

1952) and Pierre, where it was recorded in the then unflooded Oahe Dam Site (loc. cit. 5:28, 1953 and by N. R. Whitney, Audubon Field Notes, 16:425, 1962).

Since the Missouri River Valley between Pierre, South Dakota and Bismarck, North Dakota has had very little ornithological exploration it is not surprising that this species should have first been observed in the latter state in the Bismarck area. It is doubtful, however, if the species exists at present in most of this Missouri valley region for woodland habitat suitable for the species has now been inundated by the Oahe Reservoir.

It appears that this species may either be spreading northward or is just now being observed by ornithologists, for in the 1960's several additional records of this species have been recorded in the state. The first observation of this species made by the senior author occurred in 1961 while he was making breeding bird observations on a study area three miles southwest of Riverdale in McLean County, North Dakota. The song of this species was heard on 20 June 1961 in thick, low willow growth adjacent to the Missouri River but off the study area. He was unable to find the bird at the time, however, and no further verification was made of its presence. In June of 1968 the senior author was again making breeding bird censuses in the Riverdale area when he found this species breeding there. The area being surveyed was a portion of the abandoned main channel of the Missouri River approximately one quarter mile south of Garrison Dam which had contained water in 1958, but had since 1960 grown up into a savanna consisting of relatively open areas interspersed with dense stands of young diamond willow (*Salix missouriensis*), 5-8 feet high. Two singing males were found on territory in this willow habitat and were observed on six separate visits between 11 June and 10 July 1968, when the last visit was made to the area. Considerable effort was made to locate nests in the dense tangle of vegetation but only one was found and it had already been abandoned.

We know of only one other reported observation of this species in North Dakota from outside the Missouri River area. This is of a singing male observed by R. E. Stewart on 4 June 1966 "along Brush Creek, a tributary of the Knife River in Mercer County, about 4 miles SSW of Beulah" (Stewart, Audubon Field Notes, 20:579, 1966). —EDMUND A. HIBBARD, *Dept. of Zoology, North Dakota State University, Fargo, North Dakota 58102* AND PAUL D. KLINE, *Iowa Conservation Commission, Indianola, Iowa 50125, 5 August, 1970 (originally received 21 April 1965)*.

Persistence of remains of birds killed on motor highways.—There are published in the literature numerous counts of birds killed on motor highways, and the counting of dead birds appears to hold possibilities for use in evaluating the magnitude of bird mortality on the highways. However, if the resulting data are to be used in a meaningful way to evaluate even the magnitude of the mortality, the counts must be supplemented with information on the durability of evidence of automobile-killing of different species on highways having different amounts of motor traffic. In this note data are given on the durability of parts of House Sparrows (*Passer domesticus*) on an interstate highway and on a country road in North Carolina.

In the forenoon of 20 May 1968, I threw 50 dead House Sparrows from an automobile window onto the surface of Interstate Highway 85, between Oxford and Creedmoor, North Carolina. I returned 90 minutes later and found remaining the parts of only five birds. In driving over the highway another 30 minutes later, no part of any of the birds was found, and all evidence of dead birds observable from a moving automobile had thus been obliterated by the heavy motor traffic within two hours.

In the forenoon of 28 May 1968, 20 dead House Sparrows were thrown onto the surface of a blacktop country road running 2 to 7 miles southward from Oxford; another 20 birds were placed beside the birds on the blacktop in the clipped vegetation on the shoulder of the same section of highway. The birds on the blacktop were all crushed before evening by wheels of motor vehicles, but all birds remained clearly visible. The 20 birds, feathers and all, were gone from the road surface the following morning, the crushed birds presumably having been removed by unidentified scavengers during the night or early morning. The birds on the shoulder remained undisturbed during the following five days, and 16 days passed before all evidence of the birds' presence had disappeared. The difference in durability of bird parts on the road surface and on the shoulder was confirmed with various species of birds killed by automobiles during the four seasons of 1968.

Unless they are appropriately planned, counts of small birds dead on interstate highways with the amount of travel of Interstate 85 have little value for measuring mortality because parts of the birds remain on the highway very short periods of time, and the length of time is variable. Much modern cross-country motor travel is over interstate highways and thus cannot be expected to yield useful data on highway mortality of small birds. Perhaps a reasonably accurate count could be made on an interstate highway by repeated trips over the same section of highway every few minutes throughout a daylight period.

By making daily counts of only birds on the pavement in the late evening, partial counts can be made of birds killed on country roads. All of the first preceding daylight period and little or no more time can be considered to be involved. However, if the count is to be complete for all birds killed, it must also include the birds thrown onto the shoulder by the automobiles striking them, and this necessarily involves counts made when the observer is walking to determine the proportion of the birds thrown from the highway onto the shoulder. A significant but unknown portion of the birds killed by automobiles are still lost from the count by their having been caught in the radiator grills of automobiles striking them. Counts made at other times than in the evening involve various periods of time depending on the length of time before evening at which they were made. Counts not giving consideration to the time of day at which they were made have relatively little value for measuring the actual magnitude of mortality, and they thus have lost much of their potential value. Daily travel over the same route, such as evening travel home from work, provides the best source for useful counts on traffic-killed birds.—PAUL A. STEWART, *Entomology Research Division, Agricultural Research Service, USDA, Oxford, North Carolina 27565, 5 January 1970.*

ANNOUNCEMENT OF PUBLICATION

A limited edition of 250 copies of Audubon's "Birds of America" will be reprinted starting in September 1971 by the Johnson Reprint Corporation, New York. The price will be \$5,400 (\$4,500 before the publication of the first part) for the complete set of 435 colorplates.