

1917. Notes on the Fringilline Genus *Passerherbulus* and its Nearest Allies. Ohio Journ. Sci., 17 (8): 332-336.

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Scott's Sparrow, *Aimophila ruficeps scottii*, a New Bird for Kansas.—While examining a series of miscellaneous unidentified and uncatalogued skins of birds in the collection in the Museum of Natural History of the University of Kansas, I found a male specimen of a Rufous-crowned Sparrow, *Aimophila ruficeps*, which was taken in Schwarz Canyon, Comanche County, Kansas, on June 7, 1936, by C. W. Hibbard. Comparative study showed that it belongs to the subspecies *A. r. scottii* which, according to the A. O. U. Check-List of North American Birds (1931: 342), ranges northeastward only as far as southeastern Colorado. This is the first record of this bird in Kansas. Our knowledge of the birds of southwestern Kansas is incomplete, and this species may be resident there in summer since the bird was taken in the nesting season. The specimen is now number 29222 in the collection of the Division of Birds.—R. W. FREDRICKSON, *Museum of Natural History, University of Kansas, Lawrence, Kansas.*

Development of White in Tails of Juncos, *Junco hyemalis*.—Variations in the white areas in the tail feathers of Slate-colored Juncos, *Junco h. hyemalis* (L.), have received some attention. A few juncos trapped for banding offered an opportunity for observation, although no nestlings or fledglings were seen for a definite determination of age.

Between November, 1929, and March, 1948, we banded 170 juncos of which 32 (18.8 per cent) repeated the same winter, and 13 (7.6 per cent) returned during subsequent seasons. During four winters, 113 drawings were made of the configurations of the white areas in the three outer tail feathers of 74 juncos. All these juncos had the first pair of rectrices completely white, except one which had light gray tips to the first and second feathers. The second rectrices were entirely white in 53 per cent of the birds. Because the returning juncos seemed to show an increase in the amount of white it was decided to collect feathers as better evidence of actual conditions.

From November, 1938, to April, 1948, the involved rectrices were plucked from 56 individual juncos, from some over periods of three or four years. Eleven of these juncos repeated in the traps the same season when banded and eight returned during subsequent winters. All 56 juncos had the first outer pair of rectrices completely white, except one or two; and in 19 the second outer pair was wholly white.

These collected feathers revealed certain characteristics of feather growth in Slate-colored Juncos. The feather vane is normally uniformly white or slate-colored, but two instances of mottling were seen. The mottled appearance was apparently caused by some of the dark diurnal growth bars retaining the slate-color longer than the intervening bars which are developed during the night. In the changing juvenal feathers, the rachis becomes white faster than do the vanes.

Junco No. 42-169079, banded November 4, 1945, and judged by streaks on the breast to be a young bird, showed in its plucked third rectrix 18 per cent white, measured by a cellophane counter of one and two square millimeters. The bird was trapped the following winter, and the succeeding feather from the same papilla measured 40 per cent white. This amount remained constant in the following feathers present 12 and 15 months later. These later uniform feathers were adult, without doubt, while showing nearly half the area white.

Juncos do not molt during the winter. Juvenal outer tail feathers which are plucked during the winter will be succeeded, not by feathers of duplicate design, but by feathers having the color pattern at the time of the next molt, due some months later.

From junco No. 42-169011, banded December 24, 1943, the third right rectrix was plucked and found to have only 16 per cent white; the succeeding feather collected February 7, 1944, measured 70 per cent white. This was another sudden winter transition from juvenal to adult plumage. Another junco, No. 44-14954, with 20 per cent white in the collected third rectrix, had twice that amount six weeks later in the succeeding feather. Junco No. 42-156538, with the two outer feathers entirely white and the third measuring 27 per cent white on January 3, 1943, increased the area in the following feather to 34 per cent white a year later; the next year this area was the same size; this suggests that the adult third rectrix may be only one-third white. This was also shown in junco No. 44-14927 in which the area increased from 13 to 34 per cent and remained there. Another junco of unknown age had 77 per cent white, which increased to 86 per cent. These limits of 34 and 86 per cent white in the probable adult plumage represent individual variations.

Dr. G. Hapgood Parks wrote me that a junco banded in Maine as a nestling, returned a year later, mated with her banded father, and raised a family. This shows that a junco may be sexually mature in one year, although at that time having a "juvenal-type" plumage. The next year she returned and mated with her banded brother, at which time her outer rectrices were entirely white, but the second was "white with a gray area near the base." Her two year old brother "showed outer and second feathers completely white," suggestive that the male develops color patterns more rapidly than does the female or that it normally has more white.

Paired tail feathers in juncos normally are symmetrical in the amount and shape of the white patches, because they are developed at the same time. Where they occasionally are unsymmetrical in the juvenile bird the feather having the more white was developed later. Removal of a feather can apparently advance the preseasonal development of feathers of succeeding molt design.—HAROLD B. WOOD, 3016 North Second St., Harrisburg, Pennsylvania.

Behavior Responses of the Slate-colored Junco, *Junco hyemalis hyemalis*.

—An experiment in which five Slate-colored Juncos were subjected to a series of electrical shocks was recently conducted in the Ornithological Laboratory of Ohio State University. This experiment was designed in such a manner that the birds were given alternate courses to reach food and water without being shocked: (1) they could hop over the shock-wires onto the edges of the trays; (2) they could reach over the wires with a slight stretching of the neck; or (3) they could fly directly to the food and water. A cage 74 inches by 26 inches by 25 inches was used, and the side toward the observer was thoroughly curtained. The curtain was fitted with a small peep hole through which observations were made. Observations were made both before and after shock was applied and extended for one or two hours each time after the food and water were daily placed in the cage. Shock was not applied between the periods of observation. Each bird was marked for individual identification. All of the birds had been held captive six or more months prior to the time of the experiment.

During the first period of observation each bird hopped over the wires after it had received an initial shock experience. The birds continued to hop over the wires without further shock experiences through the remainder of the two-hour period of observation. Likewise, on the second day the birds invariably hopped over the wires after each had received an initial shock experience. On the third day the first