York. *Auk* 63: 591.
- Ludwig, J. P. 1974. Recent changes in the Ring-billed Gull population and biology in the Laurentian Great Lakes. *Auk* 91: 575-594.
- Palmer, R. S. 1962. *Handbook of North American Birds*. Vol. 1. Yale University Press, New Haven, 567 pp.
- Scharf, W. C., G. W. Shugart, and M. L. Chamberlin. 1978. Colonial birds nesting on man made and natural sites in the U.S. Great Lakes. *Technical Report D-78-10*. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 136 pp.
- Weir, R. 1981. Colonial waterbird survey—offshore Kingston Islands. 1981. *Blue Bill* 28: 85-86.
- Weseloh, D. V., P. Mineau and D. J. Hallett. 1979. Organochlorine contaminants and trends in reproduction in Great Lakes Herring Gulls, 1974-1978. *Trans. 44th North American Wildl. and Nat. Res. Conf.*, pp. 543-557.
- Woodward, J. 1962. Nesting Season June 1 to August 15, 1962, Ontario-Western New York Region. *Audubon Field Notes* 16: 473-475.
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Table 1. Results of the 1981 census of colonial waterbirds nesting at Little Galloo Island, and published numbers of colony sizes for earlier years.

Year	Method	Ring-billed Gull	Double-crested Cormorant	Herring Gull	Black-crowned Night Heron	Cattle Egret	Great Black-backed Gull	Reference
1938		"nesting"						Bull (1974)
1945	estimate	+ 1800 breeding birds		+200 breeding birds				Kutz (1946)
1950	estimate	19,200 nests ¹						Belknap (1950)
1951	nest census				11 nests			Belknap (unpub. data)
1955	estimate	45,000 nests		no more than 50 pairs				Belknap (1961)
1961	estimate	63,000 nests			at least 50 nests with contents			Belknap (1961)
1963	estimate	75,000 nests			80 nests			Clinch (1963)
1965	estimate	85,000 nests		100 nests	75 nests			Clinch (1965)
1966	estimate	100-120,000 pairs		100 pairs	nesting			Gordon (1966)
1966	estimate	75-85,000 nests						Ludwig (1974)
1967	estimate	85,000 nests			over 75 pairs			Belknap (1968)
1967	estimate	82,000 nests						Ludwig (1974)
1974	nest census		22 nests		25 nests			G. A. Smith, pers. comm.
1975	nest census		28 nests		29 nests			Chamberlaine (1975)
1976	nest census		68 nests		60 nests			Chamberlaine (1976)
1976	air survey	30,000 nests		200 nests				Scharf <i>et al.</i> (1978)
1976	nest census		76 nests		121 nests			Scharf <i>et al.</i> (1978)
1977	nest census		130 nests		121 nests			G. A. Smith, pers. comm.
1977	air survey	27,308 nests		200 pairs				Scharf <i>et al.</i> (1978)
1977	nest census		96 nests		130 nests	2 nests		Scharf <i>et al.</i> (1978)
1978	estimate	77,000 nests						Chamberlaine (1978)
1978	nest census		192 nests	93 nests	77 nests	3 nests		Chamberlaine (1978)
1980	nest census		264 nests					D. V. Weseloh (unpub. data)
1981	nest census	73,780 nests ²	461 nests ³	350 nests ²	96 nests ²	5 nests ⁴	4 nests ⁴	this report

¹ includes Herring Gull nests (less than 5%)² 11 and 12 May 1981³ 24 July 1981⁴ whole season