Special Federal permit for this work is required under the provisions of the Migratory-Bird Treaty Act. Application for permit and full information relative to the work may be secured by addressing the Bureau of Biological Survey, U. S. Department of Agriculture, Washington, D. C.

Biological Survey, Washington, D. C.

RECENT RETURNS FROM TRAPPING AND BANDING BIRDS

BY S. PRENTISS BALDWIN

1. OPERATIONS AT CLEVELAND, OHIO.

The methods used by the writer, for trapping and banding birds have been fully explained in an article published by the Linnaean Society of New York in 1919.[1] Briefly it may be explained that by means of the so-called Government sparrow-trap, and by the use of trap nest boxes, adult wild birds are caught, aluminum bands bearing address and numbers for identification are placed on the legs of these birds and they are then released. During the last six years many hundreds have been thus banded and many thousands handled by the writer; and many have been re-taken again and again the same season and succeeding seasons.

The publication above referred to contains, besides a description of methods, a report of the returns of birds to and including the year 1918. The following report includes only the "returns" of the years 1919 and 1920. Those who have a copy of the previous report may be interested to know that three of the birds described therein, were taken three years later, in 1920, and appear in this report. These are Brown Thrasher, number 19247; Red-bellied Woodpecker, number 31778; and White-throated Sparrow, number 38160. An additional report for House Wren number 44008 is also contained in the following pages.

Handling Wild Birds.—Two positions for holding birds are described and illustrated on page 27 of the 'Proceedings.' Per-

[1] Proceedings of the Linnaean Society of New York No. 31, 1919.

haps I should have described also the simple process of changing a bird from one position to the other without danger of flutter or escape; i. e., to pick the bird up by the head. It sounds barbarous and you expect the bird to hang himself, or pull his own head off, but it is really a very satisfactory method and does not harm the bird in any manner. One soon learns a knack of handling birds quietly, in banding, changing position, or examining, and indeed in a few moments the bird is so quieted that one may open the hand flat, and sometimes even roll the bird back and forth on the open palm without any attempt on its part to escape. Then suddenly it goes like a shot, so quickly that one cannot see how it is done.

I have not had such abundant returns at Cleveland as I find in the work in Georgia, In the latter region it is an intensive work, taking many birds in a short season of a month or six weeks, during the high point of spring migration, with a high percentage of returns. But in Cleveland I miss the spring migration, and get only the local residents during the summer and the fall migration of the various native sparrows.

Considering the larger percentage of returns in Georgia of Myrtle Warblers and Chipping Sparrows, some of them not only one year but two and even three year returns, the results in Ohio are astonishing for their meagerness. Autumn after autumn I have banded many migrant White-throated and White-crowned Sparrows, and have never had one back the next year. This does not mean that it is useless to band these sparrows, for the banding does give information of their movements from day to day and the dependence of those movements upon the weather.

To What Extent do Birds Return?—Of 156 House Wrens handled in five years 10 returned, or about six and two-thirds per cent. This figure may be considered fairly accurate though probably below the real number returned, as some no doubt escaped me. Of the total number of birds of all kinds banded at Cleveland, prior to 1920—some 1200, 36 have returned one or more years, or 3 per cent. This figure is of birds actually taken, but as many of the birds on my lists are species that do not come to the traps, and many others likely return and nest nearby, but are not taken in the traps during the season; the figure is much too low. Prob-

ably ten per cent may be about a correct estimate of those which survive and return to within 500 yards of last year's site.

The percentage of returns in Georgia seems to run higher than ten, and likely so since all are adult birds when banded.

There is no doubt that, on an average, as many birds of any species die each year, as are raised that year; but it seems probable that the death rate is higher among the young birds of the year, than among adults. This death rate must be considered in any estimates of the tendency of birds to return; and estimates of the *average* life of birds.

Do young birds return to the same spot?—They do, sometimes. I have had several examples, but especially Robin 32932 and House Wren 45325, both banded in the nest so that there was no question as to their youth.

Birds banded in 1919 and 1920.—Total birds banded since 1914, 1064; of which 156 were banded in 1919 and 376 in 1920.

Migration. During the autumn of 1919 illness prevented my observations. In 1920 the weather was mild and uniform during the entire months of September and October, with no sharp storms. The birds therefore drifted in and out, without the distinct wave movements seen in more stormy years. The White-crowned Sparrows exceeded the White-throated Sparrows in number this season, while unusually large flocks of Chipping and Field Sparrows were present in October.

Return of birds banded in previous years.—

32932. ROBIN (*Planesticus migratorius migratorius*).
1917. Banded May 15 in the nest.
1919. Taken March 19 in the greenhouse. A positive return of a young bird.

29863. CATBIRD (*Dumetella carolinensis*).
1916. Banded June 22, at station B.
1917. Taken June 21, at station A.
1919. Taken June 21, in the greenhouse.

45399. SONG SPARROW (*Melospiza melodia melodia*).
1919. Banded October 7, at station A.
1920. Taken June 4, 6, 7, 10 (twice), 15, 18, 27, 30, July 9, 13, August 1 (with young 46081 and 46082), 2, 4, and 5. Always at station A although stations B and C were only 100 yards away.

45359. SONG SPARROW (*Melospiza melodia melodia*).
1919. Banded July 18, at station A (marked "young").
1920. Taken July 31, at station A.

53035. BROWN THRASHER (*Toxostoma rufum*).
1919. Banded May 16, at station B. Taken June 7 (at A), and 11 (at B.).
1920. Taken June 15, at station B.

53038. BROWN THRASHER (*Toxostoma rufum*).
1919. Banded June 10, at station B. Taken June 21 and 29 and July 25. All at B. Accompanied, June 10 by young 53039 and on July 25 by young 53056 which would seem to have belonged to a second brood.
1920. Taken July 26, and July 22 (twice) always at station B. Accompanied July 26 by young 53928.

41273. BLUE JAY (*Cyanocitta cristata cristata*).
1919. Banded May 13 with 41272.
1920. Taken July 11, at station B, with 53926.

38643. CHIPPING SPARROW (*Spizella passerina passerina*).
1916. Banded September 12.
1920. Taken September 25, at station E. Had a swollen hind toe on right foot. Taken again October 7 (at E) and kept over night in a cage to show to Dr. Chapman and Mr. Fuertes who visited the place on October 8.

It had been four years since I had seen this little fellow. Coming at the same time in both the years that I caught him, and with flocks of others, I believe this bird was migrating and had just stopped en route.

Returns of House Wrens at Cleveland.—In the case of House Wrens I am able to band each year practically every individual, old and young, on the place, and can trap each year practically every adult so that a much more accurate and definite record of these birds can be secured that of those caught in the other bird traps which are dependent largely on chance. During the past two years I have been more careful of the Wren record than formerly, but even so, a few may have escaped me during my absence from the farm. The summary of Wren banding and examination for the several years is as follows; all "new" birds being banded each year.

1914. Banded 12 individuals. No returns from these.
1915. Banded 44 (5 adults and 39 young). One adult, 27739, was retaken in 1916. (see Linnaean Proceedings, p. 52).

1916. Examined only 7 (2 adults and 5 young). One adult was a 1915 bird as above stated. Had no time for the work this year.
1917. Examined 22 (6 adults and 16 young). One of the birds banded this year 44008, was retaken in both 1918 and 1919.
1918. Examined 27 (9 adults and 18 young). Four of the adults banded this year were retaken in 1919.
1919. Examined 44 (12 adults and 32 young). Four of the adults and 1 young banded this year were retaken in 1920.
1920. Examined 51 (13 adults and 38 young).

Summing up the results: Of the 156 individuals handled from 1914 to 1920 (not including 1920) ten have returned, nine of them being adults and one a young bird while one bird has appeared a third year.

Returns of House Wrens in 1919 and 1920.—

45206. HOUSE WREN (*Troglodytes aedon aedon*).
1918. Banded July 14 at Box 47.
1919. Taken June 17 at Box 26.

44008. HOUSE WREN (*Troglodytes aedon aedon*).
1917. Banded July 4 at Box 51.
1918. Taken at Box 51 June 19.
1919. Taken June 17 at Box 19.

44100. HOUSE WREN (*Troglodytes aedon aedon*).
1918. Banded June 19 at Box 51.
1919. Taken June 17 at Box 19.

44526. HOUSE WREN (*Troglodytes aedon aedon*).
1918. Banded June 23 at Box 40.
1919. Taken June 24 at Box 40.

45335. HOUSE WREN (*Troglodytes aedon aedon*).
1919. Banded June 24 at Box 63.
1920. Taken June 15 at Box 49 and July 7 at Box 63.

45303. HOUSE WREN (*Troglodytes aedon aedon*).
1919. Banded at Box 25 June 17.
1919. Taken July 20 at Box 53.
1920. Taken June 17 at Box 25 and July 29 at Box 25.

45342. HOUSE WREN (*Troglodytes aedon aedon*).
1919. Banded June 26 at Box 53.
1920. Taken June 17 and July 29 at Box 25.

45325. HOUSE WREN (*Troglodytes aedon aedon*).
1919. Banded June 19 as a young one in Box 3.
1920. Taken July 7 and 28 at Box 59.

45349. HOUSE WREN (*Troglodytes aedon aedon*).
1919. Banded July 4 at Box 53.
1919. Taken July 20 at Box 53.
1920. Taken July 13 at Box 47.

II. OPERATIONS AT THOMASVILLE, GEORGIA. 1920.

What old friends among the birds may one expect to meet after an absence of three years? How many have died? Is it not an axiom that in each species about as many die every year as are raised in that year? How many have strayed? How many still live in exactly the same old haunts or return to the same spots to spend the winter? These are some of the questions that bird banding may be able to answer and those who have read my previous account of bird banding at Thomasville, Georgia (Proc. Linnaean Society of New York, No. 31, for the year 1919) will understand the interest with which I returned to Thomasville in February, 1920 after an absence of three years.

In the three seasons previously spent here I banded 542 birds as follows:

1915.	Resident birds	27.	Migrants	63.	Total	90.
1916.	" "	44.	"	169.	"	213.
1917.	" "	24.	"	215.	"	239.
		95.		447.		542.

In 1920 11 of these birds were taken again in the traps, seven residents or more than seven percent and four migrants or nearly one per cent. In the five traps 723 individual birds were taken in 1920. Of these 283 were new birds and were banded this season while 440 captures represent recaptures of these same birds or of the eleven banded in previous years. Of the new birds 232 were migrants and 51 residents.

The migration began in earnest among the Myrtle Warblers and Chipping Sparrows in the second week of March, the movement being clearly shown in the number of birds handled in the five traps, only 86 being taken in February while 637 were taken in March. Mr. Frederick C. Lincoln in charge of the bird banding work of the U. S. Biological Survey, visited me in Thomasville, March 20 to 24 and during these five days we handled 222 birds among which were Blue Jay 31772 of 1916 and Myrtle Warbler

27440 of 1917. There was a joyous reunion when Brown Thrasher 19247 appeared. Although the early history of this bird has been given in the 'Linnaean Proceedings,' p. 35, it is desirable to republish its record in full, along with that of another 1917 bird retaken in 1920.

19247. BROWN THRASHER (*Toxostoma rufum*).
1915. Banded February 27 and taken again March 13. It was the mate of 19246 at station A and was always shy of the trap although 19246 always entered it.
1916. Taken March 4, 11, and 17. It was again the mate of 19246 and each bird had the same attitude toward entering the trap as last year.
1917. Taken March 11 with 31783 which was believed to be its mate this year. The former mate 19246 has not been taken since 1916. Taken again alone on March 12 and 13.
1920. Taken February 16, 20, March 8 (with 53085), and March 11. This year as before always at station A. May we not consider 53085 its mate for this year? 53085, by the way, has the left leg off at the mid-tarsus and well healed into a button. My conscience troubled me as I feared it might possibly have been the band that caused him the loss of his foot and that he might be the same mate as last year.

40796. BROWN THRASHER (*Toxostoma rufum*).
1917. Banded March 2. Taken March 8 with 31779 and alone on March 19 always at station D.
1920. Taken March 16, 20 and 21 (with 53092) always at station B, two-hundred yards from station D.

Brown Thrashers are classed as permanent residents, not meaning to imply that any one individual may not be a migrant, but they are mated and nesting in March so that it seems fair to assume that two caught together are mates. Other 1920 records follow.

1916. BLUE JAY (*Cyanocitta cristata cristata*).
1916. Banded March 28 at station A.
1920. Taken February 15 at station A.
[1921. As this paper goes through the press this bird was caught again, March 6 (Sta. AA). It is now at least six years old.]

31772. BLUE JAY (*Cyanocitta cristata cristata*).
1916. Banded February 27 at station C.
1920. Taken March 23 at station A.

41897. BLUE JAY (*Cyanocitta cristata cristata*).
1917. Banded March 12 at station B.
1920. Taken February 27 at station C and March 3 at station A.

Blue Jays are classed as permanent residents and these returns of three birds from a total of 21 banded in the three years, 1915–1917, bear out the belief that they remain closely at home.

31778. RED-BELLIED WOODPECKER (*Centurus carolinus*).
1916. Banded March 7. Taken March 11, 19, 21, 22, and 24 at stations A, B and C.
1917. Taken March 9 at station B and March 11 at station C.
1920. Taken February 16 at station B, 19 (at B), 23 (at A), and 25 (at B).
This bird is a good old standby already published in my original report, p. 40. These woodpeckers feed on the ground much as the Flickers do, which accounts no doubt for their coming to the bread and grain bait.

32197. CARDINAL (*Cardinalis cardinalis cardinalis*). Female.
1917. Banded March 20 at station C.
1920. Taken February 13 at station C.

An unusual number of Cardinals, both males and females appeared all through March and I banded 29 new ones, though I had banded only 36 all told in the three seasons, 1915 to 1917. Could they be migrants?

16246. HERMIT THRUSH (*Hylocichla guttata pallasi*).
1917. Banded February 28 at station AA.
1920. Taken February 23 at station AA.
It was rather a surprise to get a Hermit Thrush, as I had banded only four—three in 1917 and one in 1918. I suppose this bird was migrating.

27290. MYRTLE WARBLER (*Dendroica coronata*).
1917. Banded February 28 at station C.
1920. Taken March 7 at station C and March 11 at station D.
[1921. As the paper goes through the press this bird was caught again, March 1 (Sta. D) and March 3 (Sta. B). It is now at least five years old and has made four trips to the north since it was banded.]

27440. MYRTLE WARBLER (*Dendroica coronata*).
1917. Banded March 1 at station C. Taken March 2 (at C and D), 3 (at C and D), 4 (at C), 5 (at D), 7 (at D).
1920. Taken March 19 at station C, 22 (at D), 23 (at B). This bird happily remained over from the 19th to the 23rd to greet Mr. Lincoln.

The taking of the same Myrtle Warbler in your hand after an interval of three years during which time the tiny creature has made three long trips to the far north certainly arouses your sentiment. To be sure I have banded many of these birds, 64 in 1917, 55 in 1916 and 15 in 1915, and have had numerous returns after one year or even two years but to capture these two birds after so long an interval was very gratifying.

In former seasons Myrtle Warblers have apparently wintered at Thomasville, at least they have been very plentiful in February, and would be mostly gone further north before the Chipping Sparrows came up from farther south; the second week in March; but this year the Myrtle Warblers seemed to come at the same time as the Chipping Sparrows appearing in flocks about March 6.

38160. WHITE-THROATED SPARROW. (*Zonotrichia albicollis*).
1916. Banded March 5 at station A. Taken March 6, 7 and 16 at the same station.
1917. Taken March 7 and 19 at station A.
1920. Taken February 25 (at AA), 27, March 2, 3 and 6—all at station A and March 22 (at AA.)

The taking of this bird is of interest not only on account of the history of the individual but because in my opinion it identified this group of White-throats as the same group that has been found in the same patch of shrubbery at the end of the house, station A, ever since 1915. This year the group seemed smaller, apparently only half a dozen individuals, while previously there had always seemed to be two dozen or more. In 1915 I banded twelve of these, two were re-taken in 1916 and one other in 1917. In 1916 I banded six, and of these four were re-taken in 1917. In 1917 I banded eighteen. In 1920 I banded only six.

I believe this is one and the same group of these birds that I first found here in 1915, a continuous though ever changing group as some die, young birds are added, some in mating go outside the group, and others mating come into the group. During February and March they remain closely together, feeding now on one side of the house, now on the other side, but always to be found somewhere at Station A. I believe these birds travel not as single pairs of mates but as a group of relatives and neighbors, year by year, from the same spot in winter, to the same spot in

summer and return. I call attention to this as a "neighborhood group" not as a proposition proved, but to suggest it as probable, and something which may be proved by this method of study.

Chipping Sparrows (*Spizella passerina passerina*). After having Myrtle Warblers return after three years, I did hope for one or two Chipping Sparrows but did not get a single one though I had banded 266 of them in the three years, 1915 to 1917. Among the new Chipping Sparrows only eight of the 110 banded had swollen toes, but it is probably only by chance that this does not equal the ten per cent, found in former years. But why do Chipping Sparrows have so great a proportion of diseased toes, while the condition seems never to be found in other birds?

Individuality in Birds.—The behavior of the individual when handled is interesting. The Cardinal nearly always screams and squeals and fights with energy, yet four of the twenty-nine handled in 1920 are marked to have squealed very little. This is not an accident of the moment, for the same bird will act the same way every time it is handled. Myrtle Warbler (45490) taken six times squealed every time, though no other Myrtle Warbler of nearly 200 handled has squealed in my hands. Of the hundred or more Chipping Sparrows handled this year five only have squealed in handling.

Of about the 730 birds trapped in February and March only six were killed, and these by shrikes or hawks, but many more would have been destroyed if we had not watched the neighborhood with a gun.

2930 Prospect Ave., Cleveland, Ohio.

THE MARRIAGE RELATIONS OF THE HOUSE WREN (TROGLODYTES A. AEDON).

BY S. PRENTISS BALDWIN

INTRODUCTION.

The belief that most birds mate for life and each year return to the site of the previous nest to rear their young, is very old, and in the popular mind it is probably more or less generally accepted. The following data will have a bearing on this matter