

FLORIDA DISTRIBUTION OF RING-BILLED GULLS FROM THE GREAT LAKES REGION

BY WILLIAM E. SOUTHERN

Bent (1921) described the migration and seasonal range of the Ring-billed Gull (*Larus delawarensis*). Then, as now, the range apparently was divided into an eastern and western segment. Rarely do birds from either region cross the 96° meridian. This species has increased in abundance since Bent's writing, and corresponding changes have occurred with respect to its distribution in the eastern United States (Southern, 1974a).

A significant proportion of the Ring-billed Gulls in eastern North America breeds in the Great Lakes Region (Southern, 1974a, b, c). This species now nests throughout most of Lake Huron (53% of the population breeding in the Great Lakes), on islands in the northern one-third of Lake Michigan (19% of total), at locations in the east end of Lake Ontario (22%), and along the St. Lawrence River. One or more colonies may exist near Sault St. Marie, Michigan (Lake Superior, <1%), on Mohawk Island in Lake Erie (6%), and on the northern end of Lake Champlain (New York). The present breeding range is between 42 to 47° North latitude and 71 to 87° West longitude (Fig. 1).

The only recent distributional study pertaining to the post-breeding (i.e., winter) range was by Forsythe (1972, 1973, 1974), and this dealt specifically with the Charleston, South Carolina area. Because only 12% of the winter (January and February) band encounters for this species are from the coasts of North and South Carolina (Fig. 2), a significant portion of the winter range remains to be described. The purpose of this paper is to examine the postbreeding range and the distribution of Ring-billed Gulls in Florida, which has the largest proportion of band encounters during winter. The term band encounter has been adopted by the Fish and Wildlife Service and refers to data for dead birds (i.e., recoveries) and live individuals (i.e., reports).

PROCEDURES

To achieve this objective, I analyzed the data from over 18,000 Ring-billed Gull band encounters that were on file with the U. S. Fish and Wildlife Service Bird Banding Laboratory through the period ending 1 August 1972. Most of the gulls had been banded as chicks at breeding colonies (designated by solid black in Fig. 1). The others had been banded as subadults or adults in the same area. The relative number of band encounters for various localities was used as a direct indication of the population density of Ring-billed Gulls at those particular sites. Although errors may result at the local level from this approach, the trends indicated by the data are probably accurate.

Additional data were obtained from 6,521 reports of wing-marked (Fig. 3) adult Ring-billed Gulls. During May and June of 1967 through 1972, my assistants and I (1971) placed 2,808

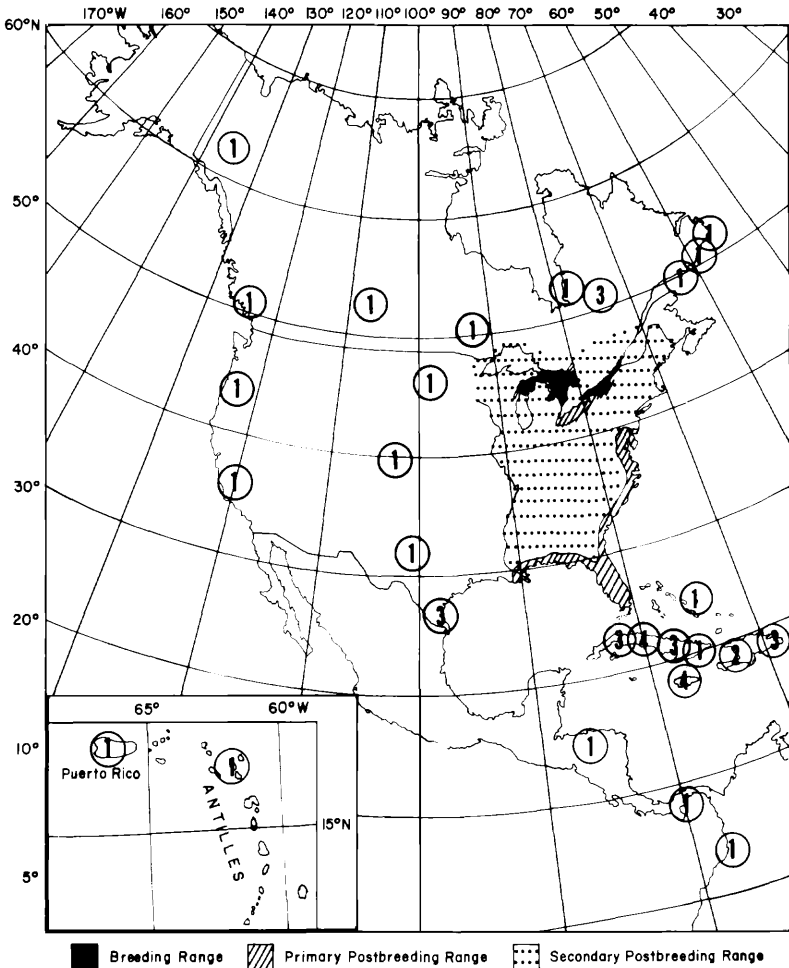


FIGURE 1. Annual range of Great Lakes Region Ring-billed Gulls. The circled numbers represent band encounters at localities outside the highly frequented portion of the range. In addition to these 45 encounters (0.3% of the total), there was one from Spain and another from Colombia.

wing-markers on adults nesting in two Michigan colonies. One of these was located on Ile aux Galets in northern Lake Michigan, about seven miles off shore from Cross Village (Emmet County). Birds from this colony were given blue markers. The other colony was situated on a man-made peninsula projecting into northern Lake Huron near Rogers City, Presque Isle County. Adults captured by cannon-nets (Southern, 1972) in this colony received orange markers. The markers remained on adults for as long as five years, although fading and wear altered the color during this period.

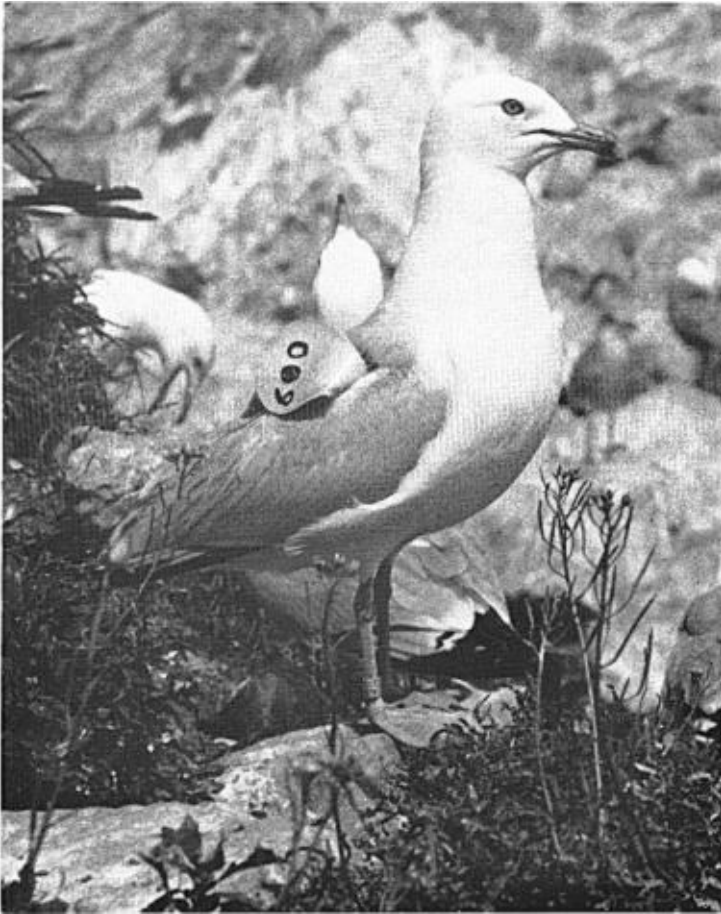


FIGURE 3. Wing-marked adult Ring-billed Gull. This tag is a bright orange which designates individuals from a colony at Rogers City, Michigan. The black numerals are used for individual recognition.

Information acquired during four trips to Florida and the adjacent postbreeding range during December through February (1967-70) have aided my interpretation of banding data. Results from the 1972 Christmas Bird Counts in Florida (Arbib et al, 1973) also were used to substantiate distributional trends.

The fact that various factors may bias any interpretation of banding data has been well documented. Any discussion of population density and annual range based on banding data is subject to error for one or more of several reasons: (1) an unequal distribution of potential reporters, (2) relative inaccessibility of some areas, (3) band wear and loss, and (4) the overall low encounter rate for banded birds. I have attempted to compensate somewhat for inaccuracies inherent in any one data set by comparing information from several sources.

RESULTS AND DISCUSSION

Schedule and pattern of post- and prebreeding migration.—Departure from the breeding colonies begins about mid-July and usually is completed by early August. During August and September dispersal is widespread over the Great Lakes Region with a tendency for Ring-bills to accumulate at the lower end of the lakes. The encounter rate for the Carolina-Georgia coastal region increases slightly during September but the rate for Florida (<1%) remains low and stable (Fig. 4). Southward migration is intensified during October with large concentrations developing on Lake Erie during November and early December. Portions of this lake represent a staging area for continued southward migration (Southern, 1974a). Weather conditions on the Great Lakes may influence departure dates, but a significant population decline usually occurs by mid-December.

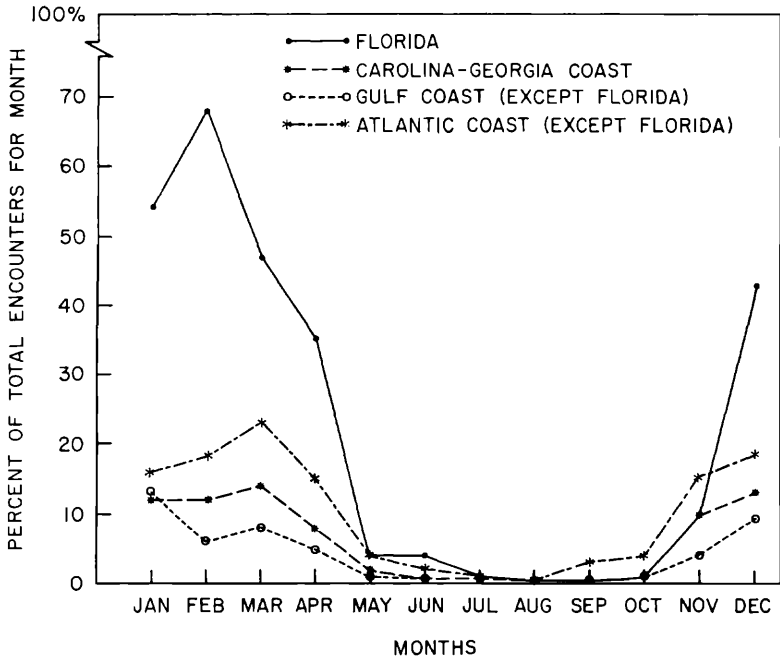


FIGURE 4. Monthly band encounter data for specific regions within the primary postbreeding range.

Band encounters from Florida and other southeastern United States localities increase during November and December, reaching a peak in January and February (Fig. 4). The latter two months represent the period when winter populations are most constant throughout the species' range. This period, therefore, is the pivot point separating the post- and prebreeding periods; during late February northward migration is initiated. During January and

February, 54 and 68% respectively, of the band encounters for the Great Lakes Region population are from Florida (Figs. 2 and 4). Other areas having a significant number of encounters include the Carolinas and Georgia coastlines, the Gulf coast to the Mississippi delta, and the lower Great Lakes (Fig. 2). A few individuals, particularly juveniles (less than one-year-old) and subadults (less than three-years-old) may move farther south to Cuba or other regions outside the usual range of the eastern population (Fig. 1).

Northward migration begins in late February, and during March and early April most adult Ring-billed Gulls leave the southern extreme of their range. Whereas postbreeding migration was casual, with some birds requiring several months to reach the southern extreme of their range, prebreeding migration is condensed into a few weeks. Florida encounters for May represent about 4% of the total for the month, whereas the Great Lakes proportion has risen to 74%. Some birds remain in Florida or other southern localities throughout the summer but these are usually subadults (up to two-year-olds) or occasionally adults that will not, for some reason, breed during that season. A detailed discussion of migration patterns and the breeding range has been published elsewhere (Southern, 1974a, b).

Postbreeding range.—Although some Ring-billed Gulls remain in northern localities throughout the winter months (the number being proportionate to the severity of the winter), most individuals migrate in a southeasterly direction to the Chesapeake Bay area, the Atlantic coast from North Carolina to Georgia, Florida, and the Gulf coast west to the Mississippi delta. These areas having the largest proportion of the encounter data have been designated as the primary postbreeding range in Figure 1. The Atlantic coast, north of Florida, accounts for 15 to 23% of the band encounters for November through March. Much of the remaining area east of the Mississippi River, and some localities in Texas, consistently have fewer Ring-billed Gulls during winter. These areas, because they have a less consistent report rate and a smaller proportion of the total encounters, are designated as the secondary postbreeding range in Figure 1. The encounter rate for the primary areas is substantial during late November through early April, with the peak rates occurring during January and February (Fig. 4). Because Florida has the highest proportion of band encounters for the breeding period, it was selected for a more intensified analysis.

Florida band encounter data.—Data from 1,060 band encounters obtained during November through April were used to describe distributional trends within the state. More Ring-billed Gulls apparently congregate on the Atlantic coast than along the Gulf coast (Fig. 5): 31 to 62% of the Florida band encounters are from east coast localities during the six months; 18 to 29% are from the Gulf coast; and 18 to 40% are from inland localities.

The recovery sites for 897 gulls reported dead during December through March have been plotted by one-half degree quadrates

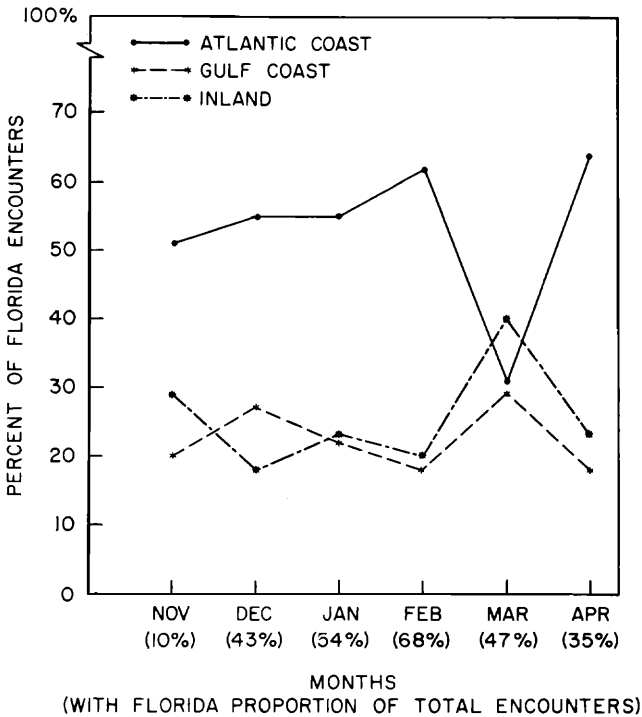


FIGURE 5. The monthly proportion of band encounters obtained from Florida's Atlantic coast, Gulf coast, and inland localities. The Florida proportion of all band encounters for the Great Lakes Region population is presented parenthetically on the abscissa.

(0.5° latitude \times 0.5° longitude subdivisions) in Figure 6. Data for November and April encounters were excluded from the figure because very few wing-marker reports were received during these two months. Areas having a large proportion of the total band encounters are evident in the vicinity of Jacksonville, Daytona Beach, and West Palm Beach to Miami on the Atlantic coast; centrally located Orlando, Lakeland, and Lake Okeechobee; and, Fort Myers, Sarasota, Tampa, and Cedar Key on the Gulf coast. These are not the only Florida localities where Ring-billed Gulls occur during the post- and prebreeding periods, but they apparently have the most consistent, and perhaps largest, concentrations. It is possible, however, that dead banded gulls are simply more likely to be spotted at these beach localities and reported, thereby biasing results. The fact that all these areas are adjacent to large human settlements increases the chances of this. Perhaps certain characteristics of these urbanized areas are particularly attractive to gulls. The tendency for Ring-billed Gulls to be attracted to sanitary landfills, for example, has been well documented by Forsythe (1974) and others.

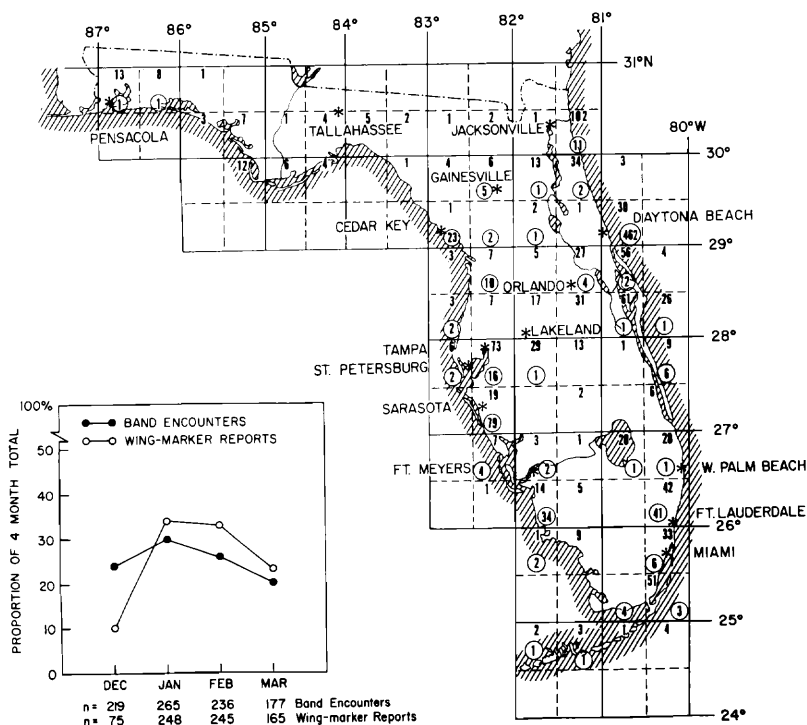


FIGURE 6. Distribution of band encounters (uncircled numerals) and wing-marker reports (circled numerals) received from Florida during December through March. The data are summarized according to one-half degree quadrates. The monthly proportions of the total Florida sample for wing-marker and band encounter data are graphically presented. Selected cities are designated by an *.

Two other Gulf coast areas, Pensacola (Florida) to Mobile Bay (Alabama) and the Mississippi Delta (Louisiana), had encounter rates ranging from 3% of the total encounters in February to 14% in November, and <1% in February to 7% in November, respectively. Encounter rates were highest for both regions early in the winter when Ring-billed Gulls were migrating southward along the Mississippi and other rivers. As winter progressed, the number of encounters decreased and by February, when peak concentrations were reached in Florida, the number of Ring-bills at each of these locations was very small. The combined rate for the northern Gulf area (Fig. 2) does not reflect this trend as well because north-western Florida was included in the calculations.

Inland band encounters from Florida are relatively numerous (Fig. 7), particularly during March (40% of the Florida total). During each month (November - April), at least 18% of the Florida band encounters were from inland sites. This may be, in part, a result of gulls concentrating near the St. Johns River and various inland lakes, some of which are 15 to 50 miles from the Atlantic

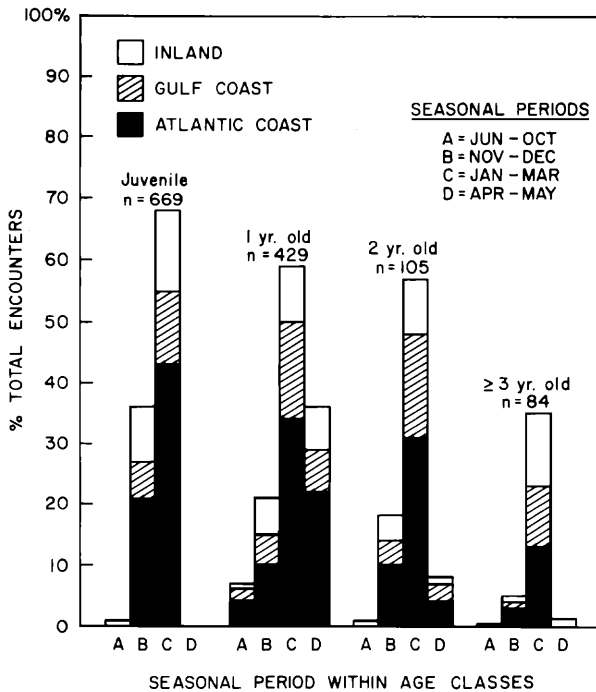


FIGURE 7. Florida band encounters examined on the basis of age, seasonal period, and Florida distribution. For the purpose of this study a gull moved into the next year class on 1 June which represents the approximate date of hatching in Great Lakes Region colonies. The seasonal periods were selected as representing significant periods in the annual cycle.

coast. Many of the inland encounters may represent gulls that ranged away from the coast to feed during these months, perhaps in association with agricultural activities. There was a noticeable increase (Fig. 5) in the number of inland encounters during March, which may be the result of one or two factors, singly or in combination: (1) increased availability of food at these locations; or, (2) intensification of prebreeding migration resulting in short term dispersal of gulls over more of Florida.

In Figure 7, the seasonal proportion of band encounters is presented for subadults (juvenile, 1-year-old, 2-year-old) and adults (3-year-old and older). Very few (1% or less) adults are present in Florida during April through October. Encounters for each age class were most abundant during January through March.

Florida wing-marker data.—Wing-marker reports were recorded from August, 1967 through May, 1973, and present a more current assessment of Ring-billed Gull distribution on the primary postbreeding range. The 738 Florida reports for November through April represent 69% of the total for the primary and secondary postbreeding ranges and 11% of the 6,521 reports received for all

months. These data are not directly comparable with those for band encounters as a wing-marked bird may be reported more than once, either at the same or different location. A banded bird, on the other hand, is reported usually only once, when found dead. Nevertheless, the data show monthly trends resembling those for banding data. In addition, information about duration of stay, return to wintering locations, and other data are available for wing-marked individuals that are not usually obtained for banded birds. These data will be discussed in a separate paper.

In Figure 6, the locations are plotted for 733 wing-marker reports received from Florida for December through March. Only four (<1% of 738) sightings were recorded during November and one was received for April. This is in contrast with the relative abundance of band encounters for these two months, 10 and 35%, respectively. The difference is probably associated with the ages of birds involved. All wing-marked gulls were adults that had been captured in a nesting colony, whereas a large proportion of the banded individuals were juveniles. Younger gulls appear to remain in the south longer and migrate northward in a more leisurely fashion (Southern, 1974a). Age-dependent migratory behavior will be discussed in another paper.

A greater proportion of the wing-marker reports was received from the Atlantic coast ($n = 541$; 74%) of Florida than from either Gulf coast ($n = 177$; 24%) or inland localities ($n = 15$; 2%) as is indicated in Figure 6. The distribution of reports is similar for banded and wing-marked birds, with the largest proportion of each coming from coastal areas. This reinforces the possibility that these localities are hosting sizable concentrations of gulls during these months. The large number of reports from the Daytona Beach area is undoubtedly associated with the relative ease with which this coastal area can be censused and the number of bird watchers roaming the beaches. At least 53 wing-marked individuals, based on carefully described marker numbers, have visited this site at least once.

Band encounter and wing-marker reports indicate distributional trends, but the number of individuals represented by each report is difficult to estimate on the basis of these data alone. I have used Christmas Bird Census data as a means of determining the actual number of gulls distributed throughout the state. In 1972, Christmas bird counts were conducted at 35 Florida localities (Arbib et al, 1973) and were made between 22 December and 2 January. As indicated earlier, this is before postbreeding migration is completed and the Florida Ring-billed Gull population is not at its peak. Nevertheless, I have attempted to compare banding results, wing-marker data, and census results by plotting the December data for each in Figure 8. This comparison of data obtained by three drastically different methods is subject to error but, at this time, it represents the best available solution to the problem.

The count summaries provide an indication of the actual number of gulls present within 15 of the 22 one-degree quadrates plotted in Figure 8 that had band encounter or wing-marker reports, or both. During the count period, 34,543 Ring-billed Gulls were reported

Longitude - Degrees West

		86	85	84	83	82	81	80
Latitude - Degrees North	31	5 (2%) 300 (1%)	2 (1%) 536 (2%)	2 (1%)	3 (1%) 250 (1%)		25 (11%) 2096 (6%)	
	30		4 (2%)	2 (1%)		2 (1%) 7 (9%) 352 (1%)	15 (7%)	2 (1%) 46 (61%)
	29					3 (1%) 1 (1%) 633 (2%)	28 (13%) 1731 (5%)	32 (15%) 2 (2%) 5231 (15%)
	28					27 (12%) 5 (7%) 8035 (23%)	5 (2%) 3401 (10%)	5 (2%) 4 (5%) 2560 (8%)
	27						4 (2%) 2 (2%) 3110 (9%)	14 (6%) 7 (9%) 1394 (4%)
	26						1 (<1%)	32 (14%) 4699 (14%)
	25						2 (1%) 1 (1%) 215 (<1%)	5 (2%)
	24							

FIGURE 8. December band encounters (top figure), wing-marker reports (middle), and Christmas census totals (bottom) for Florida. The percentage of the Florida total for each is given in parentheses after each figure. Sample sizes are as follows: band encounters, 219; wing-markers, 75; Christmas censuses, 34,543.

for Florida localities. For this same period there were 219 band encounters and 75 wing-marker reports. The actual number reported throughout Florida and the proportion of the total it represents are plotted in Figure 8. Distinct similarities exist between the three types of evidence thereby supporting the distributional trends discussed on the basis of band encounter data.

SUMMARY

A description of the winter range of Ring-billed Gulls from the Great Lakes breeding population was based on data from over 18,000 band encounters (1,060 from Florida, November-April) and 6,521 wing-marker reports. The patterns of post- and pre-breeding migration also are summarized. The data show that Florida has a larger concentration of this species (about 69%), during December through March, than any other part of the post-breeding range. This species is concentrated on Florida's Atlantic coast with 31 to 62% of the band encounters coming from there during the six months compared to 18 to 29% coming from the Gulf coast and 18 to 40% from inland localities. A similar distributional pattern is indicated by the wing-marker data; Atlantic coast, 74% of the total reports; Gulf coast, 24%; and inland sites, 2%.

Particular areas, often surrounding large metropolitan centers (e.g., Miami, Tampa), show significantly greater concentrations than less developed localities. This is especially apparent when reviewing wing-marker reports and could involve sampling bias.

Christmas Bird Census data from 35 Florida localities were used as an indication of the actual number of gulls present at sites having band and wing-marker reports.

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