

less together during the non-breeding season and, with additions to and subtractions from the group, reassemble in the same colony season after season. This aggregation is little or not at all dependent upon family relationship.

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NOTES ON THE MIGRATION OF BLUE JAYS

By GEOFFREY GILL

A CERTAIN amount of doubt obscures the movements of Blue Jays, (*Cyanocitta cristata*), particularly in the states bordering the Atlantic Coast. In an endeavor to shed some light on the question, twenty members of the Eastern Bird Banding Association have submitted to the writer for compilation, their records of 2,830 Blue Jays banded during two to twenty-six years previous to 1941.¹

In analyzing records of such volume, collected from different localities, each with their different respective factors, it is freely admitted that the records cannot always be listed in strictly comparable categories. Nevertheless, trends, pointing to certain conclusions, appear so persistently throughout the entire analysis as to make this summary of interest.

Inasmuch as these operators banded Blue Jays as a part of their usual catch and none of them specialized in such banding, certain rules must be observed in interpreting the data. With few exceptions, no records of the probable age of the birds, at the time they were banded, were made by these banders. This handicaps conclusions to a degree as it is the writer's belief that age has a direct bearing on the migration of this species. In lieu of definite data in this respect the writer has imposed a rule whereby it is assumed that the Blue Jays banded in Eastern Pennsylvania, New Jersey and southern New York, previous to June 15th were at least one year old when banded, and all birds banded between this date and the 15th of October were birds of the year, unless the bander specified otherwise. Individual birds caught after the 15th of October are assumed to be either older residents or migrants from a northern area of unknown age.

One of the most interesting facts about this collection of data is the paucity of recoveries of such a showy, noisy and well-known bird. Only 51 recoveries are reported by the twenty collaborators. These recoveries can be divided into three classifications, those

¹The writer wishes to express his appreciation to the members of the Eastern Bird Banding Association who have so kindly co-operated with him in the preparation of this paper.

that show a southward movement in the autumn, those that show a northward movement in the spring, and a third group, made up of older birds, which show little or no movement from their place of banding in any season.

The first group, showing a definite migratory trend to the south in the autumn, are as follows:

<i>Date of Banding</i>	<i>Place of Banding</i>	<i>Place of Recovery</i>	<i>Date of Recovery</i>	<i>Approx. Miles</i>
Aug. 8, '33	Montvale, N. J.	Carrborro, N. C.	Feb. 1, '34	500 SW
Jul. 27, '35	Montvale, N. J.	Leesville, S. C.	Jan. 29, '36	678 SW
June 4, '29	Montclair, N. J.	Sumter, S. C.	Jan. 12, '30	647 SW
Sept. 9, '39	Wyncote, Pa.	Woodruff, S. C.	Feb. 20, '40	548 SW
May 5, '38	Huntington, N. Y.	Quakertown, Pa.	Nov. 1, '38	115 SW

It should be emphasized that the above recoveries have all been reported within approximately six months of the time they were banded. It should be also noted that with the exception of the Montclair and Huntington birds, all the above birds are probably young of the year, pointing to an extensive migration for the younger individuals. In regard to the Huntington bird, complete data relative to the recovery are available. This bird was reported by a school teacher as found sick by one of her pupils who brought it to school where it died the next day. This bird was adult when banded and had traveled only a short distance compared to that of those banded when probably young birds. This would bear out the theory advanced by the present writer.

The next group of recoveries show a definite movement to the north in the Spring of the year:

<i>Date of Banding</i>	<i>Place of Banding</i>	<i>Place of Recovery</i>	<i>Date of Recovery</i>	<i>Approx. Miles</i>
Feb. 17, '37	Washington, D. C.	Providence, R. I.	May 15, '38	408 NE
Jan. 17, '39	Washington, D. C.	Asbury Park, N. J.	June 23, '39	192 NE
May 7, '36	Wyncote, Pa.	Freeport, N. Y.	June 2, '36	108 NE
May 22, '36	Wyncote, Pa.	Sea Cliff, N. Y.	May 21, '39	116 NE
Oct. 29, '38	Elmhurst, N. Y.	Seekonk, Mass.	Oct. 15, '39	145 NE
Oct. 21, '35	Elmhurst, N. Y.	Amagansett, N. Y.	Jan. 22, '38	90 E
Apr. 29, '29	Wyncote, Pa.	Elizabeth, N. J.	Aug. 16, '30	79 NE
Oct. 6, '38	Demarest, N. J.	Lincoln, Mass.	May 29, '40	210 NE
Dec. 3, '39	Demarest, N. J.	Bethel, Conn.	May 18, '40	81 NE

The two Elmhurst recoveries show a northward movement, but the date of their recovery is most unseasonal. The first recovery was killed by an automobile and may have been ailing at the time. At least, if a migrant, the bird was traveling much slower, than in the previous year, to be in Massachusetts in October. The second Elmhurst recovery was "found dead" in January, twenty-seven months after banding and was probably an older resident of the area in which it was found and no longer migrated to any extent, or else the bird could have been dead for several months before

being found. An instance of this "found dead" type of recovery was investigated by the writer in respect to one of his banded Blue Jays. The remains, a skeleton and some feathers, pointed to a demise two or more months previous to the reported date of the discovery.

The third and largest group of recoveries show slight movement from the place of banding and in the majority of cases, show a longer period of time elapsed between the dates of banding and the dates of recovery. They are as follows:

Date of Banding	Place of Banding	Date of Recovery	Place of Recovery	Approx. Miles	Approx. Age Yrs.
May 7, 1935	Pequanock, N. J.	Jan. 15, 1937	Lincoln Park, N. J.	5	2½
Aug. 8, 1933	Montvale, N. J.	May 15, 1935	Pearl River, N. Y.	2	1½
July 27, 1935	Montvale, N. J.	June 28, 1940	Montvale, N. J.	½	5
Aug. 30, 1935	Montvale, N. J.	Dec. 14, 1938	Pearl River, N. Y.	2	3½
Aug. 1, 1936	Huntington, N. Y.	May 4, 1940	Huntington, N. Y.	½	4
May 18, 1935	Montclair, N. J.	July 1, 1939	Passaic, N. J.	5	5
Dec. 28, 1933	Montvale, N. J.	Aug. 20, 1934	Pearl River, N. Y.	2	1
May 9, 1929	Wyncote, Pa.	July 7, 1930	Weldon, Pa.	5	2
Aug. 22, 1934	Wyncote, Pa.	Apr. 1, 1938	Elkins Park, Pa.	2	3½
Oct. 14, 1934	Elmhurst, N. Y.	June 10, 1937	Forest Hills, N. Y.	2	3
Aug. 23, 1934	Elmhurst, N. Y.	Mar. 15, 1935	Brooklyn, N. Y.	5	1
Oct. 15, 1938	Elmhurst, N. Y.	Nov. 20, 1939	Freeport, N. Y.	18	1½
Oct. 3, 1928	Speonk, N. Y.	June 20, 1932	Speonk, N. Y.	½	4
Apr. 17, 1929	Speonk, N. Y.	Apr. 2, 1932	Speonk, N. Y.	½	4
June 3, 1929	Swarthmore, Pa.	May 12, 1934	Swarthmore, Pa.	½	5
Feb. 16, 1926	Demarest, N. J.	Oct. 12, 1928	Demarest, N. J.	½	3
Nov. 28, 1925	Demarest, N. J.	July 27, 1929	Demarest, N. J.	½	4
Dec. 27, 1933	Demarest, N. J.	Jan. 23, 1936	Demarest, N. J.	½	4

With this last group of recoveries, attention should be called to the fact that the age of the bird when recovered is estimated from its probable age when banded and undoubtedly is greater in many cases than the age shown.

The above group of recoveries when considered with 272 returns, showing older individuals present at the home banding station in all seasons of the year, evidences a sedentary trait with advancing years in this species.

Nineteen other recoveries are reported from these operators, but these recoveries are of birds found dead within a month or two following banding and within a short distance of the banding station. It is considered that such have little or no bearing on the matter under discussion.

Further evidence that Blue Jays migrate is given by a chart showing the number of Blue Jays banded by months at each of these stations. At all stations that are continuous in operation throughout the year, there is a decrease in the number of new birds banded from January, reaching a low point in March or April, when few or almost no new birds are taken in the traps. With the advent of May the catch spurts up to a high point with less appearing in June until in July the catch again swings up due to an influx of birds of the year. This is carried on through August and is assisted by birds, presumably migrating in September and October,

followed by a rapidly declining catch until the following May.

The report of a banding station in western South Carolina, not far from the area in which the group of southern recoveries were reported further bears out the migratory theory. The catch of new birds at this station is highest consistently in the winter months when the northern Blue Jays are at the southern part of their winter range. It is also interesting to note in the data supplied by this South Carolina collaborator, that the 467 individuals banded have produced only thirteen returns. This is considerably below the northern return average. Seven of these birds returned in the winter months and, significantly, none have returned more than once, and all that did return to the southern station returned in the year following banding.

As a comparison with the scarcity of returns from birds banded in the south, a station can be cited in northern New Jersey which has banded 485 Blue Jays and obtained 66 returns and nearby recoveries. At the writer's own station on Long Island, New York, the banding of 328 Blue Jays has produced 41 returns.

In *BIRD BANDING*, Vol. VII, No. 4, October, 1936, Dayton Stoner cites a Northern Blue Jay, obviously a bird of the year, recovered 475 miles south of its place of banding. In recent correspondence with Dr. Stoner, he reports that he also captured, on May 10, 1927, a Blue Jay banded the previous August by an operator 110 miles east of his station. Both these instances lend weight to the theory that the younger members of this species migrate.

Numerous letters from correspondents throughout the area report large but loosely formed flights traveling in a single direction in the autumn. As an example, I quote the findings of Mr. Forrest A. Dilling of Bowmanville, Ontario, Canada:

"On September 22, 1940 I observed a flight of approximately 800, flying quite low, just above the tree tops and in a straggling manner, resting occasionally for a few minutes, and then continuing on their way. They were proceeding in a westerly direction about one and one half miles from Lake Ontario. I also witnessed a flight one week later on September 29, 1940, of approximately 500 in the same location and under the same conditions as already mentioned. Each year for the past five years, I have observed this movement at approximately the same date."

In conclusion, from a study of the data available to the writer, it can be said that comparatively few recoveries are reported concerning this showy and often much maligned species. That it is probable that a migratory movement does occur among this species, particularly among the younger birds, and that with advancing age, Blue Jays become more a resident of their nesting area and less prone to desert it due to weather conditions, except in the extreme northern part of their range.

Huntington, Long Island, New York.