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# Distribution and Abundance of Roof-Nesting Gulls in the Great Lakes Region of the United States<sup>1</sup>

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**ABSTRACT.** In 1994, we conducted aerial, mail, and telephone surveys to determine the distribution and abundance of roof-nesting gulls in states bordering the Great Lakes. We documented more than 7,922 nesting pairs of gulls at 30 colonies in four states; species composition was 71% ring-billed (*Larus delawarensis*), 24% herring (*L. argentatus*), and 5% unknown. Colony size ranged from 1 to 1,003 nesting pairs. Proportions of ring-billed gulls nesting less than 5.0 and more than 10.0 km from the Great Lakes were 31% and 39%, in contrast to 63% and less than 1% for herring gulls, respectively. Maximum distances herring and ring-billed gull colonies were located from the Great Lakes were 23.5 and 58.0 km, respectively. Roof-nesting ring-billed and herring gulls represented approximately 2% and 4%, respectively, of the total nesting population for these species in the U.S. portion of the Great Lakes. As previous surveys of colonial waterbirds in the Great Lakes did not document roof-nesting gull colonies, future surveys should include potential inland colony sites, particularly roofs and other urban habitats, to obtain more accurate estimates of total population size and to monitor population trends of roof-nesting gulls.

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## INTRODUCTION

Populations of gulls have increased throughout the United States and Canada in recent years (Ludwig 1974, Blokpoel and Tessier 1986, Vermeer 1992, Belant and Dolbeer 1993). For example, the nesting population of ring-billed gulls (*Larus delawarensis*) along the Canadian portion of the lower Great Lakes increased from about 56,000 pairs to 283,000 pairs between 1976-1990; herring gulls (*L. argentatus*) increased from 440 to 1,300 pairs during these same years (Blokpoel and Tessier 1991). The nesting population of herring gulls on Sandusky Bay, Lake Erie, OH, increased at an average annual rate of 11.9% from 1976-1989 (Dolbeer et al. 1990).

Gull population increases in the Great Lakes region have been attributed in part to exploitation of anthropogenic food at landfills (Belant et al. 1993, 1995) and use of human-made habitats for nesting (Blokpoel and Tessier 1987). Consequently, gull populations have increased in urban areas where they have established nesting colonies on buildings (Blokpoel and Smith 1988, Dolbeer et al. 1990). Roof-nesting gulls are generally considered undesirable as they cause damage to structures, plug drains with nest material and food remains, defecate on vehicles, and harass maintenance personnel (Blokpoel and Scharf 1991, Belant 1993).

Previous studies have documented roof-nesting by gulls in portions of the Great Lakes (Blokpoel and Smith 1988, Blokpoel et al. 1990, Dolbeer et al. 1990, Belant 1993); however, no study has summarized the distribution and

extent of roof-nesting gulls for the United States portion of the Great Lakes. Our objective was to determine the prevalence of roof-nesting by ring-billed gulls and herring gulls in states bordering the Great Lakes.

## MATERIALS AND METHODS

We conducted an aerial survey of Cuyahoga County (includes metropolitan Cleveland), south-central Lake Erie, using a fixed-wing aircraft on 18 May 1994. The aerial survey coincided with maximum nesting activity, based on observations of three known roof colonies in Cuyahoga County. We surveyed the entire county from an altitude of 460 m, flying parallel north-south transects approximately 2.0 km apart. Two observers in the plane monitored roofs for concentrations of gulls and other evidence of gull nesting activity, including nest material or droppings. The three known colonies (Table 1) were used as visual references to ensure we could detect roof colonies at that altitude. Colony locations were plotted on maps (1:39,400) and visited within one week to determine colony size, species composition, and primary roof substrate where the colony occurred. We also determined the nearest distance (to nearest 0.5 km) of each colony to Lake Erie and whether removal programs (e.g., nest and egg removal) occurred in 1994, and, if known, the number of years the colony had nested on the roof.

To determine the extent of roof-nesting by gulls in the remainder of the Great Lakes region during 1994, 10 biologists of the U.S. Department of Agriculture, Animal Damage Control (ADC) program stationed in the eight Great Lakes states (Minnesota to New York) were surveyed by mail or interviewed by telephone during January-March 1995. ADC biologists receive public complaints of nuisance gulls and also review all federal permit applications to remove gull nests and eggs. Thus, these ADC biologists were knowledgeable of the locations and species composition of all reported roof-nesting

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TABLE 1

*Location, number of nests, and species composition of roof-nesting herring (HERG) and ring-billed (RBGU) gull colonies in the Great Lakes region of the United States, 1994.*

State	County	Distance to water (km)	Years known to exist	Roof type	Number of nests				Removal Program in 1994
					HERG	RBGU	Unk.	Total	
Michigan	Macomb	–	2	Asph/Grav	975	0	0	975	Yes
New York	Monroe	23.5	5	Gravel	0	300	0	300	Yes
	Monroe	8.5	–	Gravel	3	1000	0	1003	Yes
	Onondaga	55.0	5	Gravel	0	0	20	20	Yes
	Onondaga	58.0	5	Gravel	0	307	0	307	Yes
Ohio	Cuyahoga	7.5 <sup>+</sup>	3	Gravel	203	447	0	650	No
	Cuyahoga	7.5	0	Metal	9	0	0	9	No
	Cuyahoga	21.0 <sup>+</sup>	5	Gravel	0	243	0	243	Yes
	Cuyahoga	21.0	0*	Gravel	0	470	0	470	Yes
	Cuyahoga	22.5 <sup>+</sup>	2	Gravel	1	437	0	438	No
	Cuyahoga	16.5	1	Gravel	0	140	0	140	No
	Cuyahoga	9.0	17	–	–**	0	0	–	Yes
	Cuyahoga	8.0	7	–	22	0	0	22	Yes
	Cuyahoga	3.0	–	–	43	0	0	43	Yes
	Cuyahoga	3.0	–	–	31	0	0	31	–
	Cuyahoga	3.0	–	Gravel	201	0	0	201	No
	Cuyahoga	3.0	–	Gravel	48	170	0	218	No
	Cuyahoga	8.5	–	Gravel	84	0	0	84	No
	Erie	0.0	–	Metal	61	0	0	61	No
	Erie	0.0	–	Metal	37	0	0	37	No
	Erie	0.0	6	Gravel	66	0	0	66	Yes
Erie	0.0	6	Gravel	70	0	0	70	Yes	
Wisconsin	Marinette	0.0	13	Metal	0	0	238	238	No
	Marinette	0.0	15	Gravel	0	100	0	100	Yes
	Marinette	0.0	10	Metal	0	1000	0	1000	No
	Marinette	0.0	3	–	0	200	0	200	No
	Milwaukee	–	1	–	0	0	1	1	–
	Milwaukee	–	5	Asph/Grav	0	0	>100	>100	No
	Milwaukee	–	1	–	0	850	0	850	–
	Winnebago	–	1	–	0	0	45	45	–
Total					1854	5664	404	7922	

+Colonies used as visual references in aerial survey of Cuyahoga County.

\*Colony established in 1994.

\*\*Number of nests was not determined.

gull colonies within the Great Lakes states. Some colonies may not have been reported, however, if building owners did not seek assistance from ADC personnel. Thus, the number of roof colonies and nesting pairs obtained are minimum estimates. Information requested from ADC biologists was similar to that obtained for colonies in Cuyahoga County. Gulls nesting on adjacent buildings at a single facility were considered one colony.

## RESULTS

We documented more than 7,922 nesting pairs of gulls at 30 colonies in four states (Table 1). The number of colonies recorded by state (Great Lake) were: Ohio (Lake Erie), 17 colonies; Wisconsin (Lake Michigan), eight colonies; New York (Lake Ontario), four colonies; and

Michigan (Lake Huron), one colony (Fig. 1). Overall species composition was 71% ring-billed, 24% herring, and 5% unknown. Colony size ranged from 1 to 1,003 nesting pairs. The estimated mean minimum number of years colonies were present on roofs was  $5.1 \pm 4.8$  (SD), with one colony more than 17 years old and another established in 1994.

Proportions of ring-billed gulls nesting less than 5.0 and more than 10.0 km from the Great Lakes were 31% and 39%, in contrast to 63% and less than 1% for herring gulls, respectively. Maximum distances herring and ring-billed colonies were located from the Great Lakes were 22.5 and 58.0 km, respectively.

Recorded roof substrates at colony sites were primarily (81%) gravel or a mixture of gravel and asphalt, followed

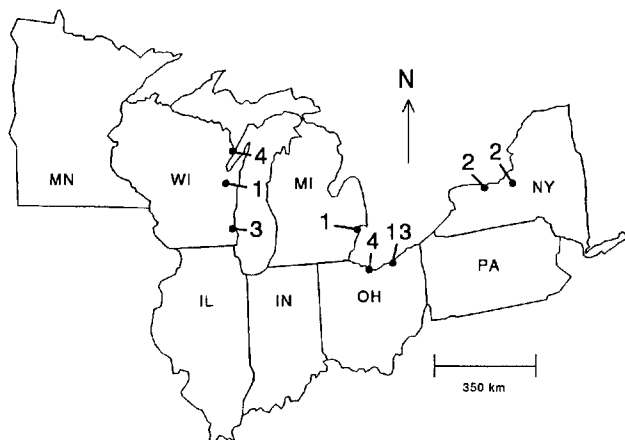


FIGURE 1. Distribution of roof-nesting colonies of ring-billed and herring gulls in the Great Lakes region of the United States. Numbers represent the number of colonies recorded at each location.

by metal (19%). Nest disturbance (e.g., nest and egg removal) was conducted at 50% of the colonies during 1994.

## DISCUSSION

Previous studies have documented roof-nesting by gulls in portions of the Great Lakes (Blokpoel and Smith 1988, Blokpoel et al. 1990, Dolbeer et al. 1990, Belant 1993). Roof-nesting by gulls in Ontario probably first occurred in the early 1970s (Blokpoel et al. 1990). The earliest confirmed report of roof-nesting gulls in the U.S. portion of the Great Lakes (Cuyahoga County) was in 1978 (this study). Also, the mean number of years (5.1) colonies were present on roofs suggests that use of roofs as nesting habitat has increased considerably in the Great Lakes region only in recent years. Increased use of roofs as nesting habitat has been reported for other expanding populations of herring gulls and glaucous-winged gulls (*L. glaucescens*) (Monaghan and Coulson 1977, Eddy 1982, Vermeer et al. 1988). Roof nesting by gulls will likely continue and may increase, particularly on the lower Great Lakes where gulls have exploited urban food sources (e.g., landfills) and nesting habitat (e.g., roofs) (Blokpoel and Scharf 1991).

Ring-billed gulls were more abundant at nesting colonies farther from the Great Lakes, whereas herring gulls were more abundant at colonies nearer to the Great Lakes. Inland feeding sites (e.g., landfills, agricultural fields), as opposed to the Great Lakes, are likely of greater importance to ring-billed gulls than to herring gulls (Belant et al. 1993, 1995). Chudzik et al. (1994) documented greater use of anthropogenic food by ring-billed gulls than by herring gulls in Lake Huron. Vermeer (1973) stated that the distribution of herring gulls in northern Canada was restricted to areas around large lakes because of their dependence on aquatic food sources. Also, Belant et al. (1993) determined that fish was the primary food of herring gulls nesting on Sandusky Bay, Lake Erie.

In this study, 50% of the roof-nesting colonies were subjected to removal programs during 1994. Concen-

trations of nesting gulls in proximity to humans can cause economic, safety, or health concerns (Blokpoel and Scharf 1991, Belant 1993). Various techniques such as overhead wires are currently available to reduce or eliminate roof-nesting by gulls (Blokpoel and Tessier 1992). However, gull management should be considered at a scale broader than specific problem sites as displacement of these roof-nesting gulls may cause relocations of the colonies to nearby roofs (Belant and Ickes 1996).

The number of roof-nesting ring-billed and herring gulls represented about 2% and 4% of the total respective 1989-1990 breeding gull populations in the U.S. portion of the Great Lakes (Scharf et al. 1994). Previous surveys did not detect gull colonies located on roofs, however. For example, a 1990 survey of gulls nesting on the Great Lakes reported only one herring gull colony (35 nests) on a breakwall in Cuyahoga County (Scharf et al. 1994). In contrast, we determined that 13 colonies comprising more than 2,549 breeding pairs occurred in Cuyahoga County during 1994 and at least three roof-nesting gull colonies comprising more than 265 breeding pairs occurred in 1990. As Cuyahoga County was the only area intensively surveyed during this study, the number of roof colonies and number of breeding pairs reported for the U.S. portion of the Great Lakes is likely conservative. Future surveys of colonial nesting waterbirds in the Great Lakes should include potential inland colony sites to obtain more accurate estimates of total population size, and to monitor population trends of roof-nesting gulls.

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