

NOTES ON FOSSIL BIRDS FROM THE PLEISTOCENE OF KANSAS AND OKLAHOMA

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In the exploration of Pleistocene deposits of southwestern Kansas and adjacent Oklahoma, Dr. Claude W. Hibbard and field parties of the University of Michigan Museum of Paleontology have assembled collections of fossil faunas of diverse ages. I have examined the bird fossils collected in the 1954 summer field season. Comparisons have been made with the recent skeletons of birds in the Museum of Zoology, University of Michigan. All catalogue numbers refer to the collections of the Museum of Paleontology, University of Michigan.

It might be worthwhile to make some remarks about the collecting of microfossils. For many years vertebrate paleontology has concentrated on fossil remains of large specimens. Remains of smaller organisms were often collected as a sort of byproduct. Any attempt to use such data for paleoecological purposes was difficult for the number of kinds of animals found at one site was limited, by and large, to the larger species. It is obvious on reflection that most kinds of animals of a community are small ones. For this reason specialized methods for collecting remains of small kinds of organisms were necessary to get an extended list of the fauna of a particular site. Hibbard (1) has been a leader in developing techniques for attacking the problem of collecting small fossils, especially those of unconsolidated or loosely consolidated sediments. These techniques of sifting and washing have proved very useful in collecting large numbers of bones and shells from sites the ordinary collector would consider very unpromising. The results of the study of such specimens permit a reconstruction of ecological conditions of the site. Hibbard has used them extensively on non-marine Pliocene and Pleistocene deposits in Kansas and Oklahoma. These techniques are especially productive of mammal remains, especially jaws which are very useful in the taxonomy of these animals. However, remains of fish, amphibians, reptiles, and birds are by no means uncommon.

The identification of bird bones presents difficulties. Pleistocene deposits, however, usually produce existing species or genera so skeletons of modern birds can be used for comparison. There is no particular element such as the jaw in mammals which is of primary importance in taxonomy of the group. In fact, the variation

in characters of elements of the skeleton of species of modern birds has been little studied. If one has an extensive series of a particular element among his fossils, a study of the variation in this element in modern forms would be in order. Downs (2) did such a study for his examination of the avifauna of the Jones fauna of Kansas. A problem arises when one has to attempt identification of a small number of different elements of fossil birds. The amount of labor involved in Downs' study did not seem justified by the amount of fossil material available, yet the potential value of the identifications was worth a somewhat lesser attempt. I therefore tried comparing each fossil bone with specimens in the skeleton collection of the Division of Birds of the Museum of Zoology, University of Michigan. Some of the elements could be identified quite readily as duck bones or passerine bones. If there was much doubt about the group concerned at this point, I then considered such an element worthless for this purpose. More detailed comparisons were made with the remaining elements to see whether the specimen in hand fell within the range of variation of the modern form. This last point is an important one to anyone who has worked with variation in modern forms; it is important to have some idea of the amount of variation within the species concerned in order to evaluate the single specimen. This is the method Downs used in a formal way, but which I followed only in making comparisons by eye. Determinations were then made in cases where the fossil would reasonably fit into the variation of some particular species and outside the variation of the other related species. Such a technique depends on an adequate skeletal collection, a rarity in this country. By this method I was able to identify four species from three Pleistocene deposits from Kansas and Oklahoma.

DIXON LOCAL FAUNA

This fauna (3:160) is found in the Meade formation in deposits of clays and sandy silts which occur on the SW $\frac{1}{4}$ sec 12, T. 29 S., R. 8 W., Kingman County, Kansas. The mollusk and mammal faunas indicate a water area with marshy edges as well as some trees and shrubs, and a cool climate. Hibbard's tentative age assignment is late Nebraskan.

Spatula clypeata (Linnaeus), Shoveler. No. 33737 is a complete, somewhat worn left cuneiform. No. 33738 is the anterior portion and part of the neck of a right scapula which seems to belong to this species, but I could not separate it with certainty from that of *Aix sponsa*.

Fulica americana Gmelin, American Coot. No. 31975 is the anterior median portion of a sternum including bone in front of the carina and all but the distal parts of the coracoidal sulcus; the ventral manubrial spine is missing. There is a slight depression

between the base of the carina and the ventral manubrial spine, a condition approached in one recent Coot specimen; in six others the area is relatively flat or slightly arched. No. 33739 is the distal portion of a right tarsometatarsus including the trochlea for digit 3 and the central portion of the shaft to include the distal foramen. No. 33740 is the distal portion of a carpometacarpus.

SANDERS LOCAL FAUNA

This fauna (3:179) occurs in a zone above the buried caliche in the Missler member of the Meade formation in outcrops along the valley of Spring Creek and its tributaries on the Big Springs Ranch, south of Meade, Meade County, Kansas. The fossils discussed were collected at Loc. UM-K2-53, SE $\frac{1}{4}$ Sec. 23, T. 32 S., R. 29 W. The habitat indicated is a broad, chiefly marshy, floodplain. The climate was warmer than at the time of the Dixon fauna and more moist than at the present time. The age is considered to be late Aftonian.

Euphagus cyanocephalus (Wagler), Brewer's Blackbird. Five elements were found that can be assigned to this species: No. 31985, the distal portion of a left humerus; No. 31988, right and left quadrates which lack the orbital process and the process that bears the socket for the quadratojugal; Nos. 31986, 31987, right and left ulnae, including the proximal head and part of the shaft. The humerus and quadrates are too large for *E. carolina*. The ulnae are not especially distinctive but could be *E. cyanocephalus*. The quadrates are about the same size in two male *E. cyanocephalus* and larger than six females, but the humerus is within the size variation of the six females. Unfortunately, it is impossible to know if all of these bones were from the same individual. No lower mandibles were found so no comparisons could be made with *E. magnirostris* Miller from the late Pleistocene Rancho La Brea (4:14).

NYE SINK LOCALITY

The fossil discussed was found in gray beds in this locality, 21 miles south of Meade, Kansas, on the XIT Ranch (east part of the old XI Ranch), Sec. 15, T. 6 N., R. 25 E.C.M., Beaver County, Oklahoma (5:367; 6:79). The fossil is from the same beds from which Lunk (7) reported *Lophodytes cucullatus*. The deposit is in a large sink (basin) that was filled with sediments during the late Pleistocene; the presence of *Gopherus* would suggest that the age could be Sangamon.

Mareca americana (Gmelin), American Widgeon. No. 31747 is a nearly complete carpometacarpus.

ABSTRACT

Fragmentary fossil bird bones from several Pleistocene sites in Kansas and Oklahoma were collected in 1954 by Dr. Claude W.

Hibbard. A number of species can be identified. *Spatula clypeata* and *Fulica americana* are recorded from the Dixon Local Fauna, which is probably late Nebraskan in age. *Euphagus cyanocephalus* is identified from the Sanders Local Fauna, probably late Aftonian. *Mareca americana* is reported from the probably Sangamon Nye Sink locality in Oklahoma.

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