

THE POTENTIAL OF CHRISTMAS BIRD COUNTS FOR MONITORING PRESENCE OF EXOTIC BIRD SPECIES

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Abstract: The 1975 Christmas Bird Count was divided into 10 blocks, each comprising 100 observation units, encompassing the continental United States and Alaska. A random sample of 10 observation units was drawn from each block, assuring an even distribution over the continental United States and Alaska. Nine major metropolitan areas which were not drawn in the random sample were also studied. Each unit in the sample was examined for each of the years 1956, 1966, 1973, 1974 and 1975. The occurrence and number of each was recorded for all sample units for all years. Results indicated that a total of 30 exotic bird species were observed in Christmas Bird Counts. The greatest variety of species was found around the major cities studied especially Miami, FL. and Los Angeles, CA. The most abundant and widespread exotic species were the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), pheasant (*Phasianus colchicus*), cattle egret (*Bubulcus ibis*), and house finch (*Carpodacus mexicanus*). The present survey did not indicate that all known exotic bird species were detected in Christmas Bird Counts. Nevertheless, Christmas Bird Counts could be a valuable means of monitoring the presence and possible abundance of exotic bird species provided that it is recognized that failure to detect species is not necessarily indicative of the absence of those species.

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Birds comprise a large proportion of the vertebrates imported into the United States annually. Data on imported birds have been analyzed in recent years in terms of numbers and taxonomic classification of species imported (Banks 1970; Banks and Clapp 1972; Ciapp and Banks 1973a,b; Clapp 1975). Based on the classification of species recently imported it is noted that the majority of birds are destined for the pet trade. Birds distributed to the public often escape. Considerable evidence of the escape and subsequent establishment of introduced species is available from the literature (Phillips 1928; Cooke and Knappen 1940; Bull 1973; Hardy 1973; Owre 1973; Fisk and Crabtree 1974).

Many of the most serious vertebrate pests in North America are introduced species. Some of the problems of introduced species have been discussed by Scanlon et al. (1976) and several recommendations were made. Among these was the need for periodic or continued monitoring of local faunas for presence of introduced species. However, such monitoring is likely to be expensive. Christmas Bird Counts are organized and conducted annually by the Audubon Society on a nationwide basis and results are published in the journal *American Birds*. These may be useful as a source of published data for indicating the presence of introduced species. The present report is an evaluation of Christmas Bird Counts as a potential means of monitoring presence of introduced species.

MATERIALS AND METHODS

The 1975 Christmas Bird Count for the Continental United States and Alaska was taken and divided into 10 blocks each representing 100 sets of count centers. Then 10 count centers were randomly drawn from each block giving a sample size of 100. The location of sampling points is shown in Fig. 1. The Christmas Bird Counts for each of these count centers were examined for records of known introduced species. Records for the years 1956, 1966, 1973, 1974, and 1975 were studied and were obtained from the appropriate issues of *American Birds*. Data were recorded for each area on exotic species of birds recorded.

Additional data were also recorded for all Christmas Bird Counts in major metropolitan areas as follows: New York City, NY; Boston, MA; Washington, D.C.; Jacksonville, FL; Miami, FL; and neighboring cities; Detroit, MI; New Orleans, LA; Los Angeles, CA; and San Diego, CA. All available count centers in these cities were examined.

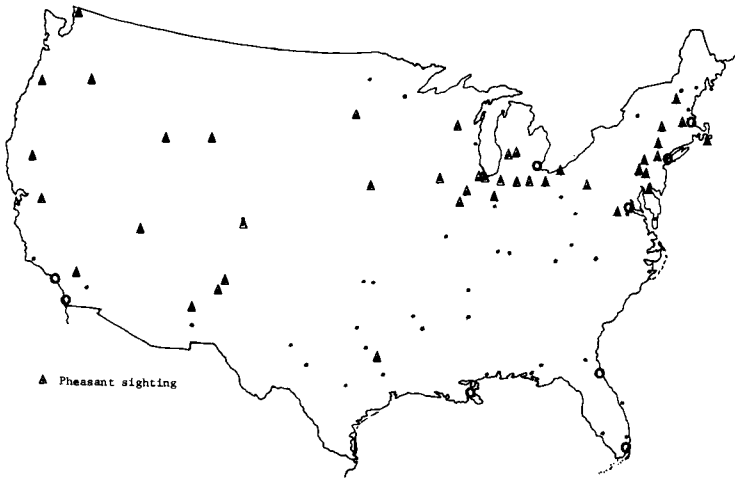


Fig. 1. Observations of ring-necked pheasants in Christmas bird counts. Locations of all Christmas Bird Counts in sample are shown.

RESULTS AND DISCUSSION

A total of 30 exotic bird species was seen in Christmas Bird Counts. Many of these had been introduced as game birds and their sightings were either sporadic or confined to the habitats into which they were introduced. European sparrows, starlings, and rock doves (*Columba livia*) appeared to have been universally distributed throughout the areas studied. Rock doves were not recorded in Christmas Bird Counts prior to 1975 though they were present almost universally prior to that time.

Observations of ring-necked pheasants (*Phasianus colchicus*) are shown in Fig. 1. The range within which observations were made corresponds appropriately to the known range where introduction has been successful.

The cattle egret (*Bubulcus ibis*) is a species which has introduced itself into the United States during this century. An analysis of Christmas Bird Counts indicated that in the eastern half of the U.S., sightings were confined largely to Florida and the Gulf Coast area (Fig. 2). West coast observations were confined largely to southern California.



Fig. 2. Observations of cattle egrets in Christmas bird counts.

As this species is migratory and its distribution varies seasonally, Christmas Bird Counts are of limited use in determining its range on a year round basis but may have greater potential for monitoring winter populations.

The house finch is a western species which was released in the New York City area during the 1940's. Christmas Bird Counts were useful in delineating the increasing range of this species over the 20 yr period 1956-1975 (Fig. 3).

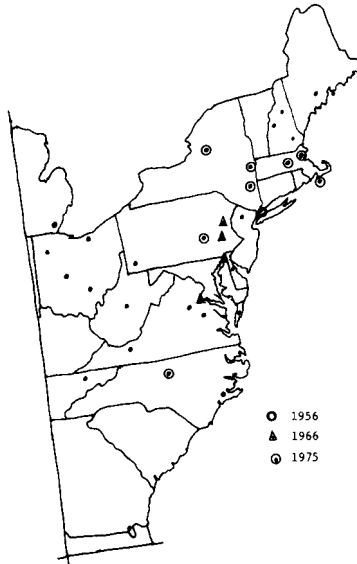


Fig. 3. Change in the range of the house finch 1956-1975 in Eastern U.S.

Numbers of exotic bird species in the 9 major city areas examined are shown in Fig. 4. Data are available in the literature on exotic species in New York (Bull 1973). Obser-



Fig. 4. Numbers of exotic species seen in Christmas bird counts in nine major metropolitan areas.

vations of exotic species recorded in Christmas Bird Counts for all these areas underestimated the number of exotic species known to exist in all areas. In any event records in Christmas Bird Counts indicate the continued presence of species.

The chief advantages of utilizing Christmas Bird Counts for monitoring the presence of exotic species are that they mobilize large numbers of competent observers and the data are available inexpensively. Disadvantages include the facts that the Christmas Bird Counts are not designed for monitoring exotics, therefore data collected have considerable limitations for later statistical interpretations due to variance in numbers and distribution of observers and changing weather conditions. Some species are migratory and, therefore, their ranges may not be readily determined from Christmas Bird Counts. There is also the possibility that some observers may ignore observations of exotic species. Additionally, data on rock doves were not included in earlier Christmas Bird Counts. Some limitations on data concerning primarily urban birds might be expected.

Despite the disadvantages, Christmas Bird Counts have considerable potential for monitoring presence of many exotic species. At least they are sources of reports of continued presence of species. From the quantitative standpoint, changes in populations could probably be monitored using appropriate normalization of data on number of observers, time spent on observation and distances traveled in making observations.

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