

A STUDY OF THE CHICKADEE AND  
WHITE-BREASTED NUTHATCH BY MEANS  
MARKED INDIVIDUALS

Part III: The White-breasted Nuthatch (*Sitta  
carolinensis cookei*)

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*Migration.* Evidence regarding the migration of the White-breasted Nuthatch is very conflicting. Most distributional lists do not discuss its relative abundance at different seasons, it being recorded merely as a permanent resident. Some observers, however, report that there is apparently no change in numbers or no migration. For example, Dawson and Jones (1903) say the Nuthatch is non-migratory in Ohio, and Cooke in the "Report on Bird Migration in the Mississippi Valley" reports that it is probably non-migratory. Many records, on the other hand, indicate that the Nuthatch is more common in winter or during migration than at other periods. For example, out of twelve lists from different points in Massachusetts seven observers report the bird as a common migrant, a winter resident, and an uncommon or local summer resident; five lists report it merely as a common or rare resident. (Howe and Allen, 1901).

Minot, writing of the Nuthatch in New England, says that it is common in spring and autumn, a few spend the winter, and a few spend the summer, in some localities it being one of the rarest of summer birds. Griscom in "The Birds of the New York City Region" says there is a distinct migration of the Nuthatch in September and October, with but little evidence of any movement in the spring. In Central Park it is seen mostly in the fall, and occasionally in the winter and spring. In the lists of the birds in the different countries of New York (Eaton, 1914), the Nuthatch is generally recorded as a common resident. In Hamilton County (Adirondack Mountains) and in Erie County it is said to be a rare summer resident.

Mr. J. A. Gillespie<sup>1</sup> writes that at Glenolden, southeastern Pennsylvania, the Nuthatch is erratic but rather common in midwinter, becoming scarcer in spring, and disappearing altogether in summer. He is quite certain that they do not breed in the immediate vicinity of Glenolden. Harlow (1918)

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<sup>1</sup> Ex litteris.

records it as a regular but not common breeder in southern New Jersey and southeastern Pennsylvania; more common throughout the rest of Pennsylvania. It is recorded as a common resident in Delaware (Rhoads and Pennock, 1905) and in Maryland (Kirkwood, 1895).

Wetmore (1926) says that in the coastal plain region of Virginia and North Carolina the Nuthatch is rarely found in summer, although it is common in winter. Thus a migration from the Blue Ridge and Alleghany Mountains or from the North is indicated. A similar statement is made in "The Birds of Virginia" (Bailey, 1913). However, the Nuthatch is recorded from a number of points on the coastal plain in summer; viz. the Dismal Swamp (Daniel, 1902), Cape Fear (Metcalf, 1922), and Lake Ellis (Philipp, 1910).

Pickens, in "Birds of Upper South Carolina" (1928), says that the Nuthatch appears to be a winter resident only at some points in the Alleghany Mountains, and that this may indicate a dividing area between the northern form (*S. c. cookei*) and the Florida subspecies (*S. c. carolinensis*) resident nearer the coast. Most of the lists from the Central and Middle-Western States merely record it as a "common permanent resident." A few, however, say "more frequent in fall, winter, and spring." Taverner and Swales in "Birds of Point Pelee" (southwestern Ontario) report, "Never very common; likely but few breed; fall dates conflicting, but indicate a migration." Cahn in "Bird Notes from Itasca County, Minnesota", reports "Common resident but certainly more common in summer."

If there is a distinct north and south migration of the Nuthatch, we should expect the bird to be absent in winter, or at least much less common at this season along the northern border of its range. Accordingly, let us examine records from points to the north. Macoun in the "Catalogue of Canadian Birds" (1909) says the Nuthatch is a common summer resident rarely seen in winter in Nova Scotia and New Brunswick. More recent records, however, show that the bird occurs regularly in winter, at least in certain sections of Nova Scotia. Tufts (1917) records it as a permanent resident, becoming less common in Kings County, Nova Scotia. In a recent letter Mr. R. W. Tufts writes that during the last few years the bird has become increasingly common in the vicinity of Wolfville, Nova Scotia. Formerly it was a matter of comment when a Nuthatch was seen, and this was usually during September and October, rarely in winter. Now this species is fairly common throughout the year, though more frequently seen during fall and winter than at any other time. According to

Dionne (1906), the Nuthatch is common at Montreal but rare at Quebec. It is found all the year round where it occurs at all. The Nuthatch occurs in winter in Algonquin Park, Ontario, though not regularly (Cleghorn, 1913). There are apparently no winter records of this species from central or northern Ontario or from Labrador. It seems to be practically absent in this territory in summer also, as most faunal lists do not mention it. It has been taken, however, at Fort Churchill on Hudson Bay, and was seen at the forks of the Albany River, which flows into James Bay, (Preble, 1902). It is common throughout the year at Winnipeg, Manitoba. Norman (1920) says it can be seen any day both summer and winter at Shoal Lake, Manitoba. The Nuthatch of Manitoba, however, may be the Rocky Mountain race (*Sitta carolinensis nelsoni*).

These data seem to indicate that there is no regular withdrawal of the birds from the north in winter.

Let us now see what light bird-banding can throw upon the question. Of 109 returns from banded Nuthatches recorded from 1920-26 in the United States and Canada (Lincoln 1924, 1927) only one bird was recovered at a point some distance from the place of banding. A Nuthatch banded February 22, 1926, at North Middleboro, Massachusetts, was killed by a cat April 23rd at St. George, New Brunswick. The records do show, however, that many individuals are permanent residents, never going far from the place of banding.

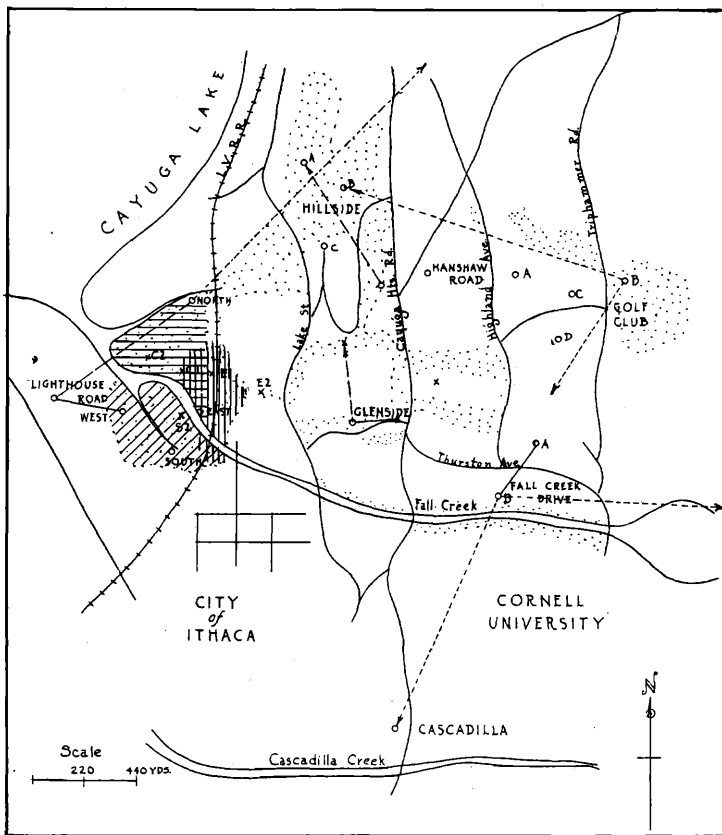
A study of the Nuthatch at Ithaca, New York, in 1924-25 indicated that most, if not all the adult Nuthatches were permanent resident individuals (Butts, 1927). The results of the present investigation confirm this view. Careful study in 1928 and 1929 showed that there were practically the same number of Nuthatches present throughout the year. Not only was the number present the same, but in most cases it is known that the individuals were the same. (See diagram showing the records of the twenty-four birds which were trapped in the vicinity of the Sanctuary, Hillside, and Glenside stations.) No other Nuthatches than those shown in the diagram were seen in the Sanctuary during the two years that the study was under way, except one pair that occasionally entered the area from the west and whose history is not well known. All these birds were provided with colored bands and some of them were painted for a part of the time, so that identification of the individuals was possible. I made a practice of trying to identify every Nuthatch that was seen in the Sanctuary, whether at a feeding-station or elsewhere. This was not always possible, since sometimes the birds flew away before there was

a chance to get a good view of the bands. It was nearly always possible to tell whether the bird was banded or not. It is possible that a few unbanded Nuthatches passed through the migration without being detected, but there could not have been many. It is certain that no other Nuthatches than those shown in the diagram stayed any length of time in the Sanctuary. It may be noted by referring to the diagram that three of the birds were recorded only once. These may have been migrants or wandering birds. It may be noted also that many of the birds disappeared. This could not be construed as a migratory movement, since the disappearances occurred at various times and in most cases they occurred after the birds had begun nesting-activities. When a bird disappeared, its place was usually taken by a new arrival. Since these new arrivals did not appear at any particular season, it is thought that they were wandering individuals rather than true migrants.

While the histories of thirteen birds banded at the other trapping stations are not as well known, the data agree with the results obtained in the Sanctuary. After a trapping station had been in operation for a sufficient length of time to band all the Nuthatches in the vicinity, no more unbanded individuals were seen. We conclude that in the three years during which the Nuthatch was studied there was very little, if any, migration of this species at Ithaca.

Let us now see if we can draw any general conclusions regarding migrating movements of the Nuthatch from this mass of conflicting data. Probably permanent resident individuals occur quite generally throughout the range of the bird, although they seem to be scarcer and of more local occurrence along the Atlantic seaboard. We cannot always be sure that more birds are present in winter than in summer merely because they appear to be more abundant; nevertheless, so many reports indicate that the birds are scarce in summer and common in winter and in migration, that it seems certain that there is either a migratory or a wandering movement. The record of the Nuthatch banded in Massachusetts and caught in New Brunswick substantiates this theory. It is possible that this movement is only on the part of immature birds, the adults remaining in the locality where they have established a territory. If there is any real migration, it must be quite irregular, rare at some places and seasons, perhaps common at other places and seasons, thus similar to the migration of the Red-breasted Nuthatch.

*Density of Population.* The number of Nuthatches in-



MAP SHOWING MOVEMENTS OF NUTHATCHES

Solid lines indicate that the birds travelled freely between the two points.  
Broken lines indicate single records.  
Dotted areas indicate woods.  
Horizontal lines in Fortes Sanctuary indicate winter feeding territory of pair of Nuthatches inhabiting the central part of the woods; C1, their nest in 1928; C2, their nest in 1929.  
Vertical lines in Fortes Sanctuary indicate winter feeding territory of pair inhabiting the eastern portion of the woods; E1, their nest in 1928; E2, their nest in 1929.  
Diagonal lines indicate winter feeding territory of pair inhabiting southern portion of the woods; S2, their nest in 1929.

habiting the Fuertes Sanctuary varied from six to nine. There were three pairs present all the time. In addition to these three pairs, in the winter of 1928 another pair had a portion of the woods in the vicinity of the North Side station as a part of their territory. Another pair frequently entered the Sanctuary from the west. Single birds were also present at times. Taking the area of the Sanctuary as eighty acres and the number of birds as seven, this gives us one bird to eleven or twelve acres, or one pair to about twenty-four acres.

Considering the whole area where the birds were studied in 1928-29, thirty-one Nuthatches lived in an area of a little more than one square mile. This gives us one pair to about forty-eight acres or a density of population of fourteen pairs per square mile.

*Local Movements and Winter Territories.* Nuthatches usually travel in pairs. Sometimes more are seen at one time, but these are usually, perhaps always, two or more pairs which have temporarily come together. Mrs. J. S. Chamberlain caught nine Nuthatches in one season at her feeding station in Amherst, Massachusetts. However, not more than four were seen at one time. Quite frequently single birds are seen. In some cases these are unmated birds. In others they are individuals that have temporarily become separated from their mates. There is some evidence to show that the members of a pair do not always stay close together in the fall, so that one more frequently sees one bird alone at this time. The mate, however, is usually not far away in the same territory.

It was found in the previous study of the Nuthatch at Ithaca in 1924-25, that each pair had a definite restricted feeding territory during the winter. This is confirmed by the results of the present study. Each pair living in the Sanctuary confined itself to a certain portion of it. In most cases each pair had its own territory which was not encroached upon to any extent by other Nuthatches. At times, however, one or both members of a pair wandered away from their usual haunts, and travelled over a portion of the territory of another pair. In this manner one pair was recorded at points five-eighths of a mile apart, the greatest distance recorded as having been travelled by any pair of Nuthatches. One pair almost always kept in the woods on the south side of Fall Creek, but on three occasions in a year and a half of observation one or both were seen north of the creek. In one instance the territories of two pairs overlapped considerably. This is shown on the accompanying map. In the area which was common to both territories both pairs were frequently seen. Occasionally the two pairs were seen there together.

During the winter the birds were not active in the defense of their territories. Two pairs even fed peaceably at the same time at the same feeding station, although, of course, never two birds at the same moment. Even the male and female of the same pair were not seen to feed together at the same time. No fighting was observed during the winter. On April 13th, after several days of warm weather, however, one pair did chase another Nuthatch for some distance along the edge of their territory. In June also, on the day that the young had come off the nest, when another Nuthatch came near, it was promptly driven away to a distance of fully a hundred yards.

The size of the territory appears to depend on the amount of woods present. In the Sanctuary, where the territories were completely wooded, each of the three pairs had an area of about twenty-five acres. Measured with a planimeter on the City Engineer's map, one territory had an area of twenty-eight acres, the other two twenty-five acres each. In the season of 1924-25 one pair in another locality had a territory of about twenty-five acres, most of which was wooded. Another pair, in 1924-25, ranged over an area of forty-eight acres, about half of which was wooded. We should have more data at hand before making any general statement, but these figures seem to indicate that a pair of Nuthatches requires about twenty-five acres of woodland or about fifty acres of semi-wooded country. It is interesting to note that in calculating the density of Nuthatch population, it was also figured that there was one pair of Nuthatches to each forty-eight acres of the area studied.

Mrs. C. L. Whittle (1926) reports that a pair of Nuthatches banded at her Peterboro, New Hampshire, station, which lived in the vicinity for two years, also visited frequently a neighbor's feeding station about half a mile distant. This perhaps indicates a slightly larger feeding territory than that of any of the birds studied at Ithaca. However, the distance from one end to the other of one of the territories at Ithaca was nearly half a mile.

The data given thus far refer to distances travelled by *mated pairs* of Nuthatches. Single birds, however, are recorded as having travelled longer distances. This is shown on the map. One female banded December 13, 1928, at Fall Creek Drive was next recovered at Cascadilla Creek, three-fourths of a mile away, on March 27, 1929. Accordingly, there appear to be single birds without established territories in addition to the pairs which stay within a restricted area. One of the most interesting of these wandering birds is number N3. (See

diagram.) This bird, a male, lived in the vicinity of the North Side station from the time it was banded, December 21, 1927, until some time in the spring. It was always seen alone. The bird was not seen in the Sanctuary after March 19, 1928, but on March 8, 1929, the same bird was discovered at a feeding station some three-fourths of a mile northeast. Its date of disappearance indicated that it might have been a winter resident which left in the spring of 1928 for the north and returned to the same region, but not exactly the same locality, for the winter of 1928-29. Further study, however, showed that it was still present the latter part of April and was probably a permanently resident individual.

When visiting a feeding station, Nuthatches sometimes stayed only long enough to get two or three sunflower seeds. At other times they were present for an hour and a half, obtaining a large number of seeds which they stored in cracks in the bark of trees. Usually during the winter they obtained half a dozen seeds or so, and then left for a period varying from half an hour to two hours, thus making on the average seven or eight visits to a feeding station in a day. Mrs. C. L. Whittle (1926) also records that six or eight visits a day is usual, though sometimes as many as fifteen are made. No schedule of visits could be noticed, nor were there any definite paths over which the birds travelled.

The presence of a feeding station apparently had no effect on the range of the birds. They travelled over just as much territory when the feeding stations were removed as they did when the food was present. The operation of feeding stations apparently did not increase the number of Nuthatches in the area where the birds were studied. Since each pair is restricted to a definite area, the birds do not collect in numbers about a feeding station. Nor are single birds without established territories induced to remain near feeding stations to any extent. Possibly the presence of a feeding station might have an effect on migrating Nuthatches, if there are any such.

The presence of feeding stations apparently did not cause the territories of the Nuthatches to be shifted. In the Sanctuary the North Side station was on the edge of or just outside the regular feeding range of the central pair of Nuthatches. Likewise the East Side station was about on the edge of their territory. The birds were seen at each of these stations very few times. It might be thought that after finding these feeding places the birds would visit them frequently. But even after they learned of the existence of these practically inexhaustible supplies of food, they still spent most of their time in the



Number	Sex	1926 1927	Dec. 1927	Jan. 1928	Feb.	Mar.	Apr.	May	Oct.	Nov.	Dec.	Jan. 1929	Feb.	Mar.	Apr.	May
N1-A24104	♂		}	—			—									
N2-152579	♀			—			—									
N3-A24100	♂		-----													
152574	?															
B65286	♂															
E1-A24084	♂				}		—									
E2-A24082	♀				}		—									
E3-B27268	♂							}								
E4-B27297	♀							}								
E5-A24083	♂							}								
C1-B27260	♂							}								
C2-B27257	♀							}								
C3-B65269	♂									}						
S1-B27253	♀							}								
S2-B27266	♂							}					}			
S3-B77219	♀											}				
A24086	♂							}								
B27273	♀							}								
182616	♂															
152573	♀											}				
B77217	♂											}				
91321	♂		—					}								
B27251	♀											}				
B65271	♂											}				

DIAGRAM SHOWING DATE OF BANDING AND OF DISAPPEARANCE  
OF NUTHATCHES.

A broken line indicates that the bird left the Sanctuary and was later reported elsewhere.

Brackets indicate apparently mated pairs.

The first part of the number given is an arbitrary number assigned to the bird so that discussion of the bird in the text is more easily understood. The second part is the band-number.

In Nos. E3 and E4 the beginning of the lines indicate the probable time of arrival, the crosses the actual date of banding.

center of the woods, where only natural food was available. Their territory was not shifted so as regularly to include the feeding stations.

In an effort made to attract birds to a large pear orchard at Geneva, New York, by the operation of feeding stations for a period of several years (Odell, 1927), the number of Nuthatches was not at all increased by the presence of the food. This is to be expected on the basis of the theory that each pair has a definite feeding territory.

Since the feeding range of Nuthatches is somewhat smaller than that of Chickadees, feeding stations must be somewhat closer together in an area where it is desired to feed all the Nuthatches. One station in the Fuertes Sanctuary would not have been found by all the Nuthatches there, no matter where it was placed. Apparently there should be one station for each pair of Nuthatches, if it is to be visited regularly. Accordingly, they should be about four hundred yards apart, or one station will cover twenty-five or thirty acres of woodland. If, in semi-wooded country, the Nuthatches have larger territories, fewer stations would suffice. Of course more than one pair of Nuthatches will feed at a single station. This is due to overlapping of territories, and to the birds occasionally going outside of their usual range. It is more often the case, however, at least at Ithaca, that only one pair feeds regularly at a feeding station.

*Sexual Differentiation.* The male Nuthatch has a shining black crown. The crown of the female is usually duller, and veiled with gray. There is a variation in this respect, however, some females having the crown fully as black as the male. One bird which was recorded as a male at the time of banding later showed by its behavior that it was a female. This observation illustrates another advantage in the use of colored bands. Without them the mistake in sex-determination would probably not have been noticed.

*Breeding Habits.* All the nests found were within five hundred or six hundred yards of the place where the birds building them were banded in the winter. In every case where the winter territory of the pair was known the nest was within or at least near the edge of the winter territory. The location of the nests of the Sanctuary Nuthatches, together with their winter feeding ranges, is shown on the accompanying map.

During the nesting season the birds ranged over practically as large an area as they did in winter. In open places they could often be seen to fly over one hundred fifty yards from the nest before alighting. On one occasion a female was positively identified by means of the colored bands at a dis-

tance of four hundred yards from the nest. On another occasion the male was seen some three hundred yards from the nest. This was at the time that the young were at least half grown. Most of the food, however, was obtained much closer to the nest. They seemed to have no difficulty in finding plenty of insects in trees directly adjacent to the nesting site. Some of it was obtained in the same tree where the nest was located. The reason for the long journeys is a mystery. Most of the observations were on one pair, but other pairs were also known to travel at least two hundred yards from the nest. Although the area of the feeding territory in the breeding season was nearly, if not quite, as large as in the winter, the two territories did not necessarily coincide. In those cases where the nest was located near the edge of the winter territory the ground covered was in part different from that covered in the winter. The birds went in all directions from the nest. In one case where the female survived from one season to the next, the nest was in the same hole the second year. In a second case, where the female survived, and in a third case, where the male survived, the nest was in a different hole, but in the same territory.

Although the birds travel to a considerable distance from the nest, two pairs sometimes build rather close together. As shown on the map, two nests in the Sanctuary in 1928 were only one hundred twenty-five yards apart. On one occasion the male from one nest was caught in a trap under the tree where the other pair was nesting. This was shortly after the nests had been constructed, or perhaps during their construction. Later on one pair almost always collected food toward the west, the other pair mostly ranged to the south and east. Thus territorial rights were respected at least to a certain extent.

The male Nuthatch does not assist in incubation. He does feed the female while she is on the nest. The female also comes off the nest at frequent intervals to get food for herself.

Both sexes feed the young. On June 4th, probably a day or two after the young had hatched (they left the nest June 16), a male bird brought food nine times in an hour, the female five times. A large part of the time the female stayed in the tree where the nest was located, frequently going in and out of the nesting-hole, as though she were standing guard.

On June 10th, when the young must have been about two-thirds grown, the male fed twenty-one times in an hour and a half, the female thirteen times. This is at the rate of about once every three minutes for both birds.

As with the Chickadees feeding of the young was irregular. Several feedings were made at frequent intervals; then one or both birds were apt to be away for some time. The female was once absent from the nest for thirty-one minutes. She could not have been searching for food all this time, because, as we have already mentioned, the birds appeared to have no difficulty in finding a plentiful supply of insects in near-by trees within a minute or two.

*Permanence of Mating.* Since one pair of birds occupies the same area in winter and summer, it might be supposed that the same birds would remain mated for successive seasons. Mrs. C. L. Whittle (1926) does report a pair which were mated for two years. In the present study, however, in every case, with one possible exception, the birds were mated for a single season only. The change in mates was apparently not due to divorce, but was caused by the disappearance of one of the birds.

The history of the pair inhabiting the east territory in the Fuertes Sanctuary is the most interesting. The birds concerned are numbers E1 to E4 on the diagram. The original pair, numbers E1 and E2, were banded on March 12 and 13, 1928, shortly after banding was commenced at this point. Since the two birds were seen together several times, it is assumed that they were mates. The male, E1, was last seen April 12th. At this time the bird was painted red so that identification was a simple matter. On April 18th the female, E2, was seen in company with an unpainted, unbanded bird, going in and out of a knot-hole. This new bird (number E3) could scarcely have been present in the immediate vicinity for a very long period before this. E2 and E3 completed a nest, and in middle of May E3 was observed carrying food to E2 while she was incubating. E2 was last seen about May 18th. E3 was not banded until May 23d, but it is assumed that the bird banded on May 23d was the same bird which had been feeding E2 because the banded bird made frequent visits to the same nesting-hole. He was once observed to go into the hole with a bit of food and come out again with the food still in his bill. He looked around for a moment and then went back in. This was repeated a number of times. It appeared as if the bird were looking for the female. On June 1st, E3 was seen with another bird, again apparently a new arrival. These two were seen together a few times in June. It is not known whether they nested. In the fall E3 was still present in the same territory, still with an unbanded bird, presumably the same one observed the previous June. This bird, E4, was

banded November 2, 1928. The two birds were seen together many times in the fall and winter, and they finally nested in a tree about a hundred and seventy-five yards east of the previous season's nest. If the bird banded on November 2d was the same individual observed with E4 in June, this is the only case where two individuals were mated for the two nesting seasons, 1928 and 1929.

It may be noted that when a bird disappeared, its mate remained in the same territory and a new bird appeared on the scene. The same thing occurred in four other territories. It was the same whether the surviving bird was a male or a female. The case is somewhat different, however, with the pair N1 and N2, which lived in the vicinity of the North Side station in the winter of 1927-28. On April 12th they seemed to be building a nest, or at least investigating a nesting-hole and picking up nesting-material. However, neither bird was seen in the vicinity again. The female, N2, did appear in September on the south side of the Sanctuary. It is possible that she was then mated to another male, S2, living on the South Side. A short time later, however, another female was found to be the mate of S2. N2, the bird which had left the North Side territory, disappeared again in November.

The remarkable feature of these observations is the ease with which the birds obtained new mates. In every case except that of the north side pair just mentioned a new mate appeared within a comparatively short time, in less than a week in one case. These new arrivals must have been wandering birds such as were occasionally caught at the feeding stations. Nevertheless, single birds without established territories are seldom seen.

*Length of Life.* The frequent disappearance of apparently permanent-resident birds indicates a high death-rate in Nuthatches. Out of twenty-one individuals, ten disappeared in less than two years. Only one individual out of those found at the beginning of the study survived till the end. The greatest age reported for the Nuthatch is six years. A bird banded May 14, 1923, by Mrs. Rachel Caughey at Antrim, New Hampshire, was taken every year for five years, the last recapture reported being May 5, 1928. (*Bull. N. E., B. B. Ass.*, 4:110.)

*Dispersal of the Young.* Unfortunately I did not succeed in banding any nestling Nuthatches. Mrs. C. L. Whittle, however, has banded several broods (H. G. Whittle, 1926). She finds that the young leave the parents or perhaps are driven away in July. A number of the young appeared the following

fall at a neighbor's station, half a mile distant, where they stayed all winter. Further history of the young is not given.

## SUMMARY

### *Methods of Marking Birds*

1. Staining the feathers is a very desirable method of marking birds for certain studies. Thirty-one different dyes were tested, but none was found satisfactory. Artists' oil colors can be used with success on some species, but their general use on small land birds is not recommended.
2. Enamelled aluminum bands are very useful, but the enamel is likely to wear off after one season.
3. Celluloid bands are more conspicuous than enamelled bands, and are recommended when it is desired to identify the individuals at a distance. One hundred and sixty-two combinations of colored bands were used in the present study.

## THE CHICKADEE

1. There were four or five times as many Chickadees present in winter as in the breeding season in the territory under observation. It is thought that this indicates a migration of certain individuals. There are Chickadees present in winter as far north within the range of the species as we have any definite information, but they are apparently not as numerous as farther south.<sup>1</sup>
2. The breeding birds were all, or nearly all, permanent residents.
3. The birds arrived between August and January 1st. A number of new birds appeared when cold weather started in December.

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<sup>1</sup>Since the publication of the portion of this paper on the Chickadee, the following information has been received in a letter from Mr. M. J. Magee, of Sault Ste. Marie, Michigan: "I have never noticed large flocks of Chickadees in the spring but several times have seen flocks of from fifty to over one hundred in September and October. My most interesting record is September 22, 1918, seventy plus at Country Club, apparently migrating. The birds had apparently come across the St. Mary's River from Canada and were in a compact bunch on telegraph-wires. The birds were practically quiet on the wires for a half-hour or so, then flew south about three-fourths of a mile and disappeared into a bunch of woods. Some twenty-five times in the past thirty years I have spent the first two weeks in August up the North Shore of Lake Superior from thirty to one hundred ten miles north west of Sault Ste. Marie. At that time Warblers have started to move [migrate] and we almost always found Chickadees travelling with them. We seldom saw a Chickadee without Warblers."

Dr. Karl Christofferson, who was in the employ of the State at Munuscong State Park, Michigan, wrote to Mr. Magee: "There is no question in my mind but that there is a marked migration of the Chickadee in the late summer and fall." Many more Chickadees were seen at this season by Dr. Christofferson than at other times of the year. In February, 1922, Mr. Magee and Dr. Christofferson saw only four Chickadees on a four-day trip looking for winter birds forty-five miles north of Sault Ste. Marie.

4. Most of the birds left in March and April.
5. There was very little if any migration in mid-winter.
6. There was very little migration of Chickadees through Ithaca in the spring.
7. There was a wandering movement of Chickadees in March and April and probably another in July.
8. Thirty birds spent the winter in an area of eighty acres. There were approximately one hundred and twenty-five Chickadees in a square mile of semi-wooded country.
9. The flocks of Chickadees behaved as semi-permanent units.
10. The number in a complete flock was about fifteen. Often some members of a flock became temporarily separated from it.
11. The flocks were not family groups.
12. The association of Chickadees with Nuthatches and other birds is a temporary one.
13. Each flock had a rather definite, restricted feeding territory of from forty to seventy acres.
14. The presence of feeding stations restricted the feeding range, but even without feeding stations the birds remained in a definite territory.
15. The birds had no definite routes which they traversed within their territories. They had no schedule of time for feeding.
16. The length of time a flock remained at a station was quite variable. They often stayed over an hour. Individuals sometimes stayed nearly all day.
17. On the average seven or eight visits a day were made by a flock to a feeding station.
18. Feeding stations three-eighths of a mile apart, or one station to seventy-five acres is sufficient to feed all the Chickadees in a given area.
19. Stations less than three-eighths of a mile apart were commonly visited by the same flock; when between three-eighths and half a mile apart, some birds occasionally went from one station to the other, but in general, different flocks fed at the two stations; when more than half a mile apart, the same birds were rarely reported at both stations.
20. It is thought that the feeding stations did not increase the number of the birds in the area.
21. Chickadees often nest for successive years in the same territory, sometimes in the same nesting-box.
22. All the nests found were in or near the birds' winter feeding territory.
23. Chickadees were observed to feed the young on the average once in two and one-third minutes, when the young

were two-thirds grown. They were fed at irregular intervals, the parents not spending all their time getting food.

24. They ranged about one hundred yards from the nest, although most of the food was obtained much nearer.

25. Breeding birds often disappeared, and, in this event, the surviving bird frequently obtained a new mate.

26. If a new mate was not obtained, the surviving bird raised the brood alone, feeding the young at approximately the same rate that a pair did under normal conditions.

27. A bird found raising a brood is not necessarily the real parent of that brood.

28. The young birds disperse widely from the nest.

#### THE NUTHATCH

1. All or nearly all the individuals of the Nuthatch found at Ithaca were permanent residents. There is no evidence of any migration in this locality.

2. Each pair of Nuthatches had a definite feeding territory throughout the year.

3. The size of the territory in the winter was about twenty-five or thirty acres in wooded country and apparently about fifty acres in semi-wooded country.

4. They ranged over an approximately equal area during the nesting season, though it was not necessarily the same area.

5. Feeding stations had no effect on the feeding range of the Nuthatch.

6. Feeding stations should be about one-fourth of a mile apart for the Nuthatch.

7. The nest is built in or near the winter feeding territory.

8. Besides the mated pairs which have established territories there are a number of wandering birds.

9. In case of the disappearance of one member of a mated pair, its place may be taken by one of these wandering birds.

10. Nuthatches may nest in the same hole for successive seasons.

11. The large size of both winter and breeding territories is apparently not caused by inability of the birds to find sufficient food in a smaller area. They are able to obtain plenty of food quite near the nest. The feeding of the young birds is apparently not such a severe task as it is commonly supposed to be.

#### CONCLUSION

The marking of birds so that individuals can be recognized at sight more than repays for the trouble involved in making



and applying the bands or colors. When stains or colored bands are used, bird-tagging ceases to be merely a game to see how many birds can be banded. It takes on a greater fascination and greater scientific value. We are able to trace their comings and goings, to learn of their tragedies and comedies, and to probe more deeply into the mysteries of the ways of bird life.

LITERATURE CITED

- BUTTS, W. K.  
The Feeding Range of Certain Birds.  
*Auk*, 44:329-350. 1927.
- CAHN, A. R.  
Bird Notes from Itasca Co., Minnesota.  
*Wilson Bull.* 32:121. 1920.
- CLEGHORN, ALLEN  
Winter Birds of Algonquin Park, Ontario.  
*Wilson Bull.* 25:147. 1913.
- COOKE, W. W.  
Report on Bird Migration in Miss. Valley. Bull. No. 2, Div. Econ.  
Ornithology, U. S. D. A. 1888, p. 277.
- DANIEL, J. W.  
Summer Birds of the Great Dismal Swamp. *Auk*. 19:18. 1902.
- DAWSON, L. D., and Jones, J. L.  
Birds of Ohio. 1903.
- DIONNE, C. E.  
Les Oiseaux de la Province de Québec. Quebec, 1906.
- EATON, E. H.  
Birds of New York. 1914.
- GRISCOM, L.  
Birds of New York City Region. *Am. Mus. Nat. Hist.* 1923.
- HARLOW, R. C.  
Breeding Birds Penn. and N. J. *Auk*. 35:146. 1918.
- HOWE AND ALLEN.  
Birds of Massachusetts. 1901.
- METCALF, Z. P.  
Birds of the Cape Fear Region of the North Carolina Coast. *Wilson  
Bull.* 34:33. 1922.
- MINOT, H. D.  
Land-Birds and Game-Birds of New England. 1903.
- NORMAN, E. S.  
Additions to the Birds of Shoal Lake, Manitoba. *Can. Field Nat.*  
34:154. 1920.
- ODELL, T. T.  
The Food of Orchard Birds with Special Reference to the Pear Psylla.  
N. Y. S. Sta. Bull. 549:1-19. 1927.
- PHILIPP, P. B.  
Birds Observed in the Carolinas. *Auk*. 27:322. 1910.
- PICKENS, A. L.  
Birds of Upper South Carolina. *Wilson Bull.* 40:245. 1928.
- PREBLE, E. A.  
Birds of Keewatin. N. A. Fauna, No. 22. 1902.
- TAVERNER, P. A., and SWALES, B. H.  
Birds of Point Pelee. *Wilson Bull.* 20:111. 1908.

TUFTS, W. R.

Notes of the Birds of the Grand Pré Region, Kings County, Nova Scotia.  
*Trans. of the Nova Scotian Inst. of Sc.* 14:195-196. 1917.

WETMORE, ALEXANDER

Migrations of Birds. pp. 84-85. 1927.

WHITTLE, HELEN G.

Recent History of a Pair of White-breasted Nuthatches. *Bull. N.E. B.B.*  
*Ass.* 2:72-74. 1926:

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## REPORT OF THE RECORDING SECRETARY OF THE NORTHEASTERN BIRD-BANDING ASSOCIATION FOR 1930

A BRIEF résumé of the Association's activities for the past nine years may be of interest. You will notice in the figures to follow that although the number of banding members decreased somewhat until 1930, owing to the fact that members living outside the territory covered by our Association gradually left it and joined the associations whose territory included their banding stations, and also because those who took up banding as a fad or amusement dropped out, still the number of birds banded and the returns as a rule have steadily increased from year to year. We feel that the eighty-three members who banded last year comprise those who are truly interested, many of them from the very beginning, finding that banding is worth while and of scientific value, and who really care about the protection and study of our native birds.

In this connection Frederick C. Lincoln, writing in the January, 1931, *Bird-Banding*, under the title "Bird-Banding: Its First Decade under the Biological Survey," is very encouraging when he says that "personal contact with a great many of the banders at their trapping stations has demonstrated that the Bureau's coöperators are almost without exception worthy champions of the highest conservation principles."

The following statistics are given, generally speaking, in round numbers: