

CHANGES IN THE RING-BILLED GULL POPULATION IN MASSACHUSETTS

by Richard A. Forster

Like many breeding "seabirds" the historical populations of Ring-billed Gull (*Larus delawarensis*) were decimated by human persecution for the plume trade in the late 1800s and early 1900s. At that time the breeding range encompassed the prairie region of the northern United States and Canada eastward to the Great Lakes with smaller populations in Lakes Erie and Ontario and the Gulf of St. Lawrence. Ring-bills commonly wintered, and still do, along the Gulf Coast of the United States to Central Mexico, in the Great Lakes, and along the Atlantic Coast from the Gulf of St. Lawrence to Florida, with greatest numbers in the southern portions of this range, although in early winter before freeze-up the greatest concentrations are found in the Great Lakes (Dolbeer and Bernhardt 1986). Once the species was afforded protection, the breeding populations stabilized and then increased slowly. In 1940 the total North American breeding population from the Great Lakes eastward was estimated at 20,000 pairs and in 1945 the total population at about 93,000 individuals (Ludwig 1974). Since that time a combination of factors has enabled Ring-bill populations to increase to unprecedented numbers. Both Ludwig (1974) and Lock (1988) have summarized the tremendous growth of the Great Lakes and eastern populations.

An important factor in the increase was an apparent explosive spread of herring (*Alosa pseudoharengus*) in the Great Lakes around 1950 after an increased sea lamprey (*Petromyzon marinus*) population had decimated predatory fish in the upper lakes. As a result, the increased amount of food available allowed for greater survival of chicks and young gulls. Then, in the 1960s a period of prolonged drought led to lower water levels and created barren islands, which provided greater site availability for breeding. At this time the population increase accelerated, and Ludwig estimated the total population of Ring-billed Gulls in 1967 to be 837,500 individuals. Since then the Great Lakes population has increased by an average of 7.9 percent per year from 1967 to 1976 and by 11.6 percent per year from 1976 to 1984 (Lock 1988). During the same time span the population has increased in both the upper and lower Gulf of St. Lawrence but at a less dramatic rate. By 1981 an estimated 5500 to 6000 pairs were breeding in Vermont on Lake Champlain, where Ring-bills were first confirmed breeding in 1939. In the maritime provinces of Canada (Labrador, Newfoundland, New Brunswick, Prince Edward Island, and Nova Scotia) including the islands of St. Pierre-Miquelon (France), where probably less than 500 pairs bred in 1950, the population in 1986 was conservatively estimated at 7000 pairs (Lock 1988). The species is suspected of nesting (but not

confirmed) at Lake Umbagog in New Hampshire. To date, the breeding population has stopped just short of Massachusetts. Perhaps the picture is best summed up by considering Little Galloo Island on Lake Ontario in New York. One thousand pairs of Ring-bills were estimated breeding there in 1945, but by 1967 that figure had skyrocketed to 82,000 pairs.

In light of the remarkable increase and close proximity, one would expect the status of Ring-billed Gull in Massachusetts to have shown an equally dramatic change relative to the expected numbers of migrants and of summering and wintering individuals. However, on the surface this expectation does not



*Ring-billed Gulls:
adult (upper right);
immature (lower left).
Photos by Dorothy R. Arvidson.*

prove out. Both Bailey (1955) and Griscom and Snyder (1955) referred to Ring-billed Gull as a common migrant and wintering species along the coast and a recent (i.e., pre-1955) regular visitor inland in limited numbers. At that time, nonbreeding, summering Ring-bills were present, especially in the Newburyport area but were rarely seen elsewhere. Given that Massachusetts lies along the traditional migratory route, one would expect maximum counts today to be on a magnitude of at least four or five times greater than those reported in 1955. However, a casual glance at maximum counts reported in various local journals over the past decade reveals only a fifty percent increase over those of three decades ago, with just a few counts nearly double the former numbers.

How then can we account for the fact that the explosive increase in the breeding population seems not to be reflected in Massachusetts' gull counts? The answer can best be attributed to reporting apathy. If an observer checks the same field each year and it has only fifty individuals more than the previous year, the numbers might be considered near normal and unworthy of comment. Assuming there were 250 individuals in the first year, then five years later the actual numbers would have doubled but received no comment because there was no dramatic annual increase. If this hypothesis is true, is there any means by which we can document an increase in Ring-billed Gulls, or lack thereof, in Massachusetts? A logical solution is an analysis of the Christmas Bird Counts (CBCs).

Before looking at the CBC results, a few words of caution regarding the pitfalls of a strict interpretation of the data are in order, and a rationale for the method used must be given. Custom dictates that CBC results be presented in terms of birds per party hour. In this presentation, however, I have eschewed this conventional wisdom and utilized instead just total numbers, hoping to spare the reader unnecessary statistical gobbledygook. Until recently Ring-billed Gull was unusual enough inland for observers to check every gull to add an additional species to the CBC list. On coastal counts, however, it is likely that total numbers have been accurately counted or estimated regardless of the number of observers or parties involved. Counts that were continuous over the years were examined to elicit any long-term trends. Hence, the total figures presented here for all counts in Massachusetts encompass the eighteen years from 1970 through 1987, the last year for which figures were available at the time of writing. It is interesting that 1970 was only the second year (1968 was the first) that the total state count exceeded 1000 individuals (it has not fallen below that level since), and 1987 was the first time that Ring-billed Gull was recorded on all counts conducted within the state.

Ring-billed Gull as a wintering species has increased by slightly more than 700 percent from 1970 to 1987. In 1987 there were eight CBCs conducted that were not done in 1970. These eight counts, five of which were inland, accounted

for approximately one third of the 1987 total of 12,656 Ring-billed Gulls. Therefore, some adjustment should be made for this. If we extrapolate back to 1970 and add one third to that total of 1181, then the theoretical 1970 total, adjusting for the eight counts not run, becomes 1575 Ring-billed Gulls. Assuming this theoretical value has some basis in reality, then the 1970 wintering population was only 12 percent of the 1987 population. (If the eight counts not run in 1970 are deleted from the 1987 total, the percentage increase is almost exactly the same.)

A casual glance at Figure 1 and Table 1 indicates that the rate of increase in Ring-billed Gulls on CBCs has been fairly steady. Declines are apparent only in 1975, 1980, 1985, and 1986. Can these decreases be due to any identifiable

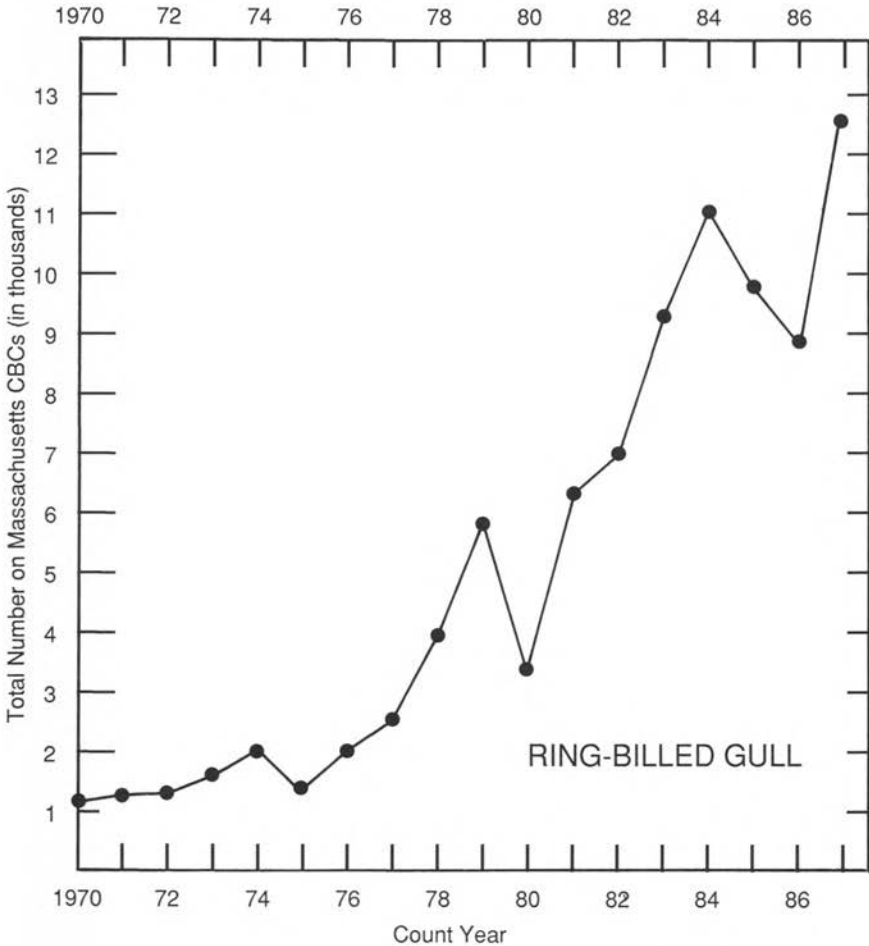


Figure 1. Massachusetts Christmas Bird Count data for Ring-billed Gull, 1970-1987.

factor—food supply, for example? An examination of feeding behavior of Ring-billed Gulls reveals that unlike the larger gulls, Ring-bills generally shun refuse dumps. Traditionally they fed at sewage outlets and along coastal mud flats where fish and other marine organisms comprised the bulk of their diet. Such traditional locations in Massachusetts include Newburyport Harbor, Plymouth Harbor, outer Cape Cod, and New Bedford Harbor. During migration in spring and fall, they also congregate in smaller numbers on cultivated fields, athletic fields, pastures, and the like, where they feed on earthworms and insects. They can be seen following plows, snatching up displaced insects. More recently and increasingly they have become acclimated to the urban and residential environment, where they frequent dumpsters and the parking lots of shopping malls and restaurants, especially fast-food establishments. Every duck-feeding area has a contingent of attendant Ring-billed Gulls. These last sites are at least partly responsible for their increase inland.

In some years a particular food item, e.g., sand lance (*Ammodytes americanus*), is so abundant that notably large numbers of Ring-bills concentrate to avail themselves of the food source while it persists. At inland locations a mild fall and early winter encourages more Ring-bills to linger, whereas a particularly harsh November pushes them farther south. A combination of food availability and weather probably determines the yearly population of Ring-billed Gulls. As a consequence annual fluctuations up or down, sometimes significant, are to be expected. Yet the general trend continues upward, reflective of the increased breeding population. A similar very dramatic upward trend over twenty-five years has been charted for the Ring-bill population on Lake Erie by Dolbeer and Bernhardt (1986).

TABLE 1. Totals for Ring-billed Gull from representative continuous CBCs at five-year intervals, 1955-1985.

Count	Year						
	1955	1960	1965	1970	1975	1980	1985
Cape Ann	1	5	0	6	13	97	132
Cape Cod	9	157	186	170	360	488	760
Concord	0	0	2	0	0	0	6
Marshfield	4	16	12	36	35	301	162
Newburyport	9	50	37	61	41	28	280
Quincy	14	18	62	191	260	637	1119
Springfield	2	0	2	11	8	14	148
Worcester	0	0	0	0	1	27	181

Ring-billed Gulls in different inland CBC areas show a pattern of sporadic occurrence for a number of years followed by a period of being continuously recorded on succeeding CBCs, but there is no consistent correlation between different inland areas. For example, Ring-billed Gulls have been recorded continuously in Springfield since 1970, in Worcester since 1975, beginning in 1978 in Millis, and since 1982 in Concord. Some rather surprising high counts have occurred inland such as Springfield where 1115 were counted in 1987 (the previous high count was 532), Worcester in 1984 where 990 were present, and Millis where 530 were seen in 1987 (previous high of 380). Inland counts began to escalate markedly in the mid-1980s.

Coastal locations are less easily analyzed since most areas have some Ring-bills with certain areas preferred over others. For instance, outer Cape Cod has always been a location favored by Ring-billed Gulls in winter, but only a few miles away on Nantucket the species was almost nonexistent until just ten years ago. At various coastal sites, mostly located south of Boston, there have been years when abnormally high counts are related to a locally abundant food supply, most likely sand lance, but other fish species might also be involved. Such inordinately large counts were made at Quincy in 1979, Nantucket in 1981 and 1982, Buzzards Bay, Cape Cod, and Quincy in 1983, Martha's Vineyard in 1984, Plymouth and New Bedford in 1985, and New Bedford again in 1987. In almost all cases these counts were more than double the figures of the year preceding and the year following the count and clearly fall outside the pattern of increase. The Greater Boston CBC which now reigns as the center of Ring-billed Gull winter distribution in Massachusetts exhibits no wild fluctuations but does demonstrate a rapid and dramatic increase since 1977 (from 302 to 2632 individuals). The random occurrence from year to year of these unusually high numbers and the widely separated geographical locations of incidence indicate the unpredictability of such locally abundant food supplies.

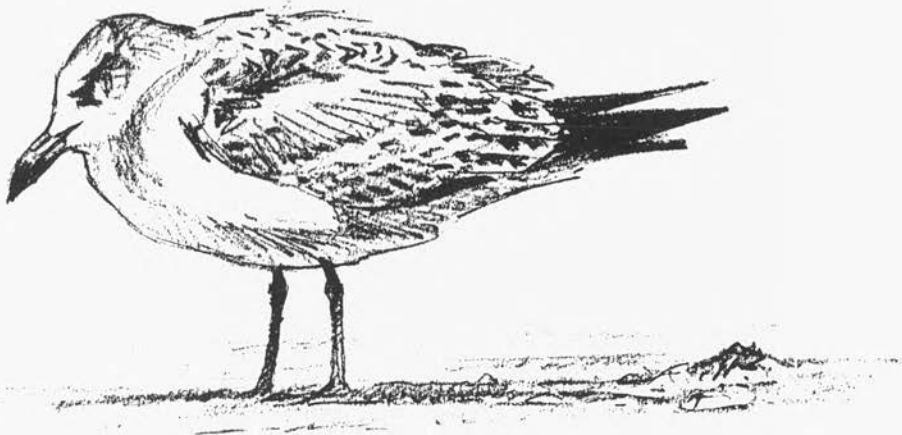
In 1950 there were 156 Ring-billed Gulls recorded on seven Massachusetts CBCs, and of that total 144 were on Cape Cod. Although the number of counts has grown to twenty-six in 1987, the total of 12,656 Ring-billed Gulls clearly reflects the tremendous growth in the breeding population to the north and west of Massachusetts. Both Ludwig and Lock suggest that the increase in number of this species will continue due to an abundant food supply, which leads to greater breeding productivity and survivability of both young and adult birds. Thus, we can expect a continued increase of Ring-billed Gull numbers on Massachusetts CBCs. Also, given the close proximity to the state of nesting Ring-billed Gulls at the present, it seems only a matter of time before the first Ring-bills colonize Massachusetts as breeders.

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Immature Ring-billed Gull

Illustration by Barry W. Van Dusen