

## SOME SECONDARY RESULTS OF BIRD-BANDING

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BIRD-BANDING is yet so new a study that it is perhaps too soon to state the primary objects, unless we accept what has first been suggested. The first idea, no doubt, was to learn whether the birds would return to the same place another year. This was followed by questions relating to length of life, winter habitat, plumage-changes, mating-habits, local range, etc.

I believe that the chief idea in my title is that the increased observation which comes from regular trapping produces a number of incidental results. I have kept rather sketchy migration-lists for many years, as I suppose thousands of other people have. These records came from the daily house-to-office walk of half a mile in the outskirts of the city, supplemented by a weekly hike in the surrounding country and by frequent half-hour or hour morning walks about the campus and gardens. How often I realized that these gave only glimpses of the passing review, and wished for time to make the weekly trip a daily one! Regular attention to a line of traps through the gardens has provided such an opportunity but with restricted range.

Trapping has distinctly extended the migration dates, both through closer observation and through birds captured. The trap, to be sure, cannot be depended upon to secure the first arrival, but it is constantly ready and has more opportunity than the eye, which is present for only brief periods. Sometimes the first or last record is a bird seen during the rounds, but very often it is a captured bird, and not infrequently one which might have been questioned without positive identification. Trapping has given me definite expression of the abundance of certain species in different seasons. It has furnished a much better idea of the abundance of the Fox Sparrow, and has shown that the White-crowned Sparrow is more common here than I had thought, most of the specimens, however, being the Gambel's subspecies.

Tree Sparrows have been rare birds in my traps; so it was a double surprise to take one on September 30th this year, two days earlier than I had recorded it before. Last spring at Jamestown, North Dakota, Mrs. A. W. Guest captured a Harris's Sparrow three weeks in advance of their usual arrival. My own fall arrival records of Harris's Sparrow are interesting. They began in 1922, and the first years ran: September 29, 25,

28, and 22. With trapping they became: September 19, 18, 16, and 15.

The recording of the first or last bird is of less importance than finding the dates of the principal movement or of the individual "waves" during the migration. Here regular trapping serves indirectly by observation as well as directly by its results. The latter point has been discussed in some detail by Mr. J. T. Nichols; so I can scarcely claim its discovery. The value of regular trapping during migration will bear repeated emphasis. The lean days are just as important as the fat ones, and days when no trapping is done must be carefully noted. General observations are essential to confirm and interpret the results. Repeated removal of those individuals which form the trap habit becomes tiresome, but the preservation of all records is needed to make the results as useful as possible.

The great majority of trapping stations may be limited in their scope and unable to take migrants in large numbers. The work of these stations is none the less valuable. Intensive work with a small number of resident birds should produce relatively large results. For those who have the opportunity the quantitative study of migrations presents an important field. Attention may be called to the fact that the appearance of migrants in unfrequented places is most likely to occur during their greatest abundance. The Junco migration covers a long period, but the principal period is short. We had observed that few appear in our backyard except when they are present in large numbers. In the spring of 1929 they visited the yard in numbers only from April 7th to 13th, though the whole period extended from March 17th to May 12th.

When one attempts to present such results graphically, he is likely to be surprised at the quantity which is needed to make a satisfactory picture. It may be worth while at times to use the combined results from different species. A year ago I became interested in tabulating my results in the following manner. These include all species, but Harris's and White-throated sparrows are very predominant.

TRAPPING RESULTS AT FARGO, NORTH DAKOTA IN 1929

Sept.	13	14	15	16	17	18	19	20	21	22	23	25 $\frac{3}{4}$	29	30
New birds banded	6	9	20	19	17	11	14	5	6	8	11	32	28	32
Old birds repeating	1	2	5	3	10	12	11	17	15	22	15	7	7	13
New birds repeating	1	0	3	3	1	1	0	0	1	1	1	2	0	4
Duplications	9	1	1	2	4	7	6	13	12	20	9	7	3	8
Total	17	12	29	27	32	31	31	35	34	51	36	48	38	57

	Oct.	1	2	3	4	5	6	7	8	9½
New birds banded	35	36	14	14	39	31	19	11	2	
Old birds repeating	20	32	14	21	22	12	15	12	17	
New birds repeating	5	5	3	3	2	8	5	1	2	
Duplications	15	34	20	26	31	24	22	12	7	
Total	75	107	51	64	94	75	61	36	28	

This record is continuous and regular except for a period of wet weather which caused an interruption on September 24th and before the end of the day on the 25th, until the 29th. An other interruption occurred October 9th to 12th, and, as shown by previous years, this is about the close of the main migration period, except for the Juncos.

These figures show a number of things. It is interesting to note that only about 12 per cent of the total number repeated the same day that they were banded. (Approximately 50 per cent of all Harris's and White-throated Sparrows repeated in the fall of 1928, 37 and 47 per cent respectively in 1929.) Birds entering the traps more than once a day have furnished about one third of the total number of records. The number of repeat records best indicates the migration movement, a large number always occurring the day before a departing flight. Such periods are shown in the above table on September 22d, October 2d, and October 5th. October 2d was remarkable for the number of new birds banded (all Harris's Sparrows) almost none of which reappeared. This I interpret as unusual activity in feeding rather than arrival of a new group. The largest number in 1928 was on October 1st.

The general tendency seems to be for the numbers (especially of individuals repeating) to increase until the departure of a group. The rainy period October 9th to 12th was without any marked drop in temperature. More than half of the birds taken on October 9th reappeared on October 13th. The next two days were warm, but a cool north wind blew for a while in the afternoon of the second day. The following day was pleasant again, but practically all the birds had gone.

Truly, bird-banding has opened an enormous field of activity. It offers an opportunity of intimate contact which had been lacking. Great as are the possibilities of obtaining through it scientific knowledge, my belief is that the largest returns will be to the workers themselves through the pleasure of a more intimate acquaintance with, and deeper appreciation of our feathered friends.