

## SOME RESULTS OF A BIRD CENSUS.

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On April 10 and May 22 of 1926, a bird census was taken in Bloomington, Indiana, a city whose population is 15,000 and whose area is approximately 1,500 acres. Some of the results of this census are of general interest.

The observations were made by a class in ornithology, all of whom had had one or more years of university training. Fifteen were distinctly superior students. Six could recognize 50 or more birds when they entered the course. The class had worked intensively on birds since February 1.

Certain streets were selected at approximately regular intervals. Two or four students were assigned to a street. Usually two worked on each side. The birds were identified and counted on the street and the lots abutting. Six streets running east and west and six streets running north and south were used. The sections between each intersection were counted and calculated separately. Two sources of error are apparent. Some birds may have been missed and some birds may have been counted twice. These two sources of error tend to correct each other. How nearly they balance can not be determined.

The birds were assumed to be evenly distributed on each side of a street to a line bisecting the area between it and the adjacent parallel street along which counts were made. These areas are rectangles and from a map of known scale the number of birds in each area and the total for the city were calculated.

Meadow larks, mocking birds and a few others were seen only near the edge of the town. The identification of the vireos and warblers by some of the class could not be relied upon absolutely. By May 22 the leaves added to the difficulty of identification of these forms unless the song was known. Some species like the martins occurred very locally.

Omitting these three groups, there remain eight species that were numerous and generally distributed. They constituted more than 90 per cent of the total.

These eight species were the imported English sparrow, *Passeres domesticus domesticus* L.; the robin, *Planesticus migratorius migratorius* L.; the northern flicker, *Colaptes auratus auratus* Bangs; the jay, *Cyanocitta cristata cristata* L.; the bronze grackle, *Quiscalus quiscula aeneus* Ridgway; the mourning dove, *Zenaidura macroura carolinensis* L.; the brown thrasher, *Toxostoma rufum* L.; and the catbird, *Dumetella carolinensis* L.

Table I shows the total number of these eight species for the whole area on the two dates. In the last column is given the percentage of increase or decrease and in column one is indicated the number of eggs each species lays.

TABLE I. Total Number of Birds for the Area Covered

Kind	No. Eggs	April 10	May 22	% Change
English Sparrow	6-9	3,675	11,655	217
Robin	4-6	735	1,168	58
Flicker	5-9	84	72	-14
Jay	3-6	118	439	270
Grackle	4-7	214	568	165
Dove	1-2	37	400	981
Thrasher	4-5	22	106	290
Catbird	4-5	13	433	3307

NOTE: Dove and Catbird evidently influenced by migration.

The decrease in the number of flickers may be accounted for by the fact that some were laying and others incubating on the last date. Since the flickers nest in holes the incubating birds could not be observed.

Besides the destruction by cats and other enemies, the major factors that influence the number of birds in our latitude during April and May are migration and reproduction.

Migration is clearly a very potent factor in the case of the dove and the catbird. The doves in part at least may simply have migrated from the field of the surrounding country to the towns to nest, since flocks of doves had been observed in these fields since February.

If a pair of birds produce four young the increase in population would be 200 per cent. This is most nearly approximated by the English sparrow, jay, grackle, and thrasher.

TABLE II. Comparison of Bloomington records with those reported by Forbes for Illinois

	Urban	Rural	
	Bloomington	Illinois	Illinois
		Autumn	Summer
English Sparrow	4,975	295	117
Robin	711	11	16
Flicker	30	11	16
Jay	187	10	.....
Grackle	241	94	75
Dove	170	33	38
Thrasher	45	.....	8
Catbird	197	.....	.....

In the fall of 1906 Forbes sent two observers into the field from August 28 to October 17. They made a quantitative estimate of the bird population of the state on a cross-section of the state at the latitude of Danville and Quincy. The following summer they made a similar estimate on a longitudinal section of the state. Seven of the

eight birds here considered are in their lists. I have reduced all observations to number per square mile. The numbers so obtained are given in table II. The nearest approach to equality is in the case of the flicker. The number for the town was nearly twice that observed in the country. There were nearly 17 times as many English sparrows in the town as were observed on the Illinois farms.

TABLE III. Total bird population per square mile.

Bloomington (May) .....	1,359
Illinois (June, July, August).....	527
Illinois (August, October).....	579

The total bird population per square mile is given in table III. This indicates that there were more than twice as many birds in the area here considered than in the rural Illinois area.

Granting that the data in both cases are reliable, it means that either the general avifauna has increased from 1906 to 1926, for which there is no corroborative evidence, or that the bird population is denser in the town, at least during the spring. All the species under consideration nest in trees. The town in which the observations were made has more trees and shrubs than any adjacent area. Whether this density of bird population is maintained during the summer is not known. A midsummer census would yield significant data.

The observations here presented indicate that some birds do "come to town" to nest. They also indicate that nesting sites must be provided if tree nesting species are to be attracted and maintained near cultivated fields.

