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THE STATUS OF NELSON'S AND SALTMARSH SHARP-TAILED SPARROWS ON WACCASASSA BAY, LEVY COUNTY, FLORIDA

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Abstract.—Little is known about the wintering ranges of the two species of sharp-tailed sparrows (*Ammodramus caudacutus* and *A. nelsoni*). During two years, I studied sharp-tailed sparrows overwintering in a salt marsh near the Gulf of Mexico in Levy County, Florida; among the 162 individuals examined in the hand, I determined that most (96%) were Nelson's Sharp-tailed Sparrow (*A. nelsoni*). Within this species, the majority (97%) were the subspecies breeding in north-central North America (*A. n. nelsoni*); the remaining 3% were intermediate between *A. n. nelsoni* and the two more eastern subspecies, *A. n. alterus,* which breeds in the area of Hudson Bay and James Bay, and *A. n. subvirgatus,* which breeds in coastal areas of the Maritime Provinces, Quebec, and Maine. Only 4% of the individuals examined were the Saltmarsh Sharp-tailed Sparrow (*A. caudacutus*), which nests on the Atlantic Coast from Maine to Virginia.

These data from one area of Florida, compared with similarly gathered data from South Carolina, tentatively suggest that the main wintering ground of the Nelson's Sharp-tailed Sparrow is on the Gulf of Mexico In contrast, the Saltmarsh Sharp-tailed Sparrow is relatively uncommon on the Gulf of Mexico in winter.

Based on the research of Greenlaw (1993), the sharp-tailed sparrow (*Ammodramus caudacutus* [American Ornithologists' Union 1983]) has been split into two species, the Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*), and the Saltmarsh Sharp-tailed Sparrow (*A. caudacutus;* American Ornithologists' Union 1995). The former species breeds in three separate regions: 1) from southern Mackenzie Province to northern South Dakota, eastward to northwestern Wisconsin; 2) the south shores of Hudson and James bays; 3) in coastal areas of Quebec and the Maritime provinces, south to Maine. The latter species breeds along the Atlantic coast from central Maine to southern Virginia. Thus, *nelsoni* has a more northerly and westerly breeding distribution, while *caudacutus* tends to breed farther east and south. As yet, little is

known about the comparative winter distribution of the two groups. As members of the sharp-tailed sparrow complex are difficult to separate in the field, it will be necessary to rely on collections or on systematic banding studies before winter distributions can be fully characterized. This study, conducted during two winters on the Gulf coast of Florida, provides information on winter population composition in one region and in one habitat type. Although populations of both species show clinal variation, and many individuals cannot be assigned unequivocally to one race or another, the subspecies categories are useful in identifying the probable geographic origin of most individuals.

Study Area and Methods

The study site was located in a salt marsh at Gulf Hammock, on the landward edge of Waccasassa Bay, Levy County, Florida. The shoreline is gradual, but dotted with oyster bars and small islands, and cut by numerous creeks. The study site is flat, except for creeks up to 2 m deep. Tides average 0.8 m. The average salinity is 19.03 0/00. Vegetation covers 94% of the study area, and tidal creeks cover 6%. Vascular plants, in order of importance (percent of relative cover), were Smooth Cordgrass (*Spartina alterniflora*), 38%; Black Needlerush (*Juncus roemerianus*), 26%; Seashore Saltgrass (*Distichlis spicata*), 23%; Glasswort (*Salicornia virginica*), 8%; Saltwort (*Batis maritima*), 3%. The site is described in further detail in Post (1981a,b), Post et al. (1983), and Woods et al. (1982).

The 30-ha study area was gridded with markers placed at 25-m intervals. Birds were captured in mist-nets placed near grid intersections. I attempted to place nets to capture the most birds in each area. The same net sites were used between years.

Upon capture, each bird was banded, measured, weighed, and the netting location was recorded. If sufficient light was available, the bird was identified to subspecies with the aid of a dichotomous key devised by Parkes (1952; see Appendix). Some individuals were photographed for comparison with museum specimens. Birds were released within 100 m of the point of capture. Mist-net casualties were salvaged and compared directly with study skins.

The study was conducted during the period 30 January 1979 to 30 October 1980.

Results

I marked 183 sharp-tailed sparrows. Sharp-tailed sparrows were about as common as Seaside Sparrows (*Ammodramus maritimus*). During the same period, using the same methods, I marked 142 Seaside Sparrows. The latter species is a permanent resident on the study area; sharp-tailed sparrows occur in the study area 3 October through 17 May.

I determined the species and subspecies for 162 sharp-tailed sparrows. The Nelson's Sharp-tailed Sparrow was by far the most common species (96% of the birds examined) The Saltmarsh Sharp-tailed Sparrow comprised only 4% of the population.

Among the 155 Nelson's Sharp-tailed Sparrows, 150 (97%) could be assigned unequivocally to *A. n. nelsoni,* 4 (3%) were intermediate between *A. n. nelsoni* and *A. n. subvirgatus* and 1 (0.6%) was intermediate between *A. n. alterus* and *A. n. nelsoni.*

The seven Saltmarsh Sharp-tailed Sparrows were not assigned to subspecies.

The minimum average return rate for the two-year period was 15%. During the winter sampling period of 1979 (30 January to 23 February), I marked 20 individuals. In the second winter sampling period (21 November 1979 to 24 February 1980), three birds from the first marked group were recaptured, giving a return rate of 15% (3/20). In the second period, I marked 43 additional birds. In the third period (16 October 1980 to 21 October 1980), I recaptured six individuals, giving a return rate of 15% (6/43). No birds marked in the first period were recaptured in the third. The relatively low return rate may be related to low annual survival of first-year birds. Only 6% of the individuals that I examined in the autumn (n = 34) were after hatch-year birds.

The average distance between the original capture positions and the points of recapture after the birds returned from the breeding grounds was 99 m (SD = 50 m; range 0-158 m; n = 9; *A. n. nelsoni*).

Both species of sharp-tailed sparrows associated in loose flocks, often joining Seaside Sparrows as they foraged out of view on the ground under *Distichlis, Salicornia*, or *S. alterniflora*, as well as in the open, along the edges of mud banks and shallow, open pools (foraging sites described in Post et al. 1984). Members of the three species formed loose aggregations, and followed each other between feeding and roosting sites (Post and Greenlaw 1993). In these contexts, the *cee* lisp, which apparently acts as a social contact call (Post and Greenlaw 1975, Greenlaw and Rising 1994), was frequently uttered. Mixed-species groups mobbed predators, often sitting in exposed positions on the tops of vegetation while vocalizing (*Tic* twitter; Greenlaw and Rising 1994).

Soon after their arrival in early October, I heard *A. nelsoni* singing. Singing was heard intermittently through the winter, especially on warm days. Seaside Sparrows, which remained on their territories during the winter, began chasing sharp-tails in February.

Mean wing length (chord from wrist to tip of longest primary) was 52.7 mm (SD = 1.8; range 48.5-56.5 mm; n = 55 *A. n. nelsoni*). The average mass of 25 *A. n. nelsoni* was 13.1 g (SD = 1.0; range 11.7-16.1 g; n = 25). The sample size was too small to test for seasonal variation in mass. Few individuals showed signs of fat accumulation in the winter. Most birds (72% of 71) had no furcular fat (Helms fat class 0) or had a slight amount (fat class 1; 38%). The only pronounced signs of fat gain occurred in late February through early March, when six individuals (8.5%) had moderate fat (fat class 2). The only very fat bird (fat class 3) was captured on 17 May.

I detected no molting individuals of *A. n. nelsoni* after its arrival in early October. Spring (prealternate) molt was first detected 27 March. By 15 April, most individuals examined (11 of 12) were undergoing molt of body and flight feathers. Flight feather molt involved replace-

ment of all remiges and rectrices. The first completed molt was recorded on 5 April; six birds examined on 17 May had completed their molt.

DISCUSSION

The main finding of this study is that more than 95% of sharp-tailed sparrows that wintered at a study site on the Gulf of Mexico were Nelson's Sharp-tailed Sparrows. The Saltmarsh Sharp-tailed Sparrow comprised only about 4% of the sample. The generality of this finding needs to be tested by sampling at other coastal localities, especially on the northern Gulf Coast of Florida.

In contrast to the findings of this study, the composition of a population of sharp-tailed sparrows wintering in a salt marsh in South Carolina, also studied by mist-netting (October through December 1984, 1993, 1997), was 57% *A. caudacutus* and 43% *A. nelsoni* (n = 72; unpubl. data). The nominate race *A. n. nelsoni* comprised only 17% of the South Carolina population, in contrast to its 93% representation at the Florida site. The two other races of *nelsoni* were relatively more abundant at the Atlantic coast site than at the Gulf Coast site. The "Acadian" sharp-tailed sparrow (*A. n. subvirgatus*) made up 11% of the population, in contrast to its 3% representation on the Gulf coast (four birds, all intermediates with *A. n. nelsoni*). Finally, the "James Bay" sharp-tailed sparrow (*A. n. alterus*) comprised 15% of the South Carolina population, while only 1% of the Florida birds were assigned to this race (one bird, also an intermediate). Thus, preliminary comparisons between the two areas indicate that there are distinct differences in the winter distribution of *A. n. nelsoni* and the other populations of sharp-tailed sparrows.

Awaiting information from studies conducted in other parts of the species' winter ranges, I tentatively suggest the following: *A. n. nelsoni,* as might be expected from its more western breeding range, winters chiefly on the Gulf coast. The more eastern breeding populations of this species (*alterus* and *subvirgatus*) winter mainly on the Atlantic coast. The Saltmarsh Sharp-tailed Sparrow winters along the Atlantic coast, principally south of its breeding range (Greenlaw and Rising 1994). Like the Atlantic coast populations of the Seaside Sparrow (Post and Greenlaw 1994), this species may rarely cross the Florida peninsula to winter on the Gulf of Mexico (see, in contrast, Stevenson and Anderson 1994).

Until the recent division of the sharp-tailed sparrow into two species, field workers had been faced with the difficult problem of distinguishing between five races, some of which were not objectively separable on the basis of plumage (Bull 1964, Chamberlain 1975). Un-

der the two-species concept, field identification may not be nearly as troublesome, as it has been reduced to the task of separating southern birds (bright, well marked pattern, sharply defined and relatively profuse dark ventral streaking, and large bill) from the group of northern ones (blurred, ill-defined, grayish ventral streaking and weak dorsal streaking, or greatly reduced breast streaking combined with a small bill and a sharply marked back and face (Greenlaw, pers. comm.; see descriptions in Greenlaw and Rising 1994 and illustrations of "typical" individuals in Rising 1994). Further banding studies and museum work are recommended to delineate the ranges of the various races within the two species.

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APPENDIX. Key to the subspecies of sharp-tailed sparrows (after Parkes 1952).

A. Flank feathers with well defined black shaft-streaks.

B. Smaller (flattened wing 51-58 mm; bill [anterior nares to tip] 8.0-9.1 mm); sharp contrast between whitish edges and blackish centers of dorsal feathers . . . . . *A. n. nelsoni*

BB. Larger (wing 53-65 mm; bill 8.9-10.1); less contrast between buffy or grayish edges and blackish or brown centers of dorsal feathers.

C. Darker; black areas of dorsum more predominant; central gray crown stripe reduced in width, sometimes completely obscured by blackish lateral stripes . . . . . *A. caudacutus diversus*

CC. Lighter; black areas of dorsum less predominant; ventral streaking less extensive; central gray crown stripe well marked *A. c. caudacutus*

AA. Flank feathers with blurred gray shaft-streaks.

B. Predominant dorsal color tone rufescent; face (except gray auriculars) rich buff; central crown stripe bluish gray; edgings of tertials buff . . . . . *A. n. alterus*

BB. Predominant dorsal color tone olivaceous; face (except gray auriculars) pale buff; central crown stripe olive gray; edgings of tertials grayish-white . . . . . *A. n. subvirgatus*