

THE RELATIONSHIPS OF SPARROWS IN THE GENERA
AMMODRAMUS, *PASSERHERBULUS*, AND *AMMOSPIZA*
WITH A DESCRIPTION OF A HYBRID
LE CONTE'S × SHARP-TAILED SPARROW

BERTRAM G. MURRAY, JR.

THE first and second editions of the A.O.U. *Check-list* (1886, 1895) list the Henslow's Sparrow (now *Passerherbulus henslowii*) and the Le Conte's Sparrow (now *Passerherbulus caudacutus*) in the subgenus *Coturniculus* of the genus *Ammodramus* with the Grasshopper Sparrow (now *Ammodramus savannarum*). When Ridgway (1901) raised the subgenera (*Passerculus*, *Centronyx*, *Coturniculus*, and *Ammodramus*) of *Ammodramus* to generic rank, he separated the Henslow's and Le Conte's Sparrows from the Grasshopper Sparrow and placed them with the former members of the subgenus *Ammodramus*, the Sharp-tailed Sparrow (now *Ammospiza caudacuta*) and the known Seaside Sparrows (now *Ammospiza maritima* and *nigrescens*), a treatment later followed by the A.O.U. (1903). The *Ammodramus* group remained intact, despite being renamed *Ammospiza* (Oberholser, 1905) and then *Passerherbulus* (Stone, 1907), until Oberholser (1917) split the group into four genera: *Thryospiza* for the Seaside Sparrows, *Ammospiza* for the Sharp-tailed Sparrow, *Passerherbulus* for the Le Conte's Sparrow, and *Nemospiza* for the Henslow's Sparrow. Subsequently the A.O.U. (1931) recognized the genus *Ammospiza* containing the Sharp-tailed and Seaside Sparrows, the genus *Passerherbulus* containing the Le Conte's and Henslow's Sparrows, and the genus *Ammodramus*, containing the Baird's (*A. bairdii*) and Grasshopper Sparrows. No changes have been made since, and as yet no diagnoses exist for these genera as presently constituted.

More recently Tordoff and Mengel (1951) questioned the present classification when they discovered that the prealternate molt of the Le Conte's Sparrow was extensive and thus more like that of the Sharp-tailed Sparrow than that of the Henslow's Sparrow. Graber (1955) actually transferred the Le Conte's Sparrow to *Ammospiza* on the basis of the similarity of the juvenal plumages of the Le Conte's and Sharp-tailed Sparrows. With the discovery of a hybrid between the Le Conte's and Sharp-tailed Sparrows (described below), it seems appropriate to consider the evidence of molt, plumage, and voice bearing on the relationships of these species.

Molt.—The descriptions of the molts of the species being considered are generally incomplete or erroneous. Detailed studies for most species have yet to be made. The best that can be done now is a brief comparison of what is known.

The Le Conte's Sparrow has an incomplete first prebasic (= postjuvinal) molt and an incomplete prealternate (= prenuptial) molt. Of 99 specimens of juveniles and immatures that I examined none showed any indication of molting primaries. This confirms Graber's (1955) suggestion that the molt is incomplete. Tordoff and Mengel (1951) showed that the prealternate molt is extensive but does not include the primaries or secondaries.

Dwight (1900) stated that the first prebasic molt of the Sharp-tailed Sparrow is incomplete and that the prealternate molt is complete. He is followed by all subsequent authors except Forbush (1929), who stated that the first prealternate molt is complete but subsequent prealternate molts are "complete or nearly complete . . . as in the young" (?). While examining hundreds of spring specimens I found only a few that had molted all of the flight feathers. Most individuals of all races that had completed molting molted only three to five outer primaries, but a few molted no primaries or secondaries. Thus, the prealternate molt is variable in the extent of molting the flight feathers.

According to Dwight (1900) the first prebasic molt of the Seaside Sparrow is complete—Chapman (1910) stated erroneously that only a few individuals molt primaries and secondaries—and there is no prealternate molt. However, I have seen several April specimens that were undergoing extensive body feather molt and some May specimens that were in fresh plumage. However, most specimens show little, if any, indication of a prealternate molt. Thus, the prealternate molt appears to vary in extent.

The molts of the Henslow's and Grasshopper Sparrows are nearly identical (Dwight, 1900; Sutton, 1935). There is a complete first prebasic molt and an incomplete prealternate molt that is restricted to a few feathers on the head and face.

With regard to molts then, the Le Conte's and Sharp-tailed sparrows are more similar to each other than either is to its present congener, and the Henslow's Sparrow is practically identical with the Grasshopper Sparrow.

Plumage.—The juvenal plumages of the Le Conte's and Sharp-tailed Sparrows are sufficiently similar that Breckenridge (1930) and Roberts (1932) based their descriptions of the juvenile Nelson's Sharp-tailed Sparrow on a juvenile Le Conte's Sparrow specimen (Dickerman, 1962). Graber (1955) has already transferred the Le Conte's Sparrow to the genus *Ammospiza* on the basis of this similarity. Juvenile Le Conte's and Sharp-tailed Sparrows are streaked on the back, whereas juvenile Henslow's Sparrows have a scalloped pattern similar to that of juvenile Grasshopper Sparrows. The juvenile Seaside Sparrow is a darker and more subdued version of the juvenile Sharp-tailed Sparrow.

In pattern and coloration the adult plumages of the Le Conte's and

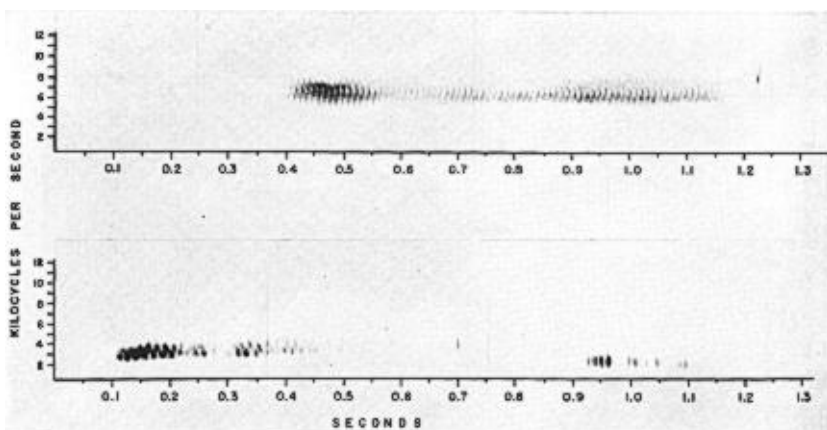


Figure 1. Sonograms of the songs of the Le Conte's Sparrow (upper) and the Sharp-tailed Sparrow (lower), recorded at the Lower Souris National Wildlife Refuge, North Dakota. One of the three faint introductory notes of the Le Conte's Sparrow's song and the middle portion of the Sharp-tailed Sparrow's song have not reproduced. To the ear the latter's song is continuous. The songs were recorded with a Uher 4000 Report-S tape recorder at a tape speed of 15 inches per second. The sonograms were produced with a Vibralyzer sound spectrograph.

Sharp-tailed Sparrows are more similar to each other than either is to any other species. The similarity extends to the pattern of individual feathers (see hybrid description).

Voice.—In comparison with published sonograms of other finch songs (e.g. Borror 1961; Borror and Reese, 1954) the sonograms of the Le Conte's and Sharp-tailed sparrows' songs (Figure 1) appear to be more similar to each other than to those of other species.

A HYBRID LE CONTE'S \times SHARP-TAILED SPARROW

In the National Museum of Canada is a specimen (CNM 36939) that appears to be a hybrid between the Le Conte's and Sharp-tailed Sparrows. The specimen (Figure 2) resembles in general appearance the Le Conte's Sparrow, but in several characters it resembles the Sharp-tailed Sparrow or it is intermediate between the two species. The specimen, a male, was collected by A. Macpherson 18 June 1949 on Ship Sands, an island in the mouth of the Moose River, Ontario, near James Bay. In the following description the hybrid is compared with 16 male Le Conte's Sparrows and 22 male Sharp-tailed Sparrows, all taken in June along the shore of James Bay.

Head.—The median crown stripe of the Sharp-tailed Sparrow is broad and gray with a few feathers having an olive tinge in some specimens. The feathers of the lateral crown stripes have black centers and reddish-brown edgings that produce a distinctly streaked appearance. In contrast, the Le Conte's Sparrow has a narrow median crown stripe that is tannish-white with a yellowish-buff spot at the anterior end. The lateral crown stripes have black centers and narrow buffy edges that soon wear off, giving a flecked appearance. In the hybrid the median crown stripe is

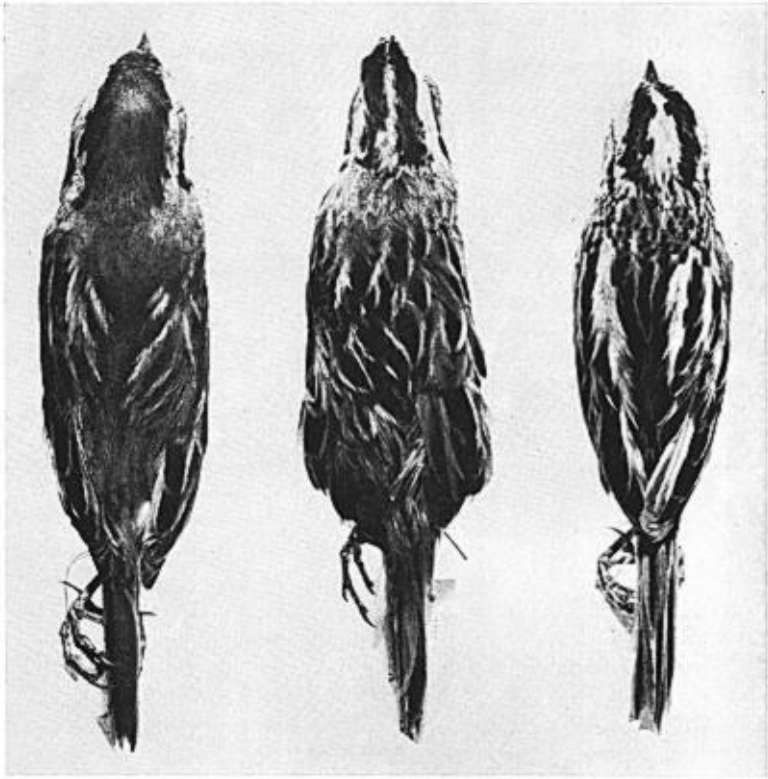


Figure 2. Dorsal view of a Sharp-tailed Sparrow (left), a Le Conte's Sparrow (right), and a hybrid Le Conte's \times Sharp-tailed Sparrow (center), all taken along the shore of James Bay, Ontario.

narrow but brownish-gray with a trace of yellowish-buff at the anterior end. The feathers of the lateral crown stripes have broad black centers with dark brown edgings.

The auriculars of the Le Conte's Sparrow are grayish-tan, and those of the Sharp-tailed Sparrow are dark gray. The superciliary stripe and the subauricular area are an intense buff in the Sharp-tailed Sparrow and a washed-out buff in the Le Conte's Sparrow. The auriculars of the hybrid are darker than in the Le Conte's Sparrow but lighter and browner than in most Sharp-tailed Sparrows. The auriculars are made conspicuous, as in the Sharp-tailed Sparrow, by an intense buff of the superciliary stripe and subauricular area.

Nape.—The feathers of the nape of the Le Conte's Sparrow are tawny-chestnut bordered by pale tan. A blackish subterminal spot varies in size and intensity. Only one specimen (CNM 32834) has indistinct spots and grayish edgings. The nape feathers of the Sharp-tailed Sparrow are reddish-brown tinged with olive or gray. The subterminal spot is indistinct. In the hybrid nearly all of the feathers lack the black subterminal spot. All of the feathers are reddish with gray edges. The gray

edging is narrow in the medial feathers but becomes increasingly broad in the more lateral feathers, giving a reddish appearance to the medial portion and grayish appearance to the lateral portions of the nape.

Back.—The proximal three-quarters or so of the back feathers of both species and the hybrid is dark gray. The distal portions of the back feathers are patterned with black, brown, buff, and white. All the back feathers of the Le Conte's Sparrow have a broad, brownish-black center, bordered by a narrow band of chestnut, and edged with varying amounts of buff. The medial back feathers are nearly symmetrical with a narrow pale buff edge, whereas the lateral back feathers are asymmetrical, having a narrow buff edge on the medial side and a broad, lighter buff edge on the lateral side. The scapulars are similar to the back feathers except that both edges are broad and light buff. In addition, they are tipped with chestnut and buff. The lateral edge of the lateral back feathers and the medial edge of the scapulars produce the two broad, light-buff, dorso-lateral stripes.

On close inspection the patterns of the back and scapular feathers of the Sharp-tailed Sparrow are similar to those of the Le Conte's Sparrow. Sharp-tailed Sparrows differ in having subdued coloration and a reduction in the amount and intensity of black pigmentation. The medial back feathers are brownish-olive, darkest at the center and becoming lighter toward the edges. The lateral back feathers are asymmetrical with a broad white lateral edge. The scapulars are nearly symmetrical with white edges.

In general appearance the hybrid's back feathers are similar to those of the Le Conte's Sparrow. Because of the make of the skin it is difficult to describe the different feather groups. However, the buffy edges are not so light nor so broad as in the Le Conte's Sparrow.

Tertials.—The tertials of the Le Conte's Sparrow are like the scapulars in pattern and coloration. The longest tertial in the Sharp-tailed Sparrow is dull brownish-olive, lighter and buffier on the edges. The two shorter tertials are blackish-brown with a narrow buffy medial edge and a broad, dull white outer edge. The tertials of the hybrid are much like those of the Le Conte's Sparrow except the black of the longest tertial is more diffuse and the buffy edges broader.

Rump and upper-tail coverts.—The rump feathers and upper-tail coverts of the Le Conte's Sparrow have a broad, dark brown central streak that is bordered by a narrow band of chestnut and edged by light buff. In the Sharp-tailed Sparrow the black is reduced to a narrow streak or a subterminal spot, and the general color is buffy-brown, sometimes with a slight reddish tint. Most of these feathers in the hybrid resemble those of the Sharp-tailed Sparrow, although a few, especially of the upper rump, that have broad, brownish-black centers are edged with the buff of the Sharp-tailed Sparrow rather than with the light buff of the Le Conte's Sparrow.

Underparts.—On the average the upper breast of the Sharp-tailed Sparrow is an intense buff with suffused olive-brown streaking, whereas that of the Le Conte's Sparrow is pale buff, usually without streaking. A few Le Conte's Sparrows have faint spotting on the breast, much like the spotting in juveniles. The streaks along the sides and flanks of the Le Conte's Sparrow are more distinct than in the Sharp-tailed Sparrow, being sharply delineated and darker. The bright buff upper breast of the hybrid resembles that of the Sharp-tailed Sparrow and the streaks are like those of the Le Conte's Sparrow.

Measurements.—The hybrid is the size of a large Le Conte's Sparrow.

	N	Wing (chord)			Tarsus		
		min	mean	max	min	mean	max
Sharp-tailed Sparrow	21	56.0	58.3	60.5	18.5	20.1	21.0
Le Conte's Sparrow	16	50.5	52.6	55.0	17.0	17.9	18.5
Hybrid			54.0			18.5	

DISCUSSION AND CONCLUSIONS

The evidence indicates a close similarity between the Le Conte's and Sharp-tailed Sparrows. Because both species occupy the same or similar habitats, the possibility that some of the similarities result from convergence must be considered. I think the similarities of molts and plumages result from close relationship rather than from convergence for several reasons. First, from descriptions of Henslow's Sparrow habitats (reviewed by Hyde, 1939), Henslow's Sparrows seem to occupy in the east habitats that are occupied by Le Conte's Sparrows in the west. The habitats are similar enough that the species occurred together in Minnesota (Roberts, 1932) and in Ontario (specimens in the Royal Ontario Museum). Yet the back patterns of juveniles, feather patterns of the adults, and molts are different. Further, the Savannah Sparrow (*Passerculus sandwichensis*) breeds in habitats with Grasshopper Sparrows and in habitats with Le Conte's and Sharp-tailed Sparrows, but its molts and juvenal plumage are different from those of the Grasshopper Sparrow and its prealternate molt is apparently less extensive than that of the Le Conte's and Sharp-tailed Sparrows (Dwight, 1900). Finally, although Seaside and Sharp-tailed Sparrows occur together on the Atlantic coast, their molts are very different. There appears to be no convergence among other species now living in the same habitat. While this argument is not conclusive, I think it unlikely that convergence is responsible for the similarity of their songs, or for the similarity of their genes which has permitted the production of a hybrid. Unfortunately the reasons for placing the Henslow's and Le Conte's Sparrows in *Passerherbulus* rather than in either *Ammodramus* or *Ammospiza* have not been published and, therefore, cannot be evaluated.

I consider the Le Conte's and Sharp-tailed Sparrows to be more closely related to each other than either is to any other species. Their closest relatives are the Seaside Sparrows. Therefore, I propose that the Le Conte's Sparrow be placed in the genus *Ammospiza*. The specific name *Fringilla caudacuta* Latham 1790 for the Le Conte's Sparrow becomes a secondary homonym of the specific name *Oriolus caudacutus* Gmelin 1788 for the Sharp-tailed Sparrow. The earliest available name for the Le Conte's Sparrow is *Emberiza Le conteii* Audubon 1844. Thus, the Le Conte's Sparrow becomes *Ammospiza leconteii* (Audubon). The Henslow's Sparrow is probably most closely related to the Grasshopper Sparrow on the

basis of the similarity of their molts and juvenal plumages. The Henslow's Sparrow becomes *Ammodramus henslowii* (Audubon).

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The University of Michigan Museum of Zoology, Ann Arbor, Michigan 48104. Present address: Department of Natural Science, University College, Michigan State University, East Lansing, Michigan 48823.