

Finches, but as they grew older they were less on the defensive and soon became more belligerent.

The last of the adult birds, a molting female, was seen on August 7. On August 15 the last immature bird was seen.

An immature male was found dead beneath the feeding tray at 51 Franklin Avenue on July 24.

The selection of the vicinity of Saranac Lake as a breeding place may be due to the abundance of food, supplied by the residents of the village, which delayed the departure of some of the birds that nest early. The similarity of the Adirondack region to the Canadian areas where they have been seen in the breeding season may also be an important factor.

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B. M. SCHAUB, 159 Elm St., Northampton, Massachusetts.

The Occurrence and Possible Significance of a Spring Molt in Leconte's Sparrow.—As nearly as can be ascertained from the accounts of Dwight (1900: 188-193) and other authors, the only North American emberizine finch of the "sharp-tailed" group known to undergo a complete spring molt is the Sharp-tailed Sparrow, *Ammodramus caudacutus*. Leconte's Sparrow, *Passerherbulus caudacutus*, is not treated in Dwight's work, and we found little in the subsequent literature in regard to its molts. However, Chapman (1910: 18) said the "spring molt [of Leconte's Sparrow] is confined to the head and breast." Accordingly, it was a matter of interest when extensive molt was noted in a series of five Leconte's Sparrows collected in April, 1950, in Marshall County, Kentucky, by Mengel. We have therefore undertaken a careful examination of 35 specimens in the University of Michigan Museum of Zoology, taken in February, March, April, and May.

Two of the Kentucky specimens were plucked and examined minutely. We examined the remainder of the specimens under an 18-power binocular microscope for indication of feather wear and replacement. New and incoming body feathers can be readily distinguished from old feathers by this method. Rectrices and remiges were also examined for evidences of molt. Where basal sheaths are present there can be no doubt that the feathers are new; however, with wear alone as a criterion, the matter is more difficult. We believe that the age of rectrices can be judged with some accuracy under a lens, but considerable uncertainty remains in regard to remiges.

The spring molt evidently begins in late March or early April. Three February specimens from Texas are in worn plumage with no indication of recent feather replacement. Of six specimens, from various localities, taken from March 20 to 31, the only molting bird is a female from Matagorda, Texas, collected on March 31, 1936, by H. H. Kimball. This bird has a considerable admixture of fresh feathers on the throat, breast, and belly, indicating that molt must have begun at least several days previously. There is, however, no evidence of molt on the upperparts.

Of 12 April birds eight taken on or after April 12 were actively molting or had nearly completed the molt; four collected on or before April 8 were not molting. The nature of the molt can best be described from the freshly collected Kentucky specimens referred to above. These lent themselves to more complete examination, and the molt in them appears to be similar to that in older study skins. Typical of the height of the body molt is RMM No. 1183, a male, taken on April 16, 1950. This is described below: crown, lores, chin, cheeks, nape, dorsal tract, scapulars, ventral tract, and upper tail-coverts all in heavy molt; under tail-coverts in light molt; femoral and crural tracts molting; slight molt in under wing-coverts, probably nearly complete; middle four or five greater secondary coverts lacking, or short and sheathed, the molt apparently progressing from proximal to distal; no perceptible molt in lesser or middle coverts, but these feathers seem fresh and may already have been replaced; innermost secondaries (*i. e.*, tertials) being replaced. Two other Kentucky specimens, RMM Nos. 1174 and 1175, both males taken on April 15, have almost completed the body molt and are in fresh, unfaded plumage.

Fourteen May specimens at hand, collected for the most part on the breeding grounds in North Dakota, Alberta, and Michigan, but including one taken on May 1, 1936, at Matagorda, Texas, are entirely in unworn, unfaded body plumage, indicating that a molt has been recently completed.

We found no positive evidence of molt of remiges other than that involving the tertials. Comparison of birds taken in late winter and early spring with specimens taken in May indicates, in general, greater wear of primaries and secondaries in the May birds.

The tail molt is considerably more difficult of analysis. The majority of late spring specimens seems to have had no spring tail molt whatever. On the basis of sheathed rectrices, only four of the 35 Leconte's Sparrows were indisputably molting their tail feathers. Three of these were May birds which had completed the body molt, and in all three the tail molt was asymmetrical, involving one, four, and seven feathers respectively. These feathers may, of course, have been lost by mishap. However, the possibility that a complete tail molt does occur in some individuals in spring is suggested by RMM No. 1183, whose body molt was described above. In this bird the tail was full grown and unworn, with the four outer left and two outer right feathers sheathed at their bases. The tail feathers of several other specimens, including RMM No. 1184, seem to be insufficiently abraded to have been worn since the previous autumn.

We have not emphasized color differences between early and late spring specimens, since we feel that more objective criteria are desirable in estimating age of feathers. Nevertheless, comparison of early and late spring birds in series clearly shows richer coloration in the latter, especially on the under parts. Furthermore, the light edgings on the feathers of the upperparts, which are lacking or much reduced in late winter birds, are present again in late spring. Subsequent wear and fading, after commencement of breeding activities, are rapid and marked.

The spring plumage acquired by the molt here described differs slightly but definitely from fresh fall plumage. The faint necklace of dark streaking on the breast usually characteristic of fresh fall specimens is nearly or totally lacking in the newly molted spring birds we have seen. It might be assumed that these streaks have been lost by wear, but even worn late winter birds usually have some remnant of these markings. The dorsal plumage in spring lacks some of the richness of tone (*i. e.*, abundance of warm browns at the expense of black) present in fall.

This consideration of the molts of Leconte's and other "sharp-tailed" sparrows brings up the question of the relationships of these birds. At one time, *Ammospiza* and *Passerherbulus*, as now understood, were considered congeneric ("*Ammospiza*," of Oberholser, 1905: 68; "*Passerherbulus*," of American Ornithologists' Union Check-List, 1910: 257-260). Oberholser (1917: 332-336), in a discussion of the generic relationships of the "sharp-tailed" sparrow group, placed the species then known in four genera ("*Thryospiza*" including *Ammospiza maritima* and *A. nigrescens*; *Ammospiza caudacuta*; *Passerherbulus "lecontei"* [= *caudacutus*]; and "*Nemospiza*" for Henslow's Sparrow, *Passerherbulus henslowii*). Oberholser separated his genera *Ammospiza* and *Passerherbulus* on the following grounds:

"[*Passerherbulus*].—Wing decidedly more than four and one-half times length of exposed culmen; tail about equal to wing; first primary (counting from outermost) longer than fifth.

"[*Ammospiza* and *Nemospiza*].—Wing not decidedly more than four and one-half times length of exposed culmen; tail decidedly shorter than wing; first primary (counting from outermost), not longer than fifth."

None of these characters in itself seems to us to be of greater phylogenetic significance than the presence or absence of an extensive prenuptial molt (although in some species, the number of annual molts varies in different subspecies (see Mayr, 1942: 50-52)). Within the genus *Ammospiza* the species *maritima* has no trace of such a molt (Dwight, 1900: 193), while *Ammospiza caudacuta*, as previously mentioned, has a complete spring molt. In Henslow's Sparrow, probably only a partial replacement of the feathers of the head and chin takes place in spring (Dwight, 1900: 191-192), while in Leconte's, as here shown, the spring molt is very extensive. Although further study is required, we conclude that the evidence suggests a closer relationship between *Ammospiza caudacuta* and *Passerherbulus caudacutus* than the currently accepted classification (American Ornithologists' Union Check-List, 1931: 337-338) indicates. In addition, Leconte's and Sharp-tailed sparrows are remarkably similar in song, juvenal plumage, and (in inland populations of Sharp-tails, at least) habitat selection.

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—HARRISON B. TORDOFF AND ROBERT M. MENGEL, *University of Michigan Museum of Zoology, Ann Arbor, Michigan.*

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.