

JUNCOS OF THE HIGH PLATEAUS

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This paper is an attempt to describe the breeding cycle of the Slate-colored Juncos on the High Plateaus of southwestern New York (Eaton S.W., *Kingbird* 5:94-97). From 1950 to 1964 I have lived in their nesting habitat on the Ten Mile Rd., town of Carrollton, Cattaraugus County (42°, 7' north; 78°, 35' west). Although my attention has never been concentrated on this species for any length of time, I have accumulated enough fragmentary data to give a fair account of their nesting.

A. H. Miller (Speciation in the Avian Genus Junco, *Univ. Calif. Publ. in Zoology* 44: 173-434.) considered these birds to be intermediate between *Junco hyemalis carolinensis* of the southern Appalachians and *Junco h. hyemalis* of the Catskills, Adirondacks and points north.

We can see Juncos here any month of the year but we also have a distinct spring migration of individuals which have wintered to the south of us. This migration starts about March 15 and reaches a peak about April 7 (8 year average 1952-1959). Migrants are scarce after the first week in May, only the residents remaining. (See also Tanghe, L.J., *Kingbird* 5: 69-84 for Rochester Area)

Fall migration starts about September 25 and peak numbers may be seen in large flocks of up to 100 individuals about October 28 (average fall maximum 1952-1959). This migration is about over by mid-November.

During the winter, flocks of 10 to 20 individuals are quite generally distributed in the wooded valleys along streams, in areas where they nest during the summer. Here their favorite foods appear to be Hemlock and Yellow Birch seeds and when abundant, Collembola, or snow fleas, and Stoneflies, Plecoptera. Occasionally large flocks are seen in the open parts of the Allegheny River valley mixed with Tree Sparrows and feeding in weed fields.

The Breeding Cycle: First territorial song by the locally breeding birds began on the average date of March 12 (figured on 10 years-1952 to 1961). Dates of first song ranged from February 26, 1958 to March 21, 1952 (see Figure).

This song was identified as territorial if birds sang from the tops of trees 30-75 feet from the ground, several times in sequence, in apparent answer to other birds within hearing. Migrants might be passing through at this time but were in fairly well-defined, restless flocks and when singing were lower down or on the ground.

Before first eggs appeared in nests there was a rapid falling off of territorial singing, followed by a slight rise in singing at the time of the

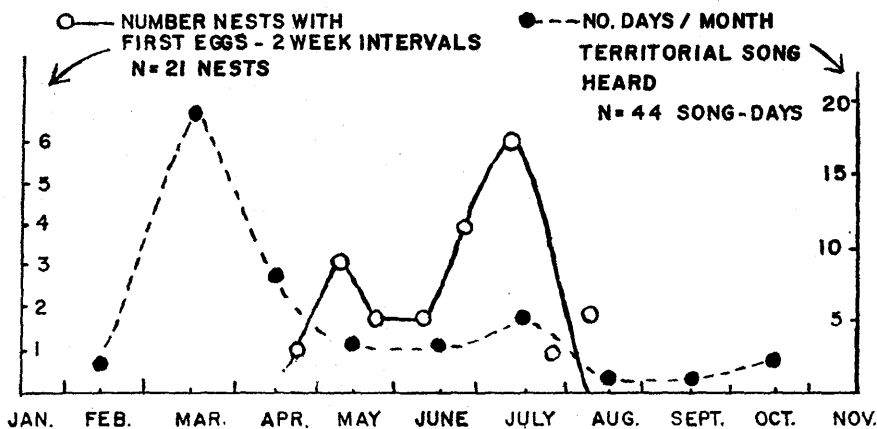
second nesting. In late September and October a slight recrudescence was noted; the latest territorial singing was on October 15, 1962.

First pair bonds were established on March 13, 1955, March 30, 1957 and March 25, 1959. I have assumed this was accomplished when 2 birds (apparently male and female on plumage characteristics) fed close together and followed one another in moving about in an acre or so of area.

Nest building is delayed or at least prolonged following pair formation. They are similar in this to the Song Sparrow (Nice, M. M., *Studies in the Life History of the Song Sparrow I*, *Trans. Linnaean Soc.* IV: p. 65 and 98). First building began about the third week in April and the earliest first egg was laid on April 28, 1951 (not actually found on this date but calculated back from its hatching date). The Figure shows that this population is double brooded and that probably the second brood is more successful than the first at fledging young. There is, of course, much bias in these figures because many nests were found in late July and August with young at various stages of growth representing second broods and renesters. This would not have been true of the peak in May.

The Figure shows actual and calculated dates of nests with first eggs. Several assumptions have been made to utilize fragmentary bits of information on 21 nests. It is assumed that, first, incubation takes 12 days; second, young remain in the nest for 10 days; and third, it takes 4 days to

Figure



Number of days per month territorial song from Juncos was identified in breeding territory from the spring of 1950 to the fall of 1961. Songs were recorded in a field notebook on a total of 44 days. Also shown are the number of first eggs in 21 nests assembled into 2 week intervals. (See text for further details)

lay 4 eggs. When a bird was flushed from 4 eggs and the nest was not seen again, 10 days (4 days to lay eggs, plus 6 days for half incubation) were subtracted from that date. The age of young in the nest in days was estimated from experience with other small passerines. In 4 nests first eggs were actually found, in the other 17, calculations of first eggs were made as described above.

In 15 nests where it was determined with fair accuracy, 4 eggs (or 4 young) constituted full clutches.

Eleven nests were placed on the ground usually along a logging road in the woods where a cut bank 2 to 6 feet high was topped by humus and leaf litter. The nests were located under the leaf litter at the top of the cut bank. Three nests were placed on ledges of the vertical faces of large conglomerate boulders about 6 to 8 feet from the ground. Five nests were about 2 feet from the ground in small Hemlock hedges adjacent to houses. One was placed on an upturned Yellow Birch root system and another in a neighbor's wind-vane bird feeder approximately 8 feet from the ground.

Copulation was observed once on July 17, 1955. The female was perched near the end of a Hemlock bough about 10 feet from the ground. The male flew down from a perch about 10 feet away, jumped on her back, copulated for about 3 seconds and flew away.

Incubation: One bird which had 2 eggs on June 18, 1960 hatched the last of 4 eggs July 1, for an incubation length of 12 days. Another which completed a clutch of 4 eggs May 12, 1961 hatched the last egg May 25 for an incubation length of 13 days. V. A. Greulach (*Auk* 51:389-390) reported one incubation length of 12 days from the same general area.

Nestlings remained in 2 nests, where hatching and departure dates were known, for 9 days. Greulach's (op. cit.) single brood left the nest when 12 days old.

Dependent fledglings: In one case where birds nested in a Hemlock hedge in front of our house the young were banded at nest departure. The father of this brood was crippled and easily identified. These young, which left the nest August 3, 1959, were seen being fed by their father August 24 and August 27. On August 28 one young banded bird was seen feeding by itself at some cracked corn in our feeder behind the house. On August 30 one of these same young perched adjacent to its father on the feeder and crouched facing towards him without giving the usual begging call. The father gave an upward posture towards its young 4 or 5 separate times, finally flying at the young and chasing it for a short distance. The young before flight remained in a crouched position as though begging but did not give the begging call. Possibly the lack of the begging call in this situation was the reason for the father chasing his

own young which he had fed so eagerly 3 days before. The young had apparently not learned the upward aggressive posture which an older bird would have given in a similar context.

On September 19, 1959 the father mentioned above was still at our feeder and about through with his post-nuptial molt. Nearby, but completely independent, was a banded juvenal bird which had just about completed its post-juvenal molt. A few juvenal feathers were present in the head, and the undertail coverts had not quite completed their growth, 46 days after the bird left the nest.

In 1960 a pair nested in about the same spot. The young fell out of the nest, perhaps a day or so early, on July 9 and were banded. On July 30 one of these young was at the same feeder and was chased a short distance by one adult bird. A few minutes later it was seen being fed by another adult Junco. August 7, 29 days after leaving the nest the banded young were starting to get visibly grey feathers in the scapular regions and in the middle of the back but the rest of the plumage was typically juvenal. On this date they were apparently independent. On September 14 the locally breeding birds were still coming to our feeders and the young had on this date completed their post-juvenal molt.

Flocks of 10 to 15 individuals composed of first and second brood juvenals and adults can be seen in the breeding areas until the migrants return from the north in September to confuse the identity of the resident individuals. Although I have banded about 20 locally raised birds, I still can not be sure whether the locally nesting populations are permanent residents because they have never been recaptured in the winter. But it is very possible that the small flocks seen in the nesting areas during the winter are local birds and the larger flocks of the more open areas of the river valley are more northern breeders. Perhaps 1% of our Song Sparrow populations remain in the area for the winter—at least we see them all winter along the banks of the Allegheny. I suspect an even higher percentage of our Juncos are permanent residents.

Miscellaneous Notes: Roosting has been noted on several occasions and is similar to that described by W. J. Hamilton, Jr. (*Auk* 1940, p. 258). On April 13 while night banding Robins, 4 Juncos were flushed from roosts in thick Norway Spruces 3 to 8 feet from the ground. On December 28, 1960 after dark a Junco was flushed from the nest in a Hemlock hedge 2 feet from the ground where there had been a successful rearing of Juncos that summer. The flock which had been feeding at cracked corn behind the house left the immediate area after this date but returned January 25, 1961 and that night I again flushed a bird from the nest. The nest, then, functions not only as a place to nurture the eggs and young, but occasionally as a roosting site in winter.

On June 29, 1962 I observed an adult Junco feeding a semi-independent Cowbird. Social parasitism of the Junco must be quite rare in this area.

It has been reported from New York (Friedmann, H. Host, Relations of the Parasitic Cowbirds, *U.S. Nat. Mus. Bull.* 233, p. 161) but not specifically from these breeding populations.

Table

	High Plateaus (Present Study)	Great Smokies (Tanner)
Years of Data Collecting	1950-1964	1951-1958
Altitudes where Nesting	1600-2450 ft.	2700-6000 ft.
Number Nests Found	21	84
First Territorial Singing	March 12	March 19
Earliest First Egg of Clutch	April 28	April 20
Latest First Egg of Clutch	Aug. 3	July 19-30
Clutch Size Apr.-June*	4 eggs 100%	4 eggs 75%, 3 eggs 24%
Clutch Size July or Later†	4 eggs 100%	4 eggs 22%, 3 eggs 61%

* Sample size High Plateaus 9, Great Smokies 92

† Sample size High Plateaus 6, Great Smokies 18

Discussion

The breeding cycle of this northern outpost of *Juncos* with a southern accent (intermediate between *J.h. carolinensis* and *J.h. hyemalis*) is surprisingly like the *Juncos* breeding in the Great Smoky Mountains, 7 degrees of latitude to the south (Tanner, J., *Juncos in the Great Smoky Mountains, The Migrant* 29: 61-65). Further, *Juncos* of the State of Maine also are double brooded and nest from April to July (Palmer, R. S., *The Birds of Maine, Bull. Mus. Comp. Zool.* 102:559). If we go

farther north to Newfoundland broods also appear to be raised in May and July (Peters, H. S. and T. D. Burleigh. *Birds of Newfoundland*. Dept of Nat. Resources, Newfoundland, St. Johns., p. 387). They mentioned clutch sizes of 4 to 5 eggs. On the High Plateaus I have never found a clutch with 5 eggs and, in the Smokies, Tanner, citing Stupka, said only one clutch of five eggs has been found there.

In conclusion it is interesting to note that subspecific variability, clutch size and the degree of migratory habit seem to be more malleable from the Great Smoky Mountains to Newfoundland than the timing of the reproductive cycle.

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MEETING OF THE NATURE CONSERVANCY, WESTERN NEW YORK CHAPTER

The Nature Conservancy, Western New York Chapter, invites members of the Federation and their friends to attend its 16th annual meeting to be held at the Buffalo Museum of Science, Buffalo, N.Y., September 10-12, 1965.

The agenda includes program and tour of Moss Lake Sanctuary on Friday, September 10, with exhibits, program and reception in the evening at the Museum; general program, business meeting and annual dinner, Saturday; field trip to Deer Lick Sanctuary, Sunday.

For detailed information about the meeting, write to: The Nature Conservancy, 2039 K Street, N.E., Washington, D.C. 20006.



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