

## GENERAL NOTES

**Racial Composition and Differential Migration of Tower-killed Savannah Sparrows in Southeastern North Dakota.**—From September 1971 through October 1973, bird mortality was monitored during the migration seasons at the 366-m high transmitting tower of the U.S. Coast Guard's Omega Navigation Station near LaMoure in southeastern North Dakota (Avery et al., 1975, 1976). One of the species most frequently killed at the Omega tower was the Savannah Sparrow (*Passerculus sandwichensis*). In this paper we discuss the racial composition of a migrant population of this species, as represented by 39 casualties that were freeze-dried and compared with study skins in the National Museum of Natural History. The freeze-dried specimens are in the collection of the Northern Prairie Wildlife Research Center, Jamestown, North Dakota.

According to the American Ornithologists' Union Check-list (1957), *P. s. nevadensis* is the subspecies nesting in North Dakota. The breeding range of this race covers a large area of western North America from northeastern British Columbia and central Manitoba south to northern Arizona. To the east, from northeastern Manitoba through much of Ontario, lies the range of *P. s. oblitus*. South of the Great Lakes, typical *P. s. mediogriseus* (included in *P. s. savanna* in the A.O.U. Check-list) is the breeding bird (Aldrich, 1940). Michigan populations are closest to *mediogriseus* but are somewhat intermediate toward *oblitus* (Braund and Aldrich, 1941). Dickerman and Parkes (1960) found that breeding populations in Minnesota are composed chiefly of intergrades between *nevadensis*, *oblitus*, and *mediogriseus*. The most northern race is *P. s. anthinus*, which breeds across the Northwest Territories and westward through much of Alaska.

Of the 39 tower-killed specimens, 26 possessed features of both *nevadensis* and *oblitus* (Table 1). These had the pale brown and gray general coloration of typical *nevadensis* but also, to some extent, the heavy dark markings on breast and back that characterize *oblitus*. Twenty of these were judged to be more similar to *nevadensis* than *oblitus* (here designated  $n > o$ ), whereas six were considered to be intermediate between these two races ( $n \times o$ ). Only five birds were identified as "pure" *nevadensis* and three as "pure" *oblitus*. Five specimens represented *anthinus*. Thus, it appears that the majority of migrant Savannah Sparrows passing through the LaMoure region breed in the area where the ranges of *nevadensis* and *oblitus* meet.

Little information is available on the racial composition of migrant Savannah Sparrows in other areas. Tordoff and Mengel (1956) identified all 16 Savannah Sparrows killed at a Topeka, Kansas TV tower as *nevadensis*. Hatler and Campbell (1975) examined 30 individuals killed in a two-day period at a lighthouse on Vancouver Island, British Columbia, and tentatively assigned them to the nominate race. Five subspecies were represented in a series of 75 Ohio migrants taken in both spring and fall over a number of years (Aldrich, 1940). About 70% of these birds belonged to *mediogriseus*, the local breeding race.

Norris (1963) analyzed subspecific variation in a South Carolina wintering population. His study illustrated the high incidence of intergradation in the Savannah Sparrow, as did

TABLE 1  
Number of Savannah Sparrows killed at the Omega Tower, LaMoure, North Dakota.

Season	Subspecies					Total
	$n^1$	$n > o$	$n \times o$	$o$	$a$	
Spring	4	12	1	3	0	20
Fall	1	8	5	0	5	19
Total	5	20	6	3	5	39

<sup>1</sup>  $n$  = *nevadensis*,  $o$  = *oblitus*,  $a$  = *anthinus*.

our migrant sample and the Minnesota breeding population studied by Dickerman and Parkes (1960). Norris found that over half of 1,750 individuals examined were intergrades, although all were primarily assignable to one of five races.

Our limited data suggest the possibility of temporal differences in migration by the various races in southeastern North Dakota (Table 2). During spring migration, the *nevadensis* ( $n$  and  $n > o$ ) specimens occurred an average of one week before those showing strong affinities to *oblitus* ( $o$  and  $n \times o$ ). In fall, the median dates for the *nevadensis* and *oblitus* groups were similar, but *anthinus* migrants averaged about one week earlier. The lack of *anthinus* specimens in the spring kill may indicate different migration routes in spring and fall for this race.

TABLE 2

Median and extreme dates of kill of Savannah Sparrow subspecies at the Omega Tower.

Subspecies	Spring		Fall	
	n	Median (extremes)	n	Median (extremes)
$n$ & $n > o$	16	8 May (20 Apr.–27 May)	9	29 Sept. (26 Sept.–5 Oct.)
$o$ & $n \times o$	4	14 May (10 May–18 May)	5	30 Sept. (26 Sept.–15 Oct.)
$a$	0	—	5	22 Sept. (7 Sept.–6 Oct.)

<sup>1</sup>  $n$  = *nevadensis*,  $o$  = *oblitus*,  $a$  = *anthinus*.

Hatler and Campbell (1975) discussed the likelihood of differential migration by sex in *P. s. sandwichensis*, because all of their 30 specimens were males. In the spring sample of *nevadensis* ( $n$  and  $n > o$ ) from the LaMoure tower, the median dates of kill for nine males and seven females were 27 April and 10 May, respectively. All six April specimens were males, and the first female was not killed until 8 May. It appears, therefore, that segregation by sex occurs in *nevadensis* during spring migration, with males migrating well ahead of females.

After examining the specimens in this study, we concur with Peters and Griscom (1938) that the subspecies *nevadensis* is highly variable. The majority of specimens in our sample were grayer and darker than "typical" examples in our *nevadensis* reference series. The differences are apparent in comparisons with recently collected study skins as well as with those taken more than 50 years ago and, therefore, do not seem to be attributable merely to the "unfoxed" plumage coloration of the newly obtained tower-kills.

A more comprehensive study of migration by the various races of Savannah Sparrows in the northern Great Plains requires a larger sample of specimens. We urge that tower-kills, banding casualties, and other such material be preserved for this purpose.

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#### LITERATURE CITED

- AMERICAN ORNITHOLOGISTS' UNION. 1957. Check-list of North American birds. Fifth ed. Baltimore, Md., Amer. Ornithol. Union.
- ALDRICH, J. W. 1940. Geographic variation in eastern North American Savannah Sparrows. *Ohio J. Sci.*, **40**: 1–8.
- AVERY, M. L., P. F. SPRINGER, AND J. F. CASSELL. 1975. Progress report on bird losses at the Omega Tower, southeastern North Dakota. *Proc. North Dakota Acad. Sci.*, **27**: 40–49.
- . 1976. The effects of a tall tower on nocturnal bird migration. *Auk*, **93**: 281–291.
- BRAUND, F. W., AND J. W. ALDRICH. 1941. Notes on the breeding birds of the Upper Peninsula of Michigan. *Oologist*, **58**: 86–93 & 98–105.

- DICKERMAN, R. W., AND K. C. PARKES. 1960. The Savannah Sparrows of Minnesota. *Flicker*, **32**: 110–113.
- HATLER, D. F., AND R. W. CAMPBELL. 1975. Notes on spring migration including sex segregation, of some western Savannah Sparrows. *Syesis*, **8**: 401–402.
- NORRIS, R. A. 1963. Birds of the A.E.C. Savannah River Plant Area. Contrib. Charleston Museum, No. 14.
- PETERS, J. L., AND L. GRISCOM. 1938. Geographical variation in the Savannah Sparrow. *Bull. Mus. Comp. Zool.*, **80**: 445–478.
- TORDOFF, H. B., AND R. M. MENGEL. 1956. Studies of birds killed in nocturnal migration. *Univ. Kansas Publ., Mus. Nat. Hist.*, No. 10.
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**Further Evidence of White-tailed Deer Eating Birds in Mist Nets.**—The White-tailed Deer (*Odocoileus virginianus*) has been reported consuming animal matter on several occasions. Stone and Palmateer (*N.Y. Fish Game J.*, **17**: 63, 1970), Olson (*J. Mammal.* **13**: 80–81, 1932) and Shaw (*J. Mammal.*, **44**: 284, 1963) reported consumption of birds, fish, and insects, respectively, by White-tailed Deer. Carlson and Sloan (*IBBA News*, **47**: 217–219, 1975) reported a number of instances of birds being eaten while captured in mist nets, and considered White-tailed Deer as the predator.

In 1976, the bird population studies on which Carlson and Sloan (op. cit.) were working were continued on the Baraga Jack Pine Plains, in Baraga County, Michigan. The 28 mist netting stations in this essentially pure Jack Pine (*Pinus banksiana*) forest were operated four days a week for most of the summer. Three incidences of consumption of captive birds were recorded in June 1976. On 19 June the remains of an unidentifiable bird were found in a mist net. The moist feather and skeletal remains contained little fleshy material and appeared well masticated. Deer tracks were numerous in the soft sandy soil surrounding the net. On 29 June, the moist remains of a Hermit Thrush (*Catharus guttata*) were found in a net about one meter from the ground. As previously, the feather and skeletal remains were well masticated with most fleshy tissue removed. Deer tracks were observed in the soil beneath the bird. On the morning of 30 June, the remains of a Dark-eyed Junco (*Junco hyemalis*) similar to those found previously were removed from a net less than one half meter from the ground. Deer tracks were observed on the trail approaching the net.

The moist, well masticated feather and skeletal remains of the entire birds as found here would eliminate most small mammals of the area as possible predators. Predation by large carnivores on the captured birds would most likely result in the bird being removed from the net and consumed entirely. Although no animals were observed in the process of consuming a captive bird, White-tailed Deer were observed regularly in the area, and evidence implicating White-tailed Deer is strong.—THOMAS A. ALLAN, *Department of Forestry, Michigan Technological University, Houghton, MI 49931*. (Present address: *1903 E Woodmar Dr., Houghton, MI 49931*). Received 10 October 1977, accepted 26 December 1977.

**Adult Female Ring-billed Gulls Sexually Molest Juveniles.**—During the spring of 1976, we observed 18 color-marked pairs of *Larus delawarensis* at the Calcite Colony, Rogers City, Presque Isle Co., Mich. from mid-incubation through juvenile departure. Subsequent to marking, the sex of each adult-plumaged pair member was predicted on the basis of behavior and intrapair size differences. Later 50% of these birds were collected for parasitological examination and their sex was verified. Our findings through the latter method showed our preliminary sexing procedure to be 100% accurate.

On three separate occasions, we observed two different color-marked adult females mount chicks and perform copulatory behavior. Their wing-flapping actions and accompanying vocalizations appeared similar, if not identical, to those described for male Ring-bills by Southern (*Bird-Banding*, **45**: 210–216, 1974). We have witnessed Ring-billed Gulls