

# GULLS WINTERING IN FLORIDA: CHRISTMAS BIRD COUNT ANALYSIS

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## Introduction

Christmas Bird Counts (CBC's) provide a unique data source for determining long term avian population trends over wide geographic areas (Kadlec and Drury 1968, Bystrak 1971, Schreiber and Schreiber 1973, Stahlecker 1975, Anderson and Anderson 1976).

The Herring and Ring-billed Gull (*Larus argentatus* and *L. delawarensis*) populations of northeastern United States have increased tremendously over the past 75 years (Drury and Kadlec 1974, Ludwig 1974). Many of these gulls winter in Florida, especially as immatures (Southern 1974, Moore 1976, and references therein). Little is known of the status of Laughing Gull (*Larus atricilla*) populations and their movements.

In this paper we analyze the CBC's of Florida for the past 33 years as a means of measuring the relative proportion and population status of the three common gull species in Florida: Herring, Ring-billed and Laughing gull.

## Methods

We calculated the index of birds per 10 party hours in the Florida CBC's 1943 through 1975 (Aud. Field Notes: 11-23, Amer. Birds: 25-30) as in Schreiber and Schreiber (1973) with the exception that individual counts were eliminated from analysis if the species under consideration was not seen in a given year. Including party hours for counts in which the species was not seen greatly reduces the index, especially with gulls that are not seen regularly on inland counts.

The same index was calculated and graphed for many individual count areas (St. Petersburg, Fort Myers, Sarasota, Coot Bay, Jacksonville, Daytona, Cocoa Beach) for comparison to each other and the state as a whole. We do not present these results but mention them where appropriate.

The low number of counts (5-6) in the 1940's and early 1950's probably makes these data less reliable. However, since the mid-1950's the number of counts is sufficient to give a reasonable indication of the population trends of these three wintering species.

## Results

*Herring Gull*: The Herring Gull index (Figure 1) indicates a steady wintering population over the years, although great fluctuations in individual count areas exist.

The total Herring Gull population in the northeastern United States doubled every 12-15 years from 1900 to 1940 (Kadlec and Drury 1968). During the eradication programs of the 1940's the population remained level (Drury and Kadlec 1974), and then began a slow increase to the present (Drury 1973, 1974).

Ludwig (1966) reported a near doubling of the population of breeding Herring Gulls on Lakes Huron and Michigan between 1960 and 1965, but Smith (1959) showed that few Michigan Herring Gulls winter in Florida. Kadlec and Drury (1968) indicated that the Florida winter population of Herring Gulls was a relatively small proportion of the total number of that species in the United States. However, the Herring Gull population of Florida apparently has not increased as dramatically as has the species in the breeding portion of its range. Moore (1976) showed that Great Lakes immature Herring Gulls winter mainly in Florida, while the adults stay closer to the breeding range, and our field data for the west coast of Florida agree with this. Moore also found that the winter population does not build up to a maximum in Florida until January which may contribute to the large fluctuations in December when the CBC's are con-

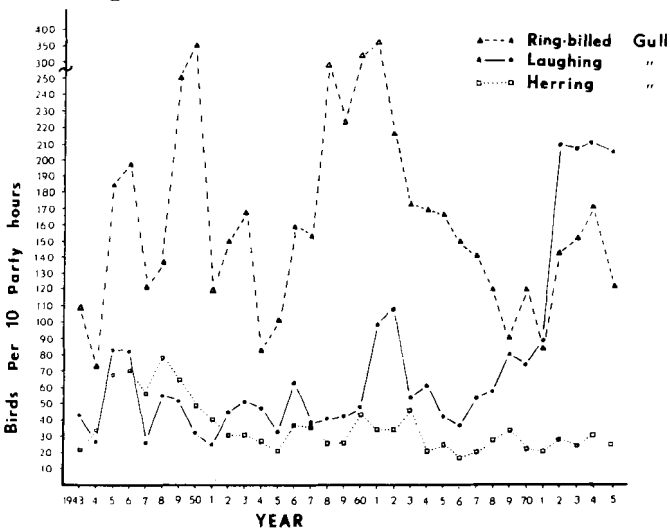


Figure 1. Christmas Bird Count indices of birds per ten party hours for three species of gulls, Family Laridae, in Florida, 1943-1975.

ducted. With the few CBC's in the 1940's, data are too few to be sure, but it appears that the gull control program in Maine during that period may have affected the Florida winter population. However, a lack of an increase in the Florida population over the past 20 years as indexed by the CBC's is surprising to us.

The numbers of Herring Gulls seen on the CBC's greatly diminish south of Sarasota on the west coast and Cocoa Beach on the east coast. There are no trends noticeable in any of the specific count areas. Wide fluctuations occur from year to year and no relation between count areas is apparent.

*Ring-billed Gull:* the Ring-billed Gull index (Figure 1) is highly variable and difficult to interpret. The Great Lakes Ring-billed Gulls concentrate in Florida during the winter (Southern 1974) and it is safe to assume that most of them found in Florida come from the Great Lakes colonies. From the CBC's it is tempting to suggest a 10-12 year population cycle for this species but we believe that to be spurious. Probably the high indices of 1949 and 1950 are artifacts of few counts and few hours in the field. Ludwig (1974) indicates a stable breeding population in Lakes Huron and Michigan between 1940 and 1960. This stability is not reflected in the Florida CBC's or in any of the individual count areas.

Between 1960 and 1965 Ludwig (1966, 1974) reports that the Ring-billed Gull populations of Lakes Huron and Michigan grew from 27,000 to 90,000 breeding pairs and the fledging rates were high. During this time and for 5 years after, the wintering populations of Ring-bills in Florida declined. Then in the 1970's numbers increased somewhat.

We are unable to interpret the wintering population fluctuations indicated for this species in light of what is known of its breeding status. Many fewer Ring-bills winter on the east coast of Florida than on the west coast. Jacksonville and Cocoa Beach counts are somewhat parallel; Sarasota and Fort Myers show similar trends in a few years; but St. Petersburg and Coot Bay counts, inexplicably are almost exactly parallel. A general increase on the west coast counts from 1950 to 1961 occurred and then declined to 1969. 1969-1975 show drastic fluctuations. No trends are indicated on the Florida east coast.

*Laughing Gull:* With exceptions (1945, 1946, 1956, 1961, 1962), the Laughing Gull index (Figure 1) is quite consistent from the 1940's to 1966. The exceptions are due to great fluctuations in different areas, not in any single count. After 1966 a dramatic increase occurs, more than tripling the population by 1972 and remaining at that level for the last four years.

Nisbet (1971) documented the decline of Laughing Gulls in New England from peak numbers in the late 1930's with a steady decline in breeding numbers through the 1940's, 50's, and 60's. This decline is reflected in the Jacksonville area counts but not in any of the other east or west coast counts, perhaps indicating that New England Laughing Gulls winter south along the Atlantic coast only as far as the Jacksonville area. No apparent change has occurred in the much larger Laughing Gull populations of New Jersey and Virginia (P. Buckley, pers. comm.) but few published data exist on these or other Laughing Gull nesting areas.

Laughing Gulls were once an uncommon breeder in the southeastern United States (Sprunt 1954). Our data (unpublished) for Tampa Bay and Charlotte Harbor indicate a huge increase in the nesting population from the mid-1960's to the mid-1970's, but few other data document this increase. The increase has been primarily in metropolitan count areas (St. Petersburg, Tampa, Dade County, Naples, Cocoa Beach, Sarasota) and Coot Bay, with several counts reporting only a few or hundreds of Laughing Gulls in the early 1960's but thousands or tens of thousands in the 1970's. Band recoveries (unpublished) from birds we banded in Tampa Bay and Charlotte Harbor (1972-1976) indicate that these birds are dispersing all over peninsular west coast Florida in the winter and some go into the Caribbean. Only 2 recoveries are from Florida's east coast.

We suspect that an increase in the amount of food available in garbage dumps and in use of these garbage dumps by Laughing Gulls in Florida is related to the increase in population. If true, this increase would closely parallel in causes that of the Herring Gull population in the northeast United States (Kadlec and Drury 1968). The use of dumps by gulls in Florida deserves further study.

Analyses of individual count areas for each species do not show shifts in population concentrations from year to year except very sporadically. More noticeable are similar fluctuations over short periods between two areas, indicating a general rise or fall of the population in a broad geographic area. An analysis of the total numbers of each species counted and total hours in the field showed a steady increase over the years, except in 1954-55 and 1964-68 when the numbers of all 3 gull species remained stable while hours in the field continued to rise.

## Discussion

We find the Christmas Bird Count data for the 3 most common gulls wintering in Florida difficult to interpret and present this analysis in part as a caution to others attempting similar studies. We believe

that CBC's can in some cases be extremely useful as an index to population trends of certain species (i.e., Brown Pelicans; Schreiber and Schreiber 1973, Anderson and Anderson 1976). However, as with all new methods, a need for caution exists in the use of CBC's and the means of analysis.

The potential problems are illustrated here most obviously in the Herring and Ring-billed Gulls, species whose breeding status is well known. The Florida CBC's, either for individual counts or for the whole state, do not reflect the known breeding status of these species. Perhaps this results because the species are so wide ranging. We know that most Herring Gull immatures from the Great Lakes spend the winter in Florida, and since Florida is a large geographic area readily used by gulls we would expect the winter population to reflect the breeding status of birds. Perhaps their large numbers work against accuracy of actual counts and reflect more clearly the count participants' greater interest in listing numbers of species rather than in careful counting of each species.

When analyzing CBC's it is probably impossible to take into account all factors that can influence individual counts: number of parties, hours spent by each party, hours spent in suitable habitat for the bird under study, number of people in each party, ability or inclination of the participants to count or estimate large flocks, organization of parties in count areas, use of boats and other vehicles, knowledge of where gulls are found, weather conditions (both local on count day and of a larger area as it might affect fall migration), and if the count is done on a weekday or weekend (garbage dumps, where gulls feed, are usually covered and inactive on weekends). Further analyses, as well exemplified by Anderson and Anderson 1976, must take into account some of these factors.

Count areas where one person is in charge over a period of years are probably more reliable as trend indicators than those in areas where the organizer changes from year to year. Analyses of individual counts for birds like gulls, that range widely and erratically, are almost useless. Even in this analysis, where we used the whole state, it is obvious that the population trends are hidden. Perhaps indices of some bird populations cannot be obtained through a late December census when the fall migration has not been completed. Probably the total range of these species must be considered for accurate population monitoring.

We believe CBC's are a valuable resource in monitoring bird populations and we emphasize the need for consistent, careful counts. With bird species as large, conspicuous, and easily counted as are the gulls, we encourage participants in the CBC's to COUNT or estimate populations as accurately as possible since their data are going to be used for scientific studies of bird populations. Records of age-class

distributions of the various species would add importantly to the value of the Christmas Bird Counts.

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